



PREVALENCE OF CIGARETTE AND WATERPIPE SMOKING AMONG WORKERS IN PRIMARY HEALTH CARE CENTERS IN MOSUL CITY-IRAQ

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ABSTRACT

Tobacco use is one of the major public health threats nowadays. Smoking can affect everybody organ. Health professionals should play pivotal roles in tobacco control, and their attitude and practice toward tobacco use can affect the health of the community.^[38] Therefore, assessing and influencing physicians' attitudes and practice are one of the alternatives to reduce smoking prevalence in the community.^[38] Accordingly, the present study was conducted to describe the smoking behavior and attitude among workers in primary health care centers. According to author knowledge, few studies are present in this respect in mosul city. So, this study may be very useful reference for future evaluation of smoking status among workers in primary health care centers in mosul city. This study was conducted on smoking behaviors and attitudes among workers in six primary health care centers in Mosul, three located in the right bank of Tigris river and three located in the left bank of Tigris river. This study was conducted over a period of 6 months extending from 1/2/2020 to 1/8/2020. This is a descriptive cross sectional study. The present study included all 340 workers (from both genders) working at these six primary health care centers. A total of 316 workers returned the questionnaire with response rate of 93%. Data collection was done through using a self-administered questionnaire. The frequency of distribution of cigarette Smoking among workers primary health care centers was 24.62%. However; when stratified by gender, the frequency distribution among male and female workers were 46.91% and 1.94% respectively. The mean number of cigarettes smoked per day was 24.1. The mean age of starting smoking of the current smokers was 21.1 years. The mean age at which smoking started and stopped for Ex-smoker were 20 and 33.5 years respectively. Prevalence of ex-smoker in the present study was 3.79% The highest percent of current smokers in the present study (41.7%) were in the age group 30-39 years, about 15% of current smokers in the present study were heavy smokers (smoke more than 20 cigarettes per day), about 64.55% of current smoker had no plane to quit smoking in the next 6 months, about 38% workers in primary health care centers who currently smoke in the present study attempted to quit smoking (for at least one week), less than 19% of currently smoking workers in primary health care centers in the present study had smoked in front of the patients (16.45% sometimes and 2.53% often), about 91.7% of ex-smokers in primary health care centers were daily smoker. The prevalence of waterpipe smoking among male workers in primary health care centers (daily and occasional) in the present study was 27.17%. The prevalence of occasional waterpipe smoking among female workers in primary health care centers (6.49%). In general, most of workers in primary health care centers hold a positive attitudes towards smoking with some significant differences between "current" and "never" smokers where the current smokers were generally less likely to agree with statements that would change their current freedom to smoke.

INTRODUCTION

World Health Organization (WHO) stated that tobacco use is the leading cause of death in developed countries. Each year, around 6 million deaths occur worldwide as a result of tobacco use and causes hundreds of billions of dollars of economic damage worldwide each year.^[1]

Most of these deaths occur in low- and middle-income countries, and this disparity is expected to widen further over the next several decades. If current trends continue, WHO anticipated that by 2030 tobacco will kill more than 8 million people worldwide each year, with 80% of these premature deaths among people living in low and middle-income countries.^[1]

Over the course of the 21st century, tobacco use could kill a Billion people or more unless urgent action is taken.^[1]

The MPOWER strategy describes the main methods recommended by the WHO to control tobacco use.^[11] Each letter in the strategy's name represents one of these methods: Monitor the epidemic, Protect the health of non-smokers from air polluted by tobacco smoke, offer help to smokers to quit smoking, Warn the population about the risks associated with tobacco use, Enforce bans on tobacco advertising sponsorship and promotion, and Raise taxes on tobacco.^[2]

There is no doubt that the prevalence of and attitudes towards tobacco use among health professionals are crucial in achieving a suitable management of this disease. Health professionals have traditionally been considered to fulfill three roles: being a role model, educator and care provider.^[3]

Though it is indeed important for all health professionals to systematically advise all their Patients who are smokers to quit using tobacco.^[1] It is also necessary to help all smokers who seem ready to make a serious attempt to quit succeed in doing So. Studies agree that a significant reduction in the prevalence of tobacco use among the group of health professionals in a given country is the inevitable first step in bringing about a significant reduction in the prevalence of tobacco use in that country's general population.^[1]

Health care workers including physicians play an important role in the identification, assessment, and treatment of smokers. Most people regard physicians as the most reliable source of knowledge and advice on matters of health.^[4]

Cigarette smoking is the single most preventable cause of morbidity and mortality and accounts for one in five deaths in the United States.^[1] During 2009 to 2012, the annual estimated economic loss attributed to smoking includes \$130 billion in direct medical expenses, \$151 billion in lost productivity, and an additional \$5.6 billion (in 2006) for lost productivity due to secondhand smoke exposure.^[5]

In 2012, there were 16.9 million workers who provided health care and social assistance.^[6] According to the Bureau of Labor Statistics by 2022, the overall employment in the health care and social assistance sector is projected to increase to an estimated 22 million; with the largest increase in health care support occupations (by 28%), and the health care practitioners and technical occupations (by 22%).^[6]

Smoking prevalence among physicians has declined from 40% in the 1960s to less than 5% in 2007 and for registered nurses and licensed practical nurses from 32% in 1974 to 18% in 1991^[7,8]; however, between 2003 and

2007, smoking prevalence among health care providers was practically unchanged and licensed practical nurses (21%) and respiratory therapists (19 %) had the highest smoking prevalences.^[8] During 2004 to 2010, an estimated 24% of workers in health care support occupations were current smokers.^[9] These estimated prevalences greatly exceed the Healthy People 2020 objective to reduce cigarette smoking to 12% or less.^[10]

A brief history of smoking

How long has tobacco been around?

- Tobacco has been growing wild in the Americas for nearly 8000 years.
- Around 2,000 years ago tobacco began to be chewed and smoked during cultural or religious ceremonies and events.^[5]

When were cigarettes developed?

- Cigarette making machines were developed in the latter half of the 1800s. The first such machines produced about 200 cigarettes per minute (today's machines produce about 9,000 per minute). Cheap mass production and the use of cigarette advertising allowed tobacco companies to expand their markets during this period.^[11]

What are current global smoking trends?

- As smoking prevalence rates have declined in the traditional markets of North America and Western Europe, the tobacco industry has refocused its promotional efforts onto the less developed and emerging nations in Africa, Asia, the Middle East, the former Soviet Union and Latin America.^[11]
- The often weak regulatory environment in these countries has further encouraged the industry to target populations in these nations.^[11]

What caused the growth and later decline of smoking in traditional markets?

- The prevalence of cigarette smoking continued to grow in the early 20th Century mainly as a result of:
- The development of new forms of tobacco promotion.^[11]
- The ability of the tobacco industry through its power and wealth to influence the policies of political parties.^[11]
- Smoking increased dramatically during the world wars, mainly due to the policy of providing free cigarettes to allied troops as a 'morale boosting' exercise.^[11]
- Later in the twentieth century, smoking became less popular due to a rapid increase in knowledge of the health effects of both active and passive smoking.^[11]
- People also became aware of the tobacco industry's efforts to mislead the public about the health effects of smoking and to manipulate public policy for the short-term interests of the industry.^[11]

What is in a cigarette?

Here are a few of the chemicals in tobacco smoke and other places they are found:

- **Acetone**—found in nail polish remover
- **Acetic acid**—an ingredient in hair dye
- **Ammonia**—a common household cleaner
- **Arsenic**—used in rat poison
- **Benzene**—found in rubber cement and gasoline
- **Butane**—used in lighter fluid
- **Cadmium**—active component in battery acid
- **Carbon monoxide**—released in car exhaust fumes
- **Formaldehyde**—embalming fluid
- **Hexamine**—found in barbecue lighter fluid
- **Lead**—used in batteries
- **Naphthalene**—an ingredient in mothballs
- **Methanol**—a main component in rocket fuel
- **Nicotine**—used as an insecticide
- **Tar**—material for paving roads
- **Toluene**—used to manufacture paint.^[12]

Smoking and Increased Health Risks

Smokers are more likely than non-smokers to develop heart disease, stroke, and lung cancer. Estimates showed that smoking increases the risk:

- For coronary heart disease by 2 to 4 times
- For stroke by 2 to 4 times
- Of men developing lung cancer by 25 times
- Of women developing lung cancer by 25.7 times
- Smoking causes diminished overall health, increased absenteeism from work, and increased health care utilization and cost.^[13]

How Is Smoking Related to Heart Disease and Stroke?

Smoking is a major cause of CVD and causes one of every four deaths from CVD. Smoking can:

- Raise triglycerides (a type of fat in your blood).^[14,15]
- Lower “good” cholesterol (HDL).^[14,15]
- Make blood sticky and more likely to clot, which can block blood flow to the heart and brain.^[14,15]
- Damage cells that line the blood vessels.^[14,15]
- Increase the buildup of plaque (fat, cholesterol, calcium, and other substances) in blood vessels.^[14,15]
- Cause thickening and narrowing of blood vessels.^[14,15]

How Is Smoking Related to COPD?

COPD is usually caused by smoking.^[14,15] Smoking accounts for as many as 8 out of 10 COPD-related deaths. However, as many as 1 out of 4 Americans with COPD never smoked cigarettes.^[14,15]

Smoking during childhood and teenage years can slow how lungs grow and develop. This can increase the risk of developing COPD in adulthood.^[14,15]

Health Effects of Smoking and Secondhand Smoke on Pregnancies

- Women who smoke have more difficulty becoming pregnant and have a higher risk of never becoming pregnant.^[15]
- Smoking during pregnancy can cause tissue damage in the unborn baby, particularly in the lung and brain, and some studies suggests a link between maternal smoking and cleft lip.^[14,15]
- Studies also suggest a relationship between tobacco and miscarriage. Carbon monoxide in tobacco smoke can keep the developing baby from getting enough oxygen. Tobacco smoke also contains other chemicals that can harm unborn babies.^[14,15]

Health Effects of Smoking and Secondhand Smoke on Babies

- Mothers who smoke are more likely to deliver their babies early. Preterm delivery is a leading cause of death, disability, and disease among newborns.^[14,15]
- One in every five babies born to mothers who smoke during pregnancy has low birth weight. Mothers who are exposed to secondhand smoke while pregnant are more likely to have lower birth weight babies. Babies born too small or too early are not as healthy.^[14,15,16]
- Both babies whose mothers smoke while pregnant and babies who are exposed to secondhand smoke after birth are more likely to die from sudden infant death syndrome (SIDS) than babies who are not exposed to cigarette smoke.^[14,15,16] Babies whose mothers smoke are about three times more likely to die from SIDS.^[14]
- Babies whose mothers smoke while pregnant or who are exposed to secondhand smoke after birth have weaker lungs than other babies, which increases the risk for many health problems.^[14,15,16]

WATERPIPE TOBACCO SMOKING

Background and history

While there are numerous kinds of waterpipe around the world, the kind addressed in this note is popularly referred to as “narghileh”, “shisha” or “hookah”, the type globalized in the 1990s. It includes a head or tobacco bowl (in which tobacco is placed), a body, a water bowl, a hose and a mouthpiece. Holes in the bottom of the head allow smoke to pass into the body’s central conduit, which is submerged in water (or alcohol or soft drinks), half-filling the water bowl. The leather or plastic hose exits from the top of the water bowl and terminates with a mouthpiece, from which the smoker inhales.^[13] Charcoal or a briquette is placed on top of the tobacco-filled head, often separated from the tobacco by a perforated aluminium foil sheet.^[13] After the head or tobacco bowl is loaded and the charcoal lit, the smoker inhales through the hose, drawing air into and around the charcoal.^[13]

The resulting heated air, which also contains charcoal combustion products, then passes through the tobacco,

which, as it is heated, produces the mainstream smoke aerosol.^[13] The smoke passes through the waterpipe body, bubbles through the water in the bowl and is carried through the hose to the smoker.^[13] Because of the communal nature of waterpipe smoking, with sharing of a mouthpiece (figure 1), there is potential transmission of infectious diseases. There are regional and cultural differences in waterpipe design features, such as the size of the head or water bowl and the number of mouthpieces, but all waterpipes contain water through which smoke passes before reaching the smoker.^[13]

A Middle-East waterpipe



Figure 1.

Waterpipes should be differentiated from the electronic devices known as “e-hookahs”, “e-shisha” or “hookah pens”. These devices are types of electronic nicotine delivery systems, which can be flavoured so that the taste is similar to that of the flavoured waterpipe tobacco called maassel. The electronic devices do not involve charcoal combustion; rather, a sweetened liquid is electrically heated to create an aerosol that is then inhaled. Research is currently being done on these devices.^[16]

Although cigarette smoking is the dominant form of tobacco use in most parts of the world, waterpipe use accounts for a significant and growing share of tobacco use globally. It is most prevalent in Asia, Africa and the Middle East, but it is a rapidly emerging problem on other continents.^[16]

In the WHO Eastern Mediterranean Region, waterpipe use has surpassed cigarette use in some countries, with growing use by both men and women and, most seriously, among young people and children.^[16]

According to one historical account, the waterpipe was invented in India by a physician during the reign of Emperor Akbar (who ruled from 1556 to 1605) as a

purportedly less harmful method of tobacco use. The physician, Hakim AbulFath, suggested that tobacco “smoke should be first passed through a small receptacle of water so that it would be rendered harmless.” Thus, the widespread but unsubstantiated belief held by many waterpipe users today—that the practice is relatively safe—may be as old as the waterpipe itself.^[17,18]

Factors that contribute to the increase in prevalence and spread of use

It is hard to identify all the factors responsible for the global spread of an addictive behaviour such as waterpipe smoking. An addictive behaviour tends to spread gradually unless it is countered by effective policies and regulations. The focus of this advisory note is on the unique features of waterpipes and the combination of factors, within or outside the context of the waterpipe, that have contributed to its fast spread globally.^[19] These are: the introduction of flavoured tobacco, social acceptability due to the café and restaurant culture, developments in mass communication and social media and lack of waterpipe-specific policy and regulations.^[19]

Lack of waterpipe-specific policy and regulations

Despite the remarkable success of public health policies in reducing cigarette smoking in many countries, waterpipe smoking has thrived in the wake of strict tobacco control policies and regulations that are mostly cigarette-oriented.^[20,21] For example, waterpipe venues and products in many developed countries are exempt from tobacco control policies, and lack of enforcement of relevant tobacco control policies is the main problem in developing countries. This has contributed to the proliferation of waterpipe venues all over the world.^[20,21]

While cigarette pack size and packaging are fairly uniform worldwide, this is not the case for waterpipes. Waterpipes vary in shape and size, are less portable, comprise multiple parts, are often shared and involve diverse commercial stakeholders. Therefore, many policy-related elements must be waterpipe-specific.^[22] For example, a typical waterpipe smoker in a public venue does not see the tobacco package or the warning labels about the health risks associated with the use of tobacco, charcoal combustion or spread of infection.^[23,24]

Regional and global patterns of waterpipe smoking

Waterpipe use is, however, increasing globally, particularly among schoolchildren and university students. In many countries, waterpipe smoking is not monitored specifically; however, a systematic review of studies of the prevalence of waterpipe smoking in various populations and subpopulations showed alarmingly high numbers, especially among high-school and university students of Middle Eastern descent.^[25]

Several epidemiological studies have indicated the growing use of waterpipes in all WHO regions and among young people and adults of both genders.

According to the Global Youth Tobacco Survey of tobacco use among 13–15-year-old children, use of tobacco products other than cigarettes increased in 34 of 100 sites surveyed, which was largely attributed to rising waterpipe use. The prevalence was 6–34% in the countries that reported data.^[26]

Health effects of the toxicant content of waterpipe smoke

As burning charcoal is usually used as the heat source in waterpipes, the smoke contains toxicants emitted from both the charcoal and the tobacco product, including flavorings. Thus, the composition of both the charcoal and the tobacco can influence the toxicant content of the smoke.^[27]

Laboratory studies during the past decade with the use of modern analytical methods and reliable machine smoke generation and sampling protocols have begun to elucidate the toxicant content of waterpipe smoke. Numerous carcinogens and toxicants have been identified, such as tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons (PAH) (e.g. benzo[a]pyrene, anthracene), volatile aldehydes (e.g. formaldehyde, acetaldehyde, acrolein), benzene, nitric oxide and heavy metals (arsenic, chromium, lead).^[27] The charcoal contributes to high levels of carbon monoxide (CO) and the generation of carcinogenic PAH. Some of these chemicals are classified by the International Agency for Research on Cancer (IARC) as human carcinogens.^[27] In 2014, it was reported that

people exposed to waterpipe smoke are at risk for leukaemia due to benzene uptake.^[27]

Additional factors that influence the toxicant content of the waterpipe smoke aerosol are puff topography (i.e. the number of puffs drawn, the puff volume, duration of puffs and the interval between consecutive puffs) and waterpipe design and construction.^[28]

Waterpipes are not standardized, although some attempt has been made to standardize them, and they therefore vary in numerous ways, including the volume of the head space above the water and the porosity of the hose through which the user draws smoke. Differences in hose porosity can greatly influence the toxicant content, by varying dilution and combustion conditions.^[28]

Published reports on the toxicant content of waterpipe smoke thus refer to a particular combination of charcoal and tobacco and specific waterpipe features and puffing parameters. In the same way as for cigarette smoke, reports on the toxicant content of waterpipe smoke vary widely. Nevertheless, all the studies to date indicate that, during a typical waterpipe use session, the user will draw large doses of toxicants (ranging from less than one to tens of cigarette equivalents) (figure 2). These toxicants have been linked to addiction, heart and lung diseases, and cancer in cigarette smokers and can result in similar outcomes in waterpipe users if these toxicants are absorbed in the body in appreciable amounts.^[29,30,31,32,33]

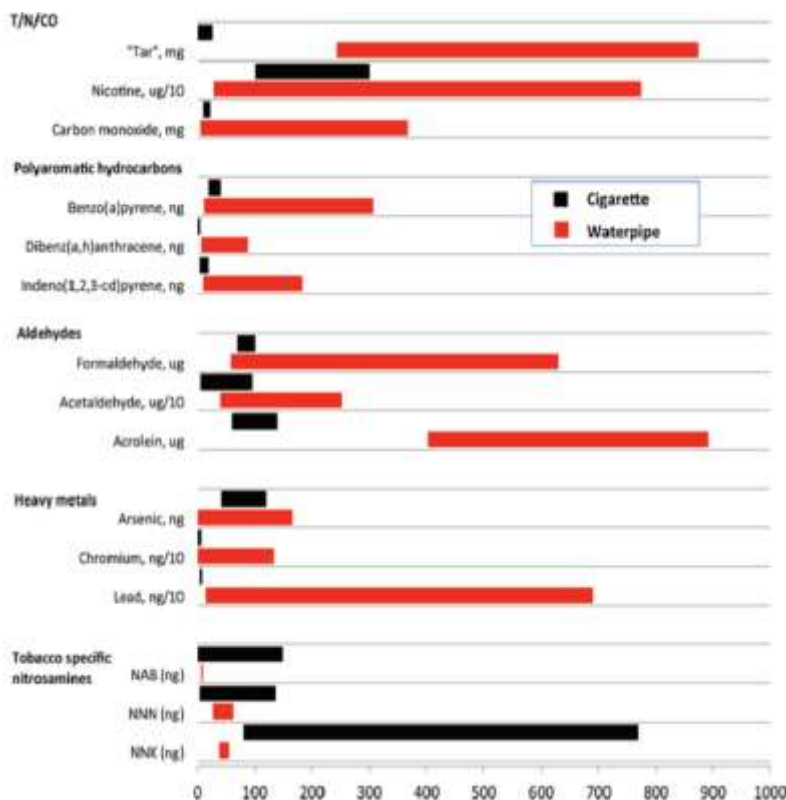


Figure 2: Reported Ranges of Toxicants Produced During A Single 1-H Session of Waterpipe Use (In Red) and From A Single Cigarette (In Black).

The nicotine in waterpipe products is responsible for their dependence potential (addictiveness). For a single smoking session of 10 g of maassel tobacco with 1.5 quick-lighting charcoal discs applied to the waterpipe head, 2.94 mg nicotine, 802 mg “tar” and 145 mg CO were measured in the mainstream smoke.^[16]

Waterpipes as a bridge to cigarette smoking

Another worrisome aspect of the spread of waterpipe smoking is its potential to thwart cessation attempts by adult cigarette smokers and to serve as a gateway to cigarette smoking among young people. Several lines of evidence support this potential. First, studies of smoking cessation in the Eastern Mediterranean Region have

shown that some people who have quit cigarettes switch to waterpipes, perhaps to sate their craving and avoid withdrawal.^[34]

The potential of waterpipes to replace cigarettes for abstinent cigarette smokers was investigated further in a clinical laboratory study in which dual waterpipe and cigarette smokers who had been abstinent for 12 h attended two randomly ordered sessions (waterpipe or cigarette) separated by 48 h. For both methods of tobacco use, the scores for withdrawal and craving were high at the beginning of the session (before smoking) and were significantly and comparably reduced during smoking either a cigarette or a waterpipe^[35] (figure 3).

Mean scores for the item “Urge to smoke” in abstinent dual cigarette–waterpipe smokers

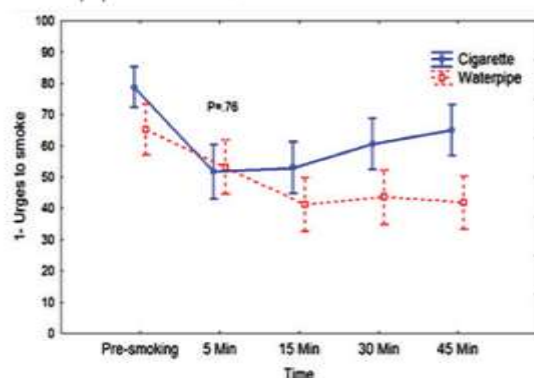


Figure 3.

AIM AND OBJECTIVES

Aim of the study

This study was conducted to describe the general situation of smoking behavior and attitude about tobacco use and tobacco control among health workers in primary health care centers in mosul city.

Specific Objectives

1. To determine the frequency distribution of cigarette and waterpipe smoking among the study group.
2. To assess the smoking behavior of the study group in respect to their current smoker, ex-smoker or never-smoker history.
3. To evaluate the behavior of the current smokers in the study group in respect to their number of cigarettes and waterpipe smoked per day, age at which smoking started and their readiness to quit smoking.
4. To evaluate the attitude of the study group in respect to their agreement or disagreement to items on tobacco and tobacco control and how the health workers would be a role model for their patients.

MATERIAL AND METHODS

Ethical Issue and Preliminary Arrangement

Prior to data collection, essential official permissions were obtained from Nineveh Health Directorate (Appendix II).

Ethical considerations approved by ethical committee, at Nineveh Health Directorate, include written consent form in which ethical review was described as the purpose of the study and what was wanted from the participants to do, also assurance of the participants about the singularity of their personal information according to the proposal format for research project protocol depended in the Iraqi Ministry of Health.

Study setting

This study was conducted on smoking behaviors and attitudes among workers in six primary health care centers in Mosul, three located in the right bank of Tigris river and three located in the left bank of Tigris river.

The six primary health care centers were:

- 1) Al-Quds primary health care center.
- 2) Al-Zuhor primary health care center.
- 3) Al-Qadesia primary health care center.
- 4) Al-Tib Al-Riyadhy primary health care center.
- 5) Al-Gharby primary health care center.
- 6) Nables primary health care center.

Study period

This study was conducted over a period of 6 months extending from 1/2/2020 to 1/8/2020.

Study design

This is a descriptive cross sectional study.

Study population

The present study included all 340 workers (from both genders) working at these six primary health care centers. A total of 316 workers returned the questionnaire with response rate of 93%.

Case Definition

The respondents were divided into 3 groups according to their cigarette smoking "current smoker", "Ex-smoker" and "never smoker" based on the following definitions:^[36]

Current smoker: is someone who currently smokes cigarettes regularly either daily or occasionally.

Ex-smoker: is someone who used to smoke cigarette regularly.

Never smoker: is someone who had never smoked cigarette regularly.

Regarding the questions about the attitudes toward smoking, workers who responds with strongly agree or agree considered to have a positive attitude.^[37]

Data collection

Data collection was done through using a self-administered questionnaire which was modified from the questionnaire developed by the WHO Global Health Professionals Survey (GHPS) and Queen's University Family Medicine Development Program in the Balkans Region.^[37]

The questionnaire consisted of the following four main parts:-

1. Personal data of the workers in primary health care centers concerning their age, gender, marital status and working position.
2. Cigarette use: duration of smoking, age at which smoking started, number of cigarette per day, smoking in front of the patient or not and readiness to quit cigarette smoking.
3. Questions to assess personnel attitudes towards smoking and the role of workers in primary health care centers regarding smoking cessation in their patients. The questions were focused on two parts. The first part described the ban on smoking and the other part was on how the workers in primary health care centers would be the role models of no-smoking to the public and their patients.
4. Questions to assess waterpipe smoking of workers in primary health care centers.

Statistical Analysis

The collected data were reviewed, coded, verified, and statistically analyzed using minitab version 16. The results were analyzed by descriptive and analytical

methods. Descriptive statistics, Chi square tests and Z test of two proportion were used in evaluating the results. P-value of <0.05 was accepted as a significant value.

RESULTS

3.1 socio-demographic data of the study population

Table (3.1) shows the social and demographic characteristics of the study sample, of which (316) respondents, and it is clear that the percentage of males reached (51.3%), while the percentage of females reached (48.7%). As for their ages, the largest proportion of the ages of the sample members ranged between (33-39) years. As for the marital status of the sample members, it was (85.4%) for married individuals, and (10.75%) for unmarried individuals, while it was found (2.215%) for widows, while the rest of the percentage (1.58%) was for divorced individuals. As for the work position of the sample members, it is clear that the percentages represented by (15.5% - 0.88% - 2.53% - 2.84% - 26.89% - 8.22% - 6.32% - 1.89% - 3.16% - 10.75% - 6.01% - 3.79% - 3.16%) is for each of (doctor - dentist - pharmacist - service worker - nurse - ministerial contractor - senior craftsman - accountant - technical observer - laboratory assistant - pharmacist assistant - writer - and radiologist) respectively. As for the workplace for the study sample, whose number is (316), they were distributed among (23.1%) for the Al-Quds Health Center and (16.4%) for the Gharbe Health Center, while (15.8%) for each of the health centers (Zuhur, Nablus and Qadisiyah), while the percentage of the Medical Al-Tib-Al-Riyadhy ratio (12.9%) of the sample. Thus, these results can be interpreted as evidence of the diversity and maturity of the individuals in the study sample.

3.2 prevalence of smoking among workers in primary health care centers

Table (3.2) shows that the prevalence of current cigarette smoking among the sample, for males, was 46.91 (45.06% were daily smokers and 1.85% were occasional smokers). While the percentage of females was 1.94%, distributed between daily and occasional smokers. It is also clear that (7.40%) of the males were former smokers and (71.2%) of the sample had never smoked.

It was obvious that female workers in primary health care centers had a low prevalence rate compared to male workers in primary health care centers and it had a significant P-value (P-value=0.000).

Table 3.1: Socio-Demographic Characteristics Of The Participants.

CHARACTCINLTIC		MALE		FEMALE		TOTAL	
AGE(YEARS)	20-29	NO.	%	NO.	%	NO.	%
	30-39	6	1.9	10	3.1	16	5
	40-49	57	18.04	64	20.25	121	38.29
	50-59	58	18.35	49	15.5	107	33.85
	60≥	39	12.34	30	9.5	69	21.84
Marital Status	Single	14	4.43	20	6.33	34	10.76
	Married	148	46.83	122	38.6	270	85.44
	Divorced	0	0	5	1.58	5	1.58
	Widow	0	0	7	2.21	7	2.21
Working Position	Doctor	18	5.7	31	9.81	49	15.5
	Dentist	9	2.85	19	6	28	8.86
	Pharmacist	1	0.316	7	2.21	8	2.53
	Service worker	7	2.21	2	0.63	9	2.85
	Nurse	47	14.87	38	11.7	85	26.9
	Ministerial Contractor	18	5.7	8	2.53	26	8.22
	Older Craftsmanship	19	6	1	0.316	20	6.33
	Accountant	3	0.95	3	0.95	6	1.9
	Artistic Observer	5	1.58	5	1.58	10	3.16
	Lab assistant	13	4.11	21	6.645	34	10.76
	Pharmacist`s assistant	8	2.53	11	3.48	19	6
	Writer	6	1.9	6	1.9	12	3.8
x-ray worker	7	2.21	3	0.95	10	3.16	
Working Place	Al_Quds health center	39	12.34	34	10.76	73	23.1
	AL_Tub alRydh healthy center	18	5.7	23	7.3	41	13
	AL_Zuhoor healthy center	23	7.3	27	8.54	50	15.82
	AL_Gharbee healthy center	32	10.12	20	6.33	52	16.45
	Nablus healthy center	31	9.8	19	6	50	15.82
	AL_Qadisiyah healthy center	20	6.33	30	9.5	50	15.82
		39	12.34	34	10.76	73	23.1

Table 3.2: Smoking status of the Participants.

Smoking status		Male no.(%)	Female no.(%)	Total no.(%)	P-value* no.(%)
Current smoker	daily	73 (45.06)	1 (0.649)	74 (23.4)	0.000
	Occasional	3 (1.85)	2 (1.29)	5 (1.58)	0.000
Ex-smoker		12 (7.40)	-----	12 (3.79)	0.000
Never smoker		74 (45.6)	151 (98.0)	225 (71.2)	0.000
Total		162 (100.0)	154 (100.0)	316 (100.0)	

Figure (3.1) shows that the prevalence of cigarettes smoking in the study sample was about 25% (23.4% were daily smoker and 1.58% were occasional smoker).

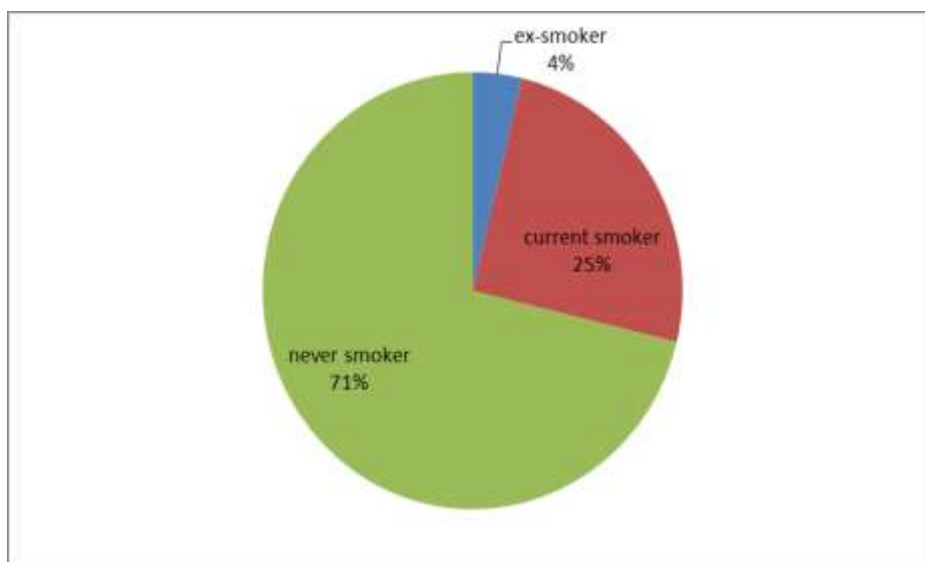


Figure 3.1: Frequency Distribution of Cigarettes Smoking of The Study Group.

Table (3.3) shows the frequency distribution of cigarette smoking status according to the ages of the study sample, and according to the age group (20-29), (3.79%) were current smokers, and (5.77%) were non-smokers. While the age group (30-39) represented (41.7%) for current smokers, which was the highest rate for this age groups, and (16.6%) for former smokers, and non-smokers

(38.2%). As for the age group (40-49), it was (29.1%) current smokers, (50%) of former smokers and (34.6%) of them were non-smokers, and thus it becomes clear that the three age groups above were the ones who accounted for the most percentages. The individuals of the sample.

Table 3.3: Frequency Distribution of Cigarette Smoking Status By Age.

Age (years)	Smoking status			Total no.(%)
	Current smoker no.(%)	Ex-smoker no.(%)	Non- smoker no.(%)	
20-29	3 (3.79)	-----	13 (5.77)	16 (5.06)
30-39	33 (41.7)	2 (16.6)	86 (38.2)	121(38.2)
40-49	23 (29.1)	6 (50.0)	78 (34.6)	107(33.8)
50-59	19 (24.0)	4 (33.3)	46 (20.0)	69 (21.8)
≥60	1 (1.26)	-----	2 (0.88)	3 (0.94)
Total	79 (100.0)	12 (100.0)	225(100.0)	316(100.0)

Table (3.4) displays the smoking status of the sample members according to their marital status, and it was found that most of the sample (255) were non-smokers

and most of them were married, at a rate of (83.55%). As for the rest of the percentages, they were distributed among the unmarried, divorced and widowed women.

Table (3.4) smoking status among workers in primary health care centers according to their Marital Status.

Marital status	Smoking status			Total no.(%)
	Current smoker no.(%)	Ex-smoker no.(%)	Non- smoker no.(%)	
Single	7 (8.86)	-----	27 (12.0)	34 (10.75)
Married	70(88.6)	12 (100.0)	188(83.55)	270(85.44)
Divorced	2 (2.53)	-----	3 (1.33)	5 (1.58)
Widow	-----	-----	7 (3.11)	7 (2.21)
Total	79 (100.0)	12 (100.0)	225 (100.0)	316 (100.0)

Table (3.5) indicates the smoking situation among the sample members according to their job position, and it can be seen from it that most of the sample (255) were non-smokers, and the largest percentage was for nurses as it reached (23.11%). As for individuals (79), they

were current smokers, and the largest percentage was for doctors, reaching (11.39%). While (12) members of the sample were former smokers, and the largest percentage was (33.33%) for nurses.

Table 3.5: Smoking Status Among Workers In Primary Health Care Centers According To Their Working Position.

Working Position	Smoking status			Total no.(%)
	Current smoker no.(%)	Ex-smoker no.(%)	Non- smoker no.(%)	
Doctor	9 (11.39)	1 (8.33)	39 (17.33)	49 (15.5)
Dentist	2 (2.53)	2 (16.66)	24 (10.66)	28 (8.86)
Pharmacist	1 (1.26)	-----	7 (3.11)	8 (2.53)
Service Worker	5 (6.32)	-----	4 (1.77)	9 (2.84)
Nurse	29 (36.7)	4 (33.33)	52 (23.11)	85 (26.89)
MinisterialContractor	7 (8.86)	-----	18 (8.0)	25 (7.9)
Older Craftsmanship	8 (10.12)	2 (16.66)	10 (4.44)	20 (6.32)
Accountant	2 (2.53)	-----	4 (1.77)	6 (1.89)
Artistic Observer	-----	-----	10 (4.44)	10 (3.16)
Lab assistant	4 (5.06)	1 (8.33)	29 (12.88)	34 (10.75)
Pharmacis Assistant	4 (5.06)	-----	15 (6.66)	19 (6.01)
Writer	4 (5.06)	1 (8.33)	8 (3.55)	13 (4.11)
X-ray worker	4 (5.06)	1 (8.33)	5 (2.22)	10 (3.16)
Total	79 (100.0)	12(100.0)	225(100.0)	316 (100.0)

3.3 smoking behaviors of currently smoking workers in primary health care centers

The mean age and standard deviation of starting smoking of the current smokers was 21.1 years \pm 8.3 and the mean number and standard deviation of cigarettes smoked per day was 24.1 cigarettes \pm 12.5.

Table (3.6) shows the distribution of current smokers according to their smoking habits. In terms of the age at which members of the sample started smoking, it becomes clear that (51.89%) were those under twenty years of age, while (37.97%) were between 20-29 years old. As for the percentage (10.12%), it was for ages 30 and over. As for the number of cigarettes that the sample members smoked per day, it is (27.84%) of the sample members smoked less than 10 cigarettes during the day, and (59.96%) of the sample members smoke 11-20 cigarettes per day. While the percentage (7.59%) is for everyone who smokes 21-40 and 40 and over. With

regard to smoking in front of patients, the largest percentage of the sample, of which (64) individuals, was (81.01%), who did not smoke in front of the sick, and (16.45%) smoked at times, while (2.53%) smoked mostly in front of patients. As for stopping smoking for at least a week, most of the sample members who did not stop smoking, as their number reached (49) by (62.02%), and the percentage (37.97%) of the sample members were those who stopped smoking. As for preparing to quit smoking, the table shows that (64.55%) of the sample members were not ready to quit during the next six months, and (18.98%) of the sample think about quitting smoking within 6 months, while (16.45%) of the sample members are now ready to quit smoking.

Table 3.6: Distribution Of Current Smokers According to smoking habits.

Characteristics		N=79	
		No.	%
Age at which smoking started	<20 years	41	(51.89)
	20-29 years	30	(37.97)
	\geq 30years	8	(10.12)
Number of cigarettes per day	\leq 10 cigarettes per day	22	(27.84)
	11-20 cigarettes per day	45	(59.96)
	21-40 cigarettes per day	6	(7.59)
	\geq 40	6	(7.59)
Smoking in front of the patients	Never	64	(81.01)
	Sometimes	13	(16.45)
	Often	2	(2.53)
Ever stopped smoking for at least one week	Yes	30	(37.97)
	No	49	(62.02)
Readiness to quit	Not ready to quit within the next 6 month	51	(64.55)
	Thinking about quitting within 6 month	15	(18.98)
	Ready to quit now	13	(16.45)

3.4 smoking behavior of ex-smokers

The mean age and standard deviation at which smoking started and stopped for Ex-smoker were 20 ± 5.2 and 33.5 ± 7.6 years respectively of 12 ex-smoker workers in primary health care centers, 11 of them (91.7%) were daily smoker and 1 of them (8.3%) were occasional smoker. No one of the ex-smoker used medications as a method to quit smoking and all of them quit smoking by weaning only.

3.5 Attitudes Toward smoking

Table No. (3.7) shows the positions of the sample members distribution according to their response to each question. Of the 316 respondents, 281 of them (88.92%) strongly agreed with the smoking ban in hospitals, health care centers and medical institutions and 237 of them (75%) strongly agreed to ban smoking in all enclosed public places. Only 13.92% of workers in primary health care centers strongly agree with the statement "Doctors who smoke are less likely to advise people to smoke."

Table 3.7: Attitude about tobacco Use and tobacco control.

Attitude Item		Strongly agree no.(%)	Agree no.(%)	Unsure no.(%)	Disagree no.(%)	Strongly disagree no.(%)
1	There should be a complete ban of the advertising of tobacco products	169 (53.48)	136 (43.0)	7 (2.21)	4 (1.26)	-----
2	Health warning on cigarette package should be in big print	125 (39.55)	182 (57.6)	4 (1.26)	4 (1.26)	1 (0.31)
3	Smoking in enclosed public places should be banned	237 (75.0)	79 (25.0)	-----	-----	-----
4	Smoking should be banned at the hospital/health care center and medical institutions	281 (88.92)	33 (10.4)	2 (0.63)	-----	-----
5	The price of tobacco should be increased sharply	69 (21.83)	87 (27.5)	96 (30.3)	37 (11.7)	27 (8.5)
6	Patient's chances of quitting smoking are increased if a health provider advises him/her to quit	66 (20.8)	211 (66.7)	34 (10.7)	4 (1.26)	1 (0.31)
7	Physicians should routinely ask about their patients' smoking habits	165 (52.21)	136 (43.0)	15 (4.74)	-----	-----
8	Physicians who smoke are less likely to advise people to smoking	44 (13.92)	95 (30.0)	55 (17.4)	116 (36.7)	6 (1.89)
9	Physicians should get specific training on cessation techniques to be able to educate their patients on how to avoid using tobacco	167 (52.84)	141 (44.6)	7 (2.21)	1 (0.31)	-----

Table (3.8) indicates the positive attitude of current smokers versus non-smokers regarding their compatibility with the nine questions raised in the above table. It is evident that non-smokers believe that tobacco prices should increase sharply compared to current smokers, in terms of the (p-value) of (p-value = 0.021). As for the doctors' routine questioning about the smoking habits of their patients, it was found that non-smokers believe that this question is necessary by doctors

compared to smokers, as their frequency reached (217) and a percentage (96.4%) compared to (73) and (92.4%) for smokers. The two current ones, in terms of (p-value = 0.050). The probability value for doctors advising smokers to stop smoking was (p-value = 0.010), and the confirmation was also by non-smokers compared to current smokers. On the other hand, a current smoker never had a better position than non-smoking individuals with respect to other items (p-value > 0.05).

Table 3.8: Positive Attitude of Current Smokers Versus Never Smokers.

Attitude item	Workers Responding Agree And Strongly Agree				p-Value*
	Current Smoker (n=79) no.(%)	Never Smoker (n=225) no.(%)	Total (n=304) no.(%)		
1	70 (88.6)	224 (99.5)	294 (96.7)		0.457
2	73 (92.3)	222 (98.6)	295 (97.0)		0.445
3	79 (100)	225 (100)	304 (100)		0.342
4	79 (100)	223 (99.1)	302 (99.3)		0.363
5	24 (30.3)	122 (49.7)	146 (48.0)		<u>0.021</u>

6	Patient`s chances of quitting smoking are increased if a health provider advises him/her to quit	69 (87.3)	200 (88.8)	269 (88.4)	0.082
7	Physicians should routinely ask about their patients smoking habits	73 (92.4)	217 (96.4)	290 (95.3)	<u>0.050</u>
8	Physicians who smoke are less likely to advise people to stop smoking	34 (43.0)	99 (44.0)	133 (43.7)	<u>0.010</u>
9	Physicians should get specific training on cessation techniques to be able to educate their patients on how to avoid using tobacco	75 (94.9)	221 (98.2)	296 (97.3)	0.432

Table (3.9) illustrate the differences in positive attitude between male and female workers. Male workers had a significant better attitudes (more positive attitude) than female workers regarding the statements "the price of tobacco should be increased sharply", "Physicians who

smoke are less likely to advise people to stop smoking" with a p-value less than 0.05 while no differences in attitudes were found to be significant between male and female workers regarding other statements.

Table 3.9: Positive Attitude of Males Versus Females.

Attitude item	Workers Responding Agree And Strongly Agree			
	Male (n=162) no.(%)	Female (n=154) no.(%)	Total (n=316) no.(%)	p-value*
1 There should be a complete ban of the advertising of tobacco products	153 (94.44)	152 (98.7)	305 (96.51)	0.470
2 Health warring on cigarette package should be banned	156 (96.29)	151 (98.0)	307 (97.15)	0.446
3 Smoking in all enclosed public places should be banned	162 (100)	154 (100)	316 (100)	0.345
4 Smoking should be banned at the hospital/health care center and medical institutions	161 (99.38)	153 (99.35)	314 (99.36)	0.366
5 The price of tobacco should be increased sharply	85 (52.46)	71 (46.1)	156 (49.36)	<u>0.022</u>
6 Patient`s chances of quitting smoking are increased if a health provider advises him/her to quit	139 (85.8)	138 (89.61)	277 (87.65)	0.875
7 Physicians should routinely ask about their patients smoking habits	152 (93.82)	149 (96.75)	301 (95.25)	0.521
8 Physicians who smoke are less likely to advise people to stop smoking	76 (46.91)	63 (40.9)	139 (43.98)	<u>0.009</u>
9 Physicians should get specific training on cessation techniques to be able to educate their patients on how to avoid using tobacco	154 (95)	154 (100)	308 (97.46)	0.434

3.6 Waterpipe (Shisha) Smoking

Table (3.10) shows the frequency distribution of workers in primary health care centers according to their waterpipe smoking. Of 154 female workers in the study group, 10 smoked waterpipe on regular basis and 2 others had tried waterpipe a few times but never smoked regularly. the remaining 142 had never smoked waterpipe.

On the other hand, 37 out of 162 male workers in the study group (22.8%) smoked waterpipe occasionally on a regular basis, 1.85% had tried waterpipe a few times but never smoked regularly and only 4.32% smoked waterpipe daily. It was obvious that male workers had a higher waterpipe smoking than female workers with a significant P-value (0.000).

Table (3.10) Frequency Distribution of Workers In Primary Health Care Centers According To Their Waterpipe Smoking.

Pipe Smoking	Male no.(%)	Female no.(%)	p-value *
Never smoked water pipes	115 (70.98)	142 (92.2)	0.000
Smoke water pipes occasionally (on a regular basis)	37 (22.8)	10 (6.49)	
Tried water pipe a few times but never smoked regularly	3 (1.85)	2 (1.29)	
Smoke water pipe daily	7 (4.32)	-----	
Total	162 (100.0)	154 (100.0)	316

BACKg Round

Tobacco use is one of the major public health threats nowadays. Smoking can affect everybody organ. Health professionals should play pivotal roles in tobacco control, and their attitude and practice toward tobacco use can affect the health of the community.^[38]

Therefore, assessing and influencing physicians' attitudes and practice are one of the alternatives to reduce smoking prevalence in the community.^[38]

Accordingly, the present study was conducted to describe the smoking behavior and attitude among workers in primary health care centers. According to author knowledge, few studies are present in this respect in mosul city. So, this study may be very useful reference for future evaluation of smoking status among workers in primary health care centers in mosul city.

Methodological issues

To achieve the aim of the present study, a primary health care centers based descriptive cross sectional study was carried out. Thus the causal association could not be determined. The target group of this study was workers in primary health care centers. Cigar, pipes and other types of tobacco use which are uncommon in our society were not included in this study.

PREVALENCE OF CIGARETTE SMOKING

Prevalence among workers in primary health care centers

In this study, the smoking prevalence among workers in primary health care centers was 24,98% which is close to a study carried out by Uysal, Delmen, Karasulu in Turkey in 2007 which was 24%.^[39] it was lower than Behbehani, Hamadeh and Macklai found in their study in Kuwait in 2004 where the prevalence was 31%.^[40]

However, it was higher than the prevalence found by Hasan A. Baey et al. in Hilla-Iraq in 2011 where the prevalence was 19.1%.^[41] and also higher than the prevalence found in Bahrain by behbehani, hamadeh and macklai in 2004 which was 14.5%.^[40]

Health professionals reflect the culture and behavior in which they live, and so the rate of smoking among health workers will vary in a similar manner as those in the general population. So these differences may be attributed to the differences in the prevalence of smoking of the general population in each country.

Prevalence among male workers in primary health care centers

When stratified by gender, it was found that the prevalence of smoking among male workers in this study was 46.91%. it was higher than that obtained by hasan A. baey, et al. in hilla-iraq in 2011 which was 30.9%.^[41] and higher than that obtained in France in 2005 and China in 2007 where it was 40% and 41% respectively.^[42,43]

These differences may be attributed to the differences of the prevalence of smoking of the general population in each country.

The prevalence of daily smoking in the present study was 45.06% among male workers.

However, it was higher than that in Behbehani, Hamadeh and Macklai found in their study in Kuwait and bahrain in 2004 where the prevalence was 15.4% and 14.6% respectively.^[40]

The important finding in this present study is that the prevalence of cigarette smoking among male workers is even higher than that of the general population for adult males in Iraq as stated by the WHO report on the global tobacco epidemic (released in 2011) where the prevalence of cigarettes smoking among males (aged 15 years or more) was 26% in 2009.^[1] this is especially alarming because one expects workers in primary health care centers to be more aware of the dangers of smoking than the general population.^[44]

The stressful working conditions for workers in primary health care centers in Iraq may be behind this high prevalence of smoking. Another possible cause for this high prevalence may be the 11 years time difference between the two prevalence (2009 versus 2020). So during these 11years the prevalence of smoking may be already increased among general population in Iraq and the epidemic of smoking may be truly growing in our country as stated by the WHO.^[45]

Smoking projects a negative image of the medical profession among the public and the smoking rate among medical professions is a reflection of the maturity of the smoking epidemic in a particular country.^[44]

Prevalence among female workers in primary health care centers

The prevalence of smoking among female workers in primary health care centers in this study was 1.939% which was similar to that found by Behbehani, Hamadah and Macklai in 2004 in Bahrain which was 1.9%.^[40]

However it is higher than that found in China by Jiang el al in 2007 and in Laos by Phengsavanh et al. in 2008 which were 1% and 0.4% respectively.^[43,46]

The prevalence of female smoking in this study was lower than what Maziak, Mzayek, Asfar and Hassig found in Syria In 1999 which was 11.4%.^[47] this difference may be due to the high prevalence of female smoking among general population in Syria as stated by WHO where the prevalence was about 10% in 1999.^[48]

The WHO report on the global tobacco epidemic (released in 2011) stated that the prevalence of cigarettes smoking among the adult females (15 year and more) in Iraq was 3% in 2009.^[1] it was higher than the prevalence

of female workers in primary health care centers in this study (1.939%). This might be explained by the fact that the majority of female smokers in our society were of low socioeconomic state.^[45]

Prevalence of EX-Smoker

Prevalence of ex-smoker in the present study was 3.79% which is lower than that stated by Phengsavanh et al. in Laos in 2008 which was 18.3%.^[46]

The prevalence of ex-smoker in Bahrain and Kuwait for male physicians were 22.1% and 21.7% as stated by Behbehani, Hamadeh and Macklai in 2004.^[40] Hodgetts, Broers and Godwin in their study in Bosnia in 2004 stated that the prevalence of ex-smoker was 13.6%.^[49]

From the above study results, one may have an impression that the percentage of quitting smoking in this study was low. It seems that a large percent of current smokers were addicted to smoking making quitting not easy for them. Also the low price of tobacco and the weak policy of tobacco control in our country did not help either.

Pattern of currently smoking workers in primary health care centers

The highest percent of current smokers in the present study (41.7%) were in the age group 30-39 years compared to 30.4% found by Phengsavanh et al. in their study in Laos in 2008. On the other hand, 29.1% of current smokers in this study belonged to the age group 40-49 whereas 48.1% of current smokers found by Phengsavanh et al. to be the same age group.

However, the high rate of smoking among younger age group (30-39) may be also explained by the predictions of the WHO of growing tobacco epidemic in our country (more younger patient tend to be smokers).^[45]

The mean age of initiation of smoking in the present study was 21.1 year which is consistent with the result obtained by Uysal, Dilmen, Karasulu and Demir in 2007 in Turkey and by Phengsavanh, et al. in Laos in 2008 where the mean age were 20 year and 21.3 respectively.^[39,46]

About 52% of current smokers started to smoke before the age of 20 years compared to 65% obtained by Hassan A. Baey, et al. in Hilla-Iraq in 2011 and 38% of current smokers in this study started between the age of 20 to 29 years compared to 29% obtained by Hassan A. Baey, et al. in Hilla-Iraq in 2011.^[41]

The mean number of cigarettes smoked per day in this study was 24.1 cigarettes \pm 12.5 which was higher than that in Bosnia by Hodgett, Broers and Godwin in 2004 (16 \pm 8.9).^[49] However, Phengsavanh et al. in their study in Laos in 2008 stated that the mean number of cigarettes smoked per day was about 8 cigarettes.^[46]

About 15% of current smokers in the present study were heavy smokers (smoke more than 20 cigarettes per day) which is lower to what Hassan A. Baey et al. found in Hilla-Iraq in 2011 which was 26%.^[41] However, it was higher than what Jiang et al. found in their study in China in 2007 where the percent of heavy smokers was only 7%.^[43] This might be due to low price of tobacco and weak policies of tobacco control in our country.

About 62% of current smoker did not report any successful cigarette quitting experience even for one week. This result was much higher than that stated by Peykari, Tehrani, Afzali, Dovvom and Djalalinia in Iran in 2010 which was 16.3% and also higher than that found by Phengsavanh et al. in Laos in 2008 where it was 15%.^[50,46]

About 64.55% of current smoker had no plane to quit smoking in the next 6 months. This result is much higher than that found by Peykari, Tehrani, Afzali, Dovvom and Djalalinia in Iran in 2010 (30.4%).^[50]

On the other hand, about 38% workers in primary health care centers who currently smoke in the present study attempted to quit smoking (for at least one week) compared to 85% of Laos and Iranian physicians.^[50,46] However; it is known from medical literatures that less than 5% of self-quitters maintain abstinence.^[47,48] Therefore, even with such high rate of desire to quit, success rates are expected to be minimal in the absence of active anti-smoking programs and support facilities.

Less than 19% of currently smoking workers in primary health care centers in the present study had smoked in front of the patients (16.45% sometimes and 2.53% often), it is less than that found in China by Jiang et al. in 2007 about (35%).^[43]

Pattern of ex-smokers

The mean age of initiation of smoking for ex-smokers in the present study was (20 \pm 5.2) which was higher to that found by Phengsavanh et al. in Laos in 2008 (18.7 \pm 5.64) while the mean age of smoking cessation in this study for ex-smoker was 33.5 \pm 7.6) which is higher than that in Laos study (30 \pm 10.1).^[46] This might be due to an effective anti-smoking programs in Laos.

About 91.7% of ex-smokers in primary health care centers were daily smoker compared to 55.4% in Laos. The remaining 8.3% of ex-smokers were occasional smoker compared to 44.6% in Laos.^[46] No one of the ex-smokers workers in primary health care centers in the present study used medication as a method to quit smoking compared to 1.6% found by Phengsavanh et al. in Laos.^[46] This may be due to non-availability of these medications in our society.

Attitude about Tobacco use and Tobacco control

In general, most of the workers in primary health care centers in the present study hold a positive attitudes

towards antismoking measures. However, there were some significant differences between "current" and "never" smokers where the current smokers were generally less likely to agree with statements that would change their current freedom to smoke. These differences in attitudes could be expected, as similar differences seen by Hodgetts, Broars and Godwin in Bosnia in 2004 and by phengsavanh et al. in Laos in 2008.^[46]

Table (4.1) compares the attitude of workers in primary health care centers in this study with that of physicians of Bosnia study. It shows that physicians in Bosnia study had a better attitude in 4 statements and about equal attitude in 3 statement and worse attitude in 2 statement than workers in primary health care centers in this study.

Table 4.1: Comparison Between The Attitude Of Workers In Primary Health Care Centers In The Present Study With Bosnia Study.

Attitude item	Current study		Bosnia study	
	Current smoker	Never smoker	Current smoker	Never smoker
1 There should be a complete of advertising of tobacco products	88.6	99.5	93.2	90.6
2 Health warring on cigarette package should be banned	92.3	98.6	86.4	90.6
3 Smoking in all enclosed public places should be banned	100	100	96.6	100.0
4 Smoking should be banned at the hospital/health care center and medical institutions	100	99.1	96.6	100.0
5 The price of tobacco should be increased sharply	30.3*	49.7*	78.0*	94.3*
6 Patient`s chances of quitting smoking are increased if a health provider advises him/her to quit	87.3	88.8	81.4	88.7
7 Physicians should routinely ask about their patients smoking habits	92.4*	96.4*	100.0	100.0
8 Physicians who smoke are less likely to advise people to stop smoking	43.0*	44.0*	64.4*	84.9*
9 Physicians should get specific training on cessation techniques to be able to educate their patients on how to avoid using tobacco	94.9	98.2	84.7	88.7

*indicate p-value was significant between current and never smoker using Z test of two proportion.

Prevalence of waterpipe smoking

The prevalence of waterpipe smoking among male workers in primary health care centers (daily and occasional) in the present study was 27.17% which was much higher than that found by Behbehani, Hamadeh and Macklai in Kuwait (16.8%) and Bahrain (8.5%) in 2004.^[40]

This may be explained by the time difference between the two studies as in 2004 waterpipe was less popular than now. So the prevalence of waterpipe smoking might have increased in Kuwait and Bahrain nowadays.

On the other hand, the prevalence of occasional waterpipe smoking among female workers in primary health care centers (6.49%) which was higher than that of Kuwait (3.3%) and Bahrain (2.9%).^[40]

The statements "the price of tobacco should be increased sharply" and "physicians who smoke are less likely to advice people to stop smoking" had a significant difference between current and never smokers in both studies.

The attitude about the statement "Physicians should routinely ask about their patients smoking habits" had a significant difference between current and never smokers in the present study but not in Bosnia study.

This difference may be explained as the above statements may affect the pleasure of smoking for the current smokers in this study.

CONCLUSIONS

Based on the results of the present study, it can be concluded that:

1. The prevalence of cigarettes smoking among workers in primary health care centers was 24.98% (23.4% daily smoker and 1.58% occasional).
2. The prevalence of cigarettes smoking among male workers in primary health care centers was 46.91% while it was 1.35% among female workers in primary health care centers. A highly significant P-value was found between the prevalence of smoking of male and female workers in primary health care centers.
3. Heavy smokers constitute about 45.7% of current smokers which is considered to be high if compared to other studies.
4. About 19% of currently smoking workers in primary health care centers had smoked in front of the patients (often or sometimes).
5. In general, most of workers in primary health care centers hold a positive attitudes towards smoking with some significant differences between "current" and "never" smokers where the current smokers

were generally less likely to agree with statements that would change their current freedom to smoke.

6. The prevalence of waterpipe smoking was 27.17% among male workers in primary health care centers and 6.49% among female workers in primary health care centers.

Recommendations

According to the findings of this study, there are some recommendations related to smoking and promotion of quit smoking among workers in primary health care center;

1. A focused and sustained anti-smoking campaign by the health facilities and the Ministry of Health may also be useful in controlling the smoking epidemic among the workers in primary health care centers.
2. We believe that policymakers, especially those working in health fields, are the most appropriate people to be role models for stopping smoking because they would have a greater appreciation of the regulations due to their position.
3. Continuous medical education and pre-service training to all workers in primary health care centers regarding smoking, aiming at improving their knowledge, changing attitudes, and improving practices.
4. The most important aspect to smoking cessation is maintaining the motivation to make multiple attempts. Thus, quit attempts should be thought of like practice sessions in learning a new skill—at some point one hopes to “get it right,” but one should not put undue hope on any single given quit attempt, and take solace in knowing the probability of success increases with each try.
5. Enforcement of laws banning smoking in hospitals and health care centers is important and a revision of the tobacco policy in the country is needed.
6. Increase the tax of tobacco aiming to increase the price of tobacco.
7. Advocate for national tobacco control legislation that provides grants for programs that recruit and train workers in primary health care centers in smoking cessation treatment.
8. Drugs used to quit smoking like bupropion and varenicline (Chantix) need to be available to assist smokers to quit.

REFERENCES

1. WHO, WHO Report on the Global Tobacco Epidemic, 2011 Warning about the Dangers of Tobacco, World Health organization, Geneva, Switzerland, 2011.
2. WHO Report on Smoking Epidemic. <http://www.who.int/tobacco/mpower/es/> (accessed June 23, 2015).
3. US Department of Health and Human Services: Smoking and Tobacco Control Mono-graph No 12: Population-Based Smoking Cessation: Proceedings of a Conference on What Works to Influence Cessation in the General Population. Washington, US De-partment of Health and Human Services, 2000.
4. A. Pipe, M. Sorensen, and R. Reid, “Physician smoking status, attitudes toward smoking, and cessation advice to patients: an international survey,” *Patient Education and Counseling*, 2009; 74(1): 118–123.
5. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014 [accessed 2018 Mar 22].
6. Bureau of Labor Statistics. [Accessed November 18, 2014]; Employment projections, 2012-2022.
7. Nelson DE, Giovino GA, Emont SL, et al. Trends in smoking among physicians and nurses. *JAMA*, 1990; 271: 1273–1275.
8. Sarna L, Bialous S, Nandy K, et al. Changes in smoking prevalences among health care professionals from 2003 to 2010–2011. *JAMA.*, 2014; 311: 197–199.
9. Syamlal G, Mazurek JM, Malarcher AM. Current cigarette smoking prevalence among working adults: United States, 2004–2010. *MMWR Morb Mortal Wkly Rep.*, 2011; 60: 1305–1309.
10. United States Department of Health and Human Services. Objective TU-1: reduce smoking rates among adults. Healthy People 2020. Washington DC: US Department of Health and Human Services; [Accessed November 18, 2014].
11. Brandt AM. The Cigarette Century: The Rise, Fall and Deadly Persistence of the Product that Defined America. Basic Books. New York, 2007.
12. American lung association
13. WHO Study Group on Tobacco Product Regulation (TobReg). Advisory note. Waterpipe tobacco smoking: health effects, research needs and recommended actions by regulators. Geneva: World Health Organization, 2005.
14. U.S. Department of Health and Human Services. A Report of the Surgeon General. How Tobacco Smoke Causes Disease: What It Means to You. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010.
15. Centers for Disease Control and Prevention. QuickStats: Number of Deaths from 10 Leading Causes—National Vital Statistics System, United States, 2010. *Morbidity and Mortality Weekly Report*, 2013; 62(08): 155. [accessed 2017 Apr 20].
16. Control and prevention of waterpipe tobacco products (document FCTC/COP/6/11). Conference of the Parties to the WHO Framework Convention on Tobacco Control, Sixth session, Moscow,

- Russian Federation, 13–18 October 2014. Geneva: World Health Organization, 2014.
17. Bhonsle RB, Murti PR, Gupta PC. Tobacco habits in India. In: Gupta PC, Hamner JE III, Murti PR, editors. Control of tobacco-related cancers and other diseases, proceedings of an international symposium. Bombay: Oxford University Press, 1992.
 18. Chattopadhyay A. Emperor Akbar as a healer and his eminent physicians. *Bull Indian Inst History Med.*, 2000; 30: 151–8.
 19. Rastam S, Ward KD, Eissenberg T, Maziak W. Estimating the beginning of the waterpipe epidemic in Syria. *BMC Public Health*, 2004; 4: 32.
 20. Maziak W, Nakkash R, Bahelah R, Hussein A, Fanous N, Eissenberg T. Tobacco in the Arab world: old and new epidemics amidst policy paralysis. *Health Policy Plan.*, 2013; 29: 784–94.
 21. Salloum RG, Nakkash RT, Myers AE, Wood KA, Ribisl KM. Point-of-sale tobacco advertising in Beirut, Lebanon following a national advertising ban. *BMC Public Health*, 2013; 13: 534.
 22. Bahelah R. Waterpipe tobacco labeling and packaging and World Health Organization Framework Convention on Tobacco Control (WHO FCTC): a call for action. *Addiction*, 2014; 109: 333.
 23. Maziak W, Taleb ZB, Bahelah R, Islam F, Jaber R, Auf R, et al. The global epidemiology of waterpipe smoking. *Tob Control*, 2015; 24(1): i3–12.
 24. Sepetdjian E, Shihadeh A, Saliba NA. Measurement of 16 polycyclic aromatic hydrocarbons in narghile waterpipe tobacco smoke. *Food Chem Toxicol*, 2008; 46: 1582–90.
 25. Knishkowsky B, Amitai Y. Water-pipe (narghile) smoking: an emerging health risk behavior. *Pediatrics*, 2005; 116: e113–9.
 26. Akl EA, Gunukula SK, Aleem S, Obeid R, Abou Jaoude P, Honeine R, et al. The prevalence of waterpipe tobacco smoking among the general and specific populations: a systematic review. *BMC Public Health*, 2011; 11: 244.
 27. Warren CW, Lea V, Lee J, Jones NR, Asma S, McKenna M. Change in tobacco use among 13–15 year olds between 1999 and 2008: findings from the Global Youth Tobacco Survey. *Global Health Promot*, 2009; 16: 38–90.
 28. Kassem NOF, Kassem NO, Jackson SR, Liles S, Daffa RM, Zarth AT, et al. Benzene uptake in hookah smokers and non-smokers attending hookah social events: regulatory implications. *Cancer Epidemiol Biomarkers Prev.*, 2014; 146: 924–31.
 29. Saleh R, Shihadeh A. Elevated toxicant yields with narghile waterpipes smoked using a plastic hose. *Food Chem Toxicol*, 2008; 46: 1461–6.
 30. Apsley A, Galea KS, Sánchez Jiménez A, Semple S, Wareing H, Tongeren MV. Assessment polycyclic aromatic hydrocarbons, carbon monoxide, nicotine, metal contents and particle size distribution of mainstream shisha smoke. *J Environ Health Res.*, 2011; 11: 93.
 31. Jenkins R, Guerin M, Tomkins B. The chemistry of environmental tobacco smoke. Boca Raton, Florida: Lewis Publishers, 2000.
 32. Monzer B, Sepetdjian E, Saliba N, Shihadeh A. Charcoal emissions as a source of CO and carcinogenic PAH in mainstream narghile waterpipe smoke. *Food Chem Toxicol*, 2008; 46: 2991–5.
 33. Schubert J, Hahn J, Dettbarn G, Seidel A, Luch A, Schulz TG. Mainstream smoke of the waterpipe: Does this environmental matrix reveal as significant source of toxic compounds? *Toxicol Lett.*, 2001; 205: 279–84.
 34. Shihadeh A. Investigation of mainstream smoke aerosol of the argileh water pipe. *Food Chem Toxicol*, 2003; 41: 143–52.
 35. Asfar T, VanderWeg MW, Maziak W, Hammal F, Eissenberg T, Ward KD. Outcomes and adherence in Syria's first smoking cessation trial. *Am J Health Behav*, 2008; 32: 146–56.
 36. Rastam S, Eissenberg T, Ibrahim I, Ward KD, Khalil R, Maziak W. Comparative analysis of waterpipe and cigarette suppression of abstinence and craving symptoms. *Addict Behav*, 2011; 36: 555–9.
 37. Goddard E. 2006. General Household Survey 2006: smoking and drinking among adults. United Kingdom: National statistics. www.statistics.gov.uk. Accessed 1 December 2012.
 38. Parna K, Rahu K, Rahu M. Smoking habits and attitudes toward smoking among Estonian physicians. *J Roy Inst Pub Health*, 2005; 119: 390–9.
 39. Cigarettes and Water Pipe Smoking Prevalence, Knowledge, and Attitudes Among the Palestinian Physicians in the West Bank, Hamzeh Al Zabadi1, Samar Musmar, Ayah Hassouna, Doa'a Shtaiwi.
 40. Uysal M, dilmen N, karasulu L, demir T. Smoking habits among physicians in Istanbul and their attitudes regarding anti-smoking legislation.
 41. Nasser N Behbehani, Randah R Hamadeh, Nejma S Macklai Knowledge of and attitudes towards tobacco control among smoking and non-smoking physicians in 2 Gulf Arab states. *Saudi Med J.*, 2004; 25(5): 585–91.
 42. Baey H et al. Smoking among health care providers, identification of associated factors in Hilla city during the year 2011. *Medical journal of Babylon*, 2011; 8(4): 569–87.
 43. Jossieran L, King G, Guilbert P, Davis J, Brucker G. Smoking by French general practitioners: behavior, attitudes and practice. *Eur J public health*, 2005; 15(1): 33–8.
 44. Jiang Y et al. Chinese physicians and their smoking knowledge, attitudes and practices. *Am j prev Med.*, 2007; 33(1): 15–22.
 45. Davis RM. When doctors smoke. *Top control*, 1993; 2: 187–8.
 46. World Health Organization (WHO). The MPOWER package; WHO report on the global tobacco epidemic. Geneva, Switzerland; WHO; 2008).

46. Phengsavanh A et al. smoking behavior and tobacco control among medical doctors in Lao PDR. *J Trop Med Public Health*, 2008; 34(1): 213-9.
47. Maziak W, Mzayek F, Asfar T, and Hassig S, smoking among physicians in Syria: do as I say, not as I do!. *Annals of suadi medicine*, 1999; 19(3): 253-6.
48. Hughes JR. tobacco withdrawal in self-qiutters. *J Consult Clin psychol*, 1992; 60: 689-97.
49. Hodgetts G, Broers T, Godwin M, smoking behavior, knowledge and attitudes among family medicine physicians and nurses in Bosnia and Herzegovina. *BMC Fam Pract*, 2004; 5: 12.
50. Peykari N, Tehrani F, Afzali H, Dovvom M, Djalalinia S. smoking habits among Iranian general practitioners. *J Egypt public health assoc*, 2010; 85(2): 97-112.