# Behavior, Attitude and Perception of Water-pipe Smoking of Students in a Private University

**Kanyaphat Setchoduk**

**Faculty of Nursing Science, Assumption University, Bangkok, Thailand**
**E-mail: <phatchareecht@au.edu; chauthong_pachy@hotmail.com>**

## *Abstract*

*Nowadays, water-pipe is a tobacco smoking apparatus which is popular worldwide, especially in the university-aged new smoker group. This research was conducted to explain the behavior, attitude and perception of university students in relation to water-pipe smoking. A cross-sectional design was applied through 400 baccalaureate degree students in a private university using simple random sampling. Data were obtained through constructed questionnaires. Results revealed that majority of the participants (76%) have been involved in water-pipe smoking from friends' persuasion and social interaction during night trip, drinking and party. The main reasons motivating them to try water-pipe tobacco smoking were self-preference, stress, social pressure, and false belief about its small consequences for health and well-being than cigarette smoking. Therefore, the responsible organizations should announce policies and find strategies to decrease water-pipe tobacco smoking.*

***Keywords****: Baraku, Hookah, Narghile, Shisha, university student*s*, cigarette smoking.*

## 1. Introduction

It has been estimated that more than one hundred million people use water-pipe for tobacco smoking on a daily basis (Harvard Medical School 2008). Surprisingly, the water-pipe tobacco smoking is becoming increasingly popular among adolescences and young adults, especially high school (Korn *et al*. 2008) and university students (Tamim *et al*. 2003). Chaaya *et al*. (2004) reported that the average initiation age and the lowest initiation age of water-pipe tobacco smokers were 16 and 8 years, respectively. Moreover, the percentages of water-pipe smokers were increased in higher age groups as indicated by 19.70% of grade $6^{th,}$ 41.90% of grade $8^{th}$, and 52.80% of grade $10^{th}$ (Korn *et al*. 2008). Interestingly, the prevalence of exclusive water-pipe tobacco smoking of university students was higher than cigarette smoking as stated by 21.1% and 7.6%, respectively (Tamim *et al*. 2003). Furthermore, the water-pipe tobacco smoking was generally more positively perceived than cigarette smoking, especially by women (Maziak *et al*. 2004).

There are varieties of words that imply water-pipe tobacco smoking according to the region of users, for example: "shisha", "borry", or "goza" for people in Egypt and Saudi Arabia; "narghile", "nargile", or "arghile" for people in Israel, Jordan, Lebanon, and Syria; "hookah" for people in Africa and the Indian subcontinent; and "hubble bubble" for people in many regions (Maziak *et al*. 2004). But Thai people know water-pipe tobacco smoking as "baraku".

When considering the mechanism of water-pipe use, the types of water-pipe tobacco smoking are different such as Maassel and Ajami (Maziak *et al*. 2004). The most common type of water-pipe smoking use is Maassel because of its flavored and sweetened ingredients such as mint, apple, blackberry, and cappuccino (Maziak *et al*. 2004; Noonan and Kulbok 2009). In general, water-pipe consists of head, water bowl, and hose as shown in Fig. 1. Holes in the bottom of the head allow smoke to pass into the body's central pipe which is submerged in the water bowl. Another part is the hose which is not submerged and ends with a mouthpiece where the smoker

inhales the smoke. The tobacco, which is usually sweetened and flavored, is moistened and placed into the head part. Then the tobacco is burned with charcoal which is placed atop the tobacco-filled head. When the head is loaded and the charcoal lit, a smoker inhales through the hose, creating a vacuum above the water, and drawing air through the body and over the tobacco and charcoal (WHO 2005).

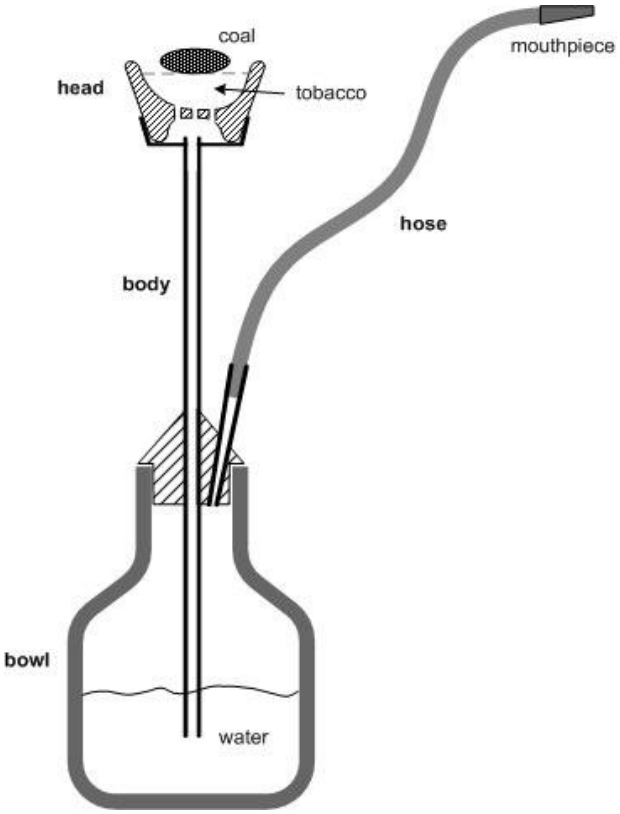


Fig. 1. The main parts of water-pipe smoking (WHO 2005).

The water-pipe tobacco smoking was invented in India by Hakim Abul Fath, a physician during the reign of Emperor Akbar. He thought that when tobacco smoke was passed through a small receptacle of water so it purportedly was made less harmful to the smoker (WHO 2005).

In fact, many studies proved that the water-pipe tobacco smoking has been associated with exposure to the same toxicants, including nicotine and CO (Cobb *et al*. 2011; Harvard Medical School 2008; Maziak *et al*. 2004). Akl *et al*. (2010) stated that the effect of water-pipe tobacco smoking on the health condition was the same as cigarette smoking as it caused cancer, low birth rate, periodontal disease, and respiratory illness. Moreover, water-pipe tobacco smoking was associated with cardiovascular problems and the increase of blood pressure and heart rate (Al-Safi *et al*. 2009; Harvard Medical School 2008). In addition, a study revealed that the water-pipe tobacco smoking had more risk for communicable disease than cigarette smoking because of sharing mouthpieces among smokers that might be the source for spreading of infectious agents (Sarrafzadegan *et al*. 2010).

Even though the serious health hazard of water-pipe smoking was explored by many researchers, it is a myth for smokers who try it. Thus the corresponding behavior and attitude of the university students and their perception of water-pipe smoking has to be explored in order to get useful information before to make a plan for the appropriate health promotion campaign or health educational program for the students who will be at risk of water-pipe smoking in the future.

## 2. Method

The cross-sectional design was applied in this research. The total population was 17,607 students of baccalaureate degree from 10 faculties in a private university who studied there in academic year 2010. Four hundred participants were randomized through simple random sampling technique.

The questionnaire was constructed by the author. It consisted of three parts, including: 8 items of demographic data; 11 items of behavioral data which represented student's behavior about water-pipe smoking use; and 7 items of attitude and perception data which represented student's attitude and perception in relation to water-pipe smoking compared with cigarette smoking. The content validity was assessed by five nursing experts. Cronbach's alpha coefficient was applied for reliability test and got a value of 0.7219. The self-administered anonymous questionnaire was employed within the private university for data collection. The consideration of research ethics was strengthened for all students who agreed to participate. Informed consent was provided for the participants before completing the

questionnaire. Descriptive statistics was utilized for data analysis through computer software program.

## 3. Results

The completed 400 questionnaires were collected and analyzed. The majority of the participants were females (58%). Most of the participants were fourth year students (31.50%), then third year (29.50%), second year (22.80%), and first year (16.30%), respectively. 36.30% of the participants were studying in the School of Management, 16% were from the School of Law, 15.30% from the School of Nursing Science, 7.80% from the School of Arts, 6.50% from the School of Engineering, and 18.10% from other schools. 57.60% of the students lived with their parent(s) or relative(s) and 42.40% lived with their friend(s) or lived alone.

For the students' behavior associated with cigarette smoking and water-pipe smoking, it was revealed that 37.30% of the participants have been smoking cigarettes. The majority of the participants (76%) knew about the water-pipe smoking. The source of information came from their friends (46.85%), pub/bar (32.43%), Internet (9.23), shop (7.66%), and others (3.83%), respectively. Among the students who knew about water-pipe smoking, 44% of them had tried it already. The reasons for water-pipe smoking use included self-preference (52.35%), friend's persuasion (18.12%), social interaction (13.76%), stress (6.71%), social pressure as they wanted to be the smart looking person (4.36%), maturation (1%), and family imitation (0.67%), respectively.

Most of the participants smoked water-pipe tobacco when they had a night trip, alcohol drinking, or party with friends (84.13%). Some of them smoked when they were under stress (9.96%) or having more free time (1.85%). After comparison with cigarette smoking, it was found that 43.75% of the participants preferred to smoke water-pipe whereas 56.25% wanted to continue smoking the traditional cigarette.

The analysis of the collected data about the students' attitude and perception in relation to cigarette smoking and water-pipe smoking revealed that approximately 33.80% of all participants thought that water-pipe smoking had no significant effect on health compared with cigarette smoking whereas 20.50% thought that tobacco smoking had less effect than cigarette smoking. Only 18.80% of the participants thought that water-pipe tobacco smoking had more serious consequences for health than cigarette smoking. It was surprising to the author that 27% of the participants had never heard about the effect of water-pipe tobacco smoking on health and well-being.

The effects on health from water-pipe smoking were perceived by the participants as if it could lead to lung cancer (19.78%), senescence (14.22%), yellow teeth (13.13%), disease of second hand smoke (12.01%), pregnancy complications (10.53%), stroke (9.92%), sexual problems (9.01%), and heart diseases (8.41%), while 1.51% of the participants stated that water-pipe tobacco smoking had no effect on health.

The overall perception of the participants of water-pipe tobacco smoking revealed that it was usual (63.50%), bad (18.3%), very bad (14.3%), good (3.8%), and very good (0.30%) behavior, respectively.

The opinions of the participants on water-pipe smoking revealed that it was accepted by male teenagers (48%) more than cigarette smoking (38%). In the opposite way, it was accepted by female teenagers (10%) less than cigarette smoking (22.3%). The participants reported that the water-pipe tobacco smoking had better taste (32.5%) than cigarette smoking (17%). Some participants perceived that the water-pipe tobacco smoking was more harmless than cigarette smoking (19.3%). Also, some participants believed that prolonged water-pipe tobacco smoking for at least 1-2 years would not be harmful and would have no effect on their health (18%).

## 4. Discussion

The water-pipe tobacco smoking is now well known and accepted by the university students (78%) as it is a popular activity for them similarly to cigarette smoking (Sutfin *et al*. 2011). However, the public advertisement

of tobacco smoking has been seriously controlled by aggressive actions. Moreover, the packaging and labeling of the tobacco in Thailand must have the required pictorial and textual health warnings on cigarettes, occupying 55% of the front and back principal display area (Tobacco Control Laws 2012) which may make new smokers hesitate to start and fear the hazards of cigarette smoking compared with water-pipe tobacco smoking.

There is no specific policy for prohibiting water-pipe smoking use, including the warning on the package of its effect on health. It is known by observation that the packaging and labeling of water-pipe smoking are propagated as attractive and harmless-like, sort of "tobacco free", "strikingly fresh", "variety of taste and smell", without any information about its serious effects on health which it may induce by misleading the smokers, especially adolescences and young adults, about its hidden effect on worsening health.

Moreover, the appearance of sweetened and flavored water-pipe tobacco smoking leads the smokers to the misunderstanding that it has less harmful effect on their health. As mentioned in the study of Chaaya *et al*. (2004), most university students who were active smokers associated their practice of water-pipe smoking (argileh) with its entertaining and tasty characteristics (94% and 86%, respectively). This study expanded the results of previous studies (Chaaya *et al*. 2004) by showing that a large proportion of students endorsed two popular misconceptions concerning water-pipe tobacco smoking, that poisonous smoke concentration was reduced by water infiltration (77%) and filtration at the mouthpiece (76%).

The prevalence of water-pipe smoking is not only an issue affecting university students but also secondary school students. Korn *et al*. (2008) reported that water-pipe smoking (nargila) use was increasing with age including the secondary school students in $10^{th}$ grade (52.8%) whereas 41.9% and 19.7% were in grades $8^{th}$ and $6^{th}$, respectively. Surprisingly, the lowest reported age at initiation of water-pipe smoking is 8 years (Chaaya *et al*. 2004) or at $2^{nd}$ grade of primary school.

For the water-pipe tobacco smoking period, the results indicated that the university students usually tried it when they joined a night trip, drank alcohol, and had party with friends (84.13%). Similarly to the study of Baker and Rice (2008), which found that peer influence was the significant factor for water-pipe tobacco smoking (narghile), the adolescents in this study and their parents considered water-pipe tobacco smoking as an acceptable activity in the society. Moreover, some reports revealed that the water-pipe tobacco smoking has been used during group communication, family gathering (Chaaya *et al*. 2004) as well as to make smokers look traditional, social, and attractive (Maziak *et al*. 2004).

Concerning students' attitude and perception in relation to cigarette and water-pipe tobacco smoking, it was found that 33.8% of the participants thought that water-pipe tobacco smoking was no different than cigarette smoking concerning its effect on health whereas 20.5% thought that water-pipe smoking had less effect when compared with cigarette smoking. Moreover, 27% of them had never heard about the effect of water-pipe tobacco smoking on health. These results are supportive evidence that the university students have had little knowledge about the hazard of the water-pipe tobacco smoking. This partially explains its extensive use worldwide.

The effects on health of water-pipe tobacco smoking have been explored by many researchers. Akl *et al*. (2010) conducted a systematic review of the medical literature to investigate the effects of water-pipe tobacco smoking on health outcomes and found on the basis of 24 available studies that water-pipe tobacco smoking was significantly associated with lung cancer, respiratory illness, low birth weight, and periodontal disease, similarly to the study of Kassis (2009) which indicated that 30% of the water-pipe tobacco smokers had signs of periodontal disease such as generalized redness and inflammation (being higher than with cigarette smokers and non-smokers).

Moreover, Al-Safi *et al*. (2009) explored the correlation of water-pipe tobacco smoking to blood pressure and heart rate and found that the water-pipe tobacco smoking had

significantly correlated with the elevation of blood pressure and heart rate.

The short-term effects of the water-pipe tobacco smoking were explored by Cobb *et al*. (2011) who found that the water-pipe tobacco and cigarette smokers had similar peak plasma nicotine concentration but water-pipe tobacco smoking produced a 3.75-fold greater elevation in peak carboxyhaemoglobin (COHb) levels and was associated with a 56-fold greater amount of smoke inhaled.

All of the above health consequences of water-pipe tobacco smoking might be associated with the nature of water-pipe tobacco smoking use. One session of water-pipe tobacco smoking takes approximately 20-80 minutes whereas a single cigarette smoking takes only 5-7 minutes. Thus the water-pipe tobacco smokers have to take 50-200 puffs compared with cigarette smokers who take 8-12 puffs in order to get the same toxicant contained per one-time use. It means that the water-pipe tobacco smokers may receive during one session of water-pipe tobacco smoking $100^{+}$ more times of smoke than cigarette smoking and there is no proof that any device or accessory can make water-pipe tobacco smoking safer (WHO 2005).

Importantly, the water-pipe tobacco smoking has one more effect on health which is not found with cigarette smoking. There is a serious risk of transmission of communicable diseases such as tuberculosis and hepatitis when a mouthpiece is shared with friends (WHO 2005).

## 5. Conclusion

At present, the water-pipe tobacco smoking is applied worldwide to various groups of people, particularly adolescences, young adults, and women in the universities due to a misunderstanding of its social trends and effects on health. Concerning the health hazard of water-pipe tobacco smoking, the Thai government and responsible organizations should take serious actions and announce policies for water-pipe tobacco control, just like the measures taken for cigarette smoking. Moreover, the health care providers must be educated about this new trend of smoking in order to give proper health education to the risky groups. Lastly, a sustainable health promotion campaign on the water-pipe tobacco smoking should be initiated and advertised to the target population by the health care providers.

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