

Original Articles

Tobacco use among medical students in Orissa

G. S. RAMAKRISHNA, P. SANKARA SARMA, K. R. THANKAPPAN

ABSTRACT

Background. Tobacco use is the most important cause of preventable morbidity, disability and premature mortality. There is a lack of adequate and reliable data on tobacco use among medical students and their perceived role as future doctors in tobacco control. We aimed to find out factors associated with tobacco use among medical students and their perceived role in tobacco control as future doctors.

Methods. A cross-sectional study was conducted among 1189 undergraduate medical students (68.5% men, median age: 21 years, age range: 17–27 years) in all 3 medical colleges of Orissa. Information on tobacco use, associated factors and their perceived role in tobacco control as future doctors was collected using a pre-tested anonymous questionnaire. Bivariate and multivariate analyses were done among the men respondents to find out associations between current tobacco use and predictor variables.

Results. The prevalence of current tobacco use was 8.7% (95% CI: 7.1–10.3); men: 12.4%, women: 0.8%. Among 286 ever users, 34% started using tobacco after joining medical college. Students with a higher personal monthly expenditure and with a family history of tobacco use were more likely to be current users. Third-year students were 3.2-times more likely to be current tobacco users (OR: 3.21; CI: 1.43–7.19) compared to first-year students. Students who reported own tobacco use as not very harmful were 4.7-times more likely to be current users compared with those who reported otherwise (OR: 4.7; CI: 2.64–8.37). Compared to non-users, current tobacco users were less likely ($p=0.026$) to assess tobacco use in their patients and were less likely ($p=0.012$) to advise patients against tobacco use.

Conclusion. Steps should be initiated early in medical colleges to prevent tobacco use, particularly among men students and those with a family history of tobacco use.

Natl Med J India 2005;18:285–9

INTRODUCTION

Tobacco use is the most important cause of preventable morbidity,

disability and premature mortality. Epidemiological research over the past several years has confirmed the harmful effects of tobacco use.¹ Developing countries are projected to contribute 70% of tobacco-related deaths by 2020.² In a recent study in 52 countries, 35.7% of myocardial infarctions were attributed to smoking.³

The medical community has a key role in tobacco control, particularly in developing countries. Doctors in developing countries are role models and they can influence patients and the lay public to give up tobacco use. This would lead to a reduction in tobacco-related morbidity, disability and mortality.⁴ In most developed countries where tobacco use has come down, usually doctors have led the way by being the first group to quit tobacco use.⁵ Medical students are better placed to understand and practise the latest developments in healthcare. Therefore, it is important to understand the factors affecting tobacco use among medical students and to know whether medical students perceive tobacco use as a public health problem.

Although much information is available on tobacco use among medical students in developed countries, only limited information is available from India. Daily smoking was reported to range from 0% in the USA to 61% in Moscow (Russia) among men, and 0% in Morocco, Benin, Hiroshima (Japan) and Kelanta (Malaysia) to 44.7% in Barcelona (Spain) among women.⁶ In developed countries, the pattern of smoking is reported to be similar among men and women medical students, sometimes showing a higher prevalence among women. For example, a study from London, UK reported a smoking prevalence of 12% in men and 24% in women medical students while another study from Newcastle, UK reported a prevalence of 11.7% among men and 30.3% among women medical students. However, in China, smoking among women medical students (1.8%) was much lower than among men (21.5%).⁷

The results of a study conducted by the International Union Against Tuberculosis and Lung Diseases showed that smoking was generally less prevalent in Asian medical schools than in European ones.^{8,9} The average prevalence among first- and final-year Asian men students was 4% and 11%, respectively, indicating an increase during the years at medical school. Therefore, medical schools are an important site for education and cessation efforts.

Data on tobacco use among medical students in India are limited and a few published studies have reported data mostly on men medical students. In India, smoking among women (2.4%) has been reported to be much lower than men (29.3%) in the general population.¹⁰ A study on 400 men students from Patna Medical College reported the prevalence of smoking as 23% and that of smokeless tobacco as 24%.¹¹ In the global health profes-

Achutha Menon Centre for Health Science Studies,
Sree Chitra Tirunal Institute for Medical Sciences and Technology,
Thiruvananthapuram 695011, Kerala, India

G. S. RAMAKRISHNA, P. SANKARA SARMA, K. R. THANKAPPAN

Correspondence to K. R. THANKAPPAN; thank@scimst.ac.in

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sionals survey, a current cigarette smoking rate of 14.9% among third-year dental students was reported from India.¹² Most of these studies among medical students focused on their smoking habits and not overall tobacco use, and none of the studies assessed their perceived role in tobacco control as future doctors.

Therefore, we studied the prevalence and correlates of tobacco use among medical students, their awareness of tobacco-related diseases, tobacco control issues and perceived role in tobacco control as future doctors in the state of Orissa, India.

METHODS

Study setting and population

We did a cross-sectional survey among all undergraduate students in 3 medical colleges of Orissa. The location selected was based on convenience. Of the 1618 students (70% men), 1189 (815 men) participated in the study. The overall response rate was 73.5% (men: 72% and women: 77%).

Data collection

Permission for the study was taken from the Director of Medical Education and Training, Government of Orissa and from the principals of all the 3 medical colleges as well as the teachers during whose classes the questionnaires were administered. Participation in the study was voluntary and verbal informed consent was taken from the participating students. One of the investigators (GSR) talked to a few students informally to find out the classes attended by most of the students and the survey was administered during these classes.

Data were collected using a pre-tested, anonymous, self-administered questionnaire during January–February 2004. The questionnaire was administered by one of the investigators and took 15–20 minutes for each class. The students were briefed about the purpose of the study, requested to fill in the questionnaire honestly and were reassured about the anonymity and confidentiality of the information. The data collected included age, sex, year of study, place of living, personal monthly expenditure, household monthly income, parents' education, tobacco use, age at initiation, whether tobacco use was initiated before or after joining medical college, type of product used, quitting, tobacco use in the family, awareness of tobacco-related diseases and tobacco control issues, and the students' perceived role in tobacco control as future doctors. Ever use was defined as 'having used tobacco even once in their lifetime'. Current use was defined as 'having used tobacco at least once in the last 30 days preceding the survey'. Never use was defined as 'having not used tobacco even once in their lifetime'.¹³

Data analysis

Data were cleaned, coded and entered in an Excel spreadsheet and analysed using SPSS for Windows Version 11.0 (SPSS Inc, Chicago, Illinois). Since only 3 women were current tobacco users, bivariate and multivariate analyses were done for men students only. Bivariate analysis was done using chi-square tests of significance. For bivariate analysis, age was grouped into ≤ 21 and > 21 years; personal monthly expenditure was grouped into ≤ 1500 , 1501–2000 and > 2000 Indian rupees based on tertiles, and place of stay was grouped into hostel and other place. Multiple logistic regression analysis was done following a step-wise method of elimination. It was done with the variables which were found to be significantly associated with the current use of tobacco in bivariate analysis. For all the statistical tests, p values < 0.05 were considered significant.

RESULTS

Study sample

The median age of the participants was 21 years and the age range was 17–27 years. Over two-thirds of the students were men. Our sample had an almost equal proportion of students (~20%) from each of the 5 years of medical education. The vast majority of students were living in a hostel. Nearly half the students spent less than Rs 1500 (~US\$ 35) per month as living expenses.

Ever tobacco use

Ever use of tobacco was much higher among men students compared with women. This was true for smoking, use of smokeless tobacco and use of both smoking and smokeless forms of tobacco (Table I).

The mean age at initiation was 17.1 years; 17.3 years in men and 15.1 years in women. The lowest age at initiation was 5 years and the highest 26 years. Over one-third of men ever users and 10% of women ever users had started tobacco use after entering medical college. The first used product was cigarettes in men and *pan masala* in women. Among ever users, 64% were offered or introduced to tobacco products by a friend. Almost 30% of them started tobacco use on their own and the most common reason for starting was curiosity or experimentation followed by 'out of fun'. According to 85% of the students, protection of their health and self-discipline were the most important reasons for not using tobacco products.

Current tobacco use

Overall, 8.7% of the students were currently using tobacco products; men: 12.4%, women: 0.8%. None of the women were current smokers. Among 101 men users, 44 were exclusive smokers (39 cigarette smokers, 1 *beedi* smoker and 4 smoked both *beedi* and cigarettes), 30 were smokeless tobacco users (16 used *pan masala*, 8 used *gutkha*, 1 used *zarda pan* and 5 used more than one product) and 27 used both forms of tobacco. All these 27 students smoked cigarettes. In addition, 17 of them used one more tobacco product, and the rest used multiple products. More than half of the current users had spent Rs 1–50 on tobacco products in the week preceding the survey. Almost half the cigarette/*beedi* users had been smoking for ≥ 15 days in the month preceding the survey and 77% of them had smoked < 5 cigarettes/*beedis* per day. More than half the current users felt that they got satisfaction out of tobacco use. Three-fourths of current users had quit tobacco use for ≥ 1 day in the year preceding the survey. Three-fourths of current users

TABLE I. Prevalence of tobacco use among medical students in Orissa

Form of tobacco	Total (n=1189)	Men (n=815)	Women (n=374)
<i>Ever use</i>			
Only smokers	117 (9.8)	109 (13.4)	8 (2.1)
Only smokeless users	94 (7.9)	85 (10.4)	9 (2.4)
Both forms	75 (6.3)	71 (8.7)	4 (1.1)
Any form	286 (24.1)	265 (32.5)	21 (5.6)
Non-users	903 (65.9)	550 (67.5)	353 (94.4)
<i>Current use</i>			
Only smokers	44 (3.7)	44 (5.4)	0
Only smokeless users	33 (2.7)	30 (3.7)	3 (0.8)
Both forms	27 (2.3)	27 (3.3)	0
Any form	104 (8.7)	101 (12.4)	3 (0.8)
Non-users	1085 (91.3)	714 (87.6)	371 (99.2)

Values in parentheses are percentages

TABLE II. Bivariate analysis of current tobacco use among men students

Variables	Users	Non-users	Total	p value
<i>Age (years)</i>				
≤21	38 (9.6)	357 (90.7)	395	0.017
>21	61 (14.7)	353 (85.3)	414	
<i>Year of study</i>				
First	13 (7.2)	168 (92.8)	181	0.009
Second	13 (8.3)	144 (91.7)	157	
Third	27 (17.3)	129 (82.7)	156	
Fourth	22 (12.9)	149 (87.1)	171	
Fifth	25 (17.0)	122 (83.0)	147	
<i>Residence</i>				
Hostel	93 (13.5)	597 (86.5)	690	0.008
Other	7 (5.7)	115 (94.3)	122	
<i>Seen tobacco use in family</i>				
Yes	58 (14.7)	337 (85.3)	395	0.023
No	37 (9.7)	343 (90.3)	380	
<i>Personal monthly expenditure (Rs)</i>				
≤1500	29 (8.1)	330 (91.9)	359	0.002
1501–2000	44 (14.3)	264 (85.7)	308	
>2000	27 (18.6)	118 (81.4)	145	
<i>Own tobacco use harmful</i>				
Very	64 (9.1)	637 (90.9)	701	<0.001
Not very	27 (30.7)	61 (69.3)	88	
<i>Others' smoking harmful</i>				
Very	68 (10.5)	582 (89.5)	650	0.023
Not very	24 (17.0)	117 (83.0)	141	

Values in parentheses are percentages

wanted to give up tobacco use. Of those who wanted to quit, more than half planned to do so in the subsequent month, whereas one-fourth wanted to quit in the subsequent year.

Current tobacco use and its correlates

Compared with first-year students, third-year students were 3.2-times more likely and final-year students 2.46-times more likely to be current users of tobacco. Students of high expenditure groups (>Rs 2000) were 2.2-times more likely to be current tobacco users compared with students belonging to the lowest expenditure group (≤Rs 1500). Those students who had seen tobacco use in the family were 1.8-times more likely to be current tobacco users compared to their counterparts (Tables II and III). Those who said that 'own tobacco use' was not very harmful were 4.7-times more likely to be current tobacco users compared to those who said that 'own tobacco use' was very harmful. Variables that were significant in bivariate analysis but became insignificant in multivariate analysis were age, residence and perception of others' smoking as harmful to their health (Tables II and III).

TABLE III. Multivariate analysis of current tobacco use among men students

Variables	Adjusted odds ratio	p value	95% confidence interval for adjusted OR
<i>Study year</i>			
First	1.00 (reference)		
Second	0.94	0.904	0.36–2.41
Third	3.21	0.005	1.43–7.19
Fourth	1.99	0.105	0.86–4.59
Fifth	2.46	0.036	1.06–5.72
<i>Personal monthly expenditure (Rs)</i>			
≤1500	1.00 (reference)		
1501–2000	1.91	0.027	1.07–3.37
>2000	2.20	0.021	1.12–4.28
<i>Seen tobacco use in family</i>			
No	1.00 (reference)		
Yes	1.82	0.020	1.10–3.00
<i>Own tobacco use harmful</i>			
Very	1.00 (reference)		
Not very	4.70	<0.001	2.64–8.37

The variables that were considered in the model but dropped subsequently were age, residence and perception of others' smoking as harmful to their health.

Awareness of tobacco-related issues

Two-thirds of students knew that the government had banned smoking in public places. However, only 12% had heard about the Framework Convention on Tobacco Control (FCTC). Almost all students (98.4%) knew that tobacco use and lung cancer are related and two-thirds of them knew that tobacco is a risk factor for coronary artery disease. However, only 39% knew that there was an association between tobacco use and bladder cancer. More than half of them did not know that tobacco use is associated with impotency. Their knowledge of an association between tobacco use and various diseases increased with their age.

Perceived role in tobacco control

Less than half of the students reported that they would always assess tobacco use among outpatients in the future (Table IV). Only one-third of students would always advise patients to quit if they reported tobacco use. Eighty per cent of the students would advise quitting tobacco use to those who presented with tobacco-related diseases. Only one-third of the students thought that they were adequately trained for advising patients who want to quit. Compared to non-users, current tobacco users were significantly less likely ($p=0.026$) to assess patients about their tobacco use and were less likely ($p=0.012$) to advise patients against tobacco use (Table IV).

TABLE IV. Perceived role of medical students on tobacco control

Current use	Never	Sometimes	Usually	Always	Total	p value
<i>Will assess tobacco use of patients</i>						
Yes	9 (8.7)	17 (16.5)	24 (23.3)	53 (51.5)	103	0.026
No	38 (3.5)	154 (14.3)	350 (32.6)	532 (49.5)	1074	
<i>Will advise patients to quit tobacco use</i>						
Yes	9 (8.9)	9 (8.9)	14 (13.9)	69 (68.3)	101	0.012
No	39 (3.7)	70 (6.6)	95 (8.9)	858 (80.8)	1062	

Values in parentheses are percentages

DISCUSSION

The proportion of current tobacco users among men students in our sample (12.4%) was less than half of the proportion of tobacco users (25.4%) among men in the general population of Orissa.¹⁴ Within the age group of 15–29 years also, the proportion of tobacco users in the general population of Orissa¹⁴ was much higher than the rates in our study. Our finding is similar to that reported from a study from China¹⁵ and less than that reported from Malaysia.¹⁶ The proportion of current tobacco users in our study is lower than that reported among medical college faculty (12.3%) from Kerala (unpublished data from a study by Mohan S *et al.* on ‘Tobacco use among medical professionals in Kerala, India: The need for enhanced tobacco cessation and control efforts’). Current use of tobacco among medical students was reported to be significantly lower compared to medical college faculty in previous studies as well (unpublished data).^{17,18} The use of smokeless forms of tobacco was 49.5% among men in the general population of Orissa compared to 7% in our sample. In the age group of 15–29 years, smokeless tobacco use was 30.9% in the general population.¹⁴ Among women in the general population also, smokeless tobacco use was high (34.9%) compared to our sample (0.8%). It is encouraging that the prevalence of tobacco use among the medical students surveyed was substantially less than that in the general population. This was also true for women smokeless tobacco users. *Pan masala*, the first used product by women, is supposed to be free of tobacco. However, we are not sure of this claim, which needs to be studied further.

The higher use by men compared to women may be because tobacco use by women is socially unacceptable in India, as in other parts of Asia and Africa.⁷ However, the 33% rate of ever tobacco use by men in our study was less than that of 43% in a study from the neighbouring state of Bihar.¹¹ Close to half the students had seen tobacco use in their family, which has also been reported previously.^{19–21} The mean age at initiation was reported to be 17.1 years, which was similar to that in other studies,²² but was earlier than that among medical students in Iran.²³

The increasing use of tobacco among third- and final-year students shows that their increasing knowledge of tobacco-related diseases does not translate into decreased use. Their behaviour was not influenced by their knowledge, which was seen in other studies too.⁶ The knowledge of medical students in our study was low with regard to certain diseases such as bladder cancer as reported in an earlier study.⁶

The higher prevalence of tobacco use among students in the higher expenditure category was similar to a report which stated that access to pocket money was a strong predictor for current tobacco use among adolescent boys in Kerala.²⁴ In this study, family history of tobacco use was reported to be strongly associated with current tobacco use.²⁴ Current use of tobacco was 4.7-times higher among those who reported that ‘own tobacco use’ was not very harmful compared to those who reported otherwise. This finding warrants the need for an education programme focusing on the harmful effects of tobacco to modify this perception among tobacco users. It is not surprising that compared to non-users, current tobacco users were less likely to either assess or advise patients against tobacco use. This again suggests the importance of an intervention to reduce tobacco use among medical students.

The students were more likely to advise quitting to patients presenting with tobacco-related disease rather than those who reported tobacco use without tobacco-related disease. A similar finding was observed in an unpublished study from Kerala where

it was reported that physicians gave cessation advice more often to patients with tobacco-related diseases compared to patients with a pregnant wife or young children (Pradeepkumar *et al.* Unpublished data from a study on ‘Physician behavior and skills for tobacco cessation in Kerala, India’).

Our finding that less than half the students would always assess tobacco use among outpatients in the future is a matter for concern. We need to build tobacco control competencies among medical students in India. In developed countries such as the USA, organized efforts are being made to increase tobacco control competencies among medical students.²⁵ Our finding that of those who currently use tobacco, over one-third initiated use after entering medical college is also of concern and suggests the need to initiate tobacco control programmes in the early years of medical education.

Considering the morbidity and mortality attributable to tobacco use, the Medical Council of India should introduce and emphasize on tobacco education in the medical curriculum. In developed countries, reduction in tobacco use among the general population is preceded by a reduction in tobacco use among medical professionals and medical students. Implementation of tobacco control laws such as the ban on smoking in public places should be enforced in all medical college campuses in India.

ACKNOWLEDGEMENTS

We acknowledge the help of Dr Kaushik Mishra and the faculty of the Departments of Community Medicine of the 3 medical colleges and the participants for their cooperation.

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