An overview of oral mucosa condition of shisha smoker

CrossMark

Rahmi Amtha,* Ardianto Kurniadi

Abstract

Objective: Aim of this study is to describe the oral mucosa condition of shisha user. A preliminary observational study was conducted at several shisha cafe at South Jakarta. Under informed consent, subject with habit of tobacco and shisha smoker were included.

Material and Methods: Shisha is a water pipe that contains tobacco extract and flavored. It is burnt using coal. It produces the smoke through the vessel and inhaled using a hose which gives good aroma. The culture of shisha smoking is popular in Middle East country that currently has been also entering Indonesia.

Results: The side effect of shisha smoking habit is still very rarely reported. Sociodemographic data (age, gender, duration and frequency

of smoking), salivary flow rate and oral mucosa changes were documented. Eighteen subjects were recruited into this study. Most of shisha smoker was also tobacco smoker. Shisha was more practiced by males at age (15–24 years old). The oral mucosa changes such as keratosis, melanosis, leukoedema, coated tongue, gingivitis and xerostomia were found on subject with habit of tobacco smoking or both shisha and tobacco smoking.

Conclusion: Apparently the shisha smoking habit may cause oral mucosa changes almost the same with tobacco smoking habit.

Keywords: Shisha, Oral mucosa conditions

Cite this Article: Amtha, R., Kurniadi, A. 2016. An overview of oral mucosa condition of shisha smoker. *Journal of Dentomaxillofacial Science* 1(2): 73-76. DOI:10.15562/jdmfs.v1i2.1

Department of Oral Medicine,
Faculty of Dentistry, Trisakti
University, Jakarta, Indonesia

Introduction

Almost more than 62% of Indonesia's population has smoking habits. Smoking not only be used as a habit but also has been used as a lifestyle, although most people have realized that the habit impair human health.¹ A decade back cigarettes have begun to enter into India/Middle East known as narghile, hookah, Water PipeSmoke (WPS) or in Indonesia itself is often referred as shisha. Shisha alone has received attention from World Health Organization (WHO) through WHO Study Group on Tobacco Product Regulation (TOBREG). The WHO wants to raise this issue to all parties by publishing an advisory note of shisha's impact on human health. The advisory note contains the results of research on the effects of shisha on health and more research needs to control shisha use. WHO issued a strong warning to the user of dangerous effect of shisha on human health that really needs attention by various parties.² Currently, shisha lovers have penetrated into various strata.³ Some of the myths that exist in society about the shisha include shisha consists of a jar of water that can bind to or retain toxins, shisha is less irritating, fruit juice added to the shisha is good for health, including less of adverse effects on oral mucosa that can arise from this habit.⁴ Based on the foregoing investigation should be done to find out how is the oral mucosa conditions of shisha smoker. It's hoped this preliminary study can be

used as the basis of further research and the basis for the prevention of diseases associated with this habit.

Shisha word itself comes from the Persian language with the meaning of goblets. Which means "glass" that is often used by the Persian nobleman to entertain the guests. The shape of the cup, is indeed similar to that contained in the shisha tube. Definition of shisha in some countries differs from one another. Initially "shisha" or "syisya" comes from meaningful Persian glass. When Shisha came to be known among the Arabs, similar objects like cigarettes are better known as "hookah" or "hubble bubble", while in Pakistan and India it was called "huqqa". Shisha comes from the province located in the northwest of India. Shisha is a tool in the form of a large tube that is equipped with one to four hose that resembles an elephant's trunk, but is smaller and has a length of 50 cm–1.5 m. The tube is known as "bong" made of brass with crystal, 60–70 cm in height. Now, shisha is already known by the whole world even to South East Asia.⁵

Generally shisha is packed in tubes. The tube consists of a tube head, body of the tube, tube for water, hose and funnel [figure 1](#). Shisha tobacco is placed on the head tube. The shisha is soft and has a wide range of flavors. The tobacco is burned by embers where it is placed on top of it. After that

*Correspondence to: Rahmi Amtha, Department of Oral Medicine, Faculty of Dentistry, Trisakti University, Jakarta, Indonesia
rahmi.amtha@gmail.com

Received: 18 July 2016
Revised: 15 August 2016
Accepted: 17 August 2016
Available Online: 31 August 2016

Figure 1 Shisha.⁷

shisha smokes and create bubbles in a tube containing water and tobacco into the respiratory tract.

Shisha contains nicotine that becomes an addiction.² Smoke produced from shisha contains polyaromatic hydrocarbons. The toxic substances are tar, carbon monoxide, heavy metals and carcinogens. In fact, individuals who consume shisha and smoke are exposed to carbon monoxide levels higher than individuals who consume tobacco cigarettes. Shisha is not inscribed on the danger labels as written on cigarettes, therefore a lot of people think that shisha is safer than cigarettes. Shisha also contains harmful as well as cigarettes.⁶ Smoke produced and inhaled from shisha for 60 minutes is 100–200 times more than inhaling one cigarette.⁷

Until now, the literature or journals that discussed about shisha on oral health are still sparse. However, Hassan et al.⁸ conducted research on the effects of tobacco on health in Saudi Arabia. From the sample population, 38.1% are shisha users and the results showed that there are some oral mucosal changes such as keratosis, hairy tongue, smoker melanosis, nicotine stomatitis etc.

Smoking is the process of burning tobacco then the smoke is directly inhaled using a pipe. Cigarette smoke contains two components. The first component that quickly evaporates the gas and the second component together with condensed gas component become particulate component.¹

According to Sitepoe Aditama⁹ based on the contents of cigarette, it divides into three types called white cigarettes, kretek cigarettes and klembak cigarettes, besides filtered and nonfiltered cigarettes. The composition of the cigarettes will be broken down into other components, for example components that quickly evaporate. The components will become smoke together with the other condensed components. Thus, cigarette smoke inhaled consists of 85% gas and the remainder in the form of particles. The

smoke produced from cigarette consists of primary (main stream smoke) and side stream smoke. The main smoke is tobacco smoke inhaled directly by the smoker, while the side smoke is tobacco smoke spread into the air, so it can be inhaled by another person who is known as passive smokers. Cigarette smoke contains 4,000 types of chemicals with different types of carcinogenicity against the body. Some of the chemicals contained in cigarettes that interfere human health are tar, nicotine and carbon monoxide (CO). Moreover, cigarettes also contain other chemicals that are not less toxic.^{1,9}

According to Smet Nasution¹⁰ there were three types of smokers who can be classified according to the number of cigarettes smoked. They are heavy smokers who smoked more than 15 cigarettes a day. Moderate smokers who smoked 5–14 cigarettes a day and light smokers who smoked 1–4 cigarettes a day.

Smoking is a risk factor for at least 25 diseases, including cancers of the urinary tract, stomach, colon and cervical, oral, esophageal, throat, pancreatic, breast and lung cancer. Systemic diseases such as chronic respiratory diseases, stroke, osteoporosis, heart disease, infertility, early menopause, giving birth to deformed babies, miscarriage, bronchitis, cough, peptic ulcer disease, emphysema, muscle weakness, mouth disease and damage to the oral mucosa and eyes problem. The cigarette can cause smokers keratosis, melanosis, leukoplakia, coated tongue, halitosis, gingivitis, taste disturbance, dry mouth and induce oral cancer.⁴

Material and Methods

The observational studies were performed on 2 different places of shisha cafes in South Jakarta. A total of 18 subjects who visit both cafes and had habit of tobacco smoking or shisha smoking were included in the study after signing an informed consent. The demographic data which consists of name, age, gender, occupation, length and frequency of smoking, salivary flow rate as well as changes in the condition of the oral mucosa were all documented. Subjects with alcohol drinking habits and history of systemic use of drugs were excluded from research. Salivary flow was observed from the amount of saliva collected for 1 minute. A number less than 1 mL/min categorized as hypo salivation or xerostomia. This research was approved by the Medical Research Ethics Committee, Faculty of Medicine, Trisakti University, Jakarta, Indonesia.

Results

A total of 18 subjects of tobacco and or shisha smokers was recruited in this study. Majority (10 subjects) of the smokers were tobacco smoker.

Table 1 Sociodemographic data of the study population.

No.	Subjects	Cigarette smoker n = 10	Shisha smoker n = 2	Cigarette + shisha smoker n = 6
1	Sex			
	1. Male	9 (90%)	2 (100%)	6 (100%)
	2. Female	1 (10%)	0 (0%)	0 (0%)
2	Age			
	1. 15–24	3 (30%)	2 (100%)	5 (83.3%)
	2. 25–34	3 (30%)	0 (0%)	1 (16.7%)
	3. 35–44	1 (10%)	0 (0%)	0 (0%)
	4. 45–55	3 (30%)	0 (0%)	0 (0%)
3	Occupation			
	1. Student	2 (20%)	0 (0%)	3 (50%)
	2. Work/private	8 (80%)	2 (100%)	3 (50%)
4	Duration of smoking			
	1. < 1 year	0 (0%)	-	0 (0%)
	2. 1–4 years	1 (10%)	-	3 (50%)
	3. > 4 years	9 (90%)	-	3 (50%)
	Duration of shisha smoking			
	1. < 1 year	-	0 (0%)	0 (0%)
	2. 1–4 years	-	2 (100%)	5 (83.3%)
	3. > 4 years	-	0 (0%)	1 (16.7%)
6	Number if cigarettes			
	1. Moderate: 5–14 cig/day	5 (50%)	-	0 (0%)
	2. Heavy: >14 cig/day	5 (50%)	-	6 (100%)
7	Number of shisha			
	1. Mild: 1–3 bong/week	-	0 (0%)	3 (50%)
	2. Moderate: 4–6 bong/week	-	0 (0%)	2 (33.3%)
	3. Heavy: > 6 bong/week	-	2 (100%)	1 (16.7%)

Those who were shisha smokers, they also smoke cigarettes (6 subjects). The shisha smoker was only found in two subjects. The findings showed that half of the subjects were involved in both type of smoking (tobacco and shisha) [table 1](#).

Based on the oral mucosal changes found on cigarettes smokers, it found that people who smoked an average cigarettes experience keratosis, melanosis, leukoedema, stomatitis nikotina, coated tounge, gingivitis and xerostomia [figure 1](#). However, the oral mucosal changes found on shisha smokers were xerostomia, gingivitis and leukoedema [figure 2](#). People who smoked cigarettes in conjunction with shisha smoking will have keratosis, melanosis, leukoedema, nicotina stomatitis, leukoplakia coated tongue, gingivitis and xerostomia [figure 3](#).

Figure 1 Oral manifestations on tobacco smoker **Figure 2** Oral manifestation of shisha smoker **Figure 3** Oral manifestations on cigarettes and shisha smoker

These results suggest that, abnormalities in the oral cavity is more common in a cigarette. Factors that lead the subjects to have more severe oral changes due to easiness of cigarette smoking that can be consumed anytime and anywhere. It causes people to smoke cigarettes more frequently than those who consume shisha besides that shisha smoking are costly.

Discussion

Apparently, it shows that shisha smoker in Indonesia is still uncommon. Shisha smoking is the latest trend of smoking compared to cigarettes smoking that applied since ancient era. People still prefer to smoke cigarettes, as the price is much cheaper which is evident in many societies. This is consistent with the WHO data that Indonesia is the second leading consumer of tobacco smoking cigarettes especially kretek.¹²

Shisha smoking mostly practiced by men in accordance with the smoking lifestyle in Indonesia and with the WHO statement that the men are 10 times more than women.¹² Meanwhile, when looking at the age, adolescents to young adults more often consume shisha at café combined with

tobacco smoking. The adults often buy the shisha “bong” and consume it at home. Shisha is more consumed by working people compared to cigarettes that is usually consumed by students.

Duration of shisha smoking is mostly between 1–4 years. This is due to those with the culture of shisha who recently entered Indonesia. Based on the number of shisha consumed, it showed that most shisha (only) smokers were classified as heavy shisha smoker. However, when the subjects practiced both type (cigarettes and shisha), it was found that they consumed a lot of cigarettes (classified as heavy tobacco smoker), but those who smokes shisha and cigarettes are still many who included mild shisha smoker. It is assumed that shisha may be able to increase the effect of addiction from tobacco. The subject may prefer to choose shisha, however in fact it is easier to practice tobacco smoking or still just want to start getting used to consume shisha.

The mechanism of shisha in inducing addiction is from tobacco liquid which is heated by the coals. The smoke will enter the tube through a pipe which is basically immersed in cold water. Then it evaporates in the tube to form steam that will be inhaled by smokers.¹³ These process will produce 4 times higher of nicotine, 100 times of tar, 11 times of carbon monoxide and 100–200 times higher puff compared to cigarette.^{14,15}

Leukoedema is the most common disorder in 83.8%–90% of them who smoked shisha and used tobacco. It has been noted in the literature, that leukoedema occur in people who have long cigarette consumption due to exposure to heat generated from the cigarette.¹⁶ Followed by gingivitis (80% used tobacco, 83.3% shisha and 100% shisha). The results of this study in contrast with the literature stated that gingivitis is rarely found in smokers as the development of gingival inflammation in response to plaque accumulation was less prominent in smokers than nonsmokers. Results of a longitudinal cross-sectional study reported that smoking is an exposure that can alter the gingival response to dental plaque.⁷ Abnormalities encountered in the mouth is xerostomia (60% used tobacco, 83.3% shisha and 100% shisha). The heat produces by cigarettes and shisha leads to the disruption of the secretion of salivary glands.

Conclusion

The founding of this study show that shisha smoking habit can cause changes in the oral mucosa. Compared to cigarettes smoking, the mucosal changes caused by shisha smoking are less. It is due to number of shisha (only) smoking subjects and

new trend of smoking in Indonesia. It is also found that those who smoke shisha are tend to smoke cigarettes a lot (heavy cigarettes smoker). Leukoedema, xerostomia and gingivitis are most frequent mucosal abnormalities found in shisha smoker. Further studies should be done in larger population, in order to get the general condition to determine the policy hereinafter.

Conflict of Interest

The authors report no conflict of interest.

References

1. Fawzani N, Triratnawati A. Terapi berhenti merokok (studi 3 perokok berat). Yogyakarta: Makara Kesehatan 2005;9: 15–22.
2. World Health Organization (WHO). Tob reg advisory note water pipe tobacco smoking: health effect, research needs and recommended actions by regulators. WHO Publication; 2005.
3. Nakkash RT, Khalil J, Afifi R. Rise in narghile (shisha, hookah) water pipe tobacco smoking: a qualitative study of perceptions of smokers and nonsmokers. BMC Public Health 2011;11: 315.
4. Knishkowsky B, Amitai Y. Water pipe (narghile) smoking: an emerging health risk behavior. Pediatrics 2012: 113–119.
5. James N, Pramili S, Susanne M. Water pipe smoking and nicotine exposure: a review of the current evidence. Nicotine Tob Res 2007;9: 987–994.
6. World Health Organization (WHO). WHO report on the global tobacco epidemic. WHO Publication; 2008.
7. Hadidi K, Mohammed F. Nicotine content in tobacco used in hubble-bubble smoking. Saudi Medical J 2004;25: 912–917.
8. Hassan M, Hassan A. Prevalence of potentially malignant oral mucosal lesions among tobacco users in Jeddah, Saudi Arabia. Asian Pac J Cancer Prev 2014;15: 757–762.
9. Aditama TY. Rokok dan Kesehatan. Jakarta: UI Press; 1997. p. 17–25.
10. Nasution IK. Perilaku Merokok pada Remaja. Medan: Program Studi Psikologi Fakultas Kedokteran Universitas Sumatera Utara; 2007.
11. Sham A, Cheung L, Jin L, et al. The effects of tobacco use on oral health. Hongkong Med J. 2003;9: 271.
12. World Health Organization (WHO). WHO report on the global tobacco epidemic. WHO Publication; 2008.
13. Mridula, Morgan, Hamid-Balma, et al. Vaporizers: safe alternatives to smoking? Visions Journal: BC Mental Health and Addictions J 2009;5: 1490–2494.
14. Shihadeh A, Saleh R. Polycyclic aromatic hydrocarbons, carbon monoxide, “tar” and nicotine in the mainstream smoke aerosol of the narghile water pipe. Food Chem Toxicol 2005;43: 655–661.
15. Shihadeh A. Investigation of mainstream smoke aerosol of the argileh water pipe. Food Chem Toxicol 2003;41: 143–152.
16. Wyk-Van CW, Ambrosio SC. Leukoedema: ultrastructural and histochemical observations. J Oral Pathol 1983;12: 319–329.

This work is licensed under a Creative Commons Attribution