ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Awareness of Adolescents Students about the Harmful Effects of Smoking at Al-Qaswa Schools in Al-Madinah Al-Munawara

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Abstract

Background: Adolescents are vulnerable to starting smoking and becoming addicted to nicotine. **Aim**: This study aimed to assess awareness of adolescent students about the harmful effects of smoking at Al-Qaswa schools in Al-Madinah Al-Munawara. **Research design:** A descriptive design was used in this study. **Setting**: This study conducted at preparatory and secondary school in Al-Madinah Al-Munawara, Saudia Arabia. **Sample:** Random sample used to choose 200 adolescent students who aged 13 to 19 years, and accept to participate in the study. **Tool of data collection:** One tool included five parts, **1st part:** Demographic characteristic, **2nd part:** Assess prevalence of smoking among adolescent students, **3rd part:** Knowledge of adolescent students about smoking, **4th part:** Reported practice of adolescent students with prevention from smoking, and **5th part:** Assess harmful effect of smoking for adolescent students. **Results:** 60.0% of the studied students had poor knowledge, and 30.0 % of them had good knowledge. While, 65 % of studied students had unsatisfactory reported practices and 35 % of them had satisfactory reported practice. **Conclusion:** Less two third of the studied students had poor total knowledge about harmful effects of smoking, and more than two third of them had unsatisfactory total reported practices regarding prevention of smoking. There is statistically significant relation between students' demographic data and their knowledge and reported practices regarding harmful effects of smoking and prevention of smoking. **Recommendations:** Provide health education program for students about harmful effects of smoking.

Keywords: *Adolescent Students, Al-Madinah Al-Munawara, Al-Qaswa Schools, and Harmful Effects of Smoking.*

Introduction

Adolescence is a transformative stage of development characterized by significant physical, emotional, and psychological changes. During this period, students undergo rapid growth and maturation, which influences their identity, self-esteem, and social interactions. This time of life is marked by a heightened desire for independence and peer acceptance, making adolescents particularly susceptible to external influences and experimentation. Their cognitive abilities are developing, allowing for more complex thinking and decision-making, but they may still struggle with impulsivity and risk assessment ***(Kim et al., 2024).***

Tobacco smoking is a significant public health issue with profound consequences for both individuals and society. The act of inhaling smoke from burning tobacco exposes users to a range of harmful chemicals, including nicotine, tar, and carbon monoxide, which contribute to serious health problems such as chronic obstructive pulmonary disease (COPD), heart disease, and various forms of cancer. Smoking not only damages the respiratory system, impairing lung function and reducing overall stamina, but it also has detrimental effects on cardiovascular health and can lead to addiction due to nicotine's highly addictive nature ***(Bitar et al., 2024).***

Tobacco use epidemic, one of the world's major public health challenges, is resulting in more than 7 million deaths per year according to the World Health Organization (WHO). Out of this total, more than 6 million deaths are the result of direct tobacco use, while some 890 000 deaths are the result of non-smokers being exposed to second-hand smoke. The prevalence of tobacco uses and the dangers posed to those users, as well as 'second-hand smokers', is one of the major public health concerns in Saudi Arabia. The control of tobacco use is imperative since the numbers of smokers and deaths from smoking in the country are rising rapidly, with a reported 70 000 Saudis dying annually from smoking-related diseases ***(Rayes et al., 2023).***

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Smoking has well-documented harmful effects on health, leading to a myriad of serious diseases and conditions. The inhalation of tobacco smoke introduces numerous toxic chemicals into the body, which significantly increases the risk of developing COPD, including emphysema and chronic bronchitis. Additionally, smoking is a leading cause of lung cancer and is linked to cancers of the mouth, throat, esophagus, and bladder. It adversely affects cardiovascular health by contributing to the development of coronary artery disease, stroke, and hypertension. The harmful chemicals in tobacco smoke compromise the immune system, making smokers more susceptible to infections and illnesses ***(Awan et al., 2024).***

Increasing adolescent awareness about smoking is crucial for enhancing health literacy and empowering young people to make informed decisions about their well-being. By educating adolescents about the dangers of smoking, including its links to respiratory diseases, cardiovascular problems, and cancer, health programs aim to build a foundational understanding of the long-term impacts of tobacco use ***(Mazi, 2023).*** Effective health literacy initiatives focus on providing accurate, relatable information through interactive methods and peer-led discussions, which resonate more deeply with young audiences. These programs often include components that address the psychological and social aspects of smoking, such as peer pressure and addiction, helping students to critically evaluate the influences that may lead them to smoke ***(Khanagar et al., 2024).***

School health nurse serves a crucial role as a health educator for adolescent students, particularly in raising awareness about the harmful effects of smoking. Through their direct interaction with students, school nurses provide valuable education on the dangers of tobacco use, including its links to serious health conditions as lung cancer, heart disease, and chronic respiratory issues. Nurses use a combination of informative sessions, interactive activities, and one-on-one counseling to communicate the risks associated with smoking in a manner that is engaging and relevant to adolescents. School nurses can identify students who may be at higher risk of smoking due to environmental or behavioral factors, offering tailored support and resources to help them avoid or quit smoking ***(Reba et al., 2024).***

Significance of the study

Smoking is one of the leading preventable causes of deaths globally and is the cause of over 8 million deaths annually, 1.2 million of which are non-smokers who die due to second-hand smoke. In the United States, about 500,000 deaths per year are attributed to smoking-related diseases and a recent study estimated that as much as 1/3 of China's male population will have significantly shortened life-spans due to smoking ***(Armstrong et al., 2022).*** Male and female smokers lose an average of 13.2 and 18.5 years of life, respectively. At least half of all lifelong smokers die earlier as a result of smoking. Estimates claim that smokers cost the U.S. economy $97.6 billion a year in lost productivity and that an additional $96.7 billion is spent on public and private health care combined ***(Villanti et al., 2022).***

The overall prevalence of lifetime tobacco use among adolescents of age group 13-19 yr. was 6.9 per cent, with 12.5 per cent of males and 1.2 per cent females reporting use. In Saudia Arabia the law prohibits the sale of tobacco products to anyone under the age of 18. The law meets Framework Convention on Tobacco Control (FCTC). 16 in that it prohibits the sale of tobacco products to minors ***(World Health Organization (WHO), 2022).***

School health nurse play an important role, personal and social skills, teach problem solving, decision-making, cognitive skills to resist personal or media influences, increase self-control and self-esteem, coping strategies for stress and assertiveness skills, endeavor to overcome social influences to use smoking by teaching adolescents to be aware of social influences that encourage substance use, teach skills to resist offers of tobacco, and deal with peer pressure and high-risk situations that might persuade an adolescent directly or indirectly to smoke ***(Delavar et al., 2021).***

Aim of the study

This study aimed to assess awareness of adolescent students about the harmful effects of smoking at Al-Qaswa schools in Al-Madinah Al-Munawara through the following:

1-Assessing adolescent students' knowledge about smoking.

2-Determining prevalence of smoking among adolescent students.

3- Appraising adolescent students' reported practice regarding harmful effect of smoking.

Research questions:

1. What is the adolescent students' knowledge about harmful effects of smoking**?**
2. What is the prevalence of smoking among adolescent students?

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
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3. What are the adolescent students' reported practices regarding the harmful effects of smoking?
4. Is there relation between adolescent students' knowledge, reported practice and their demographic data?

Subjects& Methods

Research design:

A descriptive research design was applied to achieve the aim of the study.

Study Setting:

This study conducted at preparatory and secondary school in Al-Madinah Al-Munawara, Saudia Arabia. Each one that consisted from 2 floors. In the first floor found director office, 3 offices for teachers, 1 office for the school's guard, 3 toilets, 1 library and playground. The second floor contain about 3 classes contain about 33 students, two rooms one for science laboratories and other for a computer room.

Type Sample: Simple random sample was used in this study.

Sample size: The calculated sample size was used to choose 200 adolescent students' total number of adolescents in one year equal 600 adolescents in three preparatory classes and three secondary classes which school year begin from September 202٢ to end of June 2023 at Al-Qaswa school in Al-Madinah Al-Munawara, Saudia Arabia.

The sample size calculation was done based on the power analysis Herbert Equation.

N = 600 t = 1.96

SE = 0.05 P = 0.50

$$n = \frac{0.50\ (1-0.50)}{(0.05 \div 1.96) + [0.50\ (1-0.50) \div 600)}$$

n = 200

Inclusion Criteria:

Adolescents aged 13 - 19 years ,and accept to participate in the study.

Tool for data collection:

Data was collected using the following one tool:

Tool: A structured interviewing sheet: was used in the study, it's developed by investigator after reviewing the national and international related literature and contains five parts:

Part (I): Demographic characteristics of adolescent students consisted of 17 items as age, preparatory educational stage, arrangement between brothers, work, weekly pocket money, place of residence, mother's age, mother's educational level, mother's occupation, father's age, father's educational level, father's occupation, family income, number of rooms in the house, number of family members, crowding rate (number of rooms/number of people), and family type.

Part (II): Assess prevalence of smoking among adolescent students consisted of 7 closed ended questions as smoking is considered an addiction, have you been smoking, type of smoking does use.

Part (II): Assess prevalence of smoking among adolescent students consisted of 7 closed ended questions as smoking is considered an addiction, you smoke, how long have you been smoking, type of smoking does you use.

Part (III): Knowledge of adolescent students about smoking consisted of 2 sub items as:

A- **Knowledge of adolescent students about smoking consisted of 13 closed ended questions as:** meaning of adolescence, meaning of smoking, types of smoking, smoking sections, direct smoking is.

B- Knowledge of adolescent students about harmful effect of smoking consisted of 9 closed ended questions as: The effect of smoking on mental health, effect of smoking on social status.

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Scoring system:

Each statement was assigned score according to adolescent student's knowledge were: complete correct was scored 2 grades. Incomplete correct was scored 1 grade and incorrect or don't know was scored 0. Total score were 44 grades from 22 questions. The total score each item summed up and then converted into percent score **as the following:**

- Good knowledge (≥ 75%) = ≥ 33 grades, was considered high score.
- Average knowledge (50 - < 75%) = 22-< 33 grades, was considered moderate score.
- Poor knowledge (< 50 %) = < 22 grades, was considered poor.

Part (IV): Reported practices of adolescent students with prevention from smoking consisted of 4 items as:

A- Reported practices of adolescent students about general practices included 5 closed ended questions as: avoid stimuli such as parties or cafes, avoid the "It's just one cigarette", post pictures that make people refrain from buying, advises smokers to quit smoking, keep in mind the benefits of quitting smoking, and uses nicotine replacement therapy as nicotine gum and lozenges.

B- Reported practices of adolescent students about foods used included 14 closed ended questions as: eat oranges, eat ginger, eat carrots, eat lemon, eat broccoli, eat cranberries, eat kiwi, eat spinach, eat pomegranate, eat fresh vegetables, eat fruits, eat nuts, eat dairy products, and drink plenty of water.

C- Reported practices of adolescent students about foods used to reduce smoking cessation included 4 closed ended questions as: drinks coffee, drinks tea, drink alcohol, and eat high-calorie or sugary foods.

D- Reported practices of adolescent students about sports practiced to reduce smoking cessation included 4 closed ended questions as: practice relaxation techniques as deep breathing exercises, practice relaxation techniques as yoga, practice relaxation techniques, as listening to soothing music, and practice physical activities as swimming.

Scoring system:

Each statement was assigned score according to adolescent students' response were "Done", "Not Done", and were scored 1, and 0. (done 1, not done 0), respectively. Total score were 27 grades for 27 items. The scores of items summed up and then converted into percentage score **as the following:**

- (≥ 60) was considered satisfactory = ≥ 16 grades.
- (> 60) was considered unsatisfactory = > 16 grades.

Part (V): Assess harmful effect of smoking for adolescent students included 10 closed ended questions as have mental health problems as a result of smoking, have social status problems as a result of smoking, have respiratory problems as a result of smoking, have digestive problems as a result of smoking, have urinary problems as a result of smoking, have cardiovascular problems as a result of smoking, have skin problems as a result of smoking, have gum and tooth problems as a result of smoking, have economic risks as a result of smoking and smoking causes problems at school.

Scoring system:

Each statement was assigned score according to adolescent students' response were "Yes", "No", and were scored 1, and 0, respectively. Total score were 10 grades for 10 items. The scores of items summed up and then converted into percentage score **as the following:**

- (≥ 50) was considered diseased (Abnormal) = ≥ 5 grades.
- (> 50) was considered not diseased (Normal) = > 5 grades.

I. Operational Item:

It was included preparatory phase, content validity and reliability, pilot study and field work.

A. Preparatory phase:

Prepare the study tool based on related literature review and develop the study tool and test its content validity and reliability.

ISSN 2786-0183
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Content validity:

The revision of the tools for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of five experts all of them from Faculty of Nursing from Community Health Nursing Department to measure the content validity of the tools and the necessary modification was done accordingly.

Tool Reliability:

Reliability was tested statistically using the appropriate statistical tests to assure that the tools are reliable before data collection. Answers from the repeated testing were compared Test- re- test reliability was 0.82 for knowledge, and Cronbach's Alpha reliability was 0.890 for reported practices.

Pilot study:

A pilot study conducted on 10 % of the adolescent students equal 20 adolescent students under study to assess the feasibility, practicability, clarity and objectivity of the tools. Based on the results, no modification was done. Adolescent students in the pilot study were included in the main study sample because no modifications were done.

Field work:

- An official letter issued from the dean of Faculty of Nursing Helwan University, and adolescent student, at preparatory and secondary school in Al-Madinah Al-Munawara, Saudia Arabia including the aim of the study to obtain permission after establishing a trustful relationship, each subject interviewed individually by the investigator to explain the study purpose.
- Data collected within 6 months from first of October 2023 until end of March 2024 two days /week (Tuesday-Wednesday), from 9am - 2pm, till the needed sample completed, interview of parents, informed consent obtained from adolescent students after the investigator introduce herself for each student, then explain the purpose of the study to assess knowledge, and reported practice of students about protective method regarding awareness of adolescents students about the harmful effects of smoking. Study collected through structure face to face interview and the entire tool filled by the investigator.
- The investigator utilizes one tool, was need 20 -30 minutes and meeting the adolescent students two days per week (Tuesday- Wednesday) from 9am - 2pm.
- The investigator taken about 33 adolescent students per month, total number of adolescent students = 200 adolescent students.

Ethical Considerations:

The research approval was obtained from the Scientific Research Ethical Committee in the Faculty of Nursing, Helwan University before starting the study, The investigator was clarified the objective and aim of the study to adolescent students included in the study, The investigator assured anonymity and confidentiality of subjects' data. Adolescent students' formal consent that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.

III- Administrative Item:

Approval to carry out this study was obtained from Dean of Faculty of nursing, Helwan University and official permission was obtained from the director of Al-Qaswa school in Al-Madinah Al-Munawara, Saudia Arabia for conducting the study.

IV- Statistical Item

The collected data from the studied sample was revised, coded and entered using personal computer (PC). Computerized data entry and statistically analyzed using SPSS program (Statistical Package for Social Science) version 24. Data were presented using descriptive statistics in the form of frequencies and relative percentages.

Where:

Σ=sum O= observed value E= expected P=.0001

Degrees of Significance of the results were:

- Non-Significant (NS) if $p > 0.05$.
-Significant (S) if $p < 0.05$.
-High Significant (HS) if $p < 0.01$.

ISSN 2786-0183
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Table (1): Frequency Distribution of the Studied Students regarding their Demographic Characteristics (n=200).

Demographic Characteristics	No.	%
Age (Years)		
13- < 15 years	20	10.00
15 - < 17 years	128	64.00
17- < 19 years	10	5.00
19 years	42	21.00
Mean ± SD	**16.4 ± 1.7 years**	
Preparatory educational stage		
First of school	24	12.00
Second of school	122	**61.00**
Third of school	54	27.00
Arrangement between brothers		
First	30	15.0
Second	165	**82.5**
Third	5	2.5
Work		
Work with study	24	12.00
Work after study	95	**47.5**
Does not work	81	40.5
Weekly pocket money:		
Enough and saving	158	**79.00**
Not enough	42	21.00
Mother's age		
< 25 years	9	4.50
25 – 35 years	39	19.50
35 – 45 years	142	**71.00**
> 45 years	10	5.00
Mother's educational level		
Does not read or write	18	9.0
Reads and writes	10	5.0
Basic education	8	4.0
Intermediate or secondary education. University	12	6.0
education or more	152	**76.0**
Mother's occupation		
Housewife	42	21.00
Works	158	**79.00**
Father's age		
< 25 years	9	4.50
25 – 35 years	39	19.50
35 – 45 years	130	**65.00**
> 45 years	22	11.00
Father's educational level		
Does not read or write	2	1.0
Reads and writes	26	13.0
Basic education	8	4.0
Intermediate or secondary education. University	12	6.0

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education or more	152	**76.0**
Father's occupation		
Not work	5	2.5
Works	195	**97.5**
Family income		
Sufficient	195	**97.5**
Insufficient	5	2.5
Number of rooms in the house:		
One room	3	1.5
Two rooms	45	22.5
Three rooms	130	**65.00**
More than three rooms	22	11.00
Mean ± SD	2.9 ± 0.97 rooms	
Number of family members		
≤4 people	30	15.0
≥ 5 people	165	**82.5**
≥6 people	5	2.5
Mean ± SD	5.4 ± 1.7 members	
Crowding rate (number of rooms/number of people)		
From 2 to 3	30	15.0
From 4 to 5	168	**84.0**
> 5	2	1.0
Family type		
Central	188	**94.0**
Extended	12	6.0

Table (1): Shows that, the mean age of studied students were 16.4 ± 1.7 years. Also, 76.0 % of the student's father's educational level were university education or more and 97.5 % of the students' father occupation were worked. Moreover, 79.0 % of the students' mother occupation were worked. Additionally, 97.5 % of the students' family monthly income was enough.

Table (2): Frequency Distribution of Studied Student's Prevalence of Smoking (n=200).

Item	No.	%
Smoking is considered an addiction		
Yes	188	94.0
No	12	6.0
Exposed to passive smoking		
Yes	188	**94.0**
No	12	6.0
You smoke		
Yes	90	45.0
No	110	**55.0**
If yes, how long have you been smoking? (n= 5)		
< 1 years	3	60.0
1- < 2	2	40.0
Type of smoking do you use		
Cigarettes	3	**60.0**
Electronic shisha	2	40.0
Times do you smoke a day		
< Eight times	3	**60.0**
< Ten times	2	40.0

ISSN 2786-0183
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Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Smoking has an effect on you		
Yes	3	60.0
No	2	40.0
If yes, what is the effect? (n=3)		
Heart disease	1	33.3
Lung disease	2	**66.7**

Table (2): Demonstrates that, 94.0 % of the studied students considered smoking an addiction and exposed to passive smoking. Also, 55.0 % of them smoke. 60.0 % of the studied students have you been smoking from < 1 years, and 60.0 % of the them had smoking an effect, and 66.7 % had lung disease.

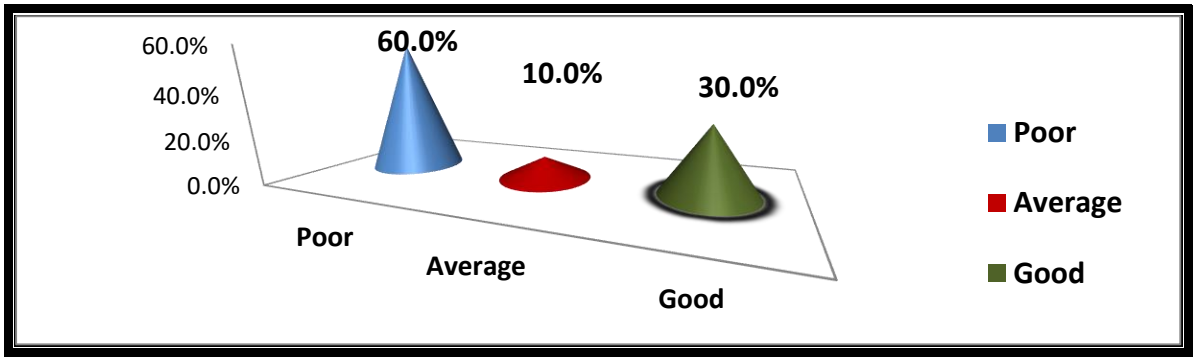

Figure (1): Percentage Distribution of the Studied Student's Total Knowledge Regarding Harmful Effects of Smoking (n=200).

Figure (1): Shows that, 60.0 % of the studied student had poor knowledge about harmful effects of smoking. Also, 10.0 % of the studied student had average knowledge about harmful effects of smoking. While, 30.0 % of them had good knowledge about harmful effects of smoking.

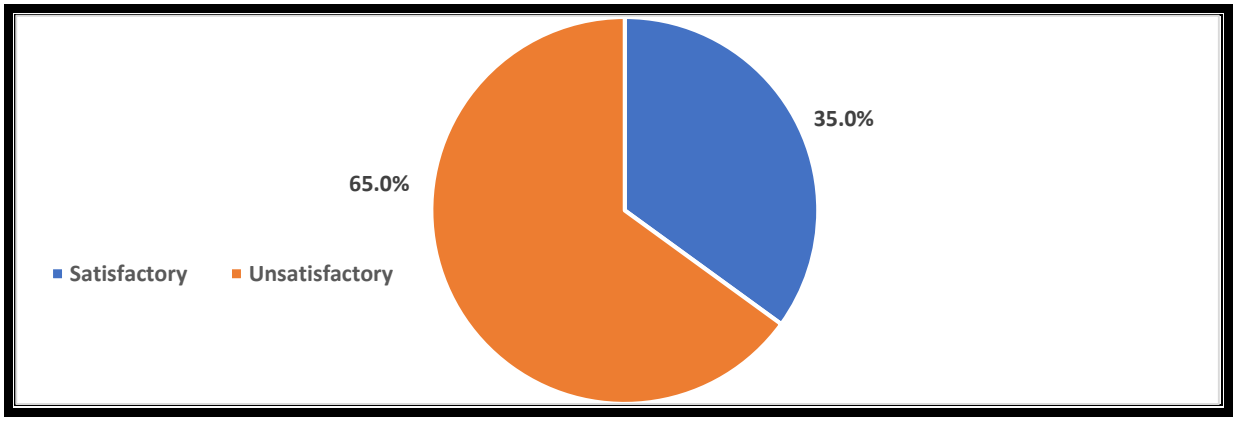

Figure (2): Percentage Distribution of Total Reported Practices among Studied Students regarding Prevention from Smoking. (N=200).

Figure (2): Shows that, 35.0 % of studied student had satisfactory of total reported practices regarding prevention from smoking. While, 65.0 % of them had unsatisfactory of total reported practices regarding prevention from smoking.

ISSN 2786-0183
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Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

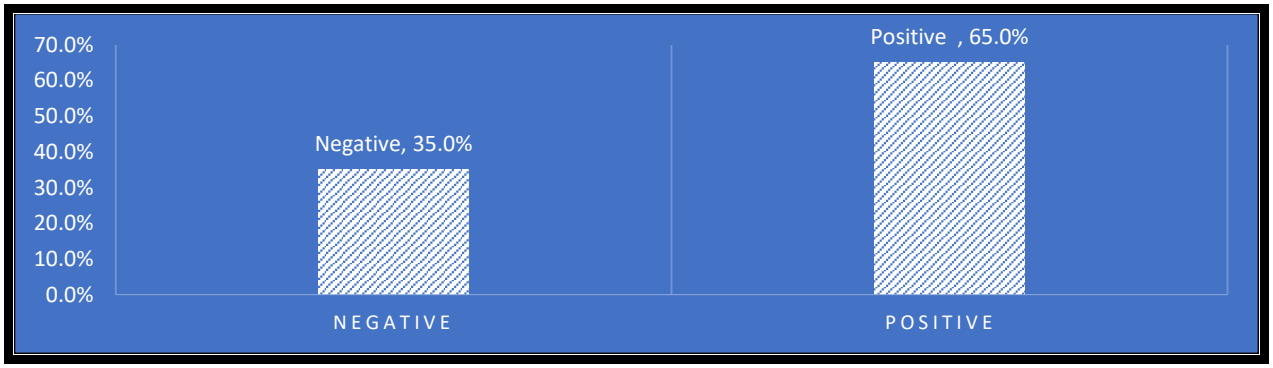

Figure (3): Percentage Distribution of Total Harmful Effect of Smoking among Studied Students (N=200).

Figure (3): Shows that, 35.0 % of studied student had un diseased (normal) of total harmful effect of smoking. While, 65.0 % of them had diseased (abnormal) of total harmful effect of smoking.

Table (3): Relation between Studied Student's Demographic Characteristics and their Total Knowledge (n=200).

Demographic characteristics	Poor n=120		Average n=20		Good n=60		X^2	P – value
	No.	%	No.	%	No.	%		
Age (year)								
13- < 15 years	20	16.7	0	0.0	0	0.0	11.391	0.000*
15 - < 17 years	80	66.6	10	50.0	38	63.3		
17- < 19 years	0	0.0	10	50.0	0	0.0		
19 years	20	16.7	0	0.0	22	36.7		
Preparatory educational stage								
First of school	20	16.7	0	0.0	4	6.7	15.558	0.001**
Second of school	90	75.0	0	0.0	32	53.3		
Third of school	10	8.3	20	100.0	24	40.0		
Place of residence								
Urban	100	81.3	0	0.0	60	100.0	17.239	0.000**
Rural	20	16.7	20	100.0	0	0.0		
Arrangement between brothers								
First	20	16.7	10	50.0	0	0.0	16.274	0.000**
Second	100	81.3	5	25.0	60	100.0		
Third	0	0.0	5	25.0	0	0.0		
Work								
Work with study	20	19.7	0	0.0	4	6.7	18.199	0.000**
Work after study	40	33..3	9	45.0	16	26.7		
Does not work	60	50.0	11	55.0	10	16.6		
Weekly pocket money:								
Enough and saving	100	81.3	0	0.0	58	96.7	18.199	0.000**
Not enough	20	16.7	20	100.0	2	3.3		
Mother's age								
< 25 years	9	7.5	0	0.0	0	0.0	11.547	0.000**
25 – 35 years	30	25.0	9	45.0	0	0.0		

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35 – 45 years	71	59.2	11	55.0	60	100.0		
> 45 years	10	8.3	0	0.0	0	0.0		
Mother's educational level								
Does not read or write	18	15.0	0	0.0	0	0.0	19.177	0.000**
Reads and writes	0	0.0	10	50.0	0	0.0		
Basic education	0	0.0	8	40.0	0	0.0		
Intermediate or secondary education.	12	10.0	0	0.0	0	0.0		
University education or more	90	75.0	2	10.0	60	100.0		
Mother's occupation								
Worked	100	81.3	0	0.0	58	96.7	18.199	0.000**
House wife	20	16.7	20	100.0	2	3.3		
Father's age								
< 25 years	9	7.5	0	0.0	0	0.0	16.554	0.000**
25 – 35 years	39	32.5	0	0.0	0	0.0		
35 – 45 years	40	33..3	20	100.0	60	100.0		
> 45 years	22	18.3	0	0.0	0	0.0		
Father's educational level								
Does not read or write	0	0.0	0	0.0	2	3.3	22.239	0.000**
Reads and writes	18	15.0	8	40.0	0	0.0		
Basic education	0	0.0	0	0.0	8	13.4		
Intermediate or secondary education.	0	0.0	12	60.0	0	0.0		
University education or more	102	85.0	0	0.0	50	83.3		
Father's occupation								
Not work	5	4.2	0	0.0	0	0.0	16.365	0.001
Works	115	95.8	20	100.0	60	100.0		
Family income								
Sufficient	115	95.8	20	100.0	60	100.0	15.854	0.001**
Insufficient	5	4.2	0	0.0	0	0.0		
Number of rooms in the house								
One room	3	2.5	0	0.0	0	0.0	19.225	0.005
Two rooms	45	37.5	0	0.0	0	0.0		
Three rooms	50	41.7	20	100.0	60	100.0		
More than three rooms	22	18.3	0	0.0	0	0.0		
Number of family members								
≤4 people	30	25.5	0	0.0	0	0.0	11.985	0.000**
≥ 5 people	90	75.5	15	75.5	60	100.0		
≥6 people	0	0.0	5	25.5	0	0.0		
Crowding rate (number of rooms/number of people)								
From 2 to 3	30	25.5	0	0.0	0	0.0	16.220	0.005
From 4 to 5	90	75.5	18	90.0	60	100.0		
> 5	0	0.0	2	10.0	0	0.0		
Family type								
Central	110	91.7	18	90.0	60	100.0	14.001	0.000**
Extended	10	8.3	2	10.0	0	0.0		

Table (3): Shows that, there were highly statistically significant relation between student's, total knowledge and all items of demographic characteristics, where (P = < .0001).

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Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Table (4): Relation between Studied Student's Demographic Characteristics and their Total Reported Practices (n=200).

Demographic characteristics	Satisfactory n=130		Unsatisfactory n=70		X^2	P – value
	No.	%	No.	%		
Age (year)						
13- < 15 years	20	15.4	0	0.0	11.987	0.000*
15 - < 17 years	100	76.9	28	40.0		
17- < 19 years	10	7.7	0	0.0		
19 years	0	0.0	42	60.0		
Preparatory educational stage						
First of school	20	15.4	4	5.7	16.996	0.001**
Second of school	110	84.6	12	17.1		
Third of school	0	0.0	54	77.1		
Place of residence						
Urban	100	76.9	60	85.7	15.589	0.000**
Rural	30	23.1	10	14.3		
Arrangement between brothers						
First	30	23.1	0	0.0	16.887	0.000**
Second	100	76.9	65	92.9		
Third	0	0.0	5	7.1		
Work						
Work with study	20	15.4	4	5.7	19.002	0.000**
Work after study	90	69.2	5	7.1		
Does not work	20	15.4	61	87.2		
Weekly pocket money:						
Enough and saving	100	76.9	58	82.9	14.2258	0.005
Not enough	30	23.1	12	17.1		
Mother's age						
< 25 years	9	6.9	0	0.0	15.869	0.005
25 – 35 years	9	6.9	30	42.9		
35 – 45 years	102	78.5	40	57.1		
> 45 years	10	7.7	0	0.0		
Mother's educational level						
Does not read or write	18	13.8	0	0.0	19.874	0.000**
Reads and writes	0	0.0	10	14.3		
Basic education	8	6.2	0	0.0		
Intermediate or secondary education.	2	1.5	10	14.3		
University education or more	102	78.5	50	71.4		
Mother's occupation						
Worked	100	76.9	58	82.9	19.685	0.000**
House wife	30	23.1	12	17.1		
Father's age						
< 25 years	9	6.9	0	0.0	16.258	0.005

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

25 – 35 years	9	6.9	30	42.9		
35 – 45 years	102	78.5	40	57.1		
> 45 years	10	7.7	0	0.0		
Father's educational level						
Does not read or write	18	13.8	0	0.0	19.785	0.000**
Reads and writes	0	0.0	10	14.3		
Basic education	8	6.2	0	0.0		
Intermediate or secondary education.	2	1.5	10	14.3		
University education or more	102	78.5	50	71.4		
Father's occupation						
Not work	5	3.8	0	0.0	16.452	0.001
Works	125	96.2	70	100.0		
Family income						
Sufficient	125	96.2	70	100.0	17.241	0.001**
Insufficient	5	3.8	0	0.0		
Number of rooms in the house						
One room	0	0.0	3	4.3	13.548	0.001
Two rooms	0	0.0	45	64.3		
Three rooms	130	10.0	0	0.0		
More than three rooms	0	0.0	22	31.4		
Number of family members						
≤4 people	30	23.1	0	0.0	16.358	0.001
≥ 5 people	100	76.9	65	92.9		
≥6 people	0	0.0	5	7.1		
Crowding rate (number of rooms/number of people)						
From 2 to 3	30	23.1	0	0.0	16.888	0.000**
From 4 to 5	100	76.9	68	97.1		
> 5	0	0.0	2	2.9		
Family type						
Central	130	100.0	58	82.9	14.669	0.000**
Extended	0	0.0	12	17.1		

Table (4): Shows that, there were highly statistically significant relation between student's, total reported practices and all items of demographic characteristics, where (P = < .0001).

Discussion

Tobacco smoking among adolescents is a significant public health concern due to its numerous adverse effects on both physical and mental health. Young students who smoke are at a higher risk of developing serious health issues later in life, such as chronic respiratory diseases, heart disease, and various types of cancer. Nicotine addiction can impair brain development, affecting cognitive functions, attention, and learning abilities. Adolescents who smoke are more likely to struggle with mental health issues, including anxiety and depression. Given the potential long-term consequences, it is crucial for schools, parents, and communities to work together to educate young students about the dangers of smoking and to provide support and resources to help prevent tobacco use ***(Alenazi et al., 2023).***

Harmful effects and diseases result tobacco smoking poses severe health risks for adolescents, impacting both their immediate and long-term well-being. In the short term, smoking can lead to persistent coughs, wheezing, and a reduced ability to exercise due to compromised lung function. Over time, it significantly increases the risk of developing serious diseases, as chronic obstructive pulmonary disease (COPD) and various cancers, including lung, throat, and mouth cancer ***(Ahmed et al., 2024).***

Regarding to demographic characteristics of the studied students. The present study findings related that mean age of students 16.4 ± 1.7 years. This result is similar to a study conducted by **Aqeeli et al., (2022)** who conducted a study in

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

Jazan Region, Saudi Arabia about "Awareness, knowledge and perception of electronic cigarettes among undergraduate students in Jazan Region, Saudi Arabia". They found that, the mean age of studied sample was 16.50 ± 3.3 years.

Regarding the mother's age of studied students, more two third of the studied students had mother's age between 35 to 45 years, and more two third of them had university education or more. This result in the same line with **Lin et al., (2023)** who carried out a study conducted in China about "Factors influencing adolescent experimental and current smoking behaviors based on social cognitive theory: A cross-sectional study in Xiamen", they found that 71.3 % of studied sample had mother's age between 36 to 45 years and 70.2 % of them had university education or more. From the investigator's point of view, access to higher education has significantly expanded, allowing more women to pursue university degrees. This trend has become more pronounced in the past 30-40 years, aligning with the age range of mothers in this group.

The following paragraphs, answered research question number Q2: What is the prevalence of smoking among adolescent students?

Concerning the smoking is considered an addiction, most of the studied students had considered smoking an addiction. This result in the same line with **Sharma & Patliya, (2024)** who carried out a study conducted in India about " An Experimental Study to Evaluate the Effectiveness of PTP on Attitude of Adolescents Regarding Effects of Smoking and Smokeless Tobacco Use and it's Health Hazards Among Students in Selected High School in Dewas", they found that 91.4 % of studied sample had considered smoking an addiction. From the investigator's point of view, nicotine, the primary addictive substance in cigarettes, creates a dependency due to its effects on the brain. This physiological dependence can make quitting smoking challenging and is a key reason why smoking is often considered an addiction.

Regarding the smoking has an effect, less two third of the studied students know that smoking has an effect. This result in the same line with **Kabbash et al., (2024)** who carried out a study conducted in Egypt about " The era of electronic smoking: perceptions and use of E-Cigarettes among university students, Egypt ", they found that 61.5 % of studied sample know that smoking has an effect. From the investigator's point of view, many schools include health education as part of their curriculum, which covers the harmful effects of smoking. Lessons often focus on how smoking affects the body, including respiratory issues, cardiovascular disease, and cancer. Educational campaigns aimed at young people often provide detailed information about the risks of smoking, helping students understand the negative health impacts.

The following paragraphs, answered research question number Q١: What is the adolescent students' knowledge about harmful effects of smoking?

Concerning the smoking methods, all of the studied students give wrong or don't know about smoking methods. This result in the same line with **Noori, & Abdullah, (2024)** who carried out a study conducted in Iraqi about " Smoking Behaviors and Related Factors Among Secondary School Students in Duhok City ", they found that 98.5 % of studied sample give wrong or don't know about smoking methods. From the investigator's point of view, students might encounter inaccurate or misleading information online or through peers, which can contribute to misunderstandings about smoking methods.

Regarding the symptoms that appear in smokers, majority of the studied students give wrong or don't know about symptoms that appear in smokers. This result in the same line with **Gunasekaran et al., (2024)** who carried out a study conducted in Singapore about " Youths' awareness and attitudes towards raising the minimum legal age of smoking and passive smoking in Singapore", they found that 88.5 % of studied sample give wrong or don't know about symptoms that appear in smokers. From the investigator's point of view, younger students might not have enough personal or family experience with chronic illnesses related to smoking to recognize or understand these symptoms.

Regarding studied students' total knowledge, less two third of them had poor knowledge about harmful effects of smoking, and less than one third of them had good knowledge, this result agrees with **Littlecott et al., (2023)** who conducted a study in British about "Perceptions of friendship, peers and influence on adolescent smoking according to tobacco control context", they found that,30.5 % of the parents had good total knowledge and 60.5 % had poor knowledge. From the investigator point of view, the depth and quality of study can vary significantly between schools and regions, affecting how well students understand the harmful effects of smoking.

The following paragraphs, answered research question number Q3: What are the adolescent students' reported practices regarding the harmful effects of smoking?

Regarding studied students' total reported practices, the current study revealed that, less than one third of them had satisfactory level in total reported practices, while less than two third of them had unsatisfactory total reported practices, this result agrees with **Adebisi et al., (2024)** who conducted a study in Thailand about "Prevalence and determinants of

ISSN 2786-0183
Helwan International Journal for Nursing Research and Pratctice
Vol. 3, Issue 8, Month: December 2024, Available at: https://hijnrp.journals.ekb.eg/

current cigarette smoking among adolescents in Thailand: evidence from 2021 global school-based health survey.", they found that,30.9 % of the parents had satisfactory level in total reported practice. Also, 61.8 % had unsatisfactory total reported practice. From the investigator point of view, some students might resist changing their views or accepting new information about smoking practices due to personal biases.

The following paragraphs, answered research question number Q 4: Is there relation between adolescent students' knowledge, reported practice and their demographic data?

Regarding to relation between studied student's demographic characteristics and total knowledge, the current study revealed a highly statistically significant between studied students all items of demographic characteristics and their total knowledge scores. This result agrees with the study done by **Griban et al., (2023)** who conducted a study in Zhytomyr about "The impact of smoking on diseases of the organs and systems of the female body", they found that, a statistically significant relation between students' and all items of demographic characteristics. From the investigator point of view, Students from different demographic backgrounds might have different levels of exposure to educational content. For example, students in regions with more comprehensive health education programs may have better knowledge about topics like smoking and health.

Concerning to relation between studied student's demographic characteristics and total reported practices, the current study revealed a highly statistically significant between studied students all items of demographic characteristics and their total reported practices. This result agrees with the study done by **Bogumil et al., (2024)** who conducted a study in California about "Excess pancreatic cancer risk due to smoking and modifying effect of quitting smoking", they found that, a statistically significant relation between samples all items of demographic characteristics and their total reported practices scores. From the investigator point of view, students with greater access to educational resources and extracurricular activities may have more opportunities to develop and report positive practices.

Conclusion

Based on the results of the present study and research question the following conclusion includes:

Less two third of the studied students had poor total knowledge about harmful effects of smoking, and more than two third of them had unsatisfactory total reported practices regarding prevention of smoking. There a relation between students' knowledge, and reported practices towards harmful effects of smoking and prevention of smoking. There is statistically significant relation between students' demographic data and their knowledge, and reported practices regarding harmful effects of smoking and prevention of smoking.

Recommendations

In the light of the result of this study, the following recommendations were suggested:

1. Provide health education program for adolescent students about harmful effects of smoking and prevention of smoking.
2. Design booklets about harmful effects of smoking and prevention of smoking used which include all information for adolescent children.
3. Design posters and put in schools of harmful effects of smoking and prevention from smoking that would help students to improve' knowledge, and practices of harmful effects of smoking and prevention from smoking.
4. Encourage students to make group discussion regarding harmful effects of smoking and prevention of smoking to exchange knowledge, and practice under observation from school health nurse.
5. Apply further research in large sample and other setting for generalization.

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