

Beliefs of tenth grade Jordanian students regarding cigarette smoking. *Implications for prevention*

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Chronic diseases, such as cardiovascular diseases and cancers are considered nowadays the main cause of mortality and morbidity among Jordanians.¹ Tobacco smoking has been identified as one of the avoidable risk factors for the development of these chronic diseases. In Jordan, smoking is not only common among adults, but also among adolescents, and the recent Global Youth Tobacco Surveillance² showed that 13.2% of male students, and 7.1% of female students between the ages of 13 and 15 were current smokers. Similar to the case in some Arab countries³ most available studies on youth smoking in Jordan have only presented data on the prevalence of smoking and some distal determinants. Since a good understanding of smoking-related beliefs reinforce the effectiveness of smoking prevention interventions,^{3,4} data on youth beliefs on smoking are required. This study aims to compare the well-known smoking related beliefs associated with Western adolescent smokers with that of Jordanian adolescents, likewise to describe the prevalence of cigarette smoking, and to analyze the differences in beliefs on cigarette smoking between smokers and non-smokers.

The theoretical framework of this study is the Integrated Model of Behavioral and Motivational Change (I-Change Model),⁵ which aims to explain why people engage in unhealthy behaviors. The model categorizes the factors that contribute to a certain behavior into 3 phases: pre-motivational, motivational, and post-motivational. According to the I-Change Model, behaviors are determined by people's intention to execute them. Intention, in turn, is determined by 3 well-defined motivational factors, namely attitudes, perceived social influences, and self-efficacy expectations. Attitude (the product of individuals' outcome expectations) reflects the individuals' evaluation of expected advantages, and disadvantages of certain behavior. Social influences include social norms (the norms on a behavior from others), social modeling (perceived behavior of others), and social support/pressure (support in favor, or pressure against a particular health behavior as experienced from others). Lastly, self-efficacy (individual ability to carry out the desired behavior) presents in varied forms, such as social self-efficacy and stress/emotional self-efficacy. The focus of this study was to identify the main motivational beliefs besides intention toward cigarette smoking.

This study was conducted in Petra region, South Jordan from July to September 2009. Ethical approval was obtained from the Ethics Committee of Al-Hussein Bin Talal University, Ma'an, Jordan. The study had a cross-sectional

design, and data were collected using a self-administered questionnaire. The sampling process followed a stratified random sampling technique where 145 students out of 486 enrolled students were selected to participate in the study. The entire questionnaire was based on the European Smoking Prevention Framework Approach (ESFA).⁴ Cigarette smoking status was assessed by one item based on a 6-point scale statements. Respondents were then classified into non-smokers (I have never smoked, I have experimented with smoking but quit experimenting, I am experimenting with smoking but not smoking weekly, I used to smoke but quitted completely now), or smokers (I smoke at least once a week, or I smoke daily). Advantages of smoking were measured by 4 items based on a 5-point scale ($\alpha=0.80$) such as, "smoking helps to calm my nerves." Likewise, disadvantages of smoking were measured by 4 items based on a 5-point scale ($\alpha=0.81$) such as, "smoking is bad." Social influences were measured by assessing social norms, social modeling, and social pressure of 3 important groups: family (parents and siblings), peers (friends and fellow students), and teachers. Social norms were measured on a 5-point scale, students indicated if their family (Pearson's correlation ($r=0.60$), peers ($r=0.77$), and teachers thought that they definitely should, or should not smoke. Social modeling was measured by assessing the perceived behavior of family, peers, and teachers. Modeling by family was based on a 2-point scale ($r=0.12$). Because of the low correlation, modeling by parents and siblings were used separately. Modeling by peers ($r=0.84$) and teachers were based on 5-point scales. Social pressure was measured on a 5-point scale to assess how often they encountered social pressure to smoke by family ($r=0.70$), peers ($r=0.68$), and teachers. Self-efficacy was assessed by 6 items based on a 5-point scale. Students indicated how confident they were to abstain from smoking in social situations ($\alpha=0.87$), and in stressful situations ($\alpha=0.89$). Students' intention to smoke next year was measured based on a 7-point scale. One demographic variable was measured, namely, the gender of the students.

Data were entered and analyzed using the Statistical Package for Social Sciences version 13.0 (SPSS Inc, Chicago, IL, USA). Descriptive statistics were used to explore smoking prevalence and gender of respondents. Chi-square tests were used to examine gender differences in smoking prevalence. Attitudes, self-efficacy expectations, social influences, and intention were analyzed using covariance analyses (ANCOVAs) with gender being a covariate. A p -value of <0.05 was considered statistically significant.

Equally, school and student response rate was 100%. The sample consisted of 46.9% males. The overall prevalence of cigarette smoking (defined as daily and weekly smoking) was 14.7%. Smoking was significantly more prevalent among males (28.4% males versus 2.6% females,

Table 1 - Differences in beliefs between smokers and non-smokers.

Variables (based on a 5-point scale)	Smokers (n=21)	Non-smokers (n=122)	P-value
Total pros toward smoking (+2, -2)	0.40	-1.03	<0.001
Total cons toward smoking (+2, -2)	0.55	1.24	0.036
<i>Social norms</i> (+2, -2)			
Norms of family	-0.90	-1.65	0.009
Norms of peers	0.60	-0.93	<0.001
Norms of teachers	-0.48	-1.50	0.008
<i>Social modeling</i>			
Modeling by parents (0, +1)	0.52	0.46	0.586
Modeling by siblings (0, +1)	0.71	0.36	0.002
Modeling by peers (4, 0)	2.50	0.82	<0.001
Modeling by teachers (4, 0)	3.05	1.41	0.045
<i>Social pressure to smoke</i> (4, 0)			
Pressure from family	0.40	0.24	0.354
Pressure from peers	1.52	0.55	0.042
Pressure from teachers	0.43	0.25	0.401
<i>Self efficacy</i> (+2, -2)			
Social	-0.27	1.03	0.008
Stress	-0.51	0.88	<0.001
Intention to smoke next year	0.71	-2.03	<0.001
Gender is a covariate			

$p=0.001$). Although the prevalence of cigarette smoking in this study is higher than that reported among some European countries, it is in line with previous Jordanian surveys.² Unlike among European adolescents, smoking is significantly more prevalent among males than females. This is not surprising, as traditional Arab families are not in agreement with women smoking.³ As shown in Table 1, many differences in beliefs on cigarette smoking between smokers and non-smokers were found. First, smoking students held more positive attitude toward smoking in terms of perceiving more advantages and less disadvantages of smoking. Second, smokers demonstrated more positive social influences to smoke than non-smokers. They more often perceived social norms from their siblings, peers, and teachers towards smoking. Additionally, smokers reported more smokers in their direct social environment including siblings, friends, fellow students, and teachers. Lastly, smokers encountered more direct social pressure to smoke

from their peers than non-smokers. In contrast, no direct pressure from parents, siblings, and teachers were reported. As in the case among Western European adolescents, peer influence on adolescence smoking seems to be stronger than family influence.⁴ Additionally, our results showed that students were influenced by their teachers' smoking and perceived teacher smoking norms, which emphasizes the significance of the teachers as constructive role models for their students. Third, similar to the situation among Western adolescents,⁴ smokers invariably had lower self-efficacy to oppose smoking, and stronger intention to smoke next year than non-smokers. Anti-smoking programs may then need to reinforce self-efficacy against smoking, as well as to change the intention to smoke.

In conclusion, the high prevalence of cigarette smoking among Jordan adolescents, as well as the strong beliefs on smoking underlines the importance of smoking prevention programs. For these programs to be more effective, better integration of family and school environment is recommended.

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