MEDICAL SCIENCE

The prevalence of the use of electronic smoking devices among medical students in Madinah

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ABSTRACT

Background: The E-cigarette is a ground-breaking development in the tobacco industry. It was developed in a previous decade when such battery-operated gadgets were created to burn tobacco and satisfy a smoker's addiction. *Objective:* The purpose of this study is to determine the prevalence of e-cigarette use among Madinah Al-Munawara medical students. It will also examine how e-cigarettes help people quit traditional smoking and whether they are potentially addictive. *Method:* Cross-sectional study design and convenient sampling technique used in this study. The medical students of Taibah Medical College and Al-Rayan Medical College taken as the population of the study. *Result:* A total of 295 out of 1250 students completed an online questionnaire, 24.1% of the surveyed students used E-cigarettes, younger age, male, higher college class, those who have ≥ 1 close friend who smokes, show a significantly higher percentage of E-cigarettes use. Higher percentage of using e-cigarettes was faculty of pharmacy (37.7%) followed by laboratory (32.6%) then dentistry (19.0%) and lastly faculty of medicine (18.2%). Finally, the most common symptoms as related to e-cigarettes are cough at 67.6%, followed by headaches at 7%, dry mouth and throat at 4.2% and 21.1%, respectively. *Conclusion:* The results of this study suggest that e-cigarette use is more prevalent in the faculties of pharmacy and laboratory than in the faculties of medicine and dentistry. Participants in this study believed that e-cigarettes were less harmful and addictive than traditional cigarettes, and that they could help people quit smoking.

Keywords: E-cigarettes, Harmful, symptoms, Madinah, Medical student

DISCOVERY
SCIENTIFIC SOCIETY

1. INTRODUCTION

An electronic device known as an e-cigarette releases nicotine as an aerosol. The mouthpiece, atomizer, cartridge, and battery make up this device. Due to

greater awareness of the risks associated with traditional cigarettes, e-cigarettes have become more popular among teenagers and young adults (Zeller, 2020). Over the last decade, e-cigarette use has steadily increased, becoming increasingly popular among young adults. Some people have turned to use e-cigarettes to quit smoking because they believe they are less dangerous than traditional cigarettes. The sudden rise in the use of e-cigarettes is because of the remarkable marketing tactics manufacturing businesses use to promote these products. They have cornered the global market. The online information media has been heavily criticized as they attractively advertise these potentially dangerous products, and the information is misleading and inaccurate (Aqeeli et al., 2020).

Globally the sale of e-cigarettes has dramatically increased, and marketing is the foremost factor. It has resulted in significantly increased tobacco use. According to a study done in Poland, over 24% of people used e-cigarettes between 2011 and 2014. Several studies have shown that younger adults are more likely to use e-cigarettes than older adults. Many studies have been done on the Saudi Arabian population regarding e-cigarette usage, concluding that youth are more likely to use e-cigarettes (Patil et al., 2022).

E-cigarettes have gained popularity over the past few years, especially among young people. As a result of e-cigarettes' rising popularity, medical students should have a basic understanding to raise future patient awareness. Little information is available about how e-cigarettes are used and perceived among medical students in Saudi Arabia and the Middle East (Almutham et al., 2019).

It has been thought that less nicotine in an e-cigarette can help traditional smoking addicts get rid of their smoking, but many researchers prove it wrong. More than 40% of e-cigarette users according to a study have started using traditional cigarettes during the 16-month follow-up, with an odds ratio of more than six compared to never using e-cigarettes. Another study found that e-cigarette users are likelier than non-users to start smoking traditional cigarettes. Other study did yet another investigation. At 12 months of follow-up, also found that e-cigarette users had a 2.87 odds ratio for starting to smoke traditional cigarettes compared to never users (Habib et al., 2020).

A study by Parker et al., (2019) and Habib et al., (2020) also revealed similar findings. Previous research has documented the prevalence of traditional cigarette smoking among Saudi Arabian health science students. It has been determined that roughly 13.3% of male medical students and 2.4% of female medical students consume regular cigarettes. For students majoring in dental, pharmacy, and medical science, smoking prevalence is estimated to be 7.9%, 13.4%, and 29%, respectively. These percentages vary according to the nation's various geographical regions. For instance, it reaches 24.8% among men and 9.1% among women in the western region (Qanash et al., 2019).

The current study aims to determine how everyday E-cigarette use is among medical students of Madinah Al-Munawara compared to traditional smoking. It will evaluate its potential for addiction and its effectiveness as a conventional smoking cessation technique. Results from the current study will provide a comprehensive overview of students' knowledge and belief related to e-cigarette smoking. Based on that policy, seminars and workshops can be arranged to spread awareness about the harms of e-smoking.

2. MATERIAL AND METHODS

Study design

Between August 2022 and February 2023, medical students enrolled in Taibah University's and Al-Rayan Medical College in Madinah Al-Munawara participated in a descriptive cross-sectional study. All medical students, male and female, and junior students were included; any infrequent use or refusal to be enrolled was an exclusion condition. 294 students from Medical College were included. The entire sampling method has been employed. A Google Form survey that was emailed to research participants' emails each year by level representatives was used to collect data from the study's contributors. The study excluded any students who were not reachable by email or who refused to participate in the digital consent form. There were no incentives offered to research participants, and participation was entirely voluntary. The persistent keeping of anonymity.

Study sample

Because the number of study participants was evenly distributed, the simple randomized procedure was employed. 295 people make up the objective sample size. The questionnaire that was provided to participants via Google Forms in their emails was used to clarify the study's goals and outcomes. The online tactic was helpful for upholding discretion. All participants, male and female, must meet the inclusion criteria. Any irregular use—or reluctance to enroll—is an exclusion factor.

In order to acquire the data needed to confirm that the questions under discussion are factual, the topic was determined using the questionnaire approach. The study or questionnaire instrument is divided into two sections: Age, gender, and other participant

data are some of the questions regarding demographic variables that are covered in the first section, which is about recognizing demographic changes; second part contains an analysis of the factors motivating students, including sociocultural data.

Data management

Statistical analysis was used, and data were coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 21.0 (SPSS, Chicago, IL, USA). Categorical variables using T-test. Data is considered significant if (P <0.05).

3. RESULT

This article provides a description of 295 medical students, whose ages range from 19 to 24 and have a mean of 22. In the 295 total, male make up 57.3% and female 42.3. Compared to student laboratories, which had a participation rate of 15.6%, 52.2% of the participants came from the medical school. With a recurrence of 254 students and 86.1%, the 20–25 age groups referred to the largest proportion of the sample research as in (Table 1).

Table 1 Demographic data

Age	%	Frequency
20-<25	86. 1	254
25-<30	13.9	41
Total	100	295
Gender	%	Frequency
Male	57.3	169
Female	42.7	126
Total	100	295
College	%	Frequency
Medicine	52.2	154
Pharmacy	18	53
Laboratories	15.6	46
Dentistry	14.2	42
Total	100	295

Table 2 Socio-cultural data

Residence	%	Frequency
Stay with parents	75.9	224
Residence with one of the parents	19.3	57
The mother is missing	2.7	8
The father is missing	2	6
Family income	%	Frequency
Enough	75.6	223
More than enough	6.8	20
Not enough	17.6	52
Extent of family's follow-up	%	Frequency
All the time Most time	77.6	229
Rare time	20.7	61
Never	1.7	5
Satisfaction with maternal relationship	%	Frequency
Satisfactory	76.6	226
Somewhat satisfied	21.7	54
Unsatisfied	1.7	5
Satisfaction with the parental relationship	%	Frequency

Satisfactory	76. 6	226
Somewhat satisfied	21.7	64
Unsatisfied	1.7	5

Residence :

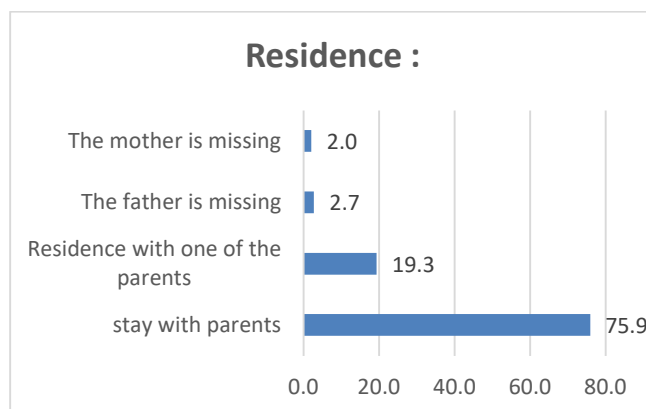|	
The mother is missing	2.0
The father is missing	2.7
Residence with one of the parents	19.3
stay with parents	75.9

0.0   20.0   40.0   60.0   80.0

Figure 1 Show residence distribution

Table 2 and Figure 1, 224 out of 295 (75.9%) of students live with parents, 19.3% live with a parent, 2.7% lost their parents and 2% lost their mothers. Table 2 and Figure 2 show that 75.6% of their income is sufficient and 17.6% of their income is insufficient and 6.8% of their income is more than sufficient.

family income:

80.0
60.0
40.0
20.0
0.0

not enough	Enough	More than enough
17.6	75.6	6.8
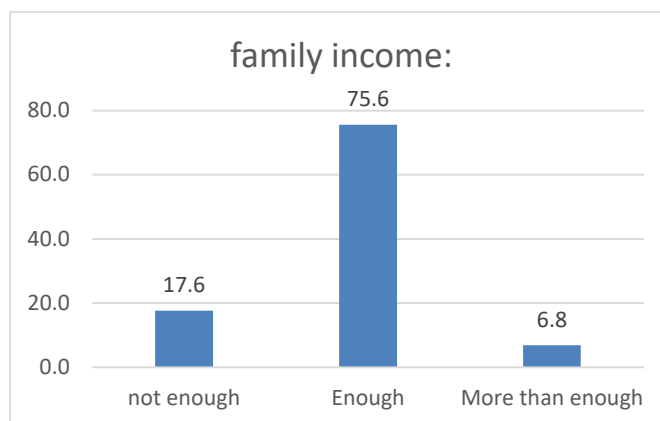
Figure 2 Show family income distribution

Extent of family follow-up

90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0

Never Before	Rare	All the time
1.7	20.7	77.6

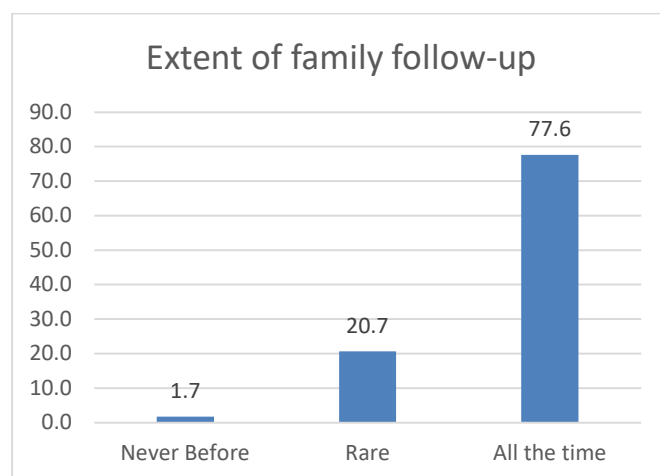**Figure 3** Show extent of family follow-up

Table 2 and Figure 3 the result show that 229 out of 295 (77.6%) of the members of the sample are followed continuously by their families and the length of time, 20.7% are rarely followed and only 1.7% are not followed by parents.
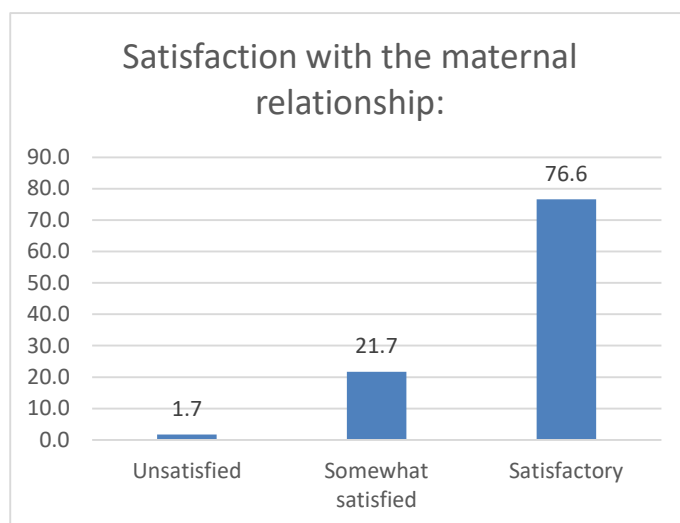

Figure 4 Show Satisfaction with the maternal relationship

Table 2 and Figure 4, the result show 76.6% of the sample individuals are satisfied with their relationship with their mothers, 21.7% are somewhat satisfied and only 1.7% are dissatisfied with their relationship with their mothers.
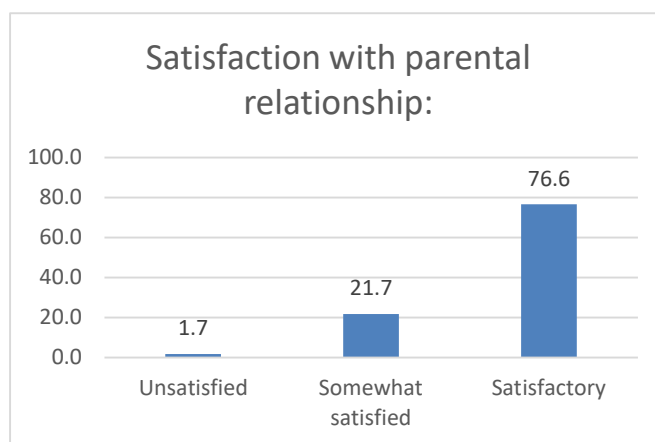

Figure 5 Show Satisfaction with the paternal relationship

Table 2 and Figure 5 show 76.6% of the sample individuals are satisfied with their relationship with their parents, 21.7% are somewhat satisfied and only 1.7% are dissatisfied with their relationship with their parents (This question would have been helpful at the age of less than 20 as adolescence and psychological instability affect individuals' relationship with their parents but this situation decreases as we age and we have worked a test with age to determine the degree to which age affects individuals' relationship with their parents).

Table 3 summarizes the statistical analysis conducted on age groups (20-25, 25-30) and their satisfaction levels with maternal and parental relationships. The p-values indicate the level of significance for each relationship. Confidence scores of 95% and 90% were considered. For the satisfaction with maternal relationship, the data shows that 60% of respondents aged 20-25 were unsatisfied; while 40% of respondents aged 25-30 fell into the same category. The p-value (0.079) suggests a relationship at a 95% confidence score, and there is also a relationship at a 90% confidence score. Regarding satisfaction with the parental relationship, 80% of respondents aged 20-25 were unsatisfied; while 20% of respondents aged 25-30 expressed the same level of dissatisfaction. However, the p-value (0.271) indicates a relationship at a 95% confidence score but not at a 90% confidence score.

Table 3 Statistical Analysis of Age and Satisfaction with Maternal and Parental Relationship

		Age		Total	P-value	Statistical analysis
		From 20 to 25	From 25 to 30			
Satisfaction with the maternal relationship	Unsatisfied	3	2	5	0.079	There is a relationship at 95% confidence score and there is a relationship at 90% confidence score
		60.0%	40.0%	100.0%		
	Somewhat satisfied	59	5	64		
		92.2%	7.8%	100.0%		
	Satisfactory	192	34	226		
		85.0%	15.0%	100.0%		
Satisfaction with parental relationship	Unsatisfied	4	1	5	0.271	There is a relationship at 95% confidence score and there is a relationship at 90% confidence score
		80.0%	20.0%	100.0%		
	Somewhat satisfied	59	5	64		
		92.2%	7.8%	100.0%		
	Satisfactory	191	35	226		
		84.5%	15.5%	100.0%		

Table 4 Usage of Electronic Cigarettes among Respondents (n=295)

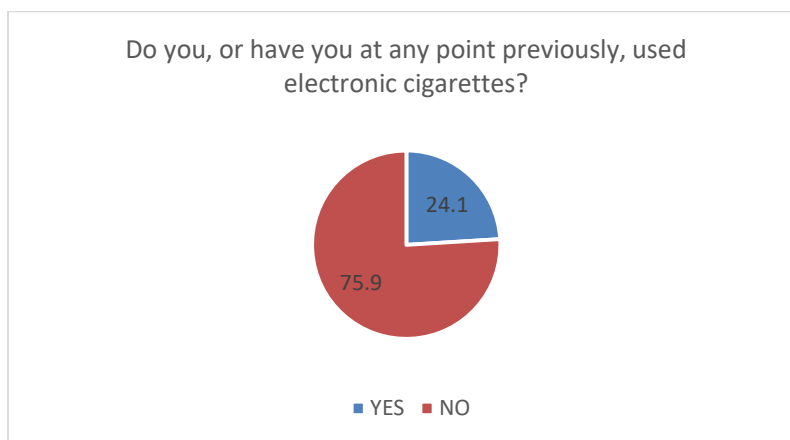| Do you, or have you at any point previously, used electronic cigarettes?	Frequency	Percent
Yes	71	24.1
No	224	75.9
Total	295	100.0

Figure 6 Show distribution of Usage of Electronic Cigarettes among Respondents

Table 4 and Figure 6 displays the frequency and percentage of respondents based on their usage of electronic cigarettes. The options provided were "YES" and "NO" with a total of 295 respondents. The data shows that 71 (24.1%) respondents answered "YES" indicating they have used electronic cigarettes, while 224 (75.9%) respondents answered "NO" indicating they have not used electronic cigarettes.

Table 5 displays the results of a statistical analysis on the use of electronic cigarettes. The data is categorized by gender, age, and college type. The p-value for each category indicates the level of statistical significance in the relationship between the variables. A p-value less than 0.05 suggest a significant relationship, while a p-value greater than 0.05 suggests no significant relationship. In terms of gender, 42% of males and 29% of females reported using electronic cigarettes.

Regarding age, among individuals aged 20 to 25, 59% reported using electronic cigarettes compared to 12% among those aged 25 to 30. When considering college type, there was a significant relationship observed. Among students in medicine, 28% reported using electronic cigarettes compared to only 3% in pharmacy, 2% in laboratories, and 9% in dentistry. Overall, these findings suggest that there is a relationship between college type and the use of electronic cigarettes.

Table 5 The statistical analysis results show the relationship between electronic cigarette usage and gender, age, and college type. The p-values indicate the level of significance is there a connection between previous variables and smoking?

		Do you, or have you at any point previously, used electronic cigarettes?		Total	P-value	Statistical analysis
		Yes	No			
Gender	Male	42	127	169	0.41	No relationship
		24.9%	75.1%	100.0%		
	Female	29	97	126		
		23.0%	77.0%	100.0%		
Age	From 20 to 25	59	195	254	0.26	No relationship
		23.2%	76.8%	100.0%		
	From 25 to 30	12	29	41		
		29.3%	70.7%	100.0%		
College Type	Medicine	28	126	154	0.01	There is relationships
		18.2%	81.8%	100.0%		
	Pharmacy	20	33	53		
		37.7%	62.3%	100.0%		
	Laboratories	15	31	46		
		32.6%	67.4%	100.0%		
	Dentistry	8	34	42		
		19.0%	81.0%	100.0%		

Table 6 Statistical Analysis of Electronic Cigarette Usage and Sociocultural Data

		Do you, or have you at any point previously, used electronic cigarettes?		Total	P-value	Statistical analysis
		Yes	No			
Residence	Stay with parents	28	196	224	0.00	There is relationships
		12.5%	87.5%	100.0%		
	Residence with one of the parents	34	23	57		
		59.6%	40.4%	100.0%		
	The father is missing	5	3	8		
		62.5%	37.5%	100.0%		
	The mother is missing	4	2	6		
		66.7%	33.3%	100.0%		
Family income	Not enough	40	12	52	0.00	There is relationships
		76.9%	23.1%	100.0%		
	Enough	24	199	223		
		10.8%	89.2%	100.0%		
	More than enough	7	13	20		
		35.0%	65.0%	100.0%		
Extent of family follow-up	Never Before	3	2	5	0.00	There is relationships
		60.0%	40.0%	100.0%		
	Rare	38	23	61		
		62.3%	37.7%	100.0%		
	All the time	30	199	229		
		13.1%	86.9%	100.0%		
Satisfaction	Unsatisfied	5	0	5	0.00	There is relationships

		100.0%	0.0%	100.0%		
with the maternal relationship	Somewhat satisfied	38	26	64		
		59.4%	40.6%	100.0%		
	Satisfactory	28	198	226		
		12.4%	87.6%	100.0%		
Satisfaction with parental relationship	Unsatisfied	5	0	5		
		100.0%	0.0%	100.0%	0.00	There is relationships
	Somewhat satisfied	43	21	64		
		67.2%	32.8%	100.0%		
	Satisfactory	23	203	226		
		10.2%	89.8%	100.0%		

Table 6 shows the statistical analysis of the relationship between various factors and the use of electronic cigarettes. The factors analyzed include residence (stay with parents or not), family income (not enough, enough, more than enough), extent of family follow-up (never before, rare, all the time), satisfaction with maternal relationship (unsatisfied, somewhat satisfied, satisfactory) and satisfaction with parental relationship (unsatisfied, somewhat satisfied, satisfactory). The p-values indicate the significance of the relationships observed.

Table 7 Sample individual Opinion on the Effectiveness of Electronic Cigarettes as a Smoking Cessation Method

I think electronic cigarettes are a successful way to stop smoking?	Frequency	Percent
Strongly disagree	6	8.5
Disagree	1	1.4
Neutral	7	9.9
Agree	52	73.2
Strongly agree	5	7.0
Total	71	100.0

Table 7 show that only 10% of the sample individuals do not agree that e-smoking has the same effect as normal smoking and that approximately 80% agree that there is an effect and yet it continues to take e-cigarettes.

Table 8 Statistical Analysis of the Opinion on the Effectiveness of Electronic Cigarettes for Smoking Cessation

		I think electronic cigarettes are a successful way to stop smoking?			Total	P-value	Statistical analysis
		Disagree	Neutral	Agree			
Gender	Male	4	4	34	42		
		9.5%	9.5%	81.0%	100.0%	0.99	No relationship
	Female	3	3	23	29		
		10.3%	10.3%	79.3%	100.0%		
Age	From 20 to 25	5	5	49	59		
		8.5%	8.5%	83.1%	100.0%	0.43	No relationship
	From 25 to 30	2	2	8	12		
		16.7%	16.7%	66.7%	100.0%		
College type	Medicine	5	5	18	28		
		17.9%	17.9%	64.3%	100.0%		
	Pharmacy	1	1	18	20		
		5.0%	5.0%	90.0%	100.0%	0.23	No relationship
	Laboratories	1	1	13	15		
		6.7%	6.7%	86.7%	100.0%		
	Dentistry	0	0	8	8		

		0.0%	0.0%	100.0%	100.0%		

Table 8 provides statistics related to the belief that electronic cigarettes are a successful way to stop smoking. The respondents were categorized based on gender, age, and college type. Table 8 displays the number of respondents who disagreed, were neutral, and agreed with the statement, along with the corresponding percentages. The p-values and the presence or absence of a relationship between variables are also provided for each category.

Table 9 Statistical analysis results showing the associations between different factors and attitudes towards electronic cigarettes as a method to quit smoking

		I think electronic cigarettes are a successful way to stop smoking?			Total	P-value	Statistical analysis
		Disagree	Neutral	Agree			
Residence	Stay with parents	4	5	19	28	0.02	There is relationships
		14.3%	17.9%	67.9%	100.0%		
	Residence with one of the parents	2	0	32	34		
		5.9%	0.0%	94.1%	100.0%		
	The father is missing	1	2	2	5		
		20.0%	40.0%	40.0%	100.0%		
	The mother is missing	0	0	4	4		
		0.0%	0.0%	100.0%	100.0%		
Family income	Not enough	2	1	37	40	0.02	There is relationships
		5.0%	2.5%	92.5%	100.0%		
	Enough	5	5	14	24		
		20.8%	20.8%	58.3%	100.0%		
	More than enough	0	1	6	7		
		0.0%	14.3%	85.7%	100.0%		
Extent of family follow-up	Never Before	0	1	2	3	0.00	There is relationships
		0.0%	33.3%	66.7%	100.0%		
	Rare	0	0	38	38		
		0.0%	0.0%	100.0%	100.0%		
	All the time	7	6	17	30		
		23.3%	20.0%	56.7%	100.0%		
Satisfaction with the maternal relationship	Unsatisfied	1	2	2	5	0.00	There is relationships
		20.0%	40.0%	40.0%	100.0%		
	Somewhat satisfied	1	0	37	38		
		2.6%	0.0%	97.4%	100.0%		
	Satisfactory	5	5	18	28		
		17.9%	17.9%	64.3%	100.0%		
Satisfaction with parental relationship	Unsatisfied	2	2	1	5	0.00	There is relationships
		40.0%	40.0%	20.0%	100.0%		
	Somewhat satisfied	2	0	41	43		
		4.7%	0.0%	95.3%	100.0%		
	Satisfactory	3	5	15	23		
		13.0%	21.7%	65.2%	100.0%		

Table 9 presents statistical analysis results regarding the relationship between residence, family income, extent of family follow-up, satisfaction with maternal relationship, satisfaction with parental relationship, and attitudes towards electronic cigarettes as a method to quit smoking. The p-values are indicated for each variable, showing the statistical significance of the relationships.

Table 10 Complication for using e-cigarettes

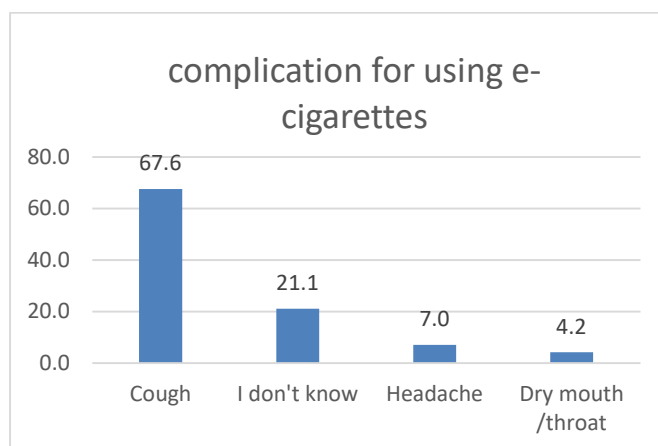| Complication for using e-cigarettes	Frequency	Percent
Cough	48	67.6
I don't know	15	21.1
Headache	5	7.0
Dry mouth /throat	3	4.2
Total	71	100

Figure 7 Show complication for using e-cigarette distribution

Table 10 and Figure 7 show that the most common symptoms that students think of as related to e-cigarettes are cough at 67.6%, followed by headaches at 7%, dry mouth and throat at 4.2% and 21.1%.

Table 11 Perceptions of the Harmfulness of E-Cigarettes Compared to Tobacco Cigarettes

According to you, compared to tobacco smoke, e-cigarettes are	Frequency	Percent
Less harmful than tobacco cigarettes	52	73.2
I don't know	9	12.7
Equally harmful to tobacco cigarettes	4	5.6
Absolutely harmless	3	4.2
More harmful than tobacco cigarettes	3	4.2
Total	71	100.0
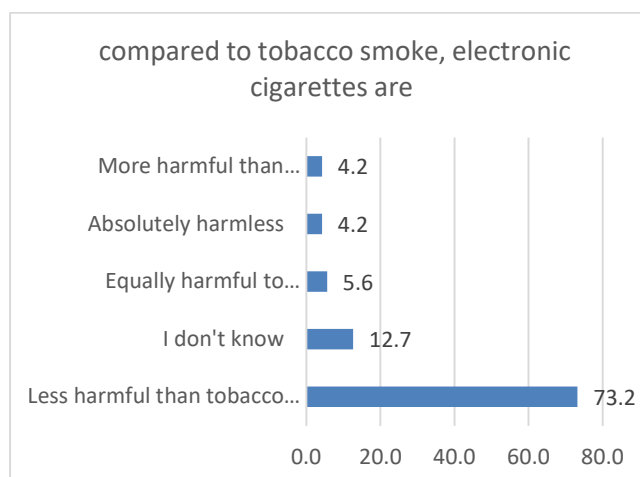
Figure 8 Show perceptions of the Harmfulness of E-Cigarettes Compared to Tobacco Cigarettes distribution

The Table 11 and Figure 8 show that 53 out of 71 (73.2%) of the sample individuals see that e-cigarettes are less harmful than normal smoking and 5.6% same damage, 4.2% think they are more harmful time and 12.7% do not know.

Table 12 Relationship between E-cigarette Use and Reported Complications in Medicine, Pharmacy, Laboratories, and Dentistry

		Medicine	Pharmacy	Laboratories	Dentistry	Total	p-value	Statistical analysis
Complication for using e-cigarettes relationship	Cough	11	17	12	8	48	0.02	There is relationships
		22.9%	35.4%	25.0%	16.7%	100.0%		
	Dry mouth/throat	2	1	0	0	3		
		66.7%	33.3%	0.0%	0.0%	100.0%		
	Headache	4	0	1	0	5		
		80.0%	0.0%	20.0%	0.0%	100.0%		
	I don't know	11	2	2	0	15		
		73.3%	13.3%	13.3%	0.0%	100.0%		
According to you, compared to tobacco smoke, e-cigarettes are	Absolutely harmless	2	0	0	1	3	0.12	No relationship
		66.7%	0.0%	0.0%	33.3%	100.0%		
	Less harmful than tobacco cigarettes	15	16	14	7	52		
		28.8%	30.8%	26.9%	13.5%	100.0%		
	Equally harmful to tobacco cigarettes	3	0	1	0	4		
		75.0%	0.0%	25.0%	0.0%	100.0%		
	More harmful than tobacco cigarettes	3	0	0	0	3		
		100.0%	0.0%	0.0%	0.0%	100.0%		
	I don't know	5	4	0	0	9		
		55.6%	44.4%	0.0%	0.0%	100.0%		

The Table 12 finds that there is a link between the college and the identification of symptoms or problems associated with smoking e-cigarettes as medical students are more specific to smoking problems inspires pharmacy students and less knowledge in dental students and lab students.

4. DISCUSSION

Utilizing of e-cigarettes has dramatically raised during the last several years all around the world. This is primarily due to the industrial corporations' aggressive and forceful marketing techniques. All age groups, especially the younger ones and the female population, are targeted by these businesses. Companies that make e-cigarettes promote them as safe tools that help people meet their nicotine needs and serve as an alternative to traditional smoking (Lotrean, 2015). The products are more alluring to consumers because they are offered in a variety of shapes and flavors (O'Connor, 2012; Wollscheid and Kremzner, 2009). The younger demographic is primarily growing more popular with e-cigarettes as a healthier alternative to traditional cigarettes (Jackler and Ramamurthi, 2016; Hammal and Finegan, 2016; Grana and Ling, 2014).

The current study's objective is to investigate the frequency of e-cigarette use among Saudi Arabia's Madinah medical students. According to this cross-sectional survey, 24.1% of the participants have ever used an e-cigarette. These results were consistent with studies that evaluated the prevalence among young adults; in those studies, the authors stated that the prevalence was 20.8% in a study done in the United States and 25% in the UK (Siddiqui et al., 2019). A survey of young high school students in the USA found that the frequency of e-cigarette use was 27.5% (Cullen et al., 2019). Research conducted among University of Minnesota medical students reported an e-cigarette consumption rate of 14.7% (Hinderaker et al., 2018).

Furthermore, there was a statistically significant difference in the use of e-cigarettes among the various medical schools, with a higher percentage of students from the Faculty of Pharmacy and Laboratories and a lower percentage from the Faculty of Medicine and Dentistry. In the current study, more male participants reported using e-cigarettes than female participants did, which can be connected to the social desirability bias in female participants' reporting of their smoking behavior. This is also related to cultural

rejection and societal rejection anxiety (Almutairi, 2016; Ghouri et al., 2006). According to our study, the increased and easier availability of e-cigarettes nowadays, as well as the users' perception that they are less dangerous, are to blame for the higher prevalence of e-cigarette use among medical students in Saudi Arabia.

The findings of our study also showed that smoking is lower in persons who are entirely satisfied with their parental relationship and more prevalent in those who are only somewhat satisfied. Additionally, we discovered that students think of cough as being the most prevalent symptom associated with e-cigarette use (67.6%), followed by headaches (7%), dry mouth (4%), and throat (21.1%), respectively. Health professional students in these included studies still held the opinion that e-cigarettes could aid tobacco users in stopping the habit, despite the fact that there is not enough evidence for the health Care professions to advocate these products as safe and helps in quitting smoking (Almutham et al., 2019).

Most e-cigarette users in another study by Qanash et al., (2019) considered them a tool for quitting tobacco. According to numerous other researches, e-cigarette consumers pondered giving up traditional smoking. It is vital to worry about the regulatory policies governing product sales and marketing in light of these facts and the need to avert a public health catastrophe that may be comparable to the widely practiced conventional cigarette smoking. Students studying to become health professionals should be aware of the higher frequency of e-cigarette use. The regulatory bodies need to give this top priority. There is a dearth of information among medical students and the general public about the potential effects of using e-cigarettes, despite the fact that there are a number of side effects of these Products.

Study limitations
The online survey design of this study, which is limited to one region and targets a specific population, has an impact on the generalizability of the findings. Also excluded from the study questionnaire were traditional smokers and other factors like parental social class and educational level. To investigate the frequency, consequences on health, and other factors influencing e-cigarette use, particularly at the community level, more extensive follow-up studies should be conducted.

5. CONCLUSION
In comparison to the faculties of medicine and dentistry, e-cigarette use seems to be more prevalent in the faculties of pharmacy and laboratory. Participants in our study thought it was less harmful and addictive, and it could help people quit. Additionally, we came to the conclusion that in some cases, using e-cigarettes as a result of an unsatisfactory parental relationship, illustrates the effects of a person's relative lifestyle and childrearing practices, particularly the parents' role. Cough is the symptom that participants associate with e-cigarette use the most, followed by headaches, dry mouth, and throat.

Recommendations
It is important to make an effort to inform and raise awareness of the dangers of using e-cigarettes among medical professionals and the general public. To reduce the sales of these products to the younger population, regulatory bodies must concentrate on and implement strict laws and policies. Reduced aggressive advertising of these products is necessary to lessen the appeal of e-cigarettes. To reduce e-cigarette use, particularly among the younger population, health promotion strategies must be developed.
In order for these future doctors to be effective health advocates for their patients' health, it is important to emphasize raising awareness of the harmful medical effects of e-cigarettes through campaigns and by updating and enhancing the medical college curriculum to include these new trends in nicotine smoking.

Author's Contributions
FYM, AAA and AKZ, conceived and designed the study, conducted research, provided research materials, collected and organized the data, and wrote the initial and final drafts of article. NAA, AAA provided research materials, collected and organized the data analyzed, and interpreted the data. FFA and TAA collected and organized the data analyzed, interpreted the data, and provided logistic support. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Informed consent

Written informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical Approval

This study was approved by the Institutional Review Committee of the National Bioethics Committee of KACST Saudi Arabia (Ref. No.: HA-03-M- 122-035). All participants were informed of the study through the electronic form attached in the questionnaire sent to them and Informed consent was obtained. The anonymity of the study participants was maintained all the time.

Abbreviations

UK: United Kingdom
USA: United States America
KACST: King Abdulaziz City for Science and Technology

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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