

KNOWLEDGE TOWARD HEALTH RISK OF SHISHA USE AMONG HIGH SCHOOL STUDENTS IN JAKARTA, INDONESIA

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ABSTRACT:

Background: The popularity of shisha smoking among adolescents has been growing worldwide in the last decade. However, the vast majority of adolescents have mistaken perception with the potential health risks posed by shisha use. In fact, prior study found health risk of shisha smoking is more or less similar with combustible cigarette. The study aim to find out the knowledge on side effects of shisha in relation to shisha smoking status, gender and school location.

Methods: A cross-sectional study was carried from April to May 2015 in Jakarta. A total of 1,318 students from 14 schools were involved in the study. To assess the knowledge, a self-report questionnaire was developed with Cronbach Alpha Score 0.828. The data were analyzed by Chi-Square test.

Results: Statistically significant differences were found between gender, shisha smoking status and school location with knowledge on addictiveness of shisha ($p < 0.001$). Non-smoker, female and students from suburban school tended to have better understanding toward health related effect of shisha smoking.

Conclusion: Most of the people think shisha were less harmful compare to combustible cigarettes. Therefore, the health promotion program should include non-cigarette smoking to the intervention program.

Keywords: Health risk behavior, Shisha, Smoking, High school student, Indonesia

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INTRODUCTION

Shisha (also well known as waterpipe or narghile or hookah) emerged as the new tobacco epidemic in recent year [1]. It was firstly famous in Middle East and South Asia and vastly spreading into global scale during past decade [2]. An online survey among college student in Southern US founded the prevalence of respondent whoever tried shisha were 61% in lifetime, and 13.5% in the past 30 days [3]. In most of Gulf Cooperation Country, shisha has replaced the popularity of cigarette smoking [4]. The prevalence is expected continue increasing particularly in big city such as Jakarta. In addition, the increment of shisha smoking was in accordance with more promotion of shisha in Internet and cafe culture [5].

Among all age group, adolescent period is the

most sensitive stage of human life course development [6]. In this period, the brain is in extraordinary changing which generates high levels of emotion, impulsivity, and risk-taking [6]. The changing is accompanied by immature cognitive control system [7]. Therefore, many high risk behaviors such as tobacco smoking, alcohol consumption, illicit drugs use, and unsafe sex firstly occur in this period [6-8]. Given shisha smoking is considered as the new culture in Indonesia [9], It is probably more encourage adolescent to experiment shisha [10].

Another concern is most of the shisha users unaware with its potential health risk [11, 12]. Prior study found that being male gender and shisha smoker were associated with less knowledge on potential health risk attributed to shisha. In facts, shisha smoke contained similar toxicants as found in the cigarette smoke such as nicotine, carbon monoxide, polycyclic aromatic hydrocarbons,

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Table 1 Knowledge of health risk of shisha smoking by shisha smoking status

	Non-Smoker	Smoker	<i>p</i> -value
	(n=1,047)	(n=271)	
	n(%)	n(%)	
Shisha is harmless than cigarette	120 (11.5)	54 (19.9)	<0.001
Fruit flavor in shisha detoxifies the smoke.	60 (5.7)	45 (16.6)	<0.001
Shisha contains less nicotine than cigarettes.	152 (14.5)	94 (34.7)	<0.001
Less frequency of use limits the side effect of shisha.	163 (15.6)	66 (24.4)	<0.001
Shisha is less irritating to the respiratory tract than cigarettes	96 (9.2)	71 (26.2)	<0.001
Shisha contains less carcinogenic than cigarette	83 (7.9)	45 (16.6)	<0.001

volatile aldehydes, and Tar [13]. These chemical compounds were related to some health problem [12]. For instance, CO inhalation linked to the cardiovascular diseases, PAHs contributed to cancer, aldehyde damaged lung function, and nicotine level in shisha smoker was equivalent to 10 cigarette sticks [13-15]. Thus, this amount was sufficient to conclude shisha lead to addiction [5,13, 15]. In addition, shisha smoker were exposed to the risk of infectious diseases since they share the mouthpiece and never change the water in the bowl each session [15]. This study aims to figure out knowledge of health risk of shisha use and its relation with shisha smoking status, gender and school location different among high school students in Jakarta.

METHODS

The study design was cross sectional survey with total 1,318 respondents. The sampling technique was multistage cluster random sampling. From the total 100 schools in Jakarta, the researcher randomly selected 16 schools and divided into two groups, suburban and downtown school. However, two schools from downtown area refused to participate as the schedule of national examination nearly come. Then, three classes from each selected school were randomly taken into account. All students from all selected classes were invited to participate. All student received and must sign the inform consent before data collection started. The data were collected from April to May 2015. The study was approved by Ethical Committee, Atma Jaya Catholic University of Indonesia No: 404/III/LPPM-PM. 10. 05/04/2015.

This study adopted a questionnaire from previous research in Pakistan since it was the most completed questionnaire and also has similarity in terms of culture (Asian country), socioeconomic level (low and middle income country) and religion (Muslim) [12]. The content validity of questionnaire was assessed by three experts from Thailand. Furthermore, prior data collection, the researcher conducted a pilot study to assess the reliability of

questionnaire. A total of 32 students from Tangerang City, an urban municipality nearby Jakarta, were recruited in the pilot study. The Cronbach's Alpha score was 0.828. Six questions were used to measure knowledge toward shisha smoking. The answer were formed by three Likert scale including true, false and don't know. For shisha use, those who ever smoked shisha at least one time in lifetime classified as a smoker [4].

All data were entered to Epidata version 2.1b (The EpiData Association Odense Denmark) and analyzed by SPSS Statistic version 22 (licensed by Chulalongkorn University). The different knowledge on health effect of shisha smoking between shisha smoking status (user and non-user), gender (male vs female), and school location (Suburban vs Downtown) were examined by chi square test.

RESULTS

The result in Table 1 revealed that a total of 11.5% nonsmoker and 19.5% smoker thought that shisha smoking is harmless compare to regular cigarette. The knowledge on harmless effect of shisha were statistically significant different ($p < 0.001$). Almost 16.6% of smoker believed that shisha can detoxify the smoked while among non-smoker were only 5.7%. There was significant association between shisha smoking status with knowledge on addictiveness of shisha smoking ($p < 0.001$). A total of 34.7% respondent believed that shisha is less addictive than regular cigarette. This proportion was double compare to non-user (14.5%). Nearly quarter of Shisha smoker (24.4%) of smoker perceived that less frequency of use limits side effect of shisha while among non-user the proportion reached to 15.6% ($p < 0.001$). The proportion of non-smoker respondent who believed that shisha smoking Shisha is less irritating to the respiratory tract than cigarettes and Shisha contains less carcinogenic than cigarette were 9.2% and 7.9% respectively. For the smoker the proportion reached to double digits in both question (26.2% and 16.6%). Significant association was found between shisha smoking status with believed that "Shisha is less

Table 2 Knowledge of Health Risk of Shisha Smoking by Gender Different

	Female (n=828)	Male (n=490)	<i>p-value</i>
	n(%)	n(%)	
Shisha is harmless than cigarette	109 (13.2)	65 (13.3)	0.055
Fruit flavor in shisha detoxifies the smoke	54 (6.5)	51 (10.4)	<0.001
Shisha contains less nicotine than cigarettes	132 (15.9)	114 (23.3)	<0.001
Less frequency of use limits the side effect of shisha	136 (16.4)	93 (19)	0.003
Shisha is less irritating to the respiratory tract than cigarettes	87 (10.5)	80 (16.3)	<0.001
Shisha contains less carcinogenic than cigarette	72 (8.7)	56 (11.4)	0.049

Table 3 Knowledge of Health Risk of Shisha Smoking by School location Different

	Suburban (n=778)	Downtown (n=540)	<i>p-value</i>
	n(%)	n(%)	
Shisha is harmless than cigarette	90 (11.6)	84 (15.6)	0.001
Fruit flavor in shisha detoxifies the smoke	57 (7.3)	48 (8.9)	0.574
Shisha contains less nicotine than cigarettes	118 (15.2)	128 (23.7)	<0.001
Less frequency of use limits the side effect of shisha	118 (15.2)	111 (20.6)	0.039
Shisha is less irritating to the respiratory tract than cigarettes	78 (10)	89 (16.5)	0.002
Shisha contains less carcinogenic than cigarette	64 (8.2)	64 (11.9)	0.086

irritating to the respiratory tract than cigarettes” and “Shisha contains less carcinogenic than cigarette” with the *p-value* <0.001. Furthermore,

The result in Table 2 indicated there was marginal association between genders different with perceived harm risk of shisha. The proportion of respondents who perceived Shisha is harmless than cigarette were 13.2% in female and 13.3% in male. Significant association was found between gender with believed Fruit flavor in shisha detoxifies the smoke ($p < 0.001$), Shisha contains less nicotine than cigarettes ($p < 0.001$), Less frequency of use limits the side effect of shisha ($p < 0.01$), Shisha is less irritating to the respiratory tract than cigarettes ($p < 0.001$). Furthermore, there were 8.7% of female and 11.4% of male thought Shisha contains less carcinogenic than cigarette ($p < 0.05$).

Table 3 indicated that there was significant association between knowledge on harmfulness of shisha with school location different ($p < 0.01$). A total of 15.6% of downtown student believed that shisha is harmless compare to regular cigarette while the proportions in suburban reached to 11.6%. The statistically significant different was found between knowledge of addictiveness with school location ($p < 0.001$). The proportion of respondents who perceived shisha is less addictive than regular cigarette among downtown and suburban student were 15.2% and 23.7% respectively. In addition, those who believed Shisha is less irritating to the respiratory tract than cigarettes were 10% in suburban and 16.5% in downtown students ($p < 0.01$). Ultimately, there were no significant association found between school locations with

perceived Shisha is less irritating to the respiratory tract than cigarettes and Shisha contains less carcinogenic than cigarette.

DISCUSSION

The study found that vast majority of respondents doesn't have adequate knowledge toward harmful effect of shisha and electronic cigarette. More than 60% of respondents were not sure with health relate effect of shisha smoking. Nonsmoker, female and respondents from suburban school tended to had better knowledge. For instance, the proportion of those who thought shisha contains less nicotine than combustible cigarettes were double in smoker than nonsmoker (34.7% vs 11.5%).

The finding confirms previous research in other countries which reported People usually have miss perception in safety issue of shisha and electronic cigarette which considered harmless and more socially acceptable than regular cigarette [11, 12, 16]. In fact, shisha smoking had many similarity toxicants with conventional cigarette smoke [13]. It contained nicotine, polycyclic aromatic hydrocarbons (PAHs), carbon monoxide (CO), volatile aldehydes, and lots of heavy metals compound [13]. These toxicant well known related with adverse health problem including heart diseases, cancer, and dependence like cigarette smoking [13]. Shisha tended associated with Psychiatric Problem, Pulmonary Diseases, Cancer, Cardiovascular Diseases (CVD), and disposed negative impact to pregnancy [15,17]. Furthermore, another study revealed that there was sufficient evidence to

consider shisha as harmful element for both smoking and passive smoking [15].

This paper is the first study focusing on knowledge related to shisha smoking in Indonesia. It would be basic evidence for epidemiological and clinical research on shisha smoking. The measurement tool was reviewed by panel expert from tobacco control field in Thailand. However, there were some limitations found. It was modified from previous study in Pakistan. After conducting pilot study, some questions were deleted from the questionnaire because of less reliable in Indonesian setting. Therefore, future research for developing a standard questionnaire is needed.

Despite preliminary evidence of health effect of shisha smoking were already discovered, no immediate action were taken to prevent shisha smoking. Some anecdotal and media report revealed that popularity of shisha are growing vastly particularly among youth in urban setting [9, 18]. The existing tobacco control policy doesn't include shisha in the regulation [19]. Therefore, the government cannot ban the shisha cafe for allowing people smoke inside the building where regular cigarette is prohibited. This is what public health advocates concern that shisha smoking were potentially renormalizing tobacco smoking [20].

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