

The Impact of Education on Smoking Refrain Based on the Theory of Planned Behavior on Shiraz High School Students' Attitudes

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Abstract

Background: Smoking is one of the preventable causes of diseases as well as early deaths all around the world. In addition, conducting educational interventions plays a major role in preventing adolescents from smoking. Therefore, the present study aimed to investigate the effect of educational intervention based on the theory of planned behavior on preventing Shirazi students from smoking.

Methods: In the present quasi-experimental study, 154 male students of the 2nd grade of high school from Shiraz were selected through multi-stage cluster sampling and randomly assigned to a control and an experimental group. The study data were collected through a questionnaire including the demographic information, questions on knowledge, and questions based on the components of the theory of planned behavior. After the pre-test, the intervention group underwent the educational intervention and after 2 months, both groups took part in the post-test. Then, the data were entered into the SPSS statistical software (v.11.5) and analyzed through the non-parametric tests of Mann-Whitney, Fisher, and Chi-square as well as Linear Multiple Logistic Regression.

Results: No significant difference was observed between the two groups' mean scores before the intervention. After the intervention, the intervention group's scores of knowledge, attitude, intention, subjective norms, and perceived behavioral control significantly increased.

Conclusion: According to the findings of the present study, educational intervention based on the theory of planned behavior was highly effective in reducing Shirazi high school students' intention to smoke.

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Introduction

Smoking is one of the major preventable causes of diseases as well as early deaths all around the world.¹ Based on the report provided by World Health Organization, there are more than 1 billion smokers around the world.² In

general, smoking is significantly related to a number of chronic diseases, such as cardiovascular diseases, cancers, and chronic respiratory and gastrointestinal diseases.³ Esmaili et al. conducted a study in 2007 and reported the prevalence of smoking among the Iranian high school students to be 15%.⁴

Attitude, a person's beliefs and personality, parents, family members, friends, places such as school, and social factors, such as accessibility, media, and advertising play a major role in starting and continuation of smoking among the adolescents of different socio-economic groups.⁵ Up to now, various anti-smoking interventions and campaigns have been performed in different situations in order to deal with this dangerous habit.⁶ According to previous studies, most successful interventions aimed to change the norms of the individuals who had not experienced smoking.⁴ Up to now, various theories, such as the theory of planned behavior, have been used in order to reach this aim. Based on the theory of planned behavior, an individual's intention is the most important determining factor of one's behavior. In fact, intention leads to performance of a particular behavior and is determined through 3 independent variables of attitude toward the behavior, subjective norms, and perceived behavioral control. For instance, the individuals' intention to smoke depends on their attitudes toward smoking (attitude), their perception of other important individuals who think they must do the behavior (subjective norms), and perceptions of their ability to perform a not smoking behavior (perceived behavioral control).⁷

Therefore, attempts for preventing smoking are most successful in case they begin before the individuals make up their minds for smoking. In fact, intention to smoke is predictive of smoking behavior. On the other hand, identifying and dealing with the factors predicting the intention cause the intervention to be more effective.⁸

Smoking is either directly or indirectly affected by the behavioral control. In fact, perceived behavioral control is defined as an individual's expectation of ease or difficulty of an intended behavior which affects one's intention.⁹ Smoking is a social learning behavior which occurs in a social framework. For instance, adolescents learn smoking through observing and modeling their peers as well as the adults.¹⁰

Furthermore, having a positive attitude toward smoking may lead to the intention to smoke. In fact, when adolescents observe their peers, teachers, friends, or others smoking, they may think that their friendly behavior is due to smoking and, as a result, develop a positive attitude toward smoking.¹¹

Up to now, a great number of studies have utilized the theory of planned behavior for predicting the smoking behavior. In the same line, a large number of studies conducted on preventing smoking around the world have recommended the theory of planned behavior as the predictor of behavior in different age groups, including adolescents, students, and adults. For instance, Harakeh et al. (2004) used this theory and showed the factors related to the parents'

smoking as the predictors of the adolescents' smoking.¹² In addition, Maassen et al. (2004) used this theory in order to investigate the determining factors of smoking among the adolescents aged between 8 and 14 in Gambia.¹³ Therefore, the theory of planned behavior is applied in health development education, through predicting healthy behaviors and understanding the intention as well as the healthy behaviors, particularly predicting and reducing smoking. According to what was mentioned above, the present study aimed to assess the effect of educational intervention based on the theory of planned behavior on preventing from smoking in the 2nd grade high school students in Shiraz.

Materials and Methods

Participants and Sampling

The present quasi-experimental study was conducted on male students of the 2nd grade of high school studying in public high schools of Shiraz 3rd educational district in 2011. The statistical population included 154 male adolescent. Of the 14 high schools in District 3 Shiraz city, 2 schools were randomly selected. One school was selected as the control and one as the intervention group. From each school, 3 classes were selected and the volunteer students of each class were entered into the study.

The ethical considerations of this study included: explaining the study objectives to the participants, completing the questionnaires anonymously, and training the control group after the study.

Methods and Instruments

In this study, a questionnaire was designed based on the studies by Wium,⁸ Johnson,¹⁴ and Van De Ven¹⁵ in order to assess the components of the theory of planned behavior, including attitude, subjective norms, perceived behavioral control, and behavioral intention. The validity of the questionnaire was determined by 10 experts in health education and psychology. Besides, the questionnaire's reliability was evaluated in two stages among 48 students of the 2nd grade of high school using test-retest method. ($r=0.74$)

In this study, attitude was assessed through 13 questions and its correlation coefficient was 77.4. Moreover, the minimum and maximum scores of attitude were 13 and 65, respectively and higher scores revealed a positive attitude toward the disadvantages of smoking. Subjective norms were also evaluated using 6 questions and the correlation coefficient of subjective norms was obtained as 72.1. Furthermore, the lowest and the highest score of the subjective norms were 6 and 30, respectively and higher scores revealed the importance of others' points of view regarding the harmfulness of

smoking. Perceived behavioral control was assessed through 7 questions and its correlation coefficient was measured as 0.76. Besides, the minimum and maximum scores of perceived behavioral control were 7 and 35, respectively and higher scores showed more behavioral control for avoiding smoking. Finally, intention was evaluated through 6 questions and its correlation coefficient was obtained as 0.70. Moreover, the minimum and maximum intention scores were 6 and 35, respectively and higher scores showed lack of intention to smoke. It should be noted that the questions on attitude, subjective norms, perceived behavioral control, and behavioral intention were of Likert type and included 5 options ranging from completely agree to completely disagree.

Educational Intervention

In order to perform the educational intervention, the data of the pre-test were analyzed so that the educational priorities of each variable were determined and the educational program was directed toward those priorities. In fact, the educational priorities were assessed based on each variable's power of predicting the behavioral intention and, according to the results, attitude, perceived behavioral control, subjective norms, and knowledge had the highest power of predicting the behavioral intention before the educational intervention, respectively. Therefore, the educational programs were prioritized based on the obtained results. The educational intervention included 4 sessions each lasting for 1 hour, being conducted through both direct and indirect methods. Direct education was conducted through lectures, question and answer, role playing, and educational clips. Video projectors and power points were also used in this method. It should be noted that the school teachers and counselors were also present during the intervention. On the other hand, indirect education was done through putting educational posters up at schools and distributing DVDs including the issues discussed in the educational sessions as well as an

educational booklet related to smoking among the students of the intervention group. Educational posters and DVDs related to various aspects of smoking included: attitude, perceived behavioral control, subjective norms, smoking hazards and smoking-attributable diseases.

Nevertheless, the control group students were not engaged in the educational interventions. Two months after the end of the intervention, the same questionnaires were filled in by the two groups again and the data were analyzed.

Statistical Analysis

In order to assess the effect of the educational programs on preventing smoking, i.e. knowledge about the disadvantages of smoking, anti-smoking attitude, subjective norms about the harmfulness of smoking from the others' points of view, controlling the smoking behavior, and the intention to avoid smoking, the study data were analyzed using SPSS statistical software (v.11.5), Mann-Whitney, and Linear Multiple Logistic Regression Analysis tests. Besides, $P < 0.05$ was considered as statistically significant.

Results

According to the results of the present study, the mean age of the intervention and control group subjects was 16.11 ± 0.60 and 16.21 ± 0.74 years. According to Table 1, no significant difference was found between the two groups' mean scores of the components of the theory before the intervention. After the intervention, however, 3.10, 2.85, 2.18, and 1.67 points were increased in the intervention group's mean scores of attitude, subjective norms, behavioral control, and behavioral intention, respectively. Among the components under the study, perceived behavioral control was shown to be predictive of the intention to smoke and it was the best predictor of the intention to smoke (Table 2).

Table 1: Constructs of the theory of planned behavior in control and intervention group before and after education

Variables	Control Group		Intervention Group		P value
	Pre-test	Post-test	Pre-test	Post-test	
	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)	
Attitude toward behavior	55.34(6.95)	55.19(6.65)	55.98(6.88)	58.93(6.08)	0.001
Subjective norms	24.06(3.25)	23.62(4.19)	23.51(3.28)	25.92(3.26)	0.001
Perceived behavior control	29.23(4.28)	29.55(4.68)	28.94(4.11)	31.44(3.91)	0.002
Behavioral Intention	26.96(3.93)	26.92(3.52)	26.65(3.23)	28.28(2.24)	0.001

Table 2: Prediction of intention to avoid smoking based on the theory of planned behavior constructs

Variables	B	S.E.	Beta	t	P value
PBC	0.23	0.05	0.30	2.77	0.001
Constant	0.41	0.23	*	1.77	0.07

Discussion

The results of the present study revealed the effectiveness of education based on the theory of planned behavior in preventing intention to smoke. The theory of planned behavior provided a framework for identifying the factor that influenced smoking intention. Theoretical based research could explain a persons' intention and how antecedent factors would be effective on intention to smoke or not. In this regard, TPB could be used for planning and implementing prevention programs.

The results of the present study revealed a significant increase in the intervention group's mean score of attitude ($P < 0.001$). In the same line, Tsai et al. conducted a study in 2005 and showed an increase in the intervention group's attitude toward the disadvantages of smoking after the educational intervention.¹⁶ In addition, the results of the study by Lee et al. (2007) showed that not only knowledge improved the students' attitude, but it also led to the adolescents' refusal of smoking, which is consistent with the findings of the present study.¹⁷

In the current study, a significant increase was found in the intervention group's mean score of subjective norms after the educational intervention ($P < 0.001$). In the study by Kosmidou et al. (2008), also, the educational intervention resulted in an increase in the subjective norms toward the anti-smoking messages.⁶ Furthermore, Khatun et al. conducted a study and showed that education improved the subjective norms regarding the preventive behavior of cardiovascular diseases.¹⁸ In general, subjective norms are mostly affected by the viewpoints of important individuals for a person who affects one's performance of a behavior.⁶ In fact, the increase in the intervention group's mean score of subjective norms shows the increase in the students' positive beliefs toward the disadvantages of smoking in a way that these individuals' beliefs were affected by their parents, friends, peers, and teachers and, consequently, they developed the preventive behaviors of smoking. Since the students are highly affected by their teachers and school counselors, they were invited to take part in the educational interventions in the present study in order to increase their subjective norms.

After the educational intervention, the intervention group's mean score of perceived behavioral control significantly increased in this study ($P < 0.002$). This finding is consistent with the results of the studies conducted by Caron et al. (2004),¹⁹ Parrott et al in 2008,²⁰ and Zhang in et al. (2009).²¹ After the educational intervention, this component had increased in all the above-mentioned studies. Moreover, in line with the studies conducted by Chang et al in 1998,²² Swaim et al. in 2007,²³ Khatun et al. in 2010,¹⁸ and Mehri et al. in 2010,²⁴ perceived

behavioral control was the strongest predictor of behavioral intention in the present study. In general, the individuals with higher capability of controlling and avoiding smoking have less intention to smoke; therefore, by strengthening this component, one can predict the individuals' intention to smoke and prevent them from smoking. In addition, the increase in the mean score of perceived behavioral control shows high self-confidence, sense of personal control toward non-smoking behavior, skill of saying no, and expressing decisiveness against others' smoking offers, which should be strengthened in the students. According to Swaim's study, confident students refuse others' smoking offers and, consequently, will have less intention to smoke in future. This study also recommended the programs on preventing smoking based on teaching the skill of saying no and resistance against the peers to be conducted among the adolescents in order to prevent them from smoking.²³

In the present study, a significant increase was observed in the intervention group's mean score of intention after the educational intervention ($P < 0.001$). Since intention is affected by attitude, subjective norms, and perceived behavioral control and due to these components' high mean scores, the intention mean score was expected to increase and, as a result, the individuals' intention to smoke was expected to decrease. In the study conducted by Lee et al., also, education led to a decrease in the intervention group's intention to smoke.¹⁷ Based on Ajzen's theory of planned behavior, the adolescents' intention to smoke is the first step toward smoking. Besides, intention and deciding to perform reflect the amount of attempts for smoking.²⁵ According to Fidler (2001), behavioral intention is mostly successful in case the individuals have not experienced smoking; therefore, prevention programs must be started before the individuals decide to smoke.²⁶ Furthermore, the results of the study by De Vries (2003) revealed intention as the strongest predictor of the adolescents' smoking behavior in future.²⁷ In fact, smoking behavior is highly related to the adolescents' intention to smoke; consequently, intention can be determined through attitude toward the behavior, subjective norms, and perceived behavioral control. Therefore, in order to design interventional programs, the complex relationship between smoking and the components of the theory as well as their effects on the adolescents' intention must be taken into account.²⁸

Conclusion

According to the results, educational intervention based on the theory of planned behavior had a positive effect on attitude, subjective norms, perceived behavioral control, and reducing the intention to smoke among the students of the 2nd grade of high school in Shiraz. Considering the

desirable effects of education based on this theory, it is recommended to be utilized in larger scales.

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Conflict of Interest: None declared

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