

Prevalence of Cigarette Smoking Among Health Care Providers At Al-Ka'akia Sector of Primary Health Care in Makkah, Saudi Arabia, 2014

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ABSTRACT

Background: Smoking is considered a significant health problem amongst youth around the world, particularly in developing countries. Although Saudi Arabia does not grow tobacco or manufacture cigarettes, smoking has existed in this country for more than 50 years. Recognizing its prevalence and its various associated factors may certainly help related authorities to construct appropriate smoking cessation programs.

Objectives: To determine the prevalence of cigarette smoking among health care providers in Primary Health Care (PHC) centers in Makkah, its prevalence according to their occupation and its associated factors.

Methodology: Across sectional study was carried out upon health care providers, males and females, who work in the PHC centers of Al-Ka'akia section in the Ministry of Health in Makkah Al-Mokarramah. Self-administration questionnaires were distributed to all participants in the study. It consisted of two main sections: the first section is concerned with personal general information about the participants and the second section is concerned with smoking behavior and its details.

Results: The study included 286 participants. The overall prevalence of smoking among HCWs in Current study was (26.2%). Their ages ranged between 23 and 60 years with a mean±SD of 37.4±8.6 years. Almost two-third of them (64%) were aged between 31 and 50 years. Most of them (82.6%) were married and Saudi (87.4%). Males represent 52.1% of them. Among current smokers, 42 (56%) smoke cigarettes only

whereas 14 (18.7%) and 8 (10.7%) smoke Shisha or Moasel only. For those who smoke shisha or moasel, 42.4% of them reported daily smoking and 30.3% of them reported a frequency of 3-5 times/week.

Conclusion: This study pointed out the fact that smoking has a high prevalence among health care providers in the Ministry of Health in Makkah. This should alarm related authorities about the importance of carrying up smoking cessation programs among the health care workers and the community as a whole.

Keywords: Smoking, Prevalence, Associated Factors, Primary Health Care.


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Article History:

Received: 14-07-2017, Revised: 02-08-2017, Accepted: 17-08-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.5.002	

INTRODUCTION

Smoking is considered a significant health problem among youth around the world, particularly in developing countries.¹ The World Health Organization (WHO) has described tobacco smoking as an epidemic. The global smoking epidemic is expected to remain as one of the greatest causes of premature death, disease, and suffering for decades to come. The WHO has estimated that the number of deaths each year from smoking-attributable disease will increase to 10 million within the next 30 years or so, of which 70% will occur in developing countries.²

Moreover, recent data from the World Health Organization (WHO) revealed that approximately 12% of adolescent boys and 7% of

adolescent girls smoke cigarettes and more than 6 million children might die at an earlier age due to smoking-related diseases. As a result of smoking at an early age, smokers will have a higher risk of developing many diseases with an earlier onset, including chronic obstructive pulmonary disease (COPD), lung cancer, and heart disease, particularly in developing countries.¹

Although Saudi Arabia does not grow tobacco or manufacture cigarettes, smoking has existed in this country for more than 50 years. Tobacco imports in the form of manufactured cigarettes have increased dramatically over the years, and an average of 600 million Saudi Riyals (about \$150 million) are spent annually

on tobacco.² No nationwide studies on the prevalence of tobacco smoking have been carried out in Saudi Arabia. Small-scale studies have shown a prevalence of between 8% and 57%; a few of these, however, were community-based.²

Smoking has many harmful effects. Compared with nonsmokers, smoking is estimated to increase the risk of Coronary heart disease and Stroke by 2 to 4 times. It increases the incidence of lung cancer by 23 and 13 times in men and women, respectively. The death caused by chronic obstructive lung diseases i.e. chronic bronchitis and emphysema is increased up to 13 times in smokers.³

Smoking causes coronary heart disease as well as it causes reduced circulation by narrowing the blood vessels (arteries) and puts smokers at risk of developing peripheral vascular disease (i.e., obstruction of the large arteries in the arms and legs that can cause a range of problems from pain to tissue loss or gangrene). Additionally, smoking causes abdominal aortic aneurysms (i.e., a swelling or weakening of the main artery of the body, the aorta, where it runs through the abdomen).³

Moreover, smoking causes lung cancer and lung diseases (e.g. emphysema, bronchitis, chronic airway obstruction) by damaging the airways and alveoli (i.e., small air sacs) of the lungs.³

Also smoking has many adverse reproductive and early childhood effects, including increased risk for infertility, preterm delivery, Stillbirth, low birth weight, sudden infant death syndrome (SIDS). It is associated with the following adverse health effects and this may include Postmenopausal women who smoke have lower bone density than women who never smoked. Also, Women who smoke have an increased risk of hip fracture than women who never smoked.³

This study aimed to estimate the prevalence of cigarette smoking among health care providers in Primary Health Care centers in Makkah as well as to determine its associated factors.

SUBJECTS AND METHODS

A cross sectional study was conducted among primary health care providers in Makkah, Saudi Arabia including males and females. Makkah is the holy city for all Muslims, and is located in the western region in an area called Makkah region. The city is divided into 4 inner and 3 outer sectors of primary health care. The researcher is concerned with one of them called the "Al-Ka'akia sector". This sector is located in the southern part of Makkah city with an estimated population of around 200,000 inhabitants. It is a well-designed area with a good infra-structure. The total number of health care providers in the Al-Ka'akia sector at Makkah PHC centers, as provided officially by the sector administration, is 286.

As such, the research and analysis of its data were carried out over the total population, i.e. the questionnaire of the research was distributed to each one of the health care providers in the sector concerned (286 health care providers) and the analysis of the collected data was carried out for them all. Every one of the participants, who constitute the whole population, was labelled with a natural number. Accordingly, the questionnaire was distributed among all participants.

Self-administered questionnaires reviewed by 2 consultants for validation were distributed to all health care providers involved in the study. It consists of two main sections: the first section is concerned with personal general information about the

participants (age, gender, marital status, nationality, job title, educational level, experience, income). The second section is concerned with smoking behaviour and its details (history of smoking, type, duration, number of cigarettes per day, fund, age of first smoking, reason for smoking, history of quitting and chronic diseases).

The questionnaires were distributed to directors of the PHC centers who distributed them to participants at their PHC centers during a 3 week period. Each week the questionnaires were distributed to four PHC centers out of the total 11 centers of the Al-Ka'akia sector at the beginning of the week and collected on Wednesday of the same week. Permission from the Makkah joint program of family and community medicine was obtained.

The Statistical Package for Social Sciences (SPSS) software version 20.0 was used for data entry and analysis. Descriptive statistics (e.g. number, percentage) and analytic statistics using Chi Square tests (χ^2) to test for the association and/or the difference between two categorical variables were applied. A p-value equal to or less than 0.05 was considered statistically significant.

RESULTS

The total number of the health care providers in Al-Ka'akia sector was 286. Thanks to Allah, all the questionnaires provided to them were collected back and underwent the analysis. As such the response rate is 100%. The overall prevalence of smoking among HCWs in Current study was (26.2%).

The study included 286 health care workers. Table 1 summarizes their personal characteristics. Their ages ranged between 23 and 60 years with a mean \pm SD of 37.4 \pm 8.6 years. Almost two-third of them (64%) were aged between 31 and 50 years. Most of them (82.6%) were married and Saudi (87.4%). Males represent 52.1% of them. Regarding profession, more than half of them (55.2%) were nurses whereas 20.6% of them were physicians. Those having a Health Diploma or health institute (secondary) represent 30.5% and 26.6% of them respectively, whereas those having Bachelor's degree represent 23.1% of them. Experience ranged between 1 and 35 years with a mean \pm SD of 10.7 \pm 8.4 years. Slightly more than a third of them (35.7%) had 5 years' experience or less. The monthly income of almost three-quarters of them (75.5%) ranged between >5000-15000 SR/month.

From Figure 1, it can be seen that almost a quarter of health care workers (26.2%) were current smokers whereas 4.5% and 4.9% of them were ex-smokers and occasional smokers (with friends), respectively.

Among current smokers (n=75), 42 (56%) smoke cigarettes only whereas 14 (18.7%) and 8 (10.7%) smoke shisha or moasel only. For those who smoke shisha or moasel, 42.4% of them reported daily smoking and 30.3% of them reported a frequency of 3-5 times/week.

Among cigarette smokers, the number of cigarettes smoked per day exceeds 20 in nine (17.3%) health care workers. Regarding money spent on smoking, 60% spent between 101 and 300 SR/month whereas 9.3% spent more than 400 SR/month on smoking. Almost a quarter of the health care workers (25.3%) started smoking at or before age of 15 years whereas 53.4% of them started it at ages ranged between 16 and 20 years. Regarding age at starting serious smoking, 5 (6.7%) started smoking seriously at or before the age of 15 years whereas 28

(37.3%) started it between the age of 16 and 20 years. Slightly less than a quarter of them (22.7%) smoked their first cigarette less than 10 minutes from waking up whereas 18 (24%) started smoking 60 minutes after waking up. Almost a third of them (32%) smoked for a duration ranging between 11 and 15 years whereas 22.7% had smoked for more than 20 years. (Table 2) Of the

smoker health care workers (n=75), 53 (70.7%) reported that they had thought of quitting smoking. Slightly less than half of them (n=35, 46.7%) had actually tried to quit smoking during the previous 6 months. Most of the smoker health care workers (n=54, 72%) claimed that they had been advised or helped by a physician to quit smoking.

Table 1: Personal characteristics of health care workers, Al-Ka'akia PHC sector, Makkah (n=286)

		Frequency	Percentage
Age in years	≤30	78	27.3
	31-40	115	40.2
	41-50	68	23.8
	>50	25	8.7
Marital status	Single	35	12.2
	Married	236	82.6
	Divorced/widowed	15	2.2
Gender	Male	149	52.1
	Female	137	47.9
Nationality	Saudi	250	87.4
	Non-Saudi	36	12.6
Profession	Physician	59	20.6
	Laboratory	12	4.2
	Dental	18	6.3
	Nursing	158	55.2
	Pharmacy	16	5.6
	Others	23	8.0
	Educational level	Health Institute (Intermediate)	39
	Health Institute (secondary)	76	26.6
	Health Diploma	87	30.5
	Bachelors	66	23.1
	Masters	13	4.5
	PhD/equivalent	5	1.7
Years of experience in PHCCs	≤5	102	35.7
	6-10	78	27.3
	11-15	30	10.5
	>15	76	26.6
Income (SR/month)	<5000	6	2.1
	≥5000-10000	96	33.5
	>10000-15000	120	42.0
	>15000	64	22.4

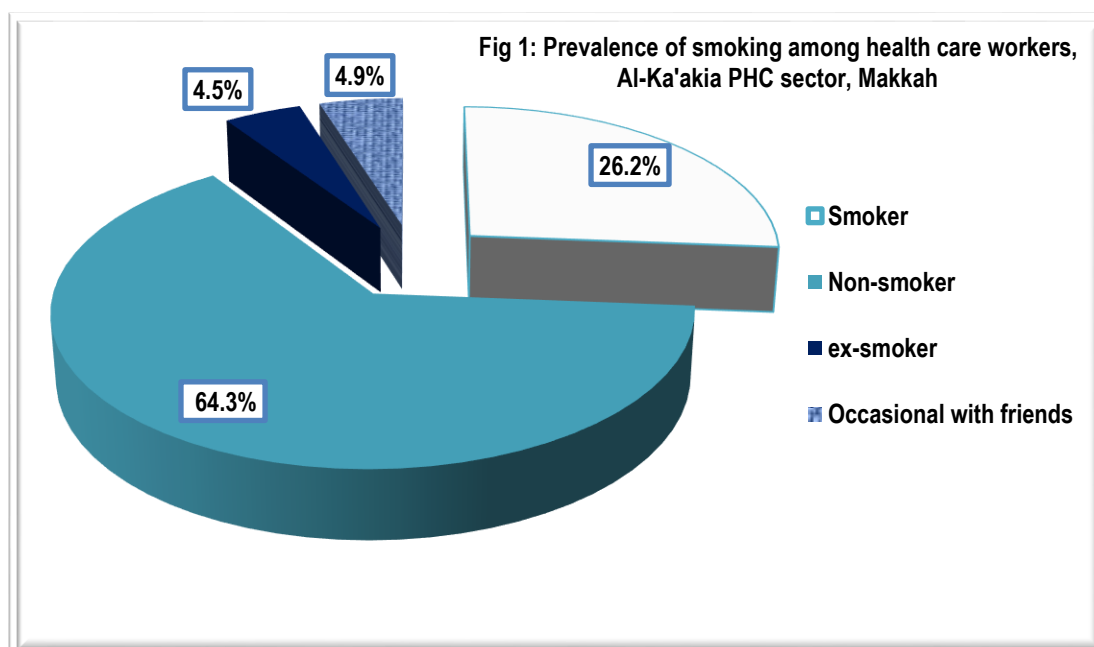


Table 2: Smoking details of the current smokers of health care workers, Al-Ka'akia PHC sector, Makkah (n=75)

		No.	%
Type of smoking	Cigarette only	42	56.0
	Shisha	14	18.7
	Moasel	8	10.7
	Cigarettes + Shisha	7	9.3
	Cigarettes + Moasel	2	2.7
	Shisha + Moasel	1	1.3
	Cigarettes + Shisha + Moasel	1	1.3
FOR THOSE WHO SMOKE SHISHA/MOASEL	Daily	14	42.4
	3-5 times	10	30.3
	Once	5	15.2
Frequency /week	Many times/month	4	12.1
	<5	4	7.7
	6-10	10	19.2
FOR CIGARETTE SMOKERS	11-15	13	25.0
	16-20	16	30.8
	>20	9	17.3
	<100	11	14.6
Number of cigarettes/day	101-200	24	32.0
	201-300	21	28.0
	301-400	12	16.0
	401-500	4	5.3
	>500	3	4.0
Money spent on smoking/month (SR)	≤15	19	25.3
	16-20	40	53.4
	>20	16	21.3
Age at first trial of smoking (years)	≤15	5	6.7
	16-20	28	37.3
	21-25	32	42.7
	>25	10	13.3
Age at first serious smoking (years)	<10	17	22.7
	10-30	24	32.0
	31-60	16	21.3
	>60	18	24.0

As shown in Table 3, more than half of HCWs aged over 50 years (52%) were current smokers compared to 17.9% of those aged 30 years or less. On the other hand, 6.4% of HCWs aged 30 years or less compared to none of those aged over 50 years occasionally smoked with friends. The association between HCWs' age and smoking was statistically significant: $p=0.013$. Almost half (43.6%) of male HCWs were current smokers compared to 7.3% of female HCWs. On the other hand, 8.1% of male HCWs compared to 0.7% of female HCWs were ex-smokers and 6% of male HCWs compared to 3.6% of female HCWs occasionally smoked with friends. These differences were statistically significant: $p<0.001$. As illustrated in Table 3, 29.2% of Saudi HCWs were current smokers compared to 5.6% of Non-Saudi HCWs. In addition, 4% of Saudi HCWs compared to 8.3% of non-Saudi HCWs were ex-smokers and 5.6% of Saudi HCWs compared to none of non-Saudi HCWs occasionally smoked with friends. These differences were statistically significant: $p=0.005$. Almost third of the nurses (33.5%) and other HCWS (34.8%) were current smokers compared to none of the dentists and 11.9% of the physicians. On the other hand, 12.5% of the pharmacists compared to none of the laboratory workers and 3.4% of the physicians occasionally smoked with friends. The association between HCWs' profession and smoking was borderline statistically significant: $p=0.050$. About 43.6% of HCWs who had a degree from the Health Institute

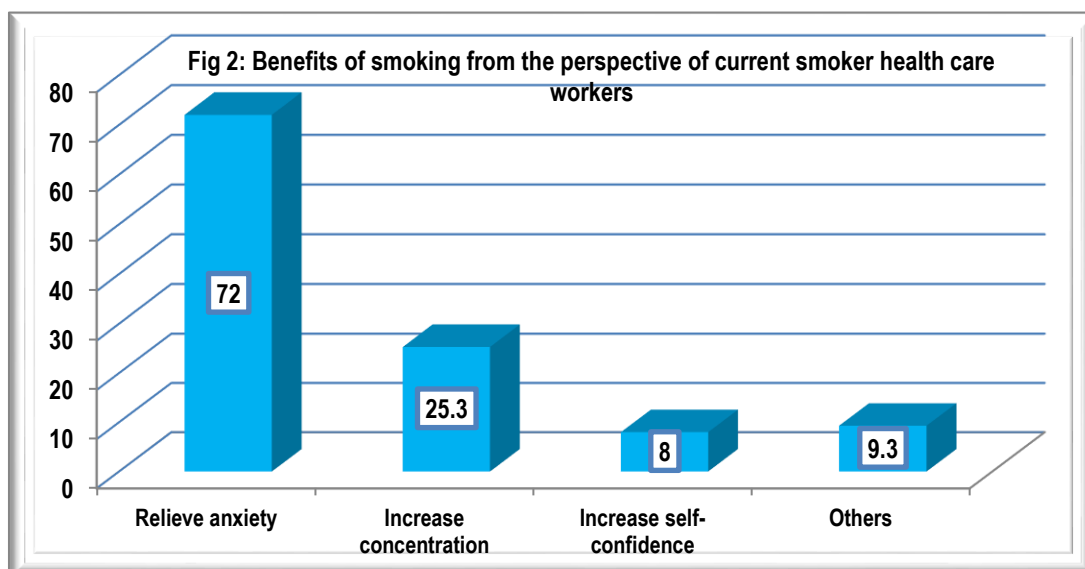
(intermediate) and 29.9% of those who had a Health Diploma were current smokers compared to none of those who had a PhD/equivalent. In addition, 6.6% of those who had a degree from the Health Institute (secondary) compared to none of those who had a Master or PhD/equivalent occasionally smoked with friends. The association between HCWs' education and smoking was statistically significant: $p=0.044$. Forty percent of HCWs who had worked in the PHC for 11-15 years were current smokers compared to 19.6% of those who had an experience of five years or less. In addition, 10% of HCWs who had worked in the PHC center for 11-15 years compared to 2.9% of who had an experience of five years or less occasionally smoked with friends. The association between HCWs' years of experience in PHC center and smoking was statistically significant: $p=0.024$. Almost three-quarters of the health care workers (73.3%) had education at school and/or institute/university regarding types and serious effects of smoking. Most of the smoker health care workers (81.3%) had guilty feelings about being smokers. Regarding initiation into smoking among smoker health care workers, 38.7% reported that school was responsible for that whereas 32% and 25.3% reported that seeing family members smoking and health institute/university members were the initiators of smoking, respectively. Only 4% reported advertisements for smoking as the initiator for their smoking. More

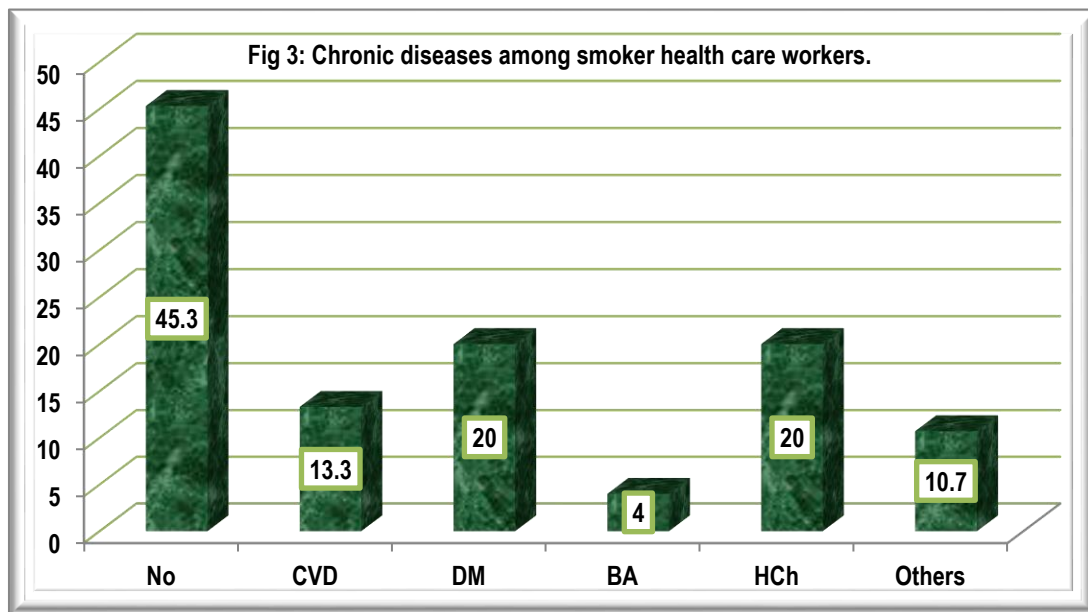
than half of smoker health care workers (56%) felt guilty when somebody asked them to stop smoking. When smokers were asked about the benefits of smoking to them, most of them (72%) reported that smoking relieved their anxiety whereas 25.3% of them reported that it increased their concentration. Only 8% reported that it increased their self-confidence. (Figure 2)

More than half of smoker health care workers (n=34, 54.7%) reported a history of chronic diseases. Diabetes mellitus or hypercholesterolemia was reported by 15 of them (20%) whereas cardio-vascular diseases/hypertension was more reported among 10 of them (13.3%). Bronchial asthma was reported among only 3 of them (4%). (Figure 3)

Table 3: Association between health care worker's age and smoking.

Age in years	Smoking				p-value	
	Yes	No	Ex-smoker	Occasional with friends		
	N (%)	N (%)	N (%)	N (%)		
Age in years	≤30 (n=78)	14 (17.9)	58 (74.4)	1 (1.3)	5 (6.4)	0.013
	31-40 (n=115)	32 (27.8)	71 (61.7)	5 (4.3)	7 (6.1)	
	41-50 (n=68)	16 (23.5)	46 (67.6)	4 (5.9)	2 (2.9)	
	>50 (n=25)	13 (52.0)	9 (36.0)	3 (12.0)	0 (0.0)	
Gender	Males (n=149)	65 (43.6)	63 (42.3)	12 (8.1)	9 (6.0)	<0.001
	Females (n=137)	10 (7.3)	121 (88.3)	1 (0.7)	5 (3.6)	
Nationality	Saudi (n=250)	73 (29.2)	153 (61.2)	10 (4.0)	14 (5.6)	0.005
	Non-Saudi (n=36)	2 (5.6)	31 (86.1)	3 (8.3)	0 (0.0)	
Marital status	Married (n=236)	65 (27.5)	148 (62.8)	13 (5.5)	10 (4.2)	0.346
	Single (n=35)	7 (20.0)	26 (74.3)	0 (0.0)	2 (5.7)	
	Divorced/widowed (n=15)	3 (20.0)	10 (66.7)	0 (0.0)	2 (13.3)	
Profession	Physician (n=59)	7 (11.9)	47 (79.7)	13 (5.1)	2 (3.4)	0.050
	Laboratory (n=12)	3 (25.0)	9 (75.0)	0 (0.0)	0 (0.0)	
	Dental (n=18)	0 (0.0)	16 (88.9)	1 (5.6)	1 (5.6)	
	Nursing (n=158)	53 (33.5)	91 (57.6)	6 (3.8)	8 (5.1)	
	Pharmacy (n=16)	4 (25.0)	8 (50.0)	2 (12.5)	2 (12.5)	
	Others (n=23)	8 (34.8)	13 (56.5)	1 (4.3)	1 (4.3)	
Education	Health Institute (Intermediate) (n=39)	17 (43.6)	19 (48.7)	2 (5.1)	1 (2.6)	0.044
	Health Institute (secondary) (n=76)	21 (27.6)	46 (60.5)	4 (5.3)	5 (6.6)	
	Health Diploma (n=87)	26 (29.9)	56 (64.4)	0 (0.0)	5 (5.7)	
	Bachelor (n=66)	9 (13.6)	49 (74.2)	5 (7.6)	3 (4.5)	
	Master (n=13)	2 (15.4)	9 (69.2)	2 (15.4)	0 (0.0)	
	PhD/equivalent (n=5)	0 (0.0)	5 (100)	0 (0.0)	0 (0.0)	
Years of experience in PHC	≤5 (n=102)	20 (19.6)	76 (74.6)	3 (2.9)	3 (2.9)	0.024
	6-10 (n=78)	17 (21.8)	54 (69.2)	2 (2.6)	5 (6.4)	
	11-15 (n=30)	12 (40.0)	14 (46.7)	1 (3.3)	3 (10.0)	
	>15 (n=76)	26 (34.2)	40 (52.7)	7 (9.2)	3 (3.9)	
Income (SR/month)	<5000 (n=6)	1 (16.7)	5 (83.3)	0 (0.0)	0 (0.0)	0.432
	>5000-10000 (n=96)	19 (19.8)	70 (72.9)	5 (5.2)	2 (2.1)	
	<10000-15000 (n=120)	34 (28.3)	74 (61.7)	5 (4.2)	7 (5.8)	
	>15000 (n=64)	21 (32.8)	35 (54.7)	3 (4.7)	5 (7.8)	





DISCUSSION

Health care workers (HCWs) play a vital role at various levels of smoking cessation programs to reduce tobacco use in general populations. However, their smoking habits may limit their ability to intervene with their patients who smoke.⁴

The overall prevalence of smoking among HCWs in Current study was (26.2%) which is high as expected, this could be related to many factors including initiating smoking at younger age affected by bad friends at schools or family members who decorate the image of smoking as part of maturity, initiating smoking affected by glamorous advertisements, cinema idols and TV stars and long working hours.⁴ Also incorrect concepts that smoking relieves stress, increases concentration along with ineffective and inadequate smoking cessation programs in our country. This prevalence is higher than other studies carried out in USA by Shahbaz (9%)⁴, Sydney by Ann-Mariee (19%)⁵ and in China (20.8%)⁶ while it was lower than others carried out in Pakistan by Zafar M. (29%).⁷ In developed countries, physicians play a key role in promoting smoking cessation⁸, and recommendations to engage physicians more actively in the smoking cessation effort go back decades.⁹ In developing countries, however, physicians are less involved in tobacco control and smoking cessation efforts¹⁰, perhaps because a substantial proportion of physicians in these countries are smokers themselves. The smoking rate among physicians in the current survey conducted in Makkah was high 11.9% as we considered those who smoked daily or occasionally at a rate of more than 100 cigarettes throughout their life as current smokers. This might be explained by assumed increased stress in the life of physicians related to long study periods and frequent exams. Again the incorrect ideas that smoking relieves stress, increases concentration and decreases anxiety are involved.⁷ More studies concerning the factors and reasons of smoking are needed in Saudi Arabia.

This rate is higher than other studies carried out in Vietnam (9.2%)¹¹, in developed countries such as USA (7%)¹², New Zealand (5%)¹³, and the UK (4%).¹⁴ However, it was lower than the figure reported in China among rural physicians (16%),¹⁵ Denmark (15%)¹⁶, Italy (28%)¹⁷, and Egypt¹⁸ where a high prevalence rate (45%) has been reported among PHC personnel

in Alexandria. It is very close to the rate reported in Switzerland (12%).¹⁹

Worldwide, smoking is still an important issue among nurses: 15% of Registered Nurses smoke; 28% of Licensed Practical Nurses smoke. These are higher rates of smoking than other health care professionals.²⁰ In the current study, smoking amongst nurses was one of the highest rates among health care workers (33.5%). In a study conducted by Shahbaz et al⁴ to determine prevalence rates of current smoking and examine sociodemographic -related factors associated with current smoking among health care professionals in the USA, the overall prevalence of current smoking was 9% with the highest prevalence (16%) recorded among respiratory therapists and the lowest prevalence (3%) recorded among physicians.

In New Zealand, midwifery and nursing professionals have the highest rate of smoking (13.6%) across the three studied groups (health therapy professionals (5.7%) and medical professionals (3.4%).²¹ In the present study, the highest rate was reported among other specialties, including dental technicians, radiologists, and others (34.8%) and the lowest was among physicians (11.9%).

When stratified by gender, we found that the prevalence of smoking was 43.6% for men and 7.3% for women. In previous studies, such as the one carried out among physicians in one hospital in Vietnam, it was revealed that the prevalence of smoking among male doctors was 35% (16% daily and 19% occasionally), while none of the female doctors ever smoked, which was lower than that found in this study.¹¹ Compared to previous studies carried out in Asian countries, the smoking prevalence among male health care workers in this study (43.6%) is higher than in Malaysia (25%)²², China (32%)¹⁵, and India (33%).²³ In a recent study conducted in Japan, prevalence rates of 12.5% and 2.9% were reported among male and female physicians in 2012, respectively.²⁴

Our study found a small percentage of female physicians who smoked (7.3%) which was higher than Malaysia²² and China²¹ where none of the females smoked. It is evident that smoking entailed mostly males in the studied sample. This is largely due to

the social unacceptability of female smoking.²⁵ Conversely, a previous study carried out in Italy found the highest prevalence of smoking among female physicians (34%).²⁶

Lifetime smoking and other tobacco use almost always begins by the time students graduate from high school. Young children's naïve experimentation frequently develops into regular smoking, which typically turns into a strong addiction—well before the age of 18—that can overpower the most well-intentioned efforts to quit.²⁷ Any efforts to decrease future tobacco use levels among high school students, college-aged youths or adults must include a focus on reducing experimentation and regular tobacco use among teenagers and pre-teens at schools.

In the present study, a quarter of HCWs tried smoking before the age of 15 years and three-quarters tried it before the age of 20 years whereas lifetime smoking started before the age of 20 years among 37% of them. A comparable figure (25.3%) has been reported in Alexandria, Egypt.¹⁸ However, in a recent study conducted in Saudi Arabia, the average reported age for initiating the smoking habit was 15.0 (SD 4.7) years, with a median of 16 and a range of 8–30 years (²⁸). Moreover, most of them stated that the initiators for their smoking were schools and health institutes.

Many long-term smokers may lack the motive to quit because they may believe that they are no longer susceptible to the risk of tobacco related disease after surviving smoking for many years, whereas others may believe that any damage that may have occurred is irreversible.²⁹ The present study indicated that 71% of current smokers thought of quitting smoking and 47% had recently attempted to quit smoking. Comparable results were obtained from a study conducted in Ecuador about the prevalence of and attitudes toward smoking among physicians.³⁰

Health professionals are expected to be role models in their society and communities for the rest of the population, and that includes, in general, their behaviour in health related matters, particularly regarding tobacco.³¹ In the present study, most of the health care workers felt guilty because of smoking and upset if somebody asked them to stop smoking.

Several limitations of the current study must be kept in mind when considering the results. Firstly, it was conducted in only one sector in Makkah, so the generalizability of the results is questionable. However, it included different categories of health care workers and a sufficient sample size. Secondly, self-administered questionnaires identified by an anonymous number were used for data collection. This method raises the issue of underreporting. Finally, due to the cross-sectional nature of the survey, we cannot draw definitive causal conclusions about the observed relationships between baseline characteristics and current smoking.

ACKNOWLEDGMENTS

The authors would like to express their thanks and appreciation to Dr. Bak Kalo, for his expert advises and notes. Also, they are grateful to Prof. Moataz Abdel-Fattah for his great efforts in analyzing data and generating the results of this study. Finally, we would like to thank those who participated from Al-Ka'akia sector, without their help, this study would not be completed.

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Source of Support: Nil. **Conflict of Interest:** None Declared.

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Cite this article as: Khaled Mohammad Al-Shahrani, Ali Hammad Alzahrani, Bakr Bakr Mohammad Kalo. Prevalence of Cigarette Smoking Among Health Care Providers At Al-Ka'akia Sector of Primary Health Care in Makkah, Saudi Arabia, 2014. *Int J Med Res Prof*. 2017 Sept; 3(5):6-13.
DOI:10.21276/ijmrp.2017.3.5.002