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Prevalence of Electronic Cigarettes Use among health care providers in the Primary Health Care in Makkah AL-Mokarramah Saudi Arabia, 2023

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Abstract

Background:

There is no doubt that the popularity of electronic cigarettes is rapidly increasing around the world, especially among healthcare professionals, and advertising for these products has become widespread and being marketed in all media.

Health problems and smokers trying to quit smoking are among the most common reasons why traditional tobacco smokers turn to e-cigarettes. Also, new generations turn to electronic cigarettes, which led to the interest of health care workers in the problems of electronic cigarettes, and most smokers try their first cigarette before they get old. Electronic cigarettes (e-cigarettes) This type of smoking is considered one of the most widespread forms among workers in the medical health care specialty, as the number of users of this type of smoking increases significantly due to the pressures related to their work, and this is consistent with the study hypothesis. smoking among healthcare professionals is increasing. The aim of this study was to know and evaluate the prevalence of electronic cigarette smoking among health care workers in the Kingdom of Saudi Arabia. As a result, the global e-cigarette market is expanding and expanding. However, there is still a potential cause of many illnesses and complications associated with the use of e-cigarettes. E-cigarettes are battery-operated devices that heat liquid and deliver an aerosol product to the user with varying flavors. The study aimed to evaluate the prevalence of e-cigarette use among primary health care workers in Makkah Al-Mukarramah in 2023.

METHODS: A cross-sectional descriptive analysis study was conducted, which included a representative random sample of primary health care workers in Makkah Al-Mukarramah. The self-verification questionnaire has been approved and modified. Sample size of healthcare workers. Total number of participants (400) .

Results: It was found that most of the participants (31.0%) belonged to the age group less than 25 years, and the gender, mostly male, was higher than that of women (72.0% and 28.0%), and the nationality of the majority of the participating participants was Saudi (66.0%).) While non-Saudis were (34.0%), and the income of most of the participants was between 10,000 and 15,000 (32.0%), and the professional qualification, and most of the participants were nurses (50.0%), while doctors were (29.0%). Conclusion: E-cigarette use is more common among primary health care workers, young adults, and those who have experimented with tobacco use, a relatively high outcome and the most common cause of

smoking. Cigarettes, and an adequate amount of nicotine, which helps control smoking behavior, are seen to have fewer harmful effects than low-cost conventional cigarettes.
KEYWORDS: E-cigarette, prevalence, health care providers, PHC, Makkah, Saudi Arabia.

Introduction

In 2014, the Food and Drug Administration (FDA) defined electronic cigarettes, also known as e-cigarettes, as a battery-powered electronic product that can extract nectin and chemicals in different flavors depending on the user's choice[1]. Burning tobacco, which distinguishes it from regular cigarettes [2] but uses aerosols that contain nicotine [3]

Some users believe that electronic cigarettes are less harmful than tobacco products, but this is wrong because it is also completely unsafe and leads to severe damage to the respiratory system [4]. Despite this, it is increasingly being promoted and exaggerated in order not to use tobacco, especially among health care workers, adults, and even families with high socioeconomic levels [5].

The media widely promotes electronic cigarettes, arguing that they are more harmful than smoking problems and help the smoker to quit smoking [6]

The widespread use of e-cigarettes is evident in their increasing popularity among healthcare professionals and adolescents and young adults around the world. [7]

A study was conducted on the prevalence of electronic cigarette users among health care workers and youth. An age group ranging between (16 - 30 years) was selected. This study was conducted in different regions of the world and a group of countries, including the Kingdom of Saudi Arabia, the United States, Canada, Europe, and New Zealand. It became clear that During these studies, the use of electronic cigarettes is increasing rapidly in these countries, and this has appeared in recent years, reaching 14.7% of users among medical students in the United States.[9]

Studies and statistics have proven that the rate of use of electronic cigarettes in the Kingdom of Saudi Arabia, among the population aged 15 years and over, about 37.6% of men and 6% of women are current smokers [10]. the economic burden of tobacco uses in the Kingdom of Saudi Arabia amounts to five billion riyals ($1.3 billion) annually [11].

The great development in the use of electronic cigarettes has become a source of great tension and concern in the Kingdom of Saudi Arabia, as it increases every year[12].

And the means of promotion and marketing use some claims that electronic cigarettes are a good and practical alternative to quitting regular cigarettes that consume tobacco by consuming nicotine [13].

E-cigarette use has become popular and has rapidly increased among teenagers around the world since their introduction in the early 2000s [14]. at the present time, sufficient information is not known about the harms of using electronic cigarettes, and this is what worries me, so the use of this type of smoking has spread among health care workers and adolescents in the Kingdom of Saudi Arabia. More and more research and studies must be done to determine the rate of use and the long-term effect of electronic cigarettes and implement appropriate prevention measures.

Moreover, the availability of a wide range of flavors makes it preferred by most users [15]. Furthermore, smokers who cannot quit smoking believe that e-cigarettes are a better option with lower health risks [16].

In addition, the availability of different and favorite flavors among a group of young people helps them mix cigarette tobacco with shisha flavors and will help them quit the harmful habit of smoking tobacco.

One of the risks that has been discovered is that e-cigarettes are linked to the risk of cancer [17].

A group of recent reports have shown that the chemical analysis of electronic cigarettes contains a variety of carcinogenic substances that help stimulate cancer cells and increase the risk of cancer [18]. It also increases the incidence of serious respiratory infections and diseases, such as asthma and chronic obstructive pulmonary disease, as well as the risks of passive smoking [19].

Despite the spread of statistics on e-cigarette users and the ability to quantify them, the use of e-cigarettes among health care workers is few and not available, especially within the Kingdom of Saudi Arabia. [20]

1.2 Literature Review

The study by Rice et al. (2023) found the prevalence and association between frequency and dependence on e-cigarette use in a sample of secondary school students in Makkah Al-Mukarramah, Saudi Arabia. Results of the study revealed an increase in the prevalence of electronic cigarette use by 20.41%, which is a higher number than subsequent studies conducted in the United States. [21].

Another study indicates that the prevalence of e-cigarette use has been studied in different settings. Casoli et al. [16] studied the prevalence of e-cigarette use among youth in Canada. 1,188 participants completed a questionnaire on e-cigarette use revealing that awareness of e-cigarette use among Canadian youth is relatively high, with a prevalence of e-cigarette use of 16.1% [22] .

A similar result was reported in a survey conducted in Qassim, Saudi Arabia among healthcare professional students, where 53.1% of participants had a family member or friend who used e-cigarettes.[23] Likewise, a Polish study reported that e-cigarette use among young people has increased since 2019 [24].

Other studies indicate that the largest percentage among current e-cigarette smokers among women and men amounted to 46.79% and 53.2%, respectively. These percentages are proportional and very similar to the total number of American adolescents, as it turned out that the percentage of boys is greater than that of girls [20].

One of the reasons for this difference is that men have a lot of free time with each other and spend their time with their partners, and these times are available to men more than women, which leads to women consuming electronic cigarettes more often. In addition, Arab youth believe Smoking is used to express maturity among peers [22].

In 2020, a study was conducted in Sweden that showed that men use cigarettes more than women [25]. At another time, the study was conducted, and it became clear that women are more regular users of cigarettes than men [21].

An example of this comes from health care workers and adults. The use of both e-cigarettes and traditional cigarettes is high among adolescents and increasing rapidly. some studies showed that young adolescents who used e-cigarettes are more likely to be current smokers than those who have never used e-cigarettes[20].

And some US studies that indicated that the use of electronic cigarettes was associated with a higher probability of smoking current cigarettes, a greater probability of having an established smoking habit, and a lower probability of reducing smoking traditional cigarettes [24]. Regarding the harm associated with e-cigarettes, one study identified some toxic substances found in e-cigarette aerosol.

An analytical study was conducted among male and female university students in the Kingdom of Saudi Arabia, and it became clear that the difference in smoking prevalence was 17% in 2019, as the prevalence for men was 26% and the prevalence for women was 5% [19].

Materials and methods

Study design:

A cross-sectional descriptive study was conducted, and this study was applied to workers in the field of primary health care and was applied to the city of Mecca in the Kingdom of Saudi Arabia in the year 2023.

Study Area

It was conducted in the Kingdom of Saudi Arabia in the city of Mecca, and it is considered to be the best place on earth. It is the birthplace of the Prophet Muhammad and the main place where pilgrims perform Umrah and Hajj. It is in the western part of the Kingdom of Saudi Arabia and is called the Holy Capital.

With a population of about 2.78 billion people. This study was allocated to primary health care centers in the city of Makkah Al-Mukarramah in the Kingdom of Saudi Arabia. These differences translate into biological, social and economic diversity of Mecca.

Study Population

This study was conducted on a group of healthcare workers who use electronic cigarettes in Mecca. Where a sample was selected from the primary health care workers, and the naked group for them ranged between 25-55 y, the total number was 400 sample members.

The sample size

A simple random sample was used, and this was used through computer distribution to select participants in the study. Where the sample size was calculated through the application of the Raosoft sample size calculator, which is based on the percentage (margin of error: 5%, confidence level: 95%, and the assumed response distribution is 20%). A sample of doctors was allocated as needed.

The test is measured (400) between (males and females) and an additional 10 percent is added to reduce the margin of error. The data was collected by the researcher in the period from June to August 2023.

Sampling technique:

Systematic random sampling was applied, where a random sample of sample numbers was used, and modern technology was applied to obtain random samples that focus on workers in the health care sector, and appropriate sampling was chosen to select participants in the study.

The analytical descriptive approach was used to match the sample of the random study, where the total number of health care workers was divided by the required sample size. (400).

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Data collection tools of the study:

The questionnaire (implemented form) conducted by the World Health Organization among young people for the year 2011 was modified.

The questionnaire was divided into two main parts, the first part is concerned with demographic data a set of relevant demographic characteristics.

Translating the questionnaire from English to Arabic. Some words that are suitable for the Arab community have been put in order to be suitable for distribution and to obtain the required quality of translation, it was presented to three consultants.

Then the questionnaire was presented to a group of officials of the local research committee, and it was approved by them, and permission was given to distribute this questionnaire to the Makkah Joint Family Medicine Program. The Ministry of Health also obtained permission to conduct the study in the primary health care center.

Written permission and consent were obtained from each participant, as the data collected by healthcare professionals is considered confidential and can only be accessed the study was self-funded.

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS 24) program was used, where the collected data were entered into the program and that data was analyzed.

Some statistical tools (such as frequencies and percentages) were used, and analytical statistics were performed using chi-square tests ($\chi 2$) to test the correlation and difference between two variables and determine the extent of the effect of each variable on the other. The p-value ≥ 0.05 will be considered statistically significant.

Pilot study

This study was conducted in an experimental manner on a small number of patients working in a primary care department from the same sector in order to match the data obtained with the full target group using the same questionnaire questions in order to test the methodology of the study. It became clear from the questionnaire answers that there were no answers with differences or defects in the study, and this demonstrates the validity of the sample used in the study.

Ethical considerations

An experiment was conducted on a small group of patients working in the primary care department in the same sector to match the data, and it was clear from the questionnaire answers that there were no differences or defects in the study, which indicates the validity of the sample used in the study.

Data entry and analysis:

Data were entered using SPSS version 25, and frequency and percentage were used to describe the data. Chi-square and Fisher's exact tests were used to test the association between e-cigarette use and potential associated factors, with a significant p-value <0.05.

Budget: Self-funded

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RESULTS

Table 1. Distribution of the Socio-demographic characteristics about Electronic Cigarettes in the participants . (n=400)

Categories	N	%
Age		
<25	124	31
25-45	76	19
45-55	100	25
>55	100	25
Gender		
Male	288	72
Female	112	28
Nationality		
Saudi	264	66
Non- Saudi	136	34
income		
<5000	44	11
5000-10000	108	27
10000-15000	128	32
>15000	120	30
Job title		
Doctors	116	29
Nurse	200	50
Others	84	21
Marital status		
Married	288	72
Not married	112	28
Smoking status		
Smokers	260	65
Ex-smokers	88	22
Non-smoker	52	13

Table 1 shows that majority of the participants were (31.0%) in age group <25 years followed by the age (45-55) and >55 years respectively were (25.0%) while age 25-45 were (19.0%), regarding the gender majority of them male was higher compared to female(72.0% and 28.0%) , regarding the nationality the majority of participant are Saudi were(66.0%) while non-Saudi were(34.0%), regarding income the majority of participant from 10000-15000 were(32.0%) while >5000were(30.0%) but from the 5000-10000were (27.0%) while < 5000 were (11.0%), regarding job title the majority of participant nurse were (50.0%) while doctors practitioner were(29.0%) but the others were (21.0%), regarding the marital status most of participants married were(72.0%) while not married were(28.0%), regarding

smoking status the majority of participant smokers were (65.0%) while Ex-smokers practitioner were(22.0%), but the non-smokers were (13.0%).

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

	N	%
Smoking period (n=490)		
<5	140	35
5-10.	88	22
10-15.	76	19
>15.	96	24
Current use of e-cigarettes		
No	148	37
Yes	252	63
Does the electronic cigarette contain nicotine?		
Yes	120	30
No	56	14
Don`t know	224	56
Do you think e-cigarettes are harmful to your health?		
Yes	300	75
No	48	12
Don`t know	52	13

Table 2 shows regarding the distribution of the Participant's Opinion about electronic cigarette this indicates the period when smoking is the most <5 were (35.0%) but >15 were(24.0%) while from 5-10 were (22.0%) while from10-15 were(19.0%) , regarding current use of e-cigarettes the most of participant answer Yes were(63.0%) followed by answer No were (37.0%), regarding the electronic cigarettes contain nicotine the most of participant did not know were (56.15%) while answer Yes were (30.0%) but No were (14.0%) , regarding Can you imagine how harmful electronic cigarettes are to your health most of the participant (answer Yes were (75.0%) followed by answer don`t know were (13.0%) but No were (12.0%)

Table 3: Distribution of socio-demographic factors associated with ever-trying e-cigarettes among health care providers

Items		**Smoking**				**Total**		**Chi-square**	
		Smoker (n=260)		**Non-smoker (n=140)**					
		N	**%**	**N**	**%**	**N**	**%**	**X^2**	**P-value**
Age	**<25**	88	33.85	36	25.71	124	31	4.775	0.189
	25-45	50	19.23	26	18.57	76	19		
	45-55	65	25.00	35	25.00	100	25		

	>55	57	21.92	43	30.71	100	25		
Gender	**Male**	182	70.00	106	75.71	288	72	1.204	0.272
	Female	78	30.00	34	24.29	112	28		
Nationality	**Saudi**	174	66.92	90	64.29	264	66	0.177	0.674
	Non-Saudi	86	33.08	50	35.71	136	34		
Income	**<5000**	26	10.00	18	12.86	44	11	1.615	0.656
	5000-10000	70	26.92	38	27.14	108	27		
	10000-15000	88	33.85	40	28.57	128	32		
	>15000	76	29.23	44	31.43	120	30		
Job Title	**Doctors**	78	30.00	38	27.14	116	29	10.762	0.0046*
	Nurse	140	53.85	60	42.86	200	50		
	Others	42	16.15	42	30.00	84	21		
Marital status	**Married**	203	78.08	85	60.71	288	72	12.76	0.0004*
	Not married	57	21.92	55	39.29	112	28		

Table 3 The demographic factors of the sample to which the health care questionnaire was distributed for continuous use of e-cigarettes with respect to age did not show a statistically significant relationship. while P=value 0.189 and X^2 4.775 increase was among those under 25 years old (33,855) among health care workers who were smokers, compared to only (25.71%) of non-smoking health care workers, while the total was (31.0%), followed by those between the ages of 45 to 55 years (25.00).) among health care workers. Workers. Smokers and (25.00%) of health care workers were non-smokers, respectively, while the total reached (25.0%). In terms of gender, there is no statistically significant relationship.
while P=value 0.272 and X^2 1.204 While the total number was (72.0%), the majority of men (75.71) were non-smoking health workers, compared to only (24.29%) of non-smoking health workers of the female sex. As for nationality, there is no statistically significant relationship. While P=value 0.674 and X^2 0.177 increase among Saudi health care workers who smoked was (66.92%) compared to only (66.00%) among non-smoking health care workers in the Kingdom of Saudi Arabia, but the total was (66.0%). As for non-Saudi health care workers, it was Smokers smoke the most. The majority of non-smoking participants in the Kingdom of Saudi Arabia were (35.71%), but Saudi health care workers were (33.08%), while the total was (66.0%), and with regard to income there was no statistically significant relationship, while P=value 0.656 and X^2 1.615 number of health care workers increased by 10,000-15,000 smokers (33.85%) compared to only (28.57%) of non-smoking health workers, while the total was (32.0%) followed by more than 15,000 health workers who were smokers (29.23%) but in non- As for smokers, the percentage of health workers reached (31.43%), while the total amounted to (30.0%). As for the cost, it is a statistically significant percentage, while P=value

0.0046 and X^2 10.762 highest number of smoker nurses was (53.85%) compared to only (42.86%) of non-smoking health care workers, but the total was (50.0%). As for doctors working in health care, the majority of health care workers participating They were smokers (42.86%), while non-smokers were (27.14%), while the total amounted to (29.0%). In terms of marital status, there was a statistically significant relationship, while
P=value 0.0004 and X^2 12.76 number of married healthcare workers increased (78.08%) compared to non-smokers (60.71%), but the total was (72.0%), while for unmarried healthcare workers, most of the participants were smokers. The percentage of non-smokers among healthcare workers was (21.92%) and (39.29%), while the total was (28.0%)

Table 4: Socio-demographic factors associated with current use of e-cigarettes among health care providers

Categories		Current use of e-cigarettes				Total		Chi-square	
		Positive (n=148)		Negative (n=252)					
		N	%	N	%	N	%	X^2	P-value
Age	<25	11	7.43	113	44.84	124	31	76.703	<0.001*
	25-45	25	16.89	51	20.24	76	19		
	45-55	50	33.78	50	19.84	100	25		
	>55	62	41.89	38	15.08	100	25		
Gender	Male	110	74.32	178	70.63	288	72	0.46	0.4977
	Female	38	25.68	74	29.37	112	28		
Nationality	Saudi	132	89.19	132	52.38	264	66	54.667	<0.001*
	Non-Saudi	16	10.81	120	47.62	136	34		
Income	<5000	20	13.51	24	9.52	44	11	6.925	0.0743
	5000-10000	45	30.41	63	25.00	108	27		
	10000-15000	36	24.32	92	36.51	128	32		
	>15000	47	31.76	73	28.97	120	30		
Job title	Doctors	85	57.43	31	12.30	116	29	103.325	<0.001*
	Nurse	32	21.62	168	66.67	200	50		
	Others	31	20.95	53	21.03	84	21		
Marital status	Married	130	87.84	158	62.70	288	72	27.996	<0.001*
	Not married	18	12.16	94	37.30	112	28		

Table 4 show Socio-demographic factors associated with current e-cigarette use among healthcare workers in relation to age were shown to have a significant relationship while P value = 0.001 and X^2 76.703 The increase in health care workers, the current positive use of e-cigarettes among over 55 years was (41.89) compared to health care workers, the current negative use of e-cigarettes was (15.8%), while the total (25.0%) followed those Between 45 and 55 years old. Among health care workers (33.78%) were smokers, but health care workers had a current positive use of e-cigarettes compared only (19.84%) of health care

workers with current negative use of e-cigarettes in, among health workers working non-smokers, while the total amounted to (25.0%)

With regard to gender, there is no significant relationship P=value 0.4977 and X^2 0.46 the increase in male healthcare workers, current positive use of e-cigarettes was (74.32%) compared to female healthcare workers, current negative use of e-cigarettes was (70.63%), while the total (72.0%) followed the current female health care providers. The percentage of positive use of e-cigarettes was (25.68%) compared to only (29.37%) by health care workers. The current passive use of e-cigarettes among non-smoking health care workers, while the total amounted to (28.0%). With regard to nationality, there is a statistically significant relationship, while

P=value 0.001 and X^2 54.667 the increase in current active use of e-cigarettes by Saudi healthcare workers was (89.19%) compared to current passive use of e-cigarettes by Saudi healthcare workers (52.38%), while the total (66.0%) was followed by healthcare Saudi Arabia . The percentage of health care workers who currently use e-cigarettes was (10.81%) compared to (47.62%) of health care workers who used e-cigarettes passively among non-smoking health care workers, while the total amounted to (34.0%)). Compared to income there is a great relationship while P=value 0.0743 and X^2 6.925 increase in >15000 Current positive use of e-cigarettes by healthcare workers was (31.76%) compared to over 15,000 healthcare workers. Current passive use of e-cigarettes was (28.97%), while the total (30.0%) was followed by between 5,000 and 10,000 current healthcare workers. Positive use of e-cigarettes was 30.41% compared to 5,000-10,000 (25.00%) of healthcare workers. Current passive use of e-cigarettes among non-smoking healthcare workers, while the total was (27.0%). In terms of work, there is a great relationship while P=value 0.001 and X^2 103.325

the increase in the number of doctors and health care workers, the current positive use of electronic cigarettes reached (57.43%) compared to doctors and health care workers, and the current negative use of electronic cigarettes reached (12.30%) while the total (29.0%) followed by positive use The current use of e-cigarettes by nurses and health workers (21.62%) compared to nurses (66.67%).P=value 0.001 and X^2 27.996 increase in married healthcare workers, current positive use of e-cigarettes was (87.84%) compared to married healthcare workers, current negative use of e-cigarettes was (62.70%), while compared to the total (72.0%), followed by single. The percentage of health care workers who currently use e-cigarettes was (12.16%) compared to unmarried (37.30%) health care workers who currently use e-cigarettes passively, while the total was (28.0%).

Discussion.

This study was conducted on the subject of the prevalence of the use of electronic cigarettes among workers in the field of primary health care in Makkah Al-Mukarramah, the Kingdom of Saudi Arabia, in the year 2023. It became clear globally that users do not directly know the extent of the harms and problems of electronic cigarettes and their impact on human health[26] .

For this reason, this study was conducted in the field of health care to address the problem of the use of electronic cigarettes among health care workers. This study was conducted due to the lack of studies that were conducted in the Kingdom of Saudi Arabia and to identify the factors associated with this behavior among professionals. in healthcare. and health workers.

Therefore, choosing to use electronic cigarettes is not a safer option than smoking tobacco. However, recent reports have shown that e-cigarettes may pose risks similar to those posed by smoking [27].

Therefore, it is important to understand the characteristics of e-cigarettes in our countries. It is evident in this study that the majority of participants (31.0%) belonged to the age group of less than 25 years, while the age group was between 25 and 45 years (19.0%), and the majority of the gender was older than women (72.0% and 28.0%). . Nationality, the majority of participants were Saudis (66.0%), Income, the majority of participants were between 10,000 and 15,000 (32.0%), professional qualification of the majority of participants were nurses (50, 0%), marital status, and most participants were married. (72.0%). Regarding smoking status, most participants were smokers (65.0%), but non-smokers (13.0%). (see table 1)

It was found in the study that the current use of e-cigarettes was 63.0%. This percentage is consistent with another study at Qassim University College of Medicine (10.6%), and the prevalence rate at the University of Minnesota Medical College was (14.7%). However, the current usage rate in our study was 63.0%, which is higher than any previously reported study; Even a study conducted at the College of Medicine indicates that active tobacco smokers constitute 22% of e-cigarette users in general, and this value is also very close. According to a study conducted in France among university students[28], which gave a rate of 23%. However, data on this number among primary health care workers are not currently available.

Sample regarding the distribution of participants' opinions about electronic cigarettes compared to the period in which they smoked, the majority of them are less than 5 (35.0%), the current use of electronic cigarettes the majority of participants answered yes (63.0%), regarding electronic smoking - cigarettes contain nicotine, the majority of participants did not know That (56.15%), and whether they believe that e-cigarettes are harmful to health, the majority of participants answered yes (75.0%) (see Table 2)

As a result of the increase in the rates of users of electronic cigarettes and the ease of access to them by teenagers, despite the conditions for their sale in the Kingdom, they are sold through the Internet, which reduces restrictions. [19] Due to the large and varying rates of use of electronic cigarettes, it is necessary to spread health education to young students in an important way to prevent starting. In testing e-cigarettes.

The results of the current study in terms of a difference between the sexes are consistent with a study conducted in Sweden and some other various foreign studies that proved that men are more likely to try e-cigarettes than women. [29] In Canada [25] and Argentina, students living in higher socioeconomic areas were more likely to use e-cigarettes. In contrast to other studies, [30] the current study reported that students with more educated mothers were more likely to use e-cigarettes. (See Table 3.4)

Conclusion .

E-cigarette use is more common among health care workers, young people, and those who have already tried smoking. More randomized trials are needed to explore the harmful effects of e-cigarettes in the Kingdom. Healthcare providers in Saudi Arabia should take these findings into consideration to improve Saudi society's awareness of the dangers of vaping. E-cigarette use is common among primary health care workers. Many health care

workers who use e-cigarettes have never smoked before, and only a small percentage of them report that e-cigarettes help them quit smoking.

Most vaping users indicated that they use it simply because of its versatility and attractive flavour. Vaping is not completely free of chemicals. However, despite the potential side effects, healthcare professionals and the general population lack information about the potential consequences of e-cigarette use. However, more research is needed to establish sufficient evidence of long-term safety, side effect profile, and the exact ingredients incorporated into vape cartridges to ensure consumer well-being. These data must be translated into evidence-based guidelines on the safety and effectiveness of e-cigarettes for smoking cessation, which will then be rapidly disseminated to primary health care providers who urgently need to keep pace with this growing epidemic.

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