Nazirah Nouh
Lecturer, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Ashjan Rahil Sooan Alenazi
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Nouf Obaid Awad Alenazi
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Alyamamah Ali Alenazi
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Manar Sulaiman Muhsin Almuhsin
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Sarah Muflih Al Mutairi
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Intisar Abdulaziz Alanazi
Nursing Student, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Corresponding Author:
Nazirah Nouh
Lecturer, College of Nursing, Riyadh Elm University, Riyadh City, Saudi Arabia

Level of Knowledge of the Nursing Students about Smoking: A Cross-sectional Survey

Nazirah Nouh, Ashjan Rahil Sooan Alenazi, Nouf Obaid Awad Alenazi, Alyamamah Ali Alenazi, Manar Sulaiman Muhsin Almuhsin, Sarah Muflih Al Mutairi and Intisar Abdulaziz Alanazi

Abstract
Smoking is a global health issue, with significant prevalence in countries like Indonesia, Spain, and Saudi Arabia. It is linked to various diseases, including cardiovascular disease, cancer, and lung disease, with millions of deaths annually. Despite efforts to reduce smoking, e-cigarette usage is on the rise, especially among youth. In Saudi Arabia, smoking rates have increased, leading to widespread efforts, including smoking cessation clinics. This study aims to assess the knowledge of nursing students regarding smoking to raise awareness about its risks and proper cessation methods. The study was conducted from December 30, 2024, to February 28, 2025, with a purposive-convenience sampling approach. This study used a cross-sectional design to assess nursing students' knowledge of smoking at Riyadh Elm University. Data were collected through a self-made questionnaire consisting of 20 questions covering demographics, smoking knowledge, health effects, and smoking management. The questionnaire was administered to 201 nursing students using google form. The study sample predominantly consisted of female participants (68.2%), with the majority aged 20-23 years (42.8%). Over half of the respondents reported having family members who smoke (67.2%), and most were non-smokers (72.6%). In terms of knowledge on smoking, the majority exhibited moderate knowledge, with an average score of 5.73 (48.18% mean percentage). Significant associations were found between knowledge level and marital status ($\chi^2 = 26.91$, $p = 0.000$), education level ($\chi^2 = 19.97$, $p = 0.000$), smoking status ($\chi^2 = 18.80$, $p = 0.000$), and previous degree status ($\chi^2 = 29.75$, $p = 0.000$). The study reveals that nursing students have a moderate level of knowledge about smoking, with significant differences based on marital status, education level, smoking status, and previous degree. These findings suggest a need for targeted educational interventions to improve smoking-related knowledge. Addressing these knowledge gaps may contribute to better health outcomes. Further research is needed to explore factors influencing smoking awareness among students.

Keywords: Knowledge, Smoking, Nursing Students, Smoking Cessation, Health Effects

Introduction

Smoking is one of the leading causes of mortality which can be preventable among users. The smoking continues to be a public health concern which account for an estimated 8 million deaths around the world [1]. There is approximately 1.07 billion smokers worldwide which the world health needs to focus. But despite the ongoing programs to curb the tobacco use, its prevalence remains a health issue. The cancer of the lungs accounts for 90% of its cancer while 80% developed Chronic Obstructive Pulmonary Disease (COPD) which also make smokers vulnerable to other diseases [2]. On this part, the nurses as a healthcare professional can contribute to programs about smoking cessation, smoking counseling or even health promotion [3]

In Saudi Arabia, studies have shown that 17.8% of its population in the year 2022 used tobacco. Between genders, the males have higher prevalence compared to female garnering 28.4% and 2.1%. In terms of youth groups with aged ranging from 13-15 years old were users of tobacco [4]. This information serves as the prevalence which may help the current healthcare professional to focus on its program. The student nurses as future health professional can influence the future on the situation where they can engage into activities

about smoking cessation [5]. Previous studies have shown that nursing students have a strong understanding of the tobacco usage while having interest in the smoking cessation campaign.

By assessing the level of knowledge regarding cigarette smoking, the nursing students can identify the gaps that exist about smoking and formulate programs in order to reduce the rates of prevalence of smoking and build competencies among future healthcare workers [6]. Moreover, evaluating the extent of knowledge of the nursing students can address the issue of public health concern. The nursing students as the future healthcare professionals, they must possess healthy behaviors that can persuade their clients in order to impact the good healthy habits positively [7]. The finding of this study may guide in tailoring policy development towards smoking cessation and ensure commitments on reducing smoking, thus, the public health outcomes will be improved.

Materials and Methods
Study Design
This study utilized a descriptive cross-sectional research design as it seeks to assess the knowledge level of the nursing students about smoking. This research design is the most suited for this study as it allows gathering of data from a target population without variables manipulation [8].

Data collection methods
The researcher formulated a structured self-administered questionnaire after reading and analyzing information about smoking in review of literature. The research instrument is composed of two parts: the first part consists of demographic profile such as age, gender, marital status, family members who smoke educational level, diploma and if smoker. The second part consisted of 13 items representing the level of knowledge. The level of knowledge was categorize as highly knowledgeable with 10-13 scores, moderately knowledgeable with 5-9 scores and less knowledgeable with 0-4 scores. This item measures the level of knowledge of the nursing students.

Sample Characteristics
This study utilized undergraduate nursing students as the study population. Those nursing students were enrolled in the university during the conduct of this study. A total of 201 respondents were used by the researchers using convenience sampling from all levels. The eligibility criteria includes: of any gender, currently enrolled and willing to participate in the study. Students who are not willing to participate was the exclusion of the study. The Slovin's formula was used to compute for the total sample of the study using 5% margin of error.

Survey Administration
Permission letter was obtained from the Dean of the Nursing depart of Riyadh Elm University before the administration of the questionnaire. The researcher informed each respondent about the purpose of the study and once it is consented, they were instructed to complete the questionnaire. They were given a 10-15 minutes to answer the questionnaire.

Ethical Consideration
The ethical approval was secured from the Institutional Review Board (IRB) of the university before data collection. The researchers utilized informed consent without coercion with confidentiality measures. Each respondent were assured that all the information that will be gathered will be treated with confidentiality and informed only for the purpose of study research. Since the respondents were not coerced in answering, they were given freedom to withdraw for whatever reason without consequences. The researchers adhered to the institutional research policies of the university.

Statistical Treatment
Data that are gathered were retrieved and tallied. They were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. The descriptive statistics used were frequency, percentage, mean and standard deviation while inferential statistics such as chi-square test was applied. The level of significance was at 0.05. The results were presented in tables and interpreted accordingly to identify areas where nursing students were strongly knowledgeable or less knowledgeable about cigarette smoking.

Results

Table 1: Demographic Characteristics of the Nursing Students (n=201)

Variable		Frequency	Percentage
Age	Less than 20	46	22.9%
	20-23	86	43.8%
	23-25	49	24.4%
	Above 25	20	10.0%
Gender	Male	64	31.8%
	Female	137	68.2%
Do you have any family member who smokes?	Yes	135	67.2%
	No	66	32.8%
Marital Status	Single	150	74.6%
	Married	37	18.4%
	Divorce	14	7.0%
Educational Level	Level 4	55	27.4%
	Level 5	26	12.9%
	Level 6	24	11.9%
	Level 7	23	11.4%
	Level 8	73	36.3%
Are you smoker?	Yes	55	27.4%
	No	146	72.6%

Have you ever had a previous degree (diploma)?	Yes	76	37.8%
	No	125	62.2%

Table 1 presents the demographic profile of the study sample. The majority of participants were aged 20-23 years (n=86, 42.8%). Most of the participants were female (n=137, 68.2%). Over half of the respondents reported having family members who smoke (n=135, 67.2%). The majority of participants were single (n=150, 74.6%). Most respondents had an education level of 8 (n=73, 36.3%). A majority of participants were non-smokers (n=146, 72.6%), while a slightly larger portion did not have a previous degree or diploma (n=125, 62.2%).

Table 2: Level of Knowledge on Smoking among Nursing Students

Level of Knowledge	Frequency	Percentage
Highly Knowledgeable (10-13)	44	21.9
Moderately Knowledgeable (5-9)	89	44.3
Less Knowledgeable (0-4)	68	33.8

Table 2 illustrates the level of knowledge on smoking among nursing students. The majority of participants exhibited moderate knowledge, with 44.3% (n=89) scoring between 5 and 9. A substantial portion of the students (33.8%, n=68) demonstrated a lower level of knowledge, scoring between 0 and 4. Only 21.9% (n=44) of participants were classified as highly knowledgeable, scoring between 10 and 13. These findings suggest that while a significant portion of the nursing students had a moderate understanding of smoking.

Table 3: Description of Mean, SD and Mean percentage of Knowledge on Smoking (n= 201)

Knowledge Score	Mean	Standard deviation	Mean Percentage
	5.726	3.056	48.18

Tables 3 provide the mean, standard deviation (SD), and mean percentage of knowledge on smoking among the participants. The average knowledge score was 5.73 (SD = 3.06), with a mean percentage of 48.18%. This indicates that, on average, the nursing students displayed a moderate level of knowledge regarding smoking, with a notable degree of variability in the responses, as reflected by the standard deviation.

Table 4: Item wise Analysis of Knowledge Score on Smoking Among Nursing Students

No.	Items	Frequency of Correct Response	Percentage of Correct Response	Mean
1	Meaning of Smoking	95	47.3	0.473
2	Why people smoke	116	57.7	0.577
3	Effect smoking on body	112	55.7	0.557
4	Risk factors for smoking	102	50.7	0.507
5	Types of smoking mechanisms	86	42.8	0.428
6	Smoking harm on body organs	82	40.8	0.408
7	Long-term effect of smoking	128	63.7	0.637
8	Emphysema, and how is it related to smoking	113	56.2	0.562
9	Smoking and Risk of heart disease	102	50.7	0.507
10	Impact of smoking on the immune system	126	62.7	0.627
11	Drugs used for smoking cessation	72	35.8	0.358
12	Care during smoking	101	50.2	0.502
13	Nursing education for smoking cessation	99	49.3	0.493

Table 4 presents an item-wise analysis of the knowledge score on smoking among nursing students. The frequency and percentage of correct responses for each item are displayed. The highest percentage of correct responses was observed for the item on the long-term effects of smoking (63.7%, n=128), followed by the impact of smoking on the immune system (62.7%, n=126), and the reasons why people smoke (57.7%, n=116). On the other hand, the lowest percentage of correct responses was seen for the item on drugs used for smoking cessation (35.8%, n=72), indicating a potential gap in knowledge in this area. Other items, such as the meaning of smoking (47.3%, n=95) and nursing education for smoking cessation (49.3%, n=99), had moderately correct response rates. The findings highlight areas of strength, such as understanding the long-term effects of smoking, as well as areas that may require further education, particularly regarding smoking cessation strategies and the harm smoking causes to body organs.

Table 5: Association between level of knowledge on smoking and their demographic profile (n=201)

Demographic Table		Total	Less	Moderate	High	Chi square Test
Age	Less than 20	46	21	19	6	χ^2= 4.051 p=0.670 df= 6
	20-23	86	30	43	13	
	23-25	49	25	18	6	
	Above 25	20	8	10	2	
Gender	Male	64	30	27	7	χ^2= 1.157 p=0.561 df= 2
	Female	137	54	63	20	
Do you have any family member who smokes?	Yes	135	56	61	18	χ^2= 0.28 p=0.986 df= 2
	No	66	28	29	9	
Marital Status	Single	150	48	75	27	χ^2= 26.91 p=0.000*** df= 4
	Married	37	25	12	0	
	Divorced	14	11	3	0	

Education Level	4	55	21	32	2	χ2= 19.97 p=0.000*** df= 8
	5	26	16	9	1	
	6	24	12	10	2	
	7	23	9	8	6	
	8	73	26	31	16	
Are you a smoker?	Yes	55	36	17	2	χ2= 18.80 p=0.000*** df= 2
	No	146	48	73	25	
Have you ever had a previous degree (diploma)?	Yes	76	50	22	4	χ2= 29.75 p=0.000*** df= 2
	No	125	34	68	23	

Note: *** - p<0.001 Level of Significant.

The data presented in Table 5 portrays the association between demographic variables and the level of knowledge on smoking among nursing students. Pearson Chi-square test was used to calculate the association. There was a significant association between the level of knowledge on smoking and demographic variables such as marital status (χ^2 = 26.91, p = 0.000), education level (χ^2 = 19.97, p = 0.000), smoking status (χ^2 = 18.80, p = 0.000), and having a previous degree (χ^2 = 29.75, p = 0.000).

Discussion
This study focus on the knowledge regarding smoking among undergraduate nursing students from Riyadh Elm University. Based on the findings of the study, the study revealed that most of the nursing students were reported of being moderately knowledgeable garnering a 44.3% while only 21.9% were highly knowledgeable about smoking. These results agreed with previous studies which demonstrated a 24.8% of the participants with higher health literacy. They concluded that health literacy is vital in facilitating smoking cessation and greater understanding of the harmful effects in order to achieve higher chances of quitting smoking [9].
The majority of the nursing students have moderately knowledge on smoking having 44.3%. The smoking should be reiterated as part of the curricula as this integration will be strengthened to tackle smoking as preventable disease. Since the majority has moderate knowledge, this reflects action to achieve higher health literacy on smoking and its cessation. There is a lack of sufficient knowledge about tobacco among student nurses. The reason was due to the lack of training. There is a low attitude towards their role in tobacco control. This aligns with the policy development to strengthen the smoking-related education with smoking contents [10].
Among the demographic characteristics, marital status, educational level, smoking status and previous degree were found to have relationship with knowledge level (p < 0.001). Previous research has argued that students having higher educational level demonstrate higher awareness about the use of cigarette. Previous studies have shown that knowledge and self-efficacy for smoking cessation were improved after exposure to education intervention program. The nursing students were reported delineated interventions on the 5A' s of smoking to quit such as asking, advising, assessing, assisting, and arranging [11]. Additionally, the integration of smoking cessation courses could improve the nurses' skills clinically and enhance their learning for assisting the clients to stop smoking. Married students were found to have lower knowledge levels, which may be due to competing priorities such as family responsibilities, limiting their engagement in academic learning. It was reported that 67.2% were family members are smokers influence the students' perception on smoking. The results of this study relate to previous study that having a family member who hold positive views toward smoking discourage them to stop smoking. This suggests that family members affect ones decision towards smoking. [12] In contrast, having moderate sports reduce by 15% the smoking risk making individuals who are active physically are less likely to be smokers [13].
The study findings underscore the need for a health development program among nursing students. Designing a smoking cessation can be integrated to nursing curricula to strengthen the competencies of the student nurses as they will be the future nurses that will take part in smoking cessation counseling and patient education. The programme, however, should contain health promotion on stop smoking and treatment for its dependency. The nurses as health care professional can conduct smoking control strategies to overcome smoking problems [14].

Conclusion
The current study found that nursing students are moderately knowledgeable about smoking. Although most of the nursing students demonstrated awareness regarding the general effects of smoking as it relates with diseases of respiratory and cardiovascular disease, gaps were identified on their understanding of strategies on smoking cessation specifically the pharmacological interventions. Significant relationship were found between level of smoking and smoking status, educational level, marital status and prior academic degree which suggest that demographic characteristics and educational factors influence smoking-related awareness.
These results highlight the beneficial impact of strengthening the curriculum for nursing. Enhancing students' knowledge through structured programs, workshops, and clinical training can empower them to become effective advocates for smoking cessation and health promotion.
Since the nurse has an essential role in health teaching and public support to smoking cessation advocacy and its strategies will contribute to a better public health outcome in the community.
Therefore, it is concluded that there is a need for integrating strategies for smoking cessation in the nursing curricular program course. This will help nursing students to equip with the appropriate knowledge and skills to support the national effort of the country for battling against tobacco-related disease.

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