



Prevalence of Smoking and Its Associated Factors Among Male College Students in Abha, Kingdom of Saudi Arabia: A Cross-Sectional Study

Mohammed Al-Mohaithef¹ and Sriram Chandramohan^{2*}

¹ Assistant Professor, Department of Public Health, College of Health Sciences, Saudi Electronic University, Riyadh, Kingdom of Saudi Arabia

² Lecturer, Department of Public Health, College of Health Sciences, Saudi Electronic University, Abha Branch, Kingdom of Saudi Arabia

*Corresponding e-mail: s.chandram@seu.edu.sa

ABSTRACT

Background: The prevalence of smoking has reduced over a period of time in the developed countries. However, the consumption of tobacco is rapidly increasing in the developing nations which further raises burden of various diseases. The prevalence of consumption of tobacco among the adolescent population is vigorously growing across the world. There are several studies in Saudi Arabia that report the smoking rate and pattern among the secondary school students, but very limited data is available about the prevalence of smoking among the college students. Therefore, the objectives of the current study are to assess the prevalence of smoking among the male college students and to evaluate the relationship between the smoking habit and socio-demographic variables. **Methodology:** This was a cross-sectional study done in selected colleges in King Khalid University, Abha during August 2016 to December 2016. A structured questionnaire was used to collect the socio-demographic information and about smoking habit among the college students. **Results:** The study showed 18.7% of prevalence of smoking among the male college students with a positive association between employment and smoking habit. However, no positive association between other socio-demographic variables and smoking. **Conclusion:** Though the prevalence rate of smoking among the male college students is less but still there is a need to create awareness among the college students and their parents for decreasing the burden of tobacco related diseases.

Keywords: Smoking, Prevalence, Male, College students, Saudi Arabia

INTRODUCTION

Smoking is a main public health issue across the world. The World Health Organization stated that many people die due to tobacco smoking and the rate of its related diseases was higher compared to the total deaths caused by the infectious diseases [1]. Use of tobacco and its related products such as *shisha* is the significant cause of death in both developing and developed countries which is very much avoidable. The number of smokers is decreasing in developed countries because of the awareness campaigns but still the prevalence rate of smoking is tremendously high in developing countries irrespective of the preventive promotions [2,3]. The adverse effects of tobacco smoking include pulmonary diseases, different types of cancers comprising the respiratory, digestive and genitourinary system. Leukemia and premature death is also a distinguished problem of tobacco consumption [4]. It is apparent that lung cancer, chronic bronchitis and the carcinoma of the oral cavity are the most commonly reported health issues among the smoking individuals [5]. The life expectancy and the productivity among the smokers are less in comparison with the non-smoking persons [6]. According to the statistical data reported in 2005, the prevalence of smoking among adult population in the United States was 20.9% [7] and a worldwide survey conducted in 42 countries among the college students found the maximum prevalence rate of 48% among male students and 22% among female students [8]. The kingdom of Saudi Arabia started experiencing a rapid industrialization, globalization, westernization and as a result of it there was a drastic change in the lifestyle among the population in the country which sharply increased the usage of smoking and smokeless tobacco [9,10]. As per 2008 statistics, the prevalence rate of smoking was about 37.6% among males and 6% among female in the Kingdom of Saudi Arabia [11]. Another review done in Saudi Arabia by Bassiony, et al., conveyed the prevalence of smoking ranged from 12% to 29.8% among the secondary school students and the

current smokers among the college students were between 2.4% to 37% [12]. A study conducted in Bahrain found the prevalence of smoking *shisha* among the young male students was 13% [13]. Similarly, another study done in Syria among the high school students found the current percentage of male and female smokers were 15.9% and 6.6% respectively [14]. Likewise, various countries all over the globe face an incredible rise in the prevalence of smoking among the youth and young adult population [15]. A research has been done on evaluating the socio-demographic characters and its association with smoking habit and it was successful in establishing a positive association [16,17].

Youth are more vulnerable to smoking habit because of social pressure and initiating of smoking at the earlier age made them a lifelong smoker which increases the burden of chronic diseases at their later stage of life [18,19]. A study done by Minh, et al., in 2016 also described that youth are the susceptible population for smoking habit and it is very much needed to plan an effective intervention for decreasing the usage of tobacco and its products among them [20]. Despite many studies done in Saudi Arabia and in Eastern Mediterranean region, only fewer studies were carried out among the college students. There is absence of scientific data about the smoking prevalence rate and its risk factors among the college students in certain regions of Saudi Arabia including the Abha City, Therefore, the current study is aimed at assessing the prevalence of smoking and its associated factors among male college students in Abha, Kingdom of Saudi Arabia.

MATERIALS AND METHODS

Study Design

This was a cross-sectional study.

Study Setting

This study was conducted in the selected colleges in King Khalid University, Abha, Kingdom of Saudi Arabia.

Study Period

The study was conducted during August 2016 to December 2016.

Sample Size

The sample size was calculated by using the Epi Info statistical program. Based on the previously published literature [21], prevalence of smoking among the college students was 14.5% with an acceptable interval of $\pm 5\%$, a design effect of 1 and confidence interval of 95% ending with a minimum sample size of 191 which was rounded to 200.

Sampling Strategy

A detailed list of colleges in the King Khalid University was prepared. The stratified random sampling was used to select the participants in the study. The sample was stratified according to the type of college. Different colleges were further stratified into two groups based on the types of studies: health science colleges (includes medicine, dentistry, nursing, pharmacy and applied medical sciences) non-health science colleges (includes computer science, arts and science, administrative sciences, language, and translation). The students were selected from each stratum to participate in the study by using the simple random sampling technique.

Ethical Considerations

Ethical approval was obtained from the research ethics committee, College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia.

Inclusion Criteria

Male students enrolled in any undergraduate courses from the above mentioned two stratum of college in King Khalid University aged between 19-30 years who agreed to participate in the study with written informed consent were included in the study.

Exclusion Criteria

Students who were physically challenged and students who refused to give written informed consent were excluded from the study.

Tools for Data Collection

Each student was interviewed by using a structured questionnaire which contains information about the socio-demographic characters and the smoking habit. The questionnaire was framed in English, translated in Arabic (local language) and back translated in English to check the translation.

Reliability

Test-retest reliability was done by Alpha (Cronbach's) test reliability for internal consistency and it was equal to 0.71. Test reliability was applied on a pilot of 30 undergraduate college students before the study.

Data Analysis

The data analysis was carried out by using SPSS (Version 16.0, SPSS Inc. Chicago, IL, USA). Frequency tables were used to describe the socio-demographic characteristics of participants. Non-parametric tests of significance (Chi square test) were applied for nominal scale. The p-value was two-tailed and statistical significance was set at $p < 0.05$.

RESULTS

Total 350 students were selected to participate in the study. Among them, 337 students responded to the questionnaire and completed the study, so the response rate was about 96.3%. The mean age group among the study participants was 22 years and the students with a minimum age of 19 years and a maximum age of 27 years were enrolled in the study (Table 1).

Table 1 Characteristics of participants

Variables	Total
Number of students	337
Mean Age	22 years
Standard deviation (Age)	1.6 years
Minimum Age	19 years
Maximum Age	27 years

Table 2 shows the demographic characteristics of study participants where more than 50% of students were between the age group of 22-24 years followed by another 37% of them between 19-21 years and only 5% of the students were 25 years and more than 25 years. About 45% of the students' fathers were educated up to secondary school and only 15% of them were university graduates. More mothers of students' in the study has completed only the intermediate level of school education and none of them had university level degree. Almost half of the students' fathers were employed in some organization and 37% of them were self-employed followed by the remaining 14% were retired persons. Eighty per cent of students in the study received pocket money because more than 90% of them were not having any job.

Table 2 Socio-demographic characteristics of participants (n=337)

Questions Asked	Answer categories	Total (Percentage)
Age	19-21	N=125 (37.1%)
	22-24	N=195 (57.9%)
	≥ 25	N=17 (5%)
Educational Qualification of Father	Intermediate or Less	N=134 (39.8%)
	Secondary	N=152 (45.1%)
	University or Above	N=51 (15.1%)
Educational Qualification of Mother	Intermediate or Less	N=215 (63.8%)
	Secondary	N=122 (36.2%)
	University or Above	N=0 (0%)
Occupation of Father	Employed	N=164 (48.7%)
	Self-Employed	N=126 (37.4%)
	Retired	N=47 (13.9%)
Do you get pocket money?	Yes	N=270 (80.1%)
	No	N=67 (19.9%)
Do you have a job?	Yes	N=25 (7.4%)
	No	N=312 (92.6%)

The prevalence of smoking among the male college students in the study was 18.7% and more than 75% of students never did smoking (Figure 1).

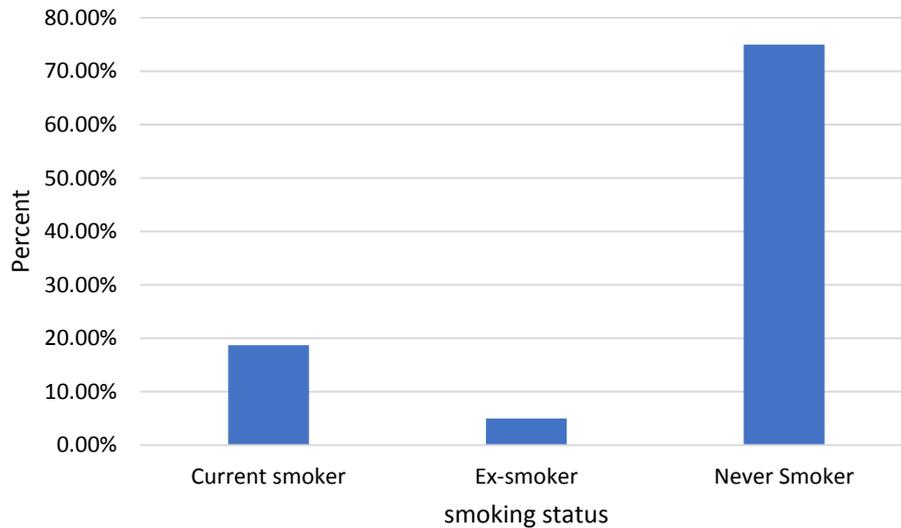


Figure 1 Prevalence of smoking among the students (n=337)

Table 3 shows the correlation between the smoking habit and the socio-demographic variables among the study population. The current study showed a significant positive correlation between the smoking habit and job (p=0.003*). There was no positive association between smoking and age (p=0.069), educational qualification of father (p=0.885), educational qualification of mother (p=0.709), occupation of father (p=0.610) and pocket money (p=0.605).

Table 3 Correlation between smoking habit and socio-demographical characteristics

Questions	Answers	Smoking Pattern			Total (Percent)	P-Value
		Current Smoker	Ex-Smoker	Never Smoker		
Age	19-21	13 (3.86%)	03 (0.89%)	109 (32.34%)	125 (37.09%)	0.069
	22-24	42 (12.46%)	14 (4.15%)	139 (41.25%)	195 (57.86%)	
	≥ 25	08 (2.37%)	01 (0.30%)	08 (2.37%)	17 (5.04%)	
Educational Qualification of Father	Intermediate or Less	25 (7.42%)	06 (1.78%)	103 (30.56%)	134 (39.76%)	0.885
	Secondary	30 (8.90%)	08 (2.37%)	114 (33.83%)	152 (45.11%)	
	University or Above	08 (2.37%)	04 (1.19%)	39 (11.57%)	51 (15.13%)	
Educational Qualification of Mother	Intermediate or Less	41 (12.17%)	13 (3.86%)	161 (47.77%)	215 (63.80%)	0.709
	Secondary	22 (6.53%)	05 (1.48%)	95 (28.19%)	122 (36.20%)	
	University or Above	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Occupation of Father	Employed	29 (8.61%)	10 (2.97%)	125 (37.09%)	164 (48.66%)	0.61
	Self-Employed	24 (7.12%)	04 (1.19%)	98 (29.08%)	126 (37.39%)	
	Retired	10 (2.97%)	04 (1.19%)	33 (9.79%)	47 (13.95%)	
Do you get pocket money?	Yes	51 (15.13%)	16 (4.75%)	203 (60.24%)	270 (80.12%)	0.605
	No	12 (3.56%)	02 (0.59%)	53 (15.73%)	67 (19.88%)	
Do you have a job?	Yes	11 (3.26%)	01 (0.30%)	13 (3.86%)	25 (7.42%)	0.003*
	No	52 (15.43%)	17 (5.04%)	243 (72.11%)	312 (92.58%)	

*P<0.05 Statistically Significant

DISCUSSION

The prevalence rate of smoking among the male college students was 18.7% which is the key finding of this study. A study done in central Saudi Arabia by Yousef, et al., found that 13% of the male medical students were current smokers and 80% of the students never smoked [22]. Similarly, another study in western Saudi Arabia done by Siraj, et al., reported that 24.8% of the male students were current smokers [23]. One more study done in Riyadh in 2010 stated that the prevalence rate of smoking among the male college students was 19% [24]. The current study results

are congruent with the results of study done in Riyadh whereas slightly higher than the results of study conducted in central Saudi Arabia and lower than the prevalence rate reported by the study carried out in western Saudi Arabia. The current study results are also supported by the original research by Jobran Miree which reported that the smoking prevalence rate among the college students varied from 0.5% to 30.1% [25]. The prevalence of smoking among the male college students in this study is comparatively lesser than the prevalence rate among adolescents at the secondary schools which is evident by the study in Jeddah that relieved 37.1% of male adolescents were smokers [26]. Only 31.2% of the male secondary school students were smokers in Riyadh that was reported by the study done by Al Ghobain, et al., [27]. Likewise, the studies conducted in Al-Qassim and Tabuk region also reported a prevalence of 29.8% and 34% among male secondary school students [28,29]. A study in UAE found 43.3% prevalence of smoking *shisha* among the male dental students which is very much higher than this study result [30]. A recent study by Ashraf Ahmed, et al., in Sharjah among the undergraduate students in the University of Sharjah showed 28.2% of students were smokers [31]. A study done in Oman by Al-Riyami, et al., presented a prevalence rate of 13% of smokers among the male adult population whose age was 20 years and above and 4.6% of them were ex-smokers [32].

The prevalence of smoking among the college students in the United States was 29% as per the study conducted by Sutfin, et al., [33] which is somewhat higher than the result of the present study. However, this study result is more than the prevalence rate in Oman and lesser than the prevalence in United States. The mean age among the study participants in the existing study was 22 years which is in consensus with mean age (21.8 years) of the study aimed at finding the smoking among the medical students in the central Saudi Arabia by Yousef, et al., [22]. Whereas the mean age of the study subjects was 21 years in the study conducted among the medical students in Riyadh in 2010 [24]. The present study found a statistically positive correlation between the smoking habit and the employment which is a unique finding of the study. The present study showed no positive correlation between smoking and age and also between smoking habit and pocket money. Whereas other studies established a positive relationship between smoking and age, sex, school level, school status, and pocket money [34-36]. There was no significant correlation between the smoking habit among the male college students and their parents' educational qualification and occupation in the current study which is also supported by the study by Abdulmohsen, et al., in 2015 in Madinah, Saudi Arabia where it showed a negative relationship between the parents' educational qualification and smoking [37]. However, the systematic review of social network analysis in adolescent cigarette smoking by Seo, et al., presented that the parents' educational qualification had a positive significant influence in reducing the prevalence rate of smoking and also it played a vital role in prevention of smoking habit among the adolescents [38].

CONCLUSION AND RECOMMENDATIONS

The prevalence of smoking among the male college students in Abha is comparatively low and there was positive correlation between the employment and the smoking habit. However, the study found no association between parental education and smoking but it has a positive influence in reducing the burden of consumption of tobacco among the college students. There is a need for health awareness campaign among the college students to prevent the smoking habit and also necessary to create a help line for smokers to quit smoking. It is also recommended to conduct anti-smoking campaign among the parents and increase their awareness level. There is a need for further research to explore other predisposing factors that increases the prevalence of smoking among the college students.

DECLARATIONS

Conflict of Interest

Author declare no conflict of interest.

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