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ORIGINAL STUDY

Attitudes of Students of the College of Physical Education and Sports Sciences Toward E-Cigarette Use and Its Relationship to Some Demographic Variables

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Abstract

The main aim of this research was analyzing the attitudes of students at the Faculty of Physical Education and Sports Sciences at Al-Mustaqbal University towards e-cigarette use. The research explored how e-cigarette use is related to demographic, economic, and social variables; in addition to the level of health awareness of its risks. The researchers followed a descriptive approach and used a survey method. The research was conducted on a sample of (80) students belonging to the four stages of the 2024–2025 academic year. Data were obtained through a questionnaire in accordance with scientific principles and verified by five specialized experts. The reliability coefficient was calculated using Cronbach's alpha (0.86). A set of statistical tools was used, including percentages, frequencies, arithmetic means, standard deviation, Pearson correlation coefficient, chi-squared test (χ^2), and one-way analysis of variance (ANOVA). The results showed: Social factors, particularly peer pressure and integration into the university environment, are the most prominent factors of e-cigarette use (85%), with statistically significant differences between academic years ($\chi^2 = 8.47, p < 0.05$). A moderate positive correlation exists between low income levels and limited spending ($r = 0.42, p < 0.01$), reflecting a more experimental use pattern. A general awareness of the harms of e-cigarette use (100% in some items) is contrasted by a weak understanding of its long-term health risks. The influence of family is less effective (8.75%) compared to friends and the university environment (77.5%). The study recommends implementing awareness programs and strengthening sports activities within the university environment, and this achieves one of the sustainable development goals of the United Nations in Iraq which is (Good Health).

Keywords: E-cigarette use, Student attitudes, Health awareness, Health behavior

1. Introduction

Smoking is considered one of the most prominent global health problems facing human societies, with varying degrees of severity and prevalence. Its negative impact continues to increase day after day due to the health, physical, psychological, social, and economic harms it may be linked to. Reports of the (World Health Organization (WHO), 2023) in the Iraqi context, reports from the (Iraqi Ministry of Health, 2022) indicate that social and economic instabilities significantly increase the spread of addiction among youth. Furthermore, aggressive digital marketing

often targets young people by downplaying the neurodevelopmental risks associated with vaping (Fakher, 2021). Globally, while e-cigarettes are marketed as cessation aids, clinical trials demonstrate they often lead to long-term nicotine dependence rather than complete abstinence (Hajek et al., 2019). The rise in youth use has sparked significant concern regarding the potential for these devices to act as a gateway to other tobacco products (Centers for Disease Control and Prevention (CDC), 2022) indicate that smoking rates remain high worldwide and that smoking may be linked to more than eight million deaths annually, while the health and

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economic burden on healthcare systems continues to grow. Recent evidence also shows that electronic cigarettes are not risk-free, as they are associated with respiratory and cardiovascular effects and the potential to increase nicotine dependence among young people (Gotts et al., 2020; Banks et al., 2022). Epidemiological studies show the high vulnerability of the university students who are easily influenced by e-cigarette use for several reasons such as peer pressure, digital marketing, and inaccurate perspectives about reduced harm (Hammond et al., 2020; O'Brien et al., 2023). Furthermore, the systematic analyses refer to the relation between using electronic cigarettes and commencing or continuing using conventional cigarette smoking (Wang et al., 2021). A recent study also revealed how e-cigarette use has become the most common type of tobacco that Arab university students tend to use. The mentioned usage reached 21.2% and surpasses both conventional cigarettes (12.9%) and waterpipe smoking (10.8%), with a solid relation between social influence and smoking behavior (Sallam et al., 2025).

1.1. Research problem

The research problem is about the growing widespread usage of e-cigarette use among students of the College of Physical Education and Sports Sciences at Al-Mustaqbal University. It indicates the gap between the students' overall awareness of the risks and their comprehensive understanding of the long-term health issues of e-cigarette use. Additionally, it explores how demographic, social, and economic variables lead to the adaptation of this behavior. This gap appears to be primarily cognitive (limited detailed knowledge of e-cigarette risks) and behavioral (continued use despite general awareness), which justifies the need for further investigation within the university context.

1.2. Research objectives

1. To examine students' attitudes toward e-cigarette use.
2. To determine the relationship between e-cigarette use and selected demographic and economic variables.
3. To assess students' level of awareness regarding the risks of e-cigarette use.
4. To analyze the influence of social factors (e.g., peers and university environment) on e-cigarette use.

1.3. Research hypotheses

H1: There are statistically significant differences in e-cigarette use according to academic stage.

H2: There is a statistically significant correlation between income level and expenditure on e-cigarette use.

H3: There is a statistically significant relationship between social factors (peer influence) and e-cigarette use.

H4: There are statistically significant differences in awareness levels according to academic stage.

As shown in Table 1, the distribution of the sample according to demographic and economic variables indicates the general characteristics of the participants included in the study.

Table 1. Distribution of the research population and sample according to academic stages.

Stage	Research Population	Sample	Percentage of the Population
First	600	20	3.3%
Second	500	20	4.0%
Third	450	20	4.4%
Fourth	450	20	4.4%
Total	2000	80	4.0%

1.4. Scope of the research

- **Human Scope:** Students of the College of Physical Education and Sports Sciences – Al-Mustaqbal University (2024–2025).
- **Temporal Scope:** From 1/11/2024 to 1/4/2025.
- **Spatial Scope:** Classrooms of the College of Physical Education and Sports Sciences – Al-Mustaqbal University.

2. Research methodology and field procedures

2.1. Research method

Adopting the descriptive method, the researchers used survey approach to examine the research problem due to it being convenient and capable of determining the level of commonness of the studied phenomenon together with its related factors among the students of the College of Physical Education and Sports Sciences.

2.2. Research population and sample

The research population consists of all students of the College of Physical Education and Sports Sciences at Al-Mustaqbal University for the academic year 2024–2025, whose total number is approximately (2000) students distributed across the four academic stages. A purposive sample of (80) students was selected, with (20) students from each stage, representing the population appropriately. A purposive sampling technique was adopted due to accessibility

and time constraints. Although this sampling method limits the generalizability of the findings, it is considered appropriate for exploratory descriptive studies within a defined educational context.

2.3. Research instrument

The survey was developed using the standardized measurement techniques originally proposed to quantify subjective attitudes effectively (Likert, 1932). To ensure psychometric rigor, the study followed the principles of psychological testing established to ensure objectivity and standardization (Anastasi & Urbina, 2010). The researchers prepared a questionnaire to measure students' attitudes toward e-cigarette use, consisting of seven parts:

- **Part One:** Demographic and economic variables.
- **Part Two:** Students' attitudes and reasons for smoking (using a five-point Likert scale).
- **Part Three:** Smoking status of close contacts.
- **Part Four:** Problems faced by smokers.
- **Part Five:** Reasons for the desire to quit smoking.
- **Part Six:** Students' awareness of the harms of smoking.
- **Part Seven:** Proposals for combating smoking.

The questionnaire consisted of (X) items distributed across seven domains. The Likert scale (five-point) was used in the second section, with responses ranging from (1 = strongly disagree) to (5 = strongly agree). Higher scores indicate more positive attitudes toward e-cigarette use. The total score was calculated by summing responses across relevant items.

2.4. Validity and reliability of the instrument

Face Validity: The questionnaire was presented to five experts specialized in physical education and public health (their names are listed in Appendix 2), and some items were modified based on their observations, achieving an agreement rate of 85%. Content validity was also considered, as the experts evaluated the relevance, clarity, and appropriateness of the items in relation to the study objectives.

Reliability: The questionnaire was applied to a pilot sample of (20) students and re-administered after two weeks. Cronbach's alpha coefficient was calculated at 0.86, indicating high reliability according to DeVellis (2017). This value indicates a high level of internal consistency, which supports the reliability of the instrument for use in this study.

2.5. Application procedures

The scale was applied to (80) students on Sunday and Monday, 16–17 February 2025, with (20) students

from each academic stage. Responding took approximately 20 minutes, in a suitable environment while ensuring full confidentiality in accordance with ethical standards in behavioral studies (National Institute on Drug Abuse (NIDA), 2021). Official approval was obtained from the College of Physical Education and Sports Sciences administration prior to data collection. In addition, all participants were informed about the purpose of the study and provided voluntary informed consent.

2.6. Statistical methods

Statistical procedures were guided by educational research methods suitable for the regional academic environment (Al-Samarrai, 2010). Parametric procedures were applied only when assumptions of normality were satisfied, avoiding the nonsensical findings that result from misusing categorical data (Allen & Seaman, 2007). The researchers used:

- Percentages and frequencies to describe the data.
- Arithmetic mean and standard deviation to analyze attitudes.
- Chi-square test (χ^2) to analyze differences between categorical variables.
- Pearson correlation coefficient (r) to examine relationships between quantitative variables.
- One-way ANOVA to compare means across academic stages.
- Cronbach's alpha coefficient to measure the reliability of the instrument.
- Pearson correlation coefficient was calculated based on composite scores derived from grouped questionnaire items, rather than individual categorical responses, to ensure the appropriateness of the statistical analysis.

To ensure the appropriate use of Pearson's correlation coefficient, selected categorical variables were transformed into composite quantitative scores through binary coding (0 = No, 1 = Yes). These scores were then aggregated within relevant dimensions, allowing for the application of Pearson's correlation in a statistically valid manner.

3. Results, analysis, and discussion

3.1. First: Results of the economic variables (Table 2)

The results of Table 2 indicate that 86.25% of the sample members belong to the low-income category (less than 350,000 IQD), a very high percentage reflecting the economic status of the majority of students. As shown in Fig. 1, according to the Chi-square test (χ^2) which compares the distribution of income among the students in the academic stages, there are no

Table 2. Distribution of the sample according to economic variables.

Variable	Level	First Stage	Second Stage	Third Stage	Fourth Stage	Total	Overall Percentage
Monthly Income	Less than 350,000	18	17	16	18	69	86.25%
	350,000–600,000	2	3	4	2	11	13.75%
Housing	Owned	20	19	20	20	79	98.75%
	Rented	0	1	0	0	1	1.25%
Family Employment Status	Employed	4	5	3	4	16	20%
	Unemployed	16	15	17	16	64	80%
Average Daily Expenditure	Less than 1,000 IQD	12	13	11	12	48	60%
	More than 1,000 IQD	8	7	9	8	32	40%

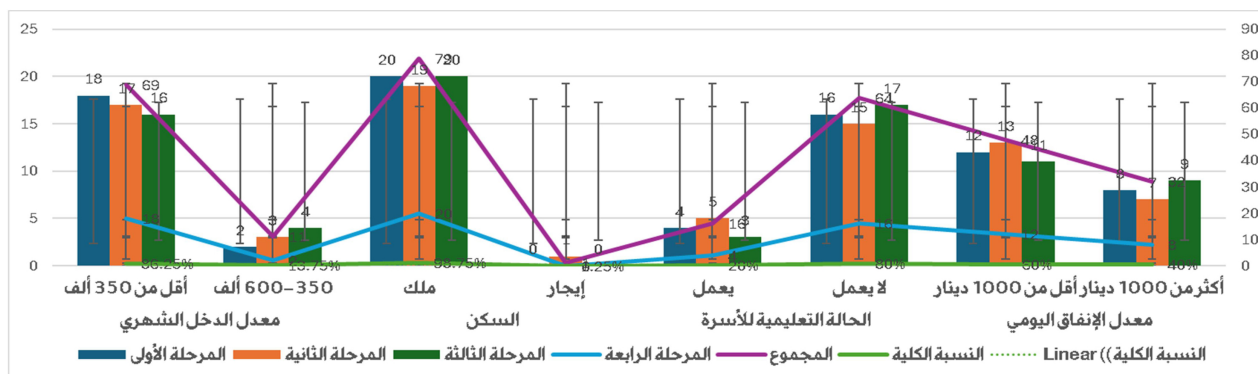


Fig. 1. Distribution of the sample according to economic variables.

statistically significant differences (calculated ($\chi^2(3) = 2.14, p > 0.05$), which is less than the critical value of 7.81 at 3 degrees of freedom and a significance level of 0.05). This shows a homogeneity level of the sample's economic status across all stages which emphasizes the solid applicability of the results. Through the use of Pearson's correlation coefficient, a moderate positive correlation ($r = 0.42, p < 0.01$) was revealed between low-income levels and low daily spending on smoking (less than 1,000 IQD). This revelation affirms the second hypothesis of this research concerning the relation between smoking attitude and economic factors. This relation illustrates the reason behind the preference of students with limited income towards low-cost e-cigarette use products.

Extended Discussion: This finding goes in line with the study by Miech et al. (2020), which indicated that university students with limited income tend to spend small amounts irregularly on "experimental" consumption rather than the regular use. This also agrees with the World Health Organization report (World Health Organization (WHO), 2023), which stated the tendency of low-income groups towards the consumption of cheaper products, involving specific types of electronic cigarettes with low-cost. As for housing, the results showed that 98.75% of students had a stable relative family background, as they live in owned houses. Nevertheless, this stability did not refrain the students from using e-cigarette use. This highlights the strong impact of social influence (peers,

university environment) as it prevails over the familial environment in molding health-related behavior. This view corresponds with Bandura's Social Learning Theory, which states that observing and imitating others is the method through which individuals, especially the youth, acquire behaviors. To support this reference, Sallam et al. (2025) also uncovered how social affect was one of the strongest factors to make Arab university students obtain positive attitudes toward e-cigarette use ($B = 0.300, p < 0.001$).

Furthermore, the results showed that 80% of the students had a humble familial background with an unemployed family head, which refers to the limited economic resources within families. This indicates the indirect relation of this variable to smoking attitude, for students may choose to go for low-cost smoking products or practice the irregular use. This revelation corresponds with NIH (2025), which asserted the prominent role of economic factors in forming the patterns of tobacco consumption among university students. This result does not support Hypothesis (H4).

3.2. Second: Results of the reasons for smoking (Table 3)

The results showed notable variation in the several factors that induce e-cigarette use. Item (1), "Relieving stress and psychological pressure," marked the highest percentage recorded (85%). These findings are clearly presented in Fig. 2 followed by item (12), "Peer influence". These results align with findings

Table 3. Distribution of students' responses regarding the reasons for E-cigarette use.

Paragraph Number	Reason	Frequency	Percentage
1	Relieving Stress and Psychological Pressure	68	85%
5	Feeling Bored and Having Free Time	58	72.5%
12	Peer Influence	62	77.5%
21	Reducing Academic and Social Pressures	32	40%
29	Encouraging Social Environment	46	57.5%

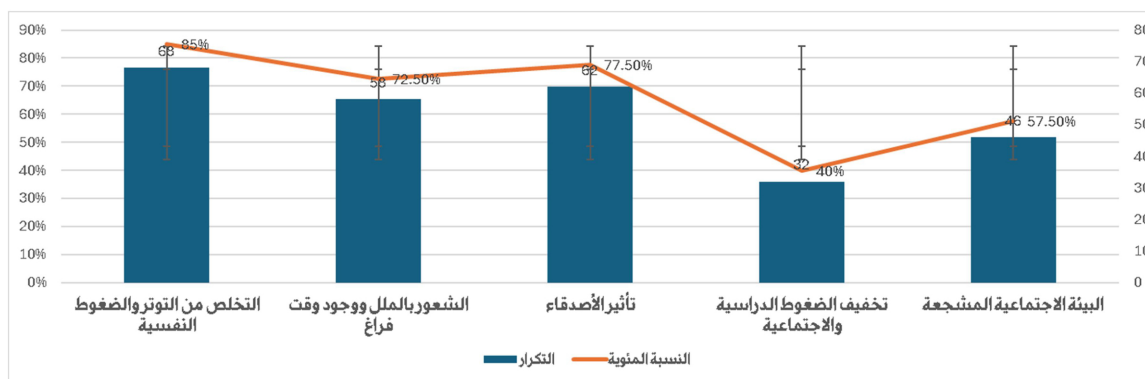


Fig. 2. Distribution of students' responses regarding the reasons for E-cigarette use.

that link risky health behaviors to social factors such as parental smoking and peer interactions (Al-Taie & Abdul Hussein, 2018). Discussions with peers and perception of others' use are significant risk factors for personal e-cigarette initiation (Stevenson et al., 2022) with a percentage of (77.5%), and then item (5), "Feeling bored and having free time" (72.5%). Comparing the mean reasons for smoking across academic stages by using one-way ANOVA, statistically prominent differences were noticed (($F(3, 76) = 4.32, p < 0.05$)) for the reason "Academic pressures" (item 21), which was the highest to be recorded among fourth-stage students (65%) in comparison to first-stage students (28%). This is due to the increased pressures related to the graduation process with its projects and academic responsibilities in final years. This distribution is also illustrated in Fig. 2.

The Chi-square test highlights the psychological and social motivations to e-cigarette use behavior, as it show the significant association between "Peer influence" and academic stage (($\chi^2(3) = 8.47, p < 0.05$)). A stronger effect is shown in the first and second stages, which reflects how peers have more effect on new students' adaptation of smoking behavior. In addition to the mentioned results, stress relief and psychological pressure come first (85) corresponding with the global studies marking the influence of psychological stress and poor emotion state on the smoking attitudes among university youth (National Institute on Drug Abuse (NIDA), 2021).

According to a recent study taking place in the United Arab Emirates, a strong connection was noted

between e-cigarette use and mental health disorders, involving depression and anxiety, among university students ($p \leq 0.05$). The social influence theory is asserted due to the clear effects of peers at 77.5% which reflects that the behavior formation during youth is mainly formed by peers' influence. This result goes along with O'Brien et al. (2023), who marked the peer pressure as one of the strongest factors that lead to e-cigarette use among university students. Moreover, Sallam et al. (2025) strengthens this view and states that situational triggers and social environment are closely connected to positive attitudes toward smoking ($B = 0.205, p = 0.002$).

On the other hand, feeling bored and having free time (72.5%) indicates the students' need to consume their free time with alternative activities. Vogel et al. (2021) highlighted the lack of participation in productive activities which rises the youth engagement in risky attitudes, including e-cigarette use. The study Frontiers in Public Health (2025) provided the recommendation of arranging healthy and interesting alternatives, such as sports and cultural activities, to occupy free time. However, very low or zero percentages were recorded for some items (e.g., items 8, 13, 17, 19, 23 at 0%), illustrating the specific may be linked to that instigate e-cigarette use in this sample. These may be linked to are clear rather than random. This view is supported by NIH (2025), which stated the association of smoking behavior among university students with a specific set of psychological and social factors rather than random instigators. This result does not support Hypothesis (H4).

Table 4. Distribution of students' responses regarding smoking among close contacts.

Item	Yes (Frequency)	Percentage	No (Frequency)	Percentage
1-Do your friends smoke?	22	27.5%	58	72.5%
2-Are your smoker friends male?	36	45%	44	55%
3-Are your smoker friends female?	8	10%	72	90%
4-Do your parents or either of them use electronic cigarettes?	22	27.5%	58	72.5%
5-Do you smoke only inside the university?	55	68.75%	25	31.25%
6-Do you share electronic cigarettes with your colleagues?	7	8.75%	73	91.25%
7-Do you share smoking with any college professors?	2	2.5%	78	97.5%

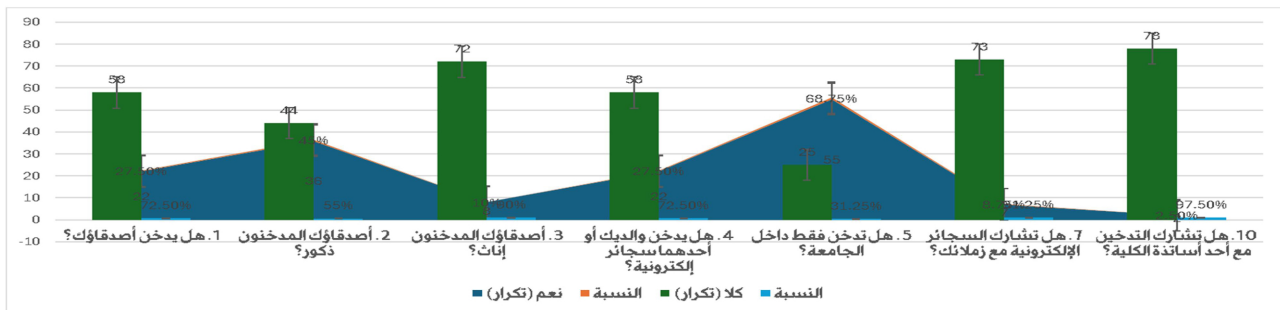


Fig. 3. Distribution of students' responses regarding smoking among close contacts.

3.3. Third: Results of smoking among close contacts and gender (Table 4)

An obvious variation appears indicating the role of close contacts in smoking behavior. Item (5), **“Smoking inside the university,”** achieved the highest percentage (68.75%), while item (2), **“Male friends who smoke”** recorded (45%); however, item (10), **“Smoking with professors,”** came with the lowest percentage (2.5%). According to the Chi-square test, differences that are statistically notable were found across academic stages regarding item (5) ($\chi^2(3) = 6.83, p < 0.05$), revealing the higher percentage of smoking inside the university being attributed to first-stage students (80%) compared to fourth-stage students (55%). Pearson’s correlation coefficient showed a weak negative relation ($r = -0.28, p < 0.05$) between the academic year and where smoking takes place, proposing the view that younger students prefer to smoke inside the campus more than older students. Fig. 3 illustrates the patterns of social influence associated with e-cigarette use.

These results highlight the social factors surrounding students as a significant element in forming attitudes toward e-cigarette use. As noted, 68.75% of students tend to smoke inside the university. In spite of prohibiting smoking inside the university, the place itself appear to be a context for smoking practices. This agrees with NIH (2025), which indicated that many students practice the **“stealth vaping”** in prohibited areas including bathrooms, libraries, and classrooms, while using small, low-emission devices. Sharing electronic cigarettes with colleagues recorded

(8.75%) which reflects the individual nature of students when smoking, as they prefer to smoke alone to avoid accountability. Similarly noted, the very low percentage of smoking with professors (2.5%) displays the clear boundaries between students and professors in this context.

Gender influence, on the other hand, is asserted as the results show the higher smoking rates among males (45%) compared to females (10%), which corresponds with Arab studies. This, consequently, highlights the cultural and social impacts which create a gender gap in smoking. Sallam et al. (2025) affirmed this fact stating that males are notably more likely to participate in e-cigarette use (AOR = 6.97, $p < 0.001$) compared to females in Arab countries. The results also indicate the frail direct influence of family members on the individuals’ smoking behavior, with item (10) which shows the very low percentage of first-degree relatives (2.5%). This concludes the fact that family environment is not the main cause of smoking behavior in this sample, and it supports the hypothesis proposing non-familial social relations such as friends and classmates are to be the most effective factor. This result does not support Hypothesis (H4).

3.4. Fourth: Results of problems faced by smokers (Table 5)

Percentages were calculated based on the total number of participants within each relevant category, ensuring accurate representation of response distributions.

Table 5. Problems faced by smokers.

Item	Yes (Frequency)	Percentage	No (Frequency)	Percentage
1-Feeling of loneliness	19	23.75%	61	76.25%
2-Difficulty communicating with others	24	30%	56	70%
3-Eating disorders	6	7.5%	74	92.5%
4-Sleep disturbances	22	27.5%	58	72.5%
5-Fear of the future	18	22.5%	62	77.5%
6-Inability to cope with academic difficulties	21	26.25%	59	73.75%
7-Lack of adequate financial resources	29	36.25%	51	63.75%

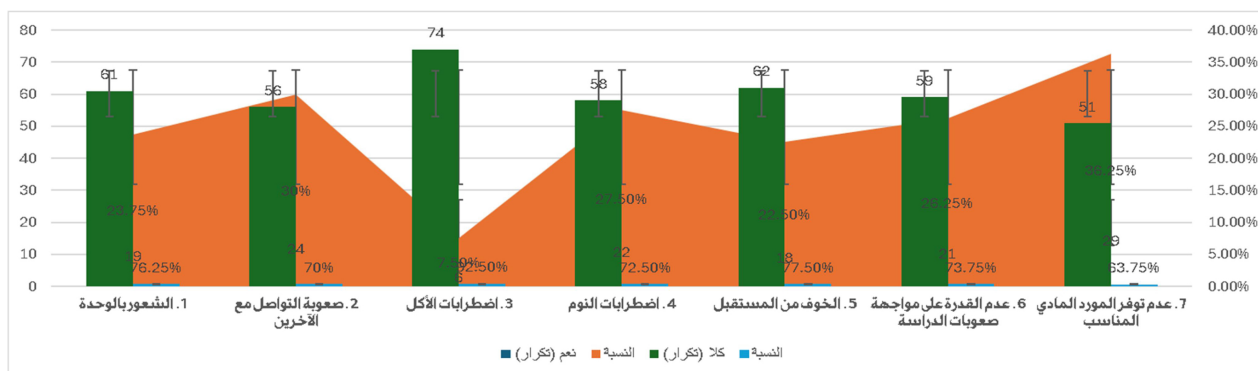


Fig. 4. Problems faced by smokers.

The results in Table 5 display how e-cigarette use problems are not greatly pronounced among most students, as the majority of “No” responses ranged between 63.75% and 92.5%. Item (7), “**Lack of adequate financial resources,**” is marked as the highest “Yes” responses recorded with percentage (36.25%), followed by item (2), “**Difficulty communicating with others**” (30%). As shown in Fig. 4, most responses tend toward “No,” indicating limited perceived problems.

According to one-way ANOVA, statistically significant differences were discovered across academic stages for item (6), “**Inability to cope with academic difficulties**” ($F(3, 76) = 3.89, p < 0.05$), with fourth-stage students achieving the highest percentage (45%) compared to first-stage students achieving (15%). This is attributed to the growing academic pressures which students have to deal with as they advance in their studies. Pearson’s correlation indicated a moderate positive relation ($r = 0.38, p < 0.01$) between duration of practicing smoking (years) and recognized seriousness of problems, which refers to the fact that students with longer smoking engagement are more aware of related issues.

As a result, most e-cigarette use issues are not instantly apparent to the majority of students, as they do not experience significant or sensible issues directly related to smoking attitude. This goes in line with recent studies that affirms the disregarding attitude of university students towards the negative influence

of e-cigarette use due to the latter being not instant or do not produce obvious health symptoms (World Health Organization (WHO), 2023; National Institute on Drug Abuse (NIDA), 2021).

The high percentage of “No” responses can be illustrated by the university students persistence on not recognizing health or social smoking issues till they have clear symptoms or they sense an extreme usage rates. This corresponds with a research indicating that the university phase is known for being experimental and having irregular consumption behavior (Barrington-Trimis & Leventhal, 2018).

However, item (7), “**Lack of adequate financial resources,**” achieved the highest “Yes” response (36.25%), revealing that economic problems are the most important problems that smoking students face. This emphasizes how limited income and smoking behavior are connected as shown in Table 2 and corresponds with Tobacco Induced Diseases (2025), which suggested that financial issues caused by smoking concern students greatly, especially in developing countries.

As for item (3), “**Eating disorders,**” it attained the lowest “Yes” response (7.5%), indicating the low perception level of this problem due to it being uncommon, indirect, or for needing prolonged revelation. This corresponds with Nature (2025), which referred to the relation between e-cigarette use and eating disorders among university students as being insignificant.

Table 6. Students' level of awareness of the harms of E-cigarette use.

Item	Yes (Frequency)	Percentage	No (Frequency)	Percentage
1-Harms the lungs	40	50%	40	50%
2-May be linked to cancer	80	100%	0	0%
3-May be linked to addiction	80	100%	0	0%
4-May be linked to bad breath	18	22.5%	62	77.5%
5-May be linked to personal financial loss	20	25%	60	75%
6-May be linked to problems and conflicts with others	21	26.25%	59	73.75%
7-May be linked to high blood pressure and rapid heartbeat	18	22.5%	62	77.5%
8-Negatively appears to be related to my mood	42	52.5%	38	47.5%
9-Makes me feel ashamed of myself	10	12.5%	70	87.5%
10-May be linked to reduced concentration in lectures	0	0%	80	100%
11-Makes me feel depressed and sad	0	0%	80	100%
12-May be linked to feelings of regret	0	0%	80	100%
13-May be linked to a decrease in my cumulative GPA	0	0%	80	100%
14-May be associated with conflicts with professors	0	0%	80	100%
15-Makes me feel tired, leading to absenteeism from lectures	0	0%	80	100%

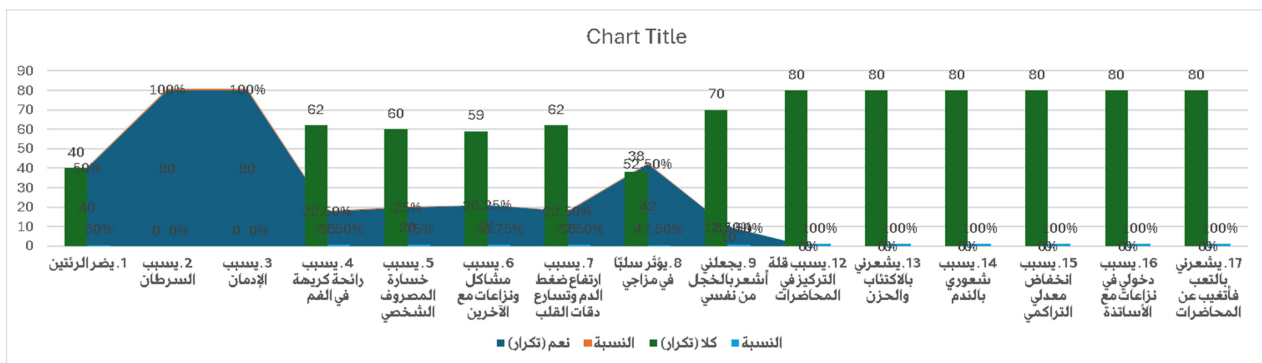


Fig. 5. Students' level of awareness of the harms of E-cigarette use.

Additionally, psychosocial issues (isolation, trouble communicating, fear of the future) showed average percentages (22.5%–30%), suggesting the negative influence of smoking on students' mental health. NIH (2025) affirms this suggestion referring to how e-cigarette use is responsible for raising the levels of anxiety and depression, as well as reducing concentration which hinder academic performance. Recent evidence confirms a strong association between vaping and mental health distress, including anxiety and depression, among health sciences students (Aburumman et al., 2025). Moreover, the direct link between e-cigarette use and the emergence of respiratory symptoms is often underestimated by university students (Alsaedi & Alharthi, 2025). This result does not support Hypothesis (H4).

3.5. Fifth: Results of students' awareness of the harms of smoking (Table 6)

The results highlight the significant variation in students' awareness concerning the harms of e-cigarette use. Items (2) and (3) achieved the highest levels of awareness (100%). Nevertheless, items

(12–17) recorded the lowest levels (0%). According to one-way ANOVA, there were no statistically considerable differences to be found between the academic years in awareness levels ($(F(3, 76) = 1.24, p > 0.05)$), which supports the homogeneity of existing awareness or its absence across all years of study.

Pearson correlation analysis uncovered a slight negative, unnoticeable relation ($r = -0.15, p > 0.05$) between duration of smoking and awareness level, referring to the fact that smoking experience does not necessarily lead to raising the awareness of its risks. The results display the inconsistency of the overall awareness which students maintain about the harms of e-cigarette use. Despite the full awareness level at 100% which some items show, others reveal an absolute lack of awareness (0%).

It is to be noted that high awareness for items (2,3) concerning cancer and addiction (100%) corresponds with global reports (World Health Organization (WHO), 2023; National Institute on Drug Abuse (NIDA), 2021), which asserts the fact that university students generally maintain basic awareness of the risks of e-cigarette use, specifically concerning the instant and highly known health effects. On the other

hand, the low awareness in detailed harms (items 4–11, ranging from 12.5%–26.25%) proposes another fact about the students who, even though possess an overall knowledge of harm, do not completely comprehend the precise influences, such as long-term consequences, cardiovascular and immune system impacts, psychological dependence, in addition to influences on physical fitness. This finding goes in line with a study by MDPI (2022), which stated that less than half of university students were able to recognize the toxic components in e-cigarettes, such as formaldehyde (34.4%) and heavy metals (43.2%).

What is notably concerning is the absolute lack of awareness in items (12–17) at 0% related to the impact of smoking on concentration, depression, regret, cumulative GPA, and damaged relations with professors. This refers to the complete lack of understanding of the harms which e-cigarette use may cause academically and psychologically. This may be attributed to:

- incompetent formal awareness programs that concentrate only on general harms.
- Students depending on the invalid information obtained from unreliable sources, such as Google and peers (39.3% and 27.9% respectively), rather than trusted medical sources (17.5%).
- The widespread misconception about e-cigarette use being “less harmful” or a “safe alternative.”

The NIH (2025) study emphasizes the serious public health challenge caused by this gap in knowledge, as students may proceed in their smoking believing the misconception that it does not influence their academic performance or long-term psychological health. This result does not support Hypothesis (H4).

4. Conclusions

1. Social factors represented by (peer pressure, university environment) are the main stimulators for using e-cigarette use among students, with peer effect reaching 77.5%, and the effect being highest in both first and second academic years ($\chi^2 = 8.47, p < 0.05$).
2. Smoking behavior is associated with economic factors, particularly low income and limited spending (86.25% of the sample belong to the low-income group), with a moderate positive correlation ($r = 0.42, p < 0.01$) between low income and low spending, reflecting an experimental and irregular usage pattern.
3. There is general awareness of the health risks of e-cigarette use (100% for some general risks), but a significant lack of understanding regarding long-term effects and scientific details (complete lack of awareness in six key items).

4. Family influence in limiting smoking is less effective (8.75%) compared to peer and university environment influence (77.5%), confirming that non-family social relationships are the most influential factor.
5. Physical and athletic activity may have a protective role in reducing the tendency toward e-cigarette use, as students who engage in physical activity are less likely to smoke.
6. Financial problems (36.25%) are the most recognized by smoking students, while long-term health problems are not sufficiently perceived.
7. Awareness level (or its absence) is homogeneous across all academic years ($(F(3, 76) = 1.24, p > 0.05)$), indicating that academic progression does not necessarily improve detailed knowledge of e-cigarette use risks.

5. Recommendations

8. **Graduated scientific awareness programs:** The effectiveness of structured health promotion programs in reducing antisocial and risky behaviors while improving healthy lifestyle perceptions has been empirically demonstrated (Raad Salman Mohammed, 2022). Launch university-based programs focusing on the detailed harms of e-cigarette use, particularly effects on the respiratory and cardiovascular systems, physical fitness, and academic performance, addressing the knowledge gaps revealed by this study.
9. **Activate educational and psychological guidance:** Enhance guidance services through periodic meetings with students, providing strategies to cope with academic and life pressures without resorting to smoking, with a focus on first- and fourth-year students who are more susceptible to stress.
10. **Multi-source media campaigns:** Arrange competent campaigns through social media; as well as, make educational posters, and scientific seminars to clear the misunderstanding about e-cigarette use as “less harmful,” and to support the positive student influencers.
11. **University environment monitoring:** Impose further supervision over campus cafes and the surrounding areas to obstruct selling electronic cigarettes to students and track where “stealth vaping” is found on campus.
12. **Sports and recreational centers:** Engage students in sports activities by establishing free sports centers within the university; thus promoting physical participation as a healthy alternative, and providing interesting programs for youth.

- 13. Smoking cessation services:** Offer free tobacco cessation services within university health units, in addition to counseling, follow-up, behavioral therapy, and the use of smart apps and remote enforcement programs.
- 14. Parental awareness:** Provide the required education for parents concerning the risks of e-cigarette use and encourage them to observe their children, especially in the early academic years.
- 15. Integration of awareness into curricula:** Include the topics that instill awareness of e-cigarette use risks within academic courses, specifically in public health and health education subjects.
- 16. Future research:** Conduct prolonged studies to monitor the development of e-cigarette use behavior across academic years, in addition to intervention studies to assess the efficiency of different awareness programs.

Conflict of interest

None.

I confirm that all tables and figures in this article were prepared and written by me personally.

Ethical clearance

This manuscript was approved by Assistant Teacher. Assistant Teacher Ali Abdullah Hammadi Al-Qara Ghulli and , Assistant Teacher Zaid Ali Hadi Kadhim on (10/4/2025) .

Author contributions

All contributions to this study were prepared by the researcher, Assistant Teacher Ali Abdullah Hammadi Al-Qara Ghulli and , Assistant Teacher Zaid Ali Hadi Kadhim , who developed the main idea and worked on writing and concluding the research, with the help of a number of experts, including Teacher Hasnain Mohammed abd , Head of the Translation Department at the Cambridge Institute for Language Training and Development in Babylon Governorate .

Facilitate the task

Students from the College of Physical Education and Sports Sciences at the Al-Mustaqbal University, representing four academic stages (first, second, third, and fourth year).

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Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Appendix (1): Research questionnaire

Part One: Demographic and Economic Variables

- Academic Year: First Second Third Fourth
- Gender: Male Female
- Age: years
- Father's Educational Level: Can read and write Intermediate Bachelor Postgraduate
- Mother's Educational Level: Can read and write Intermediate Bachelor Postgraduate
- Number of family members:
- Your rank among siblings:
- Monthly family income: Less than 350,000 IQD 350,000–600,000 IQD More than 600,000 IQD
- Housing: Owned Rented
- Employment status of the head of the family: Employed Unemployed
- Daily expenditure on smoking: Less than 1,000 IQD 1,000–5,000 IQD More than 5,000 IQD

Part Two: Reasons for Smoking

(Please select the statement that applies to you)

- To relieve stress and psychological pressure
- Imitating friends
- Curiosity and love of experimentation
- Feeling bored and having free time
- Reducing academic stress
- Supportive social environment
- Other reasons:

Part Three: Smoking Among Close People

(Answer Yes or No)

- Do your friends smoke?
- Are your smoking friends male?
- Are your smoking friends female?
- Do your parents or either of them smoke e-cigarettes?
- Do you smoke only inside the university?
- Do you share e-cigarettes with your colleagues?
- Do you smoke with a family member?
- Do you share smoking with any college professor?

Part Four: Problems Faced by Smokers

(Answer Yes or No)

- Feeling lonely
- Difficulty communicating with others
- Eating disorders
- Sleep disturbances
- Fear of the future
- Inability to cope with academic challenges
- Lack of sufficient financial resources

Part Five: Students' Awareness of the Harms of E-Cigarettes

(Answer Yes or No)

- Harmful to the lungs
- May be linked to cancer
- May be linked to addiction
- May be linked to bad breath
- May be linked to loss of personal money
- May be linked to problems or conflicts with others

- May be linked to high blood pressure and rapid heartbeat
- Negatively appears to be related to my mood
- Makes me feel ashamed of myself
- May be linked to lack of concentration in lectures
- Makes me feel depressed or sad after smoking
- May be linked to regret after spending money
- May be linked to a decrease in my GPA
- May be associated with conflicts with professors
- Makes me feel tired and absent from lectures

اتجاهات طلبة كلية التربية البدنية وعلوم الرياضة نحو استخدام السجائر الإلكترونية وعلاقتها ببعض المتغيرات الديموغرافية

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الملخص

هدف البحث إلى تحليل اتجاهات طلبة كلية التربية البدنية وعلوم الرياضة في جامعة المستقبل نحو التدخين الإلكتروني، واستكشاف علاقته ببعض المتغيرات الديموغرافية والاقتصادية والاجتماعية، فضلاً عن قياس مستوى الوعي الصحي المرتبط بمخاطره. اعتمد الباحثون المنهج الوصفي بأسلوب المسح، وشملت العينة (80) طالباً من المراحل الدراسية الأربع للعام الدراسي (2024-2025). جُمعت البيانات من خلال استبانة أعدت وفق الأسس العلمية، وتم التحقق من صدقها بعرضها على خمسة خبراء مختصين، كما حُسب معامل الثبات باستخدام كرونباخ ألفا (0.86). استُخدمت حزمة من الأدوات الإحصائية تمثلت في النسبة المئوية، التكرارات، المتوسط الحسابي، الانحراف المعياري، معامل ارتباط بيرسون، واختبار كاي-تربيع (χ^2)، وتحليل التباين الأحادي (ANOVA). أظهرت النتائج: 1. أن العوامل الاجتماعية، ولا سيما ضغط الأقران والاندماج في البيئة الجامعية، تمثل المحرك الرئيس لممارسة التدخين الإلكتروني (بنسبة 85%) مع وجود فروق دالة إحصائية بين المراحل الدراسية. 2. ($\chi^2 = 8.47, p < 0.05$) وجود ارتباط موجب متوسط بين مستوى الدخل المنخفض ومعدل الإنفاق المحدود ($r = 0.42, p < 0.01$)، مما يعكس نمط استخدام تجريبي أكثر منه اعتيادي. 3. وعي عام بأضرار التدخين الإلكتروني (100% في بعض الفئات) يقابله ضعف شديد في إدراك مخاطره الصحية بعيدة المدى (انعدام الوعي في 6 فئات). 4. تأثير الأسرة أقل فاعلية (8.75%) مقارنة بتأثير الأصدقاء والبيئة الجامعية (77.5%). 5. يمكن للنشاط البدني أن يؤدي دوراً وقائياً في الحد من الميل نحو التدخين الإلكتروني. وتوصي الدراسة بتفعيل برامج توعوية ممنهجة وتعزيز الإرشاد النفسي والأنشطة الرياضية داخل البيئة الجامعية.

الكلمات المفتاحية: التدخين الإلكتروني، اتجاهات الطلبة، الوعي الصحي، السلوك الصحي.