

Obscenity of Cigarette and Hookah Smoking in Iranian Adolescents: A Longitudinal School-based Study

Abstract

Background: There is a very limited information on the obscenity of cigarette and hookah smoking among adolescents. Using a large and representative longitudinal sample of adolescents ($n = 4820$) aged 14–19 years from Tabriz (a metropolitan city in northwestern Iran), this study aimed at comparing the obscenity of cigarette and hookah smoking and assessing factors associated with obscenity of smoking. Moreover, we examined how the obscenity of cigarette and hookah smoking affected by the progress in the stages of cigarette and hookah smoking. **Methods:** In this longitudinal study, a random sample of high-school students was selected in Tabriz in 2010. Using a valid and reliable self-administered questionnaire, the data from the sampled students were collected twice at two points in time, 12 months apart. Multivariate backward logistic regression was used to determine the effect of the transition in cigarette (or hookah) smoking stages on the obscenity of cigarette (or hookah) smoking. **Results:** While 3,079 (63.9%) students expressed that obscenity of cigarette smoking is higher than obscenity of hookah smoking, 1,741 (36.1%) students expressed that obscenity of hookah smoking is higher than obscenity of cigarette smoking. The results of multivariate backward logistic regression indicated that the transition in cigarette (hookah) smoking stages was not related to the obscenity of cigarette (hookah) smoking. **Conclusions:** The results showed that obscenity of hookah smoking was less than obscenity of cigarette smoking, especially among females. Further study is required to understand the effect of obscenity on smoking and transition to different stages of cigarette and hookah smoking.

Keywords: Adolescence, adolescent behavior, cigarette, obscenity, substance-related disorders, water-pipe smoking

Introduction

Smoking is one of the major causes of premature mortality worldwide, especially in low- and middle-income countries (LMICs). While smoking-related mortality in developed countries is anticipated to reduce by 9% from 2002 to 2030, this figure is expected to increase by 100% in LMICs over the same period.^[1] The overall cigarette smoking rate is increasing in Iran, especially among adolescents.^[2] Several different types of tobacco are widely used, including cigarettes, hookah (water-pipe), snuff and chewing tobacco. Hookah smoking among youth is continuing to increase globally. The increasing trend in the use of hookah has resulted in a new global tobacco epidemic after the cigarette epidemic.^[3]

Numerous studies in Iran and around the world have indicated the increased

prevalence of cigarette and hookah smoking among adolescents and the youths as well as progress in smoking stages during the schooling years.^[2,4] For instance, the results of a study in Iran indicated that within a 12-month period, 10.1% of the never smokers became experimenters and 1.7% became regular smokers, whereas 17.0% of experimenters became regular smokers.^[5] In terms of hookah smoking, another study in Iran revealed that during 12 months, 18.5% of students who have never used hookah before became experimenter and 7.8% of experimenters became regular hookah smokers.^[6]

If smoking is prevented in adolescence and youth period, the probability of being addicted to smoking in future will be reduced considerably.^[7] Thus, special attention should be paid to adolescents' and youths' tendency towards smoking in tobacco cessation programs. Some of the main reasons for adolescents' tendency

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towards hookah smoking include positive attitude toward hookah smoking, incorrect beliefs about its health risks compared to cigarette smoking, wrong beliefs about its non-addictiveness, cultural and social acceptance, and easy accessibility.^[8]

To date, several studies have investigated and discussed the effects of various factors, including age, sex, happiness, number of smoker friends, and having smoker parents, sisters, or brothers on adolescents' tendency towards smoking.^[9-13] Obscenity of smoking (i.e., considering it as a disagreeable and hideous action from an individual's point of view) has also been considered as an effective psychological factor in the individuals' tendency towards smoking. In fact, some studies have considered the low obscenity of smoking as one of the main factors that led to higher prevalence of smoking among men compared to women.^[14] Although obscenity of smoking has been identified as one of the factors affecting the youths' tendency towards smoking,^[15] to the best of our knowledge, there is no study that aimed to investigate the effects of obscenity and changing attitudes towards the obscenity of cigarette and hookah smoking among adolescents. Thus, this study aimed at comparing the obscenity of cigarette and hookah smoking and assessing factors associated with obscenity of smoking among high-school students in Tabriz, a metropolitan city in northwestern Iran. Furthermore, we examined how the obscenity of cigarette and hookah smoking affected by the progress in the stages of cigarette and hookah smoking.

Methods

This longitudinal school-based study was conducted on a representative sample of high-school students in Tabriz, Iran, over the period between November 2010 and December 2011. A sample of 4,907 10-grade students was randomly selected by proportional cluster sampling from high schools in Tabriz. Of the total of 865 high-school classes, 196 classes (82 classes form boys' high schools and 114 form girls' high schools) were randomly selected by considering the school type, number of students in each school, and the major of education. All students of the selected classes were invited to participate in the study. Participants were surveyed twice at 12 months apart. They completed an anonymous self-administrated questionnaire in each phase of the study. Eighty-seven students did not complete study questionnaire properly, so they were excluded from the study.

Participants were informed about the purpose, the voluntary nature of participation, and the protection of confidential information. The ethics committee of Tabriz University of Medical Sciences (TBZMED) and Education Organization of East Azerbaijan (EOEA) province in Iran approved the study and the questionnaire. The study questionnaire consisted of questions on demographic characteristics, socio-economic status (SES), cigarette smoking status,

hookah smoking status, transition in cigarette smoking stages, progress in hookah smoking, number of smoker friends, having a smoker in the family, experience of drug abuse, and obscenity of cigarette and hookah smoking.

According to a study by Kaplan and colleagues,^[16] adolescents can be classified into three stages based on cigarette smoking status: 1) *Never smokers*: adolescents who have never tried cigarettes, not even a few puffs, 2) *Experimenters*: adolescents who indicated having tried or experimented with cigarette smoking, even a few puffs, but have smoked less than 100 cigarettes, and 3) *Regular smokers*: adolescents who indicated smoking 100 cigarettes or more in lifetime irrespective of current smoking status. According to Fakhari et al.^[17], Hookah smoking status can also be classified into three stages: 1) *Never smokers*: adolescents who have never tried hookah, not even a few puffs, 2) *Experimenters*: adolescents who indicated having tried or experimented with hookah smoking, even a few puffs, and 3) *Regular smokers*: adolescents who indicated smoking hookah at least once a month

Obscenity of substances for each respondent were assessed by using the following question: With four being the highest and one being the lowest, how would you rank the obscenity of the "cigarette", "hookah smoking", "drinking alcohol" and "opiate use"?

Information on parents' education level, family assets, and income were used to determine SES of each participant using principal component analysis (PCA). Based on the result of the PCA, the students were classified into five SES groups: very high, high, middle, low, and very low SES.

Chi-squared tests were used to examine the associations between categorical variables and outcome of variable of interest. Multivariate backward logistic regression was used to determine the effect of the transition in cigarette (or hookah) smoking stages on the obscenity of cigarette (or hookah) smoking. In the regression analysis, sex, age, school type, SES, having smoker in the family, number of smoker friends, and experience of drug abuse were controlled as confounders. All analyses were performed using IBMSPSS Statistics version 19.0 (IBM, Armonk, NY, USA).

Results

A total of 4,907 students participated in our study. Of them 4,820 (98.2%) completed the main questions of the study. The mean age of the students was 15.69 ± 0.74 (range = 14–19) years. Of the total sample, 2,092 (43.4%) were male and 2,728 (56.6%) were female. Table 1 presents students' opinion on the comparison of obscenity of each substance. According to the table, 86.1% of students gave the highest score (4) to drug abuse and 61.9% of students gave score 3 for alcohol use. The

Table 1: Comparison of obscenity of each substance use: adolescents' opinion

Score	Cigarette smoking		Hookah smoking		Alcohol use		Drug abuse	
	n	%	n	%	n	%	n	%
4	216	4.4	70	1.4	599	12.3	4,210	86.1
3	852	17.4	448	9.2	3,025	61.9	539	10.4
2	2,320	47.5	1712	35.0	698	14.3	62	1.2
1	1,499	30.7	2,657	54.4	567	11.6	78	1.5
Sum score	9,559		7,705		13,434		18,659	
Mean score	1.96		1.58		2.75		3.82	

obscurity of hookah smoking was ranked lower than cigarette smoking. As reported in the bottom section of Table 1, the sum and mean scores of the obscenity ranking clearly indicated the higher obscenity of drug abuse and alcohol use and lower obscenity of hookah and cigarette smoking.

While 3,079 (63.9%) of students expressed that the obscenity of cigarette smoking is higher than the obscenity of hookah smoking, 1,741 (36.1%) had the opposite opinion. Table 2 compares characteristics of these two groups. Based on the results reported in this table it is evident that the proportion of female students expressing that the obscenity of cigarette smoking is higher than the obscenity of hookah smoking was greater than their male student counterparts (69.9% vs. 56.0%). Also, the higher proportion of students in non-governmental (private) schools, students with higher SES, students who never smoked cigarette, students who at least had experience of hookah smoking, students who did not have smoker friends, or a smoker in the family expressed that the obscenity of cigarette smoking is higher than the obscenity of hookah smoking.

The bottom section of Table 2 is related to the 12-month follow-up data. The results indicated that 18.1% students who had expressed that the obscenity of hookah smoking is higher than the obscenity of cigarette smoking progressed in hookah smoking stages after 12 months, whereas 14.5% of students who had expressed that the obscenity of hookah smoking is lower than the obscenity of cigarette smoking have progressed in hookah smoking stages during the same period. In terms of retrograding in hookah smoking, the higher proportion of students who had expressed that the obscenity of hookah smoking is higher than the obscenity of cigarette smoking have retrograded.

Table 3 reports the results of changing in obscenity of cigarette smoking and hookah smoking during the one-year follow-up period. The results suggested that 18.1% of students who believed that obscenity of cigarette smoking is more than obscenity of hookah smoking, changed their mind during the one-year follow-up period. Also, 10.4% of students changed their mind about the obscenity of smoking and viewed hookah smoking to be obscener than cigarette smoking.

Table 4 presents the association between change in obscenity of smoking and transition in cigarette and hookah smoking. The results indicated that transition in cigarette smoking stages is not related to obscenity change, but transition in hookah smoking stages is associated with obscenity change (P value = 0.017).

The results of logistic regression analysis showed that after adjusting for sex, age, school type, SES, number of smokers in the family, number of smoker friends, and experience of drug abuse, the transition in hookah smoking stages was not associated with the obscenity of hookah smoking (odds ratio [OR] =1.30; 95% confidence interval [CI], 0.93–1.37; P - value = 0.220). Also, after adjusting for confounding variables, the transition in cigarette smoking stages was not related to the obscenity of cigarette smoking (OR = 1.25; 95% CI, 0.98–1.56; P - value = 0.066).

Discussion and Conclusions

The results of present study revealed that the obscenity of drug abuse and drinking alcohol is higher than the obscenity of cigarette and hookah smoking. The higher obscenity of drug abuse (e.g., crystal, crack, and heroin) and drinking alcohol can be due to the fact that the use of drugs and alcohol is illegal in Iran.^[18] The higher obscenity of drinking alcohol can also be associated to the religious stigma attached to drinking in Iran.

The results of this study also suggested the higher obscenity score of cigarette smoking compared to hookah smoking. The obscenity scores of cigarette and hookah showed that 63.9% of the study sample considered cigarette smoking was obscener than hookah smoking, whereas only 36.1% believed vice versa. Social norms and cigarette and hookah smoking cultural values^[19–22] may have caused students to have a more negative opinion towards cigarette smoking than hookah smoking. Hookah smoking may be considered less obscene among the adolescents because of higher prevalence of smoking hookah among relatives and friends,^[6] widespread social acceptance of smoking hookah at social gatherings and parties,^[23] seen as easy to quit,^[24] as well as other reasons that might justify that it has less harms compared to cigarette smoking.^[25,26]

Social acceptance can have an inverse relationship with obscenity so that the obscener, an action is from the ethical perspective, the less is its social acceptance, and vice versa.^[27] Eli and colleagues^[28] showed that smoking hookah generally has more social acceptance than smoking cigarette, specifically in the Middle Eastern countries, where it has more social acceptance among females. Indeed, this is also the case in the western countries. For example, the results of a study in America^[29] showed a significant positive relationship between hookah use and its social acceptance among students. The results of the latter study were consistent with the results of our study. The social acceptance of tobacco smoking in developed

Table 2: Characteristics of the students and obscenity of cigarette smoking in comparison to hookah smoking

Variables	Obscenity of smoking		P
	cigarette >hookah n (%)	hookah >cigarette n (%)	
Age			
14 and 15	1,343 (64.7)	734 (35.3)	0.074
16	1431 (64.3)	796 (35.7)	
17	219 (58.2)	157 (41.8)	
18 and 19	65 (59.1)	45 (40.9)	
Sex			
Males	1,172 (56.0)	920 (44.0)	<0.001
Females	1,907 (69.9)	821 (30.1)	
School type			
Governmental	2,710 (63.2)	1,575 (36.8)	0.009
Non-governmental	369 (69.0)	166 (31.0)	
Socioeconomic status			
Very low	551 (60.7)	356 (39.3)	0.001
Low	570 (63.3)	331 (36.7)	
Middle	560 (62.3)	339 (37.7)	
High	567 (63.6)	324 (36.4)	
Very high	621 (70.5)	260 (29.5)	
Cigarette smoking status			
Never	2,496 (65.8)	1,295 (34.2)	<0.001
Experimenter	476 (60.0)	317 (40.0)	
Regular	85 (41.5)	120 (58.5)	
Hookah smoking status			
Never	1,798 (59.9)	1,203 (40.1)	<0.001
Experimenter	1,168 (70.5)	489 (29.5)	
Regular	105 (68.6)	48 (31.4)	
Number of smoker friend			
0	2,556 (64.9)	1,380 (35.1)	0.001
≥1	519 (59.0)	360 (41.0)	
Smoker in the family			
No	1,905 (66.3)	967 (33.7)	<0.001
Yes	1,141 (60.5)	746 (39.5)	
Progress in hookah smoking*			
No	2,095 (85.5)	1,127 (81.9)	0.004
Yes	356 (14.5)	249 (18.1)	
Retrograde in hookah smoking*			
No	52 (61.9)	14 (40.0)	0.028
Yes	32 (38.1)	21 (60.0)	
Transition in smoking stages*			
No	2,262 (89.9)	1,256 (89.8)	0.923
Yes	253 (10.1)	142 (10.2)	

*Percentage calculated by considering obscenity as independent variable.

Table 3: Changing in obscenity of cigarette smoking and hookah smoking during the one-year follow-up

Change of obscenity	n	%
Cigarette to hookah	793	18.1
Hookah to cigarette	455	10.4
Cigarette to cigarette	2,006	45.9
Hookah to hookah	1,120	25.6

countries is currently being reduced by various measures, tobacco-control policies, including ban on cigarette smoking in public places, anti-marketing fights in the public media,

and heavy taxation on tobacco products.^[30,31] Such a decreasing trend in social acceptance of tobacco smoking does not seem to exist in developing countries such as Iran.^[32]

Results of the present study showed that female students considered cigarette much obscener than hookah. This could be a reason for less tendency towards cigarette smoking among females and higher tendency towards hookah smoking.^[33] Nevertheless, females strongly believed that hookah was more harmful than cigarette.^[34] A study conducted by Khayyati and colleagues^[14] in Tabriz indicated

Table 4: Association of obscenity change and transition in cigarette and hookah smoking

Change of obscenity	Transition in hookah stages				P
	No		Yes		
	n	%	n	%	
Cigarette to hookah	568	86.7	87	13.3	P=0.017
Hookah to cigarette	288	80.7	69	19.3	
Cigarette to cigarette	1,401	85.7	233	14.4	
Hookah to hookah	762	82.9	157	17.1	
Change of obscenity	Transition in cigarette stages				P
	No		Yes		
	n	%	n	%	
Cigarette to hookah	594	89.3	71	10.7	P=0.440
Hookah to cigarette	329	88.9	41	11.1	
Cigarette to cigarette	1,525	91.0	151	9.0	
Hookah to hookah	842	90.8	85	9.2	

that the higher obscenity of cigarette smoking among girls was one of the potential factors affecting higher prevalence of tobacco smoking among males. Moreover, Sabahy and colleagues^[24] demonstrated that lower social obscenity of hookah smoking was one of the major factors affecting students' tendency to use hookah. The results of this study showed a significant relationship between type of school (i.e., public or private) and students' attitude toward the obscenity of hookah or cigarette smoking. This result could be due to the difference in the SES of the students in public and private schools.

The results suggested that variations in the obscenity of cigarette and hookah smoking had significant relationship with factors such as cigarette smoking status, hookah smoking status, number of smoker friends, presence of a smoker in family, progress in hookah smoking, and return in the hookah smoking stage (from the stage of regular to experiment stage of hookah smoking). These variations, however, did not have significant associations with transition in the phases of cigarette smoking. These findings might imply that obscenity (individual's attitude)^[24] and social acceptance (society's attitude)^[31,35] towards tobacco smoking could be effective factors in reducing the progress in the phases of cigarette and hookah use.

Results also indicated that while the variations in the obscenity had a significant relationship with the progress in hookah use, it did not have significant relationship with the transition through the phases of cigarette smoking. In other words, changes in the obscenity of hookah smoking and individual's attitude towards smoking hookah could be the predictor for the use of hookah among people. Having a positive attitude towards hookah could also reduce its obscenity and increase its use.^[28] A study conducted on 239 American aged 13–15 years old showed that in order to change adolescents' attitude towards cigarette use, a useful strategy for the interventions should focus on their peer age groups.^[36]

Since obscenity and personal attitude of the people have not been largely investigated in the previous studies, lack

of a standardized instrument for assessing and measuring the obscenity of cigarette and hookah smoking, and various drugs was the limitation of the present study. Thus, it is recommended to design an appropriate instrument for assessing and measuring obscenity and individuals' attitude towards various types of substances in future work.

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Conflict of interest

All authors declare that they have no conflicts of interest which could inappropriately influence the manuscript.

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