



Smoking Prevalence, Attitude, and Cessation Training among Nursing Students in Bhubaneswar, India—A Cross-sectional Study

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Abstract

Introduction The smoking habit of health professionals including nursing students may prevent them from providing cessation advice and counseling to their patients as one cannot persuade others to quit if he/she is smoking himself/herself.

Objective The study aimed to assess the smoking prevalence, attitude, and tobacco cessation training among nursing students.

Materials and Methods During January to April 2019, we conducted a cross-sectional study among 432 third-year nursing students of eight graduate nursing colleges of Bhubaneswar using the Global Health Professional Student Survey (GHPSS) questionnaire.

Results Overall, 38 (8.8%) were current smokers. Majority of participants agreed that health professionals should receive specific training on smoking cessation techniques (91%), serve as role models for their patients and the public (94%), advise their patients to quit tobacco (96.1%). Current smokers were more likely to be males (adjusted OR [aOR]: 6.53, 95% confidence interval or CI: 2.61–16.36), those not supporting a smoking ban in discos/bars/pubs (aOR: 2.82, 95% CI: 1.13–7.05), those lacking knowledge about dangers of smoking (aOR: 2.48, 95% CI: 1.10–5.60), and those not discussing the reasons of smoking (aOR: 2.49, 95% CI: 1.05–5.93).

Conclusion Sincere efforts must be undertaken in the nursing colleges to design and implement strategies to discourage tobacco use among nursing students and adequately train them on tobacco cessation techniques.

Keywords

- current smoker
- GHPSS
- nursing students
- tobacco cessation

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Introduction

Tobacco use is one of the most important preventable causes of premature mortality and morbidity. Direct tobacco smoking kills more than 7 million people every year worldwide and an additional 1.2 million die from the effects of second-hand smoke.¹ In the 20th century, tobacco is estimated to have killed 100 million people and in the current century, it is expected to kill approximately 1 billion people, mostly in the low- and middle-income countries (LMICs).² Globally, almost 1.3 billion people are currently smokers and more than 80% of smokers live in LMICs.^{1,2} Smoked tobacco in the form of cigarettes or bidi accounts for around 97% of all tobacco sales worldwide and results in a higher incidence and variety of diseases compared with smokeless tobacco.²

According to World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), population-based surveys are needed to be conducted among adults, youth, school personnel, and student health professionals to monitor the global tobacco epidemic.³ WHO FCTC has emphasized the importance of the role played by health professionals in the cessation and prevention of tobacco use by giving simple advice and counseling.^{4–7} It is essential for health care facilities and educational institutes to assume greater responsibility by promoting smoke-free facilities and practices among their staff and patients.⁸ However, the smoking habit of health professionals may prevent them from providing cessation advice and counseling to their patients as one cannot persuade others to quit if they are smoking themselves.^{9,10} In the implementation of tobacco cessation strategies, there are barriers like lack of knowledge about dangers of tobacco use, absence of adequate training, competing demands, lack of familiarity with appropriate therapies, and reimbursement for providing treatment.^{6,11,12} Moreover, nursing students' perceptions about tobacco cessation and their efficiency in providing appropriate interventions may negatively impact nurses' role in tobacco cessation.¹³

To our knowledge, studies regarding tobacco use among nursing students in India are scarce. In light of the above, the present study was performed with the following objectives: (1) to assess the tobacco consumption behavior, prevalence of current smoking, and associated factors; (2) to assess the attitudes and beliefs toward tobacco control and educational training received on tobacco control among nursing students.

Materials and Methods

This cross-sectional study was performed involving eight graduate nursing colleges at Bhubaneswar, the capital city of Odisha, located in the eastern region of India. The survey was conducted between January to April 2019 during regular class sessions. All the third-year B.Sc. nursing students studying in the nursing colleges, i.e., overall 465 students were considered for the study. Students not willing to participate and those absent on the day of the survey were excluded from the study. Twenty-eight students were absent on the day of the survey and the rest 437 students were

included as study participants as all of them agreed to participate in the study.

The tool used in this survey was the Global Health Professional Student Survey (GHPSS) questionnaire which was developed by WHO, Centres for Disease Control and Prevention (CDC), and the Canadian Public Health Association (CPHA).¹⁴ The students were asked to complete an anonymous, self-administered GHPSS questionnaire which was composed of 59 questions including information regarding socio-demographic characteristics, smoking habits, other tobacco use, intention to quit, exposure to second-hand smoke, attitudes and beliefs toward tobacco control activities, and educational training received concerning smoking and smoking cessation. The outcome measure was "being a current smoker" who used smoked tobacco on at least one day during the last 30 days before the survey.

Statistical Analysis

All the data were scrutinized and analyzed with SPSS version 21.0 software and expressed as frequency, percentages, odds ratio, and 95% confidence intervals (CIs). Chi-square tests were performed to evaluate differences for the categorical variables. Variables with a *p*-value <0.15 in bivariate analyses were introduced in the final multivariate logistic regression model to identify possible factors associated with tobacco smoking status. The goodness of fit of the model was assessed by the model χ^2 statistic and Hosmer-Lemeshow test. The level of significance was set at *p* <0.05.

Ethics Statement

The study was approved by the Institute Ethics Committee of Kalinga Institute of Medical Sciences, KIIT Deemed to be University, Bhubaneswar, India (Ref. No: KIMS/KIIT/IEC/01/2018, Date: March 01, 2019). The procedures used in this study adhere to the tenets of the Declaration of Helsinki of 1964 as revised in 2013. Also, permission was sought from respective college authorities. Before participation in the study, all the students were informed about the aims of the study and asked to provide written informed consent.

Results

Study Participants and Smoking Status

The study sample consisted of 437 third-year nursing students, out of which responses of five students were not considered due to incompleteness of data and thus data of 432 students were considered for final analysis. The response rate was 100% as all 437 students responded by filling the questionnaires. Among the total population, 388 (89.8%) were females and 44 (10.2%) males. Majority of the respondents (264, 61.1%) were ≤20 years old, while 168 (38.9%) were >20 years old. The mean age of the participants was 20.4 ± 1.1 years. Concerning smoking status, 38 (8.8%) were current smokers (smoking cigarettes or bidi daily or occasionally within the past month). Most of the students first tried using tobacco (cigarette: 66.7%, bidi: 47.9%, and smokeless tobacco: 60%) at the age between 16 and 20 years. More than half of the students were using tobacco within 30 minutes after waking up. Nearly three-fourths of the

Table 1 Tobacco consumption behavior of nursing students ($n = 432$)

Tobacco use	Smoked tobacco, <i>n</i> (%)		Smokeless tobacco, <i>n</i> (%)
	Cigarette	Bidi	
Currently using			
Yes	33 (7.6)	17 (3.9)	16 (3.7)
No	399 (92.4)	415 (96.1)	416 (96.3)
Ever used			
Yes	48 (11.1)	47 (10.9)	25 (5.8)
No	384 (88.9)	385 (89.1)	407 (94.2)
Age when first tried (in years)			
≤ 15	05 (10.4)	21 (44.7)	07 (28.0)
16–20	32 (66.7)	23 (47.9)	15 (60.0)
≥ 20	11 (22.9)	03 (6.4)	03 (12.0)
Frequency of use in last month (days/month)			
0 d	15 (31.3)	30 (63.8)	09 (36.0)
1–5 d	17 (35.4)	05 (10.6)	08 (32.0)
> 5 d	16 (33.3)	12 (25.5)	08 (32.0)
Tobacco use on school premises			
Yes	08 (16.7)	07 (14.9)	04 (16.0)
No	40 (83.3)	40 (85.1)	21 (84.0)
How soon after waking up do you use tobacco?			
< 10 min	07 (21.2)	04 (23.5)	02 (12.5)
10–30 min	08 (24.2)	04 (23.5)	05 (31.2)
After 30 min	18 (54.5)	09 (52.9)	09 (56.3)
Do you want to stop tobacco use now?			
Yes	24 (72.7)	11 (64.7)	12 (75.0)
No	09 (27.3)	06 (35.3)	04 (25.0)
Second hand smoke in living place during past 7 d			
Yes	221 (51.2)		
No	211 (48.8)		
Second hand smoke in places other than living places during past 7 d			
Yes	262 (60.6)		
No	170 (39.4)		

current tobacco users had the intention to quit it. More than half of the nursing students reported that they were exposed to secondhand smoke during the past 7 days in living places (221 [51.2%]) and other places (262 [60.6%]). Details of the tobacco consumption behavior of nursing students are given in ► **Table 1**.

Attitudes and Beliefs toward Tobacco Control

► **Table 2** summarizes the findings regarding the students' attitudes toward tobacco control by their smoking status. Fifty-seven (13.2%) of the students reported that there was no policy that forbids smoking in school buildings and clinics and 151 (35.0%) stated that the policy was not enforced.

Table 2 Nursing students' demographic characteristics and attitudes toward tobacco control by their current smoking status

	Non-smokers	Current smokers	Total	p-Value
	n (%)	n (%)	n (%)	
Age				
≤20	243 (92.0)	21 (8.0)	264 (61.1)	0.439
> 20	151 (89.9)	17 (10.1)	168 (38.9)	
Gender				
Female	364 (93.8)	24 (6.2)	388 (89.8)	0.000
Male	30 (68.2)	14 (31.8)	44 (10.2)	
Is there any policy banning smoking in school buildings and clinics?				
Yes	341 (86.5)	34 (89.5)	375 (86.8)	0.611
Is the above policy enforced?				
Yes	252 (73.9)	29 (85.3)	281 (65.0)	0.144
Should tobacco sales to adolescents be banned?				
Yes	323 (82.0)	31 (81.6)	354 (81.9)	0.951
Should tobacco advertisements be completely banned?				
Yes	330 (83.8)	26 (68.4)	356 (82.4)	0.018
Should smoking be banned in restaurants?				
Yes	333 (84.5)	26 (68.4)	359 (83.1)	0.011
Should smoking be banned in discos/bars/pubs?				
Yes	319 (81.0)	21 (55.3)	340 (78.7)	0.000
Should smoking be banned in all enclosed public places?				
Yes	335 (85.0)	33 (86.8)	368 (85.2)	0.763
Should health professionals get specific training on cessation technique?				
Yes	359 (91.1)	34 (89.5)	393 (91.0)	0.765
Do health professionals serve as role models for their patients and public?				
Yes	371 (94.2)	35 (92.1)	406 (94.0)	0.490
Should health professionals advice their patients to quit tobacco?				
Yes	379 (96.2)	36 (94.7)	415 (96.1)	0.654
Do nursing professionals have a role in giving advice about tobacco cessation?				
Yes	377 (95.7)	35 (92.1)	412 (95.4)	0.405

Compared with non-smokers, a higher proportion of smokers believed that the policy existed and was enforced in the campus, but these differences were statistically not significant. With regard to their beliefs toward tobacco control policies, non-smokers were more positive toward banning smoking in restaurants [333 (84.5%) vs. 26 (68.4%), $p < 0.05$], in bars/discos/pubs [319 (81%) vs. 21 (55.3%), $p < 0.05$]. Also, a higher percentage of nonsmokers were in favor of a complete ban of tobacco advertisements [330 (83.8%) vs. 26 (68.4%), $p < 0.05$]. Majority of the participants agreed that

Table 3 Nursing students' educational training on tobacco control by their current smoking status (positive responses)

	Non-smokers	Current smokers	Total	p-Value
	n (%)	n (%)	n (%)	
During your school training				
Were you taught about dangers of smoking?				
Yes	302 (76.6)	21 (55.3)	323 (74.8)	0.004
Did you discuss the reasons why people smoke?				
Yes	322 (81.7)	24 (63.2)	346 (80.1)	0.006
Did you learn importance of recording tobacco use history?				
Yes	314 (79.7)	30 (78.9)	344 (79.6)	0.913
Have you received any formal training in smoking cessation approaches?				
Yes	282 (71.6)	26 (68.4)	308 (71.3)	0.682
Did you learn importance of providing educational materials to support smoking cessation?				
Yes	291 (73.9)	23 (60.5)	314 (72.7)	0.078
Have you heard of nicotine replacement therapies in tobacco cessation?				
Yes	289 (73.4)	27 (71.1)	316 (73.1)	0.760
Have you heard of using antidepressants in tobacco cessation?				
Yes	235 (59.6)	16 (42.1)	251 (58.1)	0.036

health professionals should receive specific training on smoking cessation techniques (393, 91%), should serve as role models for their patients and the public (406, 94%), should advise their patients to quit tobacco (415, 96.1%), and nursing professionals have a role in providing advice about tobacco cessation (412, 95.4%).

Educational Training on Smoking and Smoking Cessation

► **Table 3** depicts nursing students' educational training on tobacco control by their smoking status. The differences in responses to questions like "were you taught about dangers of smoking," "did you discuss the reasons why people smoke," and "have you heard of using antidepressants in tobacco cessation" between smokers and nonsmokers were statistically significant whereas no statistically significant differences were identified in the responses for other questions indicating similar levels of training and understanding.

Factors Associated with Current Smoking Status

► **Table 4** presents the multivariate logistic regression model showing the possible factors associated with the current smoking status of nursing students. After adjustment of confounders, variables like male gender (adjusted OR: 6.53, 95% CI: 2.61–16.36), not supporting a smoking ban in discos/bars/pubs (adjusted OR: 2.82, 95% CI: 1.13–7.05), lack of knowledge about dangers of smoking (adjusted OR:

Table 4 Multivariate logistic regression analysis showing factors associated with current smoking status of nursing students

Variables	Currents smoking status (Non-smoker = 0, Smoker = 1)	
	Adjusted OR (95% CI)	p-Value
Gender		
Male	6.53 (2.61–16.36)	0.000
Female ^R	1	
Is the policy banning smoking enforced in school?		
No	0.73 (0.25–2.12)	0.559
Yes ^R	1	
Should tobacco advertisements be completely banned?		
No	1.10 (0.39–3.05)	0.849
Yes ^R	1	
Should smoking be banned in restaurants?		
No	1.41 (0.54–3.70)	0.481
Yes ^R	1	
Should smoking be banned in discos/bars/pubs?		
No	2.82 (1.13–7.05)	0.027
Yes ^R	1	
Were you taught about dangers of smoking?		
No	2.48 (1.10–5.60)	0.029
Yes ^R	1	
Did you discuss the reasons why people smoke?		
No	2.49 (1.05–5.93)	0.038
Yes ^R	1	
Did you learn importance of providing educational materials to support smoking cessation?		
No	1.10 (0.48–2.54)	0.818
Yes ^R	1	
Have you heard of using antidepressants in tobacco cessation?		
No	1.32 (0.59–2.96)	0.506
Yes ^R	1	

Abbreviations: CI, confidence interval; OR, odds ratio; R, reference category. Note: Model χ^2 statistic = 40.451 ($p < 0.001$) and Hosmer-Lemeshow p -value = 0.773 show that the model fits and support the existence of the relationship between independent variables and the dependent variable. The classification table reports that 91.5% of the cases can be expected to be classified correctly by the model.

2.48, 95% CI: 1.10–5.60), and not discussing the reasons of smoking (adjusted OR: 2.49, 95% CI: 1.05–5.93) had shown significant associations with the current smoking status of nursing students.

Discussion

The present study shows a prevalence of current smokers of 8.8%, higher than the country figure of 3.4% reported in a

study conducted in 2007.¹⁵ and this may be attributed to stress, peer influence, and curiosity. Given the rise of prevalence of smoking among Indian nursing students and the key role of these health professional students as future behavioral models and counselors, more attention should be focused on smoking cessation training of nursing students. More than 80% of the respondents had tried their first tobacco use before reaching the age of 20 years, indicating the importance of initiating interventional measures during adolescence. Nearly 70% of the students currently using tobacco reported that they want to quit, which is comparable with the national figure.¹⁵ Thus, it can be inferred that with timely intervention, many students can be saved from falling prey to tobacco. Our study revealed that more than half of the respondents were exposed to secondhand smoke in living places and public places, which is higher than the national figures.¹⁵ This indicates ineffective implementation of the smoking ban in the region. Also, nearly 75% of the students were of the view that policy banning smoking was not enforced on school premises, again indicating complacency in implementation despite the policy existed. In our study, concerning attitudes and beliefs, nonsmokers appeared to be more active than smokers in smoking cessation counseling. This is consistent with the results of previous literature.^{16–18}

Compared with the results reported in earlier studies,^{15,19,20} our study showed that a higher proportion of nursing students had received any formal training in smoking cessation approaches. In this study, we observed that 91% of students thought that health professionals should get specific training on cessation techniques. Similar findings have been reported in other GHPSS studies.^{15,20,21} As nurses are the largest group of health care professionals and spend more time with the patients, they can adequately contribute to health promotional activities. They can effectively counsel their patients about smoking cessation techniques and persuade them to stop tobacco use.¹³ Thus, it is imperative to put more emphasis on smoking cessation techniques in the nursing curriculum and there should be sincere efforts to train 100% of nurses on tobacco cessation approaches. There is evidence that nurses who had received training were more likely to perform tobacco control interventions than untrained nurses.²² Also, nursing students' knowledge of intervention methods for tobacco cessation such as nicotine replacement therapies and the use of antidepressants could be further improved by improving the content of the current nursing curriculum on tobacco cessation. Sarna et al reported in their study that nurses in Asian countries may not be adequately trained to help tobacco users to quit as the curriculum does not offer appropriate training related to tobacco cessation interventions.⁶

In agreement with our findings, males were more likely to smoke than females in previous studies.^{16,23,24} Our study revealed that compared with nonsmokers, smokers were more unlikely to support the fact "smoking should be banned in discos/bars/pubs." This is consistent with the result reported in an earlier study.²⁰ Similarly, Brar et al in their study conducted on medical students observed that more nonsmokers were supportive of banning smoking in

discos/bars/pubs.²⁴ In our study, students who were taught about the dangers of smoking appeared to have a lower probability to be a smoker. Also, those who discussed the reasons why people smoke were less likely to be smokers. This is supported by the findings of a previous study.²⁰ This indicates that knowledge about smoking and its dangers might prevent nursing students from being a smoker.

In interpreting our results, the main limitations of the study should be addressed. First, the design of our study was cross-sectional and thus causality of association cannot be established. Second, there is a risk of underreporting and recall bias due to self-reported data. Also, the population split in the study was leaning more toward female students than males and this might lead to bias in the findings of the study. However, the study provides relevant information regarding tobacco consumption behavior, attitudes, and educational training of nursing students. The multicentric nature of the study increases the generalizability of the findings of our study. Furthermore, as the survey was anonymous and completely voluntary, it can be assumed that smoking status was reliably captured. Further research in diverse geographical settings is needed to establish the findings of our study.

Conclusion

The prevalence of current smoking among nursing students studying in nursing colleges of Bhubaneswar is 8.8%. The study findings indicate that smoking prevalence among the nursing students might be reduced by helping students develop a positive attitude toward smoking ban in discos/bars/pubs, teaching them about the dangers of smoking, and discussing the reasons of smoking during their school training.

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Conflict of Interest
None declared.

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