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* Corresponding Author: Ruqaya S Tawfeeq
Email: ruqaya_tawfeeq@aliraqia.edu.iq

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Study of Vape Smoking among Al-Iraqia Colleges of Medicine and Dentistry Students

Prof. Dr. Ruqaya S Tawfeeq[1]

[1] Family and Community Medicine (Epidemiology), College of Medicine, Al-Iraqia University.
[2] Research Team 4th year students (Department: Community and Family Medicine), -Al-Iraqia University / College of Medicine
Omar Samer Abid-Alameer, Osama Riyhd Abidalhussein, Osama Riyhd Abidalhussein, ma Abidwahab Abidalrazak, Ali Raad Faisal, Sibteen Abidrasol Jawad, Ali Faik Tawfeeq, Abood Wsam Gazi, Lana Yasser Abidalrasol, Mena Badee Abidalrahman, Hussen Alaa Husee, Hussen Alaa Husee, Tuqa Ayad Abidalhamza, Huseen Alaa Abidalrazak.

Abstract

E-cigarettes have become widely available across the world, especially among adolescents. Nicotine is highly addictive—and vaping at a young age rewires the brain an makes it harder to avoid other tobacco products like cigarettes, so explaining the health risks of nicotine may be enough encouragement to halt the smoker from like gaining new healthier habits that replaced smoking, such as exercise can be very helpful.

A cross-sectional study was conducted using a self-administered questionnaire to identify the predictors of vaping smoking among university students aged >17 years in two Universities in Baghdad, Iraq.
98 university students enrolled in this study aged between (17 and 26) years old with mean age of (20 ± 1.6 SD). 68.36% of the participants were males, and 31.64% were females. Most of the studied sample were medical students 76.53% with some participation from dentist students 23.47%. Among the males, 31.3% of them were vape smokers, while the females shown 0% prevalence of vape smoking, Regarding vape consumption The majority of the students were non- smokers 78.6%, while vape smokers represented 21.4% of the sample. 61.9% of vape smoker have the intention to stop smoking, where 38 % of those have tried to stop vape smoking during the last year .and as response to the question (Do you think you would be able to stop smoking vape if you wanted to) 80% of vape smokers have answered as (No) which reflect the addiction among these groups.
In this study, we had found that most of the students where non vape smoker (78.6%), while vape smokers made only (21.4%) of the sample with the majority of them were smoking both vapes and other tobacco products. with 100% of the smokers being male, where males had significantly higher knowledge rates about vape products and its effect compared to females. We also identify some factors that may affect the prevalence and use of vape smoking: having friends or family members that also smoke, socioeconomic state of the students also effects the consumption of vape products and its use.

Key words: Vape, Smoking, Medical Students

Introduction

Electronic cigarettes (e-cigarettes) have been widely available since their emergence in 2004, with their usage increasing significantly across the world, particularly among adolescents and young adults (1-2). They are often marketed as safer nicotine alternatives or as tools for smoking cessation (3). Additionally, the variety of available flavors enhances their appeal, particularly among younger populations (4). E-cigarettes are categorized into three main types: cigar like devices (disposable and resembling conventional cigarettes), eGos (larger devices with refillable liquid tanks), and mods (customized or modified vaping devices) (5).

Vaping involves inhaling aerosolized substances from a battery-operated device, commonly known as an e-cigarette. The device contains "e-juice" or vaping liquid, which, when heated, generates an aerosol that is inhaled into the lungs. Contrary to popular belief, individuals who vape do not inhale "water vapor" but rather a combination of chemicals that may pose significant health risks (6). Most e-cigarettes contain nicotine, a highly addictive substance found in tobacco, and some may also be used to vaporize cannabis products. Vaping exposes users to harmful chemicals that can cause severe health issues, including lung damage (7), and may increase susceptibility to respiratory infections, such as COVID-19 (8).

In the summer of 2019, the Centers for Disease Control and Prevention (CDC) investigated a sharp rise in hospitalizations linked to vaping products. Patients exhibited respiratory symptoms such as shortness of breath, cough, and chest pain, and all had used vaping products within the preceding three months. This condition, referred to as vaping-associated pulmonary injury (VAPI) or e-cigarette, or vaping, product use-associated lung injury (EVALI), is a serious and potentially life-threatening lung disease. The symptoms of EVALI often mimic other pulmonary conditions, such as pneumonia, but do not respond to antibiotic treatment. The primary symptoms include shortness of breath, cough, chest pain, fever, chills, nausea, vomiting, diarrhea, abdominal pain, and an increased heart rate. Laboratory findings indicate that vitamin E acetate, an additive in some tetrahydrocannabinol (THC)-containing e-cigarette products, is strongly associated with EVALI. This compound was detected in the Broncho alveolar lavage (BAL) fluid of 48 out of 51 EVALI patients but was absent in the healthy comparison group. While vitamin E acetate is generally harmless when ingested as a dietary supplement or applied to the skin, inhalation may interfere with normal lung function.

The treatment of EVALI is based on expert recommendations and depends on the severity of the illness. Initial management includes antibiotics and/or antiviral medications until infectious causes are ruled out, followed by corticosteroids to reduce lung inflammation. Severe cases may require hospitalization, and in critical conditions, patients may need mechanical ventilation. Even individuals with milder symptoms may require supplemental oxygen. The CDC and FDA recommend that individuals avoid using THC-containing e-cigarette products, particularly those obtained from informal sources such as friends, family, or unregulated online vendors. Additionally, adults using nicotine-containing e-cigarettes as an alternative to traditional smoking should not revert to conventional cigarette use (9).

Beyond the direct health risks, nicotine is highly addictive, and vaping at a young age can alter brain development, making it more difficult to avoid other tobacco products in the future. Educating individuals on the health risks of nicotine may serve as a critical motivator for smoking and vaping cessation.

The adverse effects of nicotine include increased glucose release, elevated heart rate, accelerated breathing, and heightened blood pressure. Although nicotine may induce temporary feelings of alertness and pleasure, its long-term consequences include an increased risk of blood clots, atherosclerosis (hardening of arteries), seizures, peptic ulcers, irregular heart rhythms, and lung cancer. Therefore, quitting vaping is essential for maintaining cardiovascular and respiratory health.

For individuals seeking to quit vaping, the first step is to inform others of their goal and seek support, even from a single trusted individual for encouragement.

Nicotine replacement therapies (NRTs)—such as nicotine patches, gum, lozenges, sprays, and inhalers—can be effective aids in overcoming nicotine dependence. Additionally, identifying triggers that induce cravings and actively avoiding them is crucial. Strategies to combat cravings include using distraction techniques, such as keeping a prayer bead in hand, eating nuts, or chewing gum. Moreover, adopting healthier habits, such as engaging in physical exercise, can significantly aid in the cessation process and improve overall well-being (10).

Aims of the Study

- Determine the Prevalence of Vaping: Assess the prevalence of vaping among undergraduate students from selected universities in Iraq.
- Analyze Vaping Patterns: Investigate students' vaping history, including the number of puffs per day and the volume of e-liquid (ml) consumed daily.
- Identify Vaping Triggers and Coping Strategies: Explore the factors that trigger vaping behavior and encourage vape users to develop strategies for avoiding or counteracting these triggers, such as avoiding specific places or activities associated with smoking.
- Examine Smoking and Cessation Behaviors: Review past quit attempts, identifying methods that have aided in quitting and reasons for relapse, to gain insights into successful cessation strategies.
- Assess the Need for Support Services: Recognize the importance of support systems during quit attempts and evaluate the role of local smoking cessation services in assisting individuals who wish to stop vaping.
- Evaluate Community Awareness: Assess the level of knowledge within the community regarding vape products, their potential risks, and the misconceptions associated with their use.

Materials &Methods

Study Design and Data Source

This study employed a cross-sectional design utilizing a self-administered questionnaire to identify the predictors of vaping behavior among university students aged ≥17 years in two universities in Baghdad, Iraq.

The study was conducted at Al-Iraqia University, specifically within the College of Medicine and College of Dentistry in the Adhamiya region.

Data collection took place on February 17, 2023, from 10:30 AM to 12:00 PM, using a convenience sampling method.

All colleges within the university were invited to participate. In colleges that agreed to take part, instructors were requested to distribute the questionnaire among students during their lecture sessions. The questionnaire took approximately 2–3 minutes to complete.

Participation in the study was entirely voluntary, and students were informed that they could withdraw at any time without facing any negative consequences. The data collection process ensured anonymity, with no personal identifiers recorded to protect participants' privacy.

Questionnaire Design

The questionnaire was self-developed and consisted of 23 questions designed to assess vaping behavior, triggers, cessation attempts, and awareness among university students. It was initially developed in English and subsequently translated into Arabic to ensure accessibility and comprehension for all participants.

To accommodate linguistic preferences and maximize response accuracy, the survey was administered in a bilingual format (Arabic and English). A copy of the original English version of the questionnaire is provided in Appendix A.

Results

Characteristics of Participants

A total of 98 university students participated in this study, with ages ranging between 17 and 26 years and a mean age of 20 ± 1.6 SD.

Gender Distribution:

- 68.36% of participants were male
- 31.64% were female

Academic Background:

- 76.53% of participants were medical students
- 23.47% were dentistry students

Prevalence of Vaping:

- Among male students, 31.3% reported vaping:
  - 8.9% were dentistry students
  - 22.4% were medical students
- Among female students, the prevalence of vaping was 0%

Further details are presented in Table 1. According to Table 1, the study findings revealed the following key insights:

Age Distribution of Vapers:

- Approximately 33.3% of vape users were 21 years old.

Gender and Vaping Prevalence:

- No female participants reported vaping.
- All identified vape users were male students.

Academic Background of Vapers:

The majority of vape users were from the College of Medicine, indicating a higher prevalence of vaping among medical students compared to dentistry students.

These findings highlight a significant concentration of vaping behavior within a specific age group (21 years) and academic background (medicine students), with no reported use among female participants.

Prevalence of Vape Product Consumption

The study findings indicate that the majority of participants (78.6%) were non-smokers, while 21.4% reported using vape products.

•Dual Use of Tobacco Products:

- 18.3% of the total sample consumed both vape products and other forms of tobacco (e.g., cigarettes and hookah).

•Exclusive Vape Use:

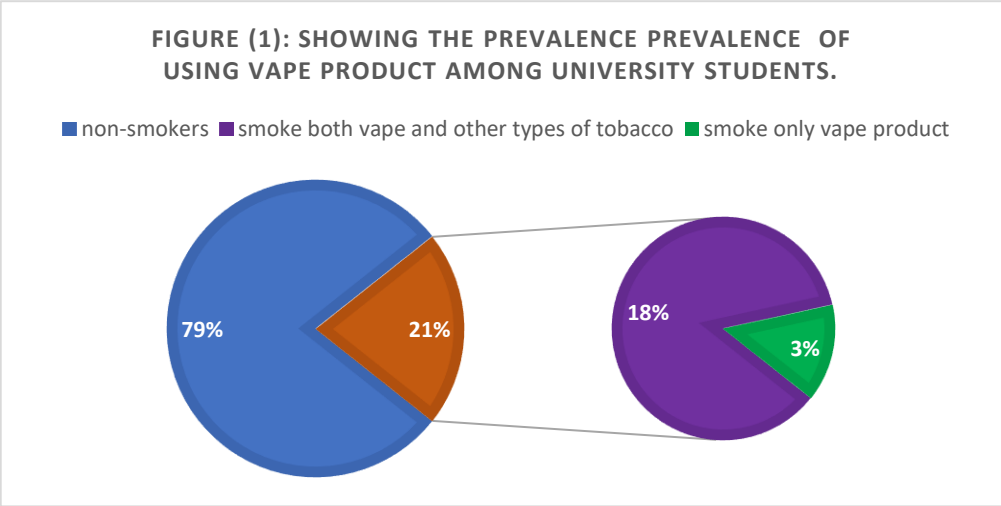
- 3% of participants reported using only vape products without consuming other tobacco products.

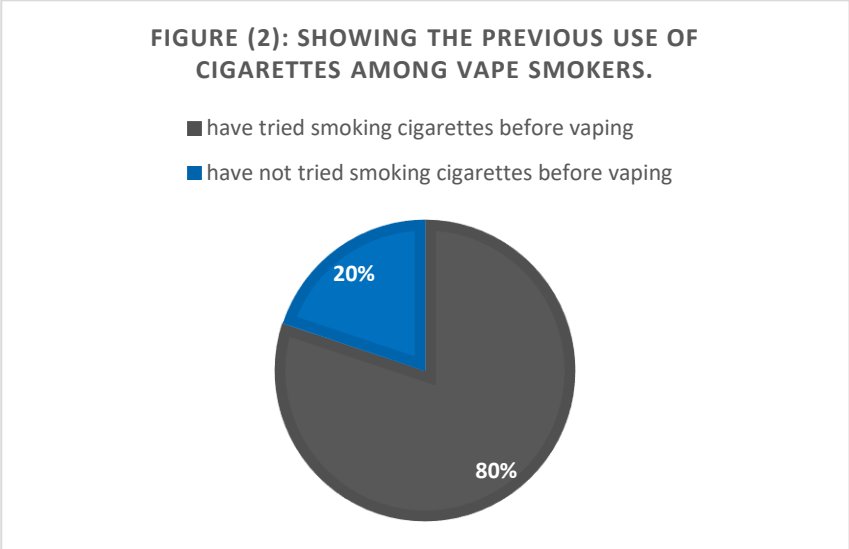
These findings are illustrated in Figure 1, which provides a visual representation of smoking behaviors among the surveyed students.

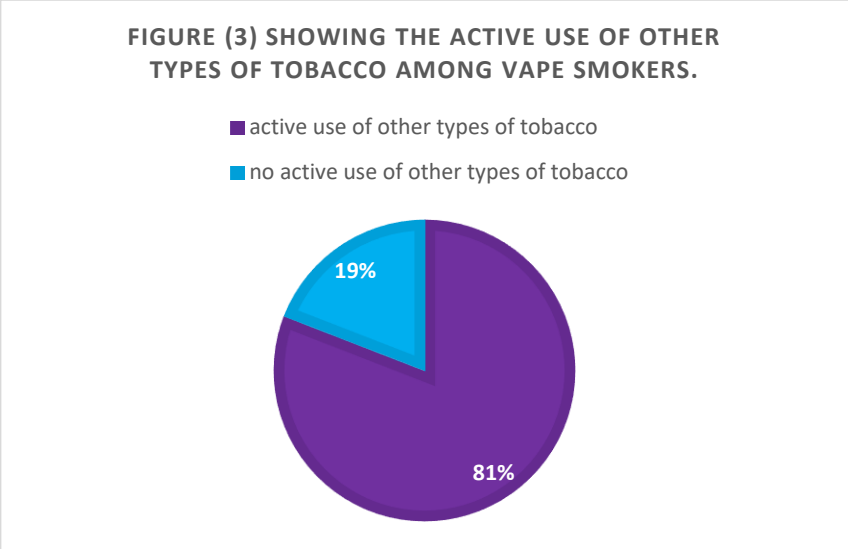
Among the vape smoker, 80.1% have tried smoking cigarettes before, and 80.9% have an active use of other types of smoking (cigarettes and hookah), where 33.3% used only cigarettes,33.3% used only hookah and 33.3% have used both, as shown in figure (2), (3), (4).

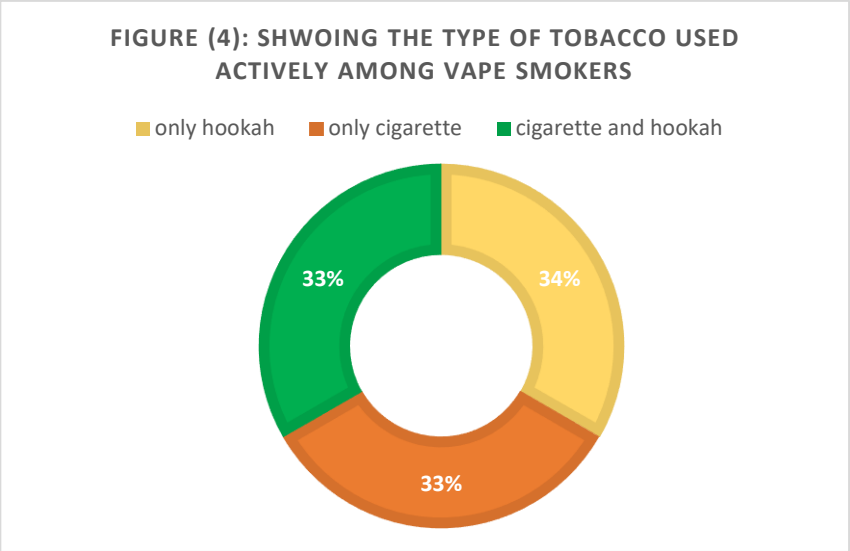
Table (1): showing prevalence of vape product among university students.

Characters	Total		Non-smokers		smokers	
	N=98	%	N=77	%	N=21	%
Age						
17	1	1.02%	1	1.29%	0	0%
18	4	4.08%	4	5.19%	0	0%
19	27	27.55%	23	29.87%	4	19%
20	22	22.44%	17	22.07%	5	23.80%
21	19	19.38%	12	15.58%	7	33.30%
22	16	16.32%	12	15.58%	4	19%
23	4	4.08%	3	3.89%	1	4.70%
24	2	2.04%	2	2.59%	0	0%
>24	3	3.06%	3	3.89%	0	0%
gender						
male	67	68.36%	46	59.75%	21	100%
female	31	31.64%	31	40.25%	0	0%
college						
medicine	75	76.53%	60	78.00%	15	71.42%
dentist	23	23.47%	17	22.00%	6	28.58%
academic year						
1st year	4	4.08%	4	5.19%	0	0%
2nd year	49	50.00%	39	50.64%	10	47.10%
3rd year	6	6.122%	3	3.89%	3	14.20%
4th year	33	33.67%	25	32.46%	8	38%
5th year	2	2.04%	2	2.02%	0	0%
6th year	4	4.08%	4	5.19%	0	0%









The data of the vape smoker (not cigarettes) have been used in the following results. In regards type of vape product, 71.4% of the smoker have used Bod mode, with 61.9% have used mode& tank (type of tanks used are regular (53.8%) and sub ohm (46.1%)), and 23.8% have used vape pen (cigarlike), where the majority of vape, smoker have used more than one type of vape product, which lead to these results, as shown in table (2).

61.9% of vape smokers answered their use of vape smoking as puffs with average of (56 puffs) per day. While others (28.5%) answered as milliliter with average of 6.3 ml per day, and 9.5% doesn't know how much they have smoked, as shown in tables (3).

Table (2): showing types of vape products used among vape smokers.

Type of vape product	Number	percentage	Type of tank/ number / percentage		
Bod mode	15	71.4%	-		
Mode & tank	13	61.9%	Regular	7	53.8%
			Sub ohm	5	46.1%
Vape pen	5	23.8%	-		

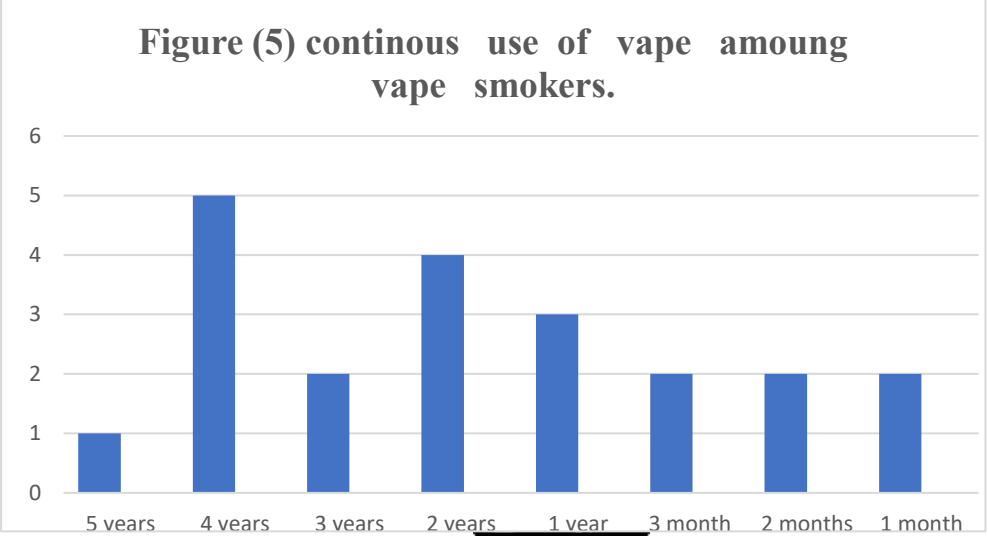


Table (3): showing average consumption of vape products among vape smokers.

Measures used for estimation smoking consumption	Amount of puffs or ml used	Number of people	percentages	Average use
puffs	150 puffs	1	4.76%	56 puffs
	100-150 puffs	1	4.76%	
	100 puffs	2	9.52%	
	50 puffs	3	14.28%	
	30 puffs	3	14.28%	
	20-30 puffs	1	4.76%	
	20 puffs	2	9.52%	
total	-	13	61.90%	
milliliters	10 ml	1	4.76%	6.3 ml
	5-10 ml	1	4.76%	
	5 ml	2	9.52%	
	4 ml	1	4.76%	
	2 ml	1	4.76%	
total	-	6	28.57%	
Don't know how much they smoke	-	2	9.52%	-

The majority (52.3%) consume 3mg of nicotine per day, with a variable continuous use of vape as shown in the figure (5) and variable value in how often they have smoked vape in figure (6)
The average monthly expenses were (44,920 IQD) where 23.8% of them have to do a part time job as way to cover the expenses.
Vape products consumption as an alternative for cigarettes and the addiction of vape products:
66.6% of vape smoker acknowledge the bad effect of vaping on the health, where 76.1% have noticed changes in their health state.
57.1% of vape smoker have used it to avoid using cigarettes tobacco, with 66.6% of them see it as an effective way. Among vape smokers 38% have tried smokeless tobacco (chewing tobacco, pinch, snuff, or snus)
61.9% of vape smokers have the intention to stop smoking, whereas 38 % have tried to stop vape smoking during the last year, as shown in figure (7).
As response to the question (Do you think you would be able to stop smoking vape if you wanted to) 80% of vape smokers have answered as (No) which reflect the addiction among these groups.

Social and environmental effect:

71.4% of vape smokers have been introduced to vaping by their friends, 23.8% from both internet and friends, and only 4.7% from internet only, as shown in figure (80).

Firgure (6) showing how often vape smokers smoke again.

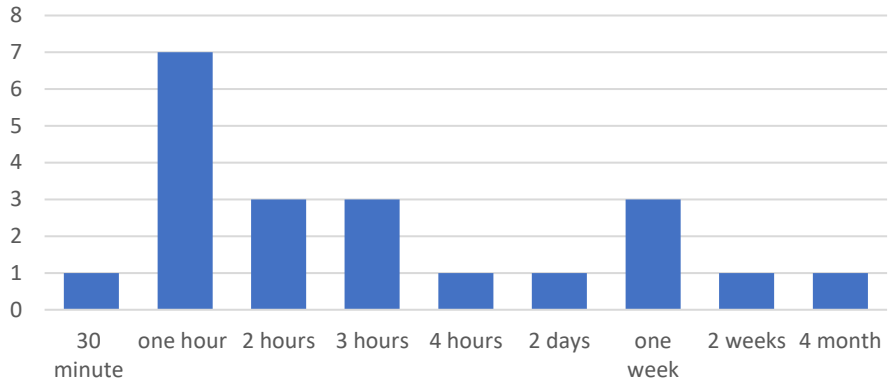


FIGURE (7): SHOWING THE INTENTION OF STOP USING VAPE SMOKING AMONG VAPE SMOKERS.

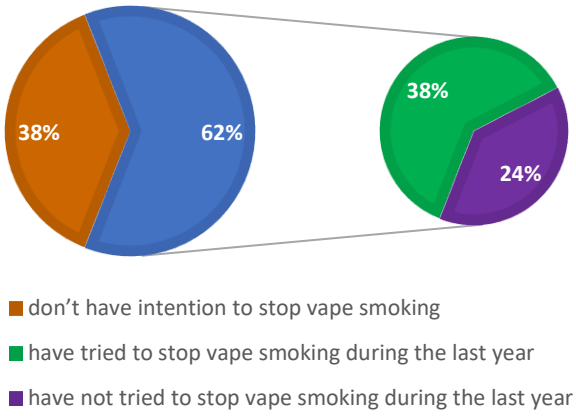
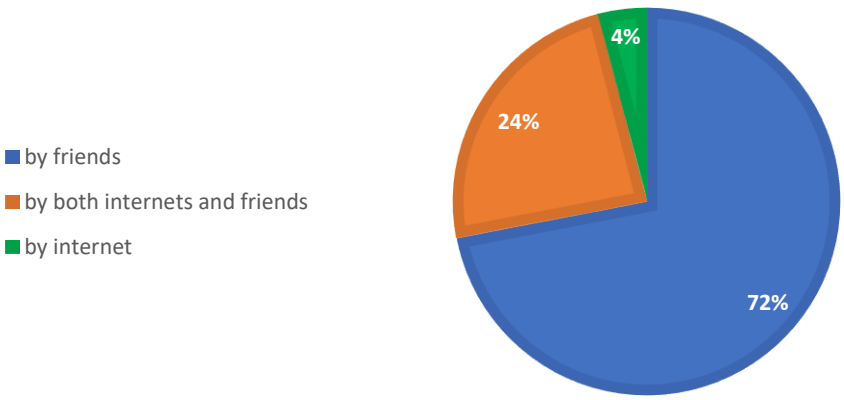
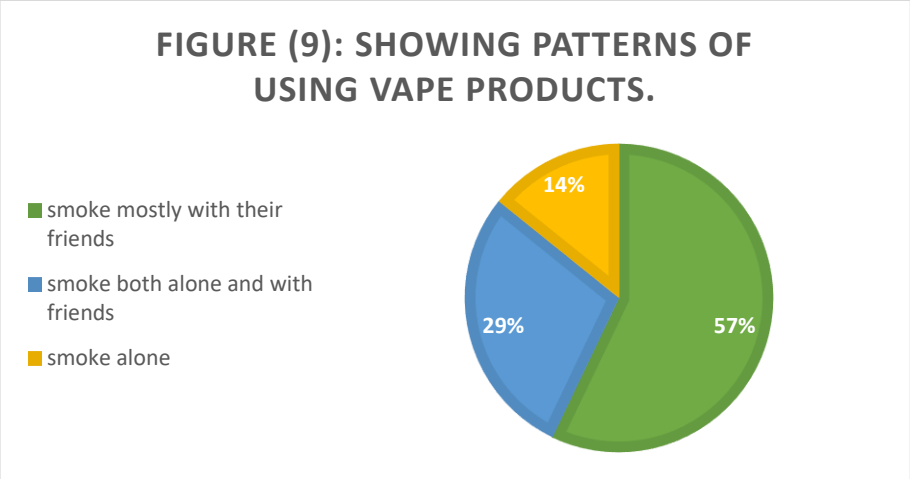


FIGURE (8): SHOWING HOW VAPE SMOKERS INTRODUCED INTO VAPE PRODUCTS.



28.5% have another member of the family smoking, while 100% have their friends smoking also. Where 57.1% of smoker smoke mostly with their smoker friends, 28.5% smoke both alone and with their friends, and only 14.2% are smoking alone, as shown in figure (9).



Most vape smokers (80.9%) smoke before turning 18 years old, 57.1% of vape smoker smoke with their parents' knowledge, 80.9% of smoker have been advised to stop smoking.

Discussion

Electronic cigarettes are gaining popularity globally, including in Iraq, with a particularly higher prevalence among young adults and university students. The present study found that the prevalence of e-cigarette smoking among students was 20%. This percentage is almost double the rates reported among medical students in Qassim University (10.6%) (11) and King Khalid University (10.8%) (12) in Saudi Arabia. Additionally, the reported prevalence in this study was higher than that observed among medical students in Poland (3.5%) (13) but lower than that reported in the USA (24.2%) (3). and Malaysia (40.3%) (14). These variations may be attributed to differences in socio-economic status between students.

E-cigarette usage is expected to be higher among individuals with a higher socio-economic status, as they are more likely to afford the initial investment required for purchasing e-cigarette starter kits, products, and equipment. Unlike conventional cigarettes, vaping devices often require a higher upfront cost. Behavioral economics literature indicates that increased pricing can lead to a reduction in e-cigarette sales, similar to trends observed in conventional cigarette sales, as consumers are price-sensitive.

Research also suggests that the consumption of cigarettes and e-cigarettes is not independent, as most current e-cigarette users are either current or former smokers (14). Consequently, changes in e-cigarette pricing and taxation policies may influence both vaping and traditional smoking behaviors. Additionally, variations in tobacco taxation across different countries and

differences in overall smoking prevalence may contribute to the observed discrepancies in e-cigarette use.

The present study also assessed students' knowledge and awareness regarding e-cigarettes. Nearly half of the participants demonstrated knowledge about e-cigarettes and their effects. More than two-thirds were aware of the nicotine content in e-cigarettes and its psychological effects, and 92.8% recognized that vaping is harmful. However, less than half of the respondents believed that e-cigarettes are less dangerous than traditional smoking, while two-thirds acknowledged that e-cigarettes may be addictive.

Additionally, males exhibited significantly higher knowledge levels compared to females, a finding consistent with research conducted in Saudi Arabia, where e-cigarette awareness was found to be higher among men. This discrepancy may be attributed to sociocultural factors, as smoking among women is often considered socially unacceptable in many Eastern and Muslim societies, contributing to a social stigma that discourages women from openly discussing or engaging in smoking behaviors.

Study Limitations

Despite its valuable insights, this study has certain limitations. The self-administered questionnaire used for data collection may introduce recall bias and social desirability bias, potentially affecting the accuracy of responses. Additionally, the study was conducted within a specific university population, which limits the generalizability of the findings to the broader Iraqi population.

Nevertheless, this study provides important epidemiological data on the prevalence of e-cigarette use among medical students, highlighting the need for further research and targeted public health interventions to address vaping behaviors and awareness in Iraq.

Conclusion

In this study, we had found that most of the students where non vape smokers (78.6%), while vape smokers made only (21.4%) of the sample with the majority of them were smoking both vapes and other tobacco products. with 100% of the smokers being male, where males had significantly higher knowledge rates about vape products and its effect compared to females. We also identify some factors that may affect the prevalence and use of vape smoking: having friends or family members that also smoke, socioeconomic state of the students also effects the consumption of vape products and its use.

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