KNOWLEDGE, ATTITUDE AND BEHAVIOR OF MEDICAL AND DENTAL STUDENTS TOWARDS SMOKING HABIT IN SAUDI ARABIAN UNIVERSITIES

‘A COMPARATIVE STUDY’

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Introduction

Tobacco is the second major cause of death worldwide [1]. There are more than 1 billion smokers in the world and 5 million deaths occur due to tobacco habit each year [2]. If the present consumption pattern continues, the number of deaths will increase to 10 million by the year 2020, 70% of which will occur in the developing countries [3]. Therefore the prevention and control of smoking has become a global concern.

Several studies have shown that smoking prevalence is high, particularly among adult males in Saudi Arabia [4-8]. In spite of having a health warning on every packet of cigarettes and anti-smoking clinics distributed all over the Kingdom, smoking in Saudi Arabia is increasing rapidly, especially among the young people. A significant contributory factor to this increasing trend is aggressive marketing by tobacco companies [9].

The students related to health profession are expected to play an important role in smoking prevention and control in future. The health professionals ought to be role models for their patients. The code of practice proposed by WHO (World Health Organization) in 2004, encourages health professionals to provide their patients with information about the health consequences of smoking, help their smoking patients to quit and act as a role model to promote tobacco free life style [10]. There is evidence to show that a very brief advice lasting less than three minutes given in a good manner by a health professional will help about 2% of smokers to successfully stop smoking [11].

Therefore it is very important to involve health professionals in any aspects of smoking control in the society. In an attempt to improve the participation of health-care providers in smoking cessation efforts, the National Cancer Institute recommended including tobacco-treatment education in the curricula of all US medical schools by 1995 [12].

Some significant barriers to anti-tobacco counseling by health professionals have been identified that include self-use of tobacco and lack of training in patients’ counseling about quitting tobacco use [13].

The objectives of the present study were:

1. To determine the prevalence of smoking among medical and dental students in different colleges of Saudi Arabia.
2. To explore their knowledge, attitudes and practices about smoking habits.
3. To assess the role of the colleges in smoking prevention and control from the students perspective.
4. To compare the medical and dental students with regard to the study variables in different geographical parts of Saudi Arabia.
5. To make a comparison amongst students of different universities of Saudi Arabia regarding their smoking habit.

**Material and Methods**

The study design was cross-sectional involving 3219 students from medical and dental colleges in different regions of Saudi Arabia. An anonymous pilot tested self administered questionnaire was distributed amongst the 2nd to 6th year students present on the respective days of the survey in 20 colleges. The questionnaires were filled out by the students during lectures and were taken back by designated students in each class.

The study was conducted between September and November 2010. The kingdom of Saudi Arabia has a total number of 24 government universities. 10 of these universities were having both medical and dental colleges while 6 of them had only medical colleges.

Three universities were located each in the Central, Northern and Southern parts of Saudi Arabia, two in the Western parts and one in the Eastern part of the country (Table 1).

<table>
<thead>
<tr>
<th>Part</th>
<th>University</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>King Saud University (KSU)</td>
<td>Medical and dental</td>
</tr>
<tr>
<td></td>
<td>King Fahd Medical City in Riyadh (KFMC)</td>
<td>Medical</td>
</tr>
<tr>
<td></td>
<td>Qassim University</td>
<td>Medical and dental</td>
</tr>
<tr>
<td>North</td>
<td>Aljouf University</td>
<td>Medical and dental</td>
</tr>
<tr>
<td></td>
<td>Ha'il University</td>
<td>Medical</td>
</tr>
<tr>
<td></td>
<td>Tabuk University</td>
<td>Medical</td>
</tr>
<tr>
<td>South</td>
<td>King khalid University (KKU)</td>
<td>Medical and dental</td>
</tr>
<tr>
<td></td>
<td>Najran University</td>
<td>Medical and dental</td>
</tr>
<tr>
<td></td>
<td>Jazan University</td>
<td>Medical and dental</td>
</tr>
<tr>
<td>East</td>
<td>Dammam University</td>
<td>Medical and dental</td>
</tr>
<tr>
<td>West</td>
<td>King Abdulaziz University (KAU)</td>
<td>Medical and dental</td>
</tr>
<tr>
<td></td>
<td>Taibah University</td>
<td>Medical and dental</td>
</tr>
</tbody>
</table>

Every region had one university except Riyadh and Mecca. Each one of them was included in the study. In the last two cases the oldest universities were chosen in those regions.

The study included a total number of 20 colleges, 11 medical and 9 dental colleges according to geographical location and availability of the medical or dental college. These colleges were having a total number of 5279 enrolled second to sixth year students, 3997 medical and 1282 dental students.
The questionnaire had a total number of 24 items. Most of them had already been validated by conducting a small scale study in Qassim University. The new items were pilot-tested on a group of 20 second to sixth year medical and dental students before they were included in the questionnaire.

The following variables were included in the study:
1. Smoking status
2. Attitudes towards smoking
3. Colleges’ role in smoking prevention
4. Starting age for smoking
5. Reasons for smoking
6. The perceived effect of the smoking habit on patients’ dealing?
7. The perceived effect of smoking status on patient’s education
8. Knowledge regarding harmful effects of smoking
9. Behaviour about quitting smoking

Smoking status was classified for the sake of data analysis as [14]:
- Currently Smoker: those who are smoking at present time.
- Ever Smoker: those who tried smoking for once or twice but then left the habit.
- Never smoker: those who never smoked during their life time.
- What about those who were smokers but quitted smoking? Those is ever smoker and it’s defined above

Statistical analysis of data

The data was coded and entered in Excel Microsoft Corporation 2007 program. It was then transferred to SPSS version-16 for analysis. Chi-square test was used to make a comparison among the medical and dental students of the different colleges. All the differences were tested at a minimum level of p<0.05 for statistical significance.

Results

A total of number of 3219 questionnaires was distributed out of which 2336 were collected with an overall response rate of 72.5%. 43 questionnaires were excluded because of incomplete entries leaving behind 2293 for final data analysis (Table 2).
Table 2: Distribution of study subjects and sample size

<table>
<thead>
<tr>
<th>College</th>
<th>No. of questionnaires distributed</th>
<th>No. of questionnaires returned</th>
<th>Response rate %</th>
<th>No. of excluded questionnaires</th>
<th>No. of Questionnaires analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>2257</td>
<td>1674</td>
<td>74.1%</td>
<td>35</td>
<td>1639</td>
</tr>
<tr>
<td>Dental</td>
<td>962</td>
<td>662</td>
<td>68.8%</td>
<td>8</td>
<td>654</td>
</tr>
<tr>
<td>Total</td>
<td>3219</td>
<td>2336</td>
<td>72.5%</td>
<td>43</td>
<td>2293</td>
</tr>
</tbody>
</table>

The results of the study showed that out of 2287 students participating in the study, 16% were smoking at the time of the study, 23% were ever-smokers and 60.8% never smoked during their life time (Table 3).

Table 3: The number (percentage) of Medical and Dental students smoking at the time of the study.

<table>
<thead>
<tr>
<th>Smoker status</th>
<th>Medical students</th>
<th>Dental students</th>
<th>Total</th>
<th>Chi-square test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>Value</td>
</tr>
<tr>
<td>Currently smoking</td>
<td>234 (14.3%)</td>
<td>116 (17.8%)</td>
<td>350 (16%)</td>
<td>= 4.389</td>
</tr>
<tr>
<td>Ever smoked</td>
<td>396 (24.2%)</td>
<td>141 (21.6%)</td>
<td>537 (22.9%)</td>
<td></td>
</tr>
<tr>
<td>Never smoked</td>
<td>1006 (61.4%)</td>
<td>394 (60.3%)</td>
<td>1400 (60.8%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1636 (100%)</td>
<td>651 (100%)</td>
<td>2287 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

The percentage of dental students who were currently smoking was significantly higher than that of the medical students (p<0.05) (Figure 1). But the number of dental students who ever or never smoked was not statistically different from their medical counterparts at an α level 0.05.
The study found that a significantly higher number of medical students (57.5%) had been smoking 5 or more cigarettes a day than the dental students 50.4%. But the difference was found to be not statistically significant at a p-value of >0.05. About 50% of students in both dental and medical groups tended to keep their smoking habit a secret.

In response to a question about use of tobacco products other than cigarettes, a significantly greater percentage of students in the dental group (23.4%) reported smoking sheesha (water pipe) than the members of the medical group 17.9% (p<0.05) (Figure 2).

Figure 1: The prevalence of currently smoking among second to sixth year medical and dental students in Saudi Arabia

Figure 2: The relative prevalence of smoking of the other products of tobacco among the students of the two colleges.
Differences regarding geographical location

The differences among the students of medical colleges in different geographical areas of Saudi Arabia with regard to smoking status were shown to be statistically significant with the highest number of smokers in the central part 18.8% and the lowest in the East 8.2% (p<0.001). However the dental students in different parts did not differ significantly at p<0.05 (figure 3).

Figure 3: Show Prevalence of smoking according to geographical area of Saudi Arabia among medical and dental students.

Attitudes of health professional students regarding smoking

When asked about their perception towards the problem of smoking amongst the health professional students, 71.2% agreed that there is a problem if health professional students smoke while 19.2% were found to be neutral about this statement and 9.5% students did not consider it a problem. 74.7% agreed that health professional students should serve as a role model for their patients and public regarding smoking (Figure 4).
Colleges’ role in smoking prevention

Students were asked three questions about the role played by the colleges in the prevention of smoking. In the first question the students were asked whether their respective college has an official policy for banning smoking in the college premises and clinics. 39% students were aware of the policy banning smoking in the college premises and clinics. In response to a second question, 75% of medical and dental students reported not being aware of anything about smoking cessation in their colleges. The third question was to seek students’ opinion about getting specific training on smoking cessation techniques in the college. 60% of the total number of students agreed with the suggestion. The medical and dental students questionnaires showed no statistically significant difference regarding the colleges’ role in smoking prevention (Table 4).

Table 4: Colleges’ role in smoking prevention

<table>
<thead>
<tr>
<th></th>
<th>Medical students</th>
<th>Dental students</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>My college has a policy banning smoking in the college premises and clinics</td>
<td>39.4%</td>
<td>37.9%</td>
<td>38.9%</td>
</tr>
<tr>
<td>Does not learned about smoking cessation in the college</td>
<td>74.1%</td>
<td>77.2%</td>
<td>75%</td>
</tr>
<tr>
<td>Should have training on smoking cessation techniques in the college</td>
<td>62.2%</td>
<td>54.4%</td>
<td>60%</td>
</tr>
</tbody>
</table>
In response to a question about the caring role of the health professional students in the cessation of smoking in their smoker colleagues, more than half of the respondents (64.1%) were found to be willing to discuss the problems related to smoking with such friends while 20.8% would be terminating their relationship with such students and another 9.9% will become cautious in their relations with smoker colleagues. A small minority (5.1%) answered with the options ‘I don’t care’, ‘I don’t know’ and ‘it depends on his health condition’ (Figure 5).

![Figure 5: What will you do if your colleague starts smoking?](image)

The smokers (n=350) were further asked fourteen questions about their smoking habit. Five of the smokers did not respond to these questions.

### Starting age for smoking

The results showed that 13.9% of students started smoking before the age of 16 years while 47.8% took a start between the ages of 16 to 18 years. 37.9% of the total number of smokers indulged in the smoking habit after joining the college (aged 19 years or more).

### Reasons for smoking

About half of smokers in the medical (50%) and dental (51.7%) groups reported that smoking was helpful in relieving their stress. A higher percentage of medical (18.4%) reported that smoking was helping them to study than dental students (8.6%). On the other hand a higher percentage of dental
students (25%) used to enjoy smoking during their leisure than that in the medical group (15.8%).

One question explored about how the students started smoking. In response a higher percentage (65.2%) of the smokers reported 'being influenced by their friends' as the main reason for starting smoking than the ones starting the habit under the influence of the family members (16.9%). Only 6.6% of the smokers started smoking by watching TV. However both these differences were not statistically significant at p>0.05.

The perceived effect of the smoking habit on patients' dealing

42.3% of health professional student smokers seemed to be concerned about their smoking habit while dealing with their patients. 80% of the smokers felt reluctant while smoking in front of their patients while 19.4% did not mind it.

The perceived effect of smoking status on patient's education

About 82.9% of the health professional student smokers were determined to educate their patients about smoking despite their self smoking. Majority of the smokers (36.8%) thought that their patients would not accept their recommendations and 40.6% of the smokers were neutralized about that.

Knowledge regarding harmful effects of smoking

74.7% of the total number of smokers was found to be fully confident about having the knowledge regarding harmful effects of smoking while 16.2% reported to know a little bit about these effects.

Advice given by the college staff about smoking cessation

52.8% of the smokers received some advice from the college staff related to smoking cessation while 31.6% of them never received any advice. About 13.3% of smokers reported that the staff did not know about their habit.

Most common places for smoking

In response to a question about the most common place where health professional students smoked in the colleges, around half of smoker students (48%) reported that they smoked in the park of the college and 39.1% smoked in a public place. About 9.6% of the students reported smoking inside the college building.

Quitting smoking

74.6% of the smokers wanted to stop smoking and 70.8% of them had an attempt to stop smoking. Amongst the smokers who did not attempt to stop smoking (n=93), 35.7 % could not leave the habit because they were under stress while 10.7% really
loved smoking. 53.5% did not state a reason for not trying to quit smoking.

Comparison of smoking rates in different Universities among medical and dental in Saudi Arabia

The differences amongst different Saudi Arabian universities related to the percentage of student involved in smoking habit were found to be highly significant (p<0.001) (Figure 6).

The King Fahad Medical City in Riyadh had the highest percentage of the medical smoking students (31.2%) while the medical college in ha'il had the lowest prevalence of smokers (5.7%).

The range for the percentage of smokers for the dental students in different universites was 5.4-25.7%, the lowest percentage being for the dental college in jazan and the highest in king Abdulaziz University dental college in Jeddah.

Discussion

The prevalence of smoking among the medical and dental students was found to be less than that in the general population of Saudi Arabia that has been reported differently in various studies but the range is roughly 21.6% [4-8, 27].

As far as the geographic distribution of smokers in Saudi Arabia is concerned, the previous studies have shown that the prevalence of smoking in Central part is 27% while it is 17% in Eastern and 22% in the Western parts of the country [27]. The results of the present study gave the respective figures for prevalence in these
parts as 18.8%, 8.8% and 16.6% respectively. This indicates a comparatively lower prevalence of smoking habit amongst the medical and dental students than that in the general population of different parts of Saudi Arabia.

In this study the prevalence rates of smoking in the medical and dental colleges at Saudi Arabian Universities are 14.3% and 17.8% respectively, with a significantly higher prevalence among dental students. Such a finding has also been reported in studies carried out in other countries like Lebanese, Tunisia, Argentina and Russia [20, 28-29].

The prevalence of smoking among the medical students in the present study was found to be lower than that among the medical students of the neighboring countries such as Bahrain (27.5%), Jordan (26.3%), Yemen (27.0%) and Syria (15.8%) [17, 19, 30]. This is also the case with some of the other countries like Pakistan (14.4%) and Turkey (17.2%) [30-31].

Also the dental students in the study under discussion had a lower prevalence of smoking as compared to their counterparts in Lebanese (31.6), Argentina (38.3 %) and Bangladesh (47.7%) [20, 28, 33].

In a study of 101 practicing dentists in Riyadh, Saudi Arabia, smoking prevalence turned out to be 14.2% [21] which is lower than the smoking prevalence among dental students in the study under discussion. On the contrary the smoking prevalence among medical students has been shown to be lower than that of physicians in Riyadh (34%) and medical doctors in many other countries [22, 34]. However it is not clear whether the dentists and doctors practicing at the time of those previous studies had been smoking during their student life or not.

A great majority of the medical and dental students in this study (75.0%) reported that they should serve as a role model for their patients and public regarding smoking. This finding is similar to other studies carried out in India, United States, Indonesia and Jordan [17, 23-25]. In some studies more than 90% of medical students believed in taking a more active role in providing smoking cessation for patients and believed that doctors ought to set a good example to patients and other health workers by not smoking [27].

The data of this study revealed that most of the medical and dental students had good perceived knowledge about the harmful effects of smoking. This finding has also been reported in a number of other studies [16-17].

A study was conducted on 202 medical students in Abha situated in the southern part of Saudi Arabia in 1998. The study reported 13.6% students who were smoking at that time. Another study involving 322 medical students in Riyadh, the central part of Saudi Arabia, in 2005 also found 13% of the students involved in smoking habit at the time of the study. The present study...
found a smoking prevalence that is almost comparable to Abha and Riyadh studies and this indicated that still no improvement up to this time \[16, \ 35\].

70.4% of the smokers in Abha study were smoking cigarettes and 51.9% were using sheesha (water pipe). In the study under discussion a lower percentage of smokers reported smoking cigarettes than the study in Abha. However the percentage of students using seesha in the two studies was almost equal. Among the smokers in Riyadh study conducted previously, 32.2% smoked cigarettes while 44.1% were smoking sheesha. The present study found an increase in the percentage of students smoking sheesha and cigarettes in Riyadh \[16, \ 35\].

The colleges’ role in smoking prevention was found to be inadequate as a great majority of students reported not having a college policy banning smoking inside the college premises it maybe the reason that some of them reported smoking inside the college building.

About three fourth of the students in the present study were quite willing to quit smoking. Similar percentage was also reported in other studies carried out in Indonesia 76% and India71% \[25, \ 36\].

Some degree of caution should be taken while generalizing the result of the study to all medical and dental students in Saudi Arabia because of certain methodological difficulties. The present study excluded the newly established medical and dental colleges as they were not having all second to sixth year classes except in the regions of Saudi Arabia which were having only one university like Aljouf, Ha’il, Najran and Jazan regions.

The universities from the regions of Tabuk and Baha were also not included in the study. The University of Tabuk did not respond to the request of participation in the study. The University in Baha had a newly established medical and dental college with first year students only. The university from the Northern border did not have a medical or dental college.

**Conclusions**

1. The prevalence of smoking amongst the study groups was low as compared to the natives of Saudi Arabia as well as to that among the students of the neighboring countries.
2. The majority of medical and dental students held positive attitudes towards smoking prevention.
3. The colleges’ role in the prevention and control of smoking turned out to be inadequate.
4. The colleges either did not have a policy imposing ban on smoking or the students were not aware of it.
5. About half of smokers thought that smoking had a stress-relieving effect in their case. A substantial number of smokers used to enjoy smoking during their leisure.
Recommendations

All colleges must have an anti-smoking policy that should be made public to all the students by adopting appropriate strategies.

1. The colleges must show serious commitment and make concerted efforts in implementing this policy by involving all the stakeholders.
2. Education about smoking must be included in the curriculum right from first year and anti-smoking messages must be reinforced at regular intervals during all academic years.
3. The students should be given training about smoking cessation and counseling techniques and must be motivated to play their role in patients’ education regarding smoking.
4. Health promoting activities must be organized in colleges to provide opportunities to the students to relieve their stress and pass their leisure.

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