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Original Article

Prevalence of Tobacco Consumption Through Passive Smoking and E-cigarette at Fakeeh College for Medical Sciences

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Abstract

Background: More than 6 million adults worldwide are lost their lives due to the consumption of E-cigarettes. Aim of this study is the investigation of tobacco consumption prevalence *via* both passive smoking and E-cigarette amongst medical students at Fakeeh College for Medical Sciences (FCMS), Jeddah city, Saudi Arabia.

Methods: An epidemiological, cross-sectional study conducted amongst FCMS medical students between July 2020 till November 2020.

Results: Total of 359 participants involved in this study. Females were (87.7%) and males were (12.3%). (48.7%) of the participants were in age group 19-20 years and (30.9%) were 21-22 years. (93.8%) were singles. The majority were in their second and third academic year, 78 (23.1%) and 90 (26.7%), respectively. 293 (81.6%) are not current smokers and 72 (20.1%) are former smokers. Most of the participants agreed that smoking tobacco causes dangerous diseases such as brain thrombosis, heart attacks and lung cancer, 291 (81.1%), 189 (52.6%), 262 (73.0%) and 288 (80.2%); respectively. Using E-cigarette to quit smoking is successful in 53 (14.8%) and 105 (29.2%) recommend E-cigarette for smoking cessation.

Conclusions: Prevalence of E-cigarette and shisha smoking amongst students of FCMS is not high, yet it is alarming. Most of the participants had good knowledge of tobacco harms. Our results highlight the importance of initiating campaigns to quit smoking cigarettes, E-cigarette, and shisha on-campus. The results obtained from this study show the importance to create, develop and implement tobacco education programs to help in smoking cessation.

Keywords: E-cigarette, medical students, smoking, passive smoking, tobacco.

Introduction

Tobacco consumption is available worldwide in the form of cigarettes, pipes, and chewing. It is also a common problem among healthcare students. More than 6 million adults worldwide are killed due to the consumption of cigarettes. Recent study has ratified the correlation between smoking and several ailments e.g., heart disease, lung cancer, bladder cancer, oral cancer, pulmonary emphysema, bronchitis, …. etc (1). One of the important addictive components of tobacco is nicotine, which explains why people who try to stop smoking face difficulties because of nicotine addiction. Even though nicotine is addictive, the majority of tobacco harm use arises from other chemicals. Tobacco consumption considers as one of the leading causes of lung cancer and chronic obstructive lung diseases, which leads to about 8 million annual deaths and 1.2 million of these deaths caused by the passive smoking (2,3). Nowadays, smokers are not only maleficence themselves, but may harm community around them as they are categorized as passive smokers (PS). The PS is defined as tobacco particles inspiration by non-smokers accidentally by having involuntary exposure to tobacco smoke (4). There is a 35% increase in risk among people with tobacco exposure (5). The strength of exposure to periphery tobacco smoke regulated by several parameters e.g., the number of exposure hours/day, the proximity to smokers, the number of active smokers existing in a place, and ventilation capacity where passive smoking exists (6).

Therefore, knowing the real numbers of health care students who consume tobacco through passive smoking or E-cigarette can help the authorities such as the Ministry of Health (MOH) to find a solution to such a problem. From this point, there has been a gap between knowing prevalence of tobacco intake through passive and E-cigarette among health care students at Fakeeh College for Medical Sciences (FCMS) in Jeddah, Saudi Arabia.

The aim of this study is to measure prevalence of tobacco usage through passive smoking and E-cigarette amongst FCMS medical students.

Methodology

Setting

The study is an epidemiological, cross-sectional study, executed from July 2020 till November 2020 in Fakeeh College for Medical Sciences (FCMS) among the medical students, Jeddah, Saudi Arabia.

Design

Sample size was 359 medical students from the FCMS enrolled in this study. We measured the sample size by using Raosoft calculator (7). The data has been collected with pre-tested validated questionnaire and it distributed on-line (8,9).

Data Questionnaire

The questionnaire is multidisciplinary composed of 4 different parts. First part included participants sociodemographic characteristics, second part comprised tobacco use prevalence and patterns. Third part based on the comparison between different tobacco use knowledges and fourth part concerned with the characteristics of vaping habits and related data. Data was entered through Microsoft Excel 2021.

Data Analysis

The data obtained were analysed using the SPSS software (version 21). The *P*-value <0.05 is considered significant statistically at confidence interval (CI) of 95%.

Results

A total of 359 participants medical students at FCMS were recruited in this study. Females (87.7%) and males (12.3%). Out of them, 48.7% of the participants were in age range 19-20 years, 30.9% were in age range 21-22 years, 14.2% were in age range 23-24 years old, 4.2% were in age range 25-26 years old and 2.1% were in age 27 years old and above. Moreover, 93.8% were singles (unmarried). Most students enrolled in this study were in their second and third academic year (23.1%) and (26.7%); respectively. Most of them lived with family (90.8%). A 5-8 were the number of family members in (62.6%). The majority were non-smokers (80.7%). A 46.0% of them had male smoker in the family **(Table 1)**.

Table 1: Baseline characteristics of participants. Age range, gender, marital status, academic year, families, previous work, and existence of smokers of the participants (n=359).

Items	Characteristics	Frequency
Gender	Female	315 (87.7%)
	Male	44 (12.3%)
Age group	19-20	175 (48.7%)
	21-22	111 (30.9%)
	23-24	51 (14.2%)
	25-26	15 (4.2%)
	27 and above	7 (2.1%)
Marital status	Single	(93.8%)
	Married	(5.0%)
	Divorced	(1.2%)
Academic year	First year	(19.9%)
	Second year	(23.1%)
	Third year	(26.7%)
	Fourth year	(19.6%)
	Fifth year	(3.3%)
	Sixth year	(7.4%)
Personal living	With Family	326 (90.8%)

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	Personal rented home	26 (7.1%)
	Rented home with friends	7 (2.1%)
Previous work	Yes	71 (19.9%)
	No	288 (80.1%)
Family characteristics	1-4	86 (24.0%)
	5-8	225 (62.6%)
	9-12	42 (11.6%)
	More than 12	6 (1.8%)
Are you a smoker	Yes	69 (19.3%)
	No	290 (80.7%)
Presence of smokers in family	Female smoker	56 (15.7%)
	Male smoker	166 (46.0%)
	Non-smoker	137 (38.3%)

Among participants, 293 (81.6%) are not current smokers and 72 (20.1%) are former smokers. 56 (15.6%) students launched smoking at age between 16-19 years old. The number of cigarettes smoked/day was 1-5 cigarettes in 53 (14.8%) of the students, while 36 (10%) students usually smoked 6-10 cigarettes per day. 95 (26.5%) students used to smoke shisha. 72 (20.1%) students tried occasionally to quit smoking. The duration of smoking shisha (hours) was in 68 (18.95%) students and the favourable place to smoke shisha significantly found p<0.035 to be in home for 68 (18.9%) students **(Table 2)**.

Table 2. Smoking habits among the participants

Question	Yes	No				P-value
Current smoker?	66 (18.4%)	293 (81.6%)				0.898
Former smoker?	72 (20.1%)	287 (79.9%)				0.161
Current smoker of smokeless tobacco	64 (17.8%)	295 (82.2%)				0.973
Using snuff by mouth/day	57 (15.9%)	302 (84.1%)				1
Smoking shisha	95 (26.5%)	264 (73.5%)				0.901
Age starting smoking (years)	<12	12-15	16-19	20 and more	Never smoked	0.654
N (%)	10 (2.8%)	29 (8.1%)	56 (15.6%)	23 (6.4%)	241 (67.1%)	
Number Cigarettes smoked/day	1-5	6-10	>10	Never smoked		0.367
N (%)	53 (14.8%)	36 (10.0%)	12 (3.3%)	258 (71.9%)		
Time of starting smoking after awakening	Within 5 min	6-60 min	>60 min	Never smoked		0.561
N (%)	43 (12.0%)	29 (8.1%)	32 (8.9%)	255 (71.0%)		
Trying to quit smoking?	Yes	No	Never smoked			0.799
N (%)	72 (20.1%)	34 (9.5%)	253 (70.5%)			
Causes for trying to quit smoking	Personal	Family advice	Health problem	Never smoked		0.534
N (%)	71 (19.8%)	18 (5.0%)	23 (6.4%)	247 (68.8%)		
Duration of smoking shisha	Minutes	Hours	Never smoked			0.694
N (%)	48 (13.4%)	68 (18.9%)	243 (67.7%)			
Place of smoking shisha	Home	Coffee shop	Restaurant	Never smoked		**0.035***

** P-value <0.05 statistically significant*

The student's knowledge and attitude concerning the tobacco usage are shown in Table 3. Most participants agreed that, smoking tobacco causes dangerous disease, brain thrombosis, heart attack and lung cancer 291 (81.1%), 189 (52.6%), 262 (73.0%) and 288 (80.2%), respectively. On the other hand, 87 (24,2%) students thought that smokeless tobacco is significantly less dangerous, p< 0.009. 124 (34.5%) and 64 (17.8%) did not know if smokeless tobacco and shisha smoking is less dangerous respectively. The majority 257 (71.6%) and 226 (63.0%) agreed that smoking and smoking shisha are significantly considered as type of addiction; respectively; p<0.003; p<0.00005. Most of the students 232 (64.6%) agreed significantly that all cigarette advertisings should be banned, p< 0.03 **(Table 3)**.

Table 3: The participants knowledge and attitude about tobacco

Questions	Yes	No	Do not know	*P* value
Smoking tobacco causes dangerous diseases	291 (81.1%)	14 (3.9%)	54 (15.0%)	0.742
Smoking tobacco causes brain thrombosis	189 (52.6%)	27 (7.5%)	143 (39.8%)	0.843
Smoking tobacco causes heart attack	262 (73.0%)	30 (8.4%)	67 (18.7%)	0.185
Tobacco smoking causes lung cancer	288 (80.2%)	25 (7.0%)	46 (12.8%)	0.484

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Smokeless tobacco is less dangerous	87 (24.2)	148 (41.2%)	124 (34.5%)	**0.009***
Shisha smoking is less dangerous	60 (16.7%)	235 (65.5%)	64 (17.8%)	0.513
Smoking is a type of addiction	257 (71.6%)	41 (11.4%)	61 (17.0%)	**0.003***
Smoking shisha is a type of addiction	226 (63.0%)	59 (16.4%)	74 (20.6%)	**0.00005***
Islam forbids smoking	213 (59.3%)	58 (16.2%)	88 (24.5%)	0.584
Tobacco products taxes should be increased	190 (52.9%)	86 (24.0%)	83 (23.1%)	0.212
All cigarettes advertising should be banned	232 (64.6%)	40 (11.1%)	87 (24.2%)	**0.030***

** P-value <0.05 statistically significant*

Most of the students didn't smoke vape 272 (75.8%). Using the E-cigarette to cease smoking was recommended by 105 (29.2%) students as a gadget for smoking cessation. 53 (14.8%) students were usefully able to stop smoking *via* the E-cigarette. 209 (58.2%) students did not realize that E-cigarette smoking is more felled than ordinary cigarette. 175 participants (48.7%) notarized that E-cigarette is less harmful than the conventional cigarettes **(Table 4)**.

Table 4: Characteristics of vaping habits and related data among participants (n=359)

Questions	Answer	N (%)	P-value
Vaping pattern	Occasional	50 (13.9%)	
	Regular vaping	37 (10.3%)	0.791
	Do not vape	272 (75.8%)	
Reason behind vaping	Peer effect	18 (5.0%)	0.243
	Sadness and depression	14 (3.9%)	
	Anxiety and stress relief	23 (6.4%)	
	Entertainment	21 (5.8%)	
	Quit conventional cigarette	21 (5.8%)	
	Do not vape	262 (73.0%)	
Smoking cessation via E-cigarette	Successful	53 (14.8%)	0.573
	Failed	32 (8.9%)	
	Never smoked	274 (76.3%)	
Recommend E-cigarette for smoking cessation	Yes	105 (29.2%)	0.843
	No	254 (70.8%)	
Vaping cessation	Successful	54 (15.0%)	0.077
	Failed	39 (10.9%)	
	Do not vape	266 (74.1%)	
Tried vaping	Tried	141 (39.3%)	0.507
	Never tried	218 (60.7%)	
E-cigarette flavors	Fruits	61 (17.0%)	0.330
	Others	27 (7.5%)	
	Do not use E-cigarette	271 (75.5%	
E-cigarette usage frequency	Daily	44 (12.3%)	0.224
	Occasional	39 (10.9%)	
Used E-cigarette for reason of quitting smoking?	Yes	84 (23.4%)	0.766
	No	275 (76.6%)	
E-cigarette smoking is more harmful?	Yes	150 (41.8%)	0.254
	No	209 (58.2%)	
Conventional smoking is more addictive?	Yes	201 (56.0%)	0.712
	No	158 (44.0%)	
Believe that E-cigarette has adverse health effects	More harm	184 (51.3%)	0.477
	Less harm	175 (48.7%)	

Discussion

The prevalence of tobacco use among youth is crucial to assess tobacco as a risk factor for health complications and to implement control guidelines for the prevention of tobacco-related maladies. Prevalence of tobacco users amongst students in this study (18.4%) was similar to those found in preceding Saudi studies, which spanned from 14 to 21.6% (15-17).

The prevalence of E-cigarette smoking was 12.2% among participated medical students in the college of medicine, Alfaisal University, KSA, with males being 3 times more compared to females (8). However, another study which was conducted at the primary health care providers in Makkah region, KSA, revealed high percentage of E-cigarette consumers (52%) (9). A study conducted among medical students at Qassim University explored that 71.9% (out of 256) of participants were not sure that E-cigarette has been approved by FDA. About 10% of students are considered as E-cigarette users (18).

Other than cigarettes, shisha smoking is one of the most ubiquitous smoking practices globally, including Saudi Arabia. The incidence of shisha smokers (26.5%) in our study were consistent with previous findings (2,10-12,19). Majority of the population consider that shisha smoking is less harmful or do not know the amount of harm shisha could make than cigarettes because they believe that the water filters out harmful substances. In our study, 16.7% and 17.8% agreed and did not know if shisha is less dangerous than cigarettes; respectively. In addition, the level of plasma nicotine generated by smoking single shisha was observed to be 20% higher than the nicotine bloodstream level generated from cigarettes, which is much more harmful (20). As just a consequence, it poses significant risk with one's health. These findings demonstrated the importance of tobacco control initiatives all forms of tobacco addiction, not just to cigarette smoking.

In this study, most of FCMS students had good knowledge that cigarette smoking is affiliated with medical problems. Numerous previous studies showed that cigarette smoking was prevalent among health-related college students despite their knowledge and realization of its harmful effects on the human bodies (14,17,21,22).

According to a study performed by Kawakami, medical students' comprehension of harmful impacts of smoking and their willingness in accomplishing tobacco cessation in the prospect seemed underwhelming (23). In fact, medical students have a superior hope of understanding out about risks of smoking throughout their undergraduate studies. As just a consequence, all health colleges' curricula

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should include a more comprehensive approach to tobacco dependence education, emphasizing medical skill and practice for students in counselling their patients in giving up smoking (24,25). It should be noted that policymakers should promote the implementation of tobacco prevention and treatment programs and enable undergraduate students to engage actively in these programs.

Despite the reality that E-cigarette have hardly become available in Saudi Arabia, our findings shows that it has become a widespread practice amongst young undergrads daily (12.3%) and occasionally E-cigarette consumers were found (10.9%). Students from King Saud University in Riyadh (26) reported a similar percentage (25.6%), whereas students from health science colleges at King Saud bin Abdulaziz University for Health Sciences, King Abdulaziz University, and Jeddah University reported 27.7% (2).

We believe that the principal cause for the E-cigarette's popularity is the implementation of a massive advertising blitz appealing to young individuals, like that utilized by conventional cigarette smokers (27, 28). Our study's prevalence is considerably larger than that of a study performed among medical students in Poland; nevertheless, it is equivalent to those from USA, where the prevalence was 3.5% and 24.2%, correspondingly (4, 29).

Conclusion

We finale that, popularity of E-cigarette and shisha smoking in FCMS as a health college is not high, yet it is alarming. Most of the participants had good knowledge of tobacco harms. Our results highlight the importance of initiating campaigns to quit smoking cigarettes, E-cigarette, and shisha on-campus. Finally, the data gathered from this study showed the necessity to implement tobacco awareness programs and techniques to aid in smoking cessation.

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Disclosure

Statement:

No conflict of interest.

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Ethical Consideration:

This study was approved by Dr. Soliman Fakeeh Hospital (DSFH) Scientific Research Review Committee (DSFH IRB approval # 105/IRB/2020; Date: 27 July 2020).

Data Availability

Data that support the findings of this study are embedded within the manuscript

Author Contribution

All authors contributed to conceptualizing, data drafting, collection, analysis and final writing of the manuscript.

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