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Knowledge, Attitudes and Practices of Waterpipe Smokers in Sulaimani City/ Kurdistan Region of Iraq

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Abstract: ***Waterpipe smoking is a global phenomenon, particularly among youths and young adults. This practice is rising in the Middle East countries. Waterpipe comprises many chemical toxins as cigarette smoke. Waterpipe smoking can cause several health problems. A descriptive case-series study was performed from 10th of October 2017 to 20th of December 2017 in eight waterpipe cafeterias in Sulaimani city. The current study involved 230 waterpipe smokers. A structured questionnaire was used to collect data. P-value ≤0.05 was used to show a level of significance. The age range of the waterpipe smokers was 16-39 years with the mean age was 24.63 years. The age distribution was a sharp peak in the age group of 21 to 25 years, over two fifths (40.9%) of the study subjects lay in this age group. The waterpipe smoking was higher in the individuals with high education level (52.2%). Regarding the participants' occupations, the frequency of the waterpipe smoking was higher among self-employment. Over two-thirds of participants (68.7%) were unmarried. The main motives for waterpipe smoking were life pressures, pleasurable experience, and habit (31%, 27%, and 25% respectively). The majority of participants had a good knowledge about the negative health effects of waterpipe smoking. Approximately half of the participants (48.3%) possessed waterpipe at home, over two thirds (68.3%) of subjects preferred smoking waterpipe with their friends, half of the respondents (50.0%) preferred smoking waterpipe at the cafeteria. Likewise, over half of participants (51.3%) smoked waterpipe every day. The main reason for the intention to quit waterpipe was a health concern.***

Keywords: Waterpipe Smokers, Knowledge, Attitudes, Practices, Motives, Sulaimani.

1. INTRODUCTION

A waterpipe smoking is a universal phenomenon, especially in adolescents and young adults [1]. The prevalence of water pipe smoking in the Middle East area and worldwide is escalating [2]. Universally there are an estimated 100 million daily waterpipe smokers [3].

Tobacco smoking is one of the leading causes of death globally. In its traditional form, it was consumed mostly by old people in the rural areas of Mediterranean and South Asian countries. In spite of this, in the past 30 years or so, there has been a remarkable increase in its use in the urban individuals, mainly in adolescents and young adults. This tendency is worrisome for various reasons; namely, unlike cigarette smoking, there are insufficient legislation and regulation in place concerning the advertising, sale, and smoking of waterpipe. Secondly, the perception of the waterpipe smoking is less harmful and danger compared to a cigarette, united with the flavours in which waterpipe is obtainable; make it socially more acceptable than cigarettes. It is not surprising that waterpipe bars have increased exponentially in urban areas [4].

The burning temperature of tobacco for a waterpipe use is around 900°C, compared to 450°C for a cigarette, which could produce varied types and levels of harmful tar and other chemical agents. Waterpipe smoke also contains remarkable concentrations of nicotine, and heavy metals. Emerging literature recommends that smoke from waterpipe contains numerous toxins as cigarette smoke, including volatile aldehydes, carbon monoxide, nicotine and carcinogenic polycyclic aromatic hydrocarbons. Furthermore, the blood nicotine levels are reached on a single waterpipe use while it takes 10 cigarettes to reach the similar level if only cigarettes are smoked [5].

Waterpipe smokers are at risk for the same types of diseases as are caused by smoking cigarette, including coronary heart disease, several types of cancers such as cancers of the mouth, lung, oesophagus and stomach. In addition decreased lung function, and reduced fertility. Sharing a waterpipe may increase the risk of transmission of infectious diseases such as tuberculosis, herpes, viral hepatitis, and other infections [6]. One reason for the

popularity of waterpipe smoking, even among people that do not smoke tobacco, maybe the absence of knowledge of toxicant effects related to this practice [7].
This study was carried out to investigate socio-demographic, knowledge, attitudes and practices background of the waterpipe smokers as well as to identify the motives for waterpipe smoking in Sulaimani city.
The study will support health professionals in planning to control and prevention of waterpipe smoking in Sulaimani city and will aid researchers for suggesting hypotheses for future waterpipe studies.

2. MATERIALS AND METHODS

Subjects and study design
A descriptive case-series study was performed from 10th of October 2017 to 20th of December 2017 in eight waterpipe cafeterias in Sulaimani city which were highly visited by waterpipe smokers. Convenience sampling method was used for the selection of the cases. The current study involved 230 waterpipe smokers.

The size of the study sample was determined by depending on the obtainable time for conducting the study and number of subjects who visited the settings of the study. Adolescent and young adult waterpipe smokers were included in this study. The response rate was high (97%). A constant effort was made to clarify the significance of the study and its benefits to the participants and community. A structured questionnaire was used to collect data which was comprised of socio-demographic, knowledge, attitudes, practices, and motives for using waterpipe variables.

Statistical analysis
Data were analysed by using Statistical Package for the Social Science (SPSS version 22, IBM Statistics.inc) with consideration procedures to ensure high quality of data and minimizing error. These included testing questionnaires, data entry, consistency checked all data collection and entry. The Chi-square ($\chi 2$) test was used for comparisons among subgroups. P-value ≤ 0.05 was used to show a level of significance. Quantitative and qualitative variables were respectively expressed as mean± 95% confidence intervals (CI) and percentage. Texts, Figures, and Tables were used for reporting the results.

Ethical considerations
Ethical approval was obtained from both of Sulaimani Technical Institute and the Directorate of Prevention Health in Sulaimani city for performing this study. The individuals were recruited for this study informed in detail about the objective of the study and they were free to take part in the study also participation was voluntary. A verbal consent was taken from the respondents. The confidentiality of the collected information was guaranteed.

3. RESULTS

Socio-demographic characteristics of participants
Out of 230 participants, the vast majority of subjects (99.1%) were males and only 0.9% was females. The age range of the waterpipe smokers was 16-39 years with the mean age was 24.63 (95%CI 23.94-25.32) years. The age distribution was the sharp peak in the age group of 21 to 25 years, over two-fifths (40.9%) of the study subjects lay in this age group. In relation to the participants' educational levels, the waterpipe smoking was higher in the subjects with high education level (52.2%) as compared with the other educational levels (Table 1).

Table1: Socio-demographic characteristics of participants

Characteristics	Number	(%)
Gender		
Male	228	(99.1)
Female	2	(0.9)
Age group (Year)		
16-20	53	(23)
21-25	94	(40.9)
26-30	55	(23.9)
31-35	20	(8.7)
≥ 36	8	(3.5)
Education		
Illiterate	12	(5.2)
Primary	11	(4.8)
Secondary	87	(37.8)
High education	120	(52.2)
Occupation		
Student	79	(34.4)
Government employed	38	(16.5)
Self-employment	95	(41.3)
Unemployed	18	(7.8)
Family size		
< 4	64	(27.8)
≥ 4	166	(72.2)
Marital status		
Married	67	(29.1)
Unmarried	158	(68.7)
Separated	5	(2.2)
Residence		
Urban	221	(96.1)
Suburban	6	(2.6)
Rural	3	(1.3)

Regarding the participants' occupations, the frequency of the waterpipe smoking was higher among self-employment followed by student, and government employed (41.3%, 34.4%, and 16.5% respectively). Around three-quarters of the waterpipe smokers (72.2%) lived within a family with ≥ 4 members. Over two-thirds of participants (68.7%) were unmarried. There was a predominant urban distribution of respondents as compared to suburban, and rural (96.1%, 2.6%, and 1.3% respectively) (Table 1).

Motives for waterpipe smoking

The figure illustrates motives for waterpipe smoking among participants in this study; the main motives were life pressures, pleasurable experience, and habit (31%, 27%, and 25% respectively).

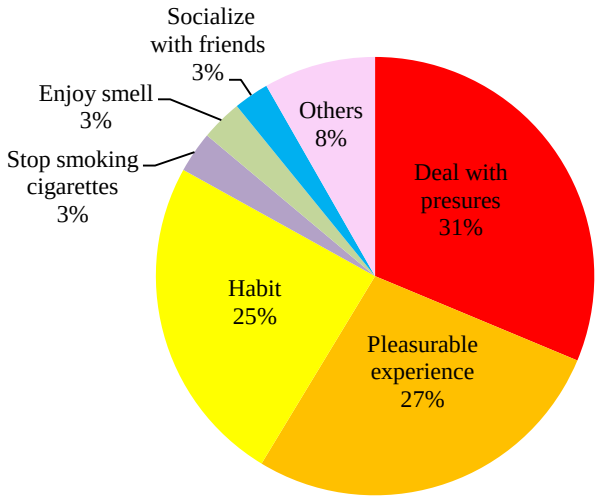

Figure 1: Relative frequencies of motives for waterpipe smoking

Health knowledge about waterpipe smoking

The result demonstrated that frequency of health knowledge of respondents about negative effects of waterpipe smoking to the human health was slightly higher among waterpipe smokers who started smoking waterpipe at age <18 compared to those started it at age ≥18, but there was no statistically significant association was shown (P>0.05). Overall, the participants were aware about health effects of waterpipe on human health. Only 33.5% of the respondents believed that waterpipe smoking was more addictive than cigarette smoking (Table2).

Practice toward waterpipe smoking

More than two-fifths of participants (43.5%) were reported to have started the waterpipe smoking before the ages of 18 years. The result reported, roughly half of participants (48.3%) possessed waterpipe at home. However, the frequency of possession of the waterpipe at home was slightly higher in the subjects who started waterpipe smoking at age <18 than those started waterpipe smoking at age ≥18, but this association was not statistically significant (P=0.207). Over two-thirds (68.3%) of subjects preferred smoking waterpipe with their friends and half of the respondents (50.0%) preferred smoking waterpipe at the cafeteria. Likewise, over half of the participants (51.3%) smoked waterpipe every day. The result revealed that 27.4% of the respondents were cigarette smokers, this practice was higher in subjects with age <18 at starting waterpipe smoking than respondents with age ≥18 at starting waterpipe smoking (35% and 21.5% respectively), this association was statistically significant (P=0.02) (Table3).

Attitude toward waterpipe smoking

The result indicated that Intended to quit waterpipe smoking was higher in participants who started waterpipe smoking at age ≥18 than those who started it at age <18 (53.8% and 28.0% respectively) this association was highly significant (P< 0.001). The study showed that the reasons of intention to quit waterpipe were health, economic, and social concerns (67.4%, 20.4%, and 12.2% respectively); there was not any statistically significant association between reasons of intention to quit waterpipe smoking and subjects' age at starting waterpipe smoking (P=364) (Table4).

4. DISCUSSION

This study is based on convenience sampling method among teenagers and young adults in Sulaimani city-Kurdistan region/ Iraq. Out of 230 waterpipe smokers, 228 (99.1%) were males and only 2 (0.9%) were females. Similarly, a study was conducted in Malaysia demonstrated that only 16% of waterpipe smokers were females[8]. Our finding might be due to the fact that our study was conducted at cafeterias and smoking waterpipe by females is unacceptable in our community especially in public places. Results suggested that majority of waterpipe users were started waterpipe smoking at age of ≥ 18 years. The most significant age group of waterpipe smokers observed in the current study was 21 to 25 years, 40.1% of the participants lay in this age group. Likewise, a study in Malaysia reported that two-fifths of waterpipe smokers belonged to the age group (22 to 24) [8].

Distribution of the waterpipe smoking in relation to participants' education, secondary and high educated individuals came in higher percentage in comparing with other educational levels. The students in high school need more health education program, as a study was carried out in Iran, indicated that 48% of students, who used drugs, started it for the first time when they were 18 years old or younger [9]. Regarding marital status, more than two thirds of subjects were unmarried. Similarly, another study was carried out in Malaysia reported that majority of waterpipe smokers were single [8].Our finding could be due to the fact that single individuals having more free times for leisure activities. Besides, they have less responsibility.

Table 2: Health knowledge about waterpipe smoking (Number = 230)

Knowledge	Number	%	Age at starting waterpipe smoking		P value (χ2-test)
			< 18	≥ 18	
			Number (%)	Number (%)	
Harmful to the health					
Yes	165	71.7	72 (72.0)	93 (71.5)	
No	51	22.2	21 (21.0)	30 (23.1)	0.838
Don't know	14	6.1	7 (7.0)	7 (5.4)	
Increases risk of cancers					
Yes	142	61.8	62 (62.0)	80 (61.5)	
No	47	20.4	18 (18.0)	29 (22.3)	0.611
Don't know	41	17.8	20 (20.0)	21 (16.2)	
Increases risk of respiratory diseases					
Yes	168	73.0	74 (74.0)	94 (72.3)	
No	39	17.0	15 (15.0)	24 (18.5)	0.741
Don't know	23	10.0	11 (11.0)	12 (9.2)	
Increases risk of cardiovascular hazards					
Yes	156	67.8	69 (69.0)	87 (66.9)	
No	39	17.0	16 (16.0)	23 (17.7)	0.934
Don't know	35	15.2	15 (15.0)	20 (15.4)	
Spreads infections by sharing waterpipe					
Yes	137	59.6	61 (61.0)	76 (58.5)	
No	61	26.5	26 (26.0)	35 (26.9)	0.912
Don't know	32	13.9	13 (13.0)	19 (14.6)	
May harm unborn babies and passive smoker					
Yes	142	61.7	60 (60.0)	82 (63.1)	
No	40	17.4	17 (17.0)	23 (17.7)	0.784
Don't know	48	20.9	23 (23.0)	25 (19.2)	
Has health risks as cigarettes smoking					
Yes	127	55.2	54 (54.0)	73 (56.2)	
No	69	30.0	31 (31.0)	38 (29.2)	0.945
Don't know	34	14.8	15 (15.0)	19 (14.6)	
Contains more nicotine than cigarette					
Yes	121	52.6	57 (57.0)	64 (49.2)	
No	62	27.0	22 (22.0)	40 (30.8)	0.318
Don't know	47	20.4	21 (21.0)	26 (20.0)	
More addictive than cigarette					
Yes	77	33.5	38 (38.0)	39 (30.0)	
No	124	53.9	51 (51.0)	73 (56.2)	0.423
Don't know	29	12.6	11 (11.0)	18 (13.8)	

Table 3: Practice toward waterpipe smoking (Number = 230)

Practices	Number	%	Age at starting waterpipe smoking		P- Value (χ2-test)
			< 18	≥ 18	
			Number (%)	Number (%)	
Possession of waterpipe at home					
Yes	111	48.3	53 (53.0)	58 (44.6)	0.207
No	119	51.7	47 (47.0)	72 (55.4)	
With whom smoke waterpipe					
Family individuals	8	3.5	2 (2.0)	6 (4.6)	0.003
Friends	157	68.3	62 (62.0)	95 (73.1)	
Anyone	49	21.3	32(32.0)	17(13.1)	
Alone	16	6.9	4 (4.0)	12 (9.2)	
Place of smoking waterpipe					
At a cafeteria	115	50.0	36 (36.0)	79 (60.8)	0.003
At home	15	6.5	7 (7.0)	8 (6.2)	
Anywhere	100	43.5	57 (57.0)	43 (33.1)	
Frequency of smoking waterpipe					
Once a month	19	8.2	9 (9.0)	10 (7.7)	0.003
Once a week	47	20.5	13 (13.0)	34 (26.2)	
2-5 times per week	46	20.0	14 (14.0)	32 (24.6)	
Daily	118	51.3	64 (64.0)	54 (41.5)	
Cigarette smoker					
Yes	63	27.4	35 (35.0)	28 (21.5)	0.02
No	167	72.6	65 (65.0)	102 (78.5)	

Table 4: Attitude toward waterpipe smoking (Number = 230)

Attitudes	Number	%	Age at starting waterpipe smoking		P- Value (χ2-test)
			< 18	≥ 18	
			Number (%)	Number (%)	
Intend to quit waterpipe smoking					
Yes	98	42.6	28 (28.0)	70 (53.8)	< 0.001
No	132	57.4	72 (72.0)	60 (46.2)	
Reasons					
Health concern	66	67.4	16 (57.1)	50 (71.4)	0.364
Economic concern	20	20.4	7 (25.0)	13 (18.6)	
Social concern	12	12.2	5 (17.9)	7 (10.0)	

According to the study results, several factors deal with increasing waterpipe smoking. The researchers classified them into internal and external factors. The most waterpipe smoking perceived in this study were; 31% of the participants smoked the waterpipe to deal with pressures, 27% related to pleasurable experiences of waterpipe smoking and 25% of them smoked it as a habit. This finding is consistent with a finding of a study was conducted in India that indicated 27.3% of participants had a pleasurable experience as a reason for waterpipe smoking. Furthermore, a study was performed in Saudi Arabia to determine the characteristics, reasons behaviour and knowledge towards waterpipe smoking indicated that several reasons cited for waterpipe smoking; pleasure and happiness (76%), handling with pressure (78%), and acceptance by society (91%) [10]. While another study was conducted in the USA, indicated the influence of friends, family fashion, and loneliness were the additional motives to waterpipe smoking [11].

Regarding respondents' knowledge, totally they were aware of the risks and harmful effects of waterpipe smoking. Our result is consistent with the finding of a study was conducted among adults in Jordan [12]. In contrast, a study was carried out in the United States reported that individuals were mainly unaware of the toxicant effects associated with waterpipe smoking [7].

Only one-third of the participants (33.5%) believed that waterpipe smoking was more addictive than cigarette smoking; our finding is in agreement with the finding of the study was performed in Chicago [3]. Moreover, a systematic review study demonstrated that the majority of people anticipated waterpipe tobacco smoking was less addictive than cigarette smoking [13].

In the present study, approximately half of the participants (48.3%) owned waterpipe instrument at home; this might encourage them to smoke waterpipe in anytime and more frequently.

In this study sample, 68.3% of the respondents preferred smoking waterpipe with their friends. Similarly, two other studies indicated that the majority of waterpipe smokers preferred smoking waterpipe with their friends [14, 15].

Our results showed that 60.8% of those who started waterpipe smoking at age ≥ 18 years and only 36% of those who started waterpipe smoking at age <18 years preferred to practice waterpipe smoking at restaurant café, these results are in agreement with the findings of a study was conducted in Saudi Arabia [16]. This is might be due to some waterpipe cafeterias do not allow those less than 18 years of old to smoke waterpipe.

Regarding the frequency of water pipe smoking more than half of the study participants (51.3%) practiced waterpipe smoking daily. According to the researchers, around 100 million people smoke waterpipe every day [17, 18]. On the contrary, two studies were performed in the south-eastern United States and Pune (India) revealed that daily waterpipe smoking was practice in a low percentage [14, 19].

In current study, the majority of the study participants (72.6%) were a non-cigarette smoker. Likewise, a study was undertaken in San Diego indicated that the bulk of waterpipe smokers were a non-cigarette smoker [20]. The outcome of waterpipe use in non-smokers is especially worrisome because it moves them into tobacco use when the remained tobacco naive behind them. This result is consistent with a study was conducted among youths in Lebanon [21], while it is inconsistent with another study was carried out in Kuwait [22]. Among countries with low and middle revenue, where the waterpipe smoking is more popular, the relationship between cigarette smoking and waterpipe smoking is unnoticeable [23].

There is a worldwide increasing of waterpipe smoking in the recent years also it continues in rising [2], there is little known about the user's cessation-related attitudes. To the best of our knowledge, this is the first study was conducted in Sulaimani city to address the quitting of waterpipe smoking related attitude. Behavioural change specified according to stage-based models to influence the cessation of waterpipe smoking, like trans-theoretical model-based alcohol, tobacco, and other drug intervention [24] and ecological model intervention [25].

The addictive behavioural modification can be improved through five stages; pre-contemplation stage with no intent to quit, contemplation stage with starting an intention to quit, preparation for the behavioural modification, action and change, and finally maintaining the change [26].

In the present study, the intention to quit waterpipe smoking in the study sample was significantly higher with increasing age, in which the participants started waterpipe smoking at age ≥18 years old more likely intend to quitting compared to individuals started waterpipe smoking at age <18 years old. The result of our study is consistent with the result of survey was conducted among Arab Americans in Houston, Texas, USA [27]. In contrast, two previous studies were performed on waterpipe smokers indicated that no significant association between age and intention of quitting waterpipe smoking [28, 29].

Overall, 57.4% of the waterpipe users were not intended to quit waterpipe smoking. While 42.6% of the participants intended to cease it. Three reasons for interesting to quit it were explained; the first one was the health concern, the second was the economic concern and the last one was the social concern. Interestingly, in the majority of them (67.4%), the health concern was the great reason for interesting to quit waterpipe smoking. This result is in agreement with the study was carried out in Syria in 2005 [30]. Furthermore, another study was conducted among Jordanian adolescents revealed the same result [15].

The most common waterpipe smoking quitting motivation is due to health risk concern and the health warning on tobacco packages are within the most notable interference to transfer the smoking health risks [31, 32]. Our finding might be due to some of the cafeterias hanged leaflets about the negative health effects of waterpipe on human health.

Strengths and Limitations

Despite evidence that the present study permits good evaluation of knowledge, practice, and attitude of

waterpipe smokers, in addition, the current study provides the basis for performing further studies on waterpipe smoking in the future, the limitation of this study should be noted. The convenience sampling is an important limitation of our study. However, high number of people participated in the current study, it included only two females, so it could be required a larger sample size. Due to, we selected merely waterpipe smokers we could not find the prevalence of waterpipe users.

5. CONCLUSION

In our study sample, dealing with pressures, pleasurable experience and habit were the most motives for waterpipe smoking. There was no significant difference between participants whose started waterpipe smoking at age < 18 and those started waterpipe smoking at age ≥ 18 in their knowledge related to waterpipe smoking. Overall, they were aware of waterpipe risks and harmful effects on human health. While only one-third of participants believed that waterpipe smoking is more addictive than cigarette smoking. More than half of the subjects practiced waterpipe smoking on a daily basis. Finally, about two-fifths of the respondents intended to quite waterpipe smoking and the main motive of intention to quit waterpipe smoking was related to the health concern.

6. RECOMMENDATION

Provide health education programs for waterpipe smokers to encourage them to stop smoking waterpipe, as well as increase public awareness about the negative health effects of waterpipe smoking via conferences, symposiums, seminars as well as social media.

Close or limit places of waterpipe smoking instead of opening new places for recreational activities to encourage adolescents and young adults spend their leisure times in these places.

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