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Factors Influencing Smoking Among School-Going Adolescents in Dhaka City–A Mediating Effect of Point of Sales

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ABSTRACT

The present study was conducted in the high schools of Dhaka city to determine the tendency of smoking among school-going adolescent in Dhaka city, and to identify the factors that influence their habit to initiate smoking. The chosen methodology is quantitative, non-experimental descriptive type of cross-sectional study. Data have collected from school going students through questionnaire and multistage cluster sampling have used to determine the sample. To analysis the data SPSS have used. Nearly half (65.5%) of adolescent students studying in grades seven, eight, nine and ten were ever users of tobacco. Adolescents from nuclear family smoke more than joint family. Government school students were 12% higher to use tobacco compared to private school students. The average age of initiating tobacco use was 12-13 years. About one of five adolescent students began tobacco use before 13 years of age. than the private school's student. A significant proportion (23.5%) of the adolescent students reported that at least one of their family members (parents, siblings and other members residing permanently) use any tobacco products and nearly (28%) reported that at least one of their cousin use tobacco. On the other hand, around (48.5%) mentioned their friends using tobacco. To reduce the adolescent school going smoker, parents and school authority can play a vital role. A book chapter could be introduced in the school syllabus where tobacco and its side effects will be discussed.

Keywords: Smoked Tobacco; Adolescent; School Students; Point of Sales

Introduction

Bangladesh is one of the largest tobacco consuming countries in the world. Over 58% of men and 29% of women use some form of tobacco, whether smoked or smokeless. At present, adolescent school going students' tobacco use has become a growing problem in Bangladesh. The use of smoked items among school going students age between 12-19 is increasing at a rate of 4%. Bangladesh faces considerable health and economic consequences from tobacco. Over 57,000 deaths are attributed to tobacco use each year. The economic costs of tobacco use in Bangladesh accounted for over 3% of GDP in 2004 (Table 1). With a thorough review of recent research nearly one out of five people on the planet smoke cigarettes and an estimated 800 million of these are in developing countries. It is estimated that one third of the world's adult population, of whom 200 million are female, are smokers. Globally, 47% of men and 12% of women are smokers. Tobacco use has become one of the leading causes of preventable death in world. According to (Sultana P, et al.

[1]), "Bangladesh is one of the highest tobacco consuming countries in the world, with reported 21.2% of the population as daily smokers, 24.3% as smokeless tobacco users, and 36.3% as adult passive smoker". This numbers are increasing daily at an alarming rate. Presently, about four million people globally die yearly from tobacco related diseases. Smoking and other nonsmoking tobacco related items are being used by all classes of people.

Table 1: Response rate of the study by Age group of the students.

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12-13	25	12.5	12.5	12.5
	14-15	85	42.5	42.5	55.0
	16-17	90	45.0	45.0	100.0
	Total	200	100.0	100.0	

The use of tobacco among students are also increasing very fast. A study in Bangladesh showed that 22.1% of students have smoking habit and it is increasing terrifyingly due to avoid anxiety and tension, feeling of maturity, symbol of manliness and unhappy family environment (Haq, et al. [2]). Adolescent school going students have also started to use tobacco related items. If current trend goes on, there will be one death in every three seconds by 2030 and majority death will be in developing countries. Tobacco kills up to half of its users and causes premature mortality and morbidity, contributes to health inequalities and exacerbates poverty. The Global Adult Tobacco Survey (GATS) 2017 revealed the social gradient in tobacco use in Bangladesh in which prevalence increases with decreasing socioeconomic status. About 24% of those in the highest wealth quintile use tobacco compared to 48% of those in the lowest wealth quintile. Smoking and passive smoking are collectively the biggest preventable cause of death in Bangladesh, with major public health burden of morbidity, disability and mortality and community costs. Bangladesh is one of the top ten countries in the world with high current smoking prevalence of 44.7% among men .This country is distinguished as the first signatory of the World Health Organization (WHO).

Framework Convention on Tobacco Control (WHO FCTC) which was ratified on 10 May 2004. The ratification was made concrete with the passage of the Tobacco Control Act (TCA) on 15 March 2005. These tobacco control measures are expected to reduce smoking. Yet a robust science base exists on social, biological, and environmental factors that influence young people to use tobacco. These students are at high risk of initiating and continuing smoking as they are likely to be exposed to peers who smoke. At the same time, they face social, emotional, and educational challenges when they enter the university settings. In Bangladesh, the numbers of tobacco smokers are increasing rapidly because of the availability of cheap tobacco products, lack of strong tobacco control regulations, and weak enforcement of existing regulations (Barakat A, et al. [3]). The Global Adult Tobacco Survey conducted by WHO reported that Bangladesh is one of the top ten countries in the world with high tobacco use (both smoking and smokeless forms) with a prevalence of 43.3% among adults (41.3 million), with 44.7% of men and 1.5% of women engaging in tobacco smoking. A study based on demographic and health survey data reported that the prevalence of tobacco smoking among men in Bangladesh is 60%. Another study among male university students in 2009 stated that 36.1% students smoked tobacco. Among fourth-year dental students, the prevalence of cigarette smoking was reported to be 49.5% and 1.7% in males and females, respectively. An increasing trend of tobacco smoking is anticipated to occur among students and this could be related to perceived alleviation of stress, life problems, peer pressure, social acceptance, class history of smoking, lower educational level of parents, and the desire to attain higher societal class. Smoking among students in Bangladesh has been poorly investigated that students may be lacking knowledge on the link between smoking and adverse health effects.

School going students are smoking because of personal factors and social factors. Not only that, the tobacco point of sales has a great impact in increasing the use of smoking among school going children. If the use of smoked tobacco items among adolescent school going children at the rate of 4% continues then in near future, we will have more adult passive smokers (Siddiqi, et al. [4]). School going students mainly buying and using tobacco because of its availability, word of mouth, experimental attitude, showoff tendency and the influence of media. If corrective measure is not taken at the initial stage, then this rate will grow at a faster rate. At the present time policy makers are focusing only adult tobacco user but problem lies bottom of the pyramid which is school going children. Approximately 50% of men in developing countries are smokers and cigarette consumption is steadily rising in these countries, particularly among women and youth. Tobacco use is predicted to be one of the major causes of death and disability-adjusted life years (DALYs) in the 21st century (Champman, et al. [5,6]).

Significance of the Study

Total number of students is 4.21 million in Dhaka city. There is very limited study has been conducted on the use of tobacco items among youth and university going students. But there is no study found focusing the school going students' use of smoked tobacco items and its accessibility. The aim of the study was to estimate the prevalence of tobacco smoking among students and to identify factors that may be related to both initiation and prevalence of tobacco smoking. Tobacco use and other high-risk behaviors are emerging as significant problems in our society. The unhealthy behaviors acquired during adolescence are continued throughout

the life cycle, resulting in adverse effects on the individual, family and society.

Methodology

In the present study, the chosen methodology is quantitative analysis, because the research involved examination of the variables to determine possible relationships among variables by using statistical analysis. Quantitative study frequently tests the assembled hypothesis with findings are predictive, explanatory and confirming. Targeted population for this study was school going adolescent students in Dhaka city.

Sampling Technique and Data Collection

Multistage cluster sampling has been used to derive the sample where two city corporation areas have been selected, first stage/cluster, different selected area under each city corporation have been second stage/cluster, schools in the selected fields have been the third stage/cluster and adolescent students in the chosen school have been the last stage/cluster of this study. The questionnaire have been divided in 2 sections, first one was demography information and second section was related to variables. The questionnaires were distributed to the students of selected classes after explaining the purpose of the study and the instructions to fill it.

Ethical Consideration

All the information have collected for the research purpose and not disclose to anyone outside the research team. Verbal consent have taken from all participating school's authority and students.

Results

General characteristics of the study population: The total number of completed survey questionnaire fill up by the respondents in the study was 200. The majority (45.0%) of the respondents were of the age group 16-17 years. Followed by 14-15 years old adolescent's school going students and 12.5 % is 12-13 years old. About (56%) of the respondents were from governmental schools and (44%) were from the private school. (Fig 4). As per the survey results are showing, 45% of the total respondents are in the age group of 16-17, 42.5 % are in 14-15 years old and 12.5% are 12-13 years old. School going adolescents whose age is 16-17 smoke more followed by 14-15 and 12-13 years respectively (Table 1). As per the result of the survey analysis, students who are studying class 9 participated in the survey more with 45%. Class ten students were 29%. Students who are studying in class eight was 16% and seven was 10% (Table 2). From the table it's clear that class nine students are more exposed to smoking than any other class students. Adolescents from the nuclear family participated more in the survey with 76.5%, and joint family adolescents were 23.4 % (Table 3).

Table 2: Percentage of level of education of the students.

Education		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seven	20	10.0	10.0	10.0
	Eight	32	16.0	16.0	26.0
	Nine	90	45.0	45.0	71.0
	Ten	58	29.0	29.0	100.0
	Total	200	100.0	100.0	

Table 3: Percentage of the students by Smoking Experience.

Tried smoking		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	131	65.5	65.5	65.5
	No	69	34.5	34.5	100.0
	Total	200	100.0	100.0	
Total	200	100.0			

Respondents Smoking Experience

Among the 200 respondents, around 131 experienced smoking which is 65.5 % of the total respondent and only 34.5 % never experienced the smoking before but may get influenced by the majority of the cluster. (Tables 3 & 4) shows that, Among 200 students 49% percent are smoke less than 6 months and only 4% have experience more than 1 years. Rest of the students have smoking experience within 6 months to 1 year (Table 4).

Table 4: Percentage of students according to duration of smoking.

Duration of smoking	Number of students (total number 200)	Percentage of students % (total 100%)
Less than 6 months	98	49%
6 months	56	28%
1 year	38	19%
More than 1 year	08	4%

Respondents get influenced for Smoking

Friends influence the adolescents to experience smoking items more with 48.5% whereas family members contribute to the influencing factor by 23.5% and relative influences 28%. From the result is very clear that friends and relatives are the most influential person in smoking (Figure 1). Association between smoking habit and age of respondents : There is an association between smoking habit and age of respondents. Age 14-15 School going adolescent smoke more than any other smoking age group (Table 5).

Table 5: Association between smoking habit and age of respondents.

Age			Habit of Smoking		Total
			Yes	No	
Age	12-13	Count	38	26	64
		% of Total	29.0%	37.68%	32.0%
	14-15	Count	52	23	77
		% of Total	39.70%	33.33%	38.5%
	16-17	Count	41	20	61
		% of Total	31.30%	28.99%	30.5%
Total		Count	131	69	200
		% of Total	65.5%	34.5%	100.0%

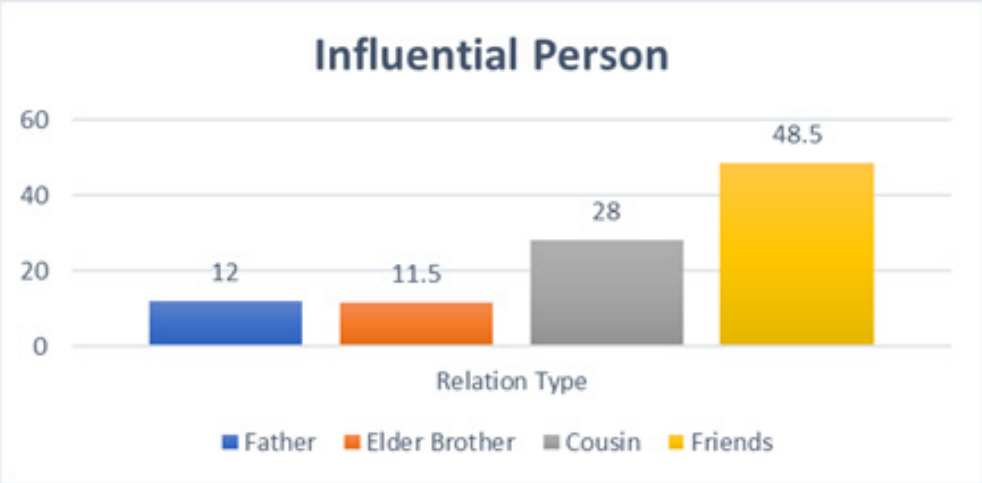

Figure 1: The Influences of the persons worked on students for smoking.

Association between Smoking Habit and Level of Education

As per the result, students studying class nine smoke (49.62%) and a second-highest smoking group of students are from class eight (Table 6). Class seven students smoke (13.74%) and class ten students' (15.27%) respectively. Each subscript letter denotes a subset of Education categories whose column proportions differ significantly from each other at the .05 level (Figure 2).

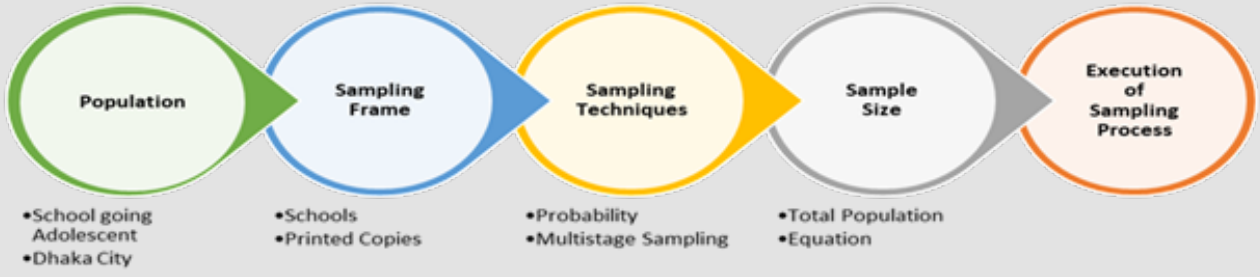

Figure 2: Sampling design.

Table 6: Association between smoking habit and Education level of respondents.

			Education				Total
			Seven	Eight	Nine	Ten	
Smoking Habit	Yes	Count	18	28	65	20	131

		% of Total	13.74%	21.37%	49.62%	15.27%	65.5%
	No	Count	15	13	25	16	69
		% of Total	21.74%	18.84%	36.23%	23.18%	34.5%
Total	Count	33	41	90	58	200	
	% of Total	16.5%	20.5%	45.%	29.0%	100.0%	

Association between Smoking Habit and Age of Respondents

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Association Between Smoking Habit and Influential Person

Table 12 shows, 61.83% of school-going adolescent students are highly influenced by the peer group or friends. However, 14.50% of students are influenced by relatives. It is also noticeable that 15.27% of students are smoking as because their elder brother smokes not only that around 8.39% reported they started smoking as their father smoke at home. Each subscript letter denotes a subset of Influenced categories whose column proportions differ significantly from each other at the .05 level.

Data Analysis for variables

This section deals with the tobacco use pattern of adolescent students among grades7, 8, 9 and 10 from both governmental and private schools of Dhaka North and South. All the variables, Personal factors, Social factors, POS and Use of tobacco Items are analyzed descriptive statistics and checked the mediation type. The Chi Square statistic Chi-Square for testing relationships between categorical variables (Statistical Solution, 2019). It is also explained that the Chi-Square statistic is most commonly used to evaluate Tests of Independence when using a cross-tabulation (Table 7).

Table 7: Association between smoking habit and Influential Person.

Smoking Habit * Influenced Cross tabulation			Influenced By				Total
			Father	Elder Brother	Cousin	Friend	
Tried Smoking	Yes	Count	11	20	19	81	131
		% of Total	8.39%	15.27%	14.50%	61.83%	65.5%
	No	Count	15	22	17	15	69
		% of Total	21.74%	31.88%	24.64%	21.74%	34.5%
Total		Count	26	42	36	96	200
		% of Total	13.0%	21.0%	18.0%	48.0%	100.0%

Table 8: Relationship Between Personal factor (PF) and Used of tobacco items (UTI).

chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	442.679a	308	0
Likelihood Ratio	302.081	308	0.40%
Linear-by-Linear Association	89.258	1	0
N of Valid Cases	200		

Note: a. This table has expected count less than 5. The minimum expected count is .05.

Table 9: Relationship Between Social factor (SF) and Used of tobacco items (UTI).

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	334.906a	224	0.02
Likelihood Ratio	259.241	224	0.003
Linear-by-Linear Association	41.386	1	0
N of Valid Cases	200		

Note: a. 250 cells (98.0%) have expected count less than 5. The minimum expected count is .05.

Table 10: Correlation Coefficient between personal factor, Social factor and Point of sales.

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.218	1.448		2.222	0.027	0.362	6.074
	PF	0.354	0.053	0.477	6.673	0	0.249	0.459
	SF	0.066	0.069	0.068	0.957	0.34	-0.07	0.202
	POS	0.041	0.077	0.033	0.533	0.595	-0.111	0.193

Note: a. Dependent Variable: UTI (Use of tobacco items).

Association between Personal Factor and Used Smoked Tobacco Items

The result of table 13 shows that there is a significant relationship between personal factor and used smoked tobacco items. Association between Social Factor and Used Smoked Tobacco Items: As per the result of Table 14, there is a significant relationship between social factor and used smoked tobacco items. As per the result of table 14, there is a significant relationship between social factor and used smoked tobacco items. To check the correlation of variables and items, we performed Descriptive Statistics and Coefficient analysis (Tables 8-10).

Discussion

Nearly half (65.5%) of adolescent students studying in grades seven, eight, nine and ten were ever users of tobacco. Adolescents from nuclear family smoke more than joint family. In most of the cases, school-going adolescent experiences their first tobacco smoke by the influence of friends though family members and relatives have also influenced these students to smoke. School-going adolescents are exposed to tobacco items more because of the point of sale. According to GYTS (2002), 4 out of 5 students buy tobacco item from nearby shops. Among adolescents, school-going students, the experimental use of tobacco, showoff and influence of media was higher than other influential factors in the various study. Thus, the use of tobacco is increasing in Dhaka city as a higher proportion of adolescents are currently experimenting the tobacco products especially smoked tobacco products like bidi and cigarette (Pandey, et al. [7]). The average age of initiating tobacco use was 12-13 years. During this age, adolescents' activities are less supervised by their parents than in their earlier life and also are more influenced by the activities and behavior of friends and relatives. As both younger and older students are studying in the same school, the younger ones were influenced by the behavior of older ones.

These older students could have a real influence on the younger students in terms of the younger ones wanting to follow the behavior of the older ones. A significant proportion (23.5%) of the adolescent students reported that at least one of their family members (parents, siblings and other members residing permanently) use any tobacco products. Tobacco use of family members is expected to influence adolescents. When adolescents are exposed to the tobacco use habit of family members, they are more likely to perceive tobacco use as positive and acceptable behavior. Thus, this helps to develop favorable personal beliefs and subjective norms about tobacco use, and ultimately leading youth to take up the habit (Green, et al. [8-11]). Nearly (28%) of school-going adolescent students reported that at least one of their cousin use tobacco. On the other hand, around (48.5%) mentioned their friends using tobacco. During adolescence, the relationship with the relatives and peer group become stronger than family members, and thus, young people are influenced more by the habits of their friends. Imitating the behavior of friends is a common practice among adolescents who want to be like their peers and affects them to use tobacco. The recent Nepali study (Calverton, et al. [12]) also explained that youths close friends who smoke were more likely to experiment and continue smoking and the effect of peer group is stronger.

Although detailed studies on the influence of family members and friends were not available in Bangladesh, different international studies suggested results similar to this study. A positive correlation was observed with parental tobacco use from a study in Tunisia. Several other studies showed that adolescents with a parent or older siblings or a friend who smoke cigarettes are more likely to be smoker. Nearly one third (42%) of adolescent students reported that they saw tobacco promotional advertisements in the media or at social or sporting events. Although the advertisement of tobacco products in national electronic media (i.e. Radio and Television) is already banned, national newspapers and magazines with high youth readerships are still publishing the attractive advertisements of tobacco products. Besides, youths are being targeted through large billboards on city corners and through sporting events, music concerts, street festivals and other social events and gatherings that are sponsored by the tobacco companies. Around (31.4%) respondent claims point of sale nearby school is the most accessible to purchase smoked tobacco items another (12%) mentioned floating seller helps to buy cigarette easily in front of school gate.

Tobacco companies have long been known to design marketing strategies aimed at young potential tobacco users through

different marketing approaches. After all tobacco advertisement in national television and radio was banned in Bangladesh long back, tobacco companies targeted adolescents through attractive advertisements in social media, large billboards on major city corners and by sponsoring different social activities. In addition, adolescents continue to be exposed to tobacco advertisements on foreign television channels that are accessible in Bangladesh. The results of this study showed that adolescent students exposed to tobacco promotional advertisements were 1. 11 times more likely to use tobacco than those who were not exposed. Similarly, other research has shown that youth who were regularly exposed to such advertisements were more likely to use tobacco.

Conclusion and Recommendations

Although a majority (85.4%) of adolescent students claimed to know the hazards of tobacco use, the results showed that about one fourth (14.6%) of the respondents, Personal factors have great impact on school going adolescent students to experience the smoke tobacco items but the impact of social factors is even higher among adolescent. Whereas the impact of point of sale plays another vital role to attract adolescent to smoke. A high proportion (65.5%) of adolescent students were ever-users of tobacco. These students more commonly used smoking items like cigarette and Biri. Most of the ever-users initiated tobacco use by 12-13 years of age. The majority of them are experimental users but are potential regular users in the future. Among ethnic groups, a higher proportion of adolescent students of the nuclear family were using tobacco than other groups (Choudhury, et al. [13]). For building mass awareness, School-based educational programs focusing on all forms of smoking and its effects should be planned and implemented.

Individual attention and culturally- appropriate education programs should be targeted at the adolescent students of the nuclear family. Different intervention programs should focus on various aspects like programs to discourage the uptake of tobacco among adolescent students between 12-13. Tobacco use by close relatives, friends and family members were influential factors for tobacco use of adolescent students. A substantial proportion of adolescent students are being exposed to the tobacco use behavior of family members and friends, creating an environment to develop more tobacco users in the future. Parental counseling is necessary to inform them about the influence of their tobacco use on their children. Programs to protect every adolescent from being exposed to the tobacco use of others are necessary (WHO, et al. [8,9,14]). Health education programs should be provided to adolescent students to raise the level of awareness of the threats of tobacco use and to change their perceptions. More anti-tobacco messages in the print, radio and/or television and psycho-social support to help students to develop a positive self-image to counter-act the pro-tobacco message are necessary.

This study suggests that exposure to tobacco promotional advertisements steers students towards the use of tobacco. Although tobacco-related advertisements are already banned in national electronic media, youths are being targeted through billboards, magazines and newspapers, and by the sponsorship of social and other events of youth interest by the tobacco companies (Zikmund, et al [15,16]). Efforts should be made to legislate a complete ban of all direct and indirect tobacco advertisements in the print and broadcast media [17-26]. Restrictions should be made in sponsoring targeted youth activities by tobacco companies. Besides, school authority should not allow shops allowing cigarette or bidi. This study suggests, therefore, that knowledge of health hazards is not sufficient to protect individuals from initiating tobacco use, although education is a necessary component of a comprehensive tobacco control program.

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