Knowledge, attitude and practice toward tobacco smoking among medical students in Kassala University, Kassala state, Sudan

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Abstract

Smoking causes preventable illness, fatality, and charges; it causes many diseases and deaths. This study aimed to evaluate knowledge, attitude, and practice toward tobacco smoking among medical students at Kassala University, Faculty of Medicine. A cross-sectional descriptive study used self-administered questionnaires to assess students' tobacco knowledge, attitudes, and behaviors. Students from 1st, 2nd, 3rd, 4th, 5th, and 6th grades participated in this study in 2021–2022. The results revealed a high level of knowledge of the hazards of tobacco smoking. They believed that both active in moreover passive smoking was injurious to health. 88.6% of the respondents believed that tobacco smoking during pregnancy increases the risk of congenital fetal anomalies.88.8% knew smoking is a risk factor for lung disease. In comparison, 12.0% were unaware of that risk in grade 1 medical students. 91.7% of the second grade knew that smoking is a risk factor for lung cancer and 8.3% were not. 100% of third-grade medical students knew that smoking is a risk factor for lung cancer. The most important conclusion was that smoking prevalence among medical students in Kassala University; Faculty of Medicine was very high as most students were males. Most participants had good knowledge about the harmful effect of smoking, which proved to help avoidance of smoking among students.

Introduction

Smoking remains a global epidemic with far-reaching health and economic implications. Although per capita rates of smoking began declining decades ago in many developed countries[1], as reported by the World Health Organization (WHO), tobacco use is currently responsible for more than 6 million deaths each year and is considered a worldwide public health threat[2]. Cigarette smoking is a public health problem associated with significant morbidity and mortality. More than five million of those deaths result from direct tobacco use. In contrast, more than 600,000 results from nonsmokers being exposed to second-hand smoke [3].

On the other hand, it is well known that tobacco is a modifiable risk factor for many oral pathologies, such as cancer and period ontitis [4]. The prevalence of smoking experience was very high among high school students. The most prevalent source of information about smoking was Iranian broadcasting companies. Cheerful family, smoking history, and smoking friends were the critical motivating factors toward smoking [5]. The Study concludes that pictorial warnings do not help persuade current smokers to quit smoking [6]. Patients expect information, help, and guidance from their primary care physician on several health-related matters; physicians also play an essential role in helping patients to stop smoking[7]. Medical students, the future physicians, are the backbone of the force to fight to smoke. In a study by Kusuma et al [8] on the knowledge of Berlin's medical students in smoking cessation, only one-third of students felt they were qualified to counsel patients about tobacco dependence. Therefore, we should ensure that medical students are willing to address the smoking epidemic before engaging them in this fight[9]. Tobacco smoking among healthcare professionals negatively affects the attitude and impression of patients about healthcare professionals and negatively affects their willingness to quit smoking. Furthermore, it was found that physicians who smoke are less likely to advise their patients about smoking and their smoking status influence their patients' response to quit smoking. Therefore, reducing the prevalence of tobacco smoking among healthcare professionals will effectively reduce its prevalence among the general population[10].

Methodology
Study Design
This research was conducted as a descriptive cross-sectional survey from January to August 2022. Quantitative research refers to doing numbers and collecting facts, and studying the relationship between these groups of facts. Thisdata collection method would be suitable for this Study as it helps assess the knowledge, attitude, and practice of medical students toward tobacco smoking at Kassala University in the years 2021 to 2022. The cross-sectional study allowed us to compare many different variables simultaneously and collect much information relatively quickly.

Study area
Kassala is the capital of Kassala State in eastern Sudan. In 2008 the population was recorded to be 419,030. The city is built on the banks of the Gash River. It is a market town and famous for its fruit garden. The inhabitants are from different Sudanese ethnic groups. Its location along the main Khartoum-port Sudan highway makes it an important trade center. Kassala University was established in1990. It is an essential institution for development in eastern Sudan. The University includes medicine and health sciences faculties, Education, Economics and Administration,Computer Sciences, and more.

Study population
A medical student in Kassala University, Faculty of Medicine and Health Sciences, respectively, medicine program from first to sixth class.

Inclusion and exclusion criteria
We included students in Kassala University, Faculty of Medicine and Health Sciences medicine program. We excluded students who had not attended or refused to participate at the time of Study.

Variables
Age, socioeconomic status, and residence of the student.

Sample size and sampling technique
The target population is medical students at Kassala University. To obtain a nationally representative sample of knowledge, attitude, and practice of medical students at Kassala University, the study used a published table sampling design with a sample size of ±5%. Precision levels where the confidence level is 95%.

The total number of students in the faculty of medicine at Kassala University is [population number] = 946.

And with a level of precision = 5%

The sample size= 278 students.

N=population, S=required sample, confidence=95%

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—N is population size. S is sample size.

Source: Krejcie & Morgan, 1970

Ethical consideration

The study was approved by the ethical and research committee of the department of community medicine of the University of Kassala. The students were informed about the aim and objectives of the Study, and both written and verbal consent was taken from students before administering questionnaire. Confidentiality of information was assured.

Data Collection tool

The data were collected using self-administered pretested validated questionnaire in English. The questionnaire included information about socio-demographic characteristics, practice, and patterns of tobacco smoking, knowledge regarding the harmful effects of tobacco smoking, and attitude.

Sampling procedure

By using a stratified sampling technique, a random sample of 278 students was selected from the population of the six grades, and appropriate representation from each grade was ensured

Pilot study

A pilot study was conducted among ten medical students who met the eligibility criteria to determine the questionnaire's feasibility, readability, and comprehensibility one month before data collection.

Data analysis

All information about the study population was entered into a computer. The data were analyzed using the Statistical Package for Social Science computer program (SPSS; Chicago, USA, version 2023). Furthermore, the results were expressed in tables and descriptive statistics. Person correlation was performed. P. values less than or equal to 0.05 were considered statistically significant in the study.

Results

The study was conducted with 278 medical students at Kassala University. The researchers received 273 completed questionnaires distributed to the 1st-grade, 2nd-grade, 3rd-grade, 4th-grade, 5th grade and 6th-grade students. The Study revealed a high level of knowledge of the hazards of tobacco smoking and believed that both active and passive smoking was injurious to health, and 88.6% of respondents believed that tobacco smoking during pregnancy increases the risk of congenital fetal anomalies.

Socio-demographic profile of study subjects

Table (1): Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	217	78.1	78.1	78.1
	female	61	21.9	21.9	100.0
	Total	278	100.0	100.0	

Most respondents were males (78.1%), and females had a lower percentage (21.9%).

Table (2): Medical school level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	50	18.0	18.0	18.0
	2.00	36	12.9	12.9	30.9
	3.00	42	15.1	15.1	46.0
	4.00	44	15.8	15.8	61.9
	5.00	36	12.9	12.9	74.8
	6.00	70	25.2	25.2	100.0
	Total	278	100.0	100.0	

Table (3): Residence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	173	62.2	62.2	62.2
	Rural	105	37.8	37.8	100.0
	Total	278	100.0	100.0	

Most of the respondents were of urban residency (62.2%) and rural (37.8%).

Table (4): State of smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nonsmoker	79	28.4	28.4	28.4
	Former smoker	56	20.1	20.1	48.6
	Occasional smoker	79	28.4	28.4	77.0
	Regular smoker	64	23.0	23.0	100.0
	Total	278	100.0	100.0	

5th level has the highest positive attitude and knowledge. This is probably due to the knowledge acquired through previous study years.

Distribution of study subjects based on knowledge

Table (5): knowledge according to medical student level

student's knowledge about smoking			Medical school level						Total	p-value
			1.00	2.00	3.00	4.00	5.00	6.00		
Passive smoking increases the risk of lung diseases in nonsmoking adults.	Agree	Count	42	33	42	39	35	59	250	
		%	84.0%	91.7%	100.0%	88.6%	97.2%	84.3%	89.9%	
	Disagree	Count	8	3	0	5	1	11	28	
		%	16.0%	8.3%	0.0%	11.4%	2.8%	15.7%	10.1%	
Total		Count	50	36	42	44	36	70	278	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.044
poisonous content in tobacco smoke is nicotine and tar	Agree	Count	37	21	41	34	36	62	231	
		%	74.0%	58.3%	97.6%	77.3%	100.0%	88.6%	83.1%	
	Disagree	Count	13	15	1	10	0	8	47	
		%	26.0%	41.7%	2.4%	22.7%	0.0%	11.4%	16.9%	
Total		Count	50	36	42	44	36	70	278	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.000

There is a statistical significance (P value=0.044) between knowledge that passive smoking increases the risk of lung disease and the medical school level; the third level had the highest knowledge (100%). Also, there is a statistical significance (P value=0.00) between knowledge about poisonous content in tobacco smoke, nicotine, and tar and medical school level; the fifth level had the highest knowledge (100%).

Table (6): Smoking is the most common risk factor for lung cancer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	263	94.6	94.6	94.6
	Disagree	15	5.4	5.4	100.0
	Total	278	100.0	100.0	

Most of the study subjects (94.6%) had correct knowledge about smoking as the most common risk factor for lung cancer.

Table (7): Passive smoking increases the risk of lung diseases in nonsmoking adults

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	250	89.9	89.9	89.9
	Disagree	28	10.1	10.1	100.0
	Total	278	100.0	100.0	

Most study subjects (89.9%) answered correctly that passive smoking increases therisk of lung disease in nonsmoking adults.

Table (8): Maternal smoking during pregnancy increases the risk of congenital anomalies in her baby

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	247	88.8	88.8	88.8
	Disagree	31	11.2	11.2	100.0
	Total	278	100.0	100.0	

Most study subjects(88.8%) agree that maternal smoking during pregnancy increases her baby's risk of congenital anomalies.

Table (9): Entrance to medical school helps increase awareness about smoking hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	225	80.9	80.9	80.9
	Disagree	53	19.1	19.1	100.0
	Total	278	100.0	100.0	

Most respondents (80.9%) agree that entrance to medical school is helpful in increasing awareness about smoking hazards.

Distribution of study subject based on attitude:

Table(10): attitude according to medical student level:

The attitude of medical students toward smoking			Medical school level						Total	p-value
			1.00	2.00	3.00	4.00	5.00	6.00		
If you are not a smoker, your reason is :	Health protection	Count	5	2	11	9	18	10	55	
		%	45.5%	25.0%	91.7%	64.3%	90.0%	71.4%	69.6%	
	Self disciplines	Count	6	6	1	4	1	1	19	
		%	54.5%	75.0%	8.3%	28.6%	5.0%	7.1%	24.1%	
	Avoid annoying others	Count	0	0	0	1	0	3	4	
		%	0.0%	0.0%	0.0%	7.1%	0.0%	21.4%	5.1%	
	You are a model for children	Count	0	0	0	0	1	0	1	
		%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	1.3%	
Total		Count	11	8	12	14	20	14	79	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.001
Smokers look confident and mature	Agree	Count	12	3	5	9	6	27	62	
		%	24.0%	8.3%	11.9%	20.5%	16.7%	38.6%	22.3%	
	Disagree	Count	38	33	37	35	30	43	216	
		%	76.0%	91.7%	88.1%	79.5%	83.3%	61.4%	77.7%	
Total		Count	50	36	42	44	36	70	278	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	0.003

There is a statistical significance(P value=0.001) between the reason for not beinga smoker and medical school level; the most positive attitude is health protection(69.6%) been most prevalent among the third level(91.7%).

Table (11): If you are not a smoker, your reason is

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Health protection	55	19.8	69.6	69.6
	Self-disciplines	19	6.8	24.1	93.7
	Avoid annoying others	4	1.4	5.1	98.7
	You are a model for children	1	.4	1.3	100.0
	Total	79	28.4	100.0	
Missing	System	199	71.6		
Total		278	100.0		

Most respondents (69.6%) avoid smoking due to health protection issues.

Table (12): Medical students play a role in smoking avoidance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	215	77.3	77.3	77.3
	Disagree	63	22.7	22.7	100.0
	Total	278	100.0	100.0	

Most respondents(77.3%) agreed that medical students play a role in smoking avoidance.

Table (13): Internet and social media increase awareness about smoking Hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	207	74.5	74.5	74.5
	Disagree	71	25.5	25.5	100.0
	Total	278	100.0	100.0	

Most respondents (74.5%) agreed thatthe internet and social media increase awareness about smoking hazards.

Table (14): Smokers look confident and mature

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	62	22.3	22.3	22.3
	Disagree	216	77.7	77.7	100.0
	Total	278	100.0	100.0	

Most respondents (77.7%) disagreed that smokers look confident and mature.

Distribution of study subjects based on practice:

Table (15): practice according to medical student level:

Practice :(for smokers)			Medical school level						Total	p-value
			1.00	2.00	3.00	4.00	5.00	6.00		
Duration of smoking	Recently	Count	14	9	11	15	6	10	65	0.054
		%	35.9%	32.1%	36.7%	50.0%	37.5%	17.9%	32.7%	
	Months	Count	10	9	12	7	4	31	73	
		%	25.6%	32.1%	40.0%	23.3%	25.0%	55.4%	36.7%	
	Years	Count	15	10	7	8	6	15	61	
		%	38.5%	35.7%	23.3%	26.7%	37.5%	26.8%	30.7%	
Total		Count	39	28	30	30	16	56	199	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Influencing factors of smoking	Friends	Count	18	6	18	7	8	23	80	0.037
		%	46.2%	21.4%	60.0%	23.3%	50.0%	41.1%	40.2%	
	Family member	Count	14	12	5	15	2	17	65	
		%	35.9%	42.9%	16.7%	50.0%	12.5%	30.4%	32.7%	
	Street	Count	7	10	7	8	6	16	54	
		%	17.9%	35.7%	23.3%	26.7%	37.5%	28.6%	27.1%	
Total		Count	39	28	30	30	16	56	199	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Factors increasing daily cigarette frequency	Sadness	Count	12	17	6	13	2	19	69	0.015
		%	30.8%	60.7%	20.0%	43.3%	12.5%	33.9%	34.7%	
	Stress	Count	25	10	19	13	10	33	110	
		%	64.1%	35.7%	63.3%	43.3%	62.5%	58.9%	55.3%	
	Emptiness	Count	2	1	5	4	4	4	20	
		%	5.1%	3.6%	16.7%	13.3%	25.0%	7.1%	10.1%	
Total		Count	39	28	30	30	16	56	199	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
If you quit smoking, substitution for another habit is a solution	Agree	Count	17	3	2	5	2	39	68	0.000
		%	43.6%	10.7%	6.7%	16.7%	12.5%	69.6%	34.2%	
	Disagree	Count	22	25	28	25	14	17	131	
		%	56.4%	89.3%	93.3%	83.3%	87.5%	30.4%	65.8%	
Total		Count	39	28	30	30	16	56	199	
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Stress was the most common factor in increasing daily smoking frequency among the first level(64.1).

Table(16): State of smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non-smoker	79	28.4	28.4	28.4
	Former smoker	56	20.1	20.1	48.6
	Occasional smoker	79	28.4	28.4	77.0
	Regular smoker	64	23.0	23.0	100.0
	Total	278	100.0	100.0	

In the present study, of the total (278) respondents (195), 71.6% were smokers. Out of them (20.1) were former smokers, (28.4%) were occasional smokers, and (23%) were regular smokers.

Table (17): Duration of smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Recently	65	23.4	32.7	32.7
	Months	73	26.3	36.7	69.3
	Years	61	21.9	30.7	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

The majority of respondents (26.3%) had moths duration of smoking.

Table (18): Duration of smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Friends	80	28.8	40.2	40.2
	Family member	65	23.4	32.7	72.9
	Street	54	19.4	27.1	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

From the present study, 28.8% of respondents said that friends play an important role in smoking, and family members (23.4%) were the second influencing factor.

Table (19): Number of cigarettes per day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	56	20.1	28.1	28.1
	5-10	89	32.0	44.7	72.9
	More than 10	54	19.4	27.1	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

Among 195 students, 89 (32%) smoked 5-10 cigarettes daily.

Table (20): Factors increasing daily cigarette frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sadness	69	24.8	34.7	34.7
	Stress	110	39.6	55.3	89.9
	Emptiness	20	7.2	10.1	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study majority of smokers (39.6% of the sample size) said that stress is the most common factor that increases daily cigarette frequency, (24%) went for sadness, and (7.2%) went for emptiness.

Table (21): Feeling during and after smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Euphoria	123	44.2	61.8	61.8
	Feeling guilty	76	27.3	38.2	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study, most smokers (44.2% of the sample size) feel euphoric during and aftersmoking, (and 27.3%) feel guilty.

Table (22): Assumed benefits of smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Relieve stress	142	51.1	71.4	71.4
	Enhance self-confidence	43	15.5	21.6	93.0
	Increases concentration	14	5.0	7.0	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study majority of respondents (51.1%) assumed that smoking relieves stress (15.5%) went for enhancing self-confidence, (and 5%) went for increasing concentration.

Table (23): Smoking has the charismatic effect

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	88	31.7	44.2	44.2
	Disagree	111	39.9	55.8	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study, most respondents (39.9%) disagreed that smoking has a charismatic effect.

Table (24) Smoking consumes your expense

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	123	44.2	61.8	61.8
	Disagree	76	27.3	38.2	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study, most respondents (44.2%) agreed that smoking consumes expenses.

Table (25): Had attempts to quit smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Had	76	27.3	38.2	38.2
	Had not	123	44.2	61.8	100.0
	Total	199	71.6	100.0	
Missing	System	79	28.4		
Total		278	100.0		

In the present study, the majority of respondents(44.2%) had not attempted to quit smoking.

Discussion

We took medical students as the focus of our survey as the attitude and practice toward tobacco use of these young health professionals can influence future policies and practices. If doctors and medical students smoke, then the credibility of anti-smoking messages to the public is lost. Medical students should be more aware of the health hazards of smoking than young people of the same age. A higher proportion of smokers live in urban; friend pressure is also essential to start smoking. This Study revealed that only 70.1% of medical students at Kassala university are smokers. Other Studies among medical students showed a lower smoking prevalence of 5.07% in the Lao people's democratic republic [10], 25.8% in Lebanon 21*, and 17.6% in Saudi Arabia. According to Azhar et al., smoking prevalence among medical students is expected to be low because they have a greater chance of exposure to awareness programs and more excellent knowledge regarding the risk of smoking [11]. However, in this current Study, the prevalence is very high because there is less chance of exposure to awareness programs. Academic stress is one potential reason for the high prevalence of tobacco smoking among medical students at Kassala university. Concerning gender, the smoking prevalence in males was higher than in females due to social stigma. To the best of our knowledge, there are no studies conducted regarding tobacco smoking in the Faculty of Medicine at Kassala university. Most of the study subjects (88%)knew about the harmful effects due to tobacco consumption which leads to lung cancer higher than the Study conducted in S. Nijalingappa medical college in Bagalkot city(80%)[12] and the current Study lower than Study conducted by Singh G in Bihar(96%) where the current tobacco users were one third[13].In the current study, situations which increased the frequency of usage were mainly 64.1% during stress similar to Study done in S. Nijalingappa medical college in Bagalkot city in first grade[12] In comparison to other Study done by Shah VN, among the College Students of Bhavnagar City (Gujarat) showed that the most common situation in which frequency of tobacco consumption increased was when they were in groups (54.4%), followed by examination time (32.4%), loneliness (14.9%) and family problems (1.7%)[14].

The influence of family members in enhancing smoking is well demonstrated in this Study. This is similar to the findings in Pune [15] and Derbyshire [16]. The influence of peers is always significant among adolescents [17,18]; therefore, it is not surprising that our Study demonstrates it. Some developed these ideas further and added the use of peer leaders as educators to increase social commitment not to smoke [18].

Conclusion

The most significant finding was that the majority of students at Kassala University's Faculty of Medicine were males, which contributed to a very high prevalence of smoking among the student body. In this study, we documented that the majority of participants had a good understanding of the harmful effects of smoking, which proved to help avoid smoking among students. [Citation needed] Students were significantly influenced by their smoking friends. In addition, the vast majority of the students exhibited a favorable attitude toward the practice of smoking.

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