



## Uncovering the Smoking Habits of Undergraduate University Students: A Comprehensive Assessment of different varieties Tobacco Use

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### ABSTRACT

Tobacco use is a prevalent and serious global health issue, causing significant morbidity and mortality. Every year, over 5 million people worldwide die due to tobacco use. This research aims to comprehensively assess tobacco use, including the types of smoking, such as hookah and other varieties, among undergraduate students. A cross-sectional study was conducted using a questionnaire survey to investigate students' attitudes towards different types of smoking. The questionnaire included demographic information in the first section, while the second section consisted of questions related to students' smoking behaviors. The data revealed that 59.33% of students smoked tobacco daily and started smoking at a young age. The most common tobacco products consumed were manufactured cigarettes (64.66%) and hookah (50%), while vaping or electronic cigarette use was 26%. A total of 70% of students noticed health warnings on cigarette packages, with 50.66% of them attempting to quit smoking, while 64% never considered quitting. Males were found to smoke more than females, with a ratio of 6:1 (85.3% and 14.7%, respectively), possibly influenced by various social, cultural, environmental, and developmental factors. The results also indicated that the majority of students who smoked lived in urban areas with their families, suggesting a significant association between family smoking and students' smoking behavior. Despite health warnings on cigarette packages, students did not seriously consider quitting smoking, indicating an increasing trend of smoking varieties and a significant public health concern, particularly among university students. More effective policies are needed to control smoking and raise awareness about its detrimental health effects among the public.

**Keywords:** *Tobacco, Hookah, Vape, E-cigarette, Waterpipe, Students*

### INTRODUCTION

Millions of people die worldwide as a result of smoking tobacco (1). Tobacco use kills approximately 8 million people yearly around the globe (2). It leads to morbidity and death from variety of diseases such as cancer, coronary cardiovascular disease, respiratory diseases, atherosclerotic diseases, oral and kidney diseases

(3; 4, 5, and 6). Smoking account for up to 10% of all deaths worldwide and one in every two smokers will die from a smoking-related ailment. It is also linked to a decline in general health. Smokers have a ten-year lower life expectancy than non-smokers (7). Smoking is one of the causes of many chronic diseases and also premature death.

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It can increase stroke by two to four times, which results in brain damage and leading to death (8). More than 70% rates of death associated with coronary heart disease, and an exalt risk of sudden mortality due to smoking (9). Smoking causes also oral complication, such as teeth discolorations, losing taste and smell abilities, dental implant failure, disease of periodontics, and oral cancer (10). The poison in tobacco is carbon monoxide, which substitutes oxygen in the blood cells and deprives organs from oxygen, preventing them from functioning normally. Tar is a dark, sticky material that coats the lungs and interferes with breathing. On the other hand, water-pipe (Shisha) smoking, is a tobacco with fruit flavor that is smoked through a water-pipe. It contains nicotine and other toxic substances, just like cigarettes (11). They are even more potent than other smoking types, it comprises 30% tobacco and 70% molasses/honey or fruit pulp and includes carbon monoxide in it smoke due to the usage of charcoal (10). Shisha smoke comprises a variety of harmful carcinogenic chemical compounds, and substantially more heavy metals than cigarette smoke, including arsenic, nickel, cobalt, chromium, lead, and cadmium (12). Longer shisha sessions result in higher nicotine exposure than cigarette smoking, as well as a higher CO content in shisha smoke than cigarette smoke (13). Apart from that, e-cigarette, or vaping product use are increasing among people (14, 15). It has been associated with inflammation, lung injury, neurotoxicity and caused several deaths in young population (16). They also have negative consequences for users and social anxiety (17). College students frequently coincide with the transition from youth to adulthood (18, 19). During this time, they often face life and developmental changes that make them accept many risky conducts and susceptible to drug use (20, 21). All forms of tobacco are harmful, and there is no safe level of exposure including secondhand smoking, vaping, heated tobacco, and water pipe (22). Despite the magnitude of the burgeoning problem and its potential health consequences for smokers, health officials and experts have not given it the attention it requires. As a result, the current study was designed to fill this gap, assess smoking frequency among university students, and

analyze related attitudes and variables. Therefore, this study will shed light about the use of smoking varieties including its progression, prevalence among undergraduate students and its interaction with their lifestyle as well as its impact on their academic performance.

## 2. MATERIALS AND METHODS

### 2.1 Study Design and Planning

This study was carried out in Erbil the capital city of Kurdistan region of northern Iraq. This research was designed to identify types of tobacco smoking consumption and frequency among undergraduate students and to evaluate the student behavior towards smoking varieties. This research was adhered to the Declaration of Helsinki's ethical guidelines. The study was approved by the Board of Scientific Committee and Research (BSCR), Biology department at the University of TIU, with approval letter number 401E08122021. A cross-sectional study was carried out using a questionnaire to collect the data from undergraduate students at Tishk International University, Erbil City, Kurdistan Region, Iraq. Students from different faculties participated in the study. The first part of the questionnaire covers the demographic information which consist of the age of the participant, sex, relationship status, academic year, GPA, and their residency. The second part of the questionnaire included questions that is related to our objectives. Few questions given to the participants which consist of a list of questions aimed for extracting specific data and evaluate the number of smokers in the university such as how often do they smoke, have they smoked in the past, have they tried to stop smoking or visited doctors or other health care advisors, and asking them if noticed information about dangers of smoking and how much money do they pay for purchase.

### 2.2 Sample of the Study

To achieve the aim of our study, the minimum sample size required was calculated using online sample size calculator. The Raosoft Sample size online calculator was used to calculate the sample size with a confidence level of 90 and 5 margin

of error, thus, the required sample size range would be approximately 150 students. The questionnaires were distributed among approximately 150 undergraduate students in all departments including faculty of pharmacy, faculty of dentistry, faculty of engineering, faculty of FASE, law faculty, faculty of science, and faculty of education.

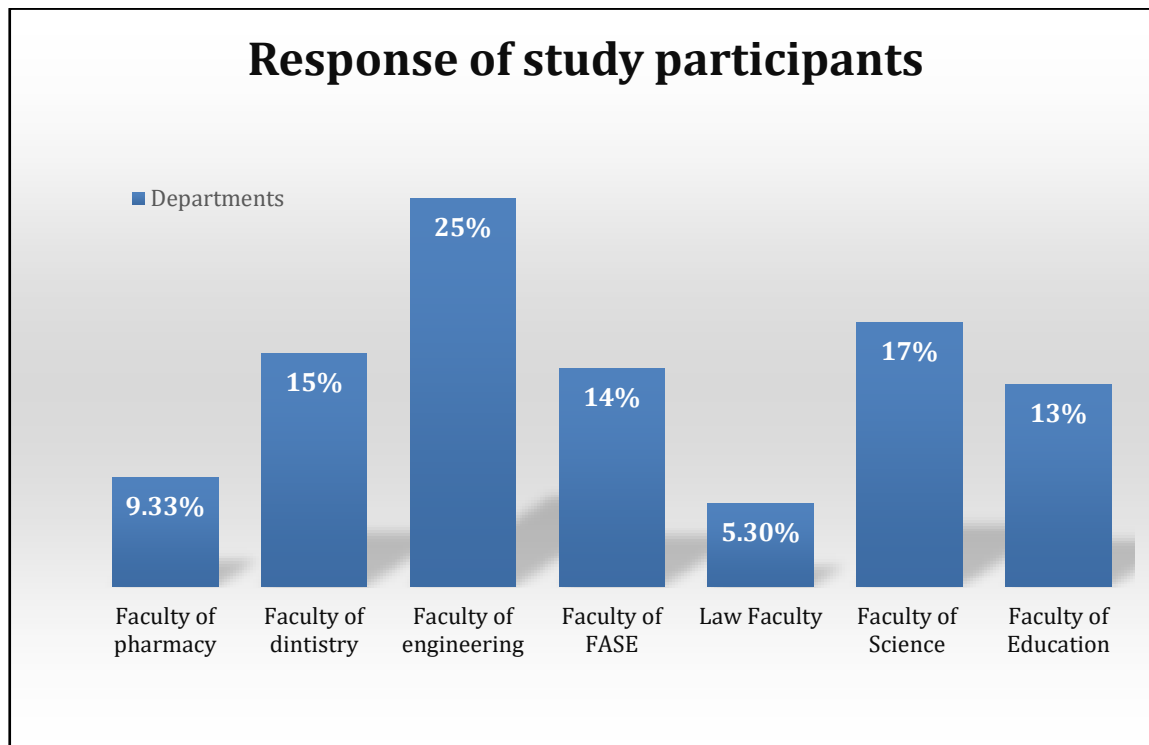
### 2.3 Data Collection and Analysis

Random students at each department were giving a questionnaire along with a consent form and were requested their honest answers while filling up the handed-out forms. A brief overview of the study along with a consent was given to the participants. Translation was offered into their preferred languages in addition to the explanation of any difficult term. Accordingly explaining the pursue and the advantages of this survey also was covered up. The filled-up questionnaires along with the signed consent forms were collected immediately. Statistical analysis Package for the Social Sciences (SPSS) version 23 was used for the data analysis.

## 3. RESULTS AND DISCUSSION

### 3.1 Demographic Information of the Participants

The demographic information of the participants presented in Table 1. The majority of the participants were males (85.3%) where most of them (94%) were single. The majority (80%) were living in urban area, while 20% were living in rural area. Student living with their family were (85.33%), while 14.66% of the student lived in dormitory. The minimum age of the participant was 18 and the maximum was 26. Majority of the students (77.33%), with GPA above 2, while 16.6% with 3 and only 6% of students were above 3. The participated students were mostly from 3rd grade (34%) and (31.33%) from 4th grade students. The data were collected from variety of departments including Faculty of pharmacy (9.33%), faculty of dentistry (15%), faculty of engineering (25%), faculty of administrative sciences and economics (14%) and (5.3%) from law department. Faculty of science (17.3%). Faculty of education (13%). Figure 1 shows the number of participants in each faculty of TIU.



**FIGURE 1:** shows the number of participants in each faculty of TIU.

**TABLE 1:** shows the sociodemographic characteristics among students.

Demographic characteristics	Total Frequency	Percentage (%)
Sex		
Male	128	85.33%
Female	22	14.66%
Marital status		
Married	9	6%
Single	141	94%
Residency		
Urban	120	80%
Rural	30	20%
Grade level		
Freshman	13	8.66%
Sophomore	39	26%
Junior	51	34%
senior	47	31.333%
Accommodation		
Family	128	85.33%
Dormitory	22	14.66%
GPA		
Above 2	116	77.33%
3	25	16.6%
Above 3	9	6%

### 3.2 The Use of Hookah and Other Smoking Varieties Behavioral Patterns

The use of tobacco and smoking varieties among undergraduate students reported in Table.2. Among the users (N=150) a total of 89 (59.3%) students were currently smoke tobacco daily and (61.3%) used to smoke daily in the past. The data showed that among consuming tobacco products, manufactured cigarette users were (64.66%) and hand-rolled cigarette were (16.66%), water-

pipe/shisha users were (50%) and other types mostly included vape or electronic cigarette were (26%). In addition, who used smokeless tobacco in the past were (47.33%). Approximately (51.33%) were smoking daily indoor inside their houses. Among those participants, more than half (52%) were working and (36%) were working indoors. During the past 30 days, about (34.66) smoked in indoor area where they work.

**TABLE 2:** Distribution of smoking varieties use behavioral patterns among undergraduate students.

Characteristics	Numbers	Percentage (%)
Do you currently smoke tobacco?		
Daily	89	59.33%
Less than daily	41	27.33%
Not at all	20	13.33%
Have you smoked tobacco in the past?		
No	58	38.66%
Yes	92	61.33%
How many of the following products do you currently smoke?		
Manufactured cigarette	97	64.66%
Hand-rolled cigarette	25	16.66%

Water-pipe/shisha	75	50%
others	39	26%
Have you used smokeless tobacco in the past?		
Yes	51	34%
No	71	47%
Don't know	28	18.66%
How often does anyone smoke inside your home?		
Daily	77	51.3%
Weakly	13	8.66%
Less than daily	6	6%
Never	16	10.66%
Don't know	39	26%
Do you currently work indoors or outdoors?		
Indoors	54	36%
Outdoors	25	16.66%
Both	39	26%
During the past 30 days, did anyone smoke indoor area where you work?		
Yes		
No	52	34.66%
Don't know	40	26.66%
	21	14%

### 3.3 Smoking Danger Awareness and Promotions Advertisements effect

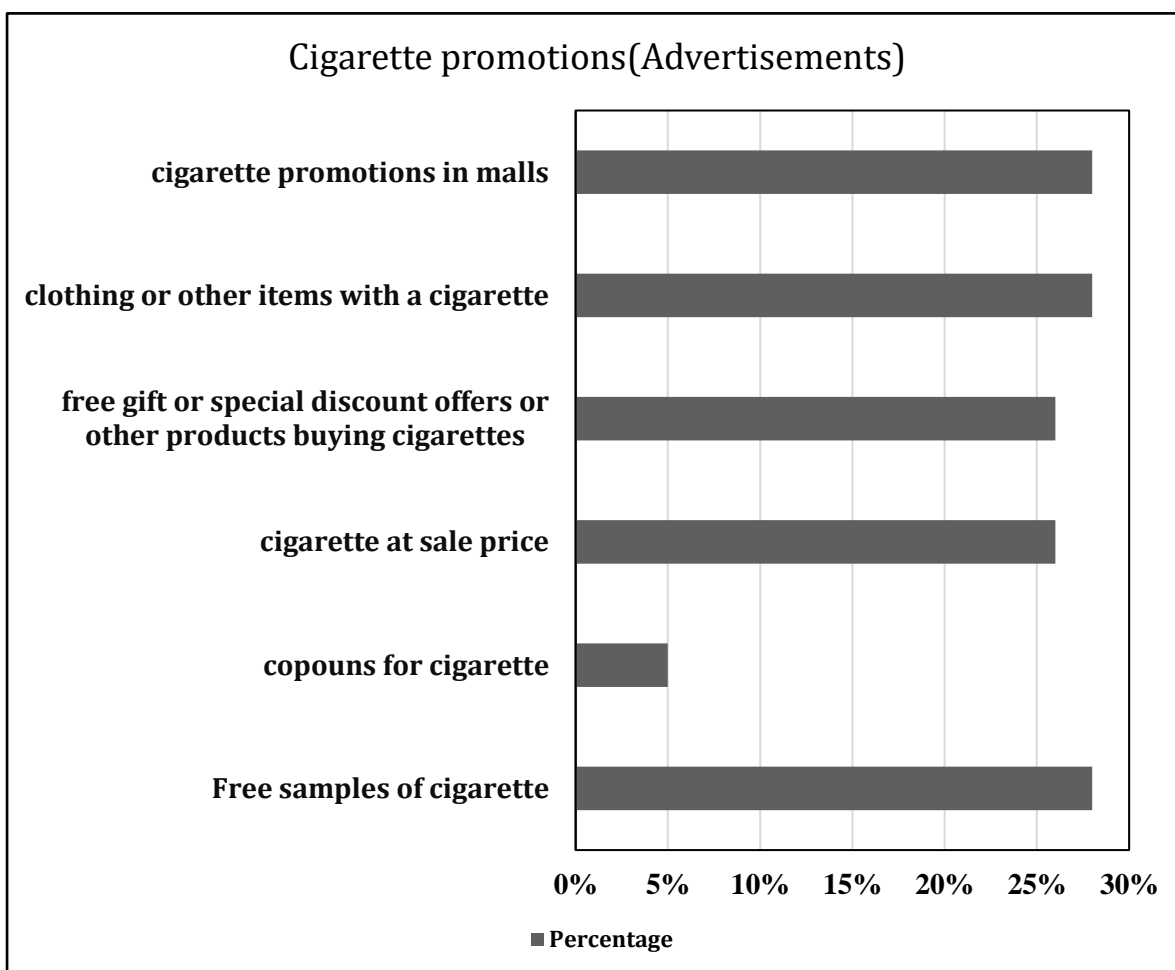
About (50.66%) of students tried to stop smoking, the results of the study reported in Table.3. Most of them (76.66%) didn't visit a doctor or health care provider in the past 12 months. The majority (70%) of participants noticed information about dangers of smoking cigarette that encourages in quitting in newspapers, television, and social media. More than half of the smokers (64%) noticed health

warning on cigarette packages yet that didn't lead them to think about quitting. More than half (65.33%) of the participants didn't notice any advertisement and signs promoting cigarette in stores where cigarette is sold. Most of the participant (66.66%) bought packed cigarette for themselves last time and the last purchase average of the participants were 34.926 IQD. However, the promotions about the types of cigarettes that students noticed are shown in Figure 2.

**TABLE 4:** Awareness of the danger of smoking and promotions through advertisements among undergraduate students

Characteristics	Number	Percentage (%)
Have you ever tried to stop smoking?		
Yes	76	50.66%
No	74	49.33%
Have you ever visited a doctor or health care provider in past 12 months where you advised to quit smoking tobacco?		
Yes	35	23.33%
No	115	76.66%
Have you noticed information about dangers of smoking cigarette that encourages in quitting in newspapers/television /social media?		
Yes		
No	105	70%
	45	30%
Did you notice any health warning on cigarette packages?		

Yes	96	64%
No	45	30%
Don't know	9	6%
Have warning labels on cigarette packages lead you to think about quitting?		
Yes	67	44.66%
No	83	55.33%
Have you noticed any advertisement or signs promoting cigarette on stores where cigarette sold?		
Yes	52	34.6%
No	98	65.33%



**FIGURE 2:** Indicates the types of cigarette promotions through advertisements that influences undergraduate students to smoke

#### 4. DISCUSSION

Smoking cigarette and its varieties is the primary source of mortality and morbidity every year across the world (23). The worldwide spread of smoking in all its varieties becomes a public health concern (1). It is essential that people should quit smoking to aid the community in reducing the global illness load (10). Therefore,

this research was done to investigate smoking varieties, types, incidence, and patterns among both female and male students among undergraduate students. Questionnaire were distributed to identify the types of tobacco smoking use among undergraduate students. The study shows that (59.3%) of students smoking tobacco daily and among the consuming tobacco



products manufactured cigarettes (64.6%) and shisha (50%) were the most common types. This number is quite high, and it rings an alarm about this harmful habit that affecting those young generation due to the harmful effect of smoking. This quite number of smoking is due to many influences, such as friends, family background, social media, movies, and other cigarette advertisements. On the contrary of our result, in another study from Othman, et al, (24) where they found that the undergraduate students smoke cigarette more than Shisha with only 10 % and 28% respectively. In addition, undergraduate student often gathered in cafeterias, restaurants, and other public places to enjoy the smoking of shisha among friends in social situations (25, 26, 27). According to Bonne, tobacco use is the result of a complex and dynamic interplay of multiple converging developmental, social, and environmental factors (21). Moreover, the result of this study showed an overlap between the two types of smoking, as some of the students tend to smoke both cigarette and shisha. Whereas some of the students preferred just cigarette and some student preferred shisha over other types of smoking. This is because the participants believed that shisha (water-pipe) is less harmful than cigarette, according to their opinion, the water in water-pipe (shisha) filters most of the toxins out, and it contains less or no tar, in addition, they also think there is no nicotine in water-pipe/shisha, which in unfortunately untrue. Similar result were reported from a study by (28). Moreover, the wide range of alluring flavors e-cigarette attracted in new smokers, with a rate of 26 % of the students. This draws some concerns towards those young users due to the harmful short-term implication and the unknowable long-term implications of vape or e-cigarette on human health. This result of our study was higher than result from other countries, as it was found that e-cigarette use ranged from Romania 11%, 1% in India, 14% in Russia (29). Our result also showed that most of the students who smoke were at age 22 years. This came in agreement with a regional cross-sectional study that evaluated the tobacco use in multiple countries, their result showed e-cigarette use was observed in certain countries among young adults aged 15–24 years (29). In addition, they found that the

prevalence of e-cigarette use is higher among wealthy educated people. Moreover, most of the students who smoke were from third grade (34%) and (31.33%) from fourth grades. This might be referred to the influencing by their colleagues hence the data showed that (38.66%) of them didn't smoke in the past but started smoking currently during college time. The result of our study were similar in terms of this students behavior to a study from (30).

The result of this study showed that male students have higher smoking rate (85.33%) than females (14.66%). The results revealed that males more tend to consume cigarette and its varieties with higher rates than females in the university, this might be associated with the cultural and behavioral reasons. In many parts of Asia and Eastern Europe, gendered differences in smoking behavior existed. It was found that the rates were as low as 5% for women in most Asian and African countries and as high as 40% for males. This shows that our rate of smoking is much higher than the rate in other countries. This rings alarm, of the dangerous impact on human health whether on smokers or the secondhand smokers, thus a solution needs to be done such as more policies and more rules to control tobacco sell and to reduce smoking due to its bad effect. In many parts of Asia and Eastern Europe, it has been shown that males smoke more than women. Smoking quantity may differ by sex due to significant physiological differences between men and women (31). The result of this study showed that students residing in the urban area and staying with family are more likely tend to smoke. This is because of the significant association between smoking habit of family or the significant influence of smoking by family members according to our collected data. This has been proved by our result, as it has been found that most of them were living with their family (51.3 %) and were smoking daily inside the house. This is built in their personality during their early years of childhood, as children often see their parent, uncles, neighbors smoking, where children like to take parents and friends as an idol for them and copying their behavior and become influenced by them. A similar result to our study was obtained previously from a recent

study (32). On the other hand, only (14.66%) of the participants who stayed in dormitory used to smoke because the dormitories students are not allowed to smoke due to certain rules. On the other hand, our result showed that only (64%) of the students noticed health warning on cigarette packages, however it didn't lead them to think about quitting smoking. This is due to the significant role of advertisement impact on this young generation. Likewise, limiting the marketing and advertising of tobacco products can aid significantly in reducing the attractiveness of smoking, particularly among young people. It has been reported that people tend to smoke more cigarettes when using larger packs (33). In fact, manufactured cigarette and shisha are cheaper compared to the other types in the region, which leads to the rapid spreading of water-pipe/shisha smoking since the last 20 years. These two types are the most common types of smoking with a huge harmful effect on human health. This is due to many reasons including social acceptance, lax regulations, accessibility, aromatic flavors, curiosity, peer pressure, trendy, the perception of high socioeconomic position, and entertainment (34). All forms of tobacco are harmful, and there is no safe level of exposure including secondhand smoking, vaping, heated tobacco, and water pipe (35). In fact, a significant positive correlation was identified between smoking and respiratory diseases (36). Therefore, several countries have banned the use of e-cigarettes, including Brazil, Uruguay and India have (16). Therefore, tobacco varieties smoking need to be regulated by several ways to control the spread of smoking, such as higher taxes, restrictions of smoking in public areas, and most importantly increasing awareness of the harmful effect of smoking among university students through seminars and awareness programs. In addition, public education campaigns can aid in increasing knowledge of the dangers of smoking on human health, as these campaigns can target, teenagers, new mother, pregnant women, and the young generation specifically. In addition, disallowing smoking in public places such as, coffee shops, restaurants, and parks will also aid in decreasing the secondhand smoke exposure and deter smoking. Lastly, provide programs for smoking

cessation to help people stop smoking, these programs can offer counseling, and medication.

## 5. CONCLUSION OF THE FINDINGS

The use of tobacco spreading quickly leading to a growing concern worldwide. Smoking and its various forms have immediate health consequences that can be fatal, leading to addiction and the development of chronic diseases. This poses a serious threat to public health, particularly among university students, who make up a significant portion of the younger generation and are the core of any society. The increased number of student smokers, including medical students, is often due to insufficient knowledge and awareness of the harmful effects of tobacco or ignorance about its dangers. It is essential to take immediate action to raise awareness of the dangers of smoking among students. Furthermore, smoking not only poses a threat to human health but also to the environment, including plants, water, and soil, through its smoke and waste. Therefore, it is crucial to implement anti-smoking policies in universities and develop programs to help reduce smoking behavior and produce better results. Additional research is necessary to understand the impact of universities' anti-smoking policies on student smoking behavior and the effectiveness of programs aimed at reducing smoking behavior. By taking action to increase awareness and understanding of the dangers of smoking, we can help create a healthier and safer environment for all.

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