East African Medical Journal Vol. 86 No. 4 April 2009
CIGARETTE SMOKING AND ORAL HEALTH AMONG HEALTHCARE STUDENTS
P. Komu, BDS (Nbi), Ministry of Health, P. O. Box 30016 - 00100, Nairobi, Kenya, E. A. O. Dimba, BDS (Nbi), PhD, (Bergen), F. G. Macigo, BDS, MPH, PGD - STI (Nbi), Depatment of Oral and Maxillofacial Surgery, Oral Pathology and Oral Medicine, School of Dental Sciences, University of Nairobi, P. O. Box 19676 - 00202, Nairobi, Kenya and A. E. O. Ogwell, BDS, MPH (Nbi), MPhil (Bergen), Ministry of Health, P. O. Box 30016 - 00100, Nairobi, Kenya

Request for reprints to: Dr. E. A. O. Dimba, Department of Oral and Maxillofacial Surgery, Oral Pathology and Oral Medicine, School of Dental Sciences, University of Nairobi, P. O. Box 19676 - 00202, Nairobi, Kenya

CIGARETTE SMOKING AND ORAL HEALTH AMONG HEALTHCARE STUDENTS

P. KOMU, E. A. O. DIMBA, F. G. MACIGO and A. E. O. OGWELL

ABSTRACT

***Background*: The knowledge, attitudes and practices of cigarette smoking and health risks among health workers has been found to be predictive of their efficiency as agents for tobacco cessation campaigns.**
***Objective:* To describe the knowledge, attitudes and practices of cigarette smoking and oral health risks among healthcare professional students.**
***Design:* A cross sectional multi-level study.**
***Setting:* College of Health Sciences, University of Nairobi.**
***Subjects:* Two hundred and eighty one students.**
***Results:* Thirty four (12.1%) of the students were current smokers, 174 (61.95%) had never smoked, while 73 (26%) were former smokers. Seventy nine point four per cent of the current smokers were males and 20.6% were females. Pharmacy students had the highest smoking prevalence at 11 (32.4%), while dental and nursing students had the lowest percentages of current smokers. Differences observed in smoking status of students in the constituent schools of the College of Health Sciences were statistically significant (p = 0.008). Apart from knowledge levels on the association between tobacco consumption and lung cancer (p = 0.142), there were statistically significant differences in the awareness of the severe oral and systemic effects of smoking amongst the four student groups.**
***Conclusions:* There is a need for harmonisation of teaching of oral and systemic effects of smoking so as to impact on the smoking habits and effectiveness of healthcare professional students as agents of smoking cessation programmes.**

INTRODUCTION

Smoking is a major cause of morbidity and mortality with approximately four million smokers dying per year from smoking related diseases (1,2). Among men in industrialised countries, smoking is estimated to be the cause of 40-45% of all cancer deaths, 90- 95% of lung, over 85% of oral, 75% of chronic obstructive lung disease, and 35% of cardiovascular disease deaths in those aged thirty five to sixty nine years (3). Approximately 50% of smokers are killed by their habit and mortality due to conditions associated with tobacco use may increase to ten million by the year 2030 (4,5).

Oral and dental effects of smoking include staining of teeth, reduction of ability to smell and taste, melanosis, smoker's palate, oral candidiasis and dental caries (6). Smoking also increases the severity of periodontal disease and has an adverse effect on almost all forms of periodontal therapy (7). Tobacco is also by far the most important risk factor for oral cancer and precancer (1,8). Smoking among pregnant women may cause complications resulting in spontaneous abortion, premature deliveries, low birth weight and perinatal mortality. The magnitude of risk for developing tobacco associated diseases is related to the quantities consumed as well as the amounts of tar and nicotine present in the tobacco products; nicotine being the main agent responsible for addiction to tobacco (9). Despite the health risks involved, many health professionals continue to smoke (10).

Research indicates that healthcare providers play a significant role in helping smokers to quit (11). However, physicians who smoke tend to underestimate the health hazards associated with smoking compared to their non-smoking counterparts may not be as effective

in counselling patients to quit smoking (12). Therefore, only those healthcare professionals who are seen to have internalised anti-smoking principles will have the most positive effect on their patients (13-15). It is suggested that if the smoking prevalence among healthcare providers declined below that of the general population, then the smoking prevalence of the general population would also decline (10). However, current data on smoking among healthcare professional students indicate that they smoke at the same rate as the general population (16).

Attitudes to smoking and the awareness of the specific health risks of tobacco have been identified as important influences on smoking habits (17). Global studies on smoking trends among students undergoing professional education in healthcare, however, indicate that some of these students either begin or continue to smoke during their studies (18,19). The purpose of this study was, therefore, to describe the knowledge, attitudes and practices of cigarette smoking and oral health risks among health care professional students at the University of Nairobi.

MATERIALS AND METHODS

The study was conducted at the University of Nairobi, College of Health Sciences, which offers undergraduate degree programmes in medicine, dental surgery, pharmacy and nursing. The various levels of study include levels 1 to 5 for the medical students and levels 1-4 for the dental, pharmacy and nursing students. Selection was done by means of stratified random sampling of students within the clinical years of training. Data were collected using self administered questionnaires which recorded the demographic characteristics of the students, class year, smoking habits, attitude towards training on smoking cessation and knowledge on oral and systemic effects of smoking. The data were analysed using SPSS (Version 12.0) statistical computer software.

RESULTS

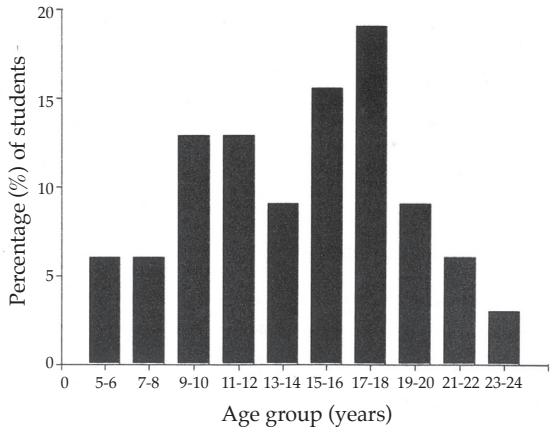
Cigarette consumption in the College of Health Sciences, University of Nairobi: The response rate was 93.67%, with 281 out of 300 questionnaires having been returned. Of these, 170 (60.4%) were filled by male students and 111 (39.6%) by female students. Analysis of the respondents according to the level of study revealed that 171 (61.2%) were in their third year of study; 36 (12.8%) were in the fourth year and 73 (26%) were in the fifth year. Most of the students 174 (61.9%) had never smoked, 34 (12.1%) were current smokers and 73 (26%) were former smokers who had quit for a variety of reasons (Table 1). Pearson's chi-square test showed that the differences observed in smoking status of students in the constituent schools of the College of Health Sciences were statistically significant ($p = 0.008$).

Of the current smokers, six (18.2%) had smoked for less than one year, 20 (60.6%) for lone to five years, six (18.2%) for six to ten years and one student had smoked for over ten years. Daily cigarette use was the norm among the current smokers with only five students (16.1%) consuming less than one stick a day. The majority 17 (54.8%) of current smokers consumed one to five cigarettes per day; eight (25.8%) smoked six to ten cigarettes per day and five (16.1%) consumed 11 to 15 cigarettes per day. Filter cigarettes appeared to have been the most popular, with 28 (87.3%) of smokers using them exclusively. Only three smokers smoked non-filter cigarettes exclusively while one smoker reported using both types. Twenty (62.5%) of the current smokers started smoking before joining the university. The rest 12 (37.5%) started smoking after joining the university. The age at which smokers first tried the habit varied from 5 to 24 years of age (Figure 1). When questioned about attempting to quit, 21 (63.6%) of smokers reported having tried to stop the habit while 12 (36.4%) said that they had not tried to quit.

Table 1
Distribution of smokers, non-smokers and students with a history of smoking

Smoking status	Frequencies by professional discipline									
	Dental sciences		Medicine		Nursing		Pharmacy		Total Frequencies at College level	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Current smoker	3	8.8	17	50	3	8.8	11	32.4	34	12.10
Never smoked	23	13.2	115	66.1	13	7.5	23	7.5	174	61.92
Quit smoking	1	1.4	49	67.1	4	5.5	19	5.5	73	25.98
Total	27	9.6	181	64.4	20	7.1	53	18.9	281	100

Figure 1
Age at first trial of smoking for students



Knowledge on the adverse effects of smoking among healthcare professional students: Apart from knowledge levels on the association between lung cancer and tobacco consumption, there were statistically significant differences in the awareness of systemic effects of smoking amongst the four student groups (Table 2). Moreover, on assessment of the oral effects of smoking, differences in the students' awareness of diseases of the mouth associated with smoking was statistically significant in severe conditions such as oral cancer (Table 3). The majority of students 242 (85%) reported to have obtained their information from their educational curricula and the media. Thirty nine (15%) of the students also cited other sources of information which included cultural teachings, public seminars, personal observations, peers, family, church and the internet. Most of the students 276 (96%) believed that cessation of smoking does reduce the risk of developing oral and systemic diseases associated with smoking. However, 11 (4%) thought that cessation would have no effect on risk reduction. Two hundred and seventy eight (99.6%) students generally thought that smoking led to addiction. One student was not sure of this fact and one previous smoker who had quit the habit stated that smoking was not addictive.

Table 2
Comparison of knowledge of systemic effects of smoking among students

Systemic effects of smoking	Frequencies by professional discipline				Total Frequencies for College	
	Dental sciences No. (%)	Medicine No (%)	Nursing No. (%)	Pharmacy No. (%)	No (%)	P- values*
Lung cancer	27 100	179 98.9	19 95	50 94.3	275 97.9	0.142
Chronic obstructive lung disease	26 96.3	169 93.4	18 90	39 73.6	252 89.7	0.000
Upper aero-digestive tract cancer	25 92.6	175 96.7	18 90	40 75.5	258 91.8	0.002
Coronary heart disease	22 81.5	171 94.5	12 60	37 69.8	242 86.1	0.000
Hypertension	22 81.5	166 91.8	13 65	36 67.9	237 84.3	0.000
Peptic ulcers	11 40.7	161 89.0	11 55	26 49.1	209 74.4	0.000
Spontaneous abortions	11 40.7	135 74.6	11 55	25 47.5	182 64.8	0.000
Low birth weights	22 81.5	166 91.7	18 90	38 71.7	244 86.8	0.002

*Pearson's chi-square test (where P<0.05 is considered statistically significant)

Table 3
Comparison of knowledge of oral effects of smoking among students

Oral effects of smoking	Frequencies by professional discipline				Total frequencies for college	P- value
	Dental sciences No. (%)	Medicine No. (%)	Nursing No. (%)	Pharmacy No. (%)	No. (%)	
Oral candidiasis	12 44.4	48 26.5	5 25.0	12 22.6	77 27.4	0.089
Hyper pigmentation	23 85.1	134 74.0	14 70	36 67.9	207 73.7	0.000
Periodontal disease	24 88.9	104 57.5	12 60	24 45.3	164 58.4	0.003
Staining of teeth	27 100	174 96.1	19 95	49 92.5	269 95.7	0.441
Dental caries	11 40.7	87 48.1	10 50	16 30.2	124 44.1	0.200
Oral cancer	27 100	143 48.1	13 65	31 58.5	214 76.2	0.000

*Person's chi-square test, (where P <0.05 is considered statistically significant)

The students were then asked whether they investigated the smoking habits of their patients and 238 (86.2%) said they did whereas 38 (13.8%) did not. Of those who recorded the smoking habits of their patients, 192 (69.8%) tried to counsel the patients against smoking while 83 (30.2%) did not. Concerning the training of health care professionals on counselling patients against smoking, 140 (50.4%) students felt that their curriculum did not train them adequately for this while 138 (49.6%) students thought that their training was sufficient. In addition, 269 (96.8%) of the students said that the training on patient counselling was necessary while only nine (3.2%) of the students thought that this was not necessary.

DISCUSSION

Although healthcare professional students are expected to offer smoking cessation advice to their patients, their own smoking habits frequently affect their health as well as their effectiveness as agents for change in patients' tobacco consumption habits (20-22). Results from this study showed a low smoking prevalence among healthcare professional students of 12.1%, with highest smoking prevalence observed among pharmacy students (Table 1). Notably, the 9.3% current smoking rates reported by medical students are substantially lower than the 18% prevalence noted for the same group in 1987 (23) but higher than rates reported in Australia (4 - 6%), China (6%), India (7%), Thailand (7%) and the US (7%) (19). The smoking prevalence among dental students was 11% which was higher than the decreasing prevalences reported among dental students in the US (4%), Canada (3%) and India (11%) (18). Nursing students had a smoking rate of 15% which was comparable to statistics obtained from nursing students in the US which ranged from 15 - 25% (24).

This study supports the finding in global research that despite acquiring theoretical information on risk factors associated with tobacco consumption, healthcare professional students begin or continue to smoke during their studies at the university (19, 21). Eighty seven point five per cent of the smokers interviewed said that they knew the health effects of smoking before they started smoking and 70.6% agreed that such knowledge would not have had an effect on their starting the habit. This lack of impact of risk awareness on smoking is consistent with previous studies that have shown that knowledge of health risks does not necessarily act as a deterrent to smoking (2, 15). This study reports that the peak age for initiation into the smoking habit for healthcare professional students was 15-18 years of age. The main reasons for starting the habit included peer influence, stress and curiosity. The addictive nature of the smoking habit was demonstrated by the 63.6% of the current smokers who had attempted to quit without success. Among the former smokers who had quit, health reasons were cited as the main reason for quitting. This was in direct contrast to a number of international studies which ranked the most effective reasons for quitting as request(s) by the smoker's family or a healthcare professional (11,19).

The teaching curricula in the constituent schools of the College of Health Sciences appeared to have a major impact on awareness of the adverse effects of smoking and subsequently on the smoking habits of the students. Pharmacy students, who demonstrated the lowest awareness levels of oral and systemic effects of smoking, had the highest smoking prevalences. Medical students showed the highest levels of competence concerning the systemic effects of smoking, while dental students had high levels of awareness of the oral effects of smoking. The knowledge levels of nursing students on the adverse effects of smoking were comparable to that of pharmacy students in many instances. However, nursing students, who were mainly females, smoked considerably less than the pharmacy students who were 60% male, perhaps reflecting the cultural taboos surrounding tobacco consumption among women in the society (18,19). The expressed need for further training on tobacco counselling in the entire student body was consistent with previous studies conducted in various parts of the world (25-27).

Results from this study must be interpreted in light of the limitations of a self reporting survey design. These include the difficulties in using standardised international methodologies for assessing tobacco use (18,19). It is possible that under-reporting of severity of this addiction may have occurred because of negative associations with the habit (28). Also, although the study maintained strict anonymity of the respondents, female students needed some reassurance before they agreed to participate. The data, however, showed a clear need for integration of training efforts in the process of equipping healthcare professional students to act as agents for tobacco cessation.

ACKNOWLEDGEMENTS

This research was conducted as a collaborative effort between the Departments of Periodontology, Community and Preventive Dentistry and Oral and Maxillofacial Surgery, Oral Pathology and Medicine at the School of Dental Sciences, University of Nairobi and the Division of Non-Communicable Diseases at the Ministry of Health.

REFERENCES

1. Petersen, P. E. The World Oral Health Report 2003 - Continuous improvement of oral health in the 21st century - the approach of the WHO Global Health Programme. *Comm. Dent. Oral Epidem*. 2003; **31 (Suppl 1):** 3 - 24.
2. Steptoe, A., Wardle, J., Cui, W., *et al*. An international comparison of tobacco smoking, beliefs and risk awareness in university students from 23 countries. *Addiction*. 2002; **97:** 1561 -1571.
3. Johnson, N. W. Tobacco use and oral cancer - a global perspective. *J. Dent. Educ.* 2001; **65:** 328 - 339.
4. Nagy, K., Barabas, K. and Nari, T. Attitudes of Hungarian health care professional students to tobacco and alcohol. *Euro. J. Dent. Educ*. 2004; **4:** 32-35.
5. Doll, R., Peto, R., Wheatley, K., *et al*. Mortality in relation to smoking: 40 years' observations on male British doctors. *Brit. Med. J*. 1994; **309:** 901 - 911.
6. Reibel, J. D. Tobacco and oral diseases. *Medical Principles and Practice.* 2003; **1 (Suppl 12:** 22-32.
7. Johnson, G. K. and Slach, N. A. Impact of tobacco use on periodontal status. *J. Dent. Educ.* 2001; **65:** 313 - 321.
8. Sham, A.S., Cheung, L.K., Jin, L.J. and Corbet, E.F. The effects of tobacco use on oral health. *Hong Kong Med. J*. 2003; **9:** 271 - 277.
9. Macigo, F. G. Public health implication of the proposed Kenyan tobacco control bill. *Afr. J. Oral Health Sci.* 2003; **4:** 187 - 188.
10. Puska, P. M. Barrueco, M., Roussos, C., Hider, A. and Hogue, S. The participation of health professionals in a smoking cessation programme positively influences the smoking cessation advice given to patients. *Intern. J. Clin. Prac*. 2005; **59:** 447 - 452.
11. US Department of Health and Human Services. Reducing tobacco use: a report of the Surgeon General, Atlanta, GA: US Department of Health and Human Services, CDC; 2000.
12. Lancaster, T., Stread, L., Silagy, C., *et al*. Effectiveness of interventions to help people stop smoking: findings from the Cochrane Library. *Brit. Med. J*. 2000; **321:** 355-358.
13. Anderson, P. Managing alcohol problems in general practice. *Brit. Med. J. Clin. Res. Eds*. 1985; **290:** 1873 - 1875.
14. Glynn, T. J. Physicians and smoke free society. *Arch. Inter. Med*. 1988; **148:** 1013 -1016.
15. Richmond, R. and Heater, N. General practitioner intervention for smoking cessation: past and future prospects. *Behaviour Change*. 1990; **7:** 110 - 119.
16. Clark, E., McCann, T. V., Rowe, K. and Lazenbatt A. Cognitive dissonance and undergraduate nursing students' knowledge of and attitude about smoking. *J. Adv. Nurs.* 2004; **46:** 586 - 594.
17. Richmond R. Teaching medical students about tobacco. *Thorax*. 1999; **54:** 70- 78.
18. Smith, D.R., Legat, P. A. An international review of tobacco smoking among dental students in 19 countries. *Inter. Dent. J.* 2007; **57:** 452 - 458.
19. Smith, D. R. and Legat, P.A. An international review of tobacco smoking among medical students. *J. Postgraduate Med*. **53:** 55 - 62.
20. Chapman, S. Doctors who smoke. *Brit. Med. J*. 1995; **311**: 142 - 143.
21. Nagy, G., Blazek, J. and Banoczy, J. The smoking habits of dentists and dental students in Hungary: *of Hungarian Dent*. (*Special issue)* 2002; 24 - 29.
22. Jenkins, K. and Ahijevych, K. Nursing students' beliefs about smoking, their own smoking behaviours, and use of professional tobacco treatment intervention. *Applied Nurs. Res.* 2003 ; **16:** 164- 172.
23. Lore, W. Smoking habits in Kenya. A preliminary study involving University of Nairobi Medical Students. *East Afr. Med. J*. 1987; **64:** 248- 252.
24. Ashwin, A. P., Hill, K., Balras, V., *et al*. A comparison of smoking habits among medical and nursing students. *CHEST*. 2003; **124:** 1415 -1420.
25. Poychonopoulou, A., Gatou, T. and Athanassouli, T. Greek dental students attitude towards tobacco control programmes. *Intern. Dent. J*. 2004; **54:** 119-125.
26. Giacona, M. B. Tobacco cessation within the dental curriculum in the US and internationally. *NY State Dent. J*. 2004; **70:** 40 - 43.
27. Jarvis, M. J., Wardle, J., Waller, J. and Owen, L. Prevalences of hardcore smoking in England and associated attitudes and beliefs. *Brit. Med. J.* 2003; **326:** 1061 - 1063.
28. Tomori, M., Zalar, B., Kores Plesnicar, B., *et al*. Smoking in relation to psychosocial risk factors in adolescents. *European Child and Adol Psych*. 2006; **10:** 143 - 150.