THE SMOKING BEHAVIOR OF HEALTH WORKERS IN ASIA: A LITERATURE REVIEW

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Abstract

Health workers are role models in preventing smoking behavior, yet many are smokers themselves. This study reviews and analyzes the smoking behavior of health workers in Asian countries, based on databases such as PubMed, EBSCO, and Google Scholar in 2013–2018. It is shown that the prevalence of smoking amongst health workers was 4.6–44%, with the nursing profession showing a higher level than other health professions and with a higher ratio of male to female smokers. Health workers are aware of the dangers of smoking, including the effects of cardiovascular disease, respiratory disease, oral cancer, atherosclerosis, hypertension, fetal disorders, and infertility. However, the factors that lead to smoking include stress, the influence of friends or family who smoke, and addiction. Health workers are responsible for providing smoking prevention education. However, there are still obstacles to its implementation due to their smoking habits and lack of expertise in educating others. Smoking prohibition policies in the workplace, the training of health workers, and smoking prevention service facilities need to be considered by Asian countries to prevent smoking.

Keywords: health worker, role model, smoking behavior

Abstrak

Analisis Perilaku Merokok pada Petugas Kesehatan di Asia: Literatur Review. *Petugas kesehatan merupakan role model dalam pencegahan perilaku merokok, akan tetapi masih banyak petugas kesehatan yang merokok. Studi ini meninjau dan menganalisis perilaku merokok petugas kesehatan di negara-negara Asia, bersumber pada basis data seperti PubMed, EBSCO, dan Google Scholar, tahun 2013–2018. Hasil studi menunjukkan perilaku merokok petugas kesehatan memiliki prevalensi sebesar 4,6–44% dengan profesi keperawatan menunjukkan tingkat yang lebih tinggi daripada profesi kesehatan lainnya, dan dengan rasio perokok laki-laki lebih tinggi dari perokok perempuan. Petugas kesehatan menyadari bahaya merokok dan dampak penyakitnya seperti penyakit kardiovaskuler, penyakit pernapasan, kanker mulut, aterosklerosis, hipertensi, gangguan janin, dan kemandulan. Faktor yang memengaruhi merokok adalah stres, pengaruh teman atau keluarga yang merokok, dan kecanduan. Petugas kesehatan bertanggung jawab untuk memberikan pendidikan pencegahan merokok. Namun, masih terdapat kendala dalam pelaksanaannya karena kebiasaan pribadi merokok mereka dan kurangnya keahlian dalam mendidik orang lain. Kebijakan larangan merokok di tempat kerja, pelatihan tenaga kesehatan, dan fasilitas layanan pencegahan merokok perlu diperhatikan oleh negara-negara Asia untuk pencegahan perilaku merokok.*

Kata kunci: perilaku merokok, petugas kesehatan, role model

Introduction

Smoking is a major health problem, causing increased cardiovascular disease, lung disease, and cancer. Cigarettes have contributed to killing 7 million people in the world. WHO estimates that 20.2% of the world's population aged ≥ 15 (34.1% of men and 6.4% of women) were active smokers in 2015 (WHO, 2018). The prevalence of smoking in the Southeast Asian region in 2015 reached 17.2% of the total population, including 32.1% of men and 2.3% of women (WHO, 2018).

Efforts to prevent and reduce smoking are a primary concern of health workers in reducing

smoking-related problems (La Torre et al., 2013). In addition to playing an important role (being a role model) in the promotion of healthy behavior and prevention of smoking, health workers must also personally value their health, shape health values in the community, and influence people to stop smoking (Hurley et al., 2015; La Torre et al., 2014).

The prevalence of health workers' smoking behavior in Bernadini Italia Hospital in 2012 showed a relatively high number, reaching 47% of the general population of 90.000 (Giorgi et al., 2015). Low smoking prevention education and training in the health education curriculum leading to the high incidence of smoking among health workers (Sreeramareddy et al., 2018). The smoking behavior of health workers is influenced by social status, politics, the economy, culture, and stress due to workload (Lillard & Christopoulou, 2015). Other factors influencing smoking behavior are education, the influence of friends who smoke, previous smoking experience, addiction, and feelings of calm (Juranić et al., 2017; Hamadeh et al., 2018; Sheals et al., 2016).

The attitudes and behaviors of health workers have been proven to be determinants of the effectiveness of smoking policies in the workplace; the implementation of 100% smoking prohibition regulations would reduce the prevalence of employees' smoking behavior (Centers for Disease Control and Prevention US et al., 2010). Health workers must be an excellent example by quitting smoking to benefit themselves and their patients (La Torre et al., 2013). By smoking, health workers have weakened their role as providers of promotive and preventive health services for the community and are less likely to advise patients to quit smoking (Duaso et al., 2017).

Health workers need to be trained to acquire competencies and skills to assist patients in preventing smoking through smoking prevention training programs. Several studies have shown that health professionals who undergo smoking prevention training will improve the competency and consistency in advising patients to quit smoking more significantly than those who do not (Sarna et al., 2018). Based on these problems, the researchers in this study are interested in further examining published articles on the smoking behavior of health workers in Asia.

Methods

Data Sources. Articles were obtained through various online journal databases, such as Pub-Med, EBSCO, and Google Scholar. The literature search was conducted by identifying relevant articles using specific keywords such as smoking behavior, cigarettes, and health workers. The literature identification was also limited by the inclusion criteria, namely articles with a statement of research authenticity published in 2013–2018, whose research location was in Asian countries. Moreover, the article had to meet the following methodology criteria: (1) explanation of the research objectives; (2) explanation of the research population or sample; (3) use of a suitable data collection method; (4) use of valid measurement tools; (5) presentation of clear and measurable analysis results; and (6) presentation of clear and precise findings.

Data Selection and Analysis. In the data extraction process, irrelevant articles such as those on smoking behavior in the general population and those using research locations outside of the Asian region were omitted, resulting in 302 relevant articles based on the titles and abstracts. These were then reselected, and 20 were omitted due to duplication, leaving 282 relevant articles based on the titles and abstracts. Of these 282, 193 were eliminated because they did not meet the inclusion criteria, leaving 89 articles identified based on their eligibility. Subsequently, 71 of these 89 were omitted because they did not meet the methodological criteria, leaving 18 complete articles that met the inclusion and methodological criteria. The data selection strategy and data analysis adopted the Prisma-P 2015 flowchart (Moher et al., 2015).
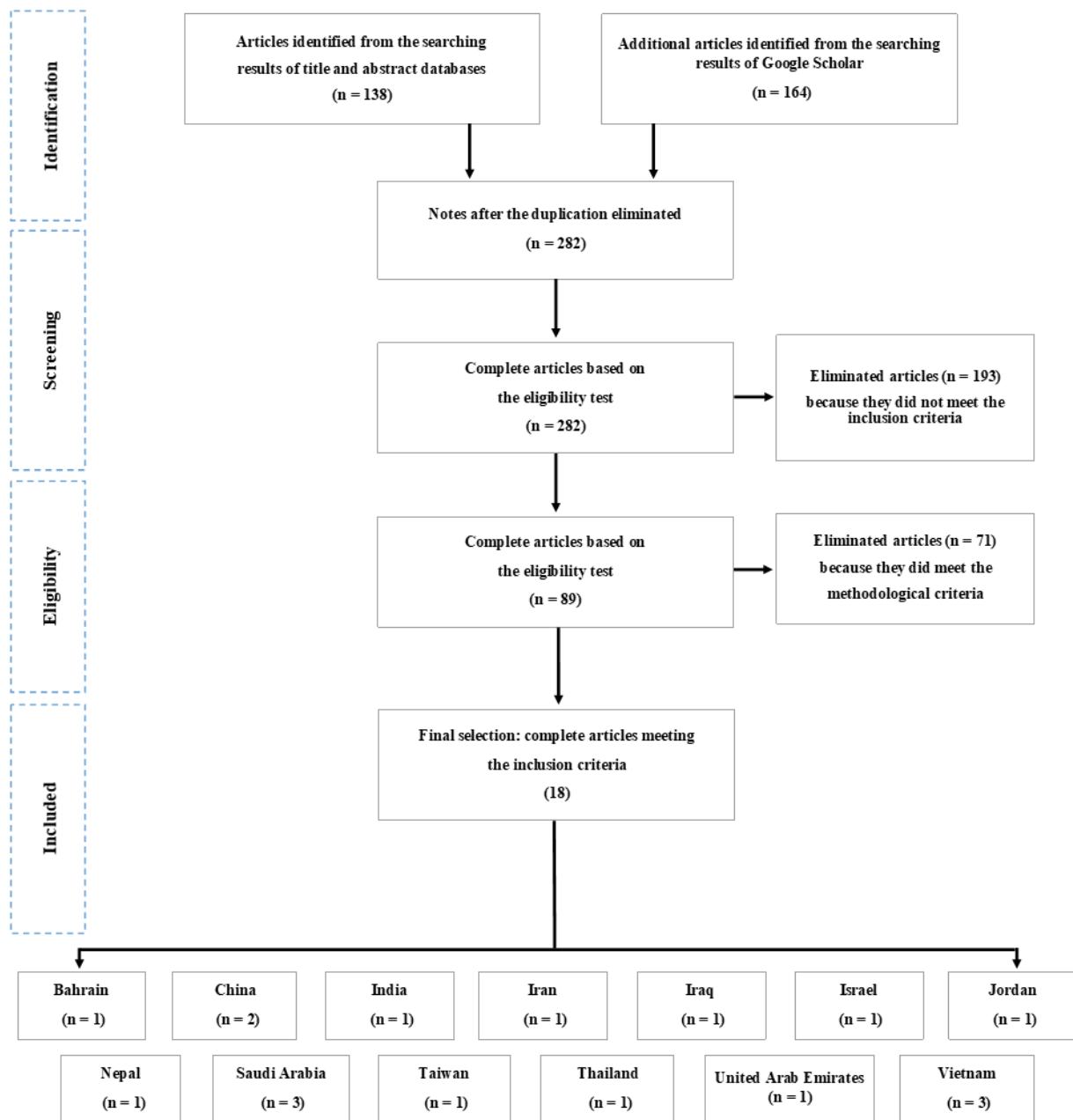
Figure 1. Prisma Diagram of the Systematic Data Searching and Extraction

Results

The analysis and selection based on the research inclusion and methodological criteria resulted in 18 research articles as data for the literature review. The identified research articles were then grouped based on the research locations, namely Bahrain (n =1), China (n = 2), India (n = 1), Iran (n = 1), Iraq (n = 1), Israel (n = 1), Jordan (n = 1), Nepal (n = 1), Saudi Arabia (n = 3), Taiwan (n = 1), Thailand (n = 1), United Arab Emirates (n = 1), and Vietnam (n = 3).

All the articles used were published during 2013–2018; more precisely, four were published in 2013, four in 2014, two in 2015, five in 2016, two in 2017, and one in 2018. They were mostly published in international journals indexed on reputable databases such as Scopus, Medline, PubMed, and EBSCO, with three from Google

Scholar. Seventeen of the articles employed quantitative methods with a cross-sectional design (n = 12), survey (n = 2), population study (n = 1), descriptive study (n = 1), or randomized controlled trial (RCT) (n = 1), while one article used a focus group-qualitative method with interview guidelines.

Demographic Characteristics of Healthcare Workers in Relation to Smoking Behavior. The demographic characteristics of the respondents in each study included data on gender, age, marital status, education level, and citizenship. These scientific research articles involved respondents who worked as doctors, nurses, dentists, medical assistants, public health workers, pharmacists, midwives, and other health workers (see Table 1).

This research categorized respondents based on gender (male or female). Two articles did not include this, while one only included female respondents. Based on the respondents' age, 14 articles were based on respondents aged 22 to 53, while the other four did not include age. Concerning marital status, seven articles were dominated by married respondents, followed by single, divorced (widow/widower), and undisclosed status. Meanwhile, in relation to educational level, two articles involved respondents with a high school education, seven articles involved ones with undergraduate or postgraduate degrees, while the remainder did not include educational information.

The research location of the articles is shown in Table 1. The research sites consisted of public hospitals, teaching hospitals at universities, community health service centers, and smoking cessation service clinics. Mahfouz et al. (2013) focused on respondents from Saudi Arabia, with a minority from India and Egypt. On the other hand, Al Hosani et al. (2015) employed two nationality groups, the United Arab Emirates and the non-United Arab Emirates. Moreover, Hamadeh et al. (2018) refer to two nationalities, Bahrain and a minority of Arab and South Asian communities.

Smoking Behavior in Health Professionals. Out of the total of 18 articles, five specifically discuss the smoking behavior of doctors and dentists, two discuss the smoking behavior of nurses, and two discuss the smoking behavior of doctors and nurses. The other nine articles discuss health professionals in general (doctors, nurses, dentists, medical assistants, public health workers, pharmacists, midwives, and other health workers).

The smoking behavior of health professionals showed a prevalence of 4.6% to 44% (Chang et al., 2016; Shelley et al., 2014). Moreover, another article was based on a large sample of 112 smokers (26.5%), with a higher prevalence of smoking among nurses (40.2%) than other health professions (Alkhatatbeh et al., 2016).

Regarding gender-based smoking behavior, nine articles showed that the number of male smokers was 106 (44.49%), higher than that of female smokers, at only five (2.7%). Health workers' smoking intensity of fewer than five cigarettes per day was 25.5% for males and 22.6% for females. In comparison, a smoking intensity of more than ten cigarettes per day was shown by 32.1% of the males and 6.5% of the females (Mahfouz et al., 2013).

Knowledge of Health Workers of Smoking Behavior. As explained in 15 research articles, the health workers agreed that both active and passive smoking harmed health because it increased the risk of cardiovascular disease, respiratory disease, oral cancer, atherosclerosis, and hypertension, amongst other diseases (Abdulateef et al., 2016; Hamadeh et al., 2018). The respondents believed that smoking was harmful to the fetus in pregnant women and increased the risk of neonatal death (Alkhatatbeh et al., 2016). They also believed that the nicotine content in cigarettes could lead to a risk of male infertility (Chang et al., 2016).

Respondents who were doctors were aware of the benefits of quitting smoking, one of which is a reduction in the risk of coronary heart disease

(Tang et al., 2013). Hoseinrezaee et al. (2013) report that the emergence of smoking-related diseases in the children of health workers was due to smoking habits in their family environment. Three other articles reported that health workers' motives to quit smoking were related to health factors (Shkedy et al., 2013; AlTurkstani et al., 2016; Hamadeh et al., 2018).

Six articles mentioned the factors influencing the smoking behavior of health workers, namely stress, the influence of friends and family who smoked, and addiction. Hamadeh et al. (2018) report that the main reason their respondents started smoking was the influence of friends. Similarly, AlTurkstani et al. (2016) found that in addition to the factors of stress, nicotine addiction, and personal desires, living or working with friends or colleagues who smoked could also influence health professionals' decision to smoke.

The Attitude of Health Workers towards Smoking Behavior. As health service providers, health workers are responsible for providing education on the dangers of smoking and giving advice on quitting. Alkhatatbeh et al. (2016) found that 92% of health workers were responsible for advising patients on giving up smoking. In another study, it was found that 89.9% of doctors advised smokers not to smoke around children (AlTurkstani et al., 2016).

The smoking behavior of health workers can be an inhibiting factor in educating people on its dangers. Seven articles explain that one of the factors inhibiting health workers from educating people on the dangers of smoking and providing smoking cessation services was their smoking behavior. Other inhibiting factors were that health workers were not comfortable providing education, considered it useless, or felt irrelevant to their professional expertise (Shkedy et al., 2013).

In addition, according to public health workers in Vietnam, the inhibiting factors in providing health education on the dangers of smoking included the lack of special programs provided by the Ministry of Health, the lack of policies and support, low involvement of health workers, the lack of government-issued smoking cessation program regulations, and the absence of specialized smoking prevention training by health workers (Shelley et al., 2014).

Public health workers in Vietnam supported good communication training for smoking cessation counseling. In this literature review, a lack of smoking prevention training for health workers was found in several articles. Around 72% of health workers in the United Arab Emirates and 78.4% of public health workers in Vietnam had not received specialized smoking prevention training (Al Hosani et al., 2015; Nguyen et al., 2017). This literature review also found a low acceptance rate for smoking prevention training in several articles, such as in Iraq (6.5%), Jordan (25.5%), Thailand (24%), Saudi Arabia (23.6%), and Vietnam (29%). In addition, only 63.6% of health workers in the United Arab Emirates were interested in joining smoking cessation and prevention training (Shelley et al., 2014; AlTurkstani et al. 2016; Chatdokmaiprai et al., 2017; Al-khatatbeh et al., 2016; Abdulateef et al., 2016).

Khaeradmand et al. (2013) found that health workers supported smoking prohibition policies in public places and workplaces, while a study in Iran also showed that most health workers (80.9%) agreed with smoking bans in the workplace Hoseinrezaee et al. (2013). The same support was given by 101 health workers (82.5%) in the United Arab Emirates, who stated that smoking in public places should be prohibited, while 88.3% of health workers supported smoke-free health care centers and hospitals (Al Hosani et al., 2015). In Jordan, a total of 381 (95.2%) health workers supported the prohibition of smoking in public places, especially in hospitals and health care centers (Alkhatatbeh et al., 2016). In line with this, a qualitative study in Vietnam showed that health workers agreed with smoking prohibition regulations in public areas, including public transport (Shelley et al., 2014).

Table 1. Demographic Characteristics and Smoking Behavior of Respondents

Author	Research Design	No. of Respondents and Gender	Response/ Retention Level	Age Range/ Marital Status	Research Site	Respondents' Education	Smoking Behavior
Tang et al. (2013) China	Randomized cluster cross-sectional survey	354 doctors (59.4% men; 40.6% women)	92%	-	Cardio-vascular Hospital	Undergraduate (S1); Postgraduate (S2)	Total male doctor smokers: 13.47%; Former smokers: 12.20% primary hospital doctors, 16.60% secondary hospital doctors, 2.94% tertiary hospital doctors.
Hoseinrezaee et al. (2013) Iran	Descriptive study	524 doctors & nurses (56.3% men; 43.7% women)	Nurses: 51.3%; Doctors: 48.7%	50.4% married, 49.6% single	Hospital at Kerman University of Medical Sciences	Undergraduate (S1); Postgraduate (S2)	Total smokers: 21.2%; Current smokers: 8% of nurses, and 7.7% of doctors; Former smokers: 8% of nurses and 2.6% of doctors; Smoking types: Tobacco cigarettes or *hookahs*.
Shkedy et al. (2013) Israel	Cross-sectional anonymous survey	90 doctors (58.9% men; 41.1% women)	-	Average age of 44.9 years with a married status	Hospitals in Israel	-	Current smokers: 15 doctors (16.7%): 18.9% of men and 13.5% of women; Former smokers: 21 doctors (23.3%); Age when first smoked ranging from 6–25 years with an average age of 18.2 ± 5.7 y.o. without gender difference.
Mahfouz et al. (2013) Saudi Arabia India Egypt Sudan	Survey with questionnaire	736 health workers (55% men; 45% women)	87.3%	Age group of ≥ 35 years; age group of ≤ 35 years	Public Hospitals and Primary Community Health Centers in Abha City	-	Total smokers: 26.3%; Current smokers: 14.8%; Former smokers: 11.5%; Prevalence of male smokers (36.3%): current smokers (19.3%), former smokers (17.0%). Prevalence of female smokers (14.2%): 9.4% current smokers and 4.8% former smokers; Smoking intensity of ≤ 5 cigarettes per day: 25.5% of men and 22.6% of women; Smoking intensity of ≥ 10 cigarettes per day: 32.1% of men and 6.5% of women; Smoking type: cigars and *shisha*.

*resp't: respondents; y.o.: years old

Table 1. Demographic Characteristics and Smoking Behavior of Respondents (continuance)

Author	Research Design	No. of Respondents and Gender	Response/ Retention Level	Age Range/ Marital Status	Research Site	Respondents' Education	Smoking Behavior
Shelley et al. (2014) Vietnam	Focus group	29 health workers (35% men; 65% women)	-	Age range of 33–67 with an average age of 53	Community health centers	-	Current smokers: 44% of men and none of the women.
An et al. (2014) China	Cross-sectional survey	801 nurses (11.8% men; 88.2% women)	99.3%	Average age of 31.2 ± 7.1 years; 387 married resp't (48.4%)	Hospitals	Health Vocational High School (*SMK*); Associate Degree Diploma; Undergraduate	Total smokers: 7.6% (48.9% of men and 2.1% of women).
Shelley et al. (2014) Vietnam	Cross-sectional survey	134 health workers (20.1% men; 79.9% women)	95%		Community Health Centers		13 current smokers (9.7%); 12 former smokers (8.9%).
Ghimire et al. (2014) Banke Village, Nepal.	Cross-sectional study	108 health workers (42.60% men; 57.40% women)	81.40%	≤ 30 y.o.: 88 resp't (81.40%); 30–50 y.o.: 12 resp't (11%); ≥ 50 y.o.: 8 resp't (7.60%) Average age: 27.35	Community Health Centers		Total smokers: 42 (38.9%) [30 men (16.66%), 12 women (1.22%)].
Aggarwal et al. (2015) India	Cross-sectional study	422 health practitioners 70.1% men 29.9% women	85.7%	20–29 y.o. (health practitioners) and 40–49 y.o. (dentists)	Health Professional Practices	Undergraduate (S1); Postgraduate (S2 and S3)	Total smokers: 98 (23.2%) [36 dentists (18.8%) 62, medical practitioners (26.8%)].
Al Hosani et al. (2015) UAE and non-UAE	Survey	122 doctors & nurses (20.5% men; 79.5% women)	89 %	≤ 30 y.o.: 22 resp't (18%); 30–50 y.o.: 75 resp't (61.4%); ≥ 50 y.o.: 25 resp't (20%); Average age: 31–40; Married: 77%; Single: 18%; Divorced: 4.9%	Community Health Centers	-	Current smokers: 8.3%; Former smokers: 3.3%; 1–10 cigarettes per day: 42.9%; 10–20 cigarettes per day: 66.7%; Smoking types: Tobacco cigarettes and *shisha*.

*resp't: respondents; y.o.: years old

Table 1. Demographic Characteristics and Smoking Behavior of Respondents (continuance)

Author	Research Design	No. Of Respondents and Gender	Response/ Retention Level	Age Range/ Marital Status	Research Site	Respondents' Education	Smoking Behavior
AlTurkstani et al. (2016) Mecca, Saudi Arabia	Cross-sectional study	262 doctors (68.70% men; 31.30% women)	-	25–35 y.o.: Single: 22.5% Married: 77.5%	Commu-nity Health Centers/ Clinics	-	Occasional smokers: 7.3%; Daily smokers: 18.7%; Former smokers: 7.6%; 48 male smokers (26.7 %) and 1 female smoker (1.2%); 79.5% tobacco cigarette smokers, 17 moasel smokers (19.3%) and 3 *shisha* smokers (3.4%).
Abdulateef et al. (2016) Iraq	Web-based Cross-sectional survey,	430 doctors and dentists (55.9% men; 44.1% women)	42.2%	≤ 35 y.o.: 68 resp't (23.1%); 35–45 y.o.: 32 resp't (33.3%); ≥ 45 y.o.: 11 resp't (23.1%); Average age: 22.3± 4.8 y.o.	Hospitals	-	Total smokers: 112 (26.5%): 106 men (44.49%), 5 women (2.7%); 97 doctors (27.6%); 15 dentists (21.1%).
Alkhatatbeh et al., (2016) Jordan	Questionn aire-based cross-sectional Study	400 health workers (126 men (31.5%); 274 women (68.5%))	96%	Single: 12.8%; Married: 84.6%; Divorced: 2.7%; Average age: 39.4 y.o. (9.5%)	Primary Health Centers		Total smokers: 102 (25.5%) (60 men and 42 women); 30 former smokers (10.1%), 12 doctors (11.8%), 14 dentists (13.7%), 11 pharmacists (10.8%), 41 nurses (40.2%), other 24 health workers (23.5%).
Hamadeh et al. (2018) Bahrain, Saudi Arabia, and South Asia Communities	Popula-tion study	399	-	Average age: 33.4 + 12.9 y.o.	Cigarette Cessation Clinics	Senior High School; Under-graduate; and Postgraduate	Smoking Types Cigarettes: 64.3%; *Shisha*: 0.3%; Cigarettes and *shisha*: 24.4%; Cigarettes and other types: 3.3%; *Shisha* and other types: 0.3%; Cigarette, *shisha*, and other types: 6.2%.
Dar-Odeh et al. (2016) Saudi Arabia	Questionn aire-based Cross-sectional Study	400 dentists (55% men; 45% women)	93.5%	Married: 77; Single: 21; Divorced: 2	Dental Health Teaching Hospital	-	Total smokers: 14 (11 men and 3 women); Total *shisha* smokers: 26 (20 men and 6 women).

*resp't: respondents; y.o.: years old

Table 1. Demographic Characteristics and Smoking Behavior of Respondents (continuance)

Author	Research Design	No. Of Respondents and Gender	Response/ Retention Level	Age Range/ Marital Status	Research Site	Respondents' Education	Smoking Behavior
Nguyen et al. (2017) Vietnam	RCT	449 health workers (14% men; 86% women)	-	Average age: 43 y.o.	Village Health Workers		Total smokers: 17 (3.8%); Former smokers: 25 (5.6%).
Chang et al. (2016) Taiwan	Cross-sectional study	848 doctors, nurses, and general staff	56.5%	-	Hospital	-	39 current smokers (4.6%); 19 former smokers (2.2%).
Chatdokmaip-rai et al. (2017) Thailand	Cross-sectional study	262 women nurses	62.38 %	Average age: 23–26 y.o.	Occupa-tional Health Service	Under-graduate (S1); Postgraduate	1 current smoker; 6 former smokers (≥ 6 months ago).

*resp't: respondents; y.o.: years old

Discussion

This literature review analyzed the research findings of the 18 articles on the smoking behavior of health workers in the Asian region, which had met the inclusion criteria with various populations. Despite not representing the entire population of health workers, the results of this review can provide an overview of such behavior. We analyzed research articles on health workers' smoking behavior, knowledge, and attitudes toward smoking.

Health Workers' Smoking Behavior. Previous studies have found that the prevalence of health workers' smoking behavior was 4.6 to 44% (Chang et al., 2016; Shelley et al., 2014), with the most significant sample being that of 112 smokers (26.5%) (Alkhatatbeh et al., 2016), and the profession with the highest rate of smoking being nursing. According to a study in Jordan, the smoking rates of health workers in primary health care were 40.2% for nurses, 11.8% for doctors, 13.7% for dentists, 10.8% for pharmacists, and 23.5% for other health workers (Alkhatatbeh et al., 2016). The smoking behavior of doctors is consistently lower than that of nurses,

but this trend could change and is influenced by national cultural factors (Chambers, 2016).

This study also discovered that the smoking behavior of male health workers was higher than that of female health workers. Fifteen articles explained the high prevalence of smoking in men, supported by an almost balanced gender representation. A research article in Thailand even found only one out of 231 female respondents who smoked (Chatdokmaiprai et al., 2017). In China, smoking behavior was 48.9% for men and 2.1% for women (An et al., 2014). This result is consistent with a cohort study of ten countries that reported higher cigarette consumption in men than women (Lillard & Christopoulou, 2015).

Fourteen articles revealed that the average age of health workers who smoked was 22–55, categorized as the productive age range. Based on a study in India, 50% of health workers who smoked were aged 20–29 (Aggarwal et al., 2015). In addition, a study in Israel reported that the age at which people started smoking was between 6 and 25, with an average age of 18, and without gender differences (Shkedy et al., 2013).

The smoking intensity of health workers was 1–10 cigarettes per day (42.9%) or 10–20 cigarettes per day (66.7%). Six articles mentioned that the types of cigarettes commonly consumed were tobacco, *shisha*, cigars, *midwakh*, pipes, and *mousel*. A study in Bahrain reported that the smoking duration of *shisha* smokers was more than ten years (Hamadeh et al., 2018).

Knowledge of Health Workers on Smoking Behavior. Smoking behavior and exposure to smoke are hazardous to health and can increase the risk of cancer, cardiovascular disease, lung disease, reproductive disorders, including embryonic and fetal disorders (Centers for Disease Control and Prevention US et al., 2010).

Health workers agree that active and passive smoking behavior can increase the risk of these diseases (Abdulateef et al., 2016; Hamadeh et al., 2018). Similarly, Alkhatatbeh et al. (2016) suggest that smoking is harmful to health and that health workers are aware of this. Exposure to cigarette smoke is very dangerous to health. As stated by health workers in the literature review, the nicotine content in cigarette smoke can harm the fetus, increase the risk of neonatal death, and result in the risk of infertility in females (Alkhatatbeh et al., 2016). Health workers even believe that the nicotine content in cigarettes can pose a risk of male infertility (Chang et al., 2016). Studies in Israel, Saudi Arabia, and Bahrain suggest that health workers' factor in quitting smoking is their health.

Factors stimulating health workers to smoke include stress, the influence of smoking friends or family, addiction, and previous smoking experiences. According to Rezk-Hanna et al. (2018), factors inhibiting health workers from quitting smoking were the environment, stress, and nicotine addiction. AlTurkstani et al. (2016) found that the population of health workers in Bahrain and Mecca started smoking for the first time due to the influence of both playmates and co-workers.

The attitude of Health Workers towards Smoking Behavior. Health workers are role models responsible for preventing smoking behavior by educating people (patients) about the dangers of smoking for health. Alkhatatbeh et al. (2016) reveal that 92% of health workers were responsible for advising patients to quit smoking. In addition, 98% of doctors in Saudi Arabia recommend that smokers should not smoke around children (AlTurkstani et al., 2016). Providing education about the dangers of smoking and advising on smoking cessation is a form of responsible attitude shown by health workers. However, several factors hamper its implementation. Seven research articles in several countries indicate that the personal factors of health workers impeded the delivery of education and socialization of smoking prevention to patients. Based on a study in Israel, health workers were not comfortable providing education, considering it useless, and feeling irrelevant to their professional expertise. These were inhibiting factors in the prevention of smoking behavior. Other obstacles faced by public health workers in Vietnam are a lack of smoking cessation programs, a lack of government support for smoking cessation programs, and the absence of training for health workers.

Health workers in Vietnam supported training on smoking cessation counseling. Other studies found that only a small proportion of health workers received smoking prevention training, such as in Iraq (6.5%), Jordan (25.5%), Thailand (24%), Saudi Arabia (23.6%), and Vietnam (29%). These percentages indicate the lack of training in smoking prevention counseling. A total of 72% of health workers in the United Arab Emirates and 78.4% of public health workers in Vietnam had not received specialized smoking prevention training.

Health workers also supported policies related to smoking bans in workplaces to reduce and prevent smoking behavior. Smoking prevention policies have been a WHO priority since 2008.

This policy is outlined in the MPOWER program: Monitoring (monitoring tobacco use and prevention policies); Protecting (protecting people from exposure to cigarette smoke); Offering (offering assistance to quit smoking); Warning (warning about the dangers of tobacco); Enforcing (prohibiting tobacco advertising, sponsorship, and promotion), and Raising (increasing tobacco-related taxes). Such measures have been proven to be effective in reducing smoking behavior globally (WHO, 2017). Smoking prohibition policies in workplaces have been widely implemented in countries worldwide. They have been proven to lower the prevalence of smoking in workplaces by 6–22% and reduce smoking consumption by 14% every day (Centers for Disease Control and Prevention US et al., 2010). Even health workers in Iran, the United Arab Emirates, Jordan, and Vietnam widely support smoking prohibition policies in workplaces.

Conclusion

Health workers play an essential role in preventing smoking behavior, both as education providers and role models. Smoking prohibition policies in workplaces, specialized training for health workers in smoking behavior control, and smoking prevention service facilities are considered to prevent smoking behavior in Asian countries with a high population of smokers.

References

Abdulateef, D.S., Ali, A.J., Abdulateef, D.S., & Mohesh, M.I.G. (2016). Smoking knowledge, attitude, and practices among health care professionals from Sulaymaniyah City/Iraq. *Tobacco Use Insights, 9,* 1–6. doi: 10.4137/ TUI.S38171.

Aggarwal, V.P., Mathur, A., Dileep, C.L., Batra, M., & Makkar, D.K. (2015). Health professional's perception toward tobacco cessation: A cross-sectional study. *Journal of Indian Association of Public Health Dentistry, 13* (4), 438–443. doi: 10.4103/

2319-5932.171161.

Al Hosani, S., Al Ali, M., Al-Marashda, K., Al-Shamsi, N., Al-Ansari, T., Al-Behandy, A., Darwish, E., & Elhassan, A. (2015). Smoking prevalence, attitudes and behaviors of primary healthcare providers and its impact on their smoking cessation counseling practices. *Ibnosina Journal of Medicine and Biomedical Sciences, 7* (2), 47–55. doi: 10.4103/1947-489X.210270.

Alkhatatbeh, M.J., Alefan, Q., & Alzghool, M. (2017). Smoking prevalence, knowledge and attitudes among primary healthcare professionals: A study from Jordan. *Eastern Mediterranean Health Journal, 22* (12), 872–879. doi: 10.26719/2016.22.12.872.

AlTurkstani, A.H.M, Alkail, B.A., Hegazy, A.A., & Asiri, S.I. (2016). Knowledge, attitude, and practice among primary healthcare physicians toward smoking cessation in Makkah, Saudi Arabia. *International Journal of Medical Science and Public Health, 5* (7), 1–11. doi: 10.5455/ijmsph.2016.13112015224.

An, F.R., Xiang, Y.T., Yu, L., Ding, Y.M., Ungvari, G.S., Chan, S.W., Yu, D.S., Lai, K.Y., Qi, Y.K., Zeng, J.Y., Wu, P.P., Hou, Z.J., Correll, C.U., Newhouse, R., & Chiu, H.F.K. (2014). Prevalence of nurses' smoking habits in psychiatric and general hospitals in China. *Archives of Psychiatric Nursing, 28* (2), 119–122. doi: 10.1016/j.apnu.2013.11.008.

Centers for Disease Control and Prevention US, National Center for Chronic Disease Prevention and Health Promotion US, & Office on Smoking and Health US. (2010). *How tobacco smoke causes disease: The biology and behavioral basis for smoking-attributable disease: A report of the surgeon general.* Centers for Disease Control and Prevention. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK53017/

Chambers, J. (2016). *Attitudes of mental health care professionals toward the provision of tobacco dependence treatment in the transition to a smoke-free mental health unit: An exploratory mixed-method study* (Master's Theses).

Retrieved from https://researchonline.nd.edu. au/theses/142/

Chang, Y.Y., Yu, S.M., Lai, Y.J., Wu, P.L., Huang, K.C., & Huang, H.L. (2016). Improving smoking cessation outcomes in secondary care: Predictors of hospital staff willingness to provide smoking cessation referral. *Preventive Medicine Reports, 3*, 229–233. doi: 10.1016/j.pmedr.2016.02.002.

Chatdokmaiprai, K., Kalampakorn, S., McCullagh, M., Lagampan, S., & Keeratiwiriyaporn, S. (2017). Factors predicting the provision of smoking cessation services among occupational health nurses in Thailand. *Workplace Health & Safety, 65* (6), 253–261. doi: 10. 1177/2165079916670661.

Dar-Odeh, N., Alnazzawi, A., Shoqair, N., Al-Shayyab, M.H., & Abu-Hammad, O. (2016). Waterpipe tobacco smoking among dental practitioners: Prevalence and health perceptions. *Tobacco Use Insights, 9*. doi: 10.4137/ TUI.S40568.

Duaso, M.J., Bakhshi, S., Mujika, A., Purssell, E., & While, A.E. (2017). Nurses' smoking habits and their professional smoking cessation practices. A systematic review and meta-analysis. *International Journal of Nursing Studies, 67*, 3–11. doi: 10.1016/j.ij nurstu.2016.10.011.

Ghimire, M., Sharma, A., & Ghimire, M. (2014). Smoking and depression among healthcare workers. *Journal of Lumbini Medical College, 2* (1), 21–24. doi: 10.22502/jlmc. v2i1.50.

Giorgi, E., Marani, A., Salvati, O., Mangiaracina, G., Prestigiacomo, C., Osborn, J.F., & Cattaruzza, M. S. (2015). Towards a smoke-free hospital: How the smoking status of health professionals influences their knowledge, attitude and clinical activity. *Annali di Igiene, 27* (2), 447–459. doi: 10.7416/ai. 2015.2031

Hamadeh, R.R., Ahmed, J., Kawari, M.A., & Bucheeri, S. (2018). Smoking behavior of males attending the quit tobacco clinics in Bahrain and their knowledge on tobacco smoking health hazards. *BMC Public Health, 18,* 199. doi: 10.1186/s12889-018-5104-7.

Hoseinrezaee, H., Khodabandeh, S., Kheradmand, A., & Pilevarzadeh, M. (2013). Frequency of smoking and specialized awareness among doctors and nurses of hospitals in Kerman, Iran. *Addiction & Health, 5* (1–2), 51–56.

Hurley, S., Edwards, J., Cupp, J., & Phillips, M. (2015). Nurses' perceptions of self as role models of health. *Western Journal of Nursing Research, 40* (8), 1131–1147. doi: 10.1177/ 0193945917701396.

Juranić, B., Rakošec, Ž, Jakab, J., Mikšić, Š, Vuletić, S., Ivandić, M., & Blažević, I. (2017). Prevalence, habits and personal attitudes towards smoking among health care professionals. *Journal of Occupational Medicine and Toxicology, 12,* 20. doi: 10. 1186/s12995-017-0166-5.

La Torre, G., Pelone, F., Marino, M., & De Belvis, A.G. (2013). Smoking prevention through mass media campaigns. In G. La Torre. *Smoking Prevention and Cessation* (pp. 167–196). Springer US.

La Torre, G., Saulle, R., Unim, B., Angelillo, I.F., Baldo, V., Bergomi, M., Cacciari, P., Castaldi, S., Del Corno, G., Di Stanislao, F., Panà, A., Gregorio, P., Grillo, O.C., Grossi, P., La Rosa, F., Nante, N., Pavia, M., Pelissero, G., Quarto, M., … Boccia, A. (2014). Knowledge, attitudes, and smoking behaviours among physicians specializing in public health: A multicentre study. *BioMed Research International, 2014*, 516734. doi: 10.1155/2014/516734.

Lillard, D.R., & Christopoulou, R. (Eds.). (2015). *Life-course smoking behavior: Patterns and national context in ten countries*. Oxford University Press.

Mahfouz, A.A., Shatoor, A.S., Al-Ghamdi, B.R., Hassanein, M.A., Nahar, S., Farheen, A., Gaballah, I.I., Mohamed, A., & Rabie, F.M. (2013). Tobacco use among health care workers in Southwestern Saudi Arabia. *BioMed Research International, 2013*,

960292. doi: 10.1155/2013/960292.

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., Steward, L.A., & Prisma-P Group. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Review, 4* (1). doi: 10.1186/2046-4053-4-1.

Nguyen, N., Nguyen, T., Chapman, J., Nguyen, L., Kumar, P., VanDevanter, N., & Shelley, D. (2017). Tobacco cessation in Vietnam: exploring the role of village health workers. *Global Public Health, 13* (9), 1265–1275. doi: 10.1080/17441692.2017.1360376.

Rezk-Hanna, M., Sarna, L., Petersen, A. B., Wells, M., Nohavova, I., Bialous, S. (2018). Attitudes, barriers, and facilitators to smoking cessation among central and Eastern European nurses: A focus group study. *European Journal of Oncology Nursing, 35*, 39–46. doi: 10.1016/j.ejon.2018.04.001.

Sarna, L., Bialous, S. A., Wells, M., & Brook, J. (2018). Impact of a webcast on nurses' delivery of tobacco dependence treatment. *Journal of Clinical Nursing, 27* (1–2), e91–e99. doi: 10.1111/jocn.13875.

Sheals, K., Tombor, I., McNeill, A., & Shahab, L. (2016). A mixed-method systematic review and meta-analysis of mental health professionals' attitudes toward smoking and smoking cessation among people with mental illnesses: Mental health professionals' views on smoking. *Addiction, 111* (9), 1536–1553. doi: 10.1111/add.13387.

Shelley, D., Nguyen, L., Pham, H., VanDevanter, N., & Nguyen, N. (2014). Barriers and facilitators to expanding the role of community health workers to include smoking cessation services in Vietnam: A qualitative analysis. *BMC Health Services Research, 14*, 606. doi: 10.1186/s12913-014-0606-1.

Shelley, D., Tseng, T.Y., Pham, H., Keithly, S., Stillman, F., & Nyuyen, N. (2014). Factors influencing tobacco use treatment patterns among Vietnamese health care providers working in community health centers. *BMC Public Health, 14*, 68. doi: 10.1186/1471-2458-14-68.

Shkedy, Y., Feinmesser, R., & Mizrachi, A. (2013). Smoking habits among Israeli hospital doctors: A survey and historical review. *Israel Medical Association Journal, 15* (7), 407–409.

Sreeramareddy, C.T., Ramakrishnareddy, N., Rahman, M., & Mir, I. A. (2018). Prevalence of tobacco use and perceptions of student health professionals about cessation training: Results from global health professions students survey. *BMJ Open, 8* (5), e017477. doi: 10.1136/bmjopen-2017-017477

Tang, Y., Jiang, M., Li, D., Guan, W., Liang, Y., Zheng, J., Zheng, J.P., Chen, R.C., & Zhong, N.S. (2013). Association between awareness of harmful effects of smoking and smoking cessation advice provided by hospital chest physicians in Guangzhou, China: A multi-institutional cross-sectional survey. *Respirology, 18* (5), 790–796. doi: 10.1111/resp.12091.

WHO. (2017). *WHO report finds dramatic increase in life-saving tobacco control policies in last decade*. Retrieved from http://www.who.int/Mediacentre/News/Releases/2017/Tobacco-Report/En/

WHO. (2018). *WHO global report on trends in prevalence of tobacco smoking 2000-2025* (2nd Ed.). World Health Organization. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/272694/9789241514170-eng.pdf?ua=1