Original Articles

PREVALENCE AND DETERMINANTS OF SMOKING AMONG THE COLLEGE STUDENTS IN SELECTED DISTRICT OF BANGLADESH

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Abstract:

Cigarette smoking is an intractable public health problem that poses threat to the health of the entire population. Smoking is considered as the single largest risk factor for a variety of malignancies, including lung cancer. The prevalence of smoking is gradually increasing among the students in Bangladesh. Considering this view, this cross sectional study was conducted in a selected higher secondary college of Moulvibazar district under Sylhet division. The objectives of the study were to determine the proportion of current smokers and its determinants among the college students. A total of 719 students were interviewed using self administered questionnaire. The mean age (SD) of the students was 17.1(SD 1.5) years ranging from 15 to 22 years. Majority of the respondents were male (57.4%) and 42.6% were female with male-female ratio of 1.3:1. Out of 719 students, 22% were current smokers and the rest 78% were non smokers. Half of the students reportedly mentioned that they started smoking due to peer pressure followed by curiosity (34%), to avoid anxiety and tension (28%), feeling of maturity (14%, symbol of manliness (9%) etc. The most frequent form of smoking was cigarette(56%) followed by Bidi (37%), Hukkah (6%) and 2% hand made cigarette. The mean age of starting smoking was 13(SD 2.9) years ranging from 9 to 20 years. More than one third (35%) of the student's father were smokers, whereas 11.5% of their brothers were smokers. Logistic analysis revealed that only age, sex and educational attainment appeared to be important predictors of smoking (p<0.001). This indicates that the smoking was 4.26 times high among male students than their female counterparts. It was 2.1 times higher among the students aged 18 years and above than below 18 years. It was also 2 times higher among students of twelve grades than eleven grades. The smoking among the young population as a whole and also among female students is alarming. This should be addressed properly to create awareness among them and proper measures should be taken to prevent smoking among young population.

Key words: *Smoking, Higher secondary school, Bangladesh*

Introduction:

Tobacco use is one of the major preventable causes of premature death and disease in the world. A disproportionate share of the global tobacco burden falls on developing countries, where an estimated 84% of the world's 1.3 billion current smokers live. As many other third world countries, Bangladesh is experiencing an increasing trend of smoking, while the prevalence of smoking in the developed countries is declining. Up till now, very little is known about the pattern and prevalence of smoking in general and specifically among the young adults, who are the target of the ever expanding tobacco market. In developed countries, most smokers start at a younger age; almost 80% initiate their smoking at teens. In developing countries, it happens by late adolescence, but it is observed that the age of initiation is becoming lower. For example, in Indonesia, 9% started smoking at the age of 10-14 years, and 55% at the age of 15-19 years. In 2001, 10% of smokers had started when aged 10-14 years, and 59% when they were 15-19 years old. It is also observed that prevalence of smoking among male aged 15-19 years increased from 4% in 1995 to 24% in 2001.[1]

About half of Bangladeshi men and one fifth of women use tobacco in either smoking or smokeless form. The decline of tobacco smoking observed in developed countries, however, is not evident in many developing countries including Bangladesh. Despite the high level of poverty in Bangladesh, smoking rates are relatively high and smoking prevalence is the highest among the poorest. Prevalence of smoking declines proportionally as income increases.[2] There are several studies indicating smoking behavior among teenagers throughout the world. The principal predictors of smoking among the adolescents are parental household influence, peer pro-smoking influence and environmental predisposition. The peer group includes sibling and friends. It is also found that age, socio-cultural status, level of education and racial differences all affect smoking initiation by teenagers. The association between greater educational attainment and decreased smoking is observed in more developed countries. In several countries where multiethnic society exists, it is observed that

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acculturation is strongly associated with smoking initiation. In some studies, the age of initiation of smoking is found less than 15 years and male sex is more likely to smoke at an earlier age.[3, 4] This study investigates smoking behavior among college students (eleven and twelve grade students) in Moulvibazar district under Sylhet division with an aim to analyze the impact of socio-economic, demographic, cultural and environmental factors for initiation and continuation of smoking behavior among adolescents.

Materials and Methods:

This cross-sectional study was designed to determine the prevalence and determinants of smoking among college students. The study was carried out at Moulvibazar Higher Secondary College under Sylhet Division. The college and students were selected purposively. The study was conducted for a period of one year starting from June 2007 to July 2008. Data was collected from 719 students using self administered questionnaire. For smooth conduction of the study, a questionnaire was developed consisting of several parts. The first part of the interview schedule was consisting of socio-demographic status related questions and the second part consisted of smoking habits and its patterns. The third part of the questionnaire was attitude towards smoking. However, in the present study, first and second part of the questionnaire was analyzed. The questionnaire was finalized following pretest. The students were informed about the purpose of the study and their voluntary participation was sought. Before data collection, a written informed consent was taken assuring that the collected data would be kept confidential. Data were collected, checked and cross-checked (triangulation) before entry into a computer and analyzed with the help of SPSS Windows Software Programme (version 16). The data were presented in simple frequency tables and also presented in diagram. Cross tabulation was done to find any association between two variables and was tested by Chi-square. To identify the factors influencing smoking, binary logistic regression analysis was done.

Results:

Socio-demographic characteristics: The mean age (SD) of the students was 17.1(SD 1.5) years ranging from 15 to 22 years. More than two thirds (71%) were in the age group less than 18 years. Majority of the respondents were male (57.4%) and 42.6% were female with male-female ratio of 1.3:1. Among the respondents, 72.6 were in class XI and the rest were Class XII students. More than two fifths (44.2%) of the students had urban background and 55.8% had rural background. Majority of the students were Muslim (75.4%) and the rest were Non Muslim students. The mean family size was 6(SD 2.0) ranging from 2 to 12. Two fifths (41.4%) of the respondents reportedly

mentioned that their family head were engaged in business followed by service (36.4%), agriculture (22.1%). Majority of the student's parents were literate and a very few of them were illiterate (Table 1).

Table-I : *Socio-demographic characteristics of the students*

Variables	No.	%	Mean (SD)
Age in years			17.1(1.15) yrs;
<18	511	71.1	Range= 15-22
≥18	208	28.9	
Sex			
Male	413	57.4	
Female	306	42.6	
Level of education			
Class XI	522	72.6	
Class XII	197	27.4	
Residence			
Urban	318	44.2	
Rural	401	55.8	
Religion			
Muslim	542	75.4	
Non-Muslim	177	24.6	
Family size			
<6	352	49.0	6.0 (SD 2.0);
≥6	367	51.0	Range = 2-12
Occupation of household head			
Service	262	36.4	
Business	298	41.4	
Agriculture	159	22.1	
Parental literacy			
Illiterate	19	2.6	
Literate	700	97.4	

Smoking and its patterns: Out of 719 students, 22.1 were current smokers and the rest 77.9% were non smokers. Considering the reasons for smoking, 50% were reported that they started smoking due to peer pressure followed by curiosity (34%), to avoid anxiety and tension (27.7%), feeling of maturity (13.8%), symbol of manliness (8.8%), unhappy family environment (8.2%). However, 24.5% of the respondents mentioned that they started smoking without any reason. Among the smokers, 22% regularly smoked and 41.5% were irregular and 36.5% were occasional smokers. Regarding the type of tobacco used, more than half of the respondents mentioned that they smoked cigarette(56%) followed by Bidi (36.5%), Hukkah (5.7%) and 2% hand made cigarette. The mean age of starting smoking was 13(SD 2.9) years ranging from 9 to 20 years. More than one third (35%) of the student's fathers were smokers, whereas 11.5% of their brothers were smokers (Table-II).

Table-II: *Characteristics of the smokers*

Characteristics	No.	%
Smoking status (n=719)		
Yes	159	22.1
No	560	77.9
*Reasons for smoking (n=159)		
Peer pressure	79	49.7
Curiosity	54	34.0
To avoid anxiety and tension	44	27.7
For nothing	39	24.5
Feeling of maturity	22	13.8
Symbol of manliness	14	8.8
Unhappy family environment	13	8.2
Regularity of smoking (n=159)		
Regular	35	22.0
Irregular	66	41.5
Occasional	58	36.5
Mean age at initiation (years)	159	13(SD 2.9) yrs; Range= 9 to 20 yrs
Pattern of smoking (n=159)		
Cigarette	89	56.0
Bidi	58	36.5
Hand made cigarettes	3	1.9
Hukkah	9	5.7
Father's smoking status (n=719)		
Smoker	253	35.2
Non smoker	466	64.8
Mother's smoking status (n=719)		
Smoker	14	1.9
Non smoker	705	98.1
Brother's smoking status (n=719		
Smoker	83	11.5
Non smoker	636	88.5

* Multiple responses

Relationship between smoking and selected socio-demographic variables: Bi-variate analysis: Analysis revealed that smoking was significantly associated with age, sex, educational attainment (class), residence, religion, family size, occupation of the household head, parental literacy, parental and sibling smoking (p<0.05) indicating the proportion of smoking was found to be high among the students aged 18 years and above with male predominance, rural residence, family size 6 and above, agriculture in occupation, parental and sibling smoking. But no statistically significant association was found between religion and parental literacy (p>0.05) (Table-III).

Table-III: *Smoking status by selected socio-demographic characteristics*

Variables	No.	Smoking status Yes (%)	No(%)	p value
Age in years				
<18	511	14.3	85.7	0.001
≥18	208	41.3	58.7	
Gender				
Male	413	32.2	67.8	0.001
Female	306	8.5	91.5	
Level of education				
Class XI	522	16.7	83.3	0.001
Class XII	197	36.5	63.5	
Residence				
Urban	318	17.6	82.4	0.010
Rural	401	25.7	74.3	
Religion				
Muslim	542	22.3	77.7	0.812
Non-Muslim	177	21.5	78.5	
Family size				
<6	352	18.5	81.5	0.021
≥6	367	25.6	74.4	
Occupation of household head				
Service	262	21.0	79.0	0.001
Business	298	17.4	82.6	
Agriculture	159	32.7	67.3	
Parental literacy				
Illiterate	19	31.6	68.4	0.314
Literate	700	21.9	78.1	
Father's smoking status				
Smoker	253	28.9	71.1	0.001
Non smoker	466	18.5	81.5	
Mother's smoking status				
Smoker	14	50.0	50.0	0.011
Non smoker	705	21.6	78.4	
Brother's smoking status				
Smoker	83	39.8	60.2	0.001
Non smoker	636	19.8	80.2	

Factors influencing smoking: Multivariate analysis: To investigate the factors for influencing smoking, a logistic regression model was fitted with a dependent variable, smoking status (dichotomous variable) and the independent variables included a number of socio-demographic characteristics. Although smoking was significantly associated with age, sex, educational attainment (class), residence, religion, family size, occupation of the household head, parental literacy, parental and sibling smoking (p<0.05), but in logistic analysis, only age, sex and educational attainment appeared to be important predictors of smoking (p<0.001). This indicates that the smoking was 4.26 times high among male students than the in female counterparts. It was 2.1 times higher among students aged 18 years and above than below 18 years. It was also 2 times higher among students of twelve grades than eleven grades (Table 4).

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Table-IV : *Smoking status and selected characteristics: Logistic regression Analysis*

Independent variables	b	p value	Odds ratio	95.0% C.I	
Age in years					
<18 (RC)					
≥18	0.768	0.001	2.155	1.342	3.460
Sex					
Female (RC)					
Male	1.449	0.001	4.260	2.609	6.957
Class					
Class XI (RC)					
Class XII	0.644	0.010	1.903	1.170	3.096
Residence					
Urban	0.137	0.548	1.147	0.733	1.793
Rural (RC)					
Family size					
<6	-.218	0.288	0.804	0.537	1.203
e''6 (RC)					
Occupation					
Service	-.290	0.219	0.749	0.472	1.188
Business	0.291	0.288	1.338	0.782	2.291
Agriculture (RC)					
Father's smoking					
Smoker	0.258	0.216	1.295	0.860	1.949
Non smoker (RC)					
Mother's smoking					
Smoker	0.160	0.787	1.173	0.369	3.729
Non smoker (RC)					
Brother's smoking					
Smoker	0.474	0.099	1.606	0.914	2.822
Non smoker (RC)					
Model chi square	120.834				
df	10				
Significance	0.001				
N	719				
Constant	-2.841	0.001			

RC= Reference category

Discussion:
In the present study, the prevalence of current smoking among college students was 22%. Similar current smoking estimates of 22.3% and 28.5% were found among college students in USA in the years 1993 and 1971.[5] Prevalence of smoking among college students studying in private and public colleges in three towns of Karachi was 24% as described by Rozis, Butt, and Akhtar in their study correlates of cigarette smoking among male college students in Karachi, Pakistan.[6] However, a study conducted in Karachi on school going adolescents reported a

prevalence of current smoking to be 13.7%.[7] Prevalence of smoking among female students in general population is only 3.6% (n=719); but the prevalence of smoking among female students was 8.5% (n=306) and among males was 16.4% (n=159). This figure indicates that for every six smokers in a college there is one female smoker. This is being supported by prevalence of smoking as estimated by WHO for both sexes was 18.6% among college students, 35.5% for male and 3.1% for female students in Bangladesh. While male predominance in smoking has been reported in many settings, this finding is not universal. Steele et al. had reported that girls were more likely to be current and former smokers in Minnesota, United States. [8]

The mean age of our student population was 17.1(SD 1.15) years and the range was 15 to 22 years. Their beliefs, attitudes and smoking behavior were similar to those of the subjects in other studies with similar populations;[9] the finding was also supported by the finding by Ohida et al.[10] Many studies have examined predictors of smoking among adolescents. Environmental variables are often found to be the strongest predictors. Reid et al. reported that young people in Western countries had easy access to cigarettes, the perception that tobacco use is the norm, peers' and siblings' positive attitudes, and were associated with adolescent smoking.[11] In our study, we have also found that 50% of the students mentioned that they have started smoking due to peer pressure followed by curiosity (34%), to avoid anxiety and tension (27.7%), feeling of maturity (13.8%), symbol of manliness (8.8%), unhappy family environment 8.2%). However, 24.5% of the respondents mentioned that they started smoking without any reasons. Among the smokers, 22% regularly smoked and 41.5% were irregular and 36.5% were occasional smokers; and it is supported by the study by Baska et al.[12] and Cheng.[13] Data analysis indicated that smoking of the students is significantly associated with father's smoking (p<0.05). A statistically significant association was found between sex of the students (p<0.05), but no statistically significant association was found between parental education (p>0.05), though the proportion of smoking was found to be high among illiterate parents. Similar finding was revealed by Kurt et al.[14]

In different studies it was found adolescents' motivation for smoking. Survey results indicated that curiosity, social norms, and pressures were the main reasons for beginning smoking and that pleasure, addiction, and desire were the main reasons for continuing. In our study considering the reasons for smoking, they were mentioned that they started smoking due to peer pressure followed by curiosity, to avoid anxiety and tension, feeling of maturity, symbol of manliness, unhappy family environment etc. However, 25% of the respondents

reported that they started smoking without any reason. For current smoking, pleasure and addiction were mentioned most often. A number of gender differences occurred with 10th grade students beginning and current smoking.[15]

Data found that the proportion of smokers were also significantly high among the rural students compared to urban and the difference was statistically significant p<0.01). Similar finding was also stated by Lutfiyya et al.[16] Their results indicated that rural high school students were significantly more likely than metropolitan and suburban youths to both try tobacco products and to become regular smokers. Bi-variate analysis revealed a statistically significant association between smoking and family size (p<0.05) indicating smoking was found to be high among the students having family members 6 and above. The reason for smoking in a larger family may lie in the fact that the young adults imitate the older ones, and the chance of being influenced by the smokers in the family is higher than that of the smaller family. This finding is also supported by the finding by Kegler et al.[17]

Though the study findings could not be generalized due to sample size and purposively selected study places, but analysis identified age, sex and educational attainment as the important predictors of smoking. Our study suggests that such factors should be taken into account when designing effective tobacco control programs among college students. This is an effort which has been done to reduce tobacco consumption among college students and introduce awareness programs to amend their health risk behavior. Cigarette smoking is prevalent among college-going adolescents in Bangladesh. There is a need to implement public health interventions, with special attention to the determinants of smoking in this age group.

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