Evaluation of intrapersonal and interpersonal factors of male adolescent smoking

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Abstract

The adolescence tobacco prevention is an especially important public health goal. The purpose of this study is evaluation of intrapersonal and interpersonal factors of cigarette smoking among male adolescents based on theory of planned behavior.

A sample of 400 high schools students, were collected in a cross-sectional survey.The outcome variable was cigarette smoking within the past 30 days preceding the survey while independent variables included intrapersonal factors (age, components of the TPB model, self-esteem) and interpersonal factors (Family members' smoking, smoking friends, independent room, member of sport team, grade point average, parental educational status, parental occupation status). Data were analyzed using descriptive statistics, independent samples t-test and logistic regression analysis. The mean age of participants was 16.7 ± 1.5 years. The prevalence of current smoking was 14.7%. In regression analysis, cigarette smoking was associated with intrapersonal factors [self-efficacy (OR =.83; 95% CI: (.72-.97), normative beliefs (OR =.82; 95% CI: (.70-.95), behavioral beliefs (OR = .76; 95% CI: (.65-.89), self-esteem (OR = .71; 95% CI: (.61-.82), knowledge (OR =.63; 95% CI: (.39-1)] and some of interpersonal factors [having Family members' who smokes (OR =3.6; 95% CI: (1.4-8.5), smoking friends(OR =2.3; 95% CI: (1.5-6.6), member of sport team(OR =1. 5; 95% CI: (1.2-5.4).Self-efficacy, normative beliefs, behavioral beliefs, self-esteem, knowledge, Family members' Smoking, Smoking friends, member of sport team, were independently associated with current smoking among Zarandieh adolescents. We believe public health programs targeting adolescent smoking should consider these factors in their design and implementation of interventions.

Keyword: Adolescents,Smoking, Tobacco

Introduction

Recent findings show that epidemic smoking is spreading in low- and middle- income countries [1]. Diminishing smoking is one of the greatest challenges that developing countries are tackling with to prevent chronic diseases [2]. Meanwhile, 84% of the world smokers live in developing countries [3]. Currently, 10% of the world mortality is due to smoking, which is estimated to claim one-sixth by 2030 [4]. Smoking is a general health problem in all countries [5] and its prevention has been designated one of the priorities of World Health Organization [6]. Who categorizes cigarettes as addictive and the cigarette addicts as mentally ill [7].

Given the rapid social changes in the recent years,high risk behaviors like a widespread desire for smoking among students have been highlighted by health organizations, teachers, and parents as one of the important current problems facing communities. Now that the age of smoking and of the first attempt is falling smoking has become one of the greatest concerns regarding general health for

every country, especially developing countries. Moreover, a great number of smokers began smoking when they were adolescentrs[8]. According to a research, more than 90% of the smokers began their smoking prior to the age of 21 [9]. Based on what researches suggest, if one did not smoke while a adolescentr, that it is most unlikely that they do thereon [10]. Unfortunately, adolescentrs in the developed and developing countries have great access to tobacco products. World Health Organization and Center for Disease Control have demonstrated that more than 70% of adolescentrs can easily buy tobacco products no matter how old they are [11].

If aadolescentr smokes, it is mostly due to psychosocial factors that may include: personal factors (knowledge, beliefs, attitudes, self-esteem, self-efficacy, perceived prevalence of smoking among peers, and income), and interpersonal factors (type, manner, and frequency of smoking in society and family) [12]. The studies by Aliverdinia showed that the effective factors toward a student's first attempts of smoking might be lower education level of their parents, having a smoker friend, personality factors, parents or a family member who smokes, and their improper cultural status of the society [13].

Previous studies have shown that factors like low socioeconomic status [14], peer pressure, attitudes, abstract norms, intention, and behavior control are some of the factors that can predict adolescent smoking. The planned behavior theory has been recognized as the most useful theory for better understanding of the predictors of smoking [15]. Furthermore, regarding health education, there is good evidence for the efficacy of factors and constructs of this planned behavior theory for preventing a adolescentr from smoking including peer pressure, attitude to smoking, and self-efficacy [16,21]. Fishbein and Ajzen developed the planned behavior theory by expanding a rational practical theory. This theory suggests that behavior intentions are a key behavioral determinant. The determinants of behavioral intentions are one's attitude toward one's won behaviors, perceived behavioral control, and abstract norms relevant to behaviors. Given the shortage of theory-centered researches regarding smoking in Iran and that the theories and behavioral patterns are advantageous, we studied the male adolescent smokers of Zarandiyeh aiming to determine the intrapersonal and interpersonal factors.

Method

This study, conducted in 2011, recruited 400 male students at grade 9 to 11 at Zaradniyeh as samples for a cross-sectional analytical study using a multi-stage sampling method. Therefore, at stage one, a stratified sampling method was employed to determine the ratio of the required sample for each high school,and at stage two, the ratio of participants in each class was determined with regard to current students at grade 9 to 11. Finally, a simple random sampling was employed to select the samples from the list of the students in each class and entered the study. According to the previous studies, 37.6% of high school students attempt smoking [23]. Considering accuracy of 5%, and CI of 95%, we estimated the sample size as 362 people, and finally 400 people were enrolled. In this study,male students at grades 9 to 11 were included and they were excluded if they did not consent to participation or were not willing to participate.

Data were collected by means of questionnaires in which the following were included: demographic information, personal factors relevant to smoking (five questions for knowledge, five for behavioral beliefs, five for evaluation of the outcomes of behaviors, seven for self-efficacy to refrain from smoking, 10 for self-esteem and five for normative behaviors), and interpersonal factors relevant to smoking (the number of family members, and friends who smoke, having a private room, the GPAof previous year, membership in a sport team, and the employment status of their mothers). Smoking status as the two-state dependent variable(smoker and non-smoker) was entered into the regression model.Code one was given to the students who regularly smoked or had once or more smoked within the last 30 days before the completion date of the questionnaires. Code zero was designated for non-smokers as the students who were currentlynon-smoker.

Content validity was used to assess the questionnaire in terms of its validity. Ten

experienced professors confirmed the questionnaires that had been previously designed in accordance with the planned behavior theory and with certain reliable scientific sources. The professors were asked to first evaluate the quality of the tools in terms of grammar, proper wording, order of items, and scoring. Next, the ambiguities and problems were resolved. A panel of 10 experts helped to assess the content validity by means of a quantitative method in which two coefficients of Content Validity Ratio and Content Validity Index were used in accordance with the Law she table that confirms a content validity ratio if it is over 0.62 and a content validity index if over 0.79. Cronbach's alpha was used as a means to evaluate the reliability of the questionnaire. This test was given to 25 students that demographically matched our samples. The result was 0.81 for knowledge, 0.85 for behavioral beliefs, 0.82 for the evaluation of outcomes of behaviors, 0.79 for efficacy to refrain from smoking, 0.87 for self-esteem, and 0.82 for normative beliefs.

After obtaining the informed consent of the students, the information was collected through the self-reporting questionnaire with no teachers present at classes, entered into SPSS [16] for analysis by descriptive and analytical tests like t-test and regression at the significance level of 0.05. Ethical considerations in this study included anonymity, obtaining the permission from Ministry of Education, obtaining informed consent from the participants, and freedom to leave the study whenever they wished to.

The results showed that the mean age of the participants was 16.74 with a standard deviation of 1.5, 164 students (41%) had attempted smoking, and 59 (14.7%) were current smokers. The highest frequency for earliest experience with smoking fell in the age groups 12-13 (32.2%), and 14-15 (25.6%). Most students (79%) said their first attempt was in a peer gathering. In terms of the parents' education, the parents with middle school education were the most frequent, and then came the ones with elementary (29%), and the ones holding high school diplomas (27%). The Chi-square statistical test did not show a significance difference between the groups of smokers and non-smokers in terms of the parents' level of education and employment status. In terms of GPA, most students ranged between10 and15 (44%), then came those with GPA between 15 and 17(38%), and over 17 (18%). Some students (36%) had a family member who smoked and 39% had smoking peers.

As Table 1 shows, the non-smokers surpass the smokers in terms of the mean of the personal variables consisting of age, knowledge, normative and behavioral beliefs, evaluation of the outcome, self-controlling, self-esteem, and self-efficacy. Besides, the t-test result demonstrated a significance difference between the two groups' means (Table 1).

Also the group of smokers had more family members and friends who smoked; they had gained lower GPA in previous year and less likely were they a member of any sport team. Parents' employment status and education level did not show a significance difference between the two groups (Table 2).

Results

Table1 *Distribution of personal factors related to adolescent smoking*

	Smoke	Non-smoker	P-Value
	Mean (SD)	Mean (SD)	
Age	±16.8 (1)	±16.4 (1.1)	0.02
Knowledge	±2.3 (1.1)	±2.7 (1)	0.01
Behavioral Beliefs	±10.3 (4.3)	±15.1 (2.9)	0.001
Normative Beliefs	±17.1 (3.6)	±20.0 (3.5)	0.001
Evaluation of Outcomes	±11.6 (3.5)	±7.8 (3.9)	0.001
Self-Efficacy	±13.6 (6.9)	±22.8 (5)	0.001
Self-Esteem	±24.8 (5.5)	±29.8 (7.7)	0.001

Table2 *Distribution of interpersonal factors of adolescent smoking*

		Smoke	Nonsmoker	P-Value
		Frequency (%)	Frequency (%)	
Family members smoke	Yes	52 (13)	91 (22.8)	0.001
	No	7 (1.8)	250 (62.5)	
Friends smoke	Yes	45 (11.2)	112 (28)	0.001
	No	14 (3.5)	229 (57.3)	
Member of a sport team	Yes	32 (8)	54 (13.5)	0.001
	No	27 (6.7)	287 (71.8)	
Private Room	Yes	44 (11)	211 (52.8)	0.06
	No	15 (3.8)	130 (32.5)	
Last year's GPA	>15	15 (3.8)	210 (52.5)	0.001
	≤15	44 (11)	131 (32.8)	

A multivariate logistic regression demonstrated that among the personal factors relevant to smoking, the variables of knowledge, normative and behavioral beliefs, self-esteem, and self-efficacy could significanclly predict smoking, so did membership in a sport team, and having a family members and/or friends who smoke as the interpersonal factors. The most important predictors were as follows: Having a family member who smoke (the odds ratio of 3.6) and friends who smoke (the odds ratio of 2.3) (Table 3).

Table3 *The result of multivariate regression analysis of the factors effective in students' smoking*

Variable		Odds ratio	Confidence Interval of 95%	P-Value
Family members smoke	No	1 (ref.)		
	Yes	3.6	1.4-8.5	0.006
Friends smoke	No	1 (ref.)		
	Yes	2.3	1.5-6.6	0.001
Member of a sport team	Yes	1 (ref.)		
	No	1.5	1.2-5.4	0.01
Self-Efficacy		0.83	0.72-0.97	0.01
Behavioral Beliefs		0.76	0.65-0.89	0.001
Normative Beliefs		0.82	0.70-0.95	0.01
Self-Esteem		0.71	0.61-0.82	0.001
Knowledge		0.63	0.39-1	0.05

Discussion

In this study, 14.7% of the students were current smokers. Likewise, the study by Warren based on the findings of GYTS from 43 countries showed that the smoking prevalence is currently 14% [24]. According to the report by the World Health Organization the smoking prevalence in Iran is higher among the young people between the ages of 15 to 19 with males composing 10.5% and females 0.7% [25] of this population. The research by Habib et al[26]. In Tehran demonstrated that 12.1% of the students between the ages of 17 to 19 smoked. Moreover, the research by Ramezankhani et al[23].Showed that 13.1% were smokers. Given the prevalence of smoking and the greater number of adolescent smokers in Zarandiyeh as compared with other parts of the country like Tehran, this issue can be attributed to the recent population growth and economical developments that have changed Zarandiyeh, in addition to the great number of immigrants to this part and recent industrialization. Moreover, Zarandiyeh special geographical position, namely, its proximity to the Southern region of Tehran has to be considered. Based on the studies, seeing parents smoking or other members of the family propels adolescentrs toward smoking [30] and having parents who care about and are sensitive to their adolescentr's smoking can act as a deterrent [30]. Furthermore, it is proved that having a smoker family member provides the adolescentr with not only aneasilyaccessiblesourcetocigarettes but a role model to follow [31]. Karimy also believes that having a smoker parent, or a smoker older sibling pushes aadolescentrmore toward smoking, and

having peers and friends who smoke make this persist [25].

The results of this study showed that adolescentrs who smoke are less likely members of sport teams in comparison to the non-smoker adolescentrs. The adolescentrs who do not do sport are 1.5 times more likely to smoke. This finding contradicts the results of the study by Vandita on Mexican adolescentrs[32] and the study by Procheska in San Francisco [33]that showed adolescentrs, who regularly do physical activities and are members of sport teams, smoke more. However, the study by Nelson and Garden [34] on American adolescentrs showed that regular physical activity lessens the risk of unhealthy behaviors like smoking and drinking alcohol. The study by Trinh[35] also showed a smaller prevalence of smoking among adolescentrs who practiced regular physical activities. Steptoe et al[36]. Found a significance and negative relationship between smoking and doing sports and suggested that physical activities can because adolescentrs quit smoking.

In this study, self-efficacy was a significance predictor of smoking, and adolescentrs who smoked had lower perceived self-efficacy to prevent smoking. In line with the findings of this study was the study by Ramezankhani et al. on smoking among adolescentrs in the city of Tehran[23]. The study by Guo et al., which targeted at predicting Chinese adolescentrs' smoking [22], showed that self-efficacy is a great and significant predictor of the intention to smoke. Rakhshani[37] through a study on the students of Zahedan showed that perceived self-efficacy has a great effect on the smoking behaviors of adolescentrs. In Greece, the study by Lazuras[38] showed that self-efficacy(β=0.34)was the strongest predictor of the intention not smoke and the attitude and abstract norms were ranked second. On the contrary to the findings of our research, Hassan and Shiu[39] and Rise et al[40].In their studies on Slav students found that self-efficacy was not a significance predictor of intention.

The findings of this study showed that behavioral beliefs are significance predictors of smoking. Based on the planned behavior theory, behavioral beliefs are the beliefs that cause a behavior and certain outcomes to happen. Our findings were in accordance with the findings of the study by Zareipour[41] that suggested behavioral beliefs are important to smoking and that there is a positive and significance correlation between positive beliefs about smoking and smoking among students. The study by Akbari[30] also showed that adolescentrs do not have correct beliefs about the risks of smoking, and behavioral beliefs significanclly determined smoking. The study by wiecha[42] demonstrated that adolescent smokers compared to adolescent non-smokers less likely perceived the risks of smoking. In the present study, the mean of the normative beliefs of the adolescentrs who did not smoke was higher, and normative beliefs were more significanclly able to predict smoking, so that for each unit of increase in the mean of normative beliefs, there was less a chance of smoking by 0.82. Based on the planned behavior theory, normative beliefs indicate a person's way of thinking about such a matter like how the important people around one behave. Researches on smoking demonstrate the importance of the role that abstract norms play in one's behaviors just having started smoking [30]. Smith et al[43] and Cote et al[15].Launched researches that proved the importance of normative beliefs to adolescentrs' behaviors.

Conclusion

Self-efficacy, normative beliefs, behavioral beliefs, self-esteem, knowledge, Family members' Smoking, Smoking friends, member of sport team, were independently associated with current smoking among Zarandieh adolescents. We believe public health programs targeting adolescent smoking should consider these factors in their design and implementation of interventions.

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Contributions

Study design: MK, SN

Data collection and analysis: MS, MK, AH, EH
Manuscript preparation: MK, AH, MS, SN

Conflict of interest
"The authors declare that they have no competing interests."

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