

## Social Norms and Perception of Waterpipe Smoking among Palestinian University Students\*

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### ABSTRACT

An obvious change in youth tobacco use patterns worldwide to non-cigarette forms is being observed; most notably water-pipe smoking (WPS). Social norms and culture have been suggested as important factors behind its spread. We aimed to assess university students' knowledge and attitudes towards WPS smoking and to examine the motivating factors behind its use. A cross-sectional study design with a random sample of 750 students was used. A pretested self-administered questionnaire was used to obtain the required data. Chi-squared test was used to assess between different groups. About 23% of the participants were classified as current water-pipe smokers. The main reason reported for using it was enjoying its taste. Half of the participants agreed that their society approves it more than a cigarette, and 18% of the female students reported that their families accept their WPS. Additionally, current smokers have significantly higher percentages of incorrect information about its danger compared to non-current smokers. In conclusion, WPS appears to be more socially acceptable than cigarette smoking and is perceived as less harmful. Implementing intervention programs to improve awareness of its harm, emphasizing on the misperceptions associated with its use, may reduce its use among university students.

**Keywords:** Water Pipe Smoking, University Students, Perception, Palestine.

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\* The research draws from the master thesis of the student Mai Abu Al-Halaweh entitled: Water-Pipe Smoking and Associated Factors among An-Najah National University Students, which was discussed at An-Najah National University on 24/5/2015.

### INTRODUCTION

Currently, more than one billion people worldwide (about one-quarter of adults) smoke tobacco even though it is well known to be associated with high morbidity and mortality [1]. A dramatic change in youth tobacco use patterns worldwide to non-cigarette forms is being observed. While cigarette smoking is either stable or declining, other forms of tobacco use are showing a rising trend, most notably water-pipe (WP) smoking [2].

WP smoking is a generic name for a method of tobacco use in which smoke passes through a reservoir of water before inhalation. The WP apparatus consists of a base that is filled with water, a bowl, a heating device that contains the tobacco, a pipe that connects the bowl to the base, and a hose that

is attached to the base to allow smoke to be inhaled [3].

Despite all documented negative health effects, WP smoking is still widely accepted as less harmful than cigarettes, a belief which is held by many smokers [4]. Its use in the Middle Eastern countries has been estimated to range between 9-25% among school students, 6-33% among university students and 6-15% among adults [5]. This may be due to a variety of social, cultural, and economic factors as well as misperceptions about its health risks. The majority of its users still believe that WP smoking is less harmful than cigarettes [6, 7, 8, 9].

Social norms and cultures have been suggested as important factors behind the significant spread of WP smoking in the region [6, 8, 10, 11]. Negative social norms against cigarette smoking seem not to be ap-

plied to WP smoking; possibly due to its more recent trend and use [6,9, 12]. Another example of this is the observed increasing numbers of females who smoke WP in relative to those who smoke cigarettes [9,10,13]. In Syria, 73.3% of female students reported that their families perceive WP smoking to be acceptable for women as compared to 28.8% perceiving cigarette smoking as "normal" for women [9].

Students' use of WP is associated with smoking in the house, smoking in the family and smoking among friends as evidenced by several studies [5,10, 14]. Peer influence was found to be an equally important determinant, indicating that a friend was most often the introducer, motivator, and companion for smoking [9, 10, 12,14].

Several factors were reported by university students all over the world as being motives behind smoking WP, including curiosity, boredom, and pleasure-seeking, peer pressure, stress-relieving [7, 13, 14], part of social gathering [7, 14], dealing with anger or depression [13] and others.

Studies of unhealthy behaviors among university students are important not only because they serve as role models for other young adults, but because the majority of high-risk health behaviors are established in young adulthood [13]. It is believed that if the health risks were understood properly by the students and the general public it would assist in developing tailored prevention and control programs [7, 15]. In Palestine, the prevalence of WP smoking is high but there is a lack of data focusing on the beliefs of students regarding water-pipe use or investigated their awareness regarding its hazard.

Identifying motivators and contributing factors to WP smoking and reporting attitude of university students, will be the first step to understand the extent of the problem and its scope in Palestine. This could be a baseline for the stakeholders to set strategies and preventive activities to minimize its burden and consequences. This study aimed to assess the knowledge and attitudes of Palestinian university students towards WP smoking and to examine the motivating factors behind it.

## METHODS

### *Study design and participants*

A cross-sectional study was conducted during the period June to July 2014 with randomly selected group students from An-Najah National University of Palestine (NNU). NNU is one of the largest universities in Palestine; the number of attending students was about 21,000 in the 2015-2016 academic years [16].

The study population consisted of full-time students enrolled at NNU. A multistage random sampling technique was employed to select a total of 780 students from the eligible 21,000 students. Initially 39 classes were selected randomly with an average of 55 students per class. Then a systematic random sample was drawn from the selected classes where every 3<sup>rd</sup> student in each class was selected and invited to participate in the study.

We visited each selected class after taking permission from the lecturer. Before disseminating the questionnaire, a brief description of the study and its objectives was given to the participants. Current WP smoker was defined as anyone who used water-pipe one time or more in the past 30 days [17].

### *Measurement tool*

A self-administered questionnaire was developed in Arabic and used to collect data. It was constructed from a literature review and questions adapted from previously published related studies [11, 12, 17, 18, 19, 20].

The questionnaire contained a brief introduction to the study and its objectives. It was divided into 4 sections; (i) demographics on age, gender, faculty of study, place of original residence, place of residence during university study, monthly average income, and average monthly spending on WP smoking (ii) motives behind WP smoking among students (including asking why they are using water-pipe: they find it a good way to socialize with family and friends, it helps them to feel less stressed and to relax, to spend leisure time, to enjoy taste and smell and other suggested reasons), (iii) students' beliefs regarding WP smoking and their perceived risk and severity of WP smoking and (iv) student' knowledge of the adverse health effects of WP smoking. It included items on the chemi-

cal contents of waterpipe tobacco and the adverse health effects that could be associated with WP smoking.

Before use, it was reviewed by three experts in the field and pretested on a group of 40 university students to assess the understandability of the questions as well as estimating the time needed to complete it. To assess its reliability, the internal consistency of the items was carried out by computing the Cronbach's alpha with results ranged from 0.71 to 0.79 which is considered as very good.

#### **Data analysis**

Statistical Package for Social Sciences (SPSS) version 17 was used for data entry and analysis. Frequencies and proportions were calculated for categorical variables and mean and standard deviation for continuous variables. The relation between the study outcomes and the independent variables was

assessed using the Chi-squared test. Significance level was set at  $\leq 0.05$ .

#### **Ethical approval**

The study was approved by NNU Institutional Review Board (IRB) and appropriate permissions were received before conducting it. Participation was voluntary and informed verbal consent was taken from students.

#### **RESULTS**

This study included a total of 750 students who completed and returned the questionnaire. Of those, 53.2% were females, 59.9% were from the Humanities and Social Sciences faculties, 52.7% were residing in villages and 82.3% were residing with their families. The mean age of students was 19.7 years and all of them were Bachelor students. Table 1 presents the demographics of the participants.

**Table (1):** Demographic characteristics of the study participants (n=750).

<b>Characteristic</b>	<b>Frequency (%)</b>
<b>Age</b>	Mean age 19.7 years (SD 1.4)
<b>Gender</b>	
Male	351 (46.8%)
Female	399 (53.2%)
<b>Faculty</b>	
Humanities and social sciences	449 (59.9%)
Engineering and Information Technology	131 (17.5%)
Medicine and health sciences	088 (11.7%)
Natural sciences	082 (10.9%)
<b>Place of residence</b>	
Village	395 (52.7%)
City	326 (43.4%)
Camp	29 (03.9%)
<b>Place of residence during studying</b>	
In family home	617 (82.3%)
With a friend in a rented apartment	110 (14.7%)
Alone in a rented apartment	023 (03.1%)
<b>Monthly income level of the family</b>	
More than 600\$	497 (66.3%)
300-600 \$	209 (27.9%)
Less than 300\$	44 (5.9%)
<b>Marital status</b>	
Single	714 (95.2%)
Married	36 (04.8%)

#### **Motives behind WP smoking**

About one fourth (22.8%) of the participants were classified as current WP smokers.

The main reason reported for smoking WP is enjoying its taste (70.8%). The second reason reported by males was that it makes them feel relaxed compared to enjoying its smell by

females. Additional motives included socializing with families and friends, peer influ-

ence, control weight, etc. (Table 2).

**Table (2):** Reasons that drive students to smoke water-pipe by gender (n=171).

The motivation behind smoking WP	Total n=171 (%)	Male n=124 (%)	Female n=45(%)
Enjoying the taste	121 (70.8%)	93 (74.3%)	28 (60.9%)
It helps me to feel relaxed	98 (57.3%)	81 (65.3%)	17 (37.0%)
Enjoying the smell	97 (56.7%)	73 (58.9%)	24 (50.1%)
It's something to do when I feel bored	82 (48.0%)	42 (34.6%)	40 (30.5%)
It helps me not to smoke cigarettes	49(28.7%)	43 (34.7%)	6 (13.0%)
A good way to socialize with family and friends	45 (26.3%)	34 (27.4%)	11 (23.9%)
Influence of friends and/or family	39 (22.8%)	25 (20.2%)	14 (30.4%)
It helps control my weight	15 (8.8%)	13 (10.5%)	2 (4.3%)
Not to feel different when being in a company with water-pipe smokers	15 (8.8%)	10 (8.1%)	5 (10.9%)

### *Social norms, beliefs and perceived health risks*

Society and family attitudes about WP smoking have been studied. Interestingly, 52.5% of the participants agreed that society approves of it more than cigarette smoking. This percentage was significantly higher

among the current smokers' group (P-value  $\leq 0.001$ ). Concordantly higher percentages of the current smoker's families are reported to accept their students' WP use (53.2%) compared to 14.9% of non-current smokers' families (P-value  $\leq 0.001$ ) (Table 3).

**Table (3):** Social norms toward water-pipe smoking.

Social norms	Total n= 750 (%)	Current Smoker n=171(%)	Non-current Smoker n=579 (%)	P-value*
Society approves water-pipe smoking	408 (54.4%)	114 (66.7%)	294 (55.9%)	<0.001
Society approves water-pipe smoking more than cigarette smoking	393 (52.4%)	113 (66.1%)	280 (48.4%)	<0.001
My family accepts my smoking water-pipe	177 (23.6%)	91 (53.2%)	86 (14.9%)	<0.001

\* Chi-Square Test

Current WP smokers have significantly higher percentages of wrong beliefs compared to non-current smokers. It was found that 91.5% of non-current smokers believe that youth harm themselves if they use WP, compared to 69.0% of the current WP smokers (P-value  $\leq 0.001$ ). Interestingly, 62.6% of the current smokers perceive WP smokers as not a bad habit, compared to 27.8% of the non-current smokers (P-value  $\leq 0.001$ ). As expected, the belief that WP smoking is less harmful than cigarette smoking is significantly higher among current WP smokers (42.1%) compared to 19.9% of the non-current smokers (P value  $\leq 0.001$ ). Moreover, more than half of current smokers don't feel

worried regarding the bad health effects of WP smokers compared to about one-fifth of the non-current smokers (P value  $\leq 0.001$ ) (Table 4).

**Table (4):** Students' negative perceptions and perceived risk regarding WP smoking (n=750).

Negative beliefs and perceived risk	Total n= 750 (%)	Current smokers n=171(%)	Non-current smokers n=579 (%)	P-value
I think youth harm themselves if they use water-pipe *	102 (13.6%)	53 (30.9%)	49 (8.5%)	< 0.001
I think if water-pipe use is stopped earlier the health risks will reverse *	304 (40.5%)	70 (40.9%)	234 (40.4%)	0.903
I think water-pipe smoking is not a bad habit**	268 (35.7%)	107 (62.6%)	161 (27.8%)	< 0.001
I think smoking water-pipe make people look cool and fit in**	254 (33.9%)	92 (53.8%)	162 (28.0%)	< 0.001
I think young people who use water-pipe have more friends **	306 (40.8%)	81 (47.4%)	225 (38.9%)	0.047
I think smoking water-pipe is less harmful than smoking cigarettes **	187 (25.0%)	72(42.1%)	115(19.9%)	< 0.001
I don't feel worried regarding bad health effects of water-pipe use **	227(30.3%)	99 (57.9%)	128 (22.1%)	< 0.001
I think that the medical evidence that water-pipe smoking is harmful is exaggerated **	304(40.5%)	113 (66.1%)	191(33.0%)	< 0.001

^ Chi-Square Test

\*Frequency of students who responded with either disagree or don't know

\*\*Frequency of students who responded with either agree or don't know

### Knowledge of health effects

Level of knowledge regarding the health effects of WP smoking was evaluated and results are shown in Table 5. Majority of the students (84.1%) agreed that the smoke inhaled from WP contains harmful chemicals. Less than half of students knew that WP smoke has more tar and nicotine (47.5%), and more carcinogens and heavy metals than

cigarette smoke (43.2%). Regarding adverse health effects of WP smoking; around 80.0% of non-current smokers agreed that it leads to different types of cancers, heart disease and harm to unborn babies, compared to 60% of smokers (P value= <0.001). Generally, the reported knowledge regarding health effects was significantly lower among the current smokers compared to non-current smokers.

**Table (5):** Knowledge of health effects associated with water-pipe use among An-Najah National University students.

Health effect of water-pipe smoking	Total n= 750 (%)	Current smokers n=171(%)	Non-current smokers n=579 (%)	P-value
Smoke inhaled from water pipes contains harmful chemicals.	631 (84.1%)	121 (70.8%)	510 (88.0%)	< 0.001
Water-pipe smoking can lead to different types of cancers; such as lung cancer, mouth & throat cancer, and other cancers.	619 (82.5%)	106 (62.0%)	513 (88.8%)	< 0.001
Water-pipe smoking can lead to heart diseases.	574 (76.5%)	108 (63.2%)	466 (80.5%)	< 0.001

Health effect of water-pipe smoking	Total n= 750 (%)	Current smokers n=171(%)	Non- current smokers n=579 (%)	P- value
Water-pipe smoking can harm unborn babies.	568 (75.7%)	104 (60.8%)	464 (80.1%)	< 0.001
Water-pipe smoking is addictive.	549 (73.2%)	99 (57.9%)	450 (77.7%)	< 0.001
Water-pipe smoking can be harmful to those exposed to second-hand smoke.	546(72.8%)	105 (61.4%)	441 (76.2%)	< 0.001
Water-pipe tobacco has more tar than cigarettes.	357 (47.6%)	69 (40.4%)	288 (49.8%)	0.029
Water-pipe tobacco has more nicotine.	356 (47.5%)	68 (39.8%)	288 (49.7%)	0.022
Water-pipe tobacco has more carcinogens.	324(43.2%)	68(39.8%)	332 (57.3%)	< 0.001
Water-pipe tobacco has more heavy metals.	324 (43.2%)	58 (33.9%)	266 (46.0%)	0.005
Water-pipe smoking can lead to infertility in male smokers.	318 (42.4%)	57 (33.3%)	261 (45.1%)	0.006

^ Chi-Square Test

## DISCUSSION

This cross-sectional study investigated motives, beliefs and perceived risks related to WP use and the knowledge regarding its adverse health effects among NNU students in 2014. It included 750 randomly selected students from a variety of areas of study. Among the participants, 170 students (22.8%) were classified as current WP smokers.

The main reason to smoke WP is to enjoy its taste. This is similar to what was reported by Syrian students who said that the smell and taste of WP smoke was its chief positive attribute [9]. This places the responsibility of the increased prevalence of WP use to some extent on the tobacco manufacturing companies who are doing their best in producing new smoking materials created to target children, youth and adults making WP smoking more attractive and enjoyable. Public health initiatives can address this issue as an area of advocacy.

Also, the majority of students reported that WP smoking was a way to feel more re-

laxed and to seek pleasure; this was comparable to students of neighboring countries [21]. The fact that students find WP smoking as something gives them pleasure and distraction when they are bored could be related to the lack of other healthy activities in our society that can be practiced in leisure times and provide the social atmosphere that is sought through smoking WP.

Peer pressure is one of the most important reinforcing factors for WP smoking, as reported in several studies [10, 13, 14]. This was noticeable in the responses of the current study participants. Up to one-quarter of WP smokers admitted that they smoke under the influence of their families or friends, about 60% of them reported that a friend was most often the introducer or companion in the first use and they are the companion of most WP smoking sessions. This can explain the high percentage (45.6%) who use it in public venues (for example cafes); as youth especially females appeared to prefer to enjoy smoking with their friends without much, if any, parental opposition, and unfortunately this is served a lot by the large and increasing number of cafes and restaurants

that provide WP with pleasant social atmosphere for smokers without any restrictions [10].

Societal approval for WP smoking was perceived by a substantial proportion of students (54.4%); those who indicated that society approves it more than cigarette smoking had 1.7 times greater tendency to use WP. Additionally, an interesting finding is that families' acceptance for WP smoking was found to be a significant risk factor for increasing tendency to smoke WP by 4.6 times. It is obvious from these results that the negative social norm against cigarette smoking is not applied to WP in the Palestinian society; which may be related to its more recent trend and use. This may play an important role in the wide and dramatic spread of this type of tobacco use. These observed findings were consistent with previous studies [12, 21].

These important results indicate the seriousness of the role of societal and family attitude informing either good or bad habits among individuals, given that intention and subsequent behaviors are predicted by attitudes and normative beliefs about the behavior as hypothesized by the theory of reasoned action [22].

Results showed a statistically significant difference in family acceptance for WP smoking between males and females, indicating that there is still some taboo toward female smoking in some communities. But on the other hand; the percentage of families who accept their daughters smoking was greater than the current prevalence of WP smoking among females, suggesting that the prevalence among females may increase more in the future without any parental opposition. Further evidence of families' lax attitude toward females' use of WP has been shown in a previous Syrian study, where most of female WP smokers had started smoking and sharing WP with family members than male WP smokers; this finding has been viewed by the author as being the first evidence in the EM region of greater permissiveness of any type of tobacco use for females than males [9].

"Switching from cigarettes to water-pipe would reduce the health risks" was a misconception perceived by undergraduate students at Midwestern University in USA [12], and this was quite similar to that was reported by 34.7% of our WP smokers "it can help me not to smoke", which indicates that WP is viewed as harm reduction method or substitute for cigarettes following cessation.

The misconception of that WP smoking is less harmful than cigarette smoking was found among university students of several western and EM countries such as the United States [12, 14], Syria [9], Jordan [10] and others. There are several false reasons that form the basis of this misconception; such as the belief that it contains less nicotine and other chemicals than cigarettes, that water has filtering properties for the smoke which reduces its harmful chemical contents [6, 21], and that WP smoking it is less irritating than that of cigarette [6].

In addition to this misinformation, the low level of perceived health risk and severity is considered as a predisposing factor for WP smoking. An individual's opinion of how serious a condition or behavior and its health consequences are a contributing factor to either performing or avoiding it [23]. This indicates the importance of taking actions in this direction such as increasing awareness of students and the society in general regarding the real nature of the harm associated with WP use, and about how serious are the consequences. More than half of the students (WP current and non-current smokers) did not know that WP smoke has tar, nicotine, heavy metals, and other carcinogens more than cigarettes which support the previous findings of the misconception that WP is less harmful than cigarettes due to the lower contents of chemicals or due to the filtering effect of water.

Regarding the adverse health effects of WP; despite that more than 60% of smokers knew that WP smoking leads to negative health consequences, they continue to smoke. This is consistent with the results of a systematic review conducted in 2013, showing that most of the studies on the level of knowledge among university students had

reported that they were aware of the adverse health effects of WP and despite that, a large proportion of them continue smoking [21]. Despite this and when comparing between current and non-current WP smokers; there was a statistically significant difference between the two groups; whenever knowledge score has decreased the risk of WP smoking increases. This emphasizes the importance of raising the level of knowledge regarding the adverse health effects of smoking in general and WP smokers.

Some limitations should be considered in the current study. First, the fact that the study was conducted at a single large university in North West-Bank may limit generalizing results on all university students in Palestine. Second, students' natural desire to provide socially acceptable answers to avoid embarrassment or please the researcher may underestimate or overestimate some findings, however, evidence shows that self-reported answers on behaviors are valid when participants understand the objectives of the study and are assured of anonymity or confidentiality [24].

## CONCLUSIONS

In summary, in this study, students reported that their main motivation for WP use was enjoying its taste, feeling relaxed when smoking and enjoying its smell. WP smoking was generally considered more socially acceptable than cigarette smoking. Although students were aware of its health hazards, a considerable proportion of them still perceives WP smoking as less harmful and severe than cigarette smoke. This lack of negative perceptions and the low perceived risk was more prominent among the current WP smoking.

The results of this study indicate the need for designing and implementing intervention programs to improve awareness of the harms of WP smoking and emphasizing on its actual health risks. These programs would likely be more effective if supported with policy interventions targeting all students as well as other society members (students' family, teachers and friends) and tailored to specific target groups (females, young adolescents, parents, etc.). Further,

follow up longitudinal studies are recommended to assess health risks and consequences associated with WP smoking.

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## COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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