



**Knowledge, Attitude and Practice of sample of Medical Student
Regarding Electronic Cigarette and Their Associated Factors During 2023**

A Research Submitted to Al-Kindy College of Medicine / Family and Community Medicine

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Abstract

Background: Electronic smoking, also known as vaping, involves inhaling aerosol produced by a battery-powered device. The practice has gained popularity as an alternative to traditional tobacco smoking, but its long-term health effects are still under investigation

Objectives : To assess the knowledge, attitudes and practices of medical students regarding electronic smoking . To find out if there any association between, students, knowledge attitudes,practices and certain demographic data

Methodology : A cross-sectional study with analytic component of 5 months duration and the Sampling techniques are convenient sample of 150 medical students in different stages , Data was collected between November 2022 and February 2023 through self-structured questionnaire derived from previous literatures and was modified by the research team then was approached to the participants by their representatives.

Results : Among study sample of 150 student, (73.3%) of them were nonsmokers, on the other (12%) of smokers had initiated smoking at the college. There was no significant association between the age of students, gender, residence, income and their knowledge about e-cigarette smoking [p value >0.05] , There was no significant association between students age, gender, residence, income and their attitude regarding e-cigarette smoking [p value > 0.05] and There is a statistical no significant association between the smoking status of the participants and their knowledge about e-cigarette, [p value > 0.05] . NS: Non Significant at $P > 0.05$, S : Significant at $P < 0.05$, HS : Highly Significant at $P < 0.01$.

Conclusion : This study showed that Medical students have a positive attitude to electronic smoking, with the majority having good knowledge about electronic smoking and its harms and there is a correlation between residential areas and smoking status, as most smokers are from urban residents.

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Chapter one

INTRODUCTION

INTRODUCTION

Electronic cigarettes or E-cigarettes (ECs) are vaping machine work on lithium ion batteries that have been launched as a modern method for smoking replacement.

The prevalence of ECs around the world can differ according to specific area for example, In the United States, rates of e-cigarette use surpassed those of cigarettes among youth in 2014(1) , and e-cigarette use is a national epidemic with high prevalence among high school and middle school students (27.5% and 10.5%, respectively)(2) . A study showed that vaping was 1.5 times higher among university students compared to the general population in Austria, with 32.4% of the students reporting having tried vapes at least once (3). In the Middle Eastern region, where cultures and demographics vary from those of the Western world, the topic of ECs is still under-researched. Our study was conducted specifically in Iraq since it is a unique developing Middle Eastern country with a distinctive social fabric comprised of a mixture of liberal and conservative ideologies. Given that EC use is a newly emerging habit in Iraq, where tobacco use is prominent, it is important to investigate the current level of EC knowledge, the attitude towards ECs, and the interplay between these two factors and the demographical characteristics of the population, including smoking and lifestyle habits. Interestingly, none of the regionally or internationally conducted studies have examined the possible relationship between EC knowledge and the attitudes towards ECs. However, this correlation could potentially have crucial public health relevance and a bearing on the targets of EC policies and regulations.

The effects of peer pressure and family smoking habit were obvious among students with statistically highly significant association. Education and awareness for anti-tobacco programs should be adopted in the

curriculum of all secondary school , so that habit doesn't continue with them in future(4)

Age, school grade of pupils and broader school environment play the major rule in the increasing prevalence of smoking among pupils, both cigarette and shisha smoking had hazardous effect on pupils' health(5)

The most common causes for vaping that they claimed it has many benefits includes:

- 1- lowering cigarette intake,
- 2- stopping smoking,
- 3- abating tobacco craving,
- 4- being less expensive than ordinary cigarettes packs, and
- 5- containing an enhanced flavor and odor better than that of classic cigarettes (6).

Despite the fact that some of ECs types do not have nicotine in them (7), but the majority ECs involving nicotine in their content (4-20 mg/puff), plus teste like glycol and propylene glycol (8). The retard in its conformation could be due to there is no dependable consensus as to whether EC is a successful smoking addiction banding aid that is safe and healthier than its tobacco counterparts with a comparatively lower or absent reliance and/or addiction potential (9).

Much research claimed the activity of ECs in lowering smoking cessation. Some research showed up a huge increase in the occurring of EC handle between elderly persons who hadn't use cigarettes (10). Another organized study claimed that ECs usage can lower smoking in people how have already addicted on it (11). However,

beside those other studies claimed that most of cigarette users who change their usage to ECs became less addicted to cigarettes consumption and lower number of packs per day (12). Also, they suggested other views that the ECs less injurious than cigarettes smoking due to minimal nicotinic content, absent of tobacco, and lowering the toxic chemical (13). Unfortunately, many studies on some people who aware in dangerous effect of tobacco smoking that they are confutable to replace it with ECs (14). More appropriate researches appeared the harmful effect of ECs and its risk effect on cancer development in pulmonary system and cardiovascular conditions even its less harmful than cigarette smoking (15). In addition to that chemical content of ECs beside nicotine can lead to obstructive pulmonary disease, an increase in immune cell reaction, lung tissue damage, and airway hypersensitivity (16). Also, it affect persons around you and lead to what is called negative smoking (17). The danger in using ECs not all that only but it involved by it containing of other substance beside nicotine including formaldehyde, acetaldehyde, acrolein, propanil, nicotine, acetone, o-methyl benzaldehyde, and carcinogenic nitrosamines, which were found to be harmful to cells (18). Moreover, ECs found to had carcinogenic metals such as cadmium, chromium, nickel, lead, and manganese (19). Their effect can not be included only on the lungs but they also lower middle ear cell activity by the presence of menthol (20).

Objectives of the study are:

- 1- To asses s the knowledge, attitudes and practices of medical students regarding electronic smoking .
- 2- To find out if there any association between, students, knowledge attitudes, practices and certain demographic data.

Chapter two

Review of literature

Review of literature

Definition of Electronic cigarettes

Electronic cigarettes, also known as e-cigarettes or vape, are battery-powered devices that simulate smoking by heating a liquid (usually containing nicotine, flavorings, and other chemicals) into an aerosol that is inhaled by the user. E-cigarettes are designed to deliver nicotine without the harmful byproducts of burning tobacco, making them a potentially less harmful alternative to traditional cigarettes (21) Electronic cigarettes, or e-cigarettes, are a newer form of smoking that have gained popularity in recent years. E-cigarettes do not burn tobacco, but instead heat a liquid containing nicotine and other chemicals that is then inhaled as a vapor. While e-cigarettes are often marketed as a safer alternative to traditional smoking, they still contain nicotine, which is highly addictive, and other harmful chemicals, and their long-term health effects are not yet known. (22)

The World Health Organization (WHO) defines electronic cigarettes (e-cigarettes) as "devices that do not burn or use tobacco leaves but instead vaporize a solution, which is then inhaled by the user." This solution, commonly referred to as e-liquid or vape juice, typically contains nicotine, flavorings, and other chemicals. The WHO notes that e-cigarettes are not a safe alternative to tobacco products and may have health risks of their own (23)

Risks of smoking the electronic cigarettes:

Electronic cigarettes, also known as e-cigarettes or vaping devices, are often marketed as a safer alternative to traditional cigarettes, they still pose health risks. Here are some of the risks associated with e-cigarette use:

1. Nicotine addiction: E-cigarettes still contain nicotine, which is highly addictive and can lead to dependence.
2. Lung damage: E-cigarette aerosol can contain harmful chemicals, such as formaldehyde and acrolein, which can damage the lungs and cause respiratory problems.
3. Cardiovascular disease: Nicotine can increase blood pressure and heart rate, and e-cigarette use has been linked to an increased risk of heart disease.
4. Oral health problems: E-cigarette use has been linked to oral health problems, such as gum disease and tooth loss.
5. Chemical exposure: E-cigarette aerosol can contain potentially harmful chemicals, such as heavy metals and volatile organic compounds, which users can inhale (24)
6. E-cigarettes can have negative effects on fetal and adolescent development: Nicotine exposure during fetal and adolescent development can have negative effects on brain development and can increase the risk of addiction (25)

Smoking during pregnancy is associated with numerous adverse health outcomes for both the mother and the developing fetus, including increased risk of miscarriage, stillbirth, preterm birth, low birth weight, and sudden infant death syndrome (SIDS). Exposure to tobacco smoke can also have long-term effects on a child's health and development, including increased risk of respiratory infections, asthma, and behavioral problems(26)

A 2021 study published in the Journal of the Endocrine Society found that pregnant women who used e-cigarettes had higher levels of nicotine and cotinine (a metabolite of nicotine) in their blood compared to non-users. The study also found that e-cigarette use during pregnancy was associated with changes in placental gene expression, which could have implications for fetal development. Another study published in the journal Pediatrics in 2018 found that prenatal exposure to e-cigarette aerosol in mice resulted in decreased body weight, altered lung function, and impaired immune function in the offspring.

The US Surgeon General's report on e-cigarette use among youth and young adults also highlights the potential health risks associated with prenatal exposure to e-cigarette aerosol. The report states that exposure to nicotine during fetal development can have lasting adverse effects on brain development, including effects on cognition, attention, and behavior. In summary, the use of e-cigarettes during pregnancy can have harmful effects on fetal development and should be avoided. Pregnant women who are struggling to quit smoking should seek the advice of a healthcare professional for support in quitting. (27)

Smoking is a behavior that can affect individuals of any gender, but the prevalence of smoking and associated health effects may differ between males and females. Smoking has been more common among men than women, but this gap has narrowed in recent years. Research has shown that women may face additional health risks from smoking compared to men, such as increased risk of certain cancers, cardiovascular disease, and reproductive health problems. Additionally, women who smoke during pregnancy put themselves and their developing fetus at risk for a range of adverse outcomes. (28)

Smoking prevalence tends to vary by age, with higher rates among younger adults and lower rates among older adults. According to the Centers for Disease Control and Prevention (CDC), in 2019, 16% of adults aged 18-24 and 14% of adults aged 25-44 were current smokers, compared to 8% of adults aged 45-64 and 7% of adults aged 65 or older. (29)

Research has shown that smoking can have negative health effects at any age, but the risks may increase with duration and intensity of smoking. Older adults who smoke may be at increased risk for a range of health problems, including cardiovascular disease, respiratory disease, and cancer. Quitting smoking at any age can reduce the risk of these and other health problems. (30)

According to the World Health Organization (WHO), Smoking rates tend to be highest among younger age groups, with rates declining as people get older. Smoking prevalence among individuals aged 15 years and older is highest in the 25-44 age group, with 28% of males and 18% of females in this age range reporting current tobacco use. In comparison, 17% of males and 11% of females aged 45-64 reported current tobacco use, while 9% of males and 6% of females aged 65 or older reported current tobacco use. (31)

The Relation between smoking and lung cancer:

Smoking is the leading cause of lung cancer. According to the American Cancer Society, cigarette smoking is responsible for about 80% of all lung cancer cases in the United States. When a person inhales tobacco smoke, they are exposed to carcinogens (cancer-causing substances) that can damage the cells lining the lungs. Over time, these damaged cells can become cancerous and form tumors, research has also shown that the risk of lung cancer decreases after a person quits smoking, although it may take several years for the risk to decline to that of a non-smoker. Additionally, exposure to secondhand smoke (also called passive smoking) has been linked to an increased risk of lung cancer, particularly among non-smokers. (32).

Smoking is a major cause of several types of cancer, and is estimated to be responsible for about one-third of all cancer deaths in the United States. According to the National Cancer Institute, smoking is linked to an increased risk of at least 15 different types of cancer, including:

- Lung cancer
- Bladder cancer
- Cervical cancer
- Colorectal cancer
- Esophageal cancer
- Kidney cancer

- Liver cancer
- Oral cavity and throat cancers
- Pancreatic cancer
- Stomach cancer

The carcinogens (cancer-causing substances) in tobacco smoke can damage DNA and other genetic material, leading to the development of cancer cells. Quitting smoking can reduce the risk of developing many types of cancer, and can also improve the chances of survival for people who have already been diagnosed with cancer.(33)

The Relation between smoking and the dose (pack):

Research has shown that smoking even a few cigarettes per day can increase the risk of many smoking-related health problems, including lung cancer, heart disease, and stroke. The more cigarettes a person smokes per day, the higher their risk of developing these health problems. For example, according to the American Cancer Society, smoking one pack of cigarettes per day (which contains about 20 cigarettes) increases the risk of lung cancer by about 25 times compared to non-smokers (34)

It's important to note that the dose-response relationship between smoking and health effects is not linear. In other words, the risk of smoking-related health problems does not increase in a straight line with each additional cigarette or pack smoked per day. Instead, the risk tends to increase more rapidly at lower doses (i.e. for light or occasional smokers) and then levels off at higher doses (i.e. for heavy smokers).

Studies have found that individuals with lower levels of education and income are more likely to smoke than those with higher levels of education and income. For example, a study by the Centers for Disease Control and Prevention (CDC) found that in 2019, 19.5% of adults living below the poverty level smoked, compared to 8.5% of those at or above the poverty level. Several factors contribute to this relationship. For example, smoking is often used as a coping mechanism for stress and anxiety, and individuals with lower incomes may face more stressors and have fewer resources to manage them. Additionally, tobacco companies often target their marketing efforts towards lower-income communities. It's important to note that smoking is a harmful and addictive habit that can have serious health consequences, regardless of income level. Quitting smoking can improve both physical and mental health and can save individuals money in the long run. (35)

Electronic cigarettes (e-cigarettes) can also contribute to passive smoking, also known as secondhand smoke or environmental tobacco smoke. Secondhand exposure to e-cigarette aerosol can expose non-smokers to potentially harmful

chemicals, including nicotine, heavy metals, and volatile organic compounds. A 2018 report by the National Academies of Sciences, Engineering, and Medicine concluded that "exposure to e-cigarette aerosol may have both immediate and long-term adverse health effects, including lung function and cardiovascular health effects, as well as effects on prenatal and adolescent development." (36)

The US Surgeon General's report on e-cigarette use among youth and young adults also highlights the potential health risks associated with secondhand exposure to e-cigarette aerosol. The report states that e-cigarette aerosol is not harmless "water vapor," as it is sometimes marketed, and can expose non-users to harmful chemicals. (37)

Electronic cigarettes (e-cigarettes) are generally considered less harmful than traditional cigarettes, but they still pose health risks. E-cigarettes contain nicotine, heavy metals, and other potentially harmful chemicals that can have adverse health effects.

A 2018 report by the National Academies of Sciences, Engineering, and Medicine concluded that e-cigarette use increases the risk of dependence on nicotine, and can have negative health effects on the cardiovascular system, respiratory system, and oral health.(38) another study published in the Journal of the American College of Cardiology in 2019 found that e-cigarette use was associated with increased risk of heart attack, coronary artery disease, and stroke, independent of traditional cigarette smoking.

One reason why e-cigarettes may be more harmful than traditional cigarettes is that they deliver nicotine in a more efficient manner, leading to higher levels of nicotine exposure. E-cigarettes also expose users to potentially harmful chemicals through inhalation of aerosolized particles. Comparing the health risks of e-cigarettes to other ways of smoking, such as traditional cigarettes or hookah, is difficult, as the risks associated with each method can vary depending on a variety of factors, including the frequency and intensity of use, the specific products used, and the individual's health status. (39)

Quit E-cigarettes smoking:

Quitting smoking of electronic cigarettes (e-cigarettes) can be challenging, but there are effective strategies that can help. To quit using e-cigarettes the person should:

1. Set a quit date: Choose a date to quit and prepare yourself mentally and emotionally for the process.
2. Consider using nicotine replacement therapy (NRT): Nicotine patches, gum, lozenges, inhalers, or nasal sprays can help reduce cravings and withdrawal symptoms. Talk to your doctor or pharmacist to determine which NRT product may be best for you.
3. Try non-nicotine alternatives: Consider using non-nicotine alternatives such as herbal cigarettes, chewing gum, or hard candy to help manage cravings.
4. Get support: Reach out to friends and family for support or join a support group to help keep you motivated and on track.

5. Keep busy: Find activities to keep your mind and hands busy to distract from cravings, such as exercise, reading, or taking up a hobby.
6. Avoid triggers: Identify situations or activities that trigger your urge to use e-cigarettes and try to avoid them or find alternative coping mechanisms.
7. Stay positive: Quitting e-cigarettes can be challenging, but staying positive and focusing on the benefits to your health and well-being can help keep you motivated . (40)

The effect of electronic cigarettes on medical student :

Electronic cigarettes (e-cigarettes) have gained popularity in recent years as an alternative to traditional cigarettes, and there is growing concern about their health effects, especially among medical students who are likely to be more aware of the potential health risks. While e-cigarettes have been marketed as a safer alternative to traditional cigarettes, their long-term health effects are not yet fully understood. Shields PG, Berman M, Brasky TM, et al. Electronic cigarettes and vaping: a new challenge in clinical medicine and public health. (41)

A study published in the American Journal of Preventive Medicine in 2016 found that e-cigarette use was associated with reduced lung function in medical students compared to non-users. The study involved 71 medical students who were divided into three groups: non-smokers, smokers, and e-cigarette users. The study found that the e-cigarette users had significantly reduced lung function compared to non-smokers, and their lung function was similar to that of traditional cigarette smokers. (42)

Another study published in the Journal of the American College of Cardiology in 2017 found that e-cigarette use was associated with increased risk of cardiovascular disease. The study authors noted that e-cigarettes are not a safe alternative to traditional cigarettes, and that young adults, including medical students, should be discouraged from using any form of tobacco or nicotine products. (43)

Furthermore, a study published in the journal Nicotine & Tobacco Research in 2019 found that e-cigarette use was associated with an increased risk of chronic obstructive pulmonary disease (COPD) in both current and former smokers. The study involved over 400,000 participants and found that e-cigarette users had a higher risk of COPD than non-users. (44)

Research studies have found that the attitude towards electronic smoking among medical students varies depending on various factors such as age, gender, and personal smoking behavior, a study published in the Journal of Medical Education and Curricular Development found that among a sample of medical students, 68% reported that e-cigarettes are less harmful than traditional cigarettes. However, only 26% of the students had received formal education about e-cigarettes and their potential harms. (45) (46)

Overall, these studies suggest that medical students generally have a positive attitude towards e-cigarettes and believe that they are less harmful than traditional cigarettes. However, there is a lack of formal education about e-cigarettes and their

potential harms among medical students, which may contribute to misinformation and potentially harmful attitudes towards e-cigarette use. (47)

On the other hand, studies have shown that knowledge towards electronic smoking among young people can vary depending on various factors such as age, gender, educational level, and exposure to e-cigarette information. Here are some examples of research findings, a study published in the Journal of Adolescent Health found that among a sample of high school students, 70% reported being aware of e-cigarettes, but only 35% were aware that e-cigarettes contained nicotine. Additionally, only 12% of students reported being educated about e-cigarettes in school. (48)

Another study published in the Journal of Medical Internet Research found that among a sample of college students, only 47% correctly identified that e-cigarettes contained nicotine, while 77% believed that they were less harmful than traditional cigarettes. (49)

A study published in the American Journal of Health Education found that among a sample of young adults aged 18-24, knowledge about e-cigarettes was low, with only 39% reporting that they knew what e-cigarettes were, and 27% reporting that they knew how they worked. (50)

Overall, these studies suggest that knowledge towards electronic smoking among young people is often limited, with many young people being unaware of the

health risks associated with e-cigarettes or lacking information about them. The findings also suggest a need for improved education and awareness campaigns to address knowledge gaps and promote informed decision-making regarding e-cigarette use among young people. (51)

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Chapter three

SUBJECTS and METHODS

SUBJECTS and METHODS

Study design and duration: A cross-sectional study with analytic component of 5 months duration

Settings: Al-Kindy College of Medicine

Sampling techniques: a convenient sample of 150 medical students in different stages

Data collection method

Data was collected between November 2022 and February 2023 through self-structured questionnaire derived from previous literatures and was modified by the research team then was approached to the participants by their representatives. The questionnaire consisted of:

1-Demographic charecteristics :

- Age
- Gender (male/female)
- Residency(Urban/Rural)
- Monthly household income(< 500000 ID/500000 - 1000000 ID/> 1000000 ID)

2- Smoking status(smoker/nonsmoker)

- Time of initiating smoking(In the primary school/In the high school/In the college/I am not smoker)
- Dose : number of smokes(One packet per day/More than one packet per day/Less than one packet/ day)
- Type of smoking (cigarette/Hookah/Electronic cigarette/Others)
- Quit smoking(Currently trying/Quit)

3- Knowledge questions: 16 questions

4- Attitude questions : 13 questions

Scoring:-

Each question had 3 answers(agree, disagree, I do not know) and the scores were classified as following:-

Agree=2

Disagree =0

I don't know= 1

There for the knowledge score :-

< 7 poor

8-10 fair

11 -14 good

And the attitude score :-

< 6 negative

7- 9 neutral

10-13 positive attitude

Pilot study:-

The questionnaire was tested by 11 student and they took about 20 minutes to complete it

The participant faced a few difficulties about understanding some terms in the questionnaire which was

Clarified after that by the research team

Ethical considerations:-

The questionnaire had been approved by the scientific committee of the department of family and community medicine at Al- Kindy Collage of medicine to be hand out to the participant by their representatives

Statistical analysis:-

The data was submitted to Statistical package of social science program (SPSS) version (2019) descriptive statistics were presented in tables (N umbers, percentages) , Chi – square test was used to find out if there was any significant between electronic cigarette smoking and studied variables were P value ≤ 0.05 is considered significant

Chapter four

Results

Results

The studied sample was composed of 150 medical student, 50% of them were at age group (18-20) years , while 51.3% of them were males , most of the studied sample lived in urban area (83.3%) , (79%) of them have more than 1000000 ID income , this is shown in table (1) .

Table (4-1): Distribution of the Study Sample According to their Socio - demographic Characteristics:

Variables		NO. 150	%100
Age (years)	18-20	75	50
	21-23	62	41.3
	24-26	13	8.7
Gender	Female	73	48.7
	Male	77	51.3
Residency	Urban	125	83.3
	Rural	25	16.7
Income	Less than 500000ID	20	13.3
	500000-1000000 ID	56	37.3
	More than 1000000 ID	74	79.3

Among study sample of 150 student, (73.3%) of them were nonsmokers. on the other (12%) of smokers had initiated smoking at the college. Regarding the dose of smokes, (42.5%) smokes one packet per day, cigarette smoking was the most preferable type (42.5%). However (90%) of smokers are currently trying to quit smoking. (65%) of smokers have friends use e-cigarette and (35%) of their family members use it , this is shown in table 2

Table (4-2): Distribution of the Study Sample According to their smoking status:

Variable		No. 150	%100
Smoking status	Non – smoker	110	73.3
	Smoker	40	26.7
Time of initiating smoking	In the college	18	12.0
	In the high school	15	10.0
	In the primary school	7	4.7
Dose of smokes	Less than one packet per day	15	37.5
	more than one packet per day	8	20.0
	one packet per day	17	42.5

Type of smoking	Cigarette	17	42.5
	Electronic cigarette	14	35
	Hookah	9	22.5
Quit smoking	Currently trying	36	90
	Quit	4	10
A close persons use e-cigarette	Family member	14	35
	Friend	26	65

Most of the participants had good knowledge Score 83.33 %as shown in fig (1)

PIE graph of knowledge of all participants

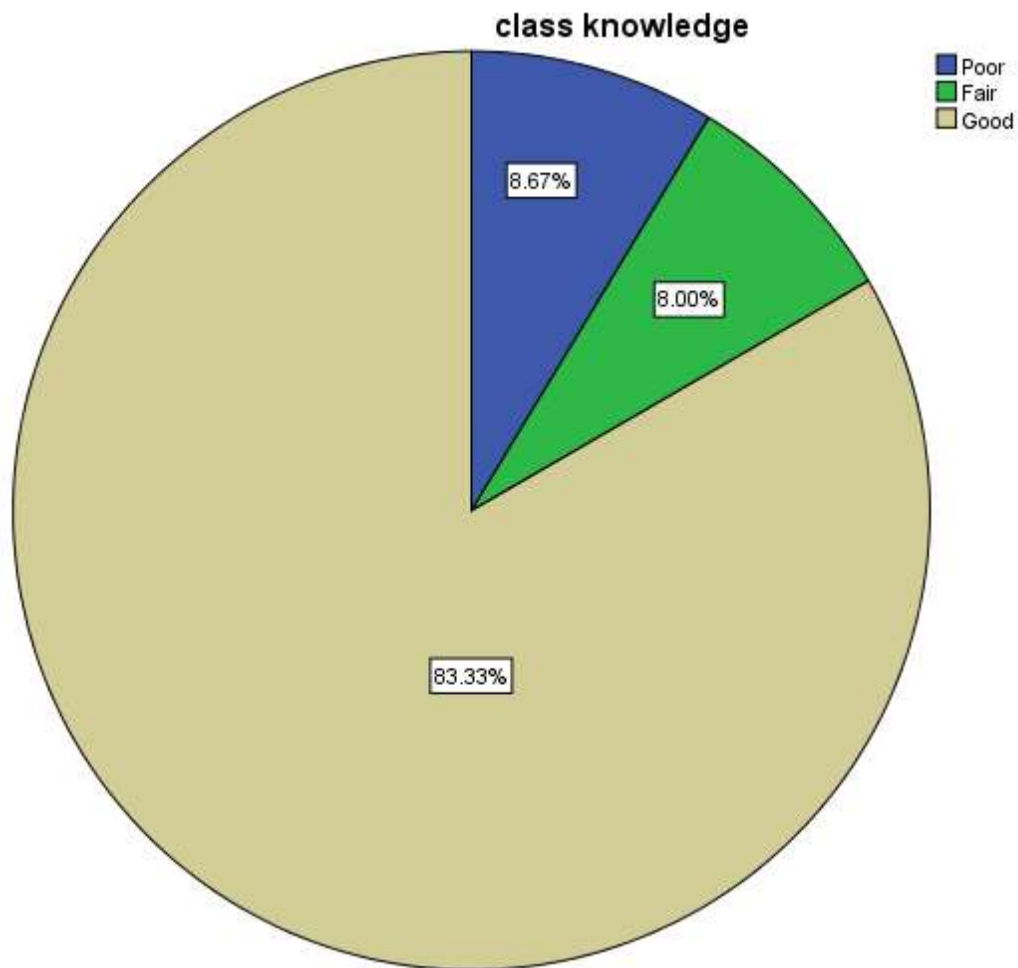


Fig (1): distribution of the participants according to knowledge level regarding e- smoking

Most of the participants had good attitude Score 80.67 %as shown in fig (2)

PIE graph of attitude all participants

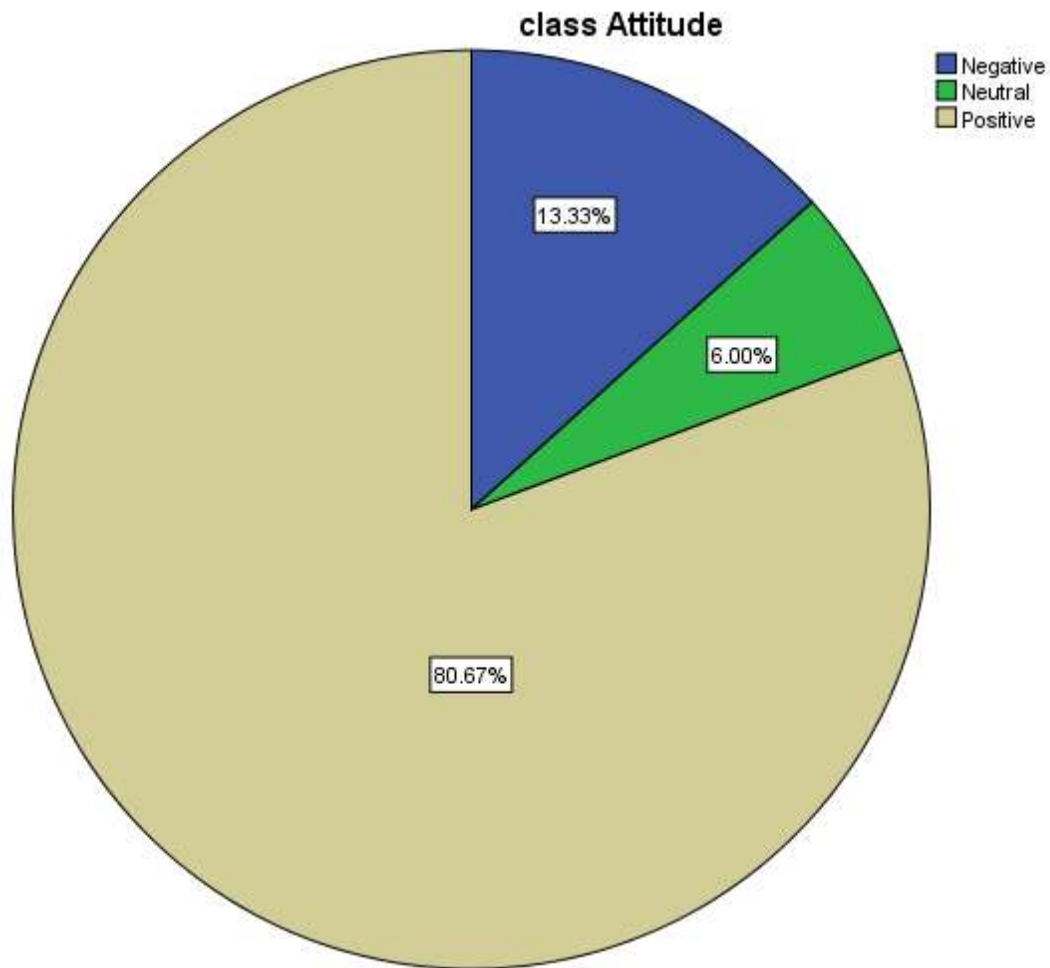


Fig (2): distribution of the participants according to attitude regarding e-smoking

There was no significant association between the age of students, gender, residence, income and their knowledge about e-cigarette smoking [p value >0.05] , this is shown in table (3).

Table (4-3): Association between Demographic Data and participant's knowledge regarding e- smoking:

Demographic Data	Scale	Overall Evaluation For knowledge			Chi .Sq	D.F	P. Value
		Poor	Fair	Good			
Age/years	18 -20 Years	9	7	59	22.588	16	0.125 NS
	21-23 Years	4	4	54			
	24-26 Years	0	1	12			
Total		13	12	125			
Gender	Male	2	7	68	1.475	2	0.478 NS
	Female	11	5	57			
Total		13	12	125			
Residency	Urban	9	12	104	5.319	2	0.070 NS
	Rural	4	0	21			
Total		13	12	125			
Income	Less than 500000ID	3	0	17	8.321	4	0.080 NS
	500000-	6	5	45			

	1000000 ID						
	More than 1000000 ID	4	7	63			
Total		13	12	125			

NS: Non-Significant at $P > 0.05$, S : Significant at $P < 0.05$, HS : Highly Significant at $P < 0.01$

There was no significant association between students age, gender, residence, income and their attitude regarding e-cigarette smoking [p value > 0.05], this is shown in table (4)

Table (4-4): Association between Demographic Data and participant's attitude regarding e- smoking :

Demographic Data	Scale	Overall Evaluation For attitude :			Chi .Sq	D.F	P. Value
		Negative	Neutral	Positive			
Age/years	18 -20 Years	14	3	58	22.588	16	0.125 NS
	21-23 Years	4	6	52			
	24-26 Years	2	0	10			
Total		20	9	121			
Gender	Male	8	4	65	1.475	2	0.478

	Female	12	5	56			NS
Total		20	9	121			
Residency	Urban	17	5	103	5.319	2	0.070 NS
	Rural	3	4	18			
Total		20	9	121			
Income	Less than 500000ID	5	1	14	8.321	4	0.080 NS
	500000-1000000 ID	11	3	42			
	More than 1000000 ID	4	5	65			
Total		20	9	121			

NS: Non Significant at $P > 0.05$, S : Significant at $P < 0.05$, HS : Highly Significant at $P < 0.01$

There is a statistical no significant association between the smoking status of the participants and their knowledge about e-cigarette, [p value > 0.05],this is shown in table (5)

Table (4-5): Association between smoking status and knowledge of the participants regarding E- smoking

Demographic Data	Scale	Overall Evaluation For knowledge			Chi .Sq	D.F	P. Value
		Poor	Fair	Good			
Smoking status	Smoker	0	3	37	5.294	2	0.071
	Non smoke	13	9	88			
Total		13	12	125			

Similar results was obtained were no significant association between the smoking status and attitude regarding e-cigarette , (p value > 0.05) , this is shown in table (6)

Table (4-6): Association between smoking status and attitude :

Demographic Data	Scale	Overall Evaluation For attitude			Chi .Sq	D.F	P. Value
		Poor	Fair	Good			
Smoking status	smoker	3	1	36	3.095	2	0.213
	Non- smoker	17	8	85			
Total		20	9	121			

Chapter five

Discussion

Discussion

This study was talking about the knowledge and attitude about electrical smoking among the medical students. This was an important subject to be discussed in such studies because this type of smoking is kindly new and we did not had a lot of information and studies about it .

Knowledge of participants regarding E-Smoking:

Most of the Participants in this study had a good knowledge about electrical smoking that was might be because the participants were medical students and they were familiar with this kind of information. The same result was obtained from another research from Nigeria(52) while in china (53) the level of knowledge was not high.

That might be because about 60% from the participants were females.

Attitude of participants regarding E-Smoking: -

Most of the Participants in this study had a good knowledge about electrical smoking.

The same result was found in a research from Nigeria(52). While in another research that was published in Thailand (54)

The association between demographic data and participant's knowledge :-

Regarding age, there is no association between the age of participants and their Knowledge. While in other study in Nigeria⁽⁵²⁾ most of the participants were adolescents.

Although in other study published in Philippine⁽⁵⁴⁾, there was not any association between demographic data and their knowledge which is the same result in current study.

Regarding residency, this study showed no significant association between participants's residency and their knowledge.

While in other study in China ⁽⁵³⁾ the participants who comes from urban areas had more knowledge toward e-cigarettes .

This is because the advertising, accessibility, or socioeconomic differences between china and middle east. While regarding educational level, there was no significant association With their knowledge.

The same result had been sawed in other study in Lebanon ⁽⁵⁵⁾

Regarding the income, there was no significant association between the income of participants and their knowledge regarding e-smoking in the current study.

While income was found to have significant association with tobacco use among adults in Malaysia(56). No significant association was seen with knowledge.

The association between demographic data and participant's Attitude :-

Regarding gender, there was no significant association between participant's gender and their attitude while in other study in other study in Saudi Arabia (57), the female participants were more negative attitude then the male participants .

While regarding income, there was not association between participant's attitude and the same result were found in Nigeria.

The association between smoking status and participant's knowledge and attitude regarding e- smoking

About smoking status in both smokers and non-smokers there was no significant association between the smokers and their knowledge and their attitude about e-cigarette , non-smokers and their knowledge and their attitude about e-cigarette smoking in current study . the same result had been found in Nigeria (52)

Chapter six

Conclusion and Recommendations

Conclusion :

1. This study showed that Medical students have a positive attitude to electronic smoking, with the majority having good knowledge about electronic smoking and its harms.
2. there is a correlation between residential areas and smoking status, as most smokers are from urban residents.

Recommendations

- 1.** Encouraging awareness campaigns about the dangers of electronic smoking for students and holding lectures to warn against them.
- 2.** conduct a periodic examination of smokers to determine the prevalence of diseases among them and annotations early treatment.
- 3.** set laws to prevent smoking in university dormitories and to set up special rooms with good ventilation for smokers in all university buildings.
- 4.** Better results can be obtained if we add

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