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Personal Attitudes, Risk Perception and Perceived Vulnerability toward Water Pipe Smoking among Male Students in Zarandieh

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Abstract

Aim: Tobacco use is one of the major causes of death worldwide and the most preventable risk factor of the coronary heart disease. The purpose of this study was to determine attitudes, risk perception and perceived vulnerability toward to water pipe (WP) smoking among male students in Zarandieh city of Iran.

Methods: This cross-sectional descriptive study was carried out on 400 male adolescents in 2011-2012. A multiple-stage sampling protocol was used. The participants completed a self-report questionnaire about demographics, knowledge, attitude and beliefs about WP smoking and their tobacco use background. Data were analyzed by SPSS16.

Findings: The prevalence of WP smoking was 72 (18%). Also 50% of participants believed water pipe smoking is less harmful compared to cigarettes. The mean score of knowledge, attitude, and risk perception for non smokers was higher from smokers (knowledge 4.9±2.1, attitude 19.5±4.3 and risk perception 18.6±3.3 versus 3.4±1.5, 15.6±5.5 and 15.4±4.3 respectively), whereas smokers reported a fairly high level of perceived stress and depression (perceived vulnerability).

Conclusion: Noticing the side effects of tobacco use and the high prevalence of incorrect perceived WP smoking beliefs among students, provision of educational programs for the correction of the beliefs of students regarding WP smoking is recommended.

Keywords: Attitude, Water Pipe, Smoking, Perceived Risk, Vulnerability

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Introduction

Tobacco consumption has fallen substantially over the past 30 years in many industrialized countries. In contrast, over the same time period, tobacco consumption has been increasing in the developing world [1]. Water pipe smoking is a traditional form of tobacco consumption in the region of the Middle East [2]. Its use can be intermittent (e.g. once per week) and the length of each session can vary from few minutes to few hours [3]. There is increasing evidence supporting the deleterious health effects of water pipe smoking. A recent systematic review found that WP smoking is possibly associated with a number of deleterious health outcomes such as lung cancer, esophageal cancer, respiratory illness, bladder cancer, and coronary heart disease [4]. Epidemiological and laboratory studies have documented that the use of hookah (used for WP smoking) is suspected to be associated with neoplasm of salivary glands [5].

WP is perceived by many adolescents and even health professionals as being less dangerous than cigarette smoking [3], for example, nicotine content is lower than that of cigarettes, water filters out all noxious chemicals, including carbon monoxide, tar and nicotine, it is less irritating and thus less harmful to the throat and respiratory system [6].

Although smoking levels have decreased overall, the rate of decrease among adolescents has not been as sharp as that for adults [7]. Adolescent smoking remains an important public health issue around the world [8, 9]. This suggests that if youth smoking can be prevented, fewer adults will be smokers [10]. The early initiation of smoking increases the likelihood of adult smoking dependence [11]. Thus, prevention of smoking initiation and identification of its causative factors at an early age may have significant public health benefits [12]. According to a recent study in Iran, the prevalence of experimentation of WP smoking at ages 11-18 years was 58.8% in boys and 50.8% in girls [1, 8].

Factors believed to explain the process of adolescent smoking are mainly psychosocial factors that are: personal (e.g. perceived vulnerability and self esteem), and behavioral (e.g. lifestyle) [1]. Judgments about risk are viewed as a fundamental element of the most of theoretical models of health and risk behavior, including Social Cognitive Theory, the Health Belief Model, and the Theory of Planned Behavior [8]. All of these theories posit that individuals' beliefs about the consequences of their actions and perceptions of their vulnerability to those consequences play a key role in behavior [7-9]. Risk perceptions play a fundamental role in behavioral intervention programs that try to get adolescents to recognize and acknowledge their own vulnerability to negative outcomes [5, 8].

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There is scarcity of studies on the WP smoking among Iranian adolescents. Previous research on adolescent smoking in Iran has focused mainly on providing prevalence data and information about the determinants of adolescents' cigarette smoking, such as access/availability, price and knowledge. Yet, no study has tested the risk perception and perceived vulnerability in relation to WP smoking in Iran. Therefore, the purpose of this study was to determine the attitudes, risk perception and perceived vulnerability toward water pipe smoking among male adolescents in Zarandieh city, of Iran.

Methods

Participants and setting

This cross-sectional descriptive study was carried out in Zarandieh city; Iran. Sample size for the study was calculated based on an anticipated WP smoking prevalence of 33% [13], with absolute precision of 95%, the minimum number was observed to be 337. Sample selection was carried out by multistage sampling as follows: (i) all seven high schools were selected from the city;(ii) the quota of male students selected from each school was proportional to the number of students in the school; (iii) the quota included from any class was based on the number of students in each grade (1–3); (iv) students from each class were randomly included in the study based on their identification number. Student participation was voluntary and anonymous using self-administered data collection procedures. 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. Questionnaire was distributed and to assure data privacy, school teachers were requested to leave the classroom during the survey period, and also sufficient time was given to fill them. It took around 50-55 minutes to fill the entire questionnaire.

Measurement

In this study we maintained the 35 questions from the GYTS questionnaire and added 5 variables: knowledge, attitude, risk perception and perceived vulnerability, and also added one open question about the reasons for smoking for the hookah user students.

Items to elicit GYTS questionnaire included: 1. Age, grade point average, pocket money, parents smoking status, friends smoking status, parental education level, family members' smoking, smoking history, age of first tobacco use, current level of smoking, place of smoking, time spent in smoking sessions) [14]. 2. Knowledge toward smoking: This part consisted of 9 items derived from the available literature [8, 12, 14-17]; knowledge refers to the estimation of the essential knowledge of students about health hazards toward smoking.

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The students answered the questions about WP smoking: "Water pipe smoking may transmit hepatitis infection". Correct answer received a score of one and incorrect and do not know received 0. The mean of 9 items was calculated to determine knowledge for this analysis. Higher scores indicated higher level of awareness of the riskful effects of smoking. The knowledge of scale's reliability (test-retest) was α = 0.82. 3. Attitude toward smoking refers to one's beliefs about WP smoking. It was measured with six items using five-interval Likert differentials scales, ranged from 1 (strongly agree) to 5 (strongly disagree) taken from available literature [5, 16, 18, 19]. Items were presented as follows: "water pipe smoking helps me deal with anxiety or worry.". A higher score indicated a stronger attitude against smoking. The attitude scale's reliability (Cronbach's alpha) was α = 0.87.

4. Self esteem, which was measured by using the five interval semantic differential scale of Rosenberg [20-22], rated on a 5-point scale ranging from 0 (strongly agree) to 4 (strongly disagree). The internal reliability of this scale was satisfactory (0.89).

5. Risk perception: The third part of the questionnaire comprised of five questions related to perceived sensitivity about health hazards of WP tobacco use derived from the available literature [1, 23], with responses ranged form strongly agree, agree to strongly disagree, disagree and undecided. The students answered to questions about health hazards WP smoking: ''By WP smoking, I am at risk of coronary heart disease and lung cancer". As for the interpretation of scoring, higher scores indicated a high level of risk perception. The internal consistency (α) for this scale was found to be 0.85.

6. Perceived vulnerability questions derived from the available literature [24], the scale consists of 2 variables of perceived stress (4 items) and perceived depression (4 items), the possible frequency answers were always, sometimes, rarely and never. It's rated on a 4-point scale ranging from 0 (never) to 3 (always). As for the interpretation of scoring, higher scores indicated a high level of perceived vulnerability. The internal reliability of this scale was satisfactory (0.81).

Data analysis

The questionnaires were reviewed and entered into a database constructed using the SPSS software, version 16.0. Statistical significance was determined at the $p<0.05$ level throughout the data analysis.

Frequencies were calculated to examine the most frequent reasons indicated for the use or non-use of hookah. Descriptive variables were expressed as frequency, mean, and overall range (minimum and maximum). An independent sample t-test was used to compare

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the mean scores of knowledge, attitude, self-esteem, risk perception and perceived vulnerability of those who were water pipe users and those who are non-users.

Result

Age of the participants ranged from 14 to 19 years with a mean of 16.7 years (SD = 1.5) and most students were high school grade one (35%), followed by second grade (33%) and third grade (32%,) students. experimentation of Water Pipe smokers (students who had hookah smoking even for one or 2 puffs in the past) were 116 (29%); WP smoker (students who had smoked hookah for one day or more during the last week) were 72 (18%) and both cigarettes and WP were used by 59 students (14.7%).

The most WP smoking experimentation 57/72 (79.1%) occurred in company of friends. About 18% of the WP smokers reported WP smoking at home with their parents or at other family gathering. More than half (59%) of the WP smokers, reported having WP smoking friends. The highest frequency of WP smoking experience was related to the third grade (31%), this rate was 26.7% in second class and 22.6% in the first in this class group respectively ($P < 0.001$).

WP smokers reported that the main influence for their current smoking of their friends (35%) and a good opportunity to meet friends (34%). Among those who were never smokers, the most frequent responses were, “paternal influence by inhibition” (41%), and “I am worried about consequences (35%)" (Table 1).

Table 1: Reasons for use or non-use of hookah

Reason of users	**N (%)**	**Reason of non users**	**N (%)**
Influence of friends	25(35)	Paternal influence by inhibition	135(41)
A good opportunity to meet friends	24(34)	I am afraid to social consequences	115(35)
It is less harmful and addictive compared to cigarettes	23(32)	With WP smoking: I am at high risk for cancer	95(29)
Positive social consequences like maturity	21(29)	With WP smoking; I think I can get respiratory diseases	89(27)
Pleasure	21(29)	I am worried about addiction	85(26)
Reduction of anxiety, stress and tension	20(28)	WP smoking may transmit hepatitis infection	54(16)
Curiosity	18(25)	Parents recommended	50(15)
Self-assertion	15(21)	Teacher or health care provider or health educator recommended	42(13)
Acceptable by the society (parents)	14(19)	Friends recommended	37(11)

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As Table 2 illustrates, the mean score of knowledge, attitude, self esteem and risk perception for non smokers was higher than smokers. Whereas the current smokers perceived a fairly high level of perceived stress and depression. There were significant differences between mean score of all variables (knowledge, attitude, self esteem, risk perception and perceived vulnerability) of those who were WP smokers and those who were non smokers ($p < 0.001$).

Table 3 displays responses of attitude items towards WP smoking among the included adolescents. Of the included adolescents, 47% believed that smoking of WP could relieve anxiety or worry, 53% agreed that smoking of WP was hazardous to his health. 45% preferred cigarette if they were to smoke because of less harm properties compared to WP. 16.5% believed that smoking of WP is a sign of maturity.

Table 2: Means and Standard Deviations of the knowledge, self esteem, and perceived vulnerability variables between WP smokers versus non smokers

	Total		**Current smokers**		**Non smokers**		
variable	N	Mean(SD)	N	Mean(SD)	N	Mean(SD)	P Value
Knowledge	400	4.6 (2.1)	72	3.4 (1.5)	328	4.9 (2.1)	0.001
Attitude	400	16.6(5.5)	72	15.6(5.5)	328	19.5(4.3)	0.001
Self esteem	400	25.4(4.1)	72	22.6(4.2)	328	26(3.7)	0.001
Risk Perception	400	16.3(4.3)	72	15.4(4.3)	328	18.6(3.3)	0.001
Perceived stress	400	4.4(2.5)	72	5.7(2.9)	328	4(2.3)	0.001
Perceived depression	400	4.2(2.4)	72	6.2(2.6)	328	3.8(2.1)	0.001

Table 3: Personal attitudes towards Water pipe Smoking among adolescents

Items	**Responses**		
	Agree*	**Disagree****	**Not decided**
Water pipe smoking helps me deal with anxiety or worry.	189(47)	151(38)	60(15)
Water pipe smoking is a sign of maturity.	66(16.5)	293(73)	41(10.5)
Water pipe smoking calms me down when I feel nervous.	114(28.5)	216(54)	70(17.5)
Water pipe smoking is hazardous to my health.	212(53)	95(24)	93(23)
When I am sad, water pipe smoking makes me feel better.	130(32.5)	198(49.5)	72(18)
Water pipe smoking is more harmful compared to cigarettes.	179(45)	201(50)	20(5)

* Both agree and strongly agree; **Both disagree and strongly disagree

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Discussion

The 18% prevalence of WP smoking found among the adolescents in this study could be considered low when compared with that reported in studies conducted in other Iranian districts (8, 26-30). However, it is difficult to directly compare this percentage with those in other studies that have assessed prevalence of smoking among Iranian adolescents because of between-study differences in the definition of criteria "Wp smoking", age and geographic location of the participants. In this study, the most WP smoking occurred in the collection of friends. Also, influence of friends and gathering of friends were the main reasons given for smoking.

This observation is in agreement with a study from the Sudan [31], which showed that the influence of the friends was the most important factor influencing the smoking. Another US study showed that the influence of friends on adolescents' tobacco use was the strongest factor [32]. According to the smoking literature, approval of smoking by friends, parents, and other key persons, for example friends, is likely to increase the probability of smoking, through the imitation of these role models [1]. However, previous studies showed [32, 33], having smoking friend(s) has been considered the most important factor influencing the smoking in adolescents in the world [34]. These results suggest that educational interventions aimed at reducing perceived peer acceptability and popularity may be effective.

In this study, the mean score of "knowledge" among nonsmoker students was higher than that of current smokers ($p<0.001$). Very few studies have been conducted on the knowledge of students about tobacco use but all have showed higher scores of knowledge in nonsmokers. Similarly, study of Ramezankhani et al showed mean score of knowledge among nonsmoker students was higher than that of smokers [8]. Therefore, increasing the knowledge of adolescents through health education programs on smoking could lead to a significant reduction in smoking among adolescents. According to present study, nonsmokers had a higher score of attitude as well ($p<0.01$). This result is in agreement with study of Nehl [35] in African American and Caucasian College Students which showed that smokers had a lower score of attitude than that of nonsmokers. Similarly, study of Baska [36] in Slovakia showed that attitudes towards tobacco use among the adolescents were closely related to their smoking status, i.e. current smokers more frequently reported positive attitudes. Prior research on adolescent smoking behavior indicated more positive attitude toward smoking and smokers tended to be related with an increased likelihood of smoking [18, 19] In

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general, adolescents who smoke are usually less knowledgeable about the health risks involved, do not believe that smoking will affect them personally, and feel that the short-term benefits outweigh any health risks [37].

Overall the state of perception about the health hazards of WP smoking was low among the included students irrespective of their smoking status. The result of risk perception displayed, alone 41% believed that smoking WP may transmit hepatitis infection, and also 63% believed that WP smoking is easier to quit and causing no addiction. These rates are in accord with those of other studies [42, 43]. for instance, in study conducted in Saudi Arabian students by Amin et al [5], and also in study of Jawid et al in the Pakistanian students [38] most WP users believed that its use was neither as harmful nor as addictive as cigarette. In general, adolescent smokers had less belief about the negative consequences of smoking than their nonsmoking counterparts, discount the addictive property of tobacco, and negate the risks of experimental smoking [39]. The result of this study further indicated mean score of self esteem for the non smokers was higher than for the current smokers. The study of Lazuras in Greek adolescents showed that intention to smoke was stronger among the adolescents with low self-esteem, suggesting that self-esteem may act as a vulnerability factor in the process of smoking initiation [40]. The study of Li in Nanjing, China, showed that the low self-esteem was positively associated with current smoking among adolescents [41]. The 2001 report of the Surgeon General of the United States concluded that adolescents smokers are more likely to have low self-esteem and low expectations for future achievement. In fact, they may regard smoking as a means of coping with the stress, anxiety and depression associated with lack of self-confidence [42].

In the present study, there were significant differences between the mean score of perceived stress/depression in the current smokers and those who were non smokers. Previous studies provided evidence of association between smoking with depression and stress [43]. This may be the fact because smokers misunderstand that smoking can help relieve their depression and stress. However, responses of attitude items towards WP smoking show that 47% agreed that water pipe smoking helps them deal with anxiety or worry. A study by Weiss on Californian students identified that smokers are likely to report more depressive symptoms than nonsmokers [44]. Similarly, study of Jie [45] in Southern California showed that risk of smoking initiation was significantly higher among students who scored higher on depressive symptoms. Several studies have failed to find a relationship between depression

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and subsequent smoking behavior and have instead found smoking to predict onset of depression [46]. It has also been suggested that depression increases adolescents' vulnerability to pressure from peers to initiate smoking [47].

The results of WP smoking behavior are based on students' self-reports. Ethical considerations in this study included anonymity, obtaining the ethical commitee approval letter from Tarbat Modares University, obtaining informed consent from the participants.

Although respondents were assured of their anonymity, Zarandieh students may have been suspicious and fearful of entrapment, and therefore may have underreported their smoking behavior. As this study was based on random sample of schools and students in the city of Zarandieh, Iran, results cannot be generalized to the rest of the adolescents living in other Iranian cities.

Conclusion

The high prevalence of incorrect beliefs and low perceived risk about WP smoking and low levels of perceived susceptibility among the WP smoker students shows the need for the implementation of a more effective smoking program for correcting the beliefs in this particular population. The findings also indicate that friends' are the important factors of adolescents' hookah use. Thus, in planning and implementation of educational tobacco control programs, there is the need to target the habits of friends as an important influencing factor.

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