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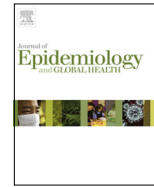
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Smoking motivators are different among cigarette and waterpipe smokers: The results of ITUPP

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Abstract The present study explores different drivers of cigarette and water pipe smoking among middle and high school students in Isfahan province. A questionnaire-based cross-sectional study was conducted. Trained staff collected questionnaires and saliva samples for response accuracy evaluation. Prevalence by demographic, parental and educational factors was calculated. Logistic regression was applied to compare behavior drivers of those who purely smoked cigarettes or a waterpipe. Waterpipe smokers were considered as the reference category. This study reported ORs along 95% confidence intervals; 5408 questionnaires were returned. The sample age was 15.37 ± 0.170 on average. The self-reported prevalence of cigarette and waterpipe experimentation was 11.60% ($n = 624$) and 20.70% ($n = 1,109$), respectively; and 5.08% ($n = 311$), 11.06% ($n = 619$) for smokers,

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and 13.30% ($n = 711$) for the whole sample. Psychological factors were the most important driver for cigarette smoking; bad event happening with odds of 2.38 (95% CI: 1.29–4.39); anger 2.58 times (95% CI: 1.51–4.43); and distress by 2.49 times (95% CI: 1.42–4.40). Habitual situations were strong predictors of cigarette smoking, but not a predictor of waterpipe smoking, such as smoking after a meal ($OR = 3.11$, 95% CI: 1.67–5.77); and smoking after waking up ($OR = 2.56$, 95% CI: 1.42–4.40). Comprehensive and multifaceted preventive programs must tailor identified factors and increase family's awareness.

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1. Introduction

5.4 million annual deaths are attributed to smoking causing it to be the leading killer. The World Health Organization (WHO) forecast that more than 80% of the tobacco-related deaths will be in the low- and middle-income countries by 2030 [1]. Several different forms of tobacco are used worldwide. Cigarettes, the most commonly used type, and the waterpipe, less common than cigarettes, have increasing popularity, especially among youth.

Nowadays, cigarette smoking has declined among adults and spread to adolescents and youth [2,3]. In addition, the prevalence of smoking has increased among young women [4–7]. The climbing prevalence of smoking among women has also been reported in developing countries [8]. In Iran, there is no study to explore the smoking trend over recent years; however, multiple surveys show the upward prevalence of smoking during successive years among youths [2,7]. Overall, cigarette smoking prevalence in Iran between 1991 and 1999 decreased from 14.6% to 11.7% among the 35–69-years-old age group [2]. The trend of cigarette smoking is different in youth compared with adults, and it is on the rise. A systematic review in Iran, which pooled studies from 1991 to 2008, showed that cigarette smoking prevalence ranges from 0.4% to 41% in various subpopulations, and the highest percentage was attributed to middle and high school students [9]. Also, a national survey of youth in 2003 revealed an average of 13% of smoking prevalence – 17.6% and 8.9% for boys and girls, respectively [10]. Another study in the year 2006 in Iran reported 14.3% of smoking among high school students with smoking initiation at the age of 13 years on average [7].

Waterpipe smoking is widespread in any region of world [11,12]. Studies report a rather high prevalence of waterpipe smoking among Middle Eastern countries [13]. It is also popular among Iranian students because of the provision of a wide range of favorite flavors and the so called “hype” role.

Traditionally, waterpipe smoking, which was common among the Iranian people, has now decreased from 3.8% to 3.5% among 35–69-year olds from 1991 to 1999. From another side, it has increased from 0.8% to 1.4% among 15–24-year olds [2]. The rising occurrence surged sharply upward during the last decade. A study among middle and high school students in 2007 showed 56.9% prevalence of lifetime waterpipe smoking and an average of 25.7% (30.7% in boys vs. 20.6% in girls) prevalence of current waterpipe smoking [14]. Waterpipe smoking exposes the individual to more smoke during a longer period and, subsequently, has more harmful health outcomes compared with cigarettes [15–17].

Obviously, health behaviors of youth are important as they are in transition to early adulthood, a time during which, if an unhealthy behavior develops it might consolidate into lifetime patterns and cause health issues [18,19]. Many demographical, parental [20], educational and socio-economical [21,22] factors are associated with youth smoking. For example, a study reported that 15-year-old students who performed poorly at school smoked six times more often during a week than high-grade achievers [23]. It is also shown that engaging in regular smoking during middle school could predict absence in high school classes independent of school performance during middle school [24]. Social factors could play a significant role in smoking initiation among youth. Factors include social norms, such as peer influence, family detachment, and self-esteem issues [7,25]. Studies suggest that psychological factors such as stress and depression eventuate smoking [26]. Peer influence is an important motivating factor, too [27].

WHO recommends a careful surveying of smoking and setting a higher priority to smoking prevention in schools and in the communities [10]. An effective preventive intervention plan requires the determination of motivating factors. Waterpipe and cigarette smoking have different prevalences. The authors believe that these products

have different initiation drivers among Iranian people. This claim is based on previously conducted studies among the Iranian people [28]. Distinct triggers of cigarette or waterpipe smoking demand national, comprehensive and multifaceted preventive programs to encompass motivational causes separately for cigarette or waterpipe smoking. This study, entitled Isfahan Tobacco Use Preventive Project (ITUPP), determined the prevalence of smoking as related to demographic, parental and educational factors in middle and high school students in Isfahan Province. In addition, this study examined motivating factors of cigarette and waterpipe smoking separately among a sample of middle and high school students in Isfahan Province, Iran.

2. Materials and methods

2.1. Study design

This is a cross-sectional study conducted in Isfahan province on middle and high school students (grades 6–12) from September to October 2010. Isfahan is the second populated province in the center of Iran and has 40 educational districts with more than 800,000 students. The study has gotten the approval of an ethics committee of Isfahan University of Medical Science.

Based on the study conducted in 2003, in which prevalence of smoking among students was reported at 14% [7] and considering a 95% confidence interval and a 0.05 of error, a sample size of 5000 subjects was calculated. An incomplete questionnaire was defined as one with more than 10% of the questions left blank. Given many incomplete or unanswered questionnaires, an estimated sample size of 5500 was determined. With a response rate of 98.3%, the 5408 questionnaires were eventually gathered.

Students were selected through a multistage, random cluster-sampling scheme. The clusters were educational districts. Stratified sampling was taken by school level (high/middle school), gender and area of residence (rural or urban area) within each cluster. Afterward, schools were selected randomly from each cluster; at last, students were taken from selected schools using a random numbers table.

2.2. Measurements

A self-administered anonymous questionnaire collected data on demographic, parental and educational variables. The variables include age,

gender, area of residence (urban, rural), education level, number of years of education (0–5 y, 6–12 y and >12 y), parents who smoke (neither of them, father, mother, both parents), average of term point, and number of days to be absent from school during last year (none, 1–3 days, 4–10 days, more than 10 days).

Motivating factors for smoking initiation were explored using an investigator invented questionnaire with a nine-item dichotomous scale (Yes, No). The answer choices include the following: (1) I smoke when/because; (1) a bad event happened; (2) I am angry; (3) I am distressed and I believe it relaxes me; (4) I am with friends to have fun; (5) everyone smokes and it is good entertainment; (6) after eating a meal because it is the best occasion for smoking; (7) as soon as I wake up because it helps me to have a fine day; (8) it decreases my appetite; and finally, (9) others smoking encourages me to smoke. The internal consistency via Cronbach's alpha was evaluated and proper consistency (0.86) was found.

Four experts reviewed the questionnaire for clarity, and questionnaires were corrected for ambiguous items. Afterward, 30 randomly selected students (15 females and 15 males) filled out the questionnaires to assess the questionnaire clarity.

All participants wanted to sign a consent form after attending an information session on the study goal and design. They were asked to fill out the questionnaire in a 30-min period during class time. All staff members that were responsible to collect the data and help students to complete the questionnaires as well as getting saliva samples from participants were fully trained.

Five percent of randomly selected students received a saliva vial. This action aimed to determine saliva cotinine-based prevalence and to compare it with self-reported prevalence for determination of accuracy of responses. Saliva cotinine level is a decent index for diagnosis of smoking. Sensitivity and specificity are reported to be 96–97% and 99–100%, respectively [29]. A sample collected during rapid tongue and cheek movements and at least half an hour post-meal or -drink. Samples were placed in the tube without touching. Staff members transported saliva vials from the collection site in a cooler bag and were then placed in a freezer set at –20 °C within four hours of collection. The central laboratory of the provincial health center analyzed samples using the highly sensitive salivary cotinine quantitative ELIZA kit made in Austria. The cutoff point was set at 48 ng/dl.

Smoking status (for cigarette and waterpipe, separately) was classified into five subgroups,

Table 1 Prevalence of cigarette and waterpipe smoking by demographic factors in study population.

	Cigarette Smoking N (%)			Total	Waterpipe smoking N (%)			Total
	Nonsmokers	Experienced	Current smokers		Nonsmokers	Experienced	Current smokers	
Overall self-reported prevalence	4427 (82.60)	624 (11.60)	311 (05.08)	5362	3631 (67.80)	1109 (20.70)	619 (11.60)	5359
Smoking duration (years)		3.58 ± 2.05	3.73 ± 2.11			3.47 ± 2.00	3.47 ± 1.96	
<i>Demographic characteristics</i>								
Age (years)	15.24 ± 1.69	15.96 ± 1.50*	15.87 ± 1.61*		15.12 ± 1.72	15.79 ± 1.52*	15.96 ± 1.51*	
Gender								
Girl	2449 (91.30)	141 (06.80)*	51 (01.90)*	2641	2123 (79.30)	436 (16.30)*	117 (04.40)*	2676
Boy	1978 (73.80)	443 (16.50)	260 (09.70)	2681	1508 (56.20)	673 (25.10)	502 (18.70)	2683
Residential area								
Urban	3894 (81.70)	581 (12.20)*	292 (06.10)*	4767	3177 (66.70)	1013 (21.30)*	575 (12.10)*	4765
Rural	533 (89.60)	43 (07.20)	19 (03.20)	595	454 (76.40)	96 (16.20)	44 (07.40)	594
<i>Parental characteristics</i>								
Father education level								
0–5y	1529 (80.20)	258 (13.50)*	119 (06.20)*	1906	1312 (69.10)	376 (19.80)	210 (11.10)	1898
6–12y	1792 (84.80)	222 (10.50)	100 (04.70)	2114	1433 (67.70)	441 (20.80)	243 (11.50)	2117
>12y	928 (83.50)	115 (10.40)	68 (06.10)	1111	747 (67.20)	242 (21.80)	122 (11.00)	1111
Mother education level								
0–5y	1925 (80.70)	322 (13.50)*	138 (05.80)	2385	1626 (68.30)	490 (20.60)	265 (11.10)	2381
6–12y	1649 (84.50)	201 (10.30)	102 (05.20)	1952	1326 (68.00)	401 (20.50)	225 (11.50)	1952
>12y	685 (84.30)	74 (09.10)	54 (06.60)	813	547 (67.40)	170 (20.90)	95 (11.70)	812
Parental smoking								
None	3038 (84.64)	371 (10.33)*	180 (05.01)*	3589	2622 (73.15)	641 (17.88)*	321 (08.95)*	3584
Father	1305 (79.10)	237 (14.40)	107 (06.50)	1649	961 (58.20)	436 (26.40)	253 (15.30)	1650
Mother	31 (88.60)	2 (05.70)	2 (05.70)	35	21 (60.00)	10 (28.60)	4 (11.40)	35
Both	53 (59.60)	14 (15.70)	22 (24.70)	89	27 (30.00)	22 (24.40)	41 (45.60)	90
<i>Educational characteristics</i>								
Years of education	8.65 ± 1.65	9.39 ± 1.51*	9.16 ± 1.52*		8.54 ± 1.67	9.22 ± 1.50*	9.35 ± 1.46*	
The average total score during last year (out of 20)	17.66 ± 2.04	16.18 ± 2.17*	16.02 ± 2.75*		17.75 ± 2.00	17.21 ± 2.16*	16.38 ± 2.52*	
Number of absences in school during a year								
None	1683 (87.20)	154 (08.00)*	93 (04.80)*	1930	1464 (75.90)	312 (16.20)*	152 (07.90)*	1928
1 to 3 days	1826 (82.40)	301 (13.60)	89 (04.00)	2216	1485 (67.20)	502 (22.70)	223 (10.10)	2210
4 to 10 days	476 (77.90)	92 (15.10)	43 (07.00)	611	355 (58.00)	156 (25.50)	101 (16.50)	612
More than 10 days	214 (63.70)	51 (15.20)	71 (21.10)	336	143 (42.30)	88 (26.00)	107 (31.70)	338

Nonsmokers considered as reference category and comparisons were made between experienced and current smokers with nonsmokers.

* Statistically significant relation.

including: (1) never used and never tried smoking; (2) smoked at least one puff or more; (3) smoked at least once a month, but less than once a week; (4) smoked at least once a week, but fewer than once a day; and (5) smoked at least once a day. The first subgroup was considered as never smoked, subgroups 2 and 3 as experienced, and subgroups 4 and 5 as current smokers. Students were asked about the number of years they have smoked. The students were then classified in two categories of: pure cigarette smokers and/or pure waterpipe smokers. Pure smokers were defined as those who purely smoked one product and did not smoke another or those who smoked one product, but also tried another one as well. The aim was to differentiate between two products; therefore, only those who purely smoked one kind of the product were included, and those who smoked two products simultaneously were discarded.

2.3. Statistical analysis

SPSS (SPSS Inc., Chicago, IL, USA; V15) software was used to analyze the data. Sample characteristics were displayed by smoking status for cigarette and waterpipe, separately. Continuous variables were presented as mean (one standard deviation), while qualitative ones were presented as absolute and percent relative frequencies. Experienced and current smokers compared with nonsmokers as the reference category using *t*-test or chi-square test. In the next step, experienced and current smokers were compared with regard to the drivers of smoking behavior to explore whether there is difference within this group of students. Finally, smoking drivers of pure cigarette smokers in relation to pure waterpipe smokers were compared using logistic regression. This analysis was to test the hypothesis that drivers are different for students who smoke cigarettes or a waterpipe. Both crude and adjusted results (covariates include age, gender, area of residence, parental education and smoking habit) were reported. Because of collinearity between age with number of education years and level, the last two variables were not entered in the adjusted model. All reported statistical tests are two-sided, and $p < 0.05$ is considered statistically significant; odd ratios (ORs) are reported with the corresponding 95% confidence intervals (CI).

3. Results

Overall, 5408 people (2702 girls and 2706 boys) returned completed questionnaires. The sample

age was 15.37 ± 01.70 on average. Eighty-nine percent of the students were from urban areas ($n = 4811$). About 42% ($n = 2445$) of the participants were from middle school.

The self-reported prevalence of cigarette and waterpipe experience was 11.60% ($n = 624$) and 20.70% ($n = 1109$), respectively, and 5.08% ($n = 311$) and 11.06% ($n = 619$) for current smokers. Prevalence of smoking in general (cigarette or waterpipe) was found to be 13.30% ($n = 711$). Results of cotinine test among randomly selected students were positive in 26 out of 220 (11.81% of the sample), with 4% positive results in girls and 20% in boys. This finding is an evidence for the validity of responses to the questionnaire. The average smoking age in cigarette experienced and current smokers was 15.97 ± 1.55 and 15.89 ± 1.63 years, respectively.

Table 1 shows the prevalence of smoking according to demographic, parental and educational factors in separate columns for cigarette and waterpipe smoking. Data points to experienced and current smokers regardless of product (cigarette or waterpipe) were mostly boys. For cigarettes, when neither of the parents were smokers, 10.33% ($n = 371$) of their children tried and 05.01% ($n = 180$) smoked and when both parents were smokers, the figure raised to 15.70% ($n = 14$) and 24.70% ($n = 22$). For waterpipe, when neither of the parents were smokers, 17.88% ($n = 641$) of their children tried and 08.95% ($n = 321$) smoked and when both parents smoked, the figure raised to 24.40% ($n = 22$) and 45.60% ($n = 41$). Among students with more than 10 days of absences during a year, 15.20% ($n = 51$) experienced cigarette smoking, 21.10% ($n = 71$) were currently cigarette smokers, 26% ($n = 88$) experienced waterpipe smoking, and 31.70% ($n = 107$) were currently waterpipe smokers. The average duration of smoking for cigarette smokers was 3.73 ± 2.11 years and for waterpipe smokers, the average duration was 3.47 ± 1.96 years.

Table 2 compares smoking drivers between experienced and current smokers by product type. The data show 59.10% ($n = 273$) of students who tried cigarettes in comparison with 40.90% ($n = 189$) who were currently smokers that started smoking when they were with friends. There were 53.80% ($n = 114$) of students who tried cigarettes and 46.20% ($n = 98$) who were smokers, and all expressed they were not seeing smoking as a problem as everyone smokes and it is a good form of entertainment. The results also showed 58% ($n = 182$) of students who tried cigarettes and 42% ($n = 132$) who were smokers that claimed that they

Table 2 Comparison of smoking drivers between experienced and current smokers by product type.

I smoke, When/because	Cigarette smoking N (%)			Waterpipe smoking N (%)		
	Experienced	Current smokers	P	Experienced	Current smokers	P
A bad event happened	50 (33.10)	101 (66.90)	<0.001	66 (34.70)	124 (65.30)	<0.001
I am angry	67 (36.40)	117 (63.60)	<0.001	89 (37.10)	151 (62.90)	<0.001
I am distressed and I believe it relaxes me	54 (34.00)	105 (66.00)	<0.001	67 (33.30)	134 (66.70)	<0.001
I am with friends for having fun	273 (59.10)	189 (40.90)	0.001	324 (46.40)	374 (53.60)	<0.001
Everyone smokes and it is a good form of entertainment	114 (53.80)	98 (46.20)	<0.001	145 (44.60)	180 (55.40)	0.001
After eating a meal, because it is one of the best occasions for smoking	33 (29.70)	78 (70.30)	<0.001	39 (29.50)	93 (70.50)	<0.001
As soon as I wake up, because it helps me to have a fine day	23 (33.30)	46 (66.70)	<0.001	36 (38.70)	57 (61.30)	<0.001
It decreases my appetite	34 (44.20)	43 (55.80)	<0.001	34 (33.00)	69 (67.00)	<0.001
Others smoke, it encourages me to smoke	182 (58.00)	132 (42.00)	0.008	248 (50.60)	242 (49.40)	<0.001

copy other smokers and other people that smoke, and this motivated them to smoke, too. It was found that trying the waterpipe after a meal was common among 29.50% ($n = 39$) of students, and using a waterpipe regularly occurred in 70.50% ($n = 93$) of participants. The results indicated that a higher percentage of those with cigarette experience would puff if they were in the situations that persuaded them to. For example, when they are hanging out with friends and they decide to have fun, when they witness others smoking and this gives them the perception that smoking is a normal behavior. From another side, current smokers puff a cigarette mostly when they face bad psychological moods and some habitual situations. The figure was also true for waterpipe experienced and current smokers.

Table 3 compares smoking drivers of pure cigarette smokers versus pure waterpipe smokers using

logistic regression. Both univariate and multivariate logistic were run, and crude and adjusted results were reported. Data indicate that 3486 (64.50%) students are non-smokers; 394 (7.7%) are purely cigarette smokers; 90 (1.8%) smoke only waterpipe; and 219 (4%) smoke neither cigarettes nor a waterpipe. Cigarette smokers when compared with waterpipe smokers were associated with a greater likelihood that they were from among students suffering from bad psychological factors. When a bad event happened, students have the odds of 2.38 (95% CI: 1.29–4.39) to smoke cigarettes. Being angry increases the risk of smoking cigarettes 2.58-fold (OR = 2.58, 95% CI: 1.51–4.43). Distress raises the odds of cigarette smoking by 2.49 times (95% CI: 1.42–4.40). The results remained significant even after adjusting for the effects of covariates. The odds ratio for cigarette smoking was 3.11 (95% CI: 1.67–5.77) for smoking

Table 3 Comparison of smoking drivers of pure cigarette smokers in relation to pure waterpipe smokers.

I smoke, When/because	Cigarette vs. waterpipe smokers			
	Crude		Adjusted	
	OR	95% CI	OR	95% CI
A bad event happened	2.38	1.29, 4.39	2.29	1.17, 4.47
I am angry	2.58	1.51, 4.43	2.54	1.40, 4.60
I am distressed and I believe it relaxes me	2.49	1.42, 4.40	2.68	1.45, 4.96
I am with friends for having fun	0.73	0.44, 1.21	0.71	0.41, 1.22
Everyone smokes and it is a good form of entertainment	0.88	0.50, 1.53	0.92	0.50, 1.68
After eating a meal, because it is one of the best occasions for smoking	3.11	1.67, 5.77	3.41	1.70, 6.85
As soon as I wake up, because it helps me to have a fine day	2.56	1.17, 5.57	2.38	1.00, 5.67
It decreases my appetite	1.09	0.48, 2.46	0.99	0.38, 2.53
Others smoke, it encourages me to smoke	0.92	0.55, 1.54	0.89	0.51, 1.55

Adjusted for age, gender, residency, parent education and parent smoking.
Waterpipe smokers regarded as reference group.

after a meal, and 2.56 (95% CI: 1.42–4.40) for smoking immediately after waking up in the morning. For entertainment and social factors, there were no statistically significant differences between cigarette and waterpipe smokers.

4. Discussion

The present large-scale study is conducted on middle and high school students in Isfahan Province to evaluate the prevalence of cigarette and waterpipe smoking and its motivational causes. The study pointed out a prevalence of smoking of over 13%. Although the highest percentage of current smokers is boys, the prevalence of smoking is notable among girls as well. These results show that psychological factors seem to be the most important drivers for cigarette smoking. In addition, habitual situations were strong predictors of cigarette smoking when compared with waterpipe smoking. As for entertainment and social motivating factors, no differences were found between smoking either product. Starting at age 12 and above, almost one out of six students tried or smoked cigarettes; and one out of three tried or smoked the waterpipe.

The prevalence of smoking in Iranian adolescent and youth seems less compared with European and American countries or even the Middle East [30]. The lower rate of smoking in this study in comparison with other Middle Eastern countries could be because of differences in tradition, culture and social norms. Compared with the past, however, a rising pattern of smoking among students, especially for waterpipe smoking, was viewed. Waterpipe smoking is more prevalent and popular among students. Some of the reasons for its popularity could be ease of use in different social settings, such as coffee shops and restaurants, a variety of choices in types and fragrances of waterpipe, the relatively cheaper price and therefore affordability. Moreover, inadequate health education programs against its use, nonconformity to smokefree air laws, especially for minors, and a wrong belief that waterpipe smoking has a less harmful effect on health and, consequently, a lower stigma when compared with cigarette smoking could contribute to its increased popularity.

Findings from this study showed a higher prevalence of smoking among boys compared with girls. Previous studies in Iran had reported a lower smoking prevalence in females versus males; however, the steeper increasing trend of smoking among females in recent years turned this notion into a matter of concern [31]. The waterpipe is more

common among girls compared with cigarettes. This may be an effect of more intensive stigmas about cigarette smoking.

Data indicate that students begin using tobacco at an early age, and the average age of smoking initiation is lower than the West [32] and in European countries (mean age 18.20 years) [33], and even lower than previous studies in Iran [7,22,34]. An early start to smoking could raise the probability of addiction to tobacco, the number of daily smoked cigarettes in the future and the decreased likelihood of quitting [18]. This worrisome trend towards a younger age of smoking onset is convincing enough to urge developing a national preventive program to begin controlling smoking from early childhood.

The use of a self-report questionnaire is always open to respondent bias, especially on such a sensitive topic as smoking. However, exploration of the accuracy of answers via cotinine proved the validity of the questionnaire to get correct answers.

A previously conducted study in 2004 on Iranian adolescents concluded that self-reported smoking underestimates the extent of smoking prevalence and provides invalid measurements [6]. The difference between self-reported and serum-based smoking prevalence among the Iranian population was a consequence of the conservatism and cultural consideration that smoking is an unfavorable and stigmatized practice in the community [6]. Therefore, people might have felt themselves under pressure to underreport their smoking situation. Having this in mind, almost equal self-reported and cotinine-based prevalence in the present study suggests that social acceptance of cigarette or waterpipe smoking has been dramatically increased. This indicates that in recent years, tobacco use has become more widespread among the youth.

These findings show that when neither parents smoke, there seems that it is less likely that their children try to or will smoke (cigarettes or waterpipe). The likelihood, though, increases when both parents are smokers. This is parallel with findings from other similar studies conducted in Japan, European countries, and the United States of America [33,35,36]. Availability of tobacco products and parents' smoking behavior as role models influence students' smoking behavior with a stronger effect on waterpipe smoking.

Therefore, any preventive intervention must include parents and increase their awareness as well. These results revealed that highly educated parents are less probable to have experienced

smoking or to have smoker children. This finding is consistent with previous reports [22,37].

It was observed that a lower average score and a higher percentage of absences from school was prevalent for smoker students compared with non-smokers, which again is similar to other findings where weak performance in school and higher quitting hours among smoker students was reported [22].

Perhaps educational disadvantages, weak performance or increased absences from school, along with some mechanism such as peer pressures, finally bring about the student's choice to skip school. More research should explore possible mechanisms in more depth. A higher rate of absences among smokers can be a result of having smoker parents or a circle of adults who smoke around them or because of higher morbidity because of respiratory disease and other health-related problems [38].

Among the factors people expressed as smoking motivators, psychological factors more likely direct students toward cigarettes rather than waterpipe smoking. Psychological factors have been cited as influencing factors for cigarette smoking in previously conducted studies. One study showed that negative life events, perceived stress, greater use of the negative coping methods of anger and helplessness relate positively to the likelihood of smoking [39]. People may choose to smoke to cope with daily life stresses. This alludes to the fact that they have learned that smoking relieves anger or strain and therefore it is perceived as having a positive effect. This study reported no difference between cigarette and waterpipe smokers for entertainment purposes. Studies among adults and university students showed that entertainment factors mostly lead a person toward waterpipe smoking more often than toward cigarette smoking. Waterpipe smoking is viewed as a leisure time activity in some ethnic group cultures [40]. A systematic review infers the main motives for waterpipe use were socializing, relaxation, pleasure and entertainment [41]. A higher prevalence in Middle Eastern countries is related to the social acceptance, cultural heritage and the belief that the practice is not as harmful as cigarette smoking. It seems that cigarette and waterpipe both were considered as hype for youth and adolescents. Habitual situations are other important factors that influence smoking patterns. Students smoke cigarettes more than the waterpipe after a meal or waking up. Easy availability of cigarettes could be a possible reason for habitual situations. When looking at social motivating

factors, no significant difference between the smoking of cigarettes and the waterpipe was found. Many studies argued that cigarette smoking was a means to be socially acceptable or to be more mature or to be loved. This is especially predominant in boys [42–44]. The Global Youth Tobacco Survey conducted by WHO pointed to the impact of social factors on cigarette smoking in 25 European countries [45]. The results of motivating factors of smoking in this study are in line with a study among Iranian university students; the exceptions being social factors favor cigarette smoking and entertainment factors favor waterpipe smoking [42].

It is worthwhile to consider the limits of this study. Because of concurrent views on the motivating factors and smoking status, causality cannot be proved. Longitudinal studies work better when it comes to causality evaluations. The author-invented questionnaire is open to bias. However, it is believed that the current study methodologically improved compared with the previous studies on smoking predicting factors. A deep exploration is needed in future studies on smoking subjects. Finally, directing a question to the participants about their age at smoking onset could cause recall bias into the data.

5. Conclusion

Based on the findings in the present study, there is a high prevalence of smoking (cigarette and waterpipe). The age of onset of smoking is lower among Iranian students and has become even lower in recent years. This study suggests the development of national, comprehensive and multifaceted prevention programs tailored to include motivational causes of cigarette or waterpipe smoking separately. School governors must alter the educational environment in such a way as to offer safe recreation and hanging out with friends. Student curriculum should consist of materials on the harmful effects of smoking for not only the students, but also their parents and teachers.

Conflict of interest

None.

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