



Original Research Article

Tobacco Use among Undergraduate Students in a Medical College of Assam, India

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ABSTRACT

Background: Tobacco surveillance among medical students offers an opportunity to assess the preparedness for tobacco control among future healthcare professionals in India.

Objectives:

- To study the pattern of tobacco use among the undergraduate medical students
- To assess their awareness towards the harmful effects of tobacco use.

Methods: A Cross-sectional study was conducted among 264 undergraduate medical students of Jorhat Medical College using a predesigned pretested anonymous questionnaire from July to September, 2014 to study about their pattern of tobacco use and assess their awareness towards the harmful effects of tobacco use. Data was analyzed by using proportions and chi square test.

Results: 110 (41.7%) had ever used a tobacco product and 68(25.8%) were current users of tobacco. Among them, 20 (7.6%) were consuming smoking form, 9 (3.4%) were using smokeless form and 39 (57.4%) were using both smoking and smokeless form of tobacco. Cigarette smoking was most common form (81.8%) of abuse. Year of study, gender and place of residence had significant association with tobacco use. There was also familial aggregation of tobacco use. 54 (49.1%) of tobacco users intend to quit the product in future. Awareness about harmful effects of tobacco abuse was high (81.1%). 84.5% students support ban on tobacco use in public places.

Conclusion: This study reflects an alarming situation; so specific tobacco cessation training is needed for medical students who happen to be health role models for the society.

Keywords: Tobacco, Smoking, Undergraduate, Medical students, Assam.

INTRODUCTION

Tobacco is the leading preventable cause of untimely death and disease worldwide. It remains a serious threat to global health, killing nearly 6 million people each year and causing hundreds of billions of dollars of economic harm annually in the

form of excess health-care costs and lost productivity. WHO estimates that if current trends continue, by 2030 tobacco will kill more than 8 million people worldwide each year, with 80% of these premature deaths among people living in low and middle-income countries. ⁽¹⁾ In India, each year

more than 8 lakh people die and 12 million people become ill as a result of tobacco use.

⁽²⁾ The youth in general and students in particular are more prone to fall prey to this deadly habit, owing to increase in academic pressure, uncertain career and other kinds of stress in life. Teaching about the effects of tobacco use and related diseases is essential for medical students, because they would be the future physicians and shall serve as role models for healthy behaviour to the society.

⁽³⁾ The World Health Organization (2006) recommends that they can help to educate the population about tobacco, support anti-tobacco policies and also influence national and global tobacco control efforts. ⁽⁴⁾

However, medical students who are the future health professionals can have negative impact on society if they themselves are involved in tobacco consumption practice. It has been reported that there is an increased trend of tobacco habits among the students pursuing healthcare education like any other youths. Little attention has been given to the context of when and how healthcare students undergo attitudinal and behavioural changes with respect to their own smoking habits. ⁽⁵⁾

Hence, the present study was undertaken to understand the pattern of tobacco use among the medical undergraduate students and their awareness towards the harmful effects of tobacco use.

MATERIALS AND METHODS

A Cross-sectional observational study was conducted among the 2nd year, 3rd year and final year medical undergraduate students of Jorhat Medical College, Jorhat, Assam during the months of July and August 2014. Jorhat Medical College is a new Medical College established in 2010 with a yearly intake of 100 students per academic session. After seeking administrative approval, the students were approached in their classes and the purpose of the study was briefed. Confidentiality of

information was ensured and verbal informed consent was taken. Participation in the study was voluntary and data were collected using a pre designed, pre tested self administered questionnaire which was distributed among the students. The respondents were asked not to mention their names and residential address but only whether they hailed from rural or urban area for maintaining anonymity in order to encourage participation and elicit truthful response.

The information were collected regarding age, sex, religion, age of initiation of tobacco, precipitating factor for the initiation, form of product used, frequency of use, tobacco use in family, their attitude towards future use and awareness of harmful effects of tobacco. Questions regarding the awareness on passive smoking and support on tobacco ban were also asked.

Out of a total 300 students, questionnaires could be distributed to 273 students, of which 9 were incomplete and were excluded from the present study. So, finally 264 respondents were included in the study and analyzed using SPSS for Windows, trial version 16. Statistical analysis comprised calculating proportion, mean and standard deviation. Association between independent factors and dependent factors was determined using chi-square test with Yates correction. P -value < 0.05 was considered significant for all tests.

Operational Definition

“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’.

RESULTS

In the present study out of the 264 respondents, 82 (31.1%) were in 2nd year, 94 (35.6%) in 3rd year and 88(33.3%) were

from final year of their MBBS course. Among them 127 (48.1%) were males and 137(51.9%) were females. Mean age of the study subjects was 21.81 ± 1.13 years. Majority of the students were Hindu 224(84.8%) and 195(73.9%) resided in urban area. According to family type 230 (87.1%) belonged to nuclear families and all the respondents lived in hostel within the premises of the Medical college campus. (Table 1)

Out of the total study subjects 110 (41.7%) students have reported that they had ever used a tobacco product. Among them, 83(31.4%) were males and 27 (10.3%) were females. 47(17.8%) of the ever users had used it in the form of smoking while 19 (7.2%) used smokeless tobacco and

44(16.7%) used both smoking and smokeless form of tobacco. Both smoking and smokeless tobacco uses were more common among male than in female ever users ($\chi^2 = 8.2$, $df = 2$, $p = 0.017$). (Table 2)

Table 1: Profile of the medical students:

Year of study	Male (%)	Female (%)	Total (%)
2 nd year	37 (14.1%)	45 (17.0%)	82 (31.1%)
3 rd year	40 (15.1%)	54 (20.5%)	94 (35.6%)
Final year	50 (18.9%)	38 (14.4%)	88 (33.3%)
Religion			
Hindu	101 (38.2%)	123 (46.6%)	224 (84.8%)
Muslim	22 (8.3%)	11 (4.2%)	33 (12.5%)
Christian	4 (1.5%)	3 (1.1%)	7 (2.7%)
Place of residence			
Urban	77 (29.2%)	118 (44.7%)	195 (73.9%)
Rural	50 (18.9%)	19 (7.2%)	69 (26.1%)
Type of family			
Nuclear	111 (42.0%)	119 (45.1%)	230 (87.1%)
Joint	16 (6.1%)	18 (6.8%)	34 (12.9%)
TOTAL	127 (48.1%)	137 (51.9%)	264 (100.0%)

Table 2: Form of tobacco use among medical students

Smoking status	Male (%)	Female (%)	Total (%)	95% confidence interval	
Ever used tobacco product	83 (65.4)	27 (19.7)	110 (41.7)	35.75-47.65	
Current users	60 (47.2)	8 (5.8)	68 (25.8)	20.52-31.08	
Not current users (Ex users)	23 (18.2)	19 (13.9)	42 (15.9)	11.49-20.31	
Never used tobacco product	44 (34.6)	110 (80.3)	154 (58.3)	52.35-64.25	
Total	127	137	264		
Form of tobacco use	Male (%)	Female (%)	Total (%)	95% confidence interval	χ^2 value p value
Ever users	83 (31.4)	27 (10.3)	110 (41.7)	35.75-47.65	
Smoking tobacco	35(13.2)	12 (4.6)	47 (17.8)	13.19-22.41	$\chi^2 = 8.2$ $df = 2$ $p = 0.017$
Smokeless tobacco	10(3.8)	9 (3.4)	19 (7.2)	4.08-10.32	
Both smoking and smokeless tobacco	38 (14.4)	6 (2.3)	44 (16.7)	12.2-21.2	
Current users	60 (22.7)	8(3.1)	68(25.8)	20.52-31.08	
Smoking tobacco	19(7.2)	1(0.4)	20 (7.6)	4.4-10.8	$\chi^2 = 5$ $df = 2$ $p = 0.082$
Smokeless tobacco	6(2.3)	3 (1.1)	9 (3.4)	1.21-5.59	
Both smoking and smokeless tobacco	35 (13.3)	4 (1.5)	39 (14.8)	10.52-19.08	

It has been observed that 68(25.8%) respondents had consumed the tobacco product within the last 30 days preceding the survey i.e. current users. Among them, 60 (22.7%) were males and 8 (3.1%) were females. 20 (7.6%) of current users were consuming in smoking form, while use of smokeless tobacco was found in 9 (3.4%) students. On the other hand 39 (14.8%) were using both smoking and smokeless form of tobacco (Table 2.) The most common type of tobacco use among both ever users and current users was cigarette (81.8% & 85.3%) followed by zarda paan i.e. betal quid with tobacco (32.7% & 42.6%) (Fig 1)

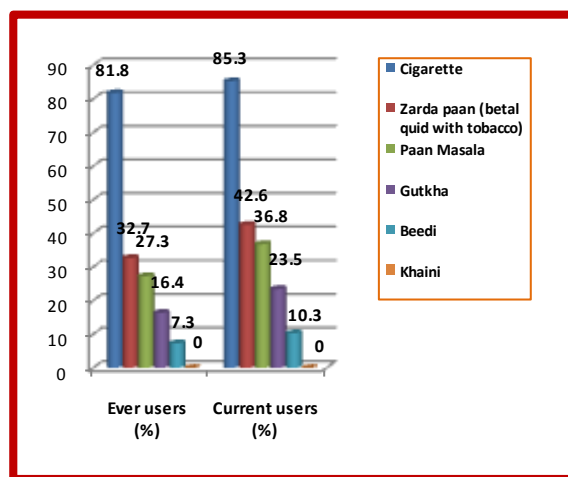


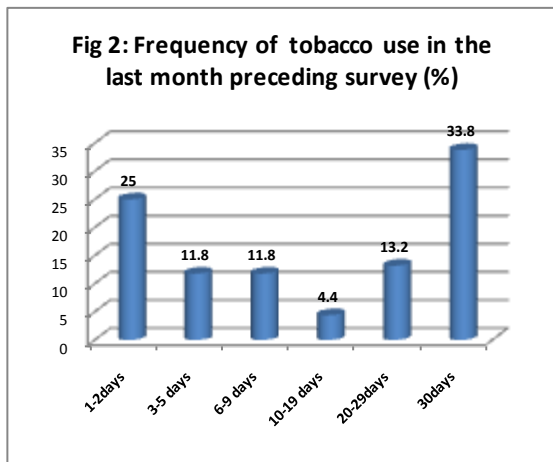
Fig 1: Types of Tobacco products consumed (%)

Table 3 shows an increasing trend in the consumption of tobacco among the current users with an increase in years of study in the Medical College; i.e. tobacco consumption increased with seniority of the students. 14.6% of 2nd year students, 21.3% of 3rd year students and 40.9% of Final year students were currently using tobacco ($\chi^2 = 18.2$, $p = 0.001$). Gender of the students was found to be significantly affecting the use of tobacco. 47.2% males were current tobacco users compared to 5.8% female students ($\chi^2 = 68.15$, $p = 0.0001$). Current use of tobacco was more common among those students whose families also used a tobacco

product. ($\chi^2 = 10.768$, $p = 0.005$) Place of residence of the respondents had a significant association with tobacco use. Use of tobacco was found to be more among students hailing from rural areas compared to urban residents. ($\chi^2 = 7.35$, p value = 0.025). However religion and type of family has no significant association with use of tobacco among the respondents (Table 3). Among the current users, 23(33.8%) claim to have used tobacco on daily basis in last month while 9 (13.2%) have used for 20-29 days and 17(25%) have used it for 1-2 days during the last month preceding the survey (Fig 2).

Table 3: Factors Associated with the use of tobacco

Characteristics of students	No. of Students N=264	Current users n1= 68	Ex-users n2=42	Non tobacco users n3=154	χ^2 value p value
Year of study					
2 nd Year MBBS	82	12(14.6%)	14(17.1%)	56(68.3%)	$\chi^2 = 18.212$ df= 4 p =0.001
3 rd Year MBBS	94	20(21.3%)	19(20.2%)	55(58.5%)	
Final Year MBBS	88	36(40.9%)	9(10.2%)	43(48.9%)	
SEX					
Male	127	60 (47.2%)	23(18.1%)	44 (34.6%)	$\chi^2 = 68.150$ df= 2 p=0.0001
Female	137	8 (5.8%)	19(13.9%)	110(80.3%)	
Tobacco use in family					
Yes	107	33 (30.8%)	24(22.4%)	50 (46.7%)	$\chi^2 = 10.768$ df= 2 p =0.005
No	157	35 (22.3%)	18(11.5%)	104(66.2%)	
Place of residence					
Urban	195	46(23.6%)	26(13.3%)	123(63.1%)	$\chi^2 = 7.351$ df= 2 p value=0.025
Rural	69	22(31.9%)	16(23.2%)	31(44.9%)	
Religion					
Hindu	224	60 (26.8%)	31(13.8%)	133(59.4%)	$\chi^2 = 5.008^a$ df= 4 p=0.286
Muslim	33	7(21.2%)	9 (27.3%)	17 (51.5%)	
Christian	7	1 (14.3%)	2 (28.6%)	4 (57.1%)	
Type of family					
Nuclear	230	59 (25.7%)	36(15.7%)	135(58.7%)	$\chi^2 = .122^a$ df= 2 p =0.941
Joint	34	9 (26.5%)	6 (17.6%)	19 (55.9%)	
Awareness on harmful effects of smoking					
Yes	214	53 (24.7%)	34(15.9%)	127(59.4%)	$\chi^2 = 0.630$ df=2 p =0.730
No	50	15 (30%)	8 (16%)	27 (54%)	
Awareness on presence of warning label on tobacco packet					
Yes	236	66 (28.0%)	41(17.4%)	129(54.7%)	$\chi^2 = 12.355$ df=2 p= 0.002
No	28	2 (7.1%)	1 (3.6%)	25 (89.3%)	
Awareness on effects of passive smoking					
Yes	245	65 (26.5%)	41(16.7%)	139(56.7%)	$\chi^2 = 3.740$ df=2 p = 0.154
No	19	3 (15.8%)	1 (5.3%)	15 (78.9%)	
Support on ban of tobacco use in public places					
Yes	223	49 (22.0%)	36(16.1%)	138(61.9%)	$\chi^2 = 11.136$ df=2 p= 0.004
No	41	19 (46.3%)	6 (14.6%)	16 (39.0%)	



It was also evident from the present study that family members of 57(51.8%) ever users also consumed tobacco. Among them, 32 (29.1%) use smoking form of tobacco whereas 25(22.7%) use smokeless form of tobacco. Majority of the tobacco ever users first started using it at 16-20 years of age (59.1%) followed by 21-25 years (23.6%). Similarly, 60.3% current users started using tobacco at 16-20 years of age followed by 21-25 years (26.5%). The reasons cited by them for initiation of tobacco use were curiosity (41.8%), for fun (31.8%), to relieve stress (20%), for show off (3.6%) and influence of family (2.7%). Majority of tobacco ever users were encouraged to initiate tobacco by their friends (77.3%), while 5.45% were encouraged by their seniors and 4.5% by their relatives. Remaining 12.7% reported that they were not encouraged by anyone to initiate tobacco consumption. 80 (72.7%) get the tobacco from shops situated near the college campus while 27(24.5%) obtain it from their friends. 91.2% of the current users obtained tobacco with their pocket money and 8.8% obtained money from their friends. Majority of tobacco current users 47 (69.1%) consume the tobacco product in hostels while 20 (29.4%) consume it in public places.

Among the ever users, 42(38.18%) were not currently using any tobacco

product (Ex- users). Of the current users, 52 (76.4%) intend to quit the product in future. All respondents who had never used tobacco in their lifetime had no intention of starting tobacco use in future.

214 (81.1%) respondents were aware of harmful effects of tobacco consumption in course of time and 236(89.4%) were aware of the presence of warning label on tobacco packet. However, inspite of being aware of presence of warning label, 28% of them were still currently using the tobacco product compared to 7.1% respondents who were not aware of it and currently using tobacco ($\chi^2 = 12.355, p = 0.002$). (Table 3)

245 (92.8%) respondents were aware of the harmful effects of passive smoking and 223(84.5%) supported ban on tobacco use in public places whereas 41 (15.5%) did not support it. A significantly higher proportion of students who did not support ban on tobacco use in public places (46.3%) were current users compared to 22% students who were supporting its ban and currently using it ($\chi^2 = 11.136, p = 0.004$) (Table 3).

DISCUSSION

Tobacco is one of the most important causes of various diseases all over the world⁽⁷⁾ and control of the tobacco epidemic is a major challenge for health professionals and policy makers. In the present study, 41.7% of Undergraduate Medical Students of Jorhat Medical College had ever used a tobacco product and 25.8% of them were current users. The prevalence of the tobacco ever use reported by other researchers were 21.7%, 24%, 22.7% and 14.7%^(5,8-10) which was lower compared to the present study. Rai *et al.*, reported that out of 2135 medical students, who were surveyed at a medical festival, 22.9% were ever users and 6.1% used tobacco products in the past one month.⁽¹¹⁾ Current use of tobacco was reported to be 11.1%, 14.5%, 33% and 28.8% among

Medical students in different studies across India. ^(5,12-14)

Use of tobacco was found to be significantly more among males than females in both ever users and current users. In India, population surveys conducted by the National Sample Survey Organization (NSSO) found tobacco use more among males than females (51.3% and 10.3%). Moreover, the National Family Health Survey (NFHS), in its second round (1998, 1999), found that tobacco use among men was 46.5% and 13.8% among women aged 15 years and above. ⁽¹⁵⁾ Similar findings were reported among Medical Students by Aggarwal *et. al.*, ⁽⁵⁾ Ramakrishna *et. al.*, ⁽⁸⁾ Bartwal *et.al.*, ⁽¹²⁾ and Sinha *et. al.*, ⁽¹⁶⁾

Overall, the use of smoking form of tobacco was more common than smokeless form in our study. 14.8% were currently using both smoking and smokeless form of tobacco, while 7.6% were using only smoking form and 3.4% were using only smokeless tobacco. Warren *et.al.*, reported that in 47 out of 80 global health professional students' survey sites around the world, over 20% of the medical students currently smoked cigarettes; and in 29 of 77 sites, over 10% currently used other tobacco products. ⁽¹⁷⁾ Rai *et.al.*, and Kumari *et.al.*, et al. also reported higher use of smoking tobacco than smokeless tobacco (5.3% vs1.3% and 25.2%vs10.8% respectively). ^(11,14) Other researchers ^(8,10) have documented lower use of smokeless tobacco (0.4% and 2.7%). However, Sinha *et.al.*, ⁽¹⁶⁾ reported the rate of smokeless tobacco use to be as high as 24% among their study population. In the present study, both smoking and smokeless form of tobacco ever use was more common among males than females. This might be due to easy accessibility and lesser inhibition among males for obtaining tobacco products.

Cigarette smoking was the most common form of tobacco use (81.8%) in our study. Similar pattern was found in studies

by Aggarwal *et. al.* , ⁽⁵⁾ and Selokar *et.al.*, ⁽¹⁸⁾ We also found an increasing trend in tobacco use among the current users with an increase in years of study in the Medical College. Findings were comparable to those documented by other researchers. ^(5,8,12,19) This might be due to increasing academic pressure and stress among the medical students with seniority.

An important observation in our study was that tobacco use was found to be significantly more among those students whose families also used a tobacco product compared to the non users which shows the role of parents and guardians in influencing such habits in their children. Similar findings were observed in other studies. ^(5,8,14,19) Also, use of tobacco was significantly more among students hailing from rural areas compared to urban residents in our study. However an absence of association between residential background and tobacco use was reported by Kumari *et. al.*, ⁽¹⁴⁾ and Singh *et. al.*, ⁽¹⁹⁾ In our study, religion and type of family had no significant association with use of tobacco among the respondents. Kumari *et. al.*, ⁽¹⁴⁾ in their study also did not find any association between religion and tobacco use.

Majority of the tobacco users first started using it at 16-20 years of age i.e. during their adolescence which is a very vulnerable age group where behavioural, psychological and emotional changes are observed. Aggarwal *et. al.*, ⁽⁵⁾ Ramakrishna GS *et.al.*, ⁽⁸⁾ and Selokar *et.al.*, ⁽¹⁸⁾ also observed that their study population initiated tobacco use in the same age group. So, special attention needs to be given to this age group by adopting Behavioural Change Communication strategies urgently to protect them from the harmful effects of tobacco use in later life.

Commonest reason for initiation of tobacco in our study was out of curiosity (41.8%). Other reasons were for fun, to relieve stress, influence of family and for

show off. Moreover, majority of tobacco users were encouraged to initiate tobacco use from their friends (77.3%). Chatterjee *et.al.*,⁽²⁰⁾ also reported curiosity as the main cause for initiation of tobacco. A study from Pakistan⁽²¹⁾ reported peer pressure, academic stress and curiosity to be the commonest reasons attributed to tobacco use by medical students. In studies by Kumari *et. al.*,⁽¹⁴⁾ and Selokar *et.al.*,⁽¹⁸⁾ peer pressure was observed to be the main cause for initiation. This is a major challenge as friends have a great influence in the lives of the students; especially when they live in hostels.

Of the current users, 33.8% claim to have used it for all 30 days in the month prior to the survey which shows a discouraging situation of the tobacco epidemic among the medical students. A report from the study in 15 medical schools from nine Asian countries revealed that the prevalence of daily smoking in males varied from 4 to 11% from first year to final year.⁽¹⁹⁾ However, Bartwal *et. al.*,⁽¹²⁾ reported that more than three-fourth students (77.27%) were using tobacco daily.

In our study it was also seen that 91.2% of current users obtain the tobacco product with their pocket money. Similar finding was reported by Bartwal *et. al.*,⁽¹²⁾ where the main source of money was pocket money (88.64%) received from their parents. So, parents also have a responsibility to keep an eye on their children's expenses. Under the Cigarettes and Other Tobacco Products Act, 2003 (COTPA 2003) there is prohibition of smoking in a public place and prohibition of sale of tobacco products within a radius of 100 yards of educational institutions.⁽¹⁵⁾ However, in our study it was observed that 72.7% get the tobacco from shops situated near the college campus and 29.4% consume it in public places. Ahmed *et al* reported similar findings.⁽²²⁾ This showcases the

urgent need to properly implement the legislations at the earliest.

The present study also shows a positive attitude of students towards quitting of tobacco where 76.4% current users intend to quit tobacco in future and all respondents who had never used tobacco in their lifetime had no intention of starting it in future. Sinha *et. al.*,⁽¹⁷⁾ Chatterjee *et. al.*,⁽²⁰⁾ and Aggarwal *et.al.*,⁽²³⁾ in their studies also found that 70%, 67% and 68.75% students respectively were willing to quit tobacco. Moreover, 84.5% respondents in our study supported ban on tobacco use in public places. But interestingly 15.5% did not support its ban. Bartwal *et. al.*,⁽¹²⁾ and Mehrotra *et. al.*,⁽¹³⁾ also reported that 84.16% and 86.7% students respectively favoured ban on tobacco use in public places.

Although awareness of the harmful effects of tobacco was high (81.1%) in our study, 24.7% of them were still currently using tobacco products. Also, 92.8% students were aware of the harmful effects of passive smoking. This shows that the high level of awareness was not fully able to curb the habit of tobacco use in our study population. The level of awareness in the present study is comparable to studies by Bartwal *et. al.*, (90.76%)⁽¹²⁾ and Khan *et.al.*, (89.53%).⁽²⁴⁾

CONCLUSION AND RECOMMENDATIONS

This study reflects a high prevalence of tobacco use among the medical students. Also a high level of awareness regarding harmful effects of tobacco use and a positive attitude towards cessation of the substance was observed in our study which reveals that knowledge regarding the ill effects of tobacco use has not been able to check its use.

So, it is recommended that it is essential to introduce teaching on tobacco dependence and cessation early in the

medical curriculum to strengthen the knowledge of the students on tobacco hazards at the earliest. Specific training in tobacco cessation techniques for developing appropriate skills and counselling on a regular basis to help them overcome the desire to use tobacco can be of great help. Developing rehabilitation programmes for the vulnerable students that are non punitive and supportive can also help them in quitting tobacco. Moreover, legislative steps banning use of tobacco in college campus can be introduced and strictly followed.

Conflict of Interests:

The authors declare that they have no conflict of interests.

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