

Smoking habits among medical students in Western Saudi Arabia

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ABSTRACT

الأهداف: تقييم نسبة انتشار التدخين بين طلاب الطب، وفهم مدى معرفة الطلاب بهذه المشكلة، وممارساتهم، ومواقفهم تجاه هذه العادة.

الطريقة: شملت هذه الدراسة المقطعية طلاب الطب الذين يدرسون في كلية الطب الرئيسية، جامعة الملك عبد العزيز، جدة، المملكة العربية السعودية، واستمرت خلال الفترة من سبتمبر 2009م إلى مايو 2010م. لقد قام الطلاب الذين تضمنتهم الدراسة بملأ أوراق المسح العالمي للتدخين لدى البالغين والتي كانت مجهولة الهوية وذاتية التعبئة أيضاً.

النتائج: لقد اعترف 90 طالباً (14%) عن قيامهم بالتدخين في وقت الدراسة وذلك من أصل 643 مشاركاً في الدراسة. أشارت نتائج الدراسة إلى أن نسبة انتشار التدخين بين الذكور وصلت إلى 24.8%، فيما كانت بين الإناث 9.1%. وكان التدخين أكثر شيوعاً بين الذكور منه لدى الإناث ($p=0.003$)، غير أن نسبة المدخنين السابقين بين الإناث كانت أكثر من الذكور ($p=0.042$). لقد كان عاملي الأصدقاء والوالدين من أكثر العوامل المؤثرة للبدء بعادة التدخين، تبعهما بعد ذلك عامل الإعلام. اعتقد 90% من المشاركين في الدراسة بأن على الأطباء أن يكونوا مثلاً يحتذى به بعدم التدخين، وأشارت الأغلبية إلى ارتباط التدخين بالعديد من الأمراض الخطيرة، وعلى ذلك فقد كان المدخنين السابقين على دراية بهذه الأمراض أكثر من المدخنين الحاليين. وعلى الرغم من اعتقاد غالبية المشاركين في الدراسة بخطور التدخين، إلا أن 9.5% منهم لم يربط تدخين الشيشة بأي ضرر.

خاتمة: أظهرت هذه الدراسة أنه بالرغم من إلمام طلاب الطب بالمخاطر المترتبة من التدخين إلا أن 24.8% من الذكور، و9.1% من الإناث مازالوا يقومون بهذه العادة. ولذلك يجب على صناع القرار النظر في العوامل التي تساعد على بدء واستمرار هذه العادة المدمرة.

Objectives: To estimate the prevalence of tobacco smoking, and understand the attitude, practice, and knowledge among medical students.

Methods: A cross-sectional study was conducted from September 2009 to May 2010. An anonymous, self-administered, Global Adult Tobacco Survey based questionnaire was completed by the students attending the main Medical College of King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.

Results: Of the 643 students in the study, 90 students (14%) indicated that they smoked tobacco at the time of the study. The prevalence of smoking was 24.8% among males, and 9.1% among females. Smoking was more common in males ($p=0.003$), but there were more ex-smokers among females ($p=0.042$). The friends and parents were considered the primary influence for initiating smoking habit, followed by the media. Ninety percent thought that doctors should set a good example by not smoking. Most of the study population indicated that smoking is related to serious illnesses; however, non-smokers were better aware of such illnesses than smokers. Although most thought that smoking tobacco is harmful, approximately 9.5% believe that smoking a water pipe is not.

Conclusion: Despite the good knowledge on the hazards of tobacco consumption, 24.8% male, and 9.1% female medical students in Jeddah continue to smoke. The policymakers should address the factors contributing to the initiation, continuation, and spread of this devastating habit.

Saudi Med J 2011; Vol. 32 (8): 843-848

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Received 4th April 2011. Accepted 20th June 2011.

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Tobacco consumption is a prevalent public health problem worldwide. In addition to its negative social and economic impacts, tobacco is a known factor predisposing smokers to many disorders leading to death or disability. Smoking is prevalent and increasing in the Kingdom of Saudi Arabia (KSA). Data extracted from a national survey between 1990 and 1993 showed that the overall prevalence of current smoking was 21.1% for males, and 0.9% for females.¹ However, recent data published by the World Health Organization (WHO) in 2008 showed that the overall smoking prevalence in KSA was 22%, comprising 37% of male adults, and 6% of female adults.² This suggests that the prevalence of smoking is increasing in KSA. It is well known that physicians play an important role in helping patients to stop smoking, thereby stemming the progress of this self-inflicted habit in the community.³ As future physicians who will witness the persistent burden of smoking-related diseases among their patients, medical students represent a primary target for the tobacco-prevention programs. As medical students progress through medical school, their knowledge of smoking-related diseases naturally increases.⁴ Nevertheless, smoking remains common in this group.⁵ An increasing knowledge of smoking-related risks does not always correlate with a lower rate of smoking among medical students.⁴ Hence, many researchers have historically investigated the rates of tobacco smoking among this demographic group.

Smoking rates among students are widely shown to vary from one country to another.⁶ According to an international review, smoking rates among male medical students range from 3% in the USA to 58% in Japan.⁶ This finding is consistent with the population data published by the WHO, which reports that only 21-26% male American adults, compared with 39-47% Japanese adults, consume tobacco.⁷ Although the regional data are limited, the reported prevalence of smoking among medical students in the Middle East ranges from 15-35%.⁸⁻¹⁰ In KSA, the prevalence of smoking among male medical students varies between 13-19%.¹¹⁻¹³ However, data regarding the prevalence, knowledge, and attitude towards smoking among medical students in the western region of KSA, and particularly among female medical students, are lacking. The aim of our study is to estimate the prevalence of smoking habits among male, and female medical students in the main medical school in the Western region. The students' attitude, practice, and knowledge of tobacco smoking were also addressed.

Methods. A cross-sectional, questionnaire-based study was conducted at the Medical College, King Abdulaziz University, Jeddah, KSA from September 2009 to May 2010. All medical students at different

educational levels (from the second to sixth levels) during the 2009 to 2010 academic year were invited to participate in the study by filling a questionnaire. Those who agreed to participate and completed the questionnaire were included in the study. The questionnaire used was derived from the Global Tobacco Survey (GTS).¹⁴ It was written in English, and included enquiries relating to demographic information, as well as detailed questions regarding the history of smoking, type of smoking, smoking duration, and severity (daily cigarette or water pipe consumption), reasons for starting and quitting (if at all), any smoking cessation intervention, and general knowledge of the consequences of smoking. For the purposes of this study, a current smoker was defined as a subject who had smoked any tobacco product daily or occasionally, and was still a smoker at the time of the study. If such a subject was not smoking at the time of the study, he or she was considered as an ex-smoker. Non-smokers were those who had never smoked before. To minimize the non-response rate, anonymity of the respondents was maintained, and the names were not required. All students consented, and assured that the information collected would be treated as confidential. The selected research assistants were the medical students since they were known, and trusted by the students. Ethical approval was obtained from the local ethics committee prior to the commencement of the study.

The qualitative data are presented in the form of numbers and percentages. The Chi-square test was used to test the significance. $P < 0.05$ was considered significant. Statistical analysis was performed using the Statistical Package for Social Sciences version 11 (SPSS Inc., Chicago, Illinois, USA).

Results. Data were successfully collected from 643 students. The medical students were in their second to sixth years of the course; 441 (69%) were females, and 222 were males. Other characteristics of the participants are shown in Table 1. Ninety students were current smokers, 55.6% of them were males, and 44.4% females, making the prevalence of smoking 24.8% in males, and 9.1% in females (Table 2). The smoking habit was more common in males than females ($p = 0.003$). However, there were more ex-smokers among females than males ($p = 0.042$). Approximately one-quarter of the study population was either a smoker, or an ex-smoker. The different characteristics of smokers, ex-smokers, and non-smokers are shown in Figures 1 a & b.

More than two-thirds of the smokers were less than or equal to 23 years of age, and had smoked for less than or equal to 5 years up to one pack daily. More than 90% of those who smoked water pipe used to smoke more than twice a week. More than 50% of the smokers were in their final years (the fifth, and sixth study levels), and

Table 1 - Demographic characteristics of the participants.

| Variables | N (%) |
|--------------------------|------------|
| Gender | |
| Male | 202 (31.0) |
| Female | 441 (69.0) |
| Age group (years) | |
| <22 | 301 (46.8) |
| 22 | 157 (24.4) |
| 23 | 111 (17.3) |
| 24 | 57 (8.9) |
| >24 | 17 (2.6) |
| Study level | |
| 2 | 133 (20.7) |
| 3 | 100 (15.6) |
| 4 | 127 (19.8) |
| 5 | 186 (28.9) |
| 6 | 97 (15.1) |

Table 2 - Prevalence of smoking habits among the study population (N=643).

| Population | N (%) | Male (%) | Female (%) | P-value |
|-----------------|------------|------------|------------|---------|
| | Total=643 | Total=202 | Total=441 | |
| Current smokers | 90 (14.0) | 50 (24.8) | 40 (9.1) | 0.003 |
| Ex-smokers | 76 (11.8) | 18 (8.9) | 58 (13.2) | 0.042 |
| Never smoked | 477 (74.2) | 134 (66.3) | 343 (77.7) | 0.031 |

most non-smokers (60%) were juniors (the second to fourth study levels). The influence of friends and parents was perceived to be the main reason for the initiation of smoking habit, followed by the effect of movies (Table 3). In 50% of the smokers, the reason for continuing this habit was the general good feeling experienced while smoking, followed by stress alleviation in more than one-fifth of them. Nevertheless, stress was the main factor that triggered smoking, as reported by more than half of the smokers (Table 3). Ninety percent of students thought that doctors should set a good example by not smoking. Although most students (96.6%) thought that smoking in general is harmful to health, it is interesting that 61 students (9.5%) thought that smoking a water pipe is not. However, one third (32.8%) of the students who thought water pipe is not harmful were actually water pipe smokers compared with 9.1% of those who thought it is harmful ($p=0.001$). Most of the study population indicated that smoking is related to major medical complications. These complications included lung cancer, bladder cancer, heart diseases, osteoporosis, and peptic ulcer. However, only 50-68.7% of the students were aware of the association between smoking and stroke, postoperative complications, and cervical cancer. Non-smokers were significantly more knowledgeable than smokers regarding the association of tobacco smoking and lung cancer, bladder cancer, heart disease, and peptic ulcer (Figure 2). However,

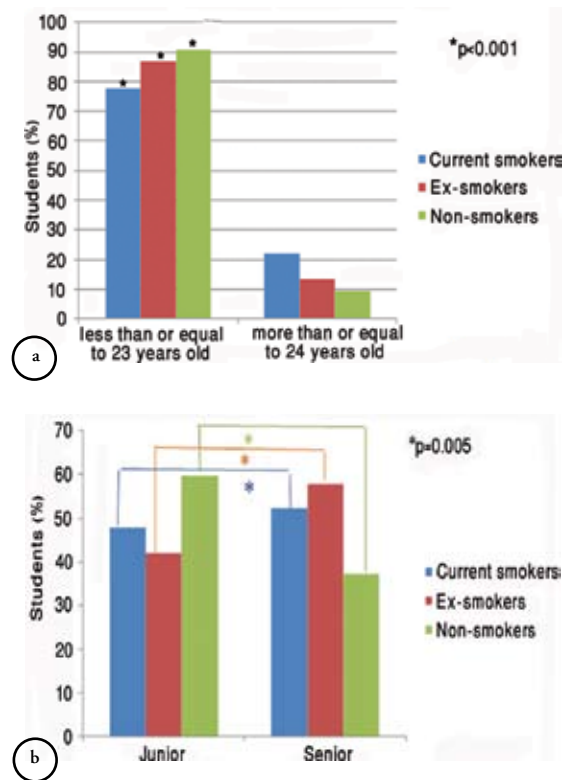


Figure 1 - Association between students' characteristics and smoking status showing, a) the relationship between students' age and prevalence of smoking habit, * $p=0.001$ indicates that more current smokers, ex-smoker, and never smoked (non-smokers) students were less than or equal to 23 years of age than those more than or equal to 24 years, b) relationship between students' level and smoking habit (juniors - students at the second to fourth study levels, seniors - students at the fifth and sixth study levels. * $p=0.005$ indicates that more current, and ex-smokers are seen in seniors, while never smoked (non-smokers) students were more common in juniors.

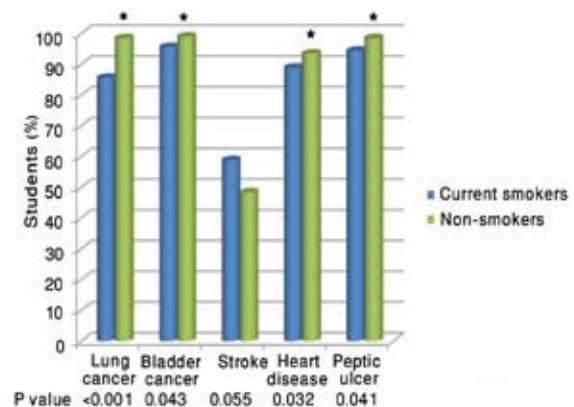


Figure 2 - Students responses to the relationships between smoking and certain diseases, * p -values indicate that non-smokers were significantly more knowledgeable than current smokers were, regarding the association of tobacco smoking and lung cancer, bladder cancer, heart disease and peptic ulcer but not stroke.

the knowledge of the female smokers was significantly superior to male smokers regarding the association of tobacco smoking and lung cancer ($p=0.001$), as well as bladder cancer only ($p=0.011$).

Discussion. This study demonstrates that the prevalence of smoking among future physicians is 14% in KSA, with males (24.8%) more likely to smoke than females (9.1%). This prevalence is actually comparable to that reported in previous local studies, which ranged from 13-19%.¹¹⁻¹³ However, the data regarding the prevalence of smoking among female medical students were limited in previous studies, and were much lower than that reported in our study (0-2.4%) (Table 4).^{11,13,15,16} This difference may be related to underreporting among females in the above-quoted studies, which were conducted in the Central Region of KSA. This probably could be attributed to the social stigma associated with smoking, which may be of less

importance in the Western region. Nevertheless, it seems that our findings are more in keeping with the prevalence in the general population; the prevalence of smoking among Saudi males ranges from 13-38% with a median of 26.5%, while in Saudi females the range is 1-16% with a median of 9%.¹⁷ In addition, our study reveals that one in every 4 students was either a current smoker or an ex-smoker (more than one in 5 females, and one in 3 males), which is a very alarming figure, keeping in mind that these are the future physicians, who are expected to have a leading role in combating smoking in the community.

Tobacco smoking was found to be higher among senior medical students compared to their junior colleagues. This is in agreement with the findings of previous reports,^{10,12,13,18} which revealed that the risk of tobacco consumption increases, as students progress through their studies, probably due to increased stress. This hypothesis is supported by our findings, that stress was the most common reason to practice this habit as reported by more than 50% of the smokers, and the second common reason to continue by 20% of them (Table 3). Unfortunately, cigarette smoking, and water pipe smoking frequently co-occur. In our study, one-third of the smokers actually smoked both. However, approximately 50% of tobacco consumers smoked water pipe alone. Similar findings were reported by others, showing a high prevalence of smoking a water pipe only, or a water pipe, as well as cigarettes.^{11,15} This is probably due to the common misconception that water pipe smoking is harmless, as seen in our study, in which approximately one in 10 of the study population thought so. In fact, water pipe smoking may be more damaging since the level of plasma nicotine resulting from smoking one water pipe was found to be 20% higher than the level of plasma nicotine resulting from smoking 21 cigarettes.¹⁹ In other words, water pipe smoking may carry greater risks to the health, and current data refutes the delusion that smoking a water pipe is harmless.²⁰ These findings strongly imply that tobacco control programs must address all the forms of tobacco consumption, not just smoking cigarettes.

Table 3 - Factors that encourage smokers to initiate, and continue smoking (n=90).

| Factors | N | (%) |
|---|----|--------|
| <i>The main influencing factors to initiate smoking habit</i> | | |
| Parent(s) | 19 | (21.1) |
| Friends | 37 | (41.1) |
| Movies | 16 | (17.8) |
| Curiosity | 10 | (11.1) |
| Smoking of an idol | 2 | (2.2) |
| Impressing others | 1 | (1.1) |
| Stress | 5 | (5.6) |
| <i>Risk factors to continue smoking habit</i> | | |
| Feeling good | 45 | (50.0) |
| Stress relieving | 19 | (21.1) |
| Cannot quit | 7 | (7.8) |
| Misinformation it is harmless to health | 2 | (2.2) |
| Being cheap | 4 | (4.4) |
| Independence | 3 | (3.3) |
| Others | 10 | (11.1) |
| <i>Factors that trigger smoking</i> | | |
| Stress | 47 | (52.2) |
| Gathering with friends | 17 | (18.9) |
| Social occasions | 10 | (11.1) |
| Not specific | 16 | (17.8) |

Table 4 - Comparison of previous studies on the prevalence of smoking among medical students in Saudi Arabia.

| Study | Sample size | Current smoking (%) | Male smoking (%) | Female smoking (%) |
|--|-------------|---------------------|------------------|--------------------|
| Jarallah, 1992 ¹⁶ | 414 | 33.0* | 137(33.0) | - |
| A l-Turki, 2006 ¹¹ | 322 | 13.0* | 42 (13.0) | - |
| Al-Turki & Al-Rowais, 2008 ¹⁵ | 337 | 2.4.0* | - | 8 (2.4) |
| Al - Haqwi et al, 2010 ¹³ | 215 | 19.0 | 40 (24.0) | 0 (0) |
| Wali, 2011 | 643 | 14.0 | 50 (24.8) | 40 (9.1) |

*Only one gender involved in the study

The present study showed that the common reason given for adopting smoking behavior was the influence of friends (41.1%) (Table 3). This agrees with other studies that revealed that most smokers started the habit due to the influence of friends.^{11-13,21,22} The effect of smoking parents as role models on their offspring is also a major influence in the initiation of smoking habit among adolescents, as was found in this study (21.1%), and supported by previous reports.^{23,24} Various researchers suggested that smoking habits of parents may be a very important in the influence, whether a medical student smokes or not.^{25,26} Encouraging parents to quit smoking, may therefore be an effective method to reduce adolescent smoking. Although Farkas et al²⁴ found that the earlier the parents quit, the less likely their children will be smokers. Other researchers found no association between whether students smoked at medical school, and whether their parents were smokers.²⁷

Our study also addressed the prevalence of ex-smokers among medical students, and found that 11.8% were ex-smokers, which is double the ratio reported by Al-Turki¹¹ (5.3%) in the Central region. This difference between the Western and Central region regarding the prevalence of ex-smokers among medical students could not be explained, but more studies are needed to look at the factors to help students to quit smoking. In addition, there was a statistically significant more ex-smokers among females (13.2%) than males (8.9%) ($p=0.042$). This is unique in our study since it was not looked at in previous local studies, and most studies are limited to one gender, and hence difficult to make any comparison (Table 4). Possible explanations to this gender variation include; that females may face more social pressure to quit smoking, they have less chance to practice smoking outdoor than males, reasons related to our cultural restriction on female liberty and autonomy, and finally female may be more educated regarding the harmful side effects of continuing smoking. The later is supported by the fact that the knowledge of female smokers in current study is significantly superior to male smokers, regarding the association of tobacco smoking and lung cancer, as well as bladder cancer, but not vascular, or peptic ulcer diseases.

Students showed good knowledge of the hazards of smoking, and its association with comorbidities, especially in relation to heart disease, and lung cancer. However, only 50% were aware of the association between smoking and stroke, which is disappointing. In addition, non-smokers were significantly better informed than smokers regarding the association of tobacco smoking with lung cancer, bladder cancer, heart disease, and peptic ulcer, which may be an important factor in discouraging their smoking. This again highlights the

necessity of public health awareness of the dangers of smoking. In addition, the significant high rate of water pipe smoking (32.8%) among students who consider it as an innocent habit, which is more than 3 folds the rate among believers in its harmful effects, again emphasizes the importance of educating, and alerting the society regarding the hazards of tobacco smoking of all kinds.

Despite the large number of the subjects included in our study, this study suffers from few limitations. There are many similar studies from KSA, and other parts of the world showing similar results²⁸⁻³². Another limitation was that the study was conducted in one institution in the Western region, and although the results were compared with the results from other institutions in other regions in the KSA, a multicenter study would be more representative and valuable. Also, our study did not address if the students did seek, or had interest in getting further knowledge regarding the effects of smoking on their health. Finally, our study did not address whether an awareness program, or campaign on the adverse effects of smoking would change the prevalence, knowledge, and attitude of the students towards smoking.

In conclusion, smoking is very common among medical students who are the future health care leaders, and role models, hence, more effective approaches are needed to help reduce tobacco consumption in this population. It is worth mentioning that the most students in our study thought that doctors should set a good example by not smoking, and that smoking tobacco is harmful, which is a healthy start in accepting smoking cessation. General strategies for promoting tobacco control among young people have been proposed by the WHO's Tobacco-Free Initiative (TFI)⁷. Many of these strategies are applicable for use among medical students. Education is probably the most critical issue in smoking cessation for both the medical students, and general public alike. It has previously been noted that educating both physicians and medical students on the importance of smoking as a cause of disease represents the first step in getting them involved in smoking cessation.³³ While medical schools should provide educational programs in this regard,³⁴ it has been suggested that not enough medical schools actually teach specific courses on tobacco control.³⁵ Failure to do so may allow a well-established smoking culture to remain among student demographics, and thus endanger their future role as physicians responsible for tobacco control programs.⁶ Regardless of when medical educators actually begin teaching their students on tobacco control, it seems clear from this study that tobacco-specific education should become mandatory in the future.

Acknowledgment. *The author is appreciative of the assistance of the following medical students in collecting the data: Walā'a Gholam, Rammal B. Al-Moayad, Fatima Jabali, Ahmad Shehabudeen, Huda Khbizindar, Rakan Bokhari, Wail Alamoudi, and Yahea Habis at King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.*

References

- Jarallah JS, al-Rubeaan KA, al-Nuaim AR, al-Ruhaily AA, Kalantan KA. Prevalence and determinants of smoking in three regions of Saudi Arabia. *Tob Control* 1999; 8: 53-56.
- World Health Organization Regional Office for the Eastern Mediterranean. Saudi Arabia Profile. [Updated 2010 August. Accessed 2010 September 13]. Available from URL: <http://www.emro.who.int/emrinfo/index.aspx?Ctry=saa>
- Davis RM. When doctors smoke. *Tob Control* 1993; 2: 187-188.
- Richmond R. Teaching medical students about tobacco. *Thorax* 1999; 54: 70-78.
- Flaherty JA, Richman JA. Substance use and addiction among medical students, residents, and physicians. *Psychiatr Clin North Am* 1993; 16: 189-197.
- Smith DR, Leggat PA. An international review of tobacco smoking among medical students. *J Postgrad Med* 2007; 53: 55-62.
- World Health Organization. Tobacco Free Initiative (TFI). [Updated 2009. Accessed 2010 September 15]. Available from URL: <http://www.who.int/tobacco/en/>
- Mandil A, Hussein A, Omer H, Turki G, Gaber I. Characteristics and risk factors of tobacco consumption among University of Sharjah students, 2005. *East Mediterr Health J* 2007; 13: 1449-1458.
- Almerie MQ, Matar HE, Salam M, Morad A, Abdulaal M, Koudsi A, et al. Cigarettes and waterpipe smoking among medical students in Syria: a cross-sectional study. *Int J Tuberc Lung Dis* 2008; 12: 1085-1091.
- Khader YS, Alsadi AA. Smoking habits among university students in Jordan: prevalence and associated factors. *East Mediterr Health J* 2008; 14: 897-904.
- Al-Turki YA. Smoking habits among medical students in Central Saudi Arabia. *Saudi Med J* 2006; 27: 700-703.
- Abolfotouh MA, Abdel Aziz M, Alakija W, Al-Safy A, Khattab MS, Mirdad S, et al. Smoking habits of King Saud University students in Abha, Saudi Arabia. *Ann Saudi Med* 1998; 18: 212-216.
- Al-Haqwi AI, Tamim H, Asery A. Knowledge, attitude and practice of tobacco smoking by medical students in Riyadh, Saudi Arabia. *Ann Thorac Med* 2010; 5: 145-148.
- Global Adult Tobacco Survey. Core Questionnaire with Optional Questions. [updated 2009 May 25. Accessed 2009 June]. Available from URL: <http://www.cdc.gov/tobacco/global/gats/questionnaire/index.htm>
- Al-Turki YA, Al-Rowais NA. Prevalence of smoking among female medical students in the College of Medicine, Riyadh, Saudi Arabia. *Saudi Med J* 2008; 29: 311-312.
- Jarallah JS. Smoking habits of medical students at King Saud University, Riyadh. *Saudi Med J* 1992; 13: 510-513.
- Bassiony MM. Smoking in Saudi Arabia. *Saudi Med J* 2009; 30: 876-881.
- Saeed AA, Khoja TA, Khan SB. Smoking behaviour and attitudes among adult Saudi nationals in Riyadh City, Saudi Arabia. *Tob Control* 1996; 5: 215-219.
- Hadidi KA, Mohammed FI. Nicotine content in tobacco used in hubble-bubble smoking. *Saudi Med J* 2004; 25: 912-917.
- Maziak W, Ward KD, Eissenberg T. Interventions for waterpipe smoking cessation. *Cochrane Database Syst Rev* 2007; 4: CD005549.
- Siddiqui S, Ogbeide DO. Profile of smoking amongst health staff in a primary care unit at a general hospital in Riyadh, Saudi Arabia. *Saudi Med J* 2001; 22: 1101-1104
- Al-Damegh SA, Saleh MA, Al-Alfi MA, Al-Hoqail IA. Cigarette smoking behavior among male secondary school students in the Central region of Saudi Arabia. *Saudi Med J* 2004; 25: 215-219.
- Al-Dawood KM. Pattern of smoking among parents of schoolboys. *Saudi Med J* 2000; 21: 735-739.
- Farkas AJ, Distefan JM, Choi WS, Gilpin EA, Pierce JP. Does parental smoking cessation discourage adolescent smoking? *Prev Med* 1999; 28: 213-218.
- Vlajinac H, Adanja B, Jarebinski M. Cigarette smoking among medical students in Belgrade related to parental smoking habits. *Soc Sci Med* 1989; 29: 891-894.
- Brenner H, Scharrer S. Smoking habits of future physicians: a survey among medical students of a south German university. *Soz Praeventivmed* 1996; 41: 150-157.
- Pathmanathan I. Smoking habits among medical students in the University of Malaya. *Med J Malaysia* 1975; 30: 88-92.
- Mony PK, John P, Jayakumar S. Tobacco use habits and beliefs among undergraduate medical and nursing students of two cities in southern India. *Natl Med J India* 2010; 23: 340-343.
- Sreeramareddy CT, Suri S, Menezes RG, Kumar HN, Rahman M, Islam MR, et al. Self-reported tobacco smoking practices among medical students and their perceptions towards training about tobacco smoking in medical curricula: A cross-sectional, questionnaire survey in Malaysia, India, Pakistan, Nepal, and Bangladesh. *Subst Abuse Treat Prev Policy* 2010; 5: 29.
- Tamaki T, Kaneita Y, Ohida T, Yokoyama E, Osaki Y, Kanda H, et al. Prevalence of and factors associated with smoking among Japanese medical students. *J Epidemiol* 2010; 20: 339-345.
- Minhas HM, Rahman A. Prevalence, patterns and knowledge of effects on health of smoking among medical students in Pakistan. *East Mediterr Health J* 2009; 15: 1174-1179.
- Frank E, Elon L, Spencer E. Personal and clinical tobacco-related practices and attitudes of U.S. medical students. *Prev Med* 2009; 49: 233-239.
- Fowler G. Educating doctors in smoking cessation. *Tob Control* 1993; 2: 5-6.
- Wallace P. Medical students, drugs and alcohol: time for medical schools to take the issue seriously. *Med Educ* 2000; 34: 86-87.
- Allen MB. Medical students> knowledge of smoking. *Thorax* 1999; 54: 2.