

Short Report

Tobacco use habits and beliefs among undergraduate medical and nursing students of two cities in southern India

PREM KUMAR MONY, PRIYA JOHN,
SYLVIA JAYAKUMAR

ABSTRACT

Background. Unless effective tobacco control is in place, most tobacco-related deaths in the coming decades are likely to be seen in low- and middle-income countries. Tobacco surveillance among medical students offers an opportunity to assess the preparedness for tobacco control among future healthcare professionals in India.

Methods. We did a cross-sectional survey in two cities (Bangalore and Coimbatore) of India. The participants were third year undergraduate students from 7 medical colleges and 6 nursing colleges. A self-administered questionnaire was used to elicit information on tobacco use, exposure to environmental tobacco smoke, knowledge on disease burden and attitudes towards tobacco control.

Results. Overall, 829 of 985 eligible students (84.1%) participated in the survey. About 14.5% (95% CI 12.0–17.0) of students had ever used tobacco. Current tobacco use was reported by 1.6% (95% CI 0.8–2.4) of students; 1.5% (95% CI 0.7–2.3) were current smokers and 0.4% (95% CI 0.1–0.7) were current chewers. The rates of smoking among male medical, female medical and female nursing students were 4.0%, 0.3% and 0%, respectively ($p < 0.001$). About 1 in 6 students reported frequent exposure to environmental tobacco smoke within their homes and over 1 in 4 reported frequent exposure outside the home environment. Median knowledge score on tobacco-related burden was 5/10. More than 80% favoured ban on tobacco sales to adolescents, tobacco advertising and tobacco use in public places. Over 90% reported interest in further training in tobacco control.

Conclusion. This scenario of comparatively low levels of tobacco use, positive attitudes towards tobacco control and suboptimal levels of knowledge coupled with a high interest in having further knowledge on tobacco control points to the need for a comprehensive curriculum for training in tobacco control that meets national requirements.

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St John's Research Institute, St John's National Academy of Health Sciences, Koramangala, Bangalore 560034, India
PREM KUMAR MONY, SYLVIA JAYAKUMAR

PSG Institute of Medical Sciences, Coimbatore 641004, Tamil Nadu, India
PRIYA JOHN Department of Community Medicine

Correspondence to PREM KUMAR MONY; prem_mony@sjri.res.in

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INTRODUCTION

While most tobacco-related deaths in the past century occurred in high-income countries, most tobacco-related deaths in the present century are likely to occur in low- and middle-income countries.¹ These premature deaths among tobacco users and passive smokers could be avoided if effective interventions were implemented widely in these countries. Following the introduction, ratification and implementation of the Framework Convention for Tobacco Control (FCTC) in many countries, there is a new optimism worldwide, including in India, to implement comprehensive tobacco control programmes.²

In India, annually about 1 in 10 deaths is projected to be related to smoking in the 2010s.³ Only cessation will lead to any major reduction in deaths due to tobacco in the coming 3–4 decades.¹ Cessation has become common in high-income countries with strong, local and reliable information on the hazards of smoking and the benefits of cessation. While in those countries the quit-rates for smoking are about 30%, these are 15% in Thailand, 9% in China and <5% in India.⁴ Health professionals in developed countries, by being exemplars through quitting smoking, not taking up smoking, using effective smoking cessation interventions, or by leading influential advocacy networks have influenced cessation rates in the general population.^{5–10} It is important for healthcare professionals in India, as individuals or as groups, to be able to influence the course of the tobacco epidemic. The prevalence of tobacco smoking among medical and nursing students varies widely across time and place.^{11,12} Tobacco surveillance among students offers a good opportunity to study the preparedness for tobacco control among future healthcare professionals. We assessed tobacco use and knowledge and attitudes towards tobacco control among undergraduate medical and nursing students in two cities of southern India.

METHODS

Study setting and population

The study was conducted in Bangalore (population 5 701 446) and Coimbatore (1 461 139), located in the states of Karnataka and Tamil Nadu, respectively. The literacy rates in the two cities were 83% and 77%, respectively.¹³ Students of 7 medical colleges (5 in Bangalore and 2 in Coimbatore) and 6 nursing colleges (5 in Bangalore and 1 in Coimbatore) participated in the study. One medical college each in Bangalore and Coimbatore was a public-funded government institution; the rest were private institutions. All third year students from these colleges were eligible to participate in the study.

Study design, instrument and data collection

A cross-sectional survey was conducted during January–June 2007. The study instrument was a 3-page, 15-item, structured questionnaire which was a locally adapted version of the Global Health Professionals Study (GHPS) questionnaire.¹⁴ The topics covered included use of tobacco by the students, exposure to environmental tobacco smoke (ETS), knowledge on tobacco-related disease burden and attitudes towards tobacco control. In addition, their interest in training in tobacco control and their perception of the role of healthcare professionals in tobacco control was also assessed. A pilot study was done to check the face

validity of the questionnaire. Permission to conduct the study was obtained from the concerned institutional authorities. Ethical clearance for the study was obtained from the Institutional Ethics Review Board of St John's Research Institute and written informed consent was obtained from the students by research assistants. The self-administered questionnaire was distributed to students in a classroom setting and collected after completion (about 30 minutes). Anonymity was respected.

Definitions of tobacco use status were based on self-reported smoking of cigarettes/*bidis* and chewing of tobacco. Never-users were defined as persons who had never smoked or chewed tobacco even once in their life-time; experimental-users were defined as those who had smoked or chewed tobacco ever in their life-time; current users were defined as those who had smoked or chewed tobacco in the last 30 days preceding the survey, either occasionally (at least once a week) or daily (at least once per day).

Data analysis

Data were entered and analysed using Stata 8.0. Simple descriptive analysis was done for the variables of interest. Prevalence ratios (PR) with 95% confidence intervals (95% CI) were also calculated. Differences in proportions were assessed using the chi-square test of significance. A p value of <0.05 was considered statistically significant, all p values being two-sided.

RESULTS

Eight hundred and twenty-nine of 985 eligible students (84.1%) participated in the survey; the rest were not available on the day of the survey; there were no refusals. The participation rate was 80% (578/723) among medical students and 96% (251/262) among nursing students. About 70% of all participants were medical students; 70% of students were from Bangalore; 38% of students were from government colleges; and 33% were male students. Since there were only 4 male nursing students, all subsequent analyses were restricted to the other 825 students (275

male medical, 303 female medical and 247 female nursing students).

Overall, 14.5% (120/825; 95% CI 12.0–17.0) of students had experimented with tobacco; 12.9% (106/825) with smoking and 3.6% (30/825) with chewing. Current tobacco use was reported by 1.6% (13/825; 95% CI 0.8–2.4) of students; 1.5% (12/825; 95% CI 0.7–2.3) were current smokers (Table I) and 0.4% (3/825; 95% CI 0.1–0.7) were current chewers. Most of the current smokers (9/12) were daily smokers. The rates of smoking among male medical, female medical and female nursing students were 4%, 0.3% and 0%, respectively ($p < 0.001$). The rates of smoking among medical students in Coimbatore and Bangalore were 4.6% and 0.8%, respectively (prevalence ratio 5.9; 95% CI 1.6–21.7). There was no significant difference between the rates of smoking among students in government or private institutions ($p = 0.71$).

The median score of knowledge regarding tobacco-related disease burden was 5 of 10 and the interquartile range was 1. Most students were aware of common diseases associated with tobacco use. However, a majority (65%) were of the opinion that nicotine had limited addictive potential and a sizeable proportion (48%) perceived the so-called 'light' cigarettes to be less harmful. There was no significant difference in knowledge by sex ($p = 0.1$) or by tobacco-use status ($p = 0.53$; Table II). Reported training in tobacco control was minimal in their curriculum but an overwhelming majority of students showed keen interest in further training.

Frequent exposure to ETS at home was reported by 1 in 6 students and outside the home environment by over 1 in 4 students (Table III). Most students had favourable attitudes regarding tobacco control legislation in public places (except for discotheques). Tobacco users were consistently more likely to report exposure to ETS at home and outside, more likely to report negative attitudes on legislation to ban smoking and perceive a diminished role for health professionals in tobacco control; all these differences were statistically significant. Most users and non-users alike felt that health professionals who smoke were less likely to advise others on quitting.

TABLE I. Baseline characteristics and reported current smoking habit among undergraduate medical ($n=578$) and nursing ($n=247$)* students

Characteristic	<i>n</i>	Current smokers (%)	Prevalence ratio (95% CI)	<i>p</i> value
Medical students	578	12 (2.1)	—	0.02
Male	275	11 (4.0)	12.1 (1.6–93.3)	0.01
Female	303	1 (0.3)	—	—
Government owned	258	6 (2.3)	1.2 (0.4–3.8)	0.71
Private owned	320	6 (1.9)	—	—
Coimbatore	194	9 (4.6)	5.9 (1.6–21.7)	0.01
Bangalore	384	3 (0.8)	—	—

* none of the nursing students were current smokers

TABLE II. Training needs assessment regarding tobacco control among undergraduate medical and nursing students ($n=825$)

Characteristic	Value	<i>p</i> value
<i>Mean (SD) knowledge score</i>		
Overall	4.8 (2.3)	—
Male	4.5 (2.3)	—
Female	4.9 (2.3)	0.10
Current users	4.4 (2.8)	—
Non-users	4.7 (2.3)	0.53
<i>Tobacco control training (95% CI)</i>		
Health professionals should get training	93.6 (91.6–95.2)	—
Have received formal training in tobacco control	16.4 (13.9–19.1)	—

DISCUSSION

Our study differs from previously published studies on medical and nursing students in India in that it documents tobacco use in the standard reference group of third year medical and nursing students in line with the recommendations of the Global Tobacco Surveillance System.¹⁴ The report of the 2006 Global Health Professional Students Survey in India followed this standard methodology.¹⁵ In our survey, both experimental and current tobacco use habits were among the lowest reported among healthcare students in India. The smoking rate of 4% among male medical students in our survey was much lower than the 12%–28% reported from medical colleges in Uttar Pradesh, Kerala, Orissa and Bihar.^{15–18} It was also significantly less than the 20% documented by the National Family Health Survey-3 in the general population of males with more than 12 years of education.¹⁹ The rates of both smoking (0.3%) and chewing (0.3%) among female medical students were about one-tenth of that among male students and were low when compared with other studies.^{15,17} The rate of smoking among female medical students was comparable with that reported in women in the general population with more than 12 years of education.¹⁹ Smoking was not reported among nursing students similar to that seen in Kerala¹⁶ and is completely different from other countries where rates of smoking varied from 1% to >50%.¹¹ Such low rates of tobacco use among medical students are comparable with those seen in the USA and Australia¹¹ and considerably lower than those in Pakistan and Bangladesh (17%–47% among males and 2%–5% among females).^{20–22} Venkataraman *et al.* have documented that tobacco use has declined among medical students in a southern Indian town over the past few decades.²³ Such a 'generation effect' of lower prevalence among current medical students compared with the prevalence 2–3 decades ago has been documented in The Netherlands too.²⁴

Awareness of health effects of tobacco was average in our study population. This could be because our respondents were students who had yet to complete their training in pharmacology

and clinical medicine. Knowledge among medical and nursing students is critical given that it is now understood that tobacco use is a leading cause of death and disease burden, and cessation is crucial.^{1,25} Exposure to ETS both within the home environment and outside it was lower than that reported elsewhere in India, but was still substantial.¹¹

Attitudes to tobacco control were generally positive with regard to legislative actions for tobacco control as also the role of healthcare professionals.^{17,18,27} Students also acknowledged that there were minimal inputs relating to tobacco cessation or control in their curriculum. However, they evinced keen interest in further training in tobacco control. This is important because health professionals are expected to be role-models in the community.²⁸ A review of over 100 surveys on physicians' smoking in European countries identified a decreasing trend in smoking prevalence among physicians preceding a similar trend in the general population, suggesting a positive influence of physicians' example.⁵ Studies among physicians in the US and UK have shown prevalence rates dropped from 40%–60% in the 1960s to 10%–20% in the 1990s.^{6,7}

Health professionals have a responsibility to convince their patients not to use tobacco. Hence, they could commit to a code of conduct on tobacco control by ceasing to use tobacco, ensuring that their work-places and public spaces are tobacco-free and using available interventions to assist their patients in not using tobacco.^{1,9,10,25}

Physicians' inability to communicate with smokers effectively has been identified as a key determinant that can be linked to insufficient medical training. Further, a lack of trans-disciplinary vision regarding smoking and failure to adapt medical school curricula in the face of changing disease patterns have been identified as deficiencies in medical education.²⁹ Such surveys of health professionals help identify gaps in training and could be used as a much needed impetus for the introduction of curricular changes into the medical and nursing syllabus for dealing with the tobacco epidemic.^{30–32}

TABLE III. Exposure to environmental tobacco smoke and beliefs regarding tobacco control among undergraduate medical and nursing students

Characteristic	Per cent (95% CI)		p value
	Current users (n=13)	Non-users (n=812)	
<i>Exposure to environmental tobacco smoke</i>			
<i>At home</i>			
Never	16.7	66.3	0.001
Less frequently (<3 days/week)	—	14.7	—
More frequently (≥3 days/week)	83.3	19.0	—
<i>Outside home</i>			
Never	9.1	36.9	0.001
Less frequently (<3 days/week)	0	29.2	—
More frequently (≥3 days/week)	90.9	33.8	—
<i>Attitudes to tobacco control</i>			
<i>In favour of ban on</i>			
Smoking in enclosed public places	84.6	97.4	0.04
Smoking in restaurants	61.5	93.8	0.001
Smoking in discotheques	23.1	66.8	0.002
Tobacco advertising/promotion	61.5	83.3	0.05
Tobacco sales to adolescents	69.2	93.8	0.007
Healthcare professionals should give advice/information to patients	46.2	87.1	0.001
Health professionals who smoke are less likely to advise patients	84.6	64.5	0.15

Selection and reporting bias are two limitations in surveys such as ours. However, our study covered almost all medical colleges and a large number of nursing colleges in the two cities. Within these institutions, we had high levels of participation among both groups of students. A recent review of the literature has shown that non-response bias may be less of an issue in health professionals' surveys than in surveys of the general public.³³ Overall, our findings are probably representative of these two cities but may need to be replicated in other regions and across time for wider validation.

In summary, the findings of our study have implications for student training in tobacco control. The comparatively low levels of tobacco use, positive attitudes towards tobacco control and average level of knowledge coupled with a high interest in further training in tobacco control amid substantial level of exposure to ETS sets the stage for concerned stakeholders (policy-makers, professional organizations and universities) to respond through the development and implementation of core tobacco curricula that meets local and national requirements.

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