

Unconventional materials and substances used in water pipe (narghile) by smokers in central western region, Saudi Arabia

Ashraf S. Baboor, BDS,
Ahmad A. Alnazzawi, MSc, PhD,
Osama A. Abu-Hammad, MSc, PhD,
Najla S. Dar-Odeh, BDS, FDS RCS.

ABSTRACT

Objectives: To investigate the use of unconventional substances and materials in water pipe among café water pipe smokers.

Methods: This was a questionnaire-based survey among subjects attending coffee shops in the region of Al Madinah, Saudi Arabia between February and March 2013.

Results: We invited 110 subjects, only 90 consented to participate in the study. A percentage of 1.1% used fluids other than water in the water pipe tank, 18.9% added other soft drinks to the tank, and 7.8% added flowers, spices or drugs to the tobacco mix placed in the head of the water pipe. A proportion of participants used fruits to replace the water pipe head (12.2%), or to replace water pipe tank (4.4%). Higher number of children the smokers had and café smoking were all significantly associated with unconventional practices.

Conclusion: A substantial percentage of sample of water pipe smokers in Al Madinah, Saudi Arabia use unusual materials and/or substances in the water pipe and this is probably encouraged by café smoking.

Water pipe smoking is now considered an epidemic that is affecting all continents.¹⁻⁷ Recent reports have indicated a high prevalence of water pipe smoking among Saudi adolescents,⁸ and university students.⁹ Besides the documented health hazards of conventional water pipe smoking,¹⁰ reports have emerged to indicate that there are other unconventional methods of water pipe smoking. These methods may employ certain materials other than Muassel, the conventional mix, such as cannabis,¹¹ psychoactive drug,¹² marijuana or hashish.³ A recent study conducted in neighboring Jordan found that approximately 6% of a sample of water pipe smokers mix alcohol with the tank water, and approximately 2% mix other substances with Muassel such as cannabis, antihistamine drugs, and paracetamol.⁷ Former studies have found an association

between water pipe smoking and an increased risk of being involved in road accidents, and this was attributed to the use of cannabis in water pipe.¹³ Other aspects of water pipe smoking that have received little or no attention is the unconventional use of fruits to replace certain components of the water pipe instrument itself like the head or water tank. This practice increases the appeal of the habit particularly among females,¹⁴ but may pose certain health hazards that are yet to be investigated. The aim of this study was to investigate the prevalence and pattern of unconventional materials and substances incorporated in water pipe in a sample of water pipe smokers in AlMadinah AlMonawara, Saudi Arabia.

Methods. The study was based on a cross sectional survey whereby a questionnaire was designed to explore the pattern of unconventional practices in the water pipe set. The questionnaire included personal questions, questions on smoking history including unconventional practices, and finally questions on health perceptions and awareness. Before distributing the questionnaire, it was validated for clarity and it was further tested for reliability. Subjects included in this study were regular male patrons at coffee shops that serve water pipe in Almadinah Almonawara, Saudi Arabia. To make sure that only participants who fit these inclusion criteria are included in this study, we conveniently recruited participants during their smoking sessions at the coffee shops. Recruitment and data collection took place during February and March 2013. We explained to the participants the nature of the study and after their acceptance (informed consent form) to participate in the study, they completed the questionnaires privately.

The study was approved by the ethical committee of the College of Dentistry, Taibah University.

Statistical analysis. Statistical analysis was performed using the Statistical Package for Social Sciences for Windows version 17.0 (SPSS Inc., Chicago, IL, USA). Frequency distribution were obtained and chi-square test was used to assess the statistical differences between frequencies. Statistical significance was set at a *p*-value of 0.05, with a confidence interval of 95%.

Results. One hundred and ten subjects were invited to participate in this study. Only 90 subjects agreed to participate giving a response rate of 81%. The subjects were all males and had an age range of 19-52 years (mean=31.4, median=31, SD=8.54). Personal and social characteristics of the study sample are shown in Table 1. Although all subjects were water pipe smokers, 98% of them responded that they are smokers when

asked if they believe that they were smokers. Table 2 shows characteristics of water pipe smoking in our sample.

In total, 23.3% of the study group used unusual methods and/or materials in water pipe; 12.2% used fruits as the water pipe head (pineapple, apples, pears, orange), while 4.4% used fruits to replace water pipe tank (watermelon, cantaloupe). Only 1.1% used fluids other than water in the water pipe tank (blueberry juice), 38.9% of the subjects added ice to water pipe tank, 18.9% added soft drinks to the tank (rose water, mint, lemon, orange juice, apple juice and fizzy drinks), and 7.8% added flowers, spices or drugs to Jarak, the type of tobacco mix placed in the head of the water pipe in the region of Saudi Arabia, (roses, banana peels, euphoric substances, cardamoms, carnations, paracetamol). When the number of participants who practice unconventional water pipe smoking was cross-tabulated with social characteristics, only the higher number of children that married people have, and the occupation of employee were significantly associated with unconventional practices with *P* values of *p*=0.005 and *p*=0.013. Also, when number of participants who practice unconventional water pipe smoking was cross-tabulated with characteristics of water pipe smoking, the only significant association was with coffee shops as the place of smoking (*p*=0.017). Health awareness perceptions were as follows: 42% used disposable tips

Table 1 - Social characteristics of participants, and the number of participants from each category that do unconventional practices. P value resulting from cross tabulation between social characteristics and unconventional practices is displayed.

Characteristics	n (%)	Participants with unconventional practices n	Cross tabulation with unconventional smoking methods (P-value)
Marital status			0.215
Single	50 (55.6)	10	
Married	40 (44.4)	11	
Number of children for married subjects (n=40)		11 have children	0.005
No children	5 (12.5)	0	
1 child	11 (27.5)	1	
2 children	13 (32.5)	3	
3 children	6 (15.0)	4	
4 children	4 (10.0)	2	
5 children	1 (2.5)	1	
Occupation			0.013
Employed	48 (55.5)	13	
Student	38 (41.1)	5	
Retired	4 (4.4)	3	

when smoking the water pipe outside their homes, 100% believed water pipe was harmful, 95% wished to quit water pipe smoking, and 23.3% tried to quit. Also, 1.1% of the subjects visit the physician routinely while 4.4% visit the dentist routinely. Cross-tabulation in association with unconventional practices did not show a significant association with the desire to quit water pipe (*p*=0.231), routine visits to the dentist (*p*=0.569), and oral hygiene practice (*p*=0.363). Table 3 shows perceived health hazards of water pipe and reason for difficulty to quit the habit.

Discussion. This study was a survey similar to a previous study.⁷ Although both Jordan and Saudi Arabia are predominated by the Arab Muslim culture,

Table 2 - Characteristics of water pipe smoking in our sample. P value in association with unconventional practices is shown. Introducer is the person(s) introducing the smoker to water pipe smoking. Companion is the person(s) with whom water pipe smoking session is spent.

Characteristics	n (%)	Participants with Unconventional practices n	Cross tabulation with unconventional practices (P-value)
Frequency per week			0.132
1-3 times	24 (26.7)	6	
4-7 times	55 (61.1)	10	
14-21 times	11 (12.2)	5	
Age of onset (years)			0.143
16-18	8 (8.8)	3	
19-26	82 (91.2)	18	
Introducer			0.742
Alone	11 (12.2)	3	
Friends	79 (87.8)	18	
Companion			0.064
Alone	17 (18.9)	7	
Friends	73 (81.1)	14	
Favorable place for smoking			0.017
Coffee shop	79 (87.8)	16	
Home	11 (12.2)	5	

Table 3 - Perceived health hazards of water pipe smoking and reasons for difficulty in quitting the habit.

Perceived health hazards of water pipe smoking	n (%)
Chest problems	75 (83.3)
Cancer	32 (35.5)
General health problems	5 (5.6)
Reasons for not being able to quit	
It became a habit	32 (35.6)
To lift the mood	32 (35.6)
To break the routine	18 (20.0)
To spend time with friends	4 (4.4)
Addiction	4 (4.4)

it is known that the community of Al Madinah Al Monawara is more conservative than that of Amman. The city is considered one of the 3 most sacred places for Muslims around the globe. The holy Muslim city is geographically divided into 2 main areas; the Haram itself and the area outside the Haram, where it is allowed to smoke and to provide the service of water pipe in coffee shops. Another characteristic of this community is the unavailability of water pipe to females in coffee shops. This explains why our sample was purely made of males. This limitation should be avoided in future studies to include females regardless the place where they smoke a water pipe. The sample was a convenient sample of 90 participants which was another limitation of the study.

The use of unconventional smoking methods was practiced by a substantial proportion of water pipe smokers (23.3%), mostly represented by adding soft drinks to the tank (18.1%), while the least popular practice was mixing Jarak (tobacco mix) with other substances in the form of flowers, spices, and drugs (7.8%). Materials added to tank, or used to replace head and tank seem to be innocuous. However, they may be associated with unknown health risks. Unlike other studies,⁷ alcohol was not used by this sample which reflects a number of trends such as the religious nature of people in Al Madina and also the fact that alcohol consumption is prohibited in Saudi Arabia. However, this did not deter subjects who mixed euphoric substances with Jarak (n=2), or the man who added paracetamol to it. Unconventional practices were not significantly associated with marital status. On the other hand, they were associated with a higher number of children that married men had. Moreover, employees followed by retired people were significantly associated with this practice. Whether these 2 observations are age-related or not, this needs further exploration. Statistical analysis for the association of nationality with unconventional practices was not performed because of the relatively small number of non-Saudi's (n=4) participating in the study.

Smoking water pipe once or more daily is considered heavy smoking.¹⁵ Most of the sample were heavy smokers (73.3%), smoking water pipe 4-7 times a week (61.1%), while a substantial proportion (12.2%) smoked 14-21 times a week. The frequency of water pipe smoking was not significantly associated with the use of unconventional practices, indicating that other factors make water pipe appealing to the heavy smokers, apart from unconventional practices. It may also indicate that the use of unconventional practices does not lead to heavy smoking. These factors were explained by the



Figure 1 - Fruits such as melons, cantaloupe, and apples are sometimes used to replace the water tank or the head of the water pipe.

answers to the question:” why do you think that quitting is difficult?” with comparable proportions describing it as a habit, and as a “mood modifier”. Four of the sample (4.4%) even admitted to being addicted to the habit. Neither companions nor introducers, were significantly associated with unconventional practices, although it was mostly friends who introduced to the habit or later became the companions. It was the favorable place for smoking, cafés, which was significantly associated with unconventional practices. This is reasonably explained by the length of time and amount of expertise needed to prepare the water pipe setting incorporating fruits, or fluids other than water in the tank (Figure 1). Recently, in neighboring Jordan there are active campaigns to ban café water pipe. But one cannot be optimistic yet regarding cutting the popularity of water pipe. Other existing methods for expert preparation of unconventional water pipe are still operative, like home delivery, or the “take-away” water pipe. These methods should be addressed efficiently if the practice of water pipe is to be counteracted.

Only 2% of water pipe smokers perceived that they were non-smokers, and 95% wished to quit the habit. Furthermore, the whole sample believed that the habit is harmful to health. However, they had poor knowledge on health hazards of the waterpipe, and actual practices of this sample show that they need more education in this regards. They did not even recognize the dangers of sharing the water pipe like infections similar to cold, herpes, and tuberculosis.¹⁶ This observation was evident in that less than half of the sample used disposable tips when smoking away from home. Moreover, negligible proportions visit the dentist and physician routinely. This has significant consequences taking into consideration that the population of water

pipe smokers are prone to various health problems. Perceived health hazards of water pipe were very general and excluded other important documented hazards. It is worth mentioning that similar studies in neighboring countries reported less awareness regarding the health perceptions and desire to quit water pipe.^{1,14}

In conclusion, unconventional risky practices seem to be associated with café water pipe smoking.

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From the College of Dentistry, Taibah University, Al Madinah Al Monawara, Kingdom of Saudi Arabia. Address correspondence and reprints request to: Dr. Najla S. Dar-Odeh, College of Dentistry, Taibah University, Al Madinah Al Monawara, PO Box 344, Al Monawara 30001, Kingdom of Saudi Arabia. E-mail: najla_dar_odeh@yahoo.com

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