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Prevalence and Factors Associated with Tobacco Consumption Among Students of a Selected Private University in Bangladesh

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ABSTRACT

Objectives: Tobacco consumption has a significant association with several health problems. Among the eight leading causes of morbidity and mortality, tobacco consumption is the major risk factor for six causes. This study aimed to find out the prevalence and the factors associated with tobacco consumption among the students at a private university.

Methods: This cross-sectional study was conducted at Daffodil International University from January to May 2017, and data were collected using a structured questionnaire.

Results: A total of 384 students participated in this study. The findings showed that 184 (48.4%) of the students of a private university were smoking any form of tobacco. Age, place of residence, knowledge of the consequences of tobacco consumption, health problems that the respondents were suffering, an affair of love, the frequency of library had a significant association with tobacco consumption.

Conclusion: Identifying associated risk factors is important to develop a prevention program and mitigate the epidemic situation of tobacco consumption among the students.

Keywords: Bangladesh, risk factors, students, tobacco consumption, universities

INTRODUCTION

The tobacco epidemic is one of the biggest threats to public health. Due to this threat, more than 5 million are dying for direct tobacco consumption and near to 1 million deaths of non-smokers being exposed to second-hand smoke.^[1] It is established in public health that tobacco consumption is a proven risk factor. Tobacco consumption has a substantial contribution to raising the epidemic of non-communicable diseases.^[2] Nearly four out of

five smokers lived in low- and middle-income countries where the expense on tobacco, tobacco-related illness and death are the heaviest burden.^[3] The tobacco consumption in the form of smoke or smokeless is higher in the South-East Asian region. A study revealed that among Bangladeshi, the rate of death due to tobacco is 28 persons per hour, which is a quarter million in a year.^[3]

Approximately 42% of the Bangladesh men are addicted to tobacco, and the number is almost double among the male of slum dwellers in Dhaka, and its adjacent areas are tobacco smokers.^[3]

Tobacco consumption has a significant association with several health problems. Among the eight leading causes of morbidity and mortality, tobacco consumption is the major risk factor for six causes. Tobacco is consumed in many different forms, including cigarettes or bidis or pan masala in South and South-East Asia.^[4] Tobacco is the only legal consumer product that harms to its consumers as well as the people who are surrounding to the consumers. Although the harmfulness of tobacco is very well known to all, tobacco use is increasing due to low prices, belligerent and widespread marketing, lack of awareness about its dangers, and inconsistent public policies against its use.^[5]

Smoking among the students, especially in Bangladesh, is gradually increasing.^[6] University students constitute high-risk groups regarding the adoption of risky behavior, such as smoking and illicit substances use.^[7, 2] However, there is a scarcity of information in this regard. The current research aimed to find out the prevalence of tobacco consumption among the students and the factors associated with tobacco consumption in one of the private universities in Bangladesh, at the Daffodil International University (DIU).

METHOD

This cross-sectional study was conducted at Daffodil International University from January to May 2017. The target population of this study was students of DIU who were available during this study and give their consent for participation. The sampling unit was an individual student, and purposive sampling was used. All the five Faculties of DIU included, and the semesters of this study were also maintained. A male student of DIU who was in their second or higher semesters and was available at the time of this study was included in this study, where DIU students who were sick at the time of this study and students who were studying at any other educational institutions other than DIU were excluded from this study.

Sample Size Determination

DIU has more than 20000 students. The following formula was used to calculate sample size

$$n = \frac{z^2 pq}{d^2}$$

here, n is the desired sample size

z = 95% confidence value which is 1.96

p is proportion in target population estimated to have the characteristics. In this study, we assume p is 50% or 0.50

$$q = 1 - p = 1 - 0.50 = 0.50$$

d = degree of accuracy required, usually set at 0.05 level.

Therefore,

$$n = (1.96)^2 (0.5) (1 - 0.5) / 0.05^2$$

$$= (1.96)^2 (0.5) (0.5) / 0.05^2$$

$$= 0.9604 / 0.0025 = 384.16$$

$$n = 384$$

The research instrument used in this study was a self-administered structured questionnaire. Data were collected using a self-administered questionnaire. A well-constructed questionnaire was distributed to the selected students. The questionnaire included information about tobacco consumption and socio-demographic characters. Data were analyzed using Statistical Package for Social Sciences and Microsoft Excel. Simple frequencies, means and standard deviations were utilized for continuous variables, and bivariate analyses like chi-square were carried out as appropriate. This study was ethically approved by the research ethics committee of the Faculty of Allied Health Sciences of DIU on 09/04/2017. All participants signed a written consent form.

RESULTS

A total of 384 male students participated in this study. Distributions of the respondents by sociodemographic characteristics are summarized in Table 1.

This study documented the prevalence of smokers in this study. Among the respondents, 186 (48.4%) found smokers and 198 (51.6%) were nonsmokers. Among smoker respondents, 178 (95.7%) were cigarette smokers, only 1 (0.5%) of Bidi smokers and 7 (3.8%). Prevalence and patterns of tobacco consumptions among the respondents are summarized in Table 2.

Table 1. Distributions of the respondents by socio-demographic characteristics

Variable	Frequency (n)	Percentage (%)
Age		
18-23 years	284	73.9
24-28 years	97	25.3
29-31 years	3	0.8
Number of family members		
1-3	38	9.9
4-5	255	66.4
6-25	91	23.7
Monthly family income BDT		
5000-13000	12	3.1
15000-25000	81	21.1
26000-40000	134	34.9
41000-60000	90	23.4
65000-100000	67	17.5
Faculty of study		
Faculty of Science and Technology	122	31.8
Faculty of Business & Economics	67	17.4
Faculty of Humanities & Social Sciences	13	3.4
Faculty of Engineering	119	31.0
Faculty of Allied Health Sciences	63	16.4
Religion		
Muslim	344	89.6
Hindus	35	9.1
Christian	2	0.5
Buddhist	2	0.5
Others	1	0.3
Present residence type		
Mess	235	61.2
Home	107	27.9
Lodging/relative house	10	2.6
Hostel	32	8.3
Personal income		
Yes	87	22.7
No	297	77.3
Source of personal income		
Job holder	67	77.0
Business	12	13.8
Other	8	9.2
Monthly personal income BDT		
2000-5000	10	11.5
5000-10000	41	47.1
12000-100000	36	41.4

Table 1. CONT.

Variable	Frequency (n)	Percentage (%)
Monthly personal expenditure BDT		
1000-5000	10	11.5
5000-10000	36	41.4
11000-80000	41	47.1
Father's educational level		
No formal education	13	3.4
Up to class VI	46	12.0
Up to SSC	63	16.4
Up to HSC	80	20.8
Up to Bachelor's degree	95	24.7
Master's degree or higher	87	22.7
Mother's educational level		
No formal education	18	4.7
Up to class VI	80	20.8
Up to SSC	108	28.1
Up to HSC	98	25.5
Up to Bachelor's degree	48	12.5
Master's degree or higher	32	8.4
Father's occupation		
Government service	97	25.3
Non-government service	37	9.6
Business	158	41.1
Farmer	31	8.1
Retired	25	6.5
Jobless	6	1.6
Others	30	7.8
Mother's occupation		
Service holder	56	14.6
House wife	322	83.9
Others	6	1.5
Number of people living a room		
Single	89	23.2
2 people	112	29.1
3 people	109	28.4
4 people	74	19.3
Place of residence		
Urban	258	67.2
Rural	126	32.8
Had affair with someone		
Yes	165	43.0
No	219	57.0

BDT: Bangladeshi Taka (currency); #the value is calculated after omitting outlier.

Slightly higher than three-fourths 143 (76.9%) of the respondents started smoking before university study, and 43 (23.1%) started smoking after university study. Nearly one-third 117 (30.5%) of the students had family members who

Table 2. Prevalence and patterns of tobacco consumptions among the respondents

Variable	Frequency (n)	Percentage (%)
Smoke tobacco (n=384)		
Yes	186	48.4
No	198	51.6
Type of smoking do you usually use (n=186)		
Cigarette	178	95.7
Bidi	1	0.5
E-cigarette	7	3.8
Frequency of smoking (n=186)		
I smoke daily	119	63.9
I smoke sometimes	44	23.7
I smoke occasionally	23	12.4
Number of sticks smoke in a day (n=186)		
≤10	146	78.5
11-20	31	16.7
>20	9	4.8
Type of SLT usually used (n=30)		
Zarda	16	53.3
Gul	5	16.7
Sadapata	5	16.7
Others	4	13.3
Frequency of SLT consumption (n=29)		
I use SLT daily	15	51.7
I use SLT sometimes	6	20.7
I use SLT occasionally	8	27.6
Amount of SLT consumed in a day (n=29)		
≤3	17	58.6
4-7	11	37.9
>7	1	3.5

SLT: Smokeless tobacco.

smoked while 267 (69.5%) of the students did not. Slightly higher than a quarter of the students had one smoker family member 97 (82.9%), followed by 20 (17.01%) who have two to four smokers in their families. Initiation, influencers and family member's tobacco consumption status of the respondents are summarized in Table 3.

In the evidence of respondent's knowledge of tobacco consumption and its effects on health more than four-fifths of

the respondent's knowledge related to the following issue were found correct: Tobacco is harmful 328 (90.9%), smoke from other people's cigarette is harmful 332 (91.0%), and tobacco causes cancer 317 (85.0%) and health warning of cigarette packet 351 (91.6%). Knowledge of tobacco consumption of the respondents are summarized in Table 4.

This study found that there was a significant association between smoking behaviors and the age group ($p=0.001$), number of family members ($p=0.026$), faculty of study ($p=0.001$) of the respondents. There was a significant association found between smoking behaviors and the place of residence ($p<0.001$), present residence type ($p<0.001$), and personal income ($p=0.002$) of the respondents. A significant association found between smoking behaviors and the mother's educational level ($p=0.014$) and father's occupation ($p=0.008$) of the respondents. Association of sociodemographic characteristics and smoking behavior of the respondents are summarized in Table 5. There was evidence of the association between smoking behavior and knowledge on tobacco consumption and its health effect. A significant association found between smoking behavior and knowledge on tobacco consumption causes mouth infection ($p=0.008$), stomach infection ($p=0.001$), loss of taste ($p=0.037$), loss of appetite ($p<0.001$), dental plaque ($p=0.002$), ulcer ($p<0.001$), and heart disease. There was a significant association between smoking behaviors and the health problems that the respondents were suffering during the last six months and types of disease those were consulted with the doctor ($p=0.005$). There was a significant association between smoking behaviors and the health problems respondents were suffering from, which is stress ($p=0.010$). Association of knowledge, health status and smoking behavior of the respondents are summarized in Table 6.

DISCUSSION

This study revealed the prevalence of tobacco consumption among male students at DIU. The overall prevalence of current smoking among the respondents in our study was 48.4%. This prevalence is remarkably lower than the reports from other surveys conducted in Bangladesh in which the prevalence of current smoking was 60.2%, where males smoked at higher rates than females.^[8]

Our findings show that the overall prevalence of smokeless tobacco (SLT) uses among students is 7.8%, which is lower than the reported estimates from the Global Adult Tobacco Survey 2009 study.^[9] Data found that the proportions of smokers were also significantly high among the rural students compared to similar urban finding was also stated by other research in Bangladesh.^[10] It is found

Table 3. Initiation, influencers and family member's tobacco consumption status of the respondents

Variable	Frequency	Percentage (%)
Age initiated smoking (years) (n=186)		
5-17	54	29.1
18-22	123	66.1
23-27	9	4.8
Initiation of smoking and university study (n=186)		
Before university	143	76.9
After university	43	23.1
Family Member/s smoke (n=384)		
Yes	117	30.5
No	267	69.5
Number of family members who smoke (n=117)		
One member	97	82.9
Two to four members	20	17.1
Age initiated SLT consumption (years) (n=29)		
5-17	13	44.8
18-22	14	48.2
23-24	2	7.0
Initiation of SLT consumption and university study (n=29)		
Before university	25	86.2
After university	4	13.8
Influencers of smoking		
Friends		
Yes	154	82.8
No	32	17.2
Siblings		
Yes	4	2.2
No	182	97.8
Relatives		
Yes	7	3.8
No	179	96.2
Movie		
Yes	10	5.4
No	176	94.6
Others		
Yes	16	8.6
No	170	91.4
Influencers of SLT consumption		
Friends		
Yes	22	75.9
No	7	24.1
Parents		
Yes	2	6.9
No	27	93.1
Teachers		
Yes	1	3.4
No	28	96.6
Movie		
Yes	2	6.9
No	27	93.1
Others		
Yes	2	6.9
No	27	93.1
Family members who use tobacco	Smoking (%)	SLT (%)
Fathers	63.5	48.0
Mothers	0.8	28.0
Siblings	24.6	10.7
Other family members	11.1	13.3

SLT: Smokeless tobacco.

Table 4. Knowledge of tobacco consumption of the respondents

Variable	Frequency (n)	Percentage (%)
Tobacco is harmful (n=361)		
Correct	328	90.9
Incorrect	33	9.1
Smoke from other people's cigarette is harmful (n=365)		
Correct	332	91.0
Incorrect	33	9.0
Tobacco consumption cause cancer (n=373)		
Correct	317	85.0
Incorrect	56	15.0
Tobacco consumption cause mouth infection (n=373)		
Correct	133	35.7
Incorrect	240	64.3
Tobacco consumption cause stomach infection (n=373)		
Correct	94	25.2
Incorrect	279	74.8
Tobacco consumption cause loss of taste (n=373)		
Correct	104	27.9
Incorrect	269	72.1
Tobacco consumption cause loss of appetite (n=361)		
Correct	77	20.6
Incorrect	296	79.4
Tobacco consumption cause dental stone/plaque (n=373)		
Correct	98	26.3
Incorrect	275	73.7
Tobacco consumption cause stroke (n=373)		
Correct	132	35.4
Incorrect	241	64.6
Tobacco consumption cause ulcer (n=373)		
Correct	92	24.7
Incorrect	281	75.3
Tobacco consumption cause heart disease (n=373)		
Correct	127	34.0
Incorrect	246	66.0

Table 4. CONT.

Variable	Frequency (n)	Percentage (%)
Noticed about health warning on the cigarette packet (n=383)		
Correct	351	91.6
Incorrect	32	8.4
Type of health warning observed (n=364)		
Text warning	105	28.9
Pictorial warning	35	9.6
Both	224	61.5
Type of health warning which is more understandable (n=362)		
Text warning	67	18.5
Pictorial warning	71	19.6
Both	224	61.9

that there is a significant association between smoking behaviors and some socio-demographic characteristics of the respondents like the age group, number of family members, faculty, and place of residence, present residence type, personal income, father's educational level, mother's educational level, father's occupation and the affair to love of the respondents which agrees with the other studies of Asia.^[10, 5]

The initiation of tobacco smoking was found to be dramatically increased after 18 years of age until 22 years, which agrees with the other study conducted in Dhaka, Bangladesh.^[8] The majority of the students who participated in this study were knowledgeable about the link between smoking cigarettes and chronic diseases, which is encouraging for future programs targeting smoking cessation. The findings of the present study are consistent with Dhaka's^[8] study. Friends were considered to have the highest influence on initiating tobacco consumption. Other researchers had similar results.^[11] This study reveals most of the student smokers started smoking before university study, which contradicts that of the national survey of the United States college students, which considers college time to be a time when many students are trying a range of tobacco products.^[12] This study showed that smoking was associated with the respondents aged 18-23 years. Another study of Nepal had similar results.^[2] The mean age of initiating tobacco smoking was 18.66 years, whereas that of initiating SLT was 17.72 years. This finding remarkably higher than that of study in Nepal in which the mean age of initiating tobacco smoking was 13.79 years, whereas that of initiating tobacco chewing was 13.58 years.^[2] This study revealed

Table 5. Association of the socio-demographic characteristics and smoking behavior of the respondents

Variable	Smoking behavior		Chi-square	p
	Yes (n=186)	No (n=198)		
Age, n (%)				
18-23 years	123 (66.1)	161 (81.3)	13.18	0.001
24-28 years	60 (32.3)	37 (18.7)		
29-31 years	3 (1.6)	0 (0.0)		
Number of family members, n (%)				
1-3	15 (8.1)	23 (11.6)	7.3	0.026
4-5	136 (73.1)	119 (60.1)		
6-25	35 (18.8)	56 (28.3)		
Faculty of study, n (%)				
Faculty of Science and Technology (FSIT)	59 (31.7)	63 (31.8)	17.8	0.001
Faculty of Business & Economics (FBE)	38 (20.4)	29 (14.7)		
Faculty of Humanities & Social Sciences (FHSS)	7 (3.8)	6 (3.0)		
Faculty of Engineering (FE)	66 (35.5)	53 (26.8)		
Faculty of Allied Health Sciences (FAHS)	16 (8.6)	47 (23.7)		
Place of residence, n (%)				
Rural	146 (78.5)	112 (56.6)	21	<0.001
Urban	40 (21.5)	86 (43.4)		
Present residence type, n (%)				
Mess	103 (55.4)	132 (66.7)	33	<0.001
Home	48 (25.8)	59 (29.8)		
Lodging/relative house	4 (2.1)	6 (3.0)		
Hostel	31 (16.7)	1 (0.5)		
Personal income, n (%)				
Yes	55 (29.6)	32 (16.2)	10	0.002
No	131 (70.4)	166 (83.8)		
Mother's educational level, n (%)				
No formal education	4 (2.2)	14 (7.1)	17.5	0.014
Up to class VI	29 (15.6)	51 (25.7)		
Up to SSC	53 (28.5)	55 (27.8)		
Up to HSC	55 (29.6)	43 (21.7)		
Up to Bachelor's degree	30 (16.0)	18 (9.1)		
Master's degree or higher	15 (8.1)	17 (8.6)		
Father's occupation, n (%)				
Government service	54 (29.0)	43 (21.7)	17.3	0.008
Non-government service	15 (8.1)	22 (11.1)		
Business	84 (45.2)	74 (37.4)		
Farmer	7 (3.8)	24 (12.1)		
Retired	14 (7.5)	11 (5.6)		
Jobless	3 (1.6)	3 (1.5)		
Others	9 (4.8)	21 (10.6)		
Affair with someone, n (%)				
Yes	89 (47.8)	76 (38.4)	3.507	0.061
No	97 (52.2)	122 (61.6)		

Table 6. Association of health status, knowledge and smoking behavior of the respondents

Variable	Smoking behavior		Chi-square	p		
	Yes	No				
Tobacco consumption cause mouth infection (n=373)						
Yes	53 (29.0)	80 (42.1)	7.019	0.008		
No	130 (71.0)	110 (57.9)				
Tobacco consumption cause stomach infection (n=373)						
Yes	32 (17.5)	62 (32.6)	11.343	0.001		
No	151 (82.5)	128 (67.4)				
Tobacco consumption cause loss of taste (n=373)						
Yes	42 (23.0)	62 (32.6)	4.34	0.037		
No	141 (77.0)	128 (67.4)				
Tobacco consumption cause loss of appetite (n=373)						
Yes	24 (13.1)	53 (27.9)	12.430	<0.001		
No	159 (86.9)	137 (72.1)				
Tobacco consumption cause dental stone/plaque (n=373)						
Yes	35 (19.1)	63 (33.2)	9.476	0.002		
No	148 (80.9)	127 (66.8)				
Tobacco consumption cause ulcer (n=373)						
Yes	29 (15.8)	63 (33.2)	15.033	<0.001		
No	154 (84.2)	127 (66.8)				
Tobacco consumption cause heart disease (n=373)						
Yes	47 (25.7)	80 (42.1)	11.195	0.001		
No	136 (74.3)	110 (57.9)				
Faced any type of disease during last six months (n=383)						
Yes	30 (16.1)	65 (33.0)	14.591	<0.001		
No	156 (83.9)	132 (77.0)				
Type of disease consulted/treated (n=66)						
Fever	3 (12.0)	11 (26.9)	25.172	0.005		
Ulcer	3 (12.0)	0 (0.0)				
Headache	1 (4.0)	1 (2.4)				
Cold	3 (12.0)	3 (7.3)				
Gastric disease	3 (12.0)	1 (2.4)				
Heart disease	2 (8.0)	0 (0.0)				
Respiratory disease	3 (12.0)	1 (2.4)				
Ophthalmic disease	0 (0.0)	4 (9.8)				
Oral/Dental disease	2 (8.0)	0 (0.0)				
Cough	2 (8.0)	3 (7.3)				
Other	3 (12.0)	17 (41.5)				
Had stress (n=384)						
Yes	80 (43.0)	69 (34.8)			2.7	0.010
No	106 (57.0)	129 (65.2)				

that respondent's knowledge of tobacco consumption causes cancer. This study is consistent with another study conducted in Iraq in which the knowledge score was high for lung cancer.^[13] The majority of the respondents agreed that Tobacco was harmful, another study in South Africa had similar findings where most of the adult respondents agreed that the health effects of smoking were serious or very serious.^[14]

CONCLUSION

The prevalence of tobacco consumption among the students of private universities is very high (48.4%), regardless of the health risks associated with tobacco use. This study reveals that tobacco smoking is initiated before university admission and continues throughout the university years. Most of the student's tobacco consumption is influenced by friends. Significant association with tobacco uses and respondent's socio-demographic characteristics, such as

age, place of residence, knowledge of the consequences of tobacco consumption, health problems that the respondents were suffering and the affair of love, frequency of library use by the respondents. The campaigns which would work against tobacco consumption should target the youth population, especially university students. This study has been conducted at the selected private university in Bangladesh; further studies in this regard can be helpful. University can establish anti-tobacco regulating cell to monitor and counseling the students.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Ethics Committee Approval: Research Ethics Committee of the Faculty of Allied Health Sciences, Daffodil International University, Dhaka, Bangladesh on 09/4/2017.

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