PREVALENCE OF ELECTRONIC CIGARETTES USE AMONG HEALTH CARE PROVIDERS IN THE PRIMARY HEALTH CARE IN MAKKAH, 2019

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ABSTRACT

BACKGROUND: Most health care providers are aware of e-cigarettes, but the information is scarce regarding the magnitude of this newly emerged habit in Saudi Arabia, since introduction in the early 2000s, e-cigarette use has rapidly increased among adolescents worldwide. then adult However, little is known about e-cigarette uptake among adolescents in Saudi Arabia. Tobacco smoking is highly prevalent in Saudi Arabia, and there is a need to reduce the resultant health burden via patient-oriented smoking cessation interventions. Primary care physicians (PCPs) have a significant role in providing counseling and advice to quit smoking.

World Health Organization (WHO) reported tobacco use as one of the biggest public health threats the world has ever faced. WHO report on the global tobacco epidemic, mentioned that in 2015, over one billion people smoked tobacco. This study aimed to assess Prevalence of Electronic Cigarettes Use Among health care providers in the Primary Health Care in Makkah, Although it is declining worldwide in many countries, the prevalence of tobacco smoking appears to be increasing in the Eastern Mediterranean Region

.Aim of the study

This study aimed to assess Prevalence of Electronic Cigarettes Use Among health care providers in the Primary Health Care in Makkah 2019.

METHODS: Cross-sectional descriptive study was carried out, including a random representative sample of health care providersin the Primary Health Care in Makkah.A self-administered validated questionnaire was adopted and modified. The Sample size of medical practitioners . Our total participants were (500)

RESULTS: showed that the majority of the participant were (52.0%) smoker regarding smoking period the majority while <5 were (35.0%), Current use of e-cigarettes were(72.0%) and (30.0%) of the participant knew that the electronic cigarettes contain nicotine whereas 56.15% did not know if e-cigarettes contain nicotine or not. Most of the students (75.0%) thought that the electronic cigarette is harmful to health.

CONCLUSION: The prevalence of e-cigarettes smoking among health care providers in the Primary Health Care in Makkah. was found relatively high and most common reasons to smoke e-cigarettes were similar taste to conventional cigarettes, adequate nicotine, helping in control of smoking behavior, perceived less harmful effects than conventional cigarettes, and low cost. E-cigarettes have been tried and currently used by a considerable proportion of health care providers. Some associated factors were identified.

KEYWORDS:E-cigarette, prevalence, health care providers, PHC, Makkah, Saudi Arabia.

1. INTRODUCTION

Tobacco smoking has risen to become one of the major problems globally. This poses serious challenges and negatively effects many sectors, mainly healthcare.According to the World Health Organization (WHO), smoking is one of the biggest public health threats in the world, responsible for more than 7 million deaths per year. It accounts for one in ten deaths among adults and represents the main cause of premature death globally.(3) On average, smokers die ten years earlier than nonsmokers.(4)

In Saudi Arabia, among the population aged 15 or more, approximately 37.6% of males and 6% of females are current smokers.(5) The social, health and economic burden of tobacco use in Saudi Arabia is estimated to be five billion Riyals per year (1.3 billion US$).(6)The utilization of electronic cigarettes (e-cigarette) has been developing and became a significant public concern.(7) The e-cigarette is a handheld, battery-powered device designed as a smoking cessation tool for adults to deliver aerosol by vaporizing flavored liquid nicotine, glycerol or propylene glycol.(8) E-cigarettes claim to be less harmful than cigarette smoking and use a valid alternative or aid to quit cigarette smoking by nicotine delivery, without the toxic effect of tobacco use.(9) Since their introduction to the market in the early 2000s, e-cigarette use has increased rapidly among adolescents worldwide.(10) Little is known about e-cigarette usage among adolescents in Saudi Arabia. Further studies need to be conducted to define the rate of use and long-term effect of e-cigarette and to apply proper prevention measures.

Electronic cigarettes were synthesized to mimic the approximate sensory feeling of smoking usual cigarettes (11). The utilization of electronic cigarettes (e-cigarette) has been developing and become a significant public concern. E-cigarettes are battery-operated devices that heat a liquid substance (or electronic -liquid) into an aerosol, or vapor, which is then inhaled by the user. Not all e-cigarettes/e-liquids contain nicotine; however, when present, nicotine in e-liquids is derived from tobacco. Four principal components comprise an e-cigarette: the battery; the atomizer; the cartridge or tank; and the mouthpiece (12). The battery powers the device and the atomizer channels that heats e-liquid in the cartridge or tank, which then creates a vapor that users inhale through the mouthpiece (13). Some e-cigarettes require users to take a drag to activate the atomizer; others have manual atomizer activation.

The study aims to investigate the prevalence and determinants associated with e-cigarette use among the health care providers in Makkah, Saudi Arabia. In addition, the collection of data on usage patterns through surveys may provide information about the property of users and the impact of those products and help to introduce appropriate interventions and policies in the future

1.2 Literature Review

In 2015, a meta-analysis found that relative to placebo, e-cigarettes helped tobacco cigarette smokers quit smoking.(14) One the contrary, a study was conducted in found that frequent e-cigarette users on daily bases did not show a cessation advantage over comparable no-e-cigarette users, and use of e-cigarettes in that attempt compared to the FDA approved cessation aids or no products, showed similar abstinence rates in the next 2 years.(11)However, its effectiveness in cessation aid is still being debated and unclear based on scientific evidence.(16)

Scholz et al found the efficacy of smoking cessation is inevitably beneficial, and the cost-effectiveness of medical interventions for nicotine dependence have been well-established.(17)Although physicians of different specialties may frequently ask their patients about their smoking statuses during examination, PCPs are expectedly more likely to contribute to providing advice and counseling regarding smoking cessation. Therefore, assessment of PCPs' knowledge and attitudes is a critical part of the smoking cessation interventions, which could reduce the burden of the resultant disorders in areas with high prevalence of smoking, such as Saudi Arabia.(18)

In a meta-analysis study of tobacco smoking prevalence among Saudi's college students that published in 2019 reported that the estimated pool of smoking prevalence was 17% and showed that males (prevalence rate of 26%) are more likely to smoke e-cigarettes compared to females (prevalence rate of 5%).(19)Actually, these findings indicate a significant shortage of the educational content on tobacco smoking in medical education. Undergraduate curricula in Saudi Arabia lack the required information regarding the risks of smoking and the need to motivating patients to abstinence. This was highlighted by Jradi and Al-Shehri, who showed that knowledge levels were generally low among students from three local medical schools, and the authors underscored the need to prioritize the topics related to smoking risks and treatment in medical education curricula. Similar patterns of low knowledge were reported among dental students regarding smoking as one of the most common risk factors of oral cancer.(20-21) In our settings, improving the undergraduate dental curricula is necessary since dentists have shown the lowest levels of knowledge regarding counseling compared to other specialties.

2. MATERIALS AND METHODS

3.1Study design:

A cross-sectional descriptive study was done among health care providers at the primary health care in Makkah City at Saudi Arabia,2019.

Study Area

The study has be carried out in the city of Makkah Al-Mokarramah Makkah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. It is located in the western area in Kingdom of Saudi Arabia and called the Holy Capital. Contains a population around 1.578 million. This study was conducted in Makkah primary health–care centers at saudi Arabia, and it reflects a diversified demographic profile with a considerable portion of the population comes from rural descent, while others come from an urban one. This difference translates into biological, socioeconomic and lifestyle differences in the Makkah population.

3.3 Study Population

The study has be conducted among health care providers regarding the Electronic Cigarettesin primary health-care in Makkah the sample was selected to include primary health-care medical practitioners who aged from <25years - > 55 years and their total number was 500.

3.4The sample size

The sample size has been calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly to sample size from medical practitioners by the required sample size; (500). (male and female) and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been 500. Computer

generated simple random sampling technique was used to select the study participants. Data collection was done by the researcher during a during the October to December, 2019.

.35 Sampling technique:

Systematic random sampling technique is adopted. After that, by using random number generator, then simple random sampling technique was applied to select the health care providers . Also, convenience sampling technique will be utilized to select the participants in the study. By using systematic sampling random as dividing the total health care providers by the required sample size; (500).

3.6 . Data collection tools of the study:

The self-administered questionnaire was adopted and modified from WHO Youth Tobacco Survey 2011 Questionnaire.5 The questionnaire consists of two main parts, socio-demographic and personal characteristics including age, gender, nationality, grade and associated determinants. The questionnaire was then translated from English to Arabic. Then it was independently retranslated into English to ensure the linguistic quality. The final questionnaire was validated by three consultants .The study was approved by the local research committee, and permitted by the Joint Program of Family Medicine in Makkah. Permission to conduct the study in the PHC was also obtained from the Ministry of health . Written consent was obtained from each participant. All collected data from the health care providers are kept confidential, accessed only for scientific research. The study is self-funded by the

3.7. Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 has be used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using Chi-Square tests ($\chi2$) to test for the association and the difference between two categorical variables were applied. A p-value $\leq$ 0.05 will be considered statistically significant.

3.8.Pilot study

A pilot study has be conducted in primary health care patient's the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study, the questionnaire has be clear and no defect has be detected in the methodology.

8 . Ethical considerations

Permission from the Makkah joint program Family Medicine program has be obtained. Permission from the Directorate of health , verbal consents from all participants in the questionnaire were obtained. All information was kept confidential, and results has be submitted to the department as feedback .

3.9Data entry and analysis:

Data was entered using SPSS version 25 (IBM Corp., Armony, NY). Frequency and percentage were used to describe data. Chi-square and Fischer exact tests were used for testing the association between e-cigarette usage from their potential associated factors from the other side, with a significance of P-value <0.05 and CI 95%.

3.10. Budget: Self-funded

4. RESULTS

Table 1. Distribution of the Socio-demographic characteristics about Electronic Cigarettes in the participants . (n=500)

Categories		
e		
<25	5	
25-45	0	
45-55	5	
>55		
nder		
Male	0	
Female	0	
tionality		
Saudi	5	
Non- Saudi	5	
ome		
<5000		
5000-10000	5	
10000-15000	0	
>15000	5	
title		
Doctors	5	
Nurse	0	
Others	5	
rital status		
Married	5	
Not married	5	

The study included 500 of the participants Table 1 show the socio-demographic characteristics. majority of the age in <25 were 35.0%, more than half of the students (62.0%) were males and 73.0% were Saudis. The highest percentage of job title nurse were (46.0%) but the doctors were (31.0%) and Others were (31%), the majority of the participant married were (69.0%).

Table 2. Distribution of the Participant's Opinion about electronic cigarette .

oking		
oker	0	
n smoker	0	
oking period (n=260)		
0.		
15.		
5.		
rrent use of e-cigarettes (n=260)		
	7	
s		
es the electronic cigarette contain nicotine?		
s		00
		85
n`t know	5	15
you think that the electronic cigarette is harmful to health?		
s	5	00
		92
n`t know		08

The study showed that the majority of the participant were (52.0%) smoker regarding smoking period the majority while <5 were (35.0%), **Current use of e-cigarettes** were(72.0%) and (30.0%) of the participant knew that

the electronic cigarettes contain nicotine whereas 56.15% did not know if e-cigarettes contain nicotine or not. Most of the students (75.0%) thought that the electronic cigarette is harmful to health

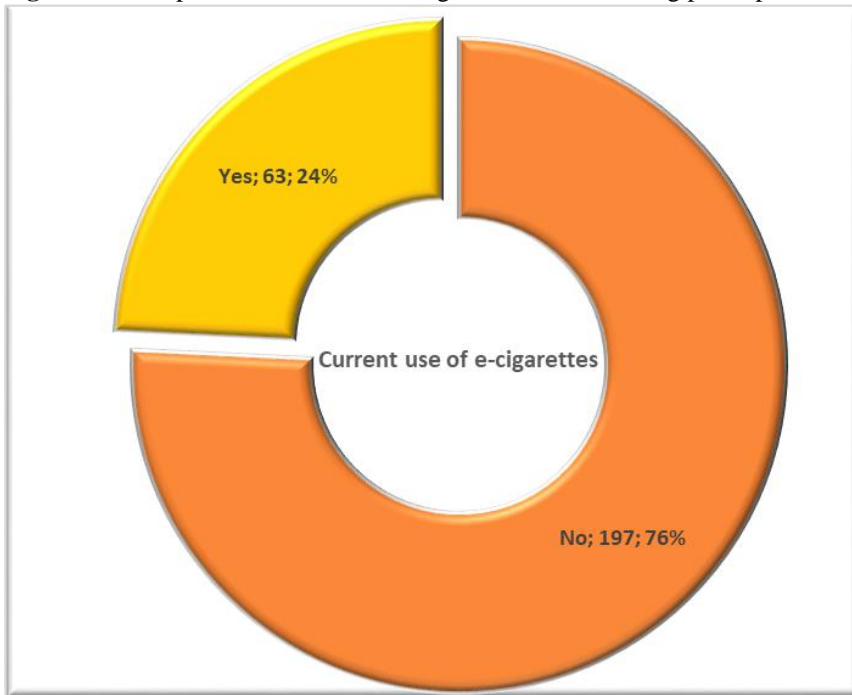**Figure 1**: description to the current using the electronic among participation .

Table (3): Distribution of main reasons for electronic cigarette use among ever trying **health care providers**

...in reasons for electronic cigarette		
...el that e-cigarette is safer than tobacco cigarette		08
...el that smoking an e-cigarette is the same as smoking tobacco cigarette		00
...el that e-cigarette can help me to quit smoking	2	15
...ke the taste and smell of the e-cigarette	5	08
...ant to experiment with the cigarette	8	15
...ered by friends		92
...ered by family members		92
...llow idol trend (fashion)		15
...igarette is more economical than tobacco cigarette	2	08

Reasons for electronic cigarette use

Table (3) summarizes the main reasons for e-cigarette use among health care providers the most reported reasons were the desire to have an experience with e- cigarette (76.15%), feeling that e-cigarette can help them to quit smoking (66.15%), trying to taste and smell the e-cigarette (48.08%) and feeling that e-cigarette is safer than tobacco cigarette (58,08%).

Table 4: Distribution of socio-demographic factors associated with ever-trying e-cigarettes among health care providers.

ms		oking		n-smoker (-240)		tal		i-square	value
		oker (n=260)							
e	5	8	38		75	5		680	001*
	45		92		50	0			
	55		77		25	5			
	5		2		50				
nder	le	0	77	0	67	0		993	001*
	male	23	0	33	0				
tionality	udi	2	23	8	42	5		398	001*
	n- Saudi		77	7	58	5			
ome	000		46		42			799	001*
	00-10000	8	54		92				
	000-15000		46		33	0			
	5000		54		33	5			
Title	ctors		69		17	5		858	001*
	rse	0	00	0	67	0			
	hers		31		17	5			
rital status	rried	4	00		25	5		.676	001*
	t married		00	0	75	5			

Table 4 show statistical significant relation While Chi-square X2 34.680 and P=value 0.001 about (45.38%) of health care providers smoker compared to only (23.75%) of the health care providers non- smoker in age <25, regarding the gender Statistical significant relation While Chi-square X2 80.993 and P=value 0.001 about (80.77%) of health care providers smoker compared to only (41.67%) of the health care providers non- smoker in male, regarding the Nationality Statistical significant relation While Chi-square X2 72.398and P=value 0.001 about (89.23%) of health care providers smoker compared to only (55.42%) of the health care providers non- smoker in Saudi , regarding the Income Statistical significant relation While Chi-square X2 30.799 and P=value 0.001 about (41.54%) of health care providers smoker compared to only (27.92%) of the health care providers non- smoker in 5000-10000, regarding the Job Title Statistical significant relation While Chi-square X2 33.858 and P=value 0.001 about (50.00%) of health care providers smoker compared to only (41.67%) of the health care providers non-smoker in nurse, regarding the Marital status Statistical significant relation While Chi-square X2 111.676 and P=value 0.001 about (90.0%) of health care providers smoker compared to only (46.25%) of the health care providers non- smoker in married

Figure 2: Distribution of socio-demographic factors associated with ever-trying e-cigarettes among health care providers
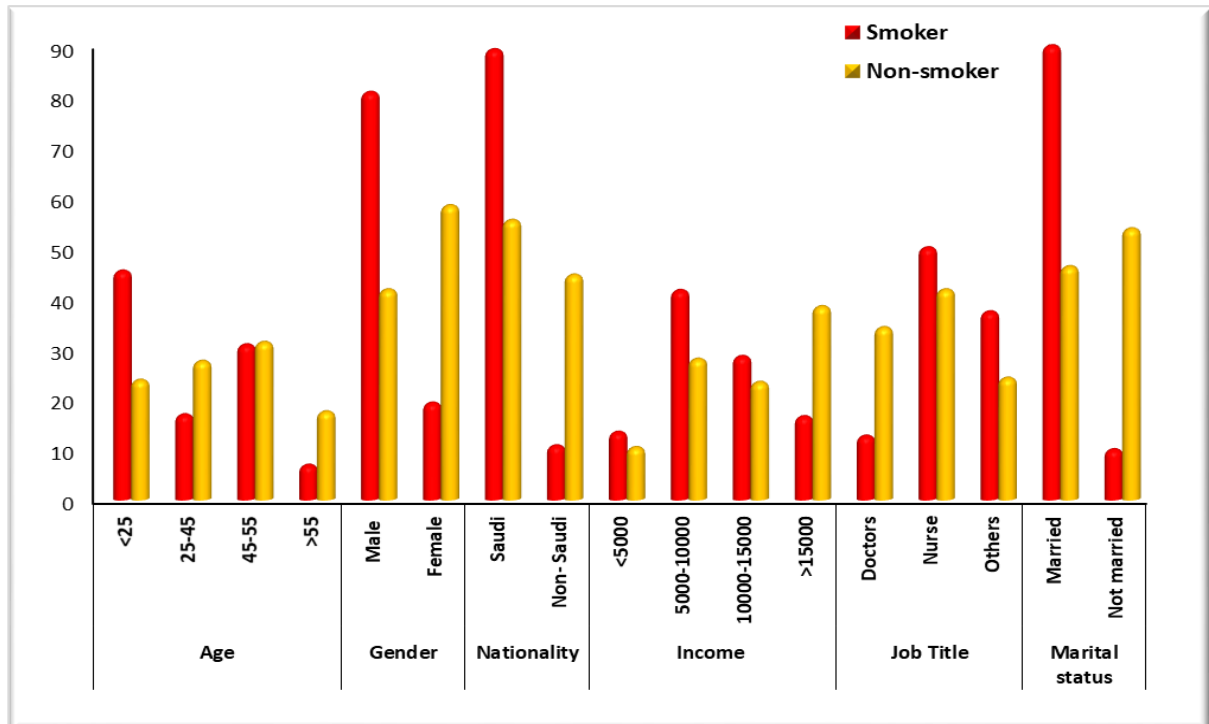
Table 5: Socio-demographic factors associated with current use of e-cigarettes among health care providers.

tegories		rrent use of e-cigarettes		tal		i-square	
		sitive (63)	gative (197)				value
e	5	11	35	8	385	986	001*
	45	81	72		923		
	55	68	92		769		
	5	40	2		231		
nder	le	44	2	39	0	769	634	001*
	male	56	1		231		
tionality	di	95	88	2	231	30	15*
	n- Saudi	05	2		769		
ome	000	6	24		462	492	001*
	0-10000	29	25	8	538		
	00-15000	92	40		462		
	5000	03	1		538		
title	ctors	38	0		692	8.971	001*
	rse	75	0	84	0			
	ners	87	16		308		
rital status	rried	89	8	36	4		14	36
	t married	11	4				

Table (5) shows that statistical significant relation While Chi-square X2 66.986 and P=value 0.001 about (39.68%) of health care providers current positive use of e-cigarettes compared to only (27.92%) of the health care providers current negative use of e-cigarettes in age 45-55, also Job title that statistical significant relation While Chi-square X2 118.971and P=value 0.001 about (52.38%) of health care providers current positive use of e-cigarettes compared to only (33.0%) of the health care providers current negative use of e-cigarettes' in age 45-55

Figure 2 Socio-demographic factors associated with current use of e-cigarettes among among health care providers
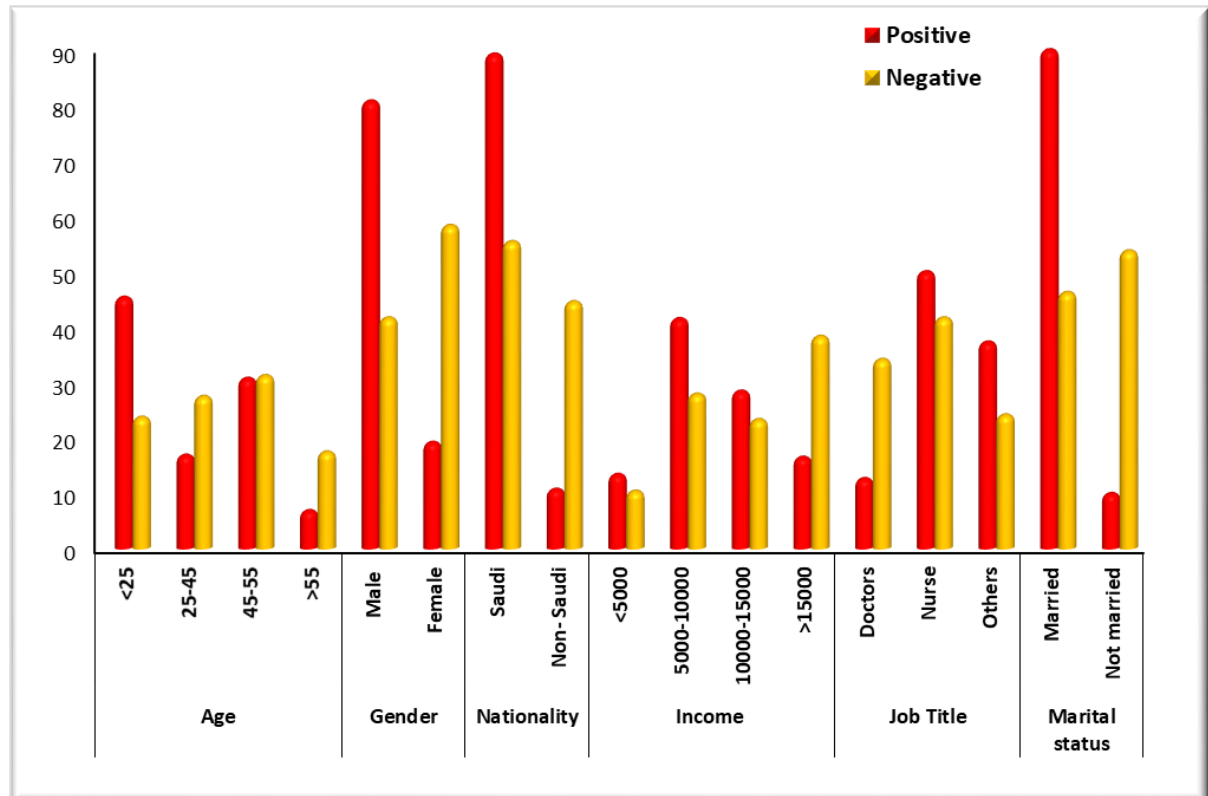
4. DISCUSSION

Worldwide, little is known regarding safety and impacts of e-cigarettes on health.(22, 23) In Saudi Arabia, as a result of lacking of studies to identify the magnitude of the problem of e-cigarettes use among adolescents, this study was carried out to tackle this problem as well as to identify factors associated with this behavior among health care providers in Makkah.In the present study, the health care providers use electronic cigarettes of them have used e-cigarettes . Different figured have been reported in various parts of the world. In Wales,(24) 18.5% of doctor studies have tried e-cigarettes and 2.7% were regular users whereas in the USA, the current e-cigarette use among doctor increased from 4.5% in 2013 to 13.4% in 2014,(25) and in 2015, it became 16%.(26) However, in another American study (2013-2014), the prevalence rate was 1.21% (27). In Poland, about 22% of the health care providers aged between 25 and 50 years were ever tried e-cigarette smoking and 27% used them in the past 30 days.(28) Among students in grades 10-12 in Canada, the prevalence of ever trying e-cigarettes was 27.1% and current smoking in the past 30 days was 8.9%.(29)

According to the Canadian Student Tobacco, Alcohol and Drugs Survey (2015), rate of e-cigarettes ever use and use in the past 30 days among students aged between 15 and 19 years were 26% and 6.2%, respectively.(30) In the UK,(31) rate of current use of e-cigarettes among students 11-18 years was 2% whereas that in Scotland among those aged 15 years was 3%.(25) In Hong Kong,(32) a low rate has been reported (1.1%) among adolescents. In Sweden,(29) the rate of ever trying e-cigarettes was more than 25% among students aged 15-16 years. Comparison between the findings of the present study and others should be taken with caution due to variations in the time of study conduction, age group, and study designs.

The relatively high prevalence observed in the present study indicates that e-cigarettes are easily accessible to adolescents and health care providers although there are restrictions on the sale of tobacco products in KSA. However, they may be available for sale online as there is little control over their marketing in comparison to tobacco products.

E-cigarettes could be a new way into nicotine addiction for never smoker young population, if regular use occurs extensively.(19) A systematic review showed that 7% of non-smokers had used e-cigarettes and the current use among them was 1.5%.(28) In Argentina, although e-cigarettes use is prohibited, the trial of using increased from 1.8% to 7.6% over a 17 month period.(15) Therefore, health education for young students is very important to prevent initiation of e-cigarettes trials .The present study demonstrated gender and job difference between health care providers in regarding ever trying or current use of e-cigarettes. The same has been observed in a study carried out in Sweden.(24) However, in Studies carried out in the United States,(9) Canada,(19) Hong Kong,(32) New Zealand(28) and Argentina,(25) male were more likely to try and use e-cigarettes compared to females.

Health care providers who had higher pocket money/day had higher rates of both ever trying and using e-cigarettes than their peers. Also, in Canada (19) and Argentina,(25) students living in higher socio-economic areas

were more likely to use e-cigarettes.In disagreement with others, (26) the present study reported that students with more educated mothers were more likely to use e-cigarettes.

5. CONCLUSION

The prevalence of e-cigarettes smoking among health care providers. was found relatively high and comparable to that reported in previous studies from Saudi Arabia and studies from USA and European countries. Most common reasons to smoke e-cigarettes were similar taste to conventional cigarettes, adequate nicotine, helping in control of smoking behavior, perceived less harmful effects than conventional cigarettes, and low cost. Young age was significantly associated with current use of e-cigarettes, while gender and level of training were non significantly associated with the current use.The desire to have an experience with e-cigarette, the perception that e-cigarettes can help them to quit smoking, and that it provides a safer sensory experience than tobacco cigarette are the main reasons for e-cigarette use

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