ORIGINAL ARTICLE

PERCEPTIONS OF HEALTH PROFESSIONAL STUDENTS REGARDING WATERPIPE SMOKING AND ITS EFFECTS ON ORAL HEALTH

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Background: Globally approximately 100 million people are waterpipe smokers and this trend also prevails in Pakistan. It has detrimental effects on general health and oral health. The objective of the study was to determine the perception of health professional students regarding waterpipe smoking (WPS) and to assess their awareness about adverse effects of WPS on oral health. **Methods:** A self-administered questionnaire based cross-sectional study was conducted among health professional students in three medical and dental institutes of Karachi from December 2015 to February 2016. **Results:** Study sample comprised 342 students with mean age of 21.36±1.609 years. About 40% of participants ever had *shisha* and 10% were current smokers; 237 (69.3%) claimed that waterpipe smoking had detrimental effects on oral and general health. A proportion of 33.6% of the total respondents were unaware that waterpipe smoking was the reason for stained teeth, whereas 51.5% did not know that waterpipe smoking was related to dental caries, and 52% and 48% were unaware that waterpipe smoking was the reason for bad taste and halitosis respectively. Approximately 10% of the respondents did not know that waterpipe smoking was a risk factor for the development of oral diseases and oral cancer. **Conclusion:** There was a scarce knowledge about the hazardous effects of waterpipe smoking on general and especially on oral health. Health professionals need to be aware of hazardous effects of waterpipe smoking so they may play a role in reducing this habit in masses.

Keywords: Waterpipe smoking; Health professional students; Oral health

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INTRODUCTION

Waterpipe is available with different names such as *shisha, hukka, narghile, arguileh* and hubble-bubble but the basic working mechanism of usage is similar among all the appliances.[1] This apparatus usually consists of head, body, bowl and hose.[2,3] Waterpipe is basically an equipment in which tobacco is heated indirectly; the smoke produced is passed through a container of water and finally reach to mouthpiece through a pipe or hose.[1,4]

Waterpipe smoking is being practiced from centuries however it is more prevalent in Eastern Mediterranean region[4–6] and the use of tobacco through waterpipe is increasing across the world[4,7]. The waterpipe smoking was the third most common source of tobacco usage after cigarettes and cigar in USA.[8] The trend of cigarette smoking in the world is stable or declining but the usage of tobacco in alternative forms especially waterpipe smoking is prevailing.[1,9] The prevalence of daily waterpipe smoking is estimated to be 100 million globally[10–12] with increasing trend seen among the youth[10]. It has become common practice in Arab world, China, Turkey, Pakistan, India and Bangladesh.[2]

The increasing popularity of waterpipe smoking in the world is a frightening sign. A study conducted in six medical and dental colleges of Karachi specifies that 22.7% were active waterpipe smokers.[13,14] Another study regarding knowledge, attitude and practice of waterpipe smoking in Karachi reported that 53.6% of the university students had ever smoked waterpipe.[15]

The reasons for the popularity of waterpipe smoking among the youth[5,10,16,17] are presumably because of its use for entertainment purposes, relaxation, to fill free time and to socialize or experimenting something new[7]. Some other factors such as social and academic stress are also the reasons for the initiation of waterpipe smoking.[15]

There is a misconception that it is less harmful than other ways of tobacco smoking. Many such smokers also believe that it is safer because the smoke passes through water which may filter toxic substances before inhalation.[11] Previous literature about effects of WPS on health shows that it is associated with various deleterious effects on health and was found related with various diseases.[4,5] WPS is found to be associated with lung cancer, respiratory illness, low birth weight[5,17] and bronchogenic carcinomas. A study on association of oral health with WPS testified that it was related with numerous oral health ailments.[10] It also found that waterpipe smokers have periodontal diseases, poor gingival health and oral lesions that could proceed to oral cancer.[10]

The WPS is gaining popularity in Pakistan and posing a health threat.[14] To the best of our knowledge there are previously published literature investigating the knowledge, attitude and perception regarding WPS and its effects on general health[2,3,11,13,14,18] but only few studies had focused on the knowledge about its ill effects on oral health[10,19,20]. None of these have observed the perception of health care professional (HCPs) about WPS's health hazardous effects on oral health. This study is designed to state the perception of university going students concerning WPS and to assess their belief and awareness about ill effects of this habit on oral health.

The healthcare professionals (HCPs) are perfect to counsel and instruct patient about the hazardous effects of smoking. They are noticeable persons and they may inadvertently affect the smoking behaviour of others. The personal smoking behaviour and beliefs of HCPS are formed during the time period of their undergraduate education. The World Health Organization (WHO) promotes the role of HCPs in reducing the use of tobacco. Hence, health related institutes such as colleges and universities play a key role in developing the tobacco control measures. Therefore, investigating the perceptions of students who will be the future health care professionals about the hazardous effects of smoking especially WPS is important and it may persuade the future tobacco controlling programs.

To the best of our knowledge this study will be the first to address the adverse effects of WPS on oral health and perceptions of university students regarding deleterious of WPS on oral health that might help in better understanding and development of WPS banning campaigns.

MATERIAL AND METHODS

This cross-sectional study was conducted among health professional students from one medical and two dental colleges namely Dow International Medical College (DIMC), Dow International Dental College (DIDC) and Dr. Ishrat-ul-Ibad Khan Institute of Oral Health Science (DIKIOHS) respectively. The duration of the study was from December 2015 to February 2016.

The sample size for this study was 342. The sample size calculation was done by using PASS v11 Chi-Square Test, a sample size of 337 achieves 80% power to detect an effect size (W) of 0.18* using 3 degrees of freedom with a significance level (alpha) of 0.05.[13] Non-probability convenient sampling technique was used to approach the students from each institute. Informed consent was taken from each of the participant before their inclusion in the study.

A structured self-administered validated questionnaire was used to collect the information from health professional students from medical and dental colleges of Karachi, Pakistan. The Global Health Professional Students Survey (GHPSS) questionnaire was adapted and modified for waterpipe (*shisha*) smoking. The language used in the questionnaire was English. As English language is used in tertiary education in Pakistan, therefore, a linguistic validation of questionnaire was not considered necessary as the target population is eloquent in English.

The final questionnaire comprised four sections. The first section of the questionnaire was designed to record the socio-demographic characteristics such as age, gender, year of study, field of study, name of the college and monthly pock money of the participants. The second section consisted of questions regarding the perceptions of health professional students about the hazardous effects of toxic substances in waterpipe on general health (such as it can cause lung disease, lung cancer, serious illness and cardiovascular diseases) and oral health (such as it can cause gum or oral disease, oral cancer and staining of teeth). The viewpoint of the participants about various myths related to waterpipe (*shisha*) smoking was also gathered. The third section of the questionnaire was designed to document the practice of waterpipe smokers; it included the questions related to frequency, age of initiation, factors that lead to the initiation of waterpipe smoking. The questions related to the time duration of one session of waterpipe smoking and the place of smoking were included. After effects of waterpipe smoking such as what symptoms they observe after smoking and their relation to waterpipe smoking were also asked. Perceptions and behaviour of the participants related to the cigarette smoking were also gathered. The final section of the questionnaire was about the quit intentions. SPSS 16.0 was used to analyse data.

RESULTS

The sociodemographic characteristics of the participant are summarized in table-1. The mean age of the participants was 21.36±1.609 ranging from 18 to 24 years. The mean pocket money was 6809 Pakistani rupees. One hundred and thirty-eight students (138) had ever smoked *shisha*, out of them thirty-four (34) students were currently using it. Seventy-seven (52.7%) of the male and 61 (31.1%) of the female indicated that they had smoked *shisha*. About 33.3% of the participants mentioned that they started *shisha* smoking at the age of 18 years. Two hundred and thirty-seven participants (69.3%) stated that waterpipe smoking had detrimental effects on health. The perception and belief of health professional students regarding the effect of *shisha* smoking on oral and general health are shown in table-2. Of those who were current waterpipe smokers reported that about 25% were using waterpipe once per week. Forty-four students (59.5%) preferred restaurants

for *shisha* smoking. Majority of the participants reported that they were influenced by their friends to adapt this habit. Thirty-eight (64.4%) of the participants mentioned that they used to go with their friends for *shisha* smoking; only nine (13%) indicated that they also went alone.

Thirty two percent (32%) of the participants observed headache, dizziness, blurred vision, cough and palpitation after smoking WP. The most observed symptoms were headache followed by cough, palpitation, dizziness and blurred vision. Thirty-five (63.6%) of the participants who observed symptoms were able to relate these symptoms with *shisha* smoking.

Table-1: Demographic characteristics of the study participants

Gender	
Male	146 (42.7%)
Female	196 (57.3%)
Field of study	
BDS	168 (49.1%)
Name of the institute	
DIMC	174 (50.9%)
DIDC	91 (26%)
DIEKIOHS	79 (23.1%)
Year of study	
First professional	86 (25.1%)
Second professional	84 (24.6%)
Third professional	87 (25.4%)
Fourth professional	85 (24.9%)

Table-2: Perception and beliefs regarding the effect of *shisha* smoking on oral and general health

WPS causes;	**YES n (%)**	**NO n (%)**
Serious illness	335 (98)	7 (2)
Lung disease	324 (94.7)	18 (5.2%)
Lung cancer	320 (93.3)	22 (6.4)
Oral disease	311 (90.9)	31 (9.1)
Oral cancer	307 (87.9)	35 (10.3)
Stroke and blood clot in brain	223 (65.2)	119 (34.7)
Stained teeth	277 (64.6)	115 (33.6)
Dental caries	116 (48.5)	176 (51.5)
Bad taste in mouth	164 (48)	178 (52)
Halitosis	178 (52)	164 (48)
Effects wound healing	248 (72.5)	94 (27.5)
Second hand smoke cause serious illness	226 (66.1)	116 (33.9)

DISCUSSION

The health hazards of WPS were firstly established by Nafae *et al.* in 1973.[15] There is previous literature on knowledge and attitudes regarding the waterpipe smoking and its detrimental effects on general health but not many studies have focused WPS effects on oral health.[11,13–15,18] In this study with respect to perceptions of students regarding waterpipe smoking, its effects on oral health were also determined.

According to the results, approximately one third of the participants in the study initiated waterpipe smoking at the age of 18 year. A cross sectional survey in Jordan also reports the initiation age between 16–18 years.[19] Another study conducted in Pakistan reports that eighty-eight percent of participants started smoking waterpipe before 20 years of age.[13]

Eighty-three percent (83%) of the waterpipe smokers smoke waterpipe at the restaurants or *shisha* bar, without any significant difference between the field of the study or year of study. Same finding had been reported by Khan N *et.al* and Haroon M *et.al*.[13,18] In this study about fifty five percent (55%) of the student claimed that they were influenced by their friends for the initiation of waterpipe smoking. Similar finding had been reported by Al-Naggar *et.al* and Haroon M *et.al.*[12,18] All the above-mentioned results support the fact that the students of this age group initiate WPS for socialization rather than as a regular smoking habit. Mozaik *et.al* also mentioned that the pattern of this form of smoking is related to socialization.[21]

About twenty-five (25%) of the waterpipe smokers reported that they use to go once a week. These finding correlates with the finding of Dar-odeh *et.al* and Khan N *et.al*[13,22] while Obeidat *et.al* states the opposite finding, he found out that the majority of his waterpipe smokers were smoking twice per week[19]. In the study it was observed that a considerable percentage of waterpipe smokers (64%) share the waterpipe during the one smoking session which could be significant source of transferring the infection from one to another.[22] In this study, most of the participants (69.3%) admitted that waterpipe smoking is more harmful than cigarette smoking for oral health. These findings are in accordance with studies by Obeidat *et.al* and Haroon M *et.al*.[18,19] The opposite finding was observed in study by Dar-odeh *et.al* and Al-naggar *et.al*.[2,19] It was observed in this study that 40.4% of the students had ever smoked *shisha* and 10 % were currently consuming it. This is very alarming, that despite having the knowledge about the detrimental effects of WPS considerable numbers of our study contributors were still consuming it.

In the present study, majority of the students were familiar with the fact that WPS was one of the associated risk factor for serious illness, lung disease and lung cancer. Comparatively lesser magnitude of students knows that WPS is also related to oral problems such as staining of the teeth, dental caries, bad taste, and halitosis, impaired wound healing and oral cancer. One third of the respondents were unaware that WPS causes staining of teeth. Obeidat *et al* and Al Nomay *et al* reported the opposite finding and mentioned relatively higher percentage of awareness regarding these oral health problems.[19,20] In the current study, approximately 10% of the respondents were unmindful of the fact that WPS

caused oral diseases including oral cancer. And similar finding had been reported by Obeidat *et.al*.[19] These finding of the study could assist in providing the information to constitute an educational and public health related programs to contest fallacious perceptions of WPS damaging effects related to oral health.

CONCLUSION

High prevalence of WPS was observed in this study. There is less knowledge about the deleterious impact of WPS on oral health. Awareness campaigns regarding the hazards of WPS especially on oral health is the need of hour to educate health professionals so they may in return create awareness in public especially youth to initiate quit intentions.

AUTHORS' CONTRIBUTION

SS and AH; conceptualized the basic idea of the work. AH; supervised the project and drafting of manuscript. SS; data collection and drafting of manuscript. SM; helped in data collection. SS and MA; compilation of the results. TR; statistical analysis. ZC; permission sorted

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