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ORIGINAL RESEARCH

Barriers to quitting smoking among nursing students in Iraq

Mohanned Khaleel Abdullah, Nasir Muwfaq Younis

Author information
College of Nursing, University of Mosul, Iraq

nasir.mufaq@uomosul.edu.iq

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Abstract
Tobacco use remains a significant contributor to health problems among nursing students in Iraq. If unresolved, it can lead to a substantial impact on mortality and morbidity. Therefore, smoking cessation is crucial to prevent further complications as mentioned in many publications. It is essential to conduct an observation on the prevalence of smoking among nursing students and the barriers to quitting. Although there is extensive research on this topic, it remains limited among population in Iraq. The purpose of the study is to assess barriers to quitting smoking among nursing students in Iraq. The study used a descriptive observational design and conducted at the College of Nursing, University of Mosul, Iraq. A total of 190 nursing students participated from three respective universities. Data collection was conducted using a comprehensive questionnaire administered to eligible nursing students within 7 January until 7 March 2024. The questionnaire comprised sections on demographic characteristics, smoking history, and barriers to smoking cessation. Prior to the main study, a pilot study was conducted with a separate group of participants who were not included in the original sample. To ensure content validity, the questionnaire was reviewed and validated by twelve experts from various medical and nursing fields. The data was analyzed using SPSS version 27 and presented in descriptive analyses across variables. The findings revealed that craving and friends' smoking were the primary barriers to smoking cessation. These results suggest that community nurses should collaborate with university authorities to develop comprehensive interventions. Furthermore, policymakers and university administrators may consider developing policies that include rewards for quitting and consequences for smoking among nursing students. Although this study was conducted in Iraq, the findings can serve as evidence that smoking cessation remains a global problem even in countries with a Muslim majority where smoking is believed to be prohibited.

Keywords: Barriers, community nursing, nursing students, smoking cessation, tobacco control measure

Introduction

Chronic tobacco use is characterized by learned behaviors and a physical dependence on nicotine (Garg, 2024). In the United States (US), tobacco use remains a serious health risk **(Figure 1)**. Of the 47 million adults who use tobacco products, nearly 80% use combustible products like cigarettes, which are the main cause of most tobacco-related illnesses and deaths (Davis et al., 2023). Globally, tobacco use causes approximately 6 million deaths each year (West, 2017). In the US, smoking is responsible for nearly 500,000 deaths each year, with secondhand smoke accounting for 10% of that total (Yousuf et al., 2020). Smoking continues to be a leading cause of health issues in economically developed countries, with a significant impact on morbidity and mortality (Chen et al., 2023). Given the ongoing deaths and high costs associated with global tobacco addiction, tobacco control and cessation remain top public health priorities (Pipe et al., 2022). Epidemiological research has validated the link between cigarette smoking and an increased risk of myocardial infarction and fatal coronary artery diseases (Albinali et al., 2023). The combination of behavioral counseling and medications like nicotine replacement therapy (NRT), varenicline, or bupropion yields greater effectiveness than either approach used separately (Rigotti et al., 2022). Quitting smoking is the most effective and economical clinical intervention for the primary and secondary prevention of illness, disability, and death (VanFrank et al., 2024). Although approximately 70% of cigarette smokers want to quit, achieving long-term abstinence often requires multiple attempts with an average of six tries (Cinciripini et al., 2023).

A 2022 study in Iraq that included nursing students found that 8.3% (50 out of 600) were smokers, with a notable difference between genders: 19.6% of men smoked while 0.0% of women did (Al-Fayyadh et al., 2022). Another study in

JHNS
Journal of Holistic Nursing Science
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Erbil found that 33.1% of university students, including nursing students who smoked with hookah being the most common form (Yousuf et al., 2020). Smoking is responsible for one-sixth of all deaths from non-communicable diseases along with a group of smoker disproportionately use a high percentage of costly medical resources (Wang et al., 2022). This emphasizes the critical need for effective strategies to treat tobacco addiction within medical facilities (Onwuzo et al., 2024; Russell et al., 2021). A study explained that several barriers to smoking cessation were ignorance, unfamiliarity, disagreement, insufficient self-efficacy, and the inability to overcome the inertia of prior practice (Bohadana et al., 2020).

Figure 1. Illustration of tobacco smoke (Generated by AI).

Other barriers mentioned are a lack of time, insecurity in handling patients, outdated perspectives, a limited role in primary care, a lack of smoker identification, and a lack of effective performance incentives (VanFrank et al., 2024). To improve the creation and efficacy of smoking cessation programs, it is crucial to generate a program that encourages quitting (Wang et al., 2021). Young adult smokers may feel conflicted about quitting due to a disconnect between their identity and their smoking habit, and they may also experience little external pressure to stop (Taylor et al., 2021). Compared to established smokers, young adults who identify as "social smokers" report fewer intentions and attempts to quit, and non-daily college smokers believe they can quit "when they want to" (Piper et al., 2020). Smoking is a perceived barrier to quitting among young adults and a negative predictor of cessation in adults, often serving as a functional way to cope with stress and enhance social power (Al-Fayyadh et al., 2022).

For young adults, potential motivators to quit smoking include the desire to save money, health reasons, social factors, the unpleasant taste or odor of cigarettes, the stigma associated with smoking, and the desire to avoid nicotine addiction (US Preventive Services Task Force et al., 2021). However, the rate of decline in smoking prevalence has been slowing, and a sizeable core group of chronic smokers still exists (Russell et al., 2021). The importance of this study derived from the noticeable increase in the number of smoking students in nursing colleges in Iraq, a significant issue that served as a main objective of this research. The study's primary focus was to investigate the barriers that make it difficult for nursing students to quit smoking. In response to this and other societal concerns, the Iraqi state has taken an active role in combating smoking, particularly among university students and on campuses. This has led the government to issue official decisions that prohibit smoking in the corridors of government departments and impose financial fines as a means of reducing this phenomenon across different segments of society. Yet, these initiatives have not entirely eliminated the issue of smoking that remains a significant challenge, particularly among certain groups. Further observation is needed to understand why nursing students still struggle to quit smoking. It is hoped that the findings of this study can serve as baseline data for the Iraqi government to develop innovative smoking cessation strategies that involve community nurses.

Method

The study employed an observational design to achieve its objective and observe the barriers to quitting smoking among nursing students. This design was likely chosen because it allows for the description of the phenomenon, identification of barriers, and exploration of relationships between variables in a naturalistic setting (Hess, 2023). With using an observational approach, the researchers can gather information into the complexities of smoking behavior and the challenges of quitting among nursing students. A cross-sectional data collection method and a non-probability sampling (purposive) technique were used at the College of Nursing, University of Mosul, Iraq. The cross-sectional design allows for data to be collected from a specific population at a single point in time (Kesmodel, 2018), which is ideal for measuring the prevalence of smoking and identifying associated factors within this group. This method is practical and cost-effective, as it does not require long-term follow-up (Capili, 2021). Meanwhile, purposive sampling was chosen to intentionally select a specific group of interest—in this case, nursing students at the University of Mosul. Together, these methods allowed the researchers to quickly gather specific, relevant data to address their study objectives.

JHNS
Journal of Holistic Nursing Science
E-ISSN: 2579-7751 P-ISSN: 2579-8472

The population consisted of fewer than 490 nursing students. The inclusion criteria comprised active nursing students at the College of Nursing who smoked, both male and female, and consented to participate. Conversely, nursing students who declined to participate due to personal reasons and students from non-nursing programs were excluded. Students who were not willing to participate in the study especially women were also excluded, as were students who had frequent and frequent absences due to the difficulty of their presence. The sample size was calculated using a single population proportion formula with the following assumptions: a 50% sample proportion (to obtain the largest possible sample size), a 95% confidence level, and a 5% margin of error. Based on these calculations, a sample size of 188 was recommended, and approximately 190 students were asked to participate in the study. The study participants were drawn from three universities: University of Mosul, Nineveh University, and Tal Afar University.

Data was gathered in person using a comprehensive questionnaire. The instrument had three components, including the study sample's sociodemographic characteristics, which covered age, study stage, study type, marital status, place of residence, and years of smoking. The second section focused on the students' smoking history and consisted of several items such as have you ever tried to quit smoking? At what age did you start smoking? What is your daily cigarette consumption? When is the first time you smoke a cigarette after waking up? Does any of your family member's smoke? Do you get irritable if you have to go more than two hours without a cigarette? If you have a cold or the flu and have problems breathing? Or if you are so unwell that you spend most of your time in bed? Do you still smoke? What alternative can you think of smoking? Did smoking cause you any of these problems? The third section contains barriers of quitting smoking among students includes several items included like any of my family who smokes, I wanted to look mature like them through smoking, like my family /or friend who is a smoker, cigarette smoking is considered to a normal habit, most of my friends smoke more cigarettes than me, I smoke to look "cool and stylish" , craving, stimulation, relaxation and enjoyment, decrease stress and anxiety, reduces the pressure of studying, avoid gain weight, improve concentration if I have exam, makes me more confident and lack of willpower.

To validate the study's instrument, the questionnaire was presented to twelve experts in various medical and nursing fields. Twelve experts in various specialties were selected from different universities to double check the validity of the measurement. Nursing and psychiatric experts played the largest role in evaluating the questionnaire's performance. All comments were taken into account and modified. The experts reviewed the content and suggested modifications for clarity, adequacy, and relevance. As a result, certain expert opinions were excluded, some items were altered or modified, and significant points were added. The final version of the tool incorporated their feedback, suggestions, and comments. The reliability of the tool was then evaluated using a test-retest reliability coefficient (also known as a coefficient of stability). This statistical analysis was performed to measure errors in the measurement technique. The tool demonstrated high reliability (r=0.85) after evaluation. Prior to the main study, a pilot test was conducted with 20 nursing students to assess the instrument's reliability. The reliability analysis yielded a coefficient of r=0.78, suggesting satisfactory reliability and validity. After a 15-day break, the test was administered again using the same protocol. The main data collection was then gathered between 7 January until 7 March 2024. Data was collected from students through a personal interview with one student, then one student filled out the questionnaire himself. Two research assistants were involved, collecting the entire study sample.

The data in this study were analyzed using SPSS version 27. Descriptive statistics, including frequency, percentage, mean, and Standard Deviation (SD) were used to present the data obtained during the study. The study was reviewed and approved by the Institutional Review Board (IRB) of the University of Mosul College of Nursing and the scientific committee of the clinical sciences nursing department (Nu 235980764). The study adhered to the ethical principles outlined in the Declaration of Helsinki. Additionally, the study also obtained approval from the University of Mosul and the Iraqi Ministry of Higher Education (No. 343562/1112). Although the formal approval letters were issued later, the study received initial approval to proceed with data collection. Informed consent was obtained from all participants before data collection began.

Results

The mean age of the study sample was 24.06 ± 4.49 years. More than half of the participants (53.7%) were in the fourth stage of their studies, with the majority (62.1%) enrolled in evening classes. Regarding marital status, a little more than a third of the sample (39.4%) was married, while the majority (60.6%) was single. The highest percentage of participants (63.7%) lived in urban areas. Based on years of smoking, the vast majority of participants had been smoking for more than four years (36.8%), followed closely by those who had smoked for three to four years (35.8%) **(Table 1)**. The table illustrates the smoking history of the participating students. Notably, more than half of the students (67.9%) had attempted to quit smoking. Half of the sample reported starting to smoke between the ages of 15-18 years. The majority

JHNS
Journal of Holistic Nursing Science
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of participants (37.9%) smoked 6-10 cigarettes per day. Family smoking habits were also prevalent, with 50% of students having fathers who smoked, 33% having brothers who smoked, and 6.3% having mothers who smoked. Many students (53.2%) reported feeling uncomfortable and disturbed when they went without smoking for more than two hours. Almost half (48.9%) of the students continued to smoke even when they were sick or had a cold or flu. When asked about alternative methods to reduce smoking, 52.6% of students chose exercise, while 31.1% opted for e-cigarettes. Furthermore, 42.1% of students reported experiencing expectoration, and 38.4% reported frequent coughing due to smoking **(Table 2)**. The table highlights that the primary barriers to stopping smoking was "craving" to smoke, reported by 79.5% of participants. The second most common barrier was "most of my friends smoke more cigarettes than me," cited by 71.1% of participants. Additionally, 70% of participants believed that smoking reduces stress and anxiety. Nearly half (58.4%) of the sample reported that smoking improves their concentration during exams. In contrast, fewer participants cited "avoiding weight gain" (35.8%) or "smoking to look cool and stylish" (28.9%) as barriers to quitting **(Table 3)**.

Table 1. Sociodemographic profile of the participants.

Variables	Frequency (n)	Percentage (%)
Age (Mean=24.06, SD= 4.49)		
20-24	100	52.6
25-29	75	40.2
≥ 30	15	7.2
Sex		
Male	170	89.4
Female	20	10.5
Grade		
Third	88	46.3
Fourth	102	53.7
Type of study		
Morning	72	37.9
Evening	118	62.1
Marital status		
Single	115	60.6
Married	75	39.4
Place of residence		
Urban	121	63.7
Rural	69	36.3
Years of smoking		
1-2 year	52	27.4
3-4 years	68	35.8
≥ 4 years	70	36.8

Discussion

The study presented that the age mean is 24.06 years old which is consistent with previous studies that age of 24-year-olds are vulnerable to smoking (Putri et al., 2024). Other study supported that cigarette smoking prevalence among adults in Iraq is 28%, and it may be on the rise (Alashab et al., 2020). According to the current study, founded the participant vast majority was smoked more than four years, this study supported with other studies that presented similar results (Chen et al., 2023; Alashab et al., 2020). There is a fundamental role from the primary health care to reduce or prevent the impact of smoking among university students in Iraq. For example, workshops, conferences, and other relevant activities. Brief guidance primarily encourages attempts to quit rather than increasing cessation rates. Moreover, heavy smokers who are at a higher risk of smoking-related illnesses often require substantial assistance to overcome their addiction (Varghese & Gharde, 2023). Consequently, all commissioners are required to refer these smokers to specialist treatment programs (Spaducci et al., 2020). The specialized service has two main objectives: firstly, to help smokers who are unable to quit with brief interventions, and secondly, to support other medical practitioners in providing effective smoking cessation therapies (Meyer et al., 2022). The study found that 50% of participants started smoking between the ages of 15 and 18.

JHNS
Journal of Holistic Nursing Science
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Another study supported that the vulnerable age for smoking is in the range of 15-18 years (Artanti et al., 2024; Reitsma et al., 2021).

Table 2. Smoking history of the participants.

Variables	Frequency (n)	Percentage (%)
Have you ever tried to quit smoking?		
Yes	129	67.9
No	61	32.1
At What age did you start smoking?		
12-14 years	29	15.3
15-18 years	95	50
19 years and above	66	34.7
What is your daily cigarette consumption?		
5 or fewer	54	28.4
6-10 times	72	37.9
More than 10	64	33.7
When is the first time you smoke a cigarette after waking up?		
5 minutes	47	24.7
5 -30 minutes	61	32.1
After 30 minutes	82	43.2
Does any of your family member's smoke?		
Father	95	50
Mother	12	6.3
Brother	64	33.6
Others	19	10
Do you get irritable if you have to go more than two hours without a cigarette?		
Yes	101	53.2
No	89	46.8
If you have a cold or the flu and have problems breathing, or if you are so unwell that you spend most of your time in bed, do you still smoke?		
Yes	97	48.9
No	93	51.1
What alternative can you think of smoking?		
E-Cigarettes	59	31.1
Exercise	100	52.6
Other (specify)	31	16.3
Did smoking cause you any of these problems? (More than one answer can be selected)		
Frequent coughing	73	38.4
Expectoration	80	42.1
Shortness of breath	62	32.6
Wheezes	11	5.8
Hemoptysis	8	4.2
Pain or tightness of the chest	40	21.1
Other (specify)	15	7.8

Community health nurses within public universities should work to improve students' behaviors towards any bad behaviors practiced within the university, such as smoking. They work to publish posters and hold continuous workshops and lectures on the harms of smoking and the importance of preventing the problems that affect smokers. The study also

JHNS
Journal of Holistic Nursing Science
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demonstrated that there were many complications that mentioned by participants such as frequent coughing, expectoration, shortness of breath, wheezes, hemoptysis, pain or tightness of the chest and weakness. This result agrees with other studies that report smoking can cause many complications that affect personal health (Wu et al., 2019; Parmar et al., 2023). Nurses have a fundamental role by establishing educational programs within universities and government institutions to reduce the harms of smoking and explain details about preventing diseases caused by smoking. Research suggests that regular exercise can aid in smoking cessation by reducing cravings and nicotine withdrawal symptoms along with helping to manage weight gain (Ussher et al., 2019; Zhou et al., 2023).

Table 3. Barriers of quitting smoking.

Barriers	Frequency (n)	Percentage (%)
Like any of my family who smokes, I wanted to look mature like them through smoking	85	44.7
Like my family /or friend who is a smoker, cigarette smoking is considered to a normal habit	83	43.7
Most of my friends smoke more cigarettes than me	135	71.1
I smoke to look "cool and stylish''	55	28.9
Craving	151	79.5
Stimulation	76	40
Relaxation and enjoyment	127	66.8
Decrease stress and anxiety	133	70
Reduces the pressure of studying	116	61.1
Avoid gain weight	68	35.8
Improve concentration if I have exam	111	58.4
Makes me more confident	76	40
Lack of willpower	110	57.9

Another possible mechanism underlying the benefits of exercise for smoking cessation is its impact on cognitive performance (Benito-León et al., 2023). Specifically, research suggests that exercise can reduce attention bias toward smoking-related cues such as pictures of people smoking (Tie et al., 2023; Rensburg et al., 2009). Furthermore, many smokers require intensive help to quit particularly heavier smokers who are more likely to suffer from smoking-related diseases (Jiang et al., 2020). In line with this, all commissioners in universities should provide comprehensive smoking cessation services that include exercise programs **(Figure 2)**. A study found that regular physical exercise meets eight of the criteria defining a tobacco harm reduction strategy that highlighting its potential as a component of smoking cessation interventions (deRuiter & Faulkner, 2006). Our findings indicate a significantly higher smoking prevalence among males compared to females. This difference may be attributed to the cultural and social norms in Iraq that view smoking as unacceptable behavior for women, a perspective shared by Iraqi researchers.

Figure 2. Illustration of students exercising (Generated by AI).

The study also found that the primary barriers to quitting smoking was craving, which accounted for 79.5% of responses, followed by peer influence with 71.1% of participants citing the item as a barrier: most of my friends smoke more cigarettes than me. Therefore, community health nurses work to improve students' behavior regarding harmful habits such as smoking (García-Suárez et al., 2025; Creighton et al., 2025). They can achieve this through ongoing seminars and talk on the negative effects of smoking, as well as creating posters to raise awareness about the importance of prevention and the issues faced by smokers. A strong family backing makes a big difference in helping a child quit smoking (Daniel et al., 2021). Family members can provide emotional support, encouragement, and motivation to overcome nicotine addiction (Gu et al., 2023). They can also help create a smoke-free environment, monitor progress,

and encourage healthy habits (Brockman et al., 2018). With being involved in the quitting process, family members can help the child stay accountable and motivated. Moreover, family support can reduce stress and anxiety, which are common triggers for smoking. Families can help their loved ones overcome the challenges of quitting smoking and achieve a healthier lifestyle by working together. This study highlights the strengths include the logical and significant results, which can be generalized to a larger population among nursing students. However, the study's limitations include the small sample size and the reluctance of some students to participate. Based on these findings, the study recommends conducting comparative analysis with involving larger samples across different universities.

Conclusion

This study concludes that craving and peer influence have a significant impact on the process of quitting smoking. This poses a challenge for university administrators and students who are serious about quitting smoking. Nurses are vital in addressing this challenge by providing smoking cessation counseling, support, and education to students. The process can help them develop strategies to overcome nicotine addiction and peer pressure. Recommendations for future research include investigating the role of technology-based interventions in supporting smoking cessation among university students. Examining the nurse-led smoking cessation programs for university students that including sustained quit rates and reduced nicotine cravings in Iraq.

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AI statements

The development of this manuscript did not involve any generative-text AI tools. However, an image-generating AI was used to generate the illustration.

Author's declaration

All authors were engaged in the conception and design of the study, data acquisition and analysis, and manuscript preparation. They also approved the final version for publication.

Availability of data and materials

The dataset and all related materials are available upon reasonable request.

Competing interests

No conflict of interest to declare.

Ethical clearance

The study was approved by the IRB of the University of Mosul College of Nursing and the scientific committee of the clinical sciences nursing department (Nu 235980764). The ethical clearance for this study was also obtained from the University of Mosul and the Iraqi Ministry of Higher Education (No. 343562/1112).

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Publishers and journal's note

The perspective from Iraq shows that challenges still exist, especially among nursing students. This is a unique finding since they should be more aware of the dangers of smoking, which should theoretically make it easier for them to quit. Although this research was conducted in Iraq, its findings contribute significantly to the data needed for development of future studies outside of the country.

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Authors' insight

Key points

- Studies indicate that craving and having friends who smoke increases the likelihood of both starting and continuing the habit among nursing students.
- Many students use smoking as a coping mechanism to manage this stress that making it hard to let go of the unhealthy habit.
- Nursing students know that smoking is bad for their health, but they do not have the routine training or complete resources to quit.

Emerging nursing avenues

- How does the prevalence of smoking among nursing students in Iraq compare to that of other university students and the general population?
- What specific educational programs or clinical training on smoking cessation are available for nursing students in Iraqi nursing curricula?
- Do male and female nursing students face different social or cultural barriers to quitting smoking in the context of Iraq?

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