

## **Consumption Pattern and Risk Factors for Smoking among Medical Students: The Case of King Saud University in Riyadh, Saudi Arabia**

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*Abstract.* This cross-sectional study was done to assess consumption, risk factors of tobacco use, and quitting attempts among smokers of King Saud University male medical students registered in the year 2008-2009, using a modified Global Youth Tobacco Survey questionnaire. Out of the total sample (n = 312), 17% were found to be current tobacco smokers. Among smokers, 59% reported using cigarettes alone or with water-pipe, while 38.5% mentioned using water pipe alone. Of smokers, 62.7% started to smoke before entering the college while 37.3% started afterwards. The main risk factors for smoking initiation were: curiosity (34.4%) and peer-pressure (27.9%); whereas the main reported reasons for quitting were health (65.5%) and religion (17.24%). Being a senior (3<sup>rd</sup> to 5<sup>th</sup> year student) was found to be significantly associated with taking up the habit of smoking (OR = 3.19; CI = 1.5–6.91, p = 0.0015). Among non-smokers (n = 258), again, the main reasons for not smoking were reported to be health (43.2%) and religion (39.7%). Moreover, about 63.31% of non-smokers reported exposure to environmental tobacco smoke. In conclusion, smoking cessation has to be encouraged among university students in general. In explicit to medical students, to protect their own health, the health of non-smokers and ensuring that the general public can accept them as role models, after graduation, as practicing physicians.

*Keywords:* Smoking, Risk factors, Medical students, Saudi Arabia.

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## Introduction

Tobacco use is the leading cause of preventable death globally, and is estimated to kill more than 5 million people each year worldwide. Most of these deaths are in low- and middle-income countries. If current trends persist, tobacco will kill more than 8 million people worldwide each year by the year 2030, with 80% of these premature deaths in low- and middle-income countries. By the end of this century, tobacco may kill a billion people or more unless urgent action is taken. Therefore, governments around the world, in partnership with civil society, must continue to act decisively against the tobacco epidemic<sup>[1]</sup>. In the United States, recent large-scale efforts on health promotion have contributed to a substantial decline in smoking among adolescents. However, smoking is still increasing rapidly at an alarming rate in developing countries, particularly among the young<sup>[2]</sup> generation. Partly because of the aggressive marketing by tobacco companies, and virtually no significant progress on advertising and marketing bans of tobacco products in 2008 with more than 91% of the world's population without the protection afforded by a comprehensive advertising ban<sup>[1]</sup>.

Smokers are not the only ones sickened and killed by tobacco: nonsmokers who breathe air containing second-hand tobacco smoke also face an increased risk of disease and death. Globally, it is estimated that about one third of adults are regularly exposed to second-hand tobacco smoke. About 50,000 deaths in the United States each year – about 11% of all tobacco-related deaths – are attributable to exposure to second-hand tobacco smoke<sup>[3]</sup>. In the European Union, second-hand tobacco smoke exposure at work is estimated to cause about 7,600 deaths per year, with exposure at home causing an additional 72,100 deaths<sup>[4]</sup>. Studies have shown that pollution levels in indoor places that allow smoking are higher than the levels found on busy roadways, in closed motor garages and during firestorms<sup>[5]</sup>.

Prevalence of tobacco use among health professionals is quite high and is a matter of concern, especially with marked deficits in the amount and the type of training received in smoking cessation. Moreover, little attention is paid to the determination of effective training methods<sup>[6]</sup>. Medical students addicted to tobacco are likely to retain this habit as physicians. Therefore, they will play a negative role model for the patients and are unlikely to counsel them against using tobacco<sup>[7]</sup>.

A recent compendium of tobacco consumption surveys in Saudi Arabia during the past decade (1999-2009) has shown that the estimated prevalence of tobacco use among young adults of university age ranges from 24–37%. Such studies have also demonstrated that smoking, particularly cigarettes and water pipes, is a wide-spread phenomenon, which is increasing with time in a larger scale<sup>[8]</sup>. Higher prevalence has been reported to be associated with age, being male, single and highly educated. Desire, peer pressure and enjoyment were seemed as important predictors for smoking among youngsters in the country<sup>[8-15]</sup>.

Strengthening public awareness about the dangers of tobacco consumption and reducing adolescent smoking rates is essential. Health professionals, particularly physicians are in an excellent position to have a prominent role on tobacco control. They can increase awareness on the hazards that tobacco consumption imposes on the health through public education, better communication, and through informational campaigns as they reach a high percentage of the population. They have the opportunity to help people change their behavior as they can give advice, guidance and answer questions related to the consequences of tobacco use<sup>[1]</sup>.

This study primarily focuses on medical students and was undertaken to establish a comprehensive understanding of the smoking habits, and possible determinants among male medical students at King Saud University (KSU). It aimed at assessing the knowledge, attitude, predictors and prevalence of tobacco use among KSU male medical students registered during the year 1429/1430H (2008/2009G); estimating the environmental tobacco smoke (ETS) exposure among the same group; and investigating the attitude and behaviors towards quitting among smokers within the group.

### **Methodology**

This quantitative observational cross-sectional study was performed among the male medical undergraduate students of KSU in Riyadh, Saudi Arabia. The sample included students who were registered during the year 1429/1430 H (2008/2009) and studying in the 1st to 5th year. The study was conducted during March/April 2009, using a modified Arabic version of the WHO/CDC Global Youth Tobacco Survey (GYTS)<sup>[16]</sup>. Out of the 1143 medical students in KSU, 385 were asked to take this questionnaire after verbal consent. The questionnaires were

randomly distributed to each group during a class or clinical practice and collected at the end of the teaching session. Participants completed the questionnaire in the presence of a student from the group conducting the study (authors of this paper), but no name or other form of identification was included in the form (anonymity and confidentiality were maintained). Demographic characteristics, parental smoking status, knowledge on smoking, self-reported smoking habits and attitudes towards tobacco, age of onset of smoking, factors influencing the initiation of the habit, interest in quitting smoking, and their possible exposure to passive smoking were all included in the questionnaire. The questionnaire data were revised for completeness and accuracy, then coded, entered and analyzed using the Statistical Package for Social Sciences (SPSS), version 12<sup>[17]</sup>. Suitable techniques were used for statistical analysis, such as: descriptive statistics, measures of central tendency (mean  $\pm$  standard deviation) and magnitude of association between possible determinants and smoking status, e.g., Odds Ratio  $\pm$  95% confidence interval, with corresponding p values (95% level of significance).

The attitude towards tobacco use among all participants in the study (smokers/non-smokers) was assessed by 7 statements. For each statement, five choices were provided (strongly agree, agree, don't know, disagree, and strongly disagree).

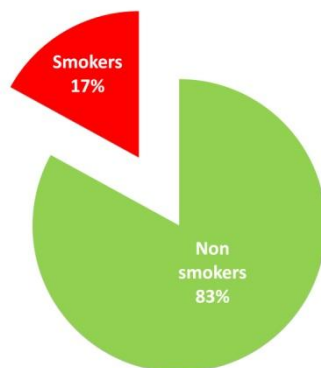
## Results

Out of total 385 questionnaires which were distributed, 318 were returned, giving an overall response rate of 82.6%. Six questionnaires were excluded from the data analysis due to missing 2 questions or more giving a final sample of 312 students. Of the total study participants, 64 (20.7%) students were from the first year, 64 (20.7%) were from the second, 63 (20.3%) were from the third, 58 (18.7%) were from the fourth and 61 (19.7%) were from the fifth medical year. The mean age of participants was  $21.8 \pm 1.67$  ranging, from 16 to 27 years.

### *Smoking Prevalence and Patterns*

Out of the total participants (n = 312), 53 (17%) were found to be current tobacco smokers (Fig. 1). The mean age of smokers was found to be  $22.51 \pm 1.53$  ranging from 19 to 26, as compared to the mean age of non-smokers which was found to be  $21.65 \pm 1.67$  ranging from 16 to 27

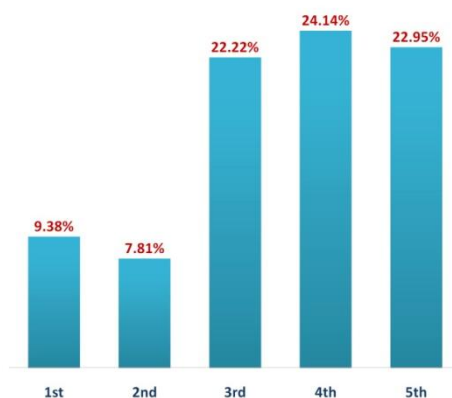
years. The mean GPA of smokers was found to be  $3.73 \pm 0.66$  ranging from 2 to 4.8 compared with the mean GPA of non-smokers which was found to be  $3.95 \pm 0.65$  ranging from 1 to 4.96.



**Fig. 1. Percentage of smokers among male medical students of KSU (2008-09); n=312.**

The mean age of initiation of smoking was found to be  $18.16 \pm 2.35$  ranging from 12 to 24 years. Of the current smokers, 32 students (62.7%) started to smoke before entering the college, while 19 students (37.3%) started after entering to college.

Analysis by school year revealed that the prevalence of smoking was 9.4% among 1<sup>st</sup> year students, 7.8% among 2<sup>nd</sup> year students, 22.2% among 3<sup>rd</sup> year students, 24.1% among 4<sup>th</sup> year students and 23% among 5<sup>th</sup> year students (Fig. 2).



**Fig. 2. Smokers per school year among male medical students of KSU (2008-09); n=53.**

The main reasons for taking up the habit of smoking were found to be: Curiosity (34.4%), peer pressure (27.9%) and psychological stress (21.3%). Other reported reasons were, “imitation of older people” (1.6%) and that tobacco “causes relaxation” (1.6%) (Table 1, Fig. 3).

**Table 1. Reasons for smoking per school year among smokers of KSU male medical students (2008-09); n = 61.**

Reasons of smoking	First	Second	Third	Fourth	Fifth	Total
<b>Curiosity</b> % of students who chose this reason	3 (14.29%)	2 (9.52%)	6 (28.57%)	6 (28.57%)	4 (19.05%)	<b>21</b> <b>(100%)</b>
<b>Friends</b> % of students who chose this reason	2 (11.76%)	1 (5.88%)	2 (11.76%)	7 (41.18%)	5 (29.41%)	<b>17</b> <b>(100%)</b>
<b>Psychological stress</b> % of students who chose this reason	1 (7.69%)	0 (0%)	4 (30.77%)	5 (38.46%)	3 (23.08%)	<b>13</b> <b>(100%)</b>
<b>Study stress</b> % of students who chose this reason	0 (0%)	0 (0%)	3 (37.5%)	2 (25%)	3 (37.5%)	<b>8</b> <b>(100%)</b>
<b>Imitation of older people</b> % of students who chose this reason	0 (0%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	<b>1</b> <b>(100%)</b>
<b>Causes relaxation</b> % of students who chose this reason	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	<b>1</b> <b>(100%)</b>

Among current smokers (n = 53), 14 (26.9%) reported using cigarettes, 20 (38.5%) reported using water pipe, while 17 (32%) were using both cigarettes and water pipe. The mean number of days per month, smokers mentioned they smoke was  $21.35 \pm 11.54$  days, while the mean number of smoked cigarettes per day was reported to be  $11.86 \pm 8.92$ , as it was found that 45% of smokers reporting 10 cigarettes or less per day, while the rest reported consuming more than 10 cigarettes per day (Table 2). About half of the smokers in the study (47%) reported daily smoking, 10 (19.6%) reported smoking 20-29 days/month, 2 (3.9%) for 10-19 days/month, and 6 (11.8%) for 6-9 days/month, while 9 (17.6%) for 1-5 days/month.

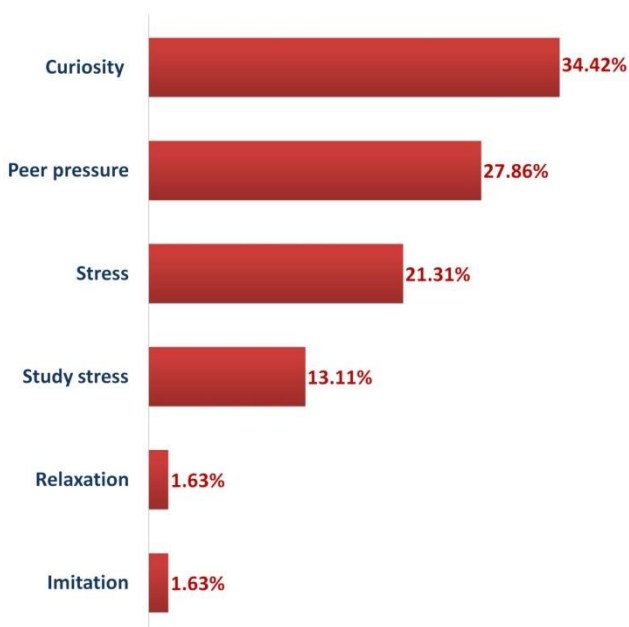


Fig. 3. Reasons for smoking among smokers of male medical students of KSU (2008-09); n=61.

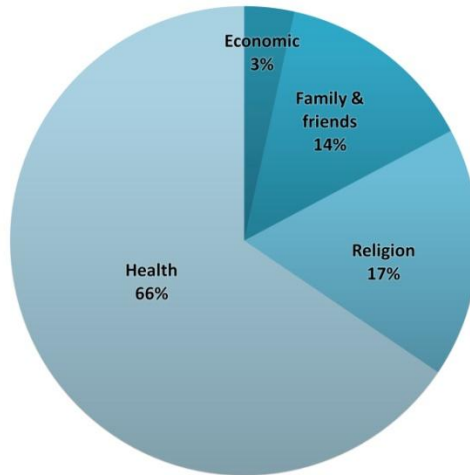
Table 2. Number of cigarettes smokers reported smoking per day among KSU male medical students (2008-09); n=33.

No. of Cigarettes	No. of Students (Percentage)
1	4 (12.12%)
2-5	8 (24.24%)
6-10	3 (9.09%)
11-20	14 (42.42%)
21-30	1 (3.03%)
more than 30	3 (9.09%)
<b>Total</b>	<b>33 (100%)</b>

### *Quitting Attitudes & Behaviors*

Of the current smokers (n = 53), 37 students (72.55%) would like to quit smoking while 14 (27.45%) would not like to. Of those who would like to quit smoking, 19 (52.78%) tried to quit, while 17 (47.22%) did not wish to. On the other hand, among those who would not like to quit only 2 (15.38%) tried to quit, while 11 (84.62%) did not.

When asked the smokers about the main reasons that made them try to quit or could drive them to quit in the future, 38 students (65.52%) reported “health” as the main reason, 10 (17.24%) reported religion, 8 (13.79%) reported family and friends, while only 2 (3.45%) reported money as a reason (Fig. 4).



**Fig. 4. Reasons to quit among smokers of male medical students at KSU (2008-09); n=58.**

Nine students (24.32%) of those who would like to quit and 7 (53.85%) of those who would not like to quit, did not get any advice or help to quit smoking. The rest got an advice from one or more sources (Table 3).

**Table 3. Source of advice to quit smoking among smokers of male medical students of KSU (2008-09); n=53.**

Source of Advice	Want to Quit	Don't Want
Didn't get any advice	9 (22.5%)	7 (53.85%)
Friend	15 (37.5%)	2 (15.38%)
Family	9 (22.5%)	4 (30.77%)
Tobacco prevention program	5 (12.5%)	0 (0%)
Other	2 (5%)	0 (0%)
<b>Total</b>	<b>40 (100%)</b>	<b>13 (100%)</b>



### ***Environmental Tobacco Smoke (ETS) Exposure***

Among the non-smokers group (n = 258) in our sample, the main reasons for not smoking were reported to be religion (39.7%) and health (43.2%) (Fig. 5). When asked non-smokers about the possibility of becoming a smoker in the future, 214 (82.6%) answered "**absolutely not**", 42 (16.2%) answered "**may be**", while only 3 (1.2%) answered "**definitely yes**". To investigate ETS exposure, non-smokers were asked "**During the last 7 days, how many times did a smoker smoke in your presence?**". The reported prevalence of ETS exposure was found to be 63.3%, the mean number of times during which non-smokers were exposed to ETS was reported to be  $2.15 \pm 1.2$ , ranging from 1 to 5 times per week (Table 4).

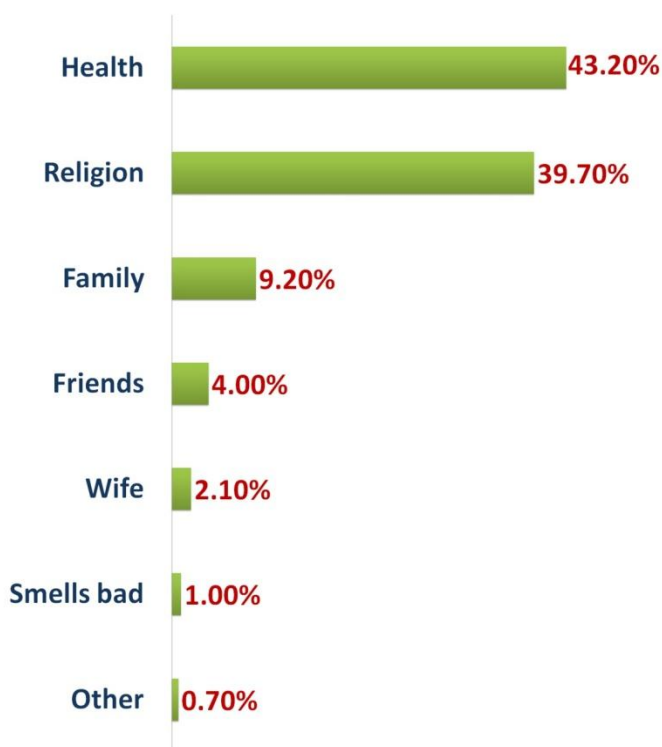


Fig. 5. Reasons of not smoking among male medical students of KSU (2008-2009). n=380.

**Table 4. Number of times of ETS exposure among non-smokers of KSU male medical students (2008-09); n = 248.**

No. of Times	No. of Non-Smokers(Percentage)
Never	91(36.7%)
1-2 times	84 (33.9%)
3-4 times	38 (15.3%)
5-6 times	15 (6%)
More than 7 times	20 (8.1%)
<b>Total</b>	<b>248</b> <b>(100%)</b>

### *Possible Determinants of Smoking*

Upon investigation of possible determinants of smoking using frequency distributions, the following outcomes were found. Regarding marital status, 49 (94.2%) of smokers and 248 (96.5%) of non smokers were single, while only 2 (3.8%) of smokers and 8 (3.1%) of non-smokers were married. With respect to economical status, 12 (22.6%) of smokers compared to 39 (15.4%) of non-smokers reported having “insufficient income”, 29 (54.7%) of smokers compared to 144 (56.7%) of non-smokers reported having “sufficient income”, 12 (22.6%) of smokers compared to 71 (28%) of non-smokers were having “more than sufficient” income. Using bivariate analyses, it was found that the only statistically significant predictor for smoking in our sample was the higher school years (3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years) (OR = 3.19; CI = 1.5 – 6.9, p = 0.0015) (Table 5).

**Table 5. Possible determinants of smoking among KSU male medical students (2008-09).**

	Odds Ratio	95% Confidence Interval	P-Value
Marital status →Exposure [Single status]	0.79	0.15 – 21.67	0.89
Economical status →Exposure [insufficient income]	1.61	0.73 – 3.52	0.27
Smokers at home →Exposure [one or more smokers]	1.66	0.88 – 3.13	0.13
School year →Exposure [3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> year]	3.19	1.5 – 6.91	0.0015
Received knowledge about smoking →Exposure [Did not receive knowledge]	3.47	0.79 – 14.60	0.12

Regarding the presence of other smokers at home, just above half (55.55%) smokers, but most (67.4%) non-smokers reported no smokers at home at all. Nevertheless, more smokers (44.4%) than non-smokers (32.6%) reported having at least 1 other smoker at home.

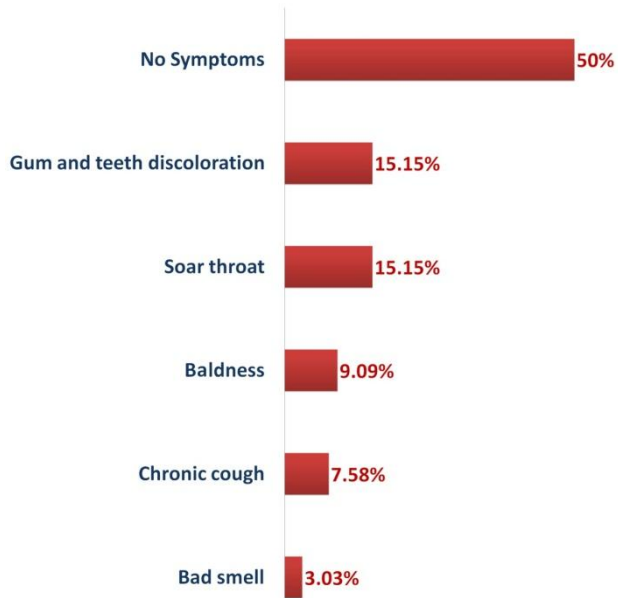
Regarding first source of knowledge about tobacco, 7.7% of smokers as compared to 2.3% of non-smokers denied receiving any information about smoking. Almost all (92.31%) smokers and non-smokers (97.66%) reported gaining their knowledge from one or more sources. Just above one third of smokers (36.5%) as compared to more than half of non-smokers (55.1%) reported “parents or older relatives” to be their first source of knowledge about tobacco use. However, almost equal proportions of smokers (19.2%) and non-smokers (19.5%) reported that “media” was their first source of knowledge, but only some non-smokers (2.3%) reported “college” as their first source of knowledge.

### ***Health Status Results***

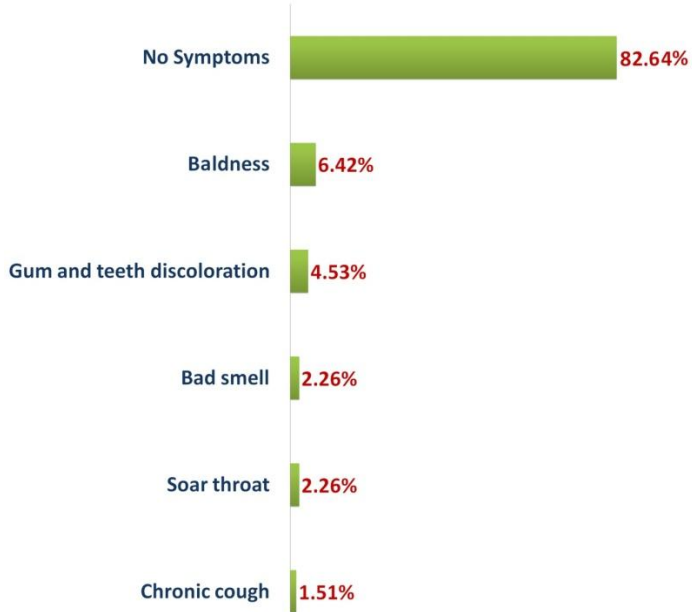
Regarding reported medical symptoms of students in our sample, 50% of smokers as compared to 83% of non-smokers did not complain from any medical symptoms. The most frequently reported medical symptoms among smokers were gum and teeth discoloration (15.2%), sore throat (15.2%) and baldness (9.1%); while among non-smokers reported medical symptoms also included baldness; gum and teeth discoloration but both at lower proportions compared to smokers (6.4%, 4.5% respectively) (Table 6, Fig. 6a,b).

**Table 6. Reported medical symptoms by KSU male medical students (2008-09); n = 331.**

<b>Medical Symptoms</b>	<b>Smokers</b>	<b>Non-Smokers</b>
No Symptoms	33 (50%)	219 (82.64%)
Gum and teeth discoloration	10 (15.15%)	12 (4.53%)
Sore throat	10 (15.15%)	6 (2.26%)
Baldness	6 (9.09%)	17 (6.42%)
Chronic cough	5 (7.58%)	4 (1.51%)
Bad smell	2 (3.03%)	6 (2.26%)
Nose discharge	0 (0%)	1 (0.38%)
<b>Total</b>	<b>66 (100%)</b>	<b>265 (100%)</b>



**Fig. 6a.** Medical symptoms among smokers of male medical students of KSU (2008-09); n = 66.



**Fig. 6b.** Medical symptoms among non-smokers of male medical students of KSU (2008-09); n = 265.

### Attitude Results

Table 7a and 7b show that more than 80% of non-smokers had negative attitude towards tobacco. They agreed that tobacco had a bad smell (95%), its price has to be increased (80.6%), and that tobacco has to be prohibited in public and study places (98.4%). Negative attitude was also seen among smokers as more than 66% of them agreed that tobacco had a bad smell (67.9%), and that tobacco has to be prohibited in public and study places (66%). But only half of smokers (54.7%) thought that tobacco's price has to be increased.

**Table 7a. Attitude towards tobacco use among smokers of KSU male medical students (2008-09); n = 368.**

Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Total
Tobacco has bad smell	<b>3</b> (5.7%)	8 (15.1%)	<b>6</b> (11.3%)	15 (28.3%)	<b>21</b> (39.6%)	53 (100%)
Tobacco price has to be increased	<b>11</b> (20.8%)	8 (15.1%)	<b>5</b> (9.4%)	8 (15.1%)	<b>21</b> (39.6%)	53 (100%)
Smoking is forbidden in Islam	<b>1</b> (1.9%)	2 (3.9%)	<b>7</b> (13.7%)	9 (17.6%)	<b>32</b> (62.7%)	51 (100%)
Smoking has to be prohibited in public places	<b>6</b> (11.3%)	3 (5.7%)	<b>9</b> (17.0%)	12 (22.6%)	<b>23</b> (43.4%)	53 (100%)
Smoking has to be prohibited in study places	<b>5</b> (9.4%)	7 (13.2%)	<b>3</b> (5.7%)	10 (18.9%)	<b>28</b> (52.8%)	53 (100%)
Smoking is harmful to health	<b>0</b> (0%)	0 0%	<b>3</b> (5.8%)	15 (28.8%)	<b>34</b> (65.4%)	52 (100%)
It is easy to quit smoking	<b>18</b> (34.0%)	<b>14</b> (26.4%)	<b>8</b> (15.1%)	<b>7</b> (13.2%)	<b>6</b> (11.3%)	<b>53</b> (100%)

**Table 7b. Attitude towards tobacco use among non-smokers of KSU male medical students (2008-09); n = 1801.**

Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Total
Tobacco has bad smell	<b>4</b> (1.6%)	5 (1.9%)	<b>4</b> (1.6%)	42 (16.3%)	<b>203</b> (78.7%)	258 (100%)
Tobacco price has to be increased	<b>13</b> (5.0%)	12 (4.7%)	<b>25</b> (9.7%)	25 (9.7%)	<b>183</b> (70.9%)	258 (100%)
Smoking is forbidden in Islam	<b>2</b> (0.8%)	2 (0.8%)	<b>16</b> (6.3%)	28 (11.0%)	<b>207</b> (81.2%)	255 (100%)
Smoking has to be prohibited in public places	<b>0</b> (0%)	2 (0.8%)	<b>2</b> (0.8%)	22 (8.5%)	<b>232</b> (89.9%)	258 (100%)
Smoking has to be prohibited in study places	<b>0</b> (0%)	1 (0.4%)	<b>3</b> (1.2%)	20 (7.8%)	<b>234</b> (90.7%)	258 (100%)
Smoking is harmful to health	<b>0</b> (0%)	1 (0.4%)	<b>0</b> (0%)	20 (7.8%)	<b>236</b> (91.8%)	257 (100%)
It is easy to quit smoking	<b>39</b> (15.2%)	74 (28.8%)	<b>63</b> (24.5%)	48 (18.7%)	<b>33</b> (12.8%)	257 (100%)

More than 80% of both groups recognized that smoking is forbidden in Islam and over 94% of both groups think that smoking is harmful to the health. However, a higher proportion of smokers in our sample (60.4%) than non-smokers (44%) believe that it is difficult to quit smoking.

## Discussion

It is a proven fact that tobacco use is a health risk behavior of adolescents and young adults. For the period 1999 - 2008, the WHO/CDC Global Youth Tobacco Survey (GYTS) has shown that smoking starts as early as 13-15 years of age. Estimates of current cigarette smoking in this age in Eastern Mediterranean nations ranged from 2% (among girls) to 7% (among boys), but at higher rates for water pipe smoking for both sexes, to range from 9% (among girls) to 14% (among boys). Moreover, susceptibility to initiate smoking was estimated to range between 14% (girls) and 20% (boys) in the same age-group<sup>[18]</sup>. In 2007, GYTS in Saudi Arabia estimated that 6.7% of 13-15 year-old students currently smoke cigarettes (ranging from 2.6% among girls to 10.2% among boys) but this is to be compared with 11.9% estimated to currently smoke water-pipe in the same age-group, with a range from 9.4% (among girls) to 13.3% (among boys)<sup>[19]</sup>.

The medical students enrolled in this study represented about 27% of the total 1143 male medical students of KSU registered during the year 2008/09. Our results indicate a smoking prevalence of 17% among male medical students of KSU, which is higher than what was reported 4 years earlier (13%) in a similar study by Al-Turki<sup>[20]</sup>. However, it is within the range of smoking prevalence reported from published Saudi studies, carried out among similar groups of health-related students, ranging from 7.9-29%<sup>[8]</sup>.

The mean age of initiation of smoking was found in this study to be  $18.16 \pm 2.35$  years. Only 12% of smokers started smoking during the primary and elementary school age, while 46% of them started during high school ages (16-18 years of age). These results are similar to those reported by Torabi *et al.*<sup>[21]</sup> in the US, which showed that the majority of college students (57.9%) in their sample started smoking at the age of 14-17; and Bener<sup>[12]</sup> in Riyadh (1987), which reported that 60% of the participants started smoking at between 13 and 18 years of age.

Analysis by school year revealed that the prevalence of smoking among 1<sup>st</sup> and 2<sup>nd</sup> year male medical students (9.4% and 7.8%, respectively) was lower than the prevalence of smoking among 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year students (22.2%, 24.1% and 23%, respectively), making the higher school years one of the important determinants of smoking in our sample (OR = 3.19; CI = 1.5 – 6.9, p value = 0.0015). This result was similar to that of another study among the students at the University of Sharjah (Mandil *et al.*<sup>[22]</sup>), which reported that spending more than 2 years in college was a predictor of smoking among this group of students (OR = 1.79; CI = 1.27 – 2.55, p value = 0.001)

An important finding and a matter of serious concern is the high percentage of students who started smoking after they entered the medical college (37.3%). Another study carried out in Abha<sup>[23]</sup> reported that smokers from the College of Medicine who started smoking at/or above the age of 18 years are significantly higher in proportion than those of the College of Education (72% versus 46.8%;  $\chi^2 = 4.19$ , p = 0.04). The scanty information on tobacco addiction given to students in the early years of their medical studies, the study stress and possibly the low impact of their knowledge on their behaviors are all factors that may explain this phenomenon.

Cigarettes were found to be the main form of tobacco use among the male medical students in our study, with about 59% reporting smoking cigarettes alone or in combination with water pipe, while 38.5% reported smoking water pipe only. These figures are similar to Al-Turki's study<sup>[20]</sup> among medical students in Riyadh, who showed that 55.9% reported smoking cigarettes alone or in combination with water pipe and 44.1% smoking water pipe alone in his sample. However, such results are different from what was reported by Abolfotouh *et al.*<sup>[23]</sup> among the medical students in Abha, who reported water pipe smoking prevalence of 51.9%, and a cigarette smoking prevalence of 70.4%.

The main reasons of taking up the habit of smoking were reported to be curiosity (34.4%), followed by peer pressure (27.9%) and psychological stress (21.3%). Such results are similar to what was reported by Abolfotouh *et al.*<sup>[23]</sup> who found that curiosity was the main reason for initiation of smoking and different from what was reported in Al-Turki<sup>[20]</sup>, who reported peer pressure and stress at the top of the list of the major factors that may lead to start smoking.

This study clearly indicates that the desire to quit smoking is high among the medical students, as 72.5% of smokers reported that they would like to quit. This is compared to what was reported among similar groups of medical students of KSU by Bener (85%) in 1987<sup>[12]</sup>, Al-Turki (57.1%) in 2006<sup>[20]</sup>; and to what was reported among applied medical science students of KSU by Hasim (70%) in 2000<sup>[24]</sup>.

The increase in quitting desire has been observed across all types of students and colleges as reported in Wechsler *et al.*<sup>[25]</sup>. The tendency of quitting among smoker medical students in our survey was considerably high, but the proportion among them who had ever tried to quit was rather low (43%), compared with (55.6%) in Abolfotouh *et al.* study in Abha<sup>[23]</sup> and (56.1%) in Torabi *et al.* study in the USA<sup>[21]</sup>. Although the desire of tobacco quitting among smokers was reported by smokers in our study, about 30% of them did not get any advice or help at all to quit smoking. Among those who got an advice or help to quit, friends (46%) and families (35%) were the most important sources, with a mere 13% of them received such support from tobacco prevention programs. This makes us wonder about the appeal, accessibility and utilization of the tobacco prevention programs in Riyadh.

About two-thirds (65.5%) of the smokers in our study reported "health" as the main reason that motivates or could motivate them in the future to quit smoking. Religion came second with only 17.2% of smokers reported it as the main reason to quit. Among non-smokers, it was found that the main reasons for not attempting to take the habit of smoking was health (43.2%) followed by religion (39.7%), which are the same as the main reasons of quitting among smokers. This was compared to what was reported by Bener<sup>[12]</sup> among KSU students more than 20 years earlier in 1987, who found that religious factors were the main reason for not attempting to smoke. Of non-smokers 16.2% answered "may be" to a question about the possibility to become a smoker in the future. Although, they may only represent a small percent of non-smokers, this still is a matter of concern.

The prevalence of reported ETS exposure in this study was very high (63.3%) compared to Al-Turki's study 4 years earlier among a similar group, which showed reported prevalence of 38.2%<sup>[20]</sup>. The increase in ETS exposure may indicate low compliance of smokers to the laws which prohibit smoking in public and study places.



Medical students are tomorrow's doctors. Their attitudes and beliefs towards tobacco use will influence their patients' and public's health behaviors in their future medical practices. This study, as expected, showed that medical students, whether smokers or non-smokers, expressed a negative attitude towards tobacco use, in general. Non-smokers, however, showed more negative attitude than smokers, as reflected by their responses to attitude statements. Such results were in agreement with those of Abolfotouh *et al.*<sup>[23]</sup> in Abha. Just above half smokers in this study (54.7%) agreed that tobacco price has to be increased, as compared to most non-smokers (80.6%). Moreover, our study revealed that religious beliefs do not seem to have the expected effect on the use of tobacco, as 80.3% of smokers and 92.2% of non-smokers agreed that smoking is forbidden in Islam. This study also revealed that the medical knowledge regarding the health effects of smoking has not been able to check its use, as 94.2% of smokers indicated that they were aware that smoking is harmful to the health. This was also reported by Abolfotouh *et al.*<sup>[23]</sup> study among medical students in Abha and Hasim's<sup>[24]</sup> study among Faculty of Applied Medical Science students in Riyadh, which showed that 85.2% (in the first study) and 72% (in the second) of smokers in such studies were aware of the health hazards associated with smoking.

### **Conclusion and Recommendations**

In conclusion, this cross-sectional study revealed a relatively low prevalence of tobacco use but a high prevalence of ETS exposure among KSU medical students. Although a high proportion of smokers reported the desire to quit, only 13% of them received help from tobacco prevention programs, which suggests an urgent need for an evaluation of the efficiency of these programs.

More effort needs to be done in combating smoking among medical students in order for the general public to accept them as their role models after graduating as doctors. It is essential to incur smoking prevention and cessation activities as it is critical that smoking students quit smoking, thereby, setting a strong and positive exemplar for the patients and the community alike. There should be specific training and counseling of the students on a regular basis, starting as early as primary school ages, but continuing throughout the university education to help them overcome the desire to indulge in this horrific and deadly habit.

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## أنماط الاستهلاك وعوامل الاختطار للتدخين بين طلاب الطب: جامعة الملك سعود بالرياض، المملكة العربية السعودية

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المستخلص. أجريت هذه الدراسة المقطعية لتقييم استهلاك التبغ، العوامل المؤدية لبدء استعماله ومحاولات الإقلاع ضمن المدخنين من طلاب الطب الذكور في جامعة الملك سعود والمسجلين في عام ٢٠٠٨/٢٠٠٩م، باستخدام استبيان معدل من "المسح العالمي لاستخدام التبغ بين الشباب". ضمن ٣١٢ طالباً (عينة الدراسة) وجد أن (١٧٪) منهم مدخنين حاليين. وجد كذلك أن (٥٩٪) من المدخنين الحاليين يدخنون السجائر وحدها أو مع الشيشة، بينما (٣٨,٥٪) ذكروا أنهم يستخدمون الشيشة فقط. بدأ (٦٢,٧٪) من المدخنين التدخين قبل دخولهم لكلية الطب، بينما بدأ (٣٧,٣٪) منهم التدخين بعد دخولهم لها. إن عوامل الخطورة الرئيسية لبداية التدخين كانت: الفضول (٣٤,٤٪)، وضغط الجلساء (٢٧,٩٪)، بينما كانت الأسباب الرئيسية للإقلاع عن التدخين: أسباب صحية (٦٥,٥٪) ودينية (١٧,٣٪). كذلك وجدنا أن هناك علاقة إحصائية بين الدراسة بالسنوات المتقدمة (الثالثة حتى الخامسة) والأخذ بعادة التدخين. (OR= ١٩,٣، CI=٥,١-٩١,٦، P=٠,٠٠١٥) بين مجموعة غير المدخنين (عددهم ٢٥٨)، وجدنا أن الأسباب الرئيسية التي جعلتهم لا

يدخنون هي الصحة (٤٣,٢٪)، والدين (٣٩,٧٪). كما وجد أن حوالي (٦٣,٣٪) من غير المدخنين قد تعرضوا إلى الدخان البيئي (السلبى) نتيجة تدخين الآخرين. يجب الحث على الإقلاع عن التدخين بين طلاب الجامعة بصفة عامة وبالأخص طلاب الطب لحماية صحتهم، صحة غيرهم من غير المدخنين، ولضمان تقبل الناس لهم كقدوة يحتذى بها عند عملهم كأطباء ممارسين.