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Knowledge, Attitudes, And Practices Towards Waterpipe Smoking Among Medical and Non-Medical University Students

Rebar Yahya Abdullah^{1*}  Dilkhosh Shamal Ramadhan² , Alaa Noori Sarkees³ , Arazoo Issa Tahir⁴  Sara Jawad Kadhim⁵ 

1. Ph.D. in family and community health nursing, Department of Community health and Maternity Nursing, College of Nursing, University of Duhok, City of Duhok, Kurdistan Region, Iraq. rebar.abdullah@uod.ac

2. M.Sc. in community health nursing, Department of Nursing, Faculty of Nursing, Hawler Medical University, Kurdistan Region, Iraq. E-mail: dilkhosh.ramadhan@hmu.edu.krd

3. Ph.D. community health nursing, Department of Nursing, Shekhan Technical University, Duhok Polytechnic University, Kurdistan Region, Iraq. E-mail: alaa.noori@dpu.edu.krd

4. M.Sc. in public health, Department of Nursing, Bardarash Technical Institute, Duhok Polytechnic University, Kurdistan Region, Iraq. E-mail: arazoo.tahir@dpu.edu.krd

5. M.Sc. in Adult Nursing, Department of Adult Nursing, College of Nursing, University of Duhok, City of Duhok, Kurdistan Region, Iraq. E-mail: sara.khadim@uod.ac

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Correspondence:

Rebar yahya Abdullah

rebar.abdullah@uod.ac

Abstract

Background: Waterpipe smoking is becoming a more popular method of tobacco consumption and is associated with short- and long-term health effects. The WPS is increasing around the world, especially among university students. Therefore, this study examined knowledge, attitudes, and practices.

Methods: A cross-sectional study was conducted at the University of Duhok, Duhok city, Kurdistan region, Iraq, from June 4 to October 5, 2023. The study included a sample of 200 students comprising medical and nonmedical students. The selection of participants was carried out using a convenience sampling technique. To collect data, a structured and validated self-administered questionnaire was used. The data collected was then analyzed using SPSS version 23, with a significance level set at p-value <0.05.

Results: The study revealed that 59% of students aged 21 to 23, with the majority (71%), medical students demonstrated greater knowledge about the increased risks of cancer (p 0.000), respiratory diseases (p 0.000), cardiovascular hazards (p 0.000), transmission of water pipe infection (p 0.003), the effect on sperm characteristics (p 0.000), and parenteral WPS and low birth weight (p 0.008). Despite non-significant differences in attitudes toward WPS between medical and nonmedical ones, 56% of students considered WPS more socially acceptable than cigarettes, 60% feeling it relaxed, and 55.5% helping manage stress. Most students practice WPS in cafes or restaurants (41%), with friends (74%), weekly (61%), and express their intention to quit (60.5%). Non-medical students exhibit a higher frequency of weekly WPS use and monthly smoking compared to medical students (p 0.009).

Conclusions: The results demonstrate the concerning practices of WPS among both medical and nonmedical students. As a result, urgent action is necessary to address this issue through increased awareness efforts and the implementation of anti-smoking policies.

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Introduction

Waterpipe smoking (WPS), also known as shisha, hookah, goza, hubble-bubble, kalian, narghile, argeela, okka, ghelyoon and ghalyan, is a form of smoking that has gained popularity in recent years (Neergaard, Singh, Job & Montgomery, 2007). Tobacco use is a significant contributor to mortality on a global scale. The World Health Organization (WHO) reports that in 2017, more than 6 million deaths worldwide were attributed to tobacco exposure, either through direct use or second-hand exposure (WHO, 2016). WPS has become increasingly popular as a recreational activity over the past 25 years (Akl et al., 2015; Arshad et al., 2019).

The origins of WPS can be traced back to the late sixteenth century, with its use documented in the Middle East. In particular, the Eastern Mediterranean Region (EMR) experienced an increase in the rate of tobacco use, which has been practiced as a traditional habit in this region for many years (Alhawsawi et al., 2019; Kargar & Ansari-Moghaddam, 2023). The trend of WPS has seen a significant increase among younger generations since the 1990s (Alhawsawi et al., 2019; Akl et al., 2011). This trend has been especially visible among young people in Asian, African, and Western nations, including England, France, Russia, Australia, Canada, and the United States (Maziak, 2011). WTS is becoming more common internationally (Akl et al., 2015; Arshad et al., 2019).

Studies examining the prevalence of WTS have indicated that university students exhibit some of the highest prevalence rates globally. For example, in Lebanon, the prevalence of waterpipe smoking was found to be 29% (Jradi, Wewers, Pirie, Binkley & Ferketich, 2013). Similarly, a study conducted in four Jordanian universities revealed that the incidence of current waterpipe smokers among university students was 30% (Khabour et al., 2012). Other Arab countries reported a prevalence ranging from 5.6% to 19.8% (Nasser & Zhang, 2019; Mandil, Hussein, Omer, Turki & Gaber, 2007). In Iran, the prevalence of waterpipe smoking was approximately 25% (Khodadost et al., 2020). It is worth noting that, while pipe smoking is already popular in the Middle East; its popularity is also increasing in other countries (Almogbel et al., 2021).

Several factors contribute to the increase in WP consumption. One reason for the increased popularity of WP is the lack of knowledge about its potential complications, leading to a higher acceptance and prevalence of WP use among different populations (Momenabadi, Iranpour, Khanjani & Mohseni, 2015; Dehdari, Jafari & Joveyni, 2012). Another factor is its use as a social behavior for socializing, relaxation, pleasure, and entertainment (Harakeh & Vollebergh, 2012; Akl et al., 2013). WPS is often seen as a social activity, and the increasing number of WP supply centers and stores that sell related products has made it easier for people to

participate in this form of smoking. The availability of affordable and flavorful tobacco has also contributed to the growing popularity of WP consumption (Momenabadi, Iranpour, Khanjani & Mohseni, 2015; Dehdari, Jafari, & Joveyni, 2012). In addition to these factors, university students also mentioned peer pressure, fashion, and curiosity as additional factors influencing their decision to smoke WP. Furthermore, people in the Middle East identified expressing cultural identity as an additional reason to smoke PW (Harakeh & Vollebergh, 2012; Akl et al., 2013).

Recent research shows that pipe smoke contains nicotine, heavy metals, and toxins found in cigarette smoke. It is also important to note that using a WP can lead to the same levels of nicotine in the blood as smoking 10 cigarettes (Bali et al., 2015; Rahim, Ibrahim, Kamal, 2018). Waterpipe smokers are susceptible to the same diseases associated with smoking cigarettes. These diseases include various cancers such as lung, head, neck, and gastric bladder cancers (Montazeri, Nyiraneza, El-Katerji & Little, 2017; Waziry, Jawad, Ballout, Al Akel & Akl, 2017; Awan, Siddiqi, Patil & Hussain, 2017), coronary heart disease, shortness of breath, chronic bronchitis, low immunity, and low birth weight (Haddad et al., 2016). Additionally, sharing a water pipe can potentially increase the risk of transmitting infectious diseases such as tuberculosis, herpes, viral hepatitis, and other infections (Tofighi et al., 2023). The increase in WTS usage among younger age groups led the WHO acknowledging it as a significant public health issue in their 2015 advisory note (Chaouachi, 2006). This recognition was based on numerous published studies that emphasized the comparable health risks associated with WTS and cigarette smoking (Waziry, Jawad, Ballout, Al Akel & Akl, 2017).

A possible explanation for the widespread appeal of WPS, even among people who do not typically smoke tobacco, could be attributed to a lack of awareness of the harmful effects associated with this practice (Nuzzo et al., 2013). The aim of this study is to determine knowledge, attitudes and practices towards WPS among medical and non-medical university students.

Materials and methods

Study Design and setting

A descriptive cross-sectional study design was conducted during the period of June 4 to October 5, 2023. The current study was carried out at the University of Duhok, located in the city of Duhok within the Kurdistan region. The researchers selected 11 departments, both medical and nonmedical ones, from the University of Duhok to collect students from these departments.

Sample Size and sampling

The research included 200 university students from both medical and nonmedical colleges at the University of

Duhok, representing various academic disciplines. Participants were selected from a wide range of departments, including nursing, medicine, dentistry, pharmacy, health sciences, history, social sciences, geography, English, Arabic, and Kurdish. A convenience sampling method was utilized to collect the sample. These students were current waterpipe smokers and the study included both male and female individuals 18 and above.

Measurement

A self-administered questionnaire was developed in the local language on knowledge, attitudes, and practices toward waterpipe smoking. The questionnaire used in the current study consisted of three parts: the first part included sociodemographic characteristics of the students, such as age, sex, class, marital status, colleges, and residency; the second part contained characteristics of waterpipe smokers; and the third part comprised knowledge, attitudes, and practices towards Waterpipe smoking. The students responded to a series of multiple choice questions within a time frame of 15 to 20 minutes.

Data Collection and Data Analysis

The data collected were analyzed through the application of descriptive statistical tests, specifically frequency and percentage analyses. Furthermore, the chi-square test was used, with a significance level of $P < 0.05$, to compare knowledge, attitudes and practices towards WPS between medical and nonmedical college students at the University of Duhok.

The inclusion criteria for the participants in a study were individuals who are waterpipe smokers, 18 years and who older, and have given their consent for participation. On the contrary, those who did not smoke, are under 18 years of age, and did not given consent for participation were excluded from the study.

The purpose was communicated to the participants through direct interviews and their willingness to participate in the study was confirmed. After a brief introduction to the purpose of the study, individual questionnaires were administered and the participants were informed of the confidentiality of the collected data. They were not required to disclose any personal information.

Ethical Considerations

Research has received approval from the scientific committee of the Duhok University School of Nursing, as well as ethical approval from the research ethics committee in the Directorate of Health in Duhok City with a reference number (31052023-4-1). Additionally, agreements have been established with the university and colleges involved in the study and informed consent has been obtained from all participants. The confidentiality of the collected data has been maintained.

Results

The data in Table 1 indicate that the majority (59%) of the students were within the age group of 21–23. Male participants constituted the majority (71%) of the total participants. Furthermore, 57% of the students attended non-medical universities, the highest percentage (37%) being in their fourth educational class of college. Furthermore, the vast majority of students were single (95.5%). In terms of residential area, approximately half of them (51%) were urban residents.

Most of the students (59.5%) reported that cafes or restaurants were the first places where water pipe smoking (WPS) started. Among students, the age reported age for first-time WPS was 16–18 years (42%). Additionally, a significant proportion of students (68%) reported that they intended to participate in WPS for the first time when they were with friends. Regarding duration, the vast majority of students (69.5%) have been water pipe smokers for one year or more, as shown in Table 2.

Table 3 illustrates that there are significant disparities in knowledge about the health risks linked to WPS between medical students and nonmedical students. Medical students show a significantly higher awareness of the elevated risks of cancer ($p 0.000$), respiratory diseases ($p 0.000$), cardiovascular hazards ($p 0.000$), transmission of infections through water pipes ($p 0.003$), the effect of WPS on the characteristics of sperm ($p 0.000$) and the link between parenteral WPS and low birth weight ($p 0.008$).

The data in Table 4 illustrate that the majority of students participate in WPS practices in cafes or restaurants (41%), with friends (74%), on a weekly basis (61%), and express an intention to quit (60.5%). A comparison was made between medical and nonmedical students regarding their use of WP. Nonmedical students reported using WP more frequently during the week and were more likely to be monthly smokers compared to medical students. However, medical students who smoked were found to use WP once a week more frequently than non-medical students ($p 0.009$).

Table 5 presents the attitudes of WP smokers, indicating that most of them (56%) consider WP to be more socially acceptable than cigarettes. Additionally, 60% of the students believe that smoking WP induces a sense of relaxation, while 55.5% view it as an effective strategy for coping with stress. Although most students do not believe that water pipe smoking (WPS) enhances intimacy between individuals of the opposite sex (75%), they also do not believe that WPS is a safe habit (87%), makes individuals appear attractive (72.5%), signifies high social status (74%), or that women cannot smoke cigarettes but can smoke WPS (63.5%). However, there were no significant differences in these attitudes towards WPS between medical and non-medical students.

Table 1: Sociodemographic characteristics of students

	Characteristics (N=200)	Frequency	Percentage %
Age	18-20	60	30.0
	21-23	118	59.0
	24 and older	22	11.0
Gender	Male	142	71.0
	female	58	29.0
Colleges	Medical	86	43.0
	Non-medical	114	57.0
Classes	First class	31	15.5
	Second class	42	21
	Third class	47	23.5
	Fourth class	74	37
	Fifth class	4	2.0
	Sixth class	2	1.0
Marital status	Single	191	95.5
	Married	9	4.5
Residency	Urban	102	51.0
	Rural	52	26.0
	Suburban	46	23.0

N number

Table 2: Factor associated with intent to WPS behavior

	Factors associated with WPS initiation (N=200)	Frequency	Percentage %
First place of WPS initiation	Cafe or restaurant	119	59.5
	Home	33	16.5
	Own dorm room	7	3.5
	Family members at home	19	9.5
	Fraternity/sorority house	2	1.0
	Friends or acquaintances home	15	7.5
	Someone else room	5	2.5
Age of first time using WP	13-15	38	19.0
	16-18	84	42.0
	19-21	60	30.0
	22-24	15	7.5
	25-29	3	1.5
First time of WPS initiation	I was alone.	13	6.5
	With friend/s	136	68
	With a family members	51	28
Duration of WPS	Less than one year	61	30.5
	One year and more	139	69.5

Table 3: Knowledge of waterpipe smoking between medical and nonmedical students

Knowledge towards WPS	F (%)	Medical students F (%)	Non-medical students F (%)	P value
WPS is harmful to health.				
Yes	190 (95)	83 (96.5)	107 (93.9)	0.68
No	7 (3.5)	2 (2.3)	5 (4.4)	
I don't	3 (1.5)	1 (1.2)	2 (1.8)	
WPS increases the risk of cancer				
Yes.	159 (79.5)	81 (94.2)	78 (68.4)	0.000
No.	19 (9.5)	3 (3.5)	16 (14.0)	
I don't	22 (11.0)	2 (2.3)	20 (17.5)	
WPS increases the risk of respiratory diseases				
Yes.	176 (88)	85 (98.8)	91 (79.8)	0.000
No.	13 (6.5)	1 (1.2)	12 (10.5)	
I don't	11 (5.5)	0 (0.0)	11 (9.6)	
WPS increases the risk of cardiovascular disease.				
Yes.	146 (73)	75 (87.2)	71 (62.3)	0.000
No.	23 (11.5)	6 (7.0)	17 (14.9)	
I don't	31 (15.5)	5 (5.8)	26 (22.8)	
WPS spreads infection by waterpipe				
Yes.	143 (71.5)	70 (81.4)	73 (64.0)	0.003
No.	35 (17.5)	6 (7.0)	29 (25.4)	
I don't	22 (11)	10 (11.6)	12 (10.5)	
WPS can harm unborn babies and passive smokers				
Yes.	153 (76.5)	67 (77.9)	86 (75.4)	0.177
No.	25 (12.5)	7 (8.1)	18 (15.8)	
I don't	22 (11)	12 (14.0)	10 (8.8)	
WP contains more nicotine than cigarette				
Yes.	98 (49)	50 (57.5)	48 (42.5)	0.084
No.	55 (27.5)	18 (20.7)	37 (32.7)	
I don't	47 (23.5)	19 (21.8)	28 (24.8)	
WP more addictive than cigarette				
Yes.	85 (42.5)	36 (41.9)	49 (43.0)	0.48
No.	91 (45.5)	37 (43.0)	54 (47.4)	
I don't	24 (12)	13 (15.1)	11 (9.6)	
The water pipe is less harmful than the cigarette				
Yes.	53 (26.5)	22 (25.6)	31 (27.2)	0.53
No.	128 (64)	58 (67.4)	70 (61.4)	
I don't	19 (9.5)	6 (7.0%)	13 (11.4)	
WPS affects the characteristics				
Yes.	52 (26)	35 (40.7)	17 (14.9)	0.001
No.	65 (32.5)	18 (20.9)	47 (41.2)	
I don't	83 (41.5)	33 (38.4)	50 (43.9)	
Parenteral WPS associated with LBW				
Yes.	75 (37.5)	42 (48.8)	33 (28.9)	0.008
No.	21 (10.5)	5 (5.8)	16 (14.0)	
I don't	104 (52)	39 (45.3)	63 (57)	

Frequency F,% percentage, Significance level set at p-value <0.05

Table 4: WPS practices between medical and nonmedical students

Practices towards WPS	F (%)	Medical students F (%)	Non -medical students F (%)	P value
Place				
Café or restaurant	83 (41.5)	40 (46.5)	43 (37.7)	0.204
Home	44 (22)	14 (16.3)	30 (26.3)	
Anywhere	73 (36.5)	32 (37.2)	41 (36.0)	
With whom?				
I was alone.	11(5.5)	5 (5.8)	7 (6.1)	0.52
With friends	148 (74%)	67 (77.9)	81 (71.1)	
With a family members	41 (20.5)	14 (16.3)	26(22.8)	
Frequency				
One a month	78 (39.0)	29 (33.7)	49 (43.0)	0.009
One a week	24 (12.0)	18 (20.9)	6 (5.3)	
2-3 a week	51 (25.5)	21 (24.4)	30 (26.3)	
More than 3 times weekly	47 (23.5)	18 (20.9)	29 (25.4)	
Intent to quit WPS				
Yes.	119 (59.5)	52 (60.5)	67 (58.8)	0.88
No.	81 (40.5)	34 (39.5)	47 (41.2)	

Frequency F,% percentage, Significance level set at p-value <0.05

Table 5: WPS attitudes between medical and nonmedical students

Attitudes towards WPS	F (%)	Medical Students F (%)	Non-medical students F (%)	P value
WP more acceptable than cigarette				
Agree	112 (56.0)	51 (59.3)	61 (53.5)	0.47
Disagree	88 (44.0)	35 (40.7)	53 (46.5)	
WPS makes one loooooo relaxed				
Totally agree.	120 (60.0)	51 (59.3)	69 (60.5)	0.88
Disagree	80 (40.0)	35 (40.7)	45 (39.5)	
WPS is one of the best stress-coping strategies				
Totally agree.	111 (55.5)	49 (57.0)	62 (54.4)	0.77
Disagree	89 (44.5)	37 (43.0)	52 (45.6)	
WPS adds intimacy among people opposite sex				
Totally agree.	50 (25.0)	21 (24.4)	29 (25.4)	0.51
Disagree	150 (75.0)	65 (75.6)	85 (74.6)	
WPS it is a safe habit				
Totally agree.	26 (13)	9 (10.47)	14 (12.28)	0.83
Disagree	174 (87.0)	77 (89.53)	100 (87.72)	
WPS makes you look attractive				
Totally agree.	55 (27.5)	27 (31.4)	28 (24.6)	0.33
Disagree	145 (72.5)	59 (68.6)	86 (75.4)	
WPS is a sign of high social status				
Totally agree.	52 (26.0)	24 (27.9)	28 (24.6)	0.62
Disagree	148 (74.0)	62 (72.1)	86 (75.4)	
Females cannot smoke cigarettes, but they can smoke WP				
Totally agree.	73 (36.5)	26 (30.2)	47 (41.2)	0.138
Disagree	127 (63.5)	60 (69.8)	67 (58.8)	

Frequency F,% percentage, Significance level set at p-value <0.05

Discussion

Most of WP smokers in the current study were between the ages of 20 and 22 and in their final year of university, which is the final educational class for all universities, excluding certain specialized majors such as general medicine, pharmacy, dentistry, and architectural engineering. Previous research has also shown that older university students tend to have a higher probability of smoking WP (Bahri et al., 2018; Othman, Kasem, & Salih, 2017).

The vast majority of WP smokers in the current study were male students. This finding is consistent with previous studies conducted in the Kurdistan region, which also showed a significantly lower prevalence of WP smoking among women compared to men (Othman, Kasem & Salih, 2017). This trend of lower smoking rates among women has been observed in multiple studies (Shalaby & Soliman, 2019; Abu-Rmeileh et al., 2018; Zieliska-Danch, 2019). This pattern is not limited to a specific region, but has been observed in various Arab countries. It has been observed that in most countries in the Eastern Mediterranean Region (EMR), the rates of tobacco smoking in WP (WTS) are slightly higher among boys compared to girls (Maziak, 2013). However, in a study of smoking in Iran, the rates among males and women were found to be similar, with men at 52% and females at 48%. This finding can be attributed to various cultural factors. Smoking is generally considered taboo and, as a result, women, especially young women, rarely smoke or do not openly reveal their smoking habits to society (Babar, 2016). Another factor is that the Kurdish society tends to be more conservative. This conservative nature may make women being less likely to disclose their smoking habits, resulting in an underestimation of female smokers in the study (Othman, Kasem & Salih, 2017).

According to the current study, more than half of the WP smokers were urban residents. Consistent results found that urban residents have a higher prevalence of WP smokers (Othman, Kasem, & Salih, 2017; Zieliska-Danch, 2019). The higher prevalence of WP smoking in urban areas can be attributed to various factors. One significant factor is the availability of facilities, such as coffee shops, that provide WP smoking services in major cities. These establishments often offer a social environment conducive to WP smoking, attracting individuals who seek socialization opportunities while engaging in this activity (Othman, Kasem & Salih, 2017). In this study, the majority of university students indicated that the period of 16–18 years of age was the initiation range of WPS. These findings are consistent with a previous study conducted in university students in the Kurdistan region, which revealed alarming results that indicate that 76% of WP smokers had already started

smoking WP before joining the university (Akl et al., 2011). Consistent results demonstrated that the majority of WP smokers started this before joining the university, specifically before 18 years of age (Bahri et al., 2018). Previous studies have consistently found that the most common age range to initiate smoking for WP among WPS is 16–18 (Rami, Makvana, & Thakor, 2015), 14–17 years (Sabahy, Divsalar, Bahreinifar, Marzban, & Nakhaee, 2011). The study findings highlight the growing trend of smoking WP among young people, indicating that it is becoming more popular among adolescents.

In our research, we found that peer pressure plays a significant role in the initiation of hookah smoking among individuals. Specifically, hookah smoker friends were found to be responsible for introducing the majority hookah smokers to this habit. Previous studies have shown that friends were influential in initiating WP smoking (WPS) among WP smokers (Rami, Makvana, & Thakor, 2015; Zieliska-Danch, 2019).

Most of the university students in the current study indicated that they started WPS in cafes and restaurants. Consistent results have been found in previous studies in the Kurdistan region among university students (Othman, Kasem & Salih, 2017). Similar results revealed that more than 70% of Oman, the UAE and Egypt started smoking WP in a cafe or restaurant (Abu-Rmeileh et al., 2018). The literature suggests that WPS is becoming more common in EMR countries. Although it used to be mainly popular among wealthy people in Iraq, today coffee shops with WP smoking options are widespread and easily accessible to young people. In relation to the duration of using WP, most of them reported using it for one year or more. These findings are consistent with earlier research conducted in the Kurdistan region, which also found that 76% of smokers had been using WP for a year or more (Othman, Kasem & Salih, 2017).

Concerning knowledge about WPS, the majority of the students expressed the belief that WPS has detrimental effects on overall health. A previous study has demonstrated that university students, particularly those with a medical background, are aware of the health consequences associated with WPS (Bahri et al., 2018). However, international studies conducted in the past have revealed a lack of awareness among current university students who participate in WPS regarding the harms of this practice (AlQahtani, 2017; Arshad et al., 2019; Awan, Alrshedan, Al Kahtani & Patil, 2016).

According to the findings of this study, most students are knowledgeable about the health risks associated with WPS, including cancers, cardiovascular diseases, respiratory diseases, and the spread of infections. Medical students have significantly higher knowledge of these diseases compared to nonmedical students. This finding is consistent with previous studies conducted among medical students in Lebanon and Saudi Arabia, which

also highlighted their awareness of the harmful effects of WP smoking (Al-Sawalha, Almomani, Al-Shatnawi & Almomani, 2021; Bahri et al., 2018). Students in health schools know about tobacco consumption and its effects, which could enhance their awareness of the harms of WPS (Bahri et al., 2018). Additionally, most students are also aware of the negative consequences of WTS, such as decreased productivity, passive smoking, and neonatal harms, without significant differences. Recent research indicates that students around the world have a general ability to recognize the harmful consequences of WTS (Arshad et al., 2019; Jradi, Wewers, Pirie, Binkley, & Ferketich, 2013).

The present study revealed a lack of basic knowledge on the content of WPS. Specifically, 51% of university students were unaware that WP smoking delivers more nicotine to the body compared to cigarettes. Alternatively, some participants believed that WP tobacco does not contain higher levels of nicotine than cigarettes. These findings align with a previous study (Zieliska-Danch, 2019) that also identified a similar lack of awareness among youth. Interestingly, these results are consistent with those of another study conducted among university students in five countries in the Eastern Mediterranean Region, less than a quarter of the students (26%) correctly perceived that pipe tobacco had higher nicotine content, while 42% believed that cigarettes contained more nicotine (Abu-Rmeileh et al., 2018). This highlights the need for greater awareness among youth.

In the present study, it was found that most of the students considered WPS to be less addictive than cigarettes. Similarly, in a study conducted with university students in five countries in the eastern Mediterranean region, only 11% of all students believed that WTS is more addictive, while 64% thought that cigarettes were more addictive. In particular, 72% of Jordanian and Palestinian students considered smoking to be more addictive than WP smoking (Abu-Rmeileh et al., 2018). Cultural, social, marketing, and advertising strategies are potential reasons for this perception, which can significantly impact public health. This study provides evidence on the perception of addiction among university students and the implications of these findings for public health interventions targeting PSW.

University students generally have limited knowledge about the impact of WPS on sperm characteristics, consistent with the results found in the earlier study (Jradi, Wewers, Pirie, Binkley & Ferketich, 2013). However, medical students have more knowledge than non-medical students. This is due to the awareness and educational subjects related to health during the study process at the university and having information available on various substances and habits among medical ones. This highlights the need for more comprehensive education and awareness campaigns to inform students

and the general public about the negative effects of WPS on fertility and other health aspects.

The current study demonstrated that most students found WPS more socially acceptable than cigarettes. This finding aligns with previous research conducted among university students, which has highlighted the social acceptability and easy accessibility of WPS (Othman, Kasem, & Salih, 2017; Akl et al., 2011). The popularity of WPS among people of all ages, men and female, in Iraq, as well as its availability in most restaurants, may contribute to its general acceptability. It is important to note that the lack of strict tobacco control policies targeting WP use and its social acceptability can contribute to its high prevalence (Ghafouri et al., 2011).

Most of the students, medical and nonmedical, without significant differences between them, considered that WPS is not less harmful to health than cigarettes. Research conducted in Karachi has found that medical and non-medical university students have similar perceptions of the risks associated with smoking (Jawad et al., 2013). Studies among university students consistently found that most of the students perceive WPS as not less harmful than cigarettes (Shalaby & Soliman, 2019) and even more harmful to health than smoking (Othman, Kasem & Salih, 2017). This is in contrast to earlier studies (Maziak, 2013), which showed that university students believed that WPS was less harmful to health than cigarette smoking, particularly among women (Labib et al., 2007).

There is a misconception that hookah smoking is less harmful than cigarette smoking, possibly due to the belief that the use of water in the hookah apparatus filters out toxic substances from the smoke (Kandela, 2000). Hookah smoke contains higher levels of metals such as arsenic, lead, and nickel, as well as significantly more tar, carbon monoxide, and nicotine compared to a single cigarette (Knishkowsky & Amitai, 2005). Despite this, the majority of the respondents in the present study were aware of the myths surrounding shisha smoking.

The increase in WP consumption is influenced by various factors. Most of the students reported that the reason for using WPS was to relax and cope with stress. Consistent with these findings, previous studies among university students showed that a social behavior factor such as socialization, relaxation, pleasure, and entertainment are associated with the use of WPS (Harakeh & Vollebergh, 2012; Akl et al., 2013).

The study reveals that most smokers smoke WP weekly, and non-medical college students being more likely to smoke WP on a monthly basis and use it more frequently than medical students. An earlier study reported nearly similar results among university students: in the Kurdistan Region of Iraq, nearly 22% of them reported using WP daily (Othman, Kasem, & Salih, 2017), among UK universities, 26% and 52% of students reported using WP

at least once a week (Jawad et al., 2013), and in the US, 42% of them were using WPS monthly or more frequently (Braun, Glassman, Wohlwend, Whewell & Reindl, 2012). In Jordan, 44.1% of medical students smoke hookah, 25% use it daily or weekly. In Qatar, most medical students smoke hookah on a monthly basis, 25% using it weekly (Jaam et al., 2016). Iranian medical students also reported high rates of hookah smoking, with approximately 60.7% engaging in this behavior on a monthly basis (Sabahy, Divsalar, Bahreinifar, Marzban & Nakhaee, 2011). These findings highlight the concerning prevalence of WPS among medical students, indicating that a significant portion of university students who have tried it continue to engage in this behavior regularly.

Smoking among university students is influenced by various factors, including location. According to a study, location is a significant factor in its practice. Most of the university students reported that cafés and restaurants are the main places to eat at WPS. University students in various regions, including the Kurdistan region (52%) (Othman, Kasem & Salih, 2017), Iran (65.7%) (Miri-Moghaddam, Shahrakipour, Nasserri & Miri-Moghaddam, 2019), and Qatar (75.2%) (Jaam et al., 2016), reported that cafes and restaurants are the main places for WPS. Friendship and peer influence also play an important role in WPS practice; previous results showed that people who engage in WPS tend to smoke with their friends (Jaam et al., 2016; Ghafouri et al., 2011). In Beirut, peer encouragement was found to be the primary factor influencing the current WPS (Afifi, Yeretizian, Rouhana, Nehlawi & Mack, 2010). Furthermore, people who smoke hookah are more likely to have friends who also smoke hookah (Maziak, 2013; Mohammed, Zhang, Newman & Shell, 2010). On the contrary, having friends with negative attitudes toward smoking has been associated with lower rates of WPS (Salameh et al., 2014). In general, the location and influence of friends and peers significantly influence the practice of WPS among university students.

Most of the university students reported their intention to quit smoking. According to previous studies among university students in the Kurdistan region, 52% have expressed their intention to quit smoking, but only 49% have tried in the past (Othman, Kasem, & Salih, 2017). In the KSA Faculty of medicine, 67.5% of smokers expressed their desire to quit, but only 75% had made serious attempts (Shalaby & Soliman, 2019). This suggests that while a significant proportion of university students express their intention to quit smoking, there may be barriers or challenges that create a gap between the intentions to quit and the actual quitting behavior. Health concerns were identified as the most motivating reason for attempting to quit smoking among university students (Asfar, Ward, Eissenberg & Maziak, 2005).

Conclusions

Medical students have a significantly higher level of knowledge on various aspects related to WPS compared to non-medical students. Various factors are attributed to the practice of WPS, such as cafes or restaurants and the influence of friends. Non-medical students also exhibit higher rates of weekly base use of WPS compared to non-medical students. Most students, regardless of their medical background, perceive WPS as more socially acceptable than smoking. They believe that smoking WP induces a sense of relaxation and view it as an effective strategy to cope with stress. However, there are no significant differences in attitudes towards WPS between medical and nonmedical students.

DECLARATION SECTION

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Ethical Considerations

Research has received approval from the scientific committee of the Duhok University School of Nursing, as well as ethical approval from the research ethics committee in the Directorate of Health in Duhok City with a reference number (31052023-4-1). Additionally, agreements have been established with the university and colleges involved in the study and informed consent has been obtained from all participants. The confidentiality of the collected data has been maintained.

Conflict of interest

None to be declared.

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Data availability:

Data are available by contacting the corresponding author by email.

Authors' contribution

All authors have read and approved the manuscript.

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