

## RESEARCH ARTICLE

# Refusal Self Efficacy, Self Esteem, Smoking Refusal Skills and Water Pipe (Hookah) Smoking among Iranian Male Adolescents

Mahmood Karimy<sup>1</sup>, Shamsaddin Niknami<sup>2\*</sup>, Ali Reza Heidarnia<sup>2</sup>, Ebrahim Hajizadeh<sup>3</sup>, Mohsen Shamsi<sup>4</sup>

### Abstract

**Background:** Tobacco use among adolescents is a major public health concern, and identifying predictors of smoking is necessary for planning prevention programs. The present study examined the relationship between refusal self efficacy, self esteem, smoking refusal skills and water pipe (hookah) smoking among Iranian male adolescents. **Materials and Methods:** A cross-sectional study was conducted with 380 Iranian male adolescents aged between 15-19 years selected by multistage sampling. The participants completed an anonymous, voluntary, self-report questionnaire. Variables independently associated with water pipe (WP) smoking were identified by multiple logistic regression analysis. **Results:** The mean age of the participants was 16.7±1.3 years. The prevalence of WP smoking was 17.3%. Logistic regression analysis revealed that knowledge (OR=0.56; 95% CI: (0.37-0.79)), attitude (OR=0.69; 95% CI: (0.52-0.89)), self esteem (OR=0.67; 95% CI: (0.55-0.82)), smoking refusal skills (OR=0.73; 95% CI: (0.55-0.87)), and self efficacy (OR=0.82; 95% CI: (0.61-0.93)) were all significant predicting factors for adolescents WP smoking. **Conclusions:** The findings have implications for public health interventions. Indeed, self efficacy and smoking refusal skills should be considered when developing tailored measures for the prevention of WP smoking among adolescents.

**Keywords:** Smoking - water pipe - adolescent - self efficacy - refusal skills - Iran

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### Introduction

Smoking, this is the major single known cause of non communicable diseases is widespread around the world (Rudatsikira et al., 2007) and quitting at an early age can reduce smoking mortality and morbidity (Wong et al., 2010). Total tobacco attributable deaths are projected to increase from approximately 5M per year today to over 8M per year by 2030 (Warren et al., 2009).

Many adult smokers initiate the smoking habit during adolescence or as young adults (Rachiotis et al., 2008). Tobacco use among adolescents has been found to be a major public health concern. Despite the widespread awareness of the short- and long-term consequences of smoking, recent studies have revealed that even if there has been a decrease, the incidence of smoking among adolescents remains high (Karimy et al., 2012a).

While adults were the initial targets of tobacco companies, in order to increase profits, the industry sought out to target adolescents, ages 15-19. Furthermore, adolescents believed that smoking would promote their social status as a member of the modern generation (Duangdao, 2012).

The multinational tobacco industry is targeting youth

in their efforts to secure “replacement smokers” (and tobacco users) and unfortunately, for most youth, access to tobacco products is relatively simple. The WHO/Centers for Disease Control Global Youth Tobacco Survey found that greater than 70% of youth around the world reported that they can buy tobacco in a store without providing proof of age (Glynn et al., 2010).

Water pipe smoking is a traditional form of tobacco consumption in the region of the Middle East, especially attracting young population. This form of smoking employs a device (the water pipe) that heats tobacco using charcoal and then filters the smoke in a bowl of water before its inhalation through a rubber pipe (Akl et al., 2010b). In some Middle East countries WP smoking is less stigmatizing than cigarette smoking, also perceived by many adolescents, the general public, and even health professionals as being less dangerous than cigarette smoking (Maziak et al., 2005), for examples, 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, Muassel “Narghile tobacco contains fruit, making them a healthy choice” (Amin et al., 2010).

<sup>1</sup>Department of Public Health, Faculty of Health, Saveh University of Medical Sciences, Saveh, <sup>2</sup>Department of Health Education, <sup>3</sup>Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, <sup>4</sup>Department of Public Health, Faculty of Health, Arak University of Medical Sciences, Arak, Iran \*For correspondence: [niknamis@modares.ac.ir](mailto:niknamis@modares.ac.ir)

There is increasing evidence supporting the deleterious health effects of water pipe smoking. A recent systematic review found that water pipe tobacco smoking is possibly associated with a number of deleterious health outcomes such as lung cancer, esophageal cancer, respiratory illness, low birth weight and periodontal disease. Similar associations may exist with bladder cancer, oral dysplasia, and coronary heart disease (Akl et al., 2010a). According to a recent study in Iran, the prevalence of self-reported WP smoking among adolescent was 54.9% (Karimy et al., 2012b).

Despite the alarming revival and dramatic increase in popularity of water pipe smoking, little is known about its determinants and predictors of smoking among adolescents in Iran and even in the region. Thus, in the absence of accurate data on factors associated with WP smoking among Iranian adolescents, the focus of the present research is to examine the association between Self efficacy, self esteem, smoking refusal skill, and WP smoking among high school students in Iran.

## Materials and Methods

### Setting and design

This cross-sectional descriptive study was carried out in Zandieh city, located in the Markazi Province of Iran, in 2012. The Markazi Province is located in the center of Iran, and comprises 12 cities. The prevalence cigarette smoking in the Markazi Province is 15.1%, which this rate is high in the compared with mean of cigarette smoking in Iran (Khosravi et al., 2009). The study involved 380 students, from high schools and, from the 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> grades and 15 to 19 years of age.

### Population and sampling

Sample size for the study was calculated from formula: and level of statistical significance was set at 95%, absolute precision of the study was set at 33% also proportion of water pipe smokers among high school male student as reported by Global Youth Tobacco Survey (GYTS) (Warren et al., 2009). The minimum number observed to be 337. A multi-stage (random) probability sample was used to obtain respondents as follows: 1. at the first stage, primary sampling units were all high schools (7 high schools). 2. After schools had been recruited, the quota any school from sample to be determined based on ratio of the number students in each school. 3. The based on ratio of the number students in each grade level (1-3) to be determined quota any classroom from sample. 4. Randomly selecting the students from these classes based on their identification number. However, the number of students from each school was calculated based on the numbers of students of each school. Also, from each school, the quota of student from each level (1-3) was chosen. All students attending the school the day the survey was administered in selected classes were eligible to participate. Student participation was voluntary and anonymous using self-administered data collection procedures. Data collection was conducted in school by trained assistants without the presence of the teacher.

The questionnaire was distributed among the

participants and to assure data privacy, the school teachers had to leave the classroom during the survey period. Also sufficient time was given to the respondents to fill in the questionnaire. It took around 40-45 minutes to fill in the entire questionnaire.

### Data collection and measures

The present study was conducted within the framework of the Global Youth Tobacco Survey (GYTS), developed by Centers for Diseases Control (CDC, Atlanta, Georgia, USA) for smoking survey among youth was used to determine pattern and prevalence of smoking, The GYTS questionnaire contained 90 multi-choice questions, 54 of them core questions uniformly used in each country. In this study we maintained the 30 questions from the GYTS questionnaire and added 5 variables attitudes, self efficacy, self esteem, smoking refusal skills, and Intention for WP smoking.

*i)* 20 items to elicit GYTS questionnaire (i.e., age, level of study, grade point average,) (GYTS, 2009). *ii)* Attitude toward smoking, refers to one's beliefs about WP smoking. It was measured with 8 items using five-interval Likert differentials scales, ranged from 1 (strongly agree) to 5 (strongly disagree) taken from available literature (Amin et al., 2010; Mallia and Hamilton-West, 2010; Mohammadi et al., 2006; Shashidhar et al., 2011). Items were presented as follows: "water pipe smoking help me deal with anxiety or worry.". A higher score indicated a stronger attitude against smoking. *iii)* Self esteem, which was measured by using the five interval semantic differential scale Rosenberg (Luhtanen and Crocker, 1992; Rosenberg et al., 1995; Schmitt and Allik, 2005), rated on a 5-point scale ranging from 0 (strongly agree) to 4 (strongly disagree). *iiii)* Refusal self-efficacy: Five items were used to assess the students' perceptions about smoking. Self-efficacy questions were derived from published reports (Engels et al., 2005; Minnix et al., 2011; Solomon et al., 2006).

Self-efficacy refers to adolescents' confidence in their ability to become (or stay) non-smokers and their confidence that they could refuse a WP smoking when one was offered. The response categories ranged were from 'very difficult' (1) to 'very easy' (5). *v)* Smoking refusal ability measured by Botvin's modified five item smoking. The selections of smoking refusal ability items were based on a previous study by Epstein et al (Epstein et al., 2007). where adolescents were asked If someone asked you to smoke? The response rated on five items For example, Tell them "no" or "no thanks." or "Make up an excuse and leave" *vi)* Knowledge: Knowledge toward smoking consisted of 9 items derived from the available literature (Mohammadi et al., 2006; Allahverdi-pour et al., 2008; Yao, 2008b; GYTS, 2009; Ramezankhani et al., 2010; Wong et al., 2010). Students responded on a four-point scale ranging from ('definitely not' to 'definitely yes'). The scale was then recoded into a dichotomous variable (0=maybe/definitely not, and 1=maybe/definitely yes). The mean of 10 items was calculated to determine the knowledge score. Higher scores indicate higher level of awareness of the harmful effects of smoking. WP Smoking status was categorized as smoker and non-smoker. Those

who smoked hookah once a week at the time of study were considered smokers and otherwise as nonsmoker (Engels et al., 2005; Toghianifar et al., 2011).

The investigator constructed the questionnaires based on the elicitation results, and the content validity of the instruments was assessed by 10 experts. Next, a confirmatory factor analysis was used to assess the construct validity of the instruments. The model's fit was confirmed for all scales (goodness-of-fit index 0.95-0.97). 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.

#### Data processing and analysis

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 one-way anova and regression at the significance level of 0.05. In the logistic regression for determine the dependent variable, Smoking status within 1 week was asked using one question: 'During the past 7 days (one week), on how many days did you smoke WP?' The responses were dichotomized such that the participants who indicated that they did not smoke or did not smoke in the past 7 days were considered non-smokers and coded 0, and those who reported smoking at least one in the 7 days were classified as WP smokers and coded 1. The dependent variable was attitude, self esteem, self efficacy, Smoking refusal and knowledge. In addition, 95% confidence intervals were adopted.

The normality of data was tested using the Kolmogorov-smirnov test, the histogram, and normality of residuals.

#### Ethical considerations

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.

## Results

We studied 380 adolescents, with ages ranging from 15 to 19 years and a mean age of  $16.7 \pm 1.3$  years. We found that 66 (17.3%) of the students were WP smokers (Students who had smoked hookah for a day or more during the last 7 days), both cigarettes and WP were used by 52 students (13.6%). Occasional and/or experimentation of WP smokers (Students who had hookah smoking even for one or 2 puffs in the past) were 110 (28.9%).

Findings indicates that the vast majority (89.9%) of the participants felt that hookah use is less harmful from cigarette smoking. About 79% of the WP smokers reported WP smoking with of their friends or friend gathering. The primary reason reported for starting to WP smoke was, following friends (41%). The second most frequent reason reported was 'feeling that smoking is the normal

**Table 1. Socio-Demographics of Students According to their WP Smoking Status**

Variable	Current smokers (n=66) N (%)	Nonsmokers (n=314) N (%)	P
Separated parents			
Yes	4(1)	5(1)	0.03
No	62(16)	309(82)	
Residence			
Urban	58(15)	276(73)	0.997
Rural	8(2)	38(10)	
Parental Smoking			
Yes	42(11)	51(13)	0.001
No	24(6)	263(70)	
Friends smoking			
Yes	45(12)	100(26)	0.001
No	21(5)	214(57)	
Regular physical activities			
Yes	11(3)	90(24)	0.042
No	55(15)	224(58)	

**Table 2. Comparison of Attitude, Self Esteem, Self-Efficacy, Smoking Refusal Ability and Knowledge Scores among Current, Ex- and Non-Smoker Groups**

	All (n = 380) Mean (SD)	Current smoker (n = 66) Mean (SD)	Ex-smoker (n = 110) Mean (SD)	Non-smoker (n = 204) Mean (SD)	P
Attitude	25.8 (5)	22.1 (6.0)	25.3 (3.4)	29.6 (3.8)	<0.001
Self esteem	24.3 (6.4)	22.6(4.2)	24.6 (5.3)	27 (4.6)	<0.001
Self-efficacy	17.4 (2.2)	14.5 (3.1)	18.0 (2.7)	19.2 (4.2)	<0.001
Smoking refusal	11.4 (4.1)	9.0 (3.2)	10.4 (6.1)	12.6 (3.9)	<0.001
Knowledge	4.1 (2.2)	3.3 (1.3)	3.9 (1.7)	4.5(2.6)	<0.06

**Table 3. Results of the Multiple Logistic Regression Analysis**

Variables	OR (95% CI)	P
Attitude	0.69 (0.52-0.89)	p < 0.05
Self esteem	0.67 (0.55-0.82)	p < 0.05
Self-efficacy	0.82 (0.61-0.93)	p < 0.05
Smoking refusal	0.73 (0.55-0.87)	p < 0.05
Knowledge	0.56 (0.37-0.79)	p < 0.05

behavior' (40.6%). The other reason reported were 'feeling of maturation' (29%), Curiosity (17%), enjoyment (17%), following parents (16.5%), relaxation in free time (12%), and more cool (11.4%).

WP smokers had more family members and friends who smoked, and in relation to physical activity and WP smoking, we observed that students with regular physical activities are at lesser risk of experimenting with smoking. In addition, when the parents are separated, the probability that the student will experiment with smoking is higher than when the parents live together (Table 1).

As table 2 illustrates, the mean score of attitude, self esteem, self-efficacy, smoking refusal ability and knowledge for non-smokers was higher than ex-smoker and current smoker groups. The one-way analysis of variance indicated that there were significant differences among current, ex- and non-smokers in all constructs (attitude, self esteem, self-efficacy, smoking refusal ability), except for knowledge.

The multiple logistic regression analysis revealed that variables knowledge (OR=0.56; 95%CI:(0.37-0.79),

attitude (OR=0.69; 95%CI:(0.52-0.89), self esteem (OR=0.67; 95%CI:(0.55-0.82), smoking refusal skills (OR=0.73; 95%CI:(0.55-0.87), and self efficacy (OR=.82; 95%CI:(0.61-0.93) were significant factors in predicting for WP smoking ( $p < 0.05$ ). The result also revealed that self-efficacy was the strongest determinant of WP smoke (Table 3).

## Discussion

Our study found that self efficacy is the major predictive of WP smoking. Also WP smokers had lower self-efficacy compared to non smokers. A body of literature supports the importance of self-efficacy in initiation and maintenance of behavioral change. For instance, a study by Engels et al showed, in the adolescent smokers, self-efficacy and attitude about smoking were predictive of smoking status 3 years later (Engels et al., 2005). Similarly study of De Vries et al (De Vries et al., 2003) among early adolescents showed that self efficacy was the most powerful predictor in explaining adolescents' future smoking behavior. In addition, Norman reported that self-efficacy was the best predictor of adolescents' smoking behavior with a high self-efficacy being negatively related to adolescents' smoking behavior (Norman et al., 1999). Also adolescents with a high self-efficacy were less likely to perceive a high social norm to smoke (Norman, 2011). Previous studies indicated, that when adolescents with a low self-efficacy come into contact with friends who smoke, they will be less resistant to the encouragement of these friends to start smoking (Harakeh et al., 2004). In a study by Yao in Wuhan, China, those who had lower refusal self-efficacy were approximately 3-5.6 times more likely to become ever smoker, and 5.99-7.37 times more likely to become ever smoker in the reference group (Yao, 2008a). On the contrary to the findings of our research, Hassan and Shiu found that self-efficacy was not a meaningful predictor of intention to smoke (Hassan and Shiu, 2007).

In the present study, smoking refusal skills were second important factor influencing the habit of smoking in adolescents. This is in line with study of Epstein et al showed that refusal skills was the significant predictor of smoking (Epstein et al., 2007). Indeed the results of the current study provide evidence for the importance of smoking refusal skills for resisting offers to WP smoking. This result provides empirical support for a smoking prevention approach that can be implemented in a school setting and has a dual emphasis on refusal skills training in order to help youth resist peer pressure to smoke.

The results of the present study demonstrated, stronger negative attitudes about tobacco were associated with lower to WP smoking. This result is agreement with study of Nehl (Nehl et al., 2009) in African American and Caucasian College Students which showed smokers had a lower score of attitude than that of nonsmokers. Previous study showed, the positive attitudes towards tobacco use and tobacco users tend to be related to an increased likelihood of tobacco use (Wang et al., 1996; Anjum et al., 2008). For instance, a study by Qian Guo in China found that having positive beliefs about smokers is cross-sectionally associated with youth susceptibility

to smoking behaviour (Guo et al., 2007). Also the result of attitude section displayed, alone 43% believed that smoking WP may transmit hepatitis infection, and also 62% believed that WP smoking is easier to quit and causing no addiction. These rates are in accord with those of other studies (Anjum et al., 2008; Jawaid et al., 2008). For instance, In study conducted in Saudi Arabia students by Amin et al (Amin et al., 2010), and also in study of Jawid et al in the Pakistan students (Jawaid et al., 2008) most WP users believed that its use was neither as harmful nor as addictive as cigarette. Positive beliefs about smoking have also been associated with youth smoking (Karimy et al., 2012b). In general, adolescent smokers have less knowledge about the negative consequences of smoking than their nonsmoking counterparts, discount the addictive property of tobacco, and negate the risks of experimental smoking (Karimy et al., 2012a).

The result of this study further indicated knowledge variable was significant factor in predicting for cigarette use, but the difference between the scores of current, ex and non smokers was not statistically significant. This finding was in accord with that of Ramezankhani study (Ramezankhani et al., 2010). Similarly, in the study of Islam in the Egypt, found knowledge of the immediate negative consequences of smoking reduced susceptibility to future tobacco use (Islam and Johnson, 2005). Based on what researches suggest, knowledge alone is not sufficient to prevent smoking among adolescents, since many misinterpret the risks involved. Considering the above-mentioned findings, planning and implementation of educational programs seem necessary in order to correct the attitude of students and promotion knowledge toward smoking.

The present study also indicated self-esteem variable was significant factor in predicting for cigarette use, and the mean score of self-esteem for the non smokers was higher for the current and ex smokers. In some studies, lack of self-esteem has been implicated in tobacco use among adolescents (Byrne et al., 2007). In other research, however, no association was found between self esteem and smoking initiation (Winefield et al., 1992). Different measures of self esteem have been used in the literature, and this may have contributed to the inconsistent findings.

In relation to the demographic variables, There was a significant statistical relationship between WP smoking and having parent and friend smoking of the students. In the smoking literature, the presence of parents and friends who smoke has been shown to be strongly associated with smoking experimentation and current smoking of the students (Ramezankhani et al., 2010; Karimy et al., 2012a). Also, among the other variables related to smoking and the lifestyle of the adolescents, we observed that adolescents whose parents are separated have a greater chance of smoking than do those whose parents live together. It is possible to think that this greater risk is related to social aspects and emotional interaction into which the separation is inserted which can lead the adolescent to search for a refuge in smoking. So, we can hypothesize that living in a supportive and friendly family environment is a significant factor in preventing smoking in adolescent. Studies investigating

the association between smoking and physical activity have yielded mixed results (Trinh, 2005; Prochaska et al., 2008; Vandita et al., 2008). While most have found physical activity to be protective against smoking (Trinh, 2005; Nelson and Gordon-Larsen, 2006), others have found physical activity to be associated with higher rates of smoking (Prochaska et al., 2008; Vandita et al., 2008). We found association between smoking behavior and regular physical activities. Adolescents who smoke had less regular physical activities than those who do not smoke. This finding was in concord with that of Maziak's study conducted on Syrian college students (Maziak et al., 2005). Similarly, Johnson et al found that leisure time such as physical activity, even when it was not vigorous, was positively related to not smoking (Fisher et al., 1999).

The present study had several limitations: The results of WP smoking behavior are based on students' self-reports. 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. Second, The study participants were recruited from schools. Interpretation of the results to the general adolescent population in Zarandieh must be made with caution as school going adolescents may not represent the overall adolescent population.

In conclusion, knowledge, attitude, self esteem, smoking refusal ability and self efficacy components were all significantly associated with WP smoking. The findings also indicated that refusal self efficacy, smoking refusal ability are important factors of adolescents' hookah use. Thus, in planning and implementation of educational tobacco control programs, smoking refusal ability and self efficacy should be considered as important influencing factors.

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