Original Article

Tobacco use among health professions students at a private university in Sudan: June 2013

Tarig Osman Mohamed Osman Dirar, MSc PTH
Public Health Researcher, Sudan Medical and Scientific Research Institute, Khartoum, Sudan

Abstract

Background

Health professionals are not aware of their fundamental role to help people quit smoking although they are in an ideal position to advise and educate patients about the dangers of smoking. Several surveys have shown that tobacco use is prevalent among students of health professions and their approach and credibility as future treatment providers may be influenced by their own smoking habits. The aim of this survey (which was done in June 2013), was to examine tobacco use prevalence, attitudes and knowledge on tobacco cessation training among prospective health professions students.

Methods

This is an institutionally-based cross-sectional survey of health professions schools. The Global Health Professions Students Survey (GHPSS) questionnaire was used for this survey and data was analyzed using IBM SPSS Statistics version 20. Chi-square test for statistical significance was conducted for comparison of proportions.

Results

One hundred seventeen students completed the survey giving an overall response rate of
58.6%. The overall prevalence of “ever smokers” and “current smokers” was 26% and 19.6% respectively. The overall prevalence of “ever other tobacco user” and “current other tobacco user” was 30.9% and 10.7% respectively. Over 60% were exposed to secondhand tobacco smoke (SHS) in public places. Only 56.5% perceived health professionals to be “role models” to patients and community. Eighty-three point one percent agreed that health professionals should receive training in smoking cessation techniques and 21.5% mentioned that they received formal training in smoking cessation.

Conclusion
Tobacco use among healthcare profession students should be discouraged. There is a need to provide formal tobacco education and training in cessation counseling.

Introduction
The WHO has categorized tobacco smoking as an epidemic\(^1\). More than 1 billion people worldwide currently smoke tobacco\(^2\). It is the leading global cause of preventable death\(^2-4\). By 2030, tobacco will kill more than 8 million people worldwide annually if current trends continue and 80% of these premature deaths will occur among people living in low- and middle-income countries\(^3\). Health professionals are not aware of their fundamental role to help people quit smoking although they are aware that smoking is the leading preventable cause of death and disability\(^4\). Another paradox is that the prevalence of smoking is higher among health professionals than the general population in some countries\(^4-7\). Hence, health professionals can have a negative impact on society if they are involved in tobacco use\(^8\). The theme for the “World No Tobacco Day” in 2005 was “Health Professionals Against Tobacco”, which emphasized the role played by health professionals\(^9\). Health professionals are in an ideal position to advise and educate patients about the dangers of smoking\(^8\). As role models, health professionals can contribute to tobacco control by not smoking or quitting smoking; by providing smoking cessation counseling and treatment; and by being community advocates for tobacco control\(^11\). Helping patients to stop smoking is cost-effective and benefits are well demonstrated\(^4,10,12\). A reduction in physician smoking patterns has been shown to be followed by a decrease in smoking prevalence rates in the population\(^5\).

Among health professions students the prevalence of tobacco smoking is fairly high\(^6,13\). Medical students themselves lack adequate knowledge about smoking-related diseases and tobacco cessation techniques\(^13\). Tobacco smoking issues are usually taught non-systematically and are of limited quality\(^6,13\). An international medical school survey has uncovered that only a tenth of medical schools had a specific tobacco module and another tenth of medical schools located mostly in Africa and Asia do not teach about tobacco issues. A separate survey carried out by The Union reported that medical students lack knowledge about smoking cessation and preventive measures\(^13\). Such findings have prompted GHPSS and the WHO to recommend a separate integrated tobacco module/curricula in medical schools to augment other strategies of tobacco control\(^5,13\).

A responsible, sensitized and tobacco-free student can strengthen tobacco-control efforts\(^17\). As future professionals, basic information about tobacco smoking among healthcare professional student population would be important since their approach and credibility as future treatment providers may be influenced by their own smoking habits\(^9\). The current implementation of the WHO Framework Convention on Tobacco Control in Sudan is below expectation. There is also no official tobacco control policy specifically targeting adolescents in Sudan\(^14\). The aim of this study was to conduct preliminary research to examine tobacco use prevalence, attitudes...
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Methods
Setting and sample
An institutionally-based cross-sectional survey was conducted in July 2013. The four health professions schools (Medicine, Dentistry, Nursing Sciences and Pharmacy) at the University of Medical Sciences and Technology (UMST) were included in the survey. The UMST is private university in Sudan. The study population was health profession students in their third year. The total student population was 302. Due to the relatively small number of students at the schools of dentistry, nursing sciences and pharmacy; all students were enrolled in for the survey.

Data collection
The GHPSS questionnaire was used for this survey. This GHPSS collects information on prevalence of cigarette use and other tobacco use; exposure to second-hand smoke at home and in public places; desire to quit smoking and the extent to which schools have official policies banning smoking in school buildings and clinics; and if the policies are enforced. It also collects information on health professionals as role models for their patients, training in patient cessation techniques for health professionals, and if health professionals have ever received formal training on such cessation counseling techniques.

Important study variables were: ever smoker (one who had smoked during their lifetime, even if one or two puffs); current smoker (who had smoked during 30 days prior to the survey including the ones who smoked every day); ever other tobacco user (one who had used any other forms of tobacco during their lifetime); and current other tobacco user (one who had used any other forms of tobacco during their lifetime 30 days prior to the survey including the ones who used other forms of tobacco every day).

Permission to proceed was obtained from the Academic Secretary and Deans of the schools of medicine, dentistry, pharmacy and nursing sciences. The purpose of the survey was explained to the students and consent was sought before distribution of the questionnaire. Participation was voluntary. Complete confidentiality was assured to all the students participating in the survey. Students were instructed not to enter any identifiable personal information in the questionnaire. Completed questionnaires were retrieved at the same time.

Data Analysis
Questionnaires were checked for completeness and consistency before analysis. Any questionnaire containing missing responses were discarded from analysis. Data was entered into IBM SPSS Statistics version 20. Data analysis consisted of frequency analysis and cross tabulation for Chi square test for statistical significance. P < 0.05 classified as statistically significant.

Results
Response rates and background characteristics
The study population consisted of 302 third year students enrolled at the four health professions schools at the university. The school response rate was 100%. The overall student response rate was 177 (58.6%). The highest student response rate was from the school of nursing (39/79.6%), followed by dentistry (31/75.6%), medicine (91/54.5%) and pharmacy (16/35.6%). A greater proportion of females participated in the survey (130/73.4%) as compared to males (47/26.6%). In each school more females than males participated. The overall mean age was 20.1 ±1.4 years. The mean age for students who participated from medicine, dentistry, pharmacy and nursing schools were 19.9±1.4, 20.1±1.6, 20.6±1.2 and years to 19.4 ±1.1 years respectively.
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The total number of students who reported that they ever smoked was 46 (26%). The prevalence was highest among dental students (11/35.5%) compared to medical (29/31.9%), pharmacy (4/25%) and nursing students (2/5.1%). Seventeen (9.6%) students reported that they currently smoked. Medical students had the highest prevalence of current smoking (11/12%), followed by dental (5/6.1%) and nursing (1/2.6%). None of the pharmacy students are current smokers. More students (109/61.6%) were exposed to secondhand smoke at public places than at homes (61/34.5%). The proportions of students within schools who were exposed to secondhand smoke in public places were also higher than those exposed within homes.

Among ever cigarette smokers, a greater proportion (35/76.1%) initiated smoking before the age of 18 years. Seventeen (37%) of ever smokers received help or advice to quit smoking. Eleven (64.7%) of current smokers smoked within 30 minutes of waking up. Thirty-seven (30.9%) students reported ever other tobacco use and 19 (10.7%) reported current other tobacco use. None of the nursing students have reported ever or current other tobacco use. With regards to existence and enforcement of ban on smoking in schools, 125 (70.6%) reported that their schools had an official policy banning smoking, but only 74 (41.8%) said that the policy was enforced. Twenty-two (47.8%) of ever smokers smoked in school premises during the past year, while 10 (21.7%) of ever smokers smoked in school buildings during the past year. Of the ever other tobacco users, 13 (35.1%) used other forms of tobacco in school premises during the past year and 8 (21.6%) used other forms of tobacco in school buildings during past year.

Attitudes towards tobacco control

Table 1 summarizes students’ attitudes toward tobacco control according to smoking status.

<table>
<thead>
<tr>
<th>Respondents who answered yes to the question…</th>
<th>Total n (%)</th>
<th>Smoker n (%)</th>
<th>Non-smoker n (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should tobacco sales to adolescents be banned?</td>
<td>101 (57.10)</td>
<td>31 (67.4)</td>
<td>70 (53.4)</td>
<td>0.100</td>
</tr>
<tr>
<td>Should there be a complete ban of the advertising of tobacco products?</td>
<td>102 (57.6)</td>
<td>26 (56.5)</td>
<td>76 (58)</td>
<td>0.860</td>
</tr>
<tr>
<td>Should smoking be banned in restaurants?</td>
<td>115 (65)</td>
<td>31 (67.4)</td>
<td>84 (64.1)</td>
<td>0.689</td>
</tr>
<tr>
<td>Should smoking in all enclosed public places be banned?</td>
<td>113 (63.8)</td>
<td>30 (65.2)</td>
<td>83 (63.4)</td>
<td>0.821</td>
</tr>
<tr>
<td>Should health professionals get specific training on cessation techniques?</td>
<td>147 (83.1)</td>
<td>42 (91.3)</td>
<td>105 (80.2)</td>
<td>0.083</td>
</tr>
<tr>
<td>Do health professionals serve as “role models” for their patients and the public?</td>
<td>100 (56.5)</td>
<td>20 (43.5)</td>
<td>80 (61.1)</td>
<td>0.038†</td>
</tr>
<tr>
<td>Should health professionals routinely advise their patients who smoke to quit smoking?</td>
<td>145 (81.9)</td>
<td>39 (84.8)</td>
<td>106 (80.9)</td>
<td>0.558</td>
</tr>
<tr>
<td>Should health professionals routinely advise their patients who use other tobacco products to quit using these products?</td>
<td>143 (80.8)</td>
<td>36 (78.3)</td>
<td>107 (81.7)</td>
<td>0.613</td>
</tr>
<tr>
<td>Do health professionals have a role in giving advice or information about smoking cessation to patients?</td>
<td>150 (84.7)</td>
<td>37 (80.4)</td>
<td>113 (86.3)</td>
<td>0.345</td>
</tr>
<tr>
<td>Are a patient’s chances of quitting smoking increased if a health professional advises him or her to quit?</td>
<td>126 (71.6)</td>
<td>29 (63)</td>
<td>97 (74)</td>
<td>0.156</td>
</tr>
</tbody>
</table>
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Are health professionals who smoke less likely to advise patients to stop smoking?

<table>
<thead>
<tr>
<th></th>
<th>Total (n = 177)</th>
<th>Smoker (n = 126)</th>
<th>Non-smoker (n = 51)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>126 (71.2)</td>
<td>33 (71.7)</td>
<td>93 (71)</td>
<td>0.923</td>
</tr>
<tr>
<td>Are health professionals who use other tobacco products less likely to advise patients to stop smoking?</td>
<td>126 (71.2)</td>
<td>31 (67.4)</td>
<td>95 (72.5)</td>
<td>0.509</td>
</tr>
</tbody>
</table>

†: Significant result

There were no significant differences between smokers and non-smokers regarding banning: tobacco selling (P=0.100), advertising (P=0.860), smoking in restaurants (P=0.689) and smoking in enclosed places (P=0.821). The perception that health professionals serve as “role models” for their patients and public was higher among non-smokers than smokers (P=0.038). However, no significant differences were noted between smokers and non-smokers with regards to health professionals receiving cessation training (P=0.083), advising patients to quit smoking (P=0.558), advising patients to quit using other tobacco products (P=0.613) and providing cessation information to patients (P=0.345). There were no significant differences between smokers and non-smokers in believing that patient cessation would increase with advice from a health professional (P=0.156), if health professional smoked (P=0.923) or used other tobacco products (P=0.509).

Students’ responses regarding tobacco education according to smoking status are summarized in Table 2.

**Table 2: Responses to questions regarding tobacco education (n=177)**

<table>
<thead>
<tr>
<th>Respondents who answered yes to the question…</th>
<th>Total n (%)</th>
<th>Smoker n (%)</th>
<th>Non-smoker n (%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>During your school training, were you taught in any of your classes about the dangers of smoking?</td>
<td>141 (79.7)</td>
<td>39 (84.8)</td>
<td>102 (77.9)</td>
<td>0.316</td>
</tr>
<tr>
<td>During your school training, did you discuss in any of your classes the reasons why people smoke?</td>
<td>89 (50.3)</td>
<td>20 (43.5)</td>
<td>69 (52.7)</td>
<td>0.283</td>
</tr>
<tr>
<td>During your school training, did you learn that it is important to record tobacco use history as part of a patient’s general medical history?</td>
<td>149 (84.2)</td>
<td>37 (80.4)</td>
<td>112 (85.5)</td>
<td>0.418</td>
</tr>
<tr>
<td>During your school training, have you ever received any formal training in smoking cessation approaches to use with patients?</td>
<td>38 (21.5)</td>
<td>6 (13)</td>
<td>32 (24.4)</td>
<td>0.106</td>
</tr>
<tr>
<td>During your school training, did you learn that it is important to provide educational materials to support smoking cessation to patients who want to quit smoking?</td>
<td>93 (52.5)</td>
<td>19 (41.3)</td>
<td>74 (56.5)</td>
<td>0.076</td>
</tr>
<tr>
<td>Have you ever heard of using nicotine replacement therapies in tobacco cessation programs (such as nicotine patch or gum)?</td>
<td>133 (75.1)</td>
<td>141 (89.1)</td>
<td>92 (70.2)</td>
<td>0.011†</td>
</tr>
<tr>
<td>Have you ever heard of using antidepressants in tobacco cessation programs (such as bupropion or Zyban)?</td>
<td>50 (28.2)</td>
<td>9 (19.6)</td>
<td>41 (31.3)</td>
<td>0.128</td>
</tr>
</tbody>
</table>

†: Significant result
Surprisingly, more smokers reported being taught of the harmful effects of smoking than non-smokers, although the difference was insignificant ($P=0.316$). Insignificant differences between smokers and non-smokers were also noted with regards to the reasons why people smoke, ($P=0.283$) the importance of taking an accurate tobacco history ($P=0.418$), receiving training in smoking cessation ($P=0.106$) and the importance of providing educational materials for quitting patients ($P=0.076$). Significantly, more smokers heard of nicotine replacement therapies as compared with non-smokers ($P=0.011$). Similarly, no differences in proportions were observed between smokers and non-smokers with regards to the use of anti-depressants ($P=0.128$).

**Discussion**

The overall response rate in this study is the result of omitting questionnaires with missing responses. It is an acceptable response rate considering an overall response rate of 43.9% was reported in separate study$^{15}$ An international survey also reported a lower response rate of 56.3% from Sudan$^{16}$. This survey highlights a high prevalence of ever cigarette smokers among health professions students, but the prevalence of current smokers is much less. The low prevalence for ever cigarette smoking among nurses can be explained by the fact that most students studying at the nursing school are females. Globally, the prevalence of tobacco use among females is less than males$^9$. Cross country data comparisons and rates from individual countries show that current smoking prevalence rates vary from less than 5% to more than 40%$^{7,11,12,15-18}$. The prevalence of other tobacco use was higher than the prevalence of ever cigarette smoking, but the prevalence of current other tobacco use was lower. In Sudan, the most common form of other tobacco is known locally as “tombak”. It is locally made and it is of the species Nicotiana rustica. The fermented ground powder is mixed with an aqueous solution of sodium bicarbonate. The resultant product is moist, with a strong aroma, and is highly addictive. Tombak is sold in plastic bags each containing about 100-150 g and one bag can be shared by up to 8 students in one sitting. It is also easy to hide the dip inside the mouth (’suffa’), thereby making it easier to be used. Its use is widespread in Sudan. Tombak is five times cheaper than cigarettes and it is a common belief that tombak is less harmful to users than smoking; therefore smokers who quit cigarettes often become tombak users$^{14}$. This may explain why the prevalence of other tobacco use is higher than the prevalence of ever smoking among students. This form of tobacco is commonly associated with oral cancers$^{19-20}$. Current other tobacco use prevalence rates have been reported to vary from less than 10% to more than 40%$^{12,16-18}$. The low prevalence of current smoking and other tobacco use might indicate that students quit smoking and other tobacco use. It is possible that health professions students have become aware of the hazards of tobacco use during their study at the university and have opted to quit tobacco use. But, other reasons for quitting smoking among health professions students need to be further researched.

The finding that most initiated smoking before the age of 18 years is a cause of concern. The overall mean age of the third year health professions students in this survey is 20.1 years. Therefore, most students became active tobacco users before enrolling into university. Several factors are known to motivate pre-teenagers and teenagers to initiate tobacco use. These factors can be summed into social, physical and environmental factors$^{21}$. These factors should be addressed accordingly and effectively during primary and secondary school education. Primary and secondary school education should cover the harms of tobacco use so that students will be aware of the hazards of tobacco from an early age.

Over 60% of students surveyed were exposed
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Tobacco use at public places. Similar studies reported the level of secondhand exposure in public places may exceed 70% (7,15-18). This is high exposure to SHS. Although tobacco use is banned at the four schools and most students are aware of the existence of a ban on tobacco use in schools, results show that students continue to use tobacco in school buildings and premises. Previous surveys have put forward recommendations to encourage health professions schools to be smoke-free work and study areas. The benefits of a smoke-free work environment are: improved air quality, reduction in health problems associated with exposure to tobacco smoke, supports and encourages cessation attempts among smokers trying to quit, and high levels of public support from people who spend time in the area. The establishment of smoke-free areas by educational institutions should send a clear message to educators, students, patients, and clinicians about the negative impact of tobacco (15-18,22).

Interestingly, smokers had more favorable attitudes towards banning tobacco sales, smoking in public places, receiving specific training in smoking cessation and routinely advising patients to quit smoking. Taking these into consideration, it is possible that smoking students will likely to quit smoking if provided with cessation counseling. The results also show that health professions students have a low recognition of health professionals as “role models” for their patients and community. This is important because future health practitioners, who have a low perception of themselves as role models, are unlikely to make an effort to provide smoking-prevention counseling once they have become practicing health practitioners (10). Health professions students need to understand their moral role as healthcare providers. Barriers have been reported that impede health professionals from becoming role models. These barriers are: a lack of tobacco-related material in school curricula, difficulties in delivering tobacco cessation care by practicing physicians to patients due to lack of time, reluctance to get involved in personal issues, and failure to use evidence-based methods with patients (15). Schools need to implement tobacco control measures and provide training to health professions students to acknowledge their role in tobacco control.

Most students were aware of the importance of recording tobacco history of a patient, the dangers of smoking and have heard of nicotine replacement therapies. There were shortcomings on the reasons why people smoke and importance of educational materials; while less than half had heard of using anti-depressants in tobacco cessation programs. The majority had not received any formal training in smoking cessation approaches at their schools. These shortcomings are understandable as there is no specific module on tobacco control and smoking cessation approaches at the schools. In some countries students have reported receiving formal training in smoking cessation techniques (7). But it has been reported that medical curricula in low- and middle-income countries lack training in smoking cessation (13). Training should be provided on tobacco control and effective cessation techniques (5). Health professions students should be trained to provide effective, accurate, and accessible advice to patients on all aspects of health (15,16,22). The type of training could include problem-based learning (as part of a general counseling curriculum) or training included in curricula as part of community medicine or public health courses (15). Hence, curricula may include a course or supplements to existing courses specifically relevant to tobacco issues (17). Any professional training for health professions students should include courses detailing the harmful health effects of tobacco use and exposure to secondhand smoke, and training...
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Tobacco use not only endangers the health of students, but it is also negatively influences the health professionals to deliver effective anti-tobacco counseling when they start seeing patients. Health professionals who use tobacco send an inconsistent message to patients whom they counsel to quit smoking. Health professional schools should discourage tobacco use among health professionals. Healthy physicians who have healthy personal habits are more likely to discuss preventive behaviors with their patients. Counseling on smoking cessation can have a positive effect on patient’s smoking habits. Therefore, health promotion programs including tobacco cessation services for health professions students may play a significant role in the future delivery of patient cessation counseling practices. Hence, educational institutions training medical students should help their students quit using tobacco by providing encouragement and information to students who are considering quitting and providing assistance to students who are motivated to quit. With inadequate and limited formal training in smoking cessation techniques, students will be un-prepared to provide counseling.

In conclusion, the strength of this survey is that it uncovered tobacco use is prevalent; there is lack of enforcement of ban on smoking; and shortcomings in tobacco education. Health professional schools and education officials should discourage tobacco use among health professionals. The schools need to develop a tobacco control and smoking cessation techniques module, strengthen and enforce the legislation aimed at smoke-free healthcare campus premises and buildings, provide tobacco cessation counseling service to students considering or motivated to quit and conduct periodic surveys to evaluate the impact of the tobacco control module. Several limitations can be noted. Data were based on the self-report of students, who might under-report or over-report their behaviors or attitudes. The overall response rate was low particularly for medical and pharmacy schools and response rates fluctuated across different disciplines. Hence, we cannot rule out some selection bias and cannot make inter-school comparisons.

Acknowledgments

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References


21. Centers for Disease Control and Prevention. a report of the surgeon general: preventing tobacco use among youth and young adults: CDC.