Cigarette smoking behavior among male secondary school students in the Central region of Saudi Arabia

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ABSTRACT

Objectives: This study was conducted to examine the smoking habits among male secondary school students in Al-Qassim, Kingdom of Saudi Arabia (KSA) and to assess their knowledge and attitudes towards smoking.

Methods: This cross-sectional study was conducted in Al-Qassim region, KSA during March 2003. Randomly selected was 14 out of 110 government male secondary schools. In the sample section, care was taken to represent urban and rural communities. In urban areas, 8 schools with the largest number of students were selected. This is in addition to 3 schools, which were the only schools with special education on Islamic, Commercial and Technical programs. In the rural areas the 3 most distant schools were included in the sample. Data were obtained through self-administered questionnaires that contained questions on personal background, smoking behavior, knowledge and attitude towards cigarette smoking. A total of 2203 students responded to the questionnaires with 83% response rate.

Results: Of the studied group, 606 (29.8%) were current smokers and among these 83.7% started smoking at the age of 15 years or less. Technical and commercial secondary school students had higher prevalence of the habit of smoking than those in general and Islamic secondary schools. It was found that the more pocket money received by the students, the higher was the prevalence of smoking. The most common reason given for cigarette smoking behavior (CSB) was the influence of friends (63.5%). Family factor, especially the brother's smoking habit (24.8%) was also important. Most of the students knew that smoking is harmful to their own health (89.3%), and to others (73.9%). The association between smoking and lung cancer was 84.3%, 80.9% for chest disease and 78.2% for heart disease, while the relation to other diseases was less known.

Conclusion: We conclude that onset of smoking in the young is alarming. This is of immense importance in formulating health education strategies, which should be directed towards pupils, teachers and parents. The religious aspect should also be an integral part of such programs.

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Tobacco smoking is considered a major public health problem in both developed and developing countries since approximately 4 million people die prematurely from tobacco-related illnesses each year, with deaths expected to rise to 10 million each year by 2030. Many of tobacco's future victims are today's children, and 250 million children alive today will be killed by tobacco in the future if current consumption trends continue.[1,2] Internationally, there is an increased public awareness about the health risks of cigarette smoking (CS) which is reflected in the declining rates of cigarette smoking behavior (CSB) in the developed countries, while in developing countries, the rates are increasing.[3] World tobacco market file states that approximately 12% of Malaysian boys

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(aged 12-19 years) currently smoke.[4] A higher percentage (30.7%) has been estimated by the Malay Ministry of Health for the same age group.[5] For "lepak" youth, who are unemployed or not in school, smoking rates can reach up to 80%.[6] A study by the Ministry of Youth and Sports showed that 71% of young people had experimented with CS.[7] In Saudi Arabia, studies from Riyadh have established high prevalence of smoking among school boys (40% smoked at sometime, and 12% were current smokers)[8] as well as students at King Saud University (37% excluding medical students).[9] Moreover, Jarallah[10] reported that 33% of medical students were current smokers. The associations between smoking and lung cancer, coronary heart disease, respiratory diseases, peptic ulcer, insomnia and depression are well established.[11] Many reports have shown that smokers not only damage their own health but can also be dangerous to others.[12,13] The real hazards of prolonged CS are greater than what is supposed and the real problem is the long delay between cause and full effect. Children who smoke may not see the immediate benefits of stopping smoking but will feel the detrimental impact of CS later in life.[14] A survey was carried out in Singapore found that among the reasons for smoking, one-third smoked for fun and curiosity, 22% due to addiction, 13% due to boredom, 10% to emulate others, 7% to look stylish and 9% had no specific reason.[15] The influence of peers and parents appears to be most important in the initiation of smoking.[16] This study aims to examine the smoking habits among male secondary school students in Al-Qassim and to assess their knowledge and attitudes towards smoking. It should be noted that CS is prohibited in public places in Al-Qassim area and in view of the prevailing culture and strong influence of religion, it is not expected that CS among the parents of students will be high.

Methods. A cross sectional study was conducted in Al-Qassim region, KSA in March 2003. Fourteen secondary schools were randomly selected from a total of 110 government male secondary schools. The different types of secondary education were represented. Data were obtained through self-administered questionnaires (Arabic language) which were sent to sample schools for all secondary students to fill out. All personal identification including names and identity card numbers were not taken to assure confidentiality and students were promised that their individual answers would not be given to the school authority. The questionnaire contained questions on personal background, smoking behavior and knowledge of and attitudes towards cigarette smoking. Two thousand two hundred and three students responded to the questionnaires (the response rate was 83%), but 168 questionnaires were excluded before the data were computed due to of incomplete or inconsistent information. The data were analyzed using statistical package of social sciences (SPSS) version 6 statistical package.[17]

Results. The mean age of the studied sample was 17.7±1.6 with a range of 15-25 and mode 17 years. The majority of students approached were Saudi (93.8%). General secondary students formed 70.2% of the sample, 13.2% were technical secondary students and 10.3% were commercial secondary students whereas 6.3% were affiliated to the Institute of Islamic Science. Moreover, almost all the studied sample (97%) were single. Of the studied group, 606 (29.8%) were current smokers while 1429 (70.2%) were non-smokers. Non-smokers were students who had either stopped smoking or those who never smoked. In this study, the minimal age of children who tried smoking was 6 years old and 83.7% of these students had started smoking at the age of 15 years or less.

Type of education. **Table 1** shows that approximately half of the students in technical (54.9%) and commercial (51.4%) secondary institutes were smokers, compared to those in general secondary schools (23.0%) and Islamic secondary institute (17.8%). These differences were

Table 1 - The relationship between smoking habits and some demographic characteristics of the studied group of male secondary school students.

Demographic characteristics	Smoking habit				x^2	*p* value
	Smokers		Non-smokers			
	n	(%)	n	(%)		
Age						
< 17	61	(16.0)	320	(84.0)	95.9	< 0.01
19	289	(27.0)	775	(72.8)		
21	198	(41.2)	282	(58.8)		
> 21	58	(52.7)	52	(47.3)		
Nationality						
Saudi	588	(30.8)	1321	(69.2)	15.4	< 0.01
Non - Saudi	18	(14.3)	108	(85.7)		
Marital status						
Single	584	(29.6)	1388	(70.4)	0.82	> 0.05
Married	22	(34.9)	41	(65.1)		
Types of education						
Technical	147	(54.9)	121	(45.1)	168.1	< 0.001
Commercial	108	(51.4)	102	(48.6)		
General	328	(23.0)	1100	(77.0)		
Islamic	23	(17.8)	106	(82.8)		
Pocket money received daily						
< 5 SR	184	(22.4)	637	(77.6)	59.0	< 0.001
5-10 SR	231	(30.0)	540	(70.0)		
> 10 SR	191	(43.1)	252	(56.9)		

SR - Saudi Riyals

statistically significant ($p<0.001$). It also shows that among students who received pocket money more than SR 10.00 daily, 43.1% were smokers, as compared to students who received SR5.00-SR10.00 (30%) and <5 (22.4%) daily. The association between smoking behavior and the amount of pocket money received was highly statistically significant ($p<0.001$) (**Table 1**).

Family history of smoking (family members). Three hundred and forty-eight (57.4%) of smokers had positive family history of smoking compared to 576 (40.3%) of non-smokers. Among the smokers, 54 (8.9%) had fathers who smoked compared to 90 (6.3%) of non-smokers. Moreover, 150 (24.8%) of smokers had brothers who smoked in contrast to 272 (19%) brothers of non-smokers who did the same. The association between family history of smoking and students smoking status was found to be statistically significant ($p<0.01$) (**Table 2**).

Number of cigarettes. More than half of the students (54.5%) smoked between 1-9 cigarettes per day, and the mode was 6 cigarettes, while 236 (38.9%) smoked between 10-20 cigarettes per day and only 40 (6.6%) smoked more than 20 cigarettes per day (**Table 3**).

Reasons for smoking. Of the responses, the reason given for smoking, 385 (63.5%) reported influence by friends as the main reason for smoking, 340 (56.1%) said it was a habit, 272 (44.9%) said that they used it to reduce tension and anxiety, and 209 (43.5%) used it for a feeling of self-confidence. The other less common responses include influence by a family member, teachers and so forth (**Table 4**).

Knowledge of health hazards. **Table 5** shows the levels of knowledge of the studied sample on health effects of smoking. Most of the studied group, 1817 (89.3%) said that smoking was harmful to their own health and 1503 (73.9%) said that it was harmful to others, whereas 1456 (71.5%) reported that smoking was an addiction, while 1288 (63.3%) believed that smoking was harmful to pregnancy. **Table 6** illustrates that high percentages of students knew of the association between smoking and lung cancer (84.3%), chest disease (80.9%) and heart disease (78.2%), but the relation to other diseases was generally less known.

Discussion. In this study, the prevalence of smoking among male students (15-25 years of age) was 29.8% which is much higher than the previous study in Riyadh.[8] The prevalence of smoking among school children varies among countries where the studies were conducted. It also depends on the age group of the students surveyed.[5,18-20] There was a significant association between cigarette smoking behavior and type of education. The students affiliated to Islamic secondary institute had lesser prevalence of smoking followed by other secondary school students, which reaffirms the results of the Rowland study which found that students who were non-smokers believed that smoking is not in

Table 2 - Relationships between the history of smoking among family members and students' smoking status.

Family history of smoking	Smoking habit				x^2	*p* value
	Smokers N=606		Non-smokers N=1429			
	n	(%)	n	(%)		
Yes	348	(57.4)	576	(40.3)	49.6	<0.01
No	258	(42.6)	853	(59.7)		
Smoking family member						
Father	54	(8.9)	90	(6.3)		
Brother	150	(24.8)	272	(19.0)		
Others	68	(11.2)	165	(11.5)		
More than one	76	(12.5)	49	(3.4)	91.2	<0.01
None	258	(42.6)	853	(59.1)		

Table 3 - History of smoking, cigarettes smoked and trial of quitting among male secondary school students.

Smoking History	n	%
Age at which smoking commenced		
< 10 years	30	(5.0)
10 – 15 years	477	(78.7)
> 15 years	99	(16.3)
Number of cigarettes / day		
< 10	330	(54.5)
10 – 20	236	(38.9)
> 20	40	(6.6)
Have you ever tried quitting?		
Yes	363	(59.9)
No	243	(40.1)

Table 4 - Reasons for developing cigarette smoking behaviors among the male secondary school students.

Reasons	Yes		Sometimes		No	
	n	(%)	n	(%)	n	(%)
Influenced by friends	385	(63.5)	125	(20.6)	96	(15.8)
Habit	340	(56.1)	147	(24.3)	119	(19.6)
Reducing tension and anxiety	272	(44.9)	137	(22.6)	197	(32.5)
Self- confidence feeling	209	(43.5)	112	(18.5)	285	(47.0)
Influenced by family member	180	(29.7)	101	(16.7)	325	(53.6)
Influenced by teachers	170	(28.1)	97	(16.0)	339	(55.9)
Pleasurable feeling	189	(31.2)	119	(19.6)	298	(49.2)
Stimulation	170	(28.1)	175	(28.9)	261	(43.1)

Table 5 - Knowledge of the studied group of male secondary school students regarding the effects of smoking.

Effect of smoking	Strongly agreed n (%)	Mildly agreed n (%)	Disagreed n (%)	No opinion n (%)
Harmful to own health	1817 (89.3)	127 (6.2)	46 (2.3)	45 (2.2)
Harmful to health of others	1503 (73.9)	323 (15.9)	132 (6.5)	77 (3.8)
Smoking is an addiction	1456 (71.5)	352 (17.3)	88 (4.3)	139 (6.8)
Harmful to pregnancy	1288 (63.3)	159 (7.8)	108 (5.3)	480 (23.6)

accordance with the principles of Islam. This can form the basis of health education campaigns targeting school students in Saudi Arabia. The students of technical and commercial education had higher prevalence of smoking compared to the other secondary school institutes and these results are consistent with Shamsuddin and Abdul Haris[21] study which mentioned that the prevalence of low academic achievement was higher among smokers compared to non-smokers.[21] The amount of pocket money was also related to prevalence of smoking. The results showed that the more pocket money received by students, the higher was the prevalence of smoking, and the relation was highly statistically significant **(Table 1)**. These results are in accordance with Bayat et al[20] and Banks et al[22] who found that the availability of money encouraged students to continue the habit. The prevalence of smoking increased as the age increased **(Table 1)**, but the effect of age is confounding with the type of education. This is due to the fact that approximately half of the smokers were students in technical and commercial institutes and they were older than those in general and Islamic secondary schools. More Saudi students (30.8%) were smokers as compared to non-Saudi (14.3%). These differences can be attributed to the higher pocket money of Saudi boys (**Table 1**). The influence of family member's on the smoking status of the students was apparent from this study where the proportion of smokers with positive family history was very high (57.4%) compared to non-smokers (40.3%). Moreover, the brothers and fathers smoking habit was strongly associated with student's current smoking status ($p<0.01$). These results are consistent with earlier studies conducted in both developed and developing countries.[8,10,18,21] The distressing finding in this study is the early age of initiation of the smoking habit. Approximately 79% of the students started smoking between 10-15 years of age (**Table 3**). This is more than the previous findings reported in schoolboys in Riyadh, Saudi Arabia[8] and comparable with other findings elsewhere.[21,23-25] The young age of onset is alarming. This parameter should be of immense importance in formulating health education strategies. Thus anti-smoking campaigns can focus on the younger age group. The ill effects of smoking must be emphasized during the health education lessons in school. Our result showed that influence by friends was the main reason for developing cigarette smoking behavior among the studied sample (**Table 4**). Similar findings were observed in Riyadh (47.1% were influenced by friends),[8] Hong Kong (88% had a best friend who was a smoker)[15] and South Africa (23.7% were influenced by their friends).[20] Other studies have

Table 6 - Knowledge of the studied group of male secondary school students concerning association between smoking and diseases.

Smoking associated disease	Strongly agreed n (%)	Mildly agreed n (%)	Disagreed n (%)	No opinion n (%)
Lung cancer	1715 (84.3)	145 (7.1)	44 (2.2)	131 (6.4)
Chest disease	1646 (80.9)	189 (9.3)	45 (2.2)	155 (6.7)
Heart disease	1592 (78.2)	172 (8.5)	61 (3.0)	210 (10.3)
Peptic ulcer	891 (43.8)	200 (9.8)	147 (7.2)	797 (39.2)
Sinusitis	965 (47.4)	202 (9.9)	133 (6.5)	735 (36.1)
Anxiety or sleeping disorder	1079 (53.0)	381 (18.7)	154 (7.6)	421 (20.7)

shown that peer pressure is the single most powerful determinant of smoking in children.[15,18,26,27] Higher percentages of smokers reported that they smoked just as a habit (56.%) or to reduce their tension and anxiety (44.9%). Other responses given by smokers as reasons for their smoking behavior were the feeling of self-confidence (34.5%), pleasurable feeling (31.2%), influence by teachers (28.1%), and stimulation (28.1%), (**Table 4**). Bayat et al[20] reported that 20% of students who smoked were influenced by the teachers. In a single school at Thaba Nchu, South Africa, it was found that 81.6% of male teachers were smokers. The role of teachers in CS behavior is very important, since children tend to imitate their teachers who serve as an influential model.[28] Thus teacher's attitude towards CS and their CS behavior has an impact on school children. It is important that it is the teachers project to promote a healthy lifestyle. Tobacco smoking leads to a dependence on nicotine. The diagnostic and statistical manual of mental disorders (DSM-IV) of the American Psychiatric Association (1994) classifies tobacco dependence as an addiction.[11] In this study 71.5% of students knew this fact (**Table 5)** and 44.9% of smokers presumably continued to smoke due to their addiction to nicotine (**Table 4**), due to the fact that nicotine reduces aggression and decreases irritability.[29] It was interesting that almost all students (89.3%) knew that smoking is harmful to smokers and yet smokers continued to smoke. Approximately, three fourth of students were aware that passive smoking is harmful. The knowledge of students on the disease risk due to inhalation of tobacco smoke was variable. More than three fourth of students agreed that smoking was associated with lung cancer, chest and heart diseases while the association between smoking and peptic ulcer disease, sinusitis, anxiety and or sleeping disorder was less known, and many students either did not know this or were uncertain on it (**Table 6**). Therefore students need to be educated on smoking before lighting their first cigarette.

We conclude that the onset of smoking in the young is alarming. This parameter should be of immense importance in formulating health education strategies. Antismoking campaigns directed to pupils and teachers should be held regularly by interested groups. Innovative ways of increasing parent's knowledge of the high likelihood that their high risk behavior will be taken up by their children should be incorporated in such programs. The religious aspects should also be an integral part of such programs.

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