

# Perceptions about the Health Effects of Passive Smoking among Bangladeshi Young Adults

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**Abstract:** Passive smoking is now firmly established as a significant cause of morbidity and mortality. Assessment of young adults' perceptions, understanding and knowledge of the health effects of passive smoking may promote educational endeavours to increase awareness of the passive smoking-linked health effects and to facilitate interventions. The study, therefore, assessed the perceptions of young adults in Bangladesh about the health effects of passive smoking. This cross-sectional descriptive study was conducted among 656 young adults in two districts under Dhaka division of Bangladesh. The study used a multistage cluster random sampling approach. Binary logistic regression was used for identifying the predictors of perceptions that passive smoking is harmful. The vast majority of the respondents believed that passive smoking causes illnesses but the knowledge of specific health effects was limited. Most (87.2%) respondents perceived that passive smoking causes 'some' or 'a lot' of harm to health of both adults and children. However, disparities in perceptions were prevalent across their educational levels. The results of logistic regression analysis showed that, after adjusting other factors, respondents who had nine or more years of education were 6.7 times likelihood of perceiving that passive smoking causes "some" or "lot of harm" compared to those who had no education. The findings suggested that more efforts, including some appropriate measures to address knowledge gaps, are needed to increase better perception about the harmful effects of passive smoking among young adults.

**Keywords:** Second hand smoke, Knowledge, Health effects, Young adults.

## BACKGROUND

Smokers not only put themselves at risk of serious health problems but people around them can also be exposed to much potential dangers. Passive smoking, also known as exposure to second hand smoke (SHS) or environmental tobacco smoke, is the involuntary inhalation of other people's cigarette smoke [1]. There is no risk-free level of SHS exposure, and even brief exposure can cause immediate harm [2]. Nowadays, passive smoking is important as it causes harm to human health and well-being [3].

Being exposed to SHS has a significant impact on the health of a child before birth and in childhood, and can continue to have an impact on his/her health into adulthood [4]. Passive smoking causes lung cancer, coronary heart disease, onset of symptoms of heart disease, asthma attacks in those already affected, worsening of symptoms of bronchitis, stroke, and reduced foetal growth (low birthweight baby, premature birth) [5]. Children exposed to SHS are at an increased risk of sudden infant death syndrome (SIDS), acute respiratory infections, middle ear infections (otitis

media), and more severe asthma [2]. Exposure to SHS slows the growth of children's lungs and can cause them to cough, wheeze, and feel breathless [2, 6].

Bangladesh is one of the world's most densely-populated countries, with over 22 million adult smokers [7]. The high prevalence of smoked tobacco use among adults (23.0%; male: 44.7%, and female: 1.5%) in Bangladesh means that a large number of adults and children are exposed to tobacco smoke pollution at their home and/or in other public venues [7]. Although children are exposed to SHS in other places, its primary source is their homes [8]. In Bangladesh, about 45% of adults (definition >15 years) and 48% of young adults (aged 15-24 years) are exposed to SHS in public places, while 63% of adults and 57.7% of young adults are exposed to SHS at the workplace [7]. Results of a study by the WHO showed that approximately 44.0% of the total population of Bangladesh was exposed to SHS at their homes and this indoor smoking mostly affects children, women, the elderly, and disabled people who spend most of their time at their homes [9].

It has consistently been established that smokers and the population in general, have a limited understanding of the extensive range of health effects that are associated with passive smoking. The continuum of change associated with eliminating non-

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smokers' exposure to passive smoking usually starts with increasing people's knowledge of the health effects of exposure to passive smoking, altering their attitudes towards the acceptability of exposing non-smokers to SHS and increasing their support for passing and enforcing tobacco-free policies [10]. Such changes can lead to increase in the number of smoke-free environments as people become more aware about the public-health benefits of smoke-free air [10].

Perception of risks from passive smoking exposure among adolescents can discourage their smoking initiation. Thus perception on passive smoking risks are more important than perceived risks of active smoking in the decision-making process of underlying smoking initiation [11].

The study was, therefore, designed to assess the level of perceptions and knowledge about the health effects of passive smoking among young Bangladeshi adults with specific focuses on the socio-demographic factors relating to level of perceptions. The research findings may be used for guiding targeted policy implications for tobacco control in Bangladesh.

## **METHODS AND MATRERIALS**

### **Study Area and Population**

This community-based cross-sectional study was done in four areas of Dhaka division, such as Bhuapur upazila of Tangail district and Tangail Sadar, Belabo upazila of Narsingdi district and Narsingdi Sadar. Tangail, a district in central region of Bangladesh, is located 99 km northeast of Dhaka, the capital city of Bangladesh. Bhuapur upazila is 29 km from Tangail central. Narsingdi district is also situated in central Bangladesh. It is located 50 km northeast of Dhaka. Belabo upazila is 35 km from Narsingdi central. Both the districts are part of Dhaka division. Respondents were recruited for the study from the four study areas, specifically aiming at young adults aged 15-24 years who met the eligibility criteria of the study.

### **Procedures**

A multistage cluster random sampling approach was adopted. Tangail and Narsingdi districts were selected from 17 districts of Dhaka division by random-sampling method. Bhuapur and Belabo upazilas were chosen randomly from each of the two districts. One village was selected randomly from each upazila to represent the rural community and the Sadar upazila (district headquarters) of that district was taken to stand

for the urban context. A systematic sampling method was used for selecting both urban and rural households.

At 95% confidence level with 5% relative precision, the estimated sample-size was 656 young adults. The sample-size was divided according to the proportionate distribution of population in each district. So, the sample-size included 406 respondents from Tangail district and 250 from Narsingdi district.

To select the sample households, the interviewers chose a specific place (usually the central point) as a starting point for the study. The direction for the study in the locality was chosen entirely by chance (toss of a coin). Only households having at least one young adult male or a female respondent aged 15-24 years were considered provided the respondents agreed to participate in the study. Adults who were extremely ill, mentally handicapped, or unwilling to participate were excluded from the study. All the households agreed to participate in the study.

The questionnaire was developed in English. It was first translated in Bangla (National language of Bangladesh) and then retranslated in English. Bangla version of the questionnaire was used for data collection. Questionnaire was pretested in a community with similar demographic characteristics to the four study communities. The trained data-collectors collected data through face-to-face interviews with the study subjects. Written informed consent was obtained from participants who were aged over 18 years and from parents or legal guardians for those who were aged less than 18 years. The study was approved by the Bangladesh Medical Research Council (BMRC).

### **Measures**

#### ***Demographic Characteristics***

As part of the overall study, demographic information on gender, age, residence (rural, urban), marital status, type of family, and education, was collected from the respondents. The marital status variable was collapsed from its original three categories (unmarried, married, divorced) into two categories: 'unmarried' and 'married'. The divorced group (n=2) was combined with the married group due to the low sample-size.

#### ***Knowledge about Health Effects of Passive Smoking Exposure***

Knowledge about the health effects of passive smoking was assessed by 8 statements on a 5-point

Likert scale ranging from one (Strongly agree) to five (Strongly disagree). To measure the knowledge on the health effects of passive smoking exposure, the respondents were asked: "Based on what you know, does passive smoking affects the health of adults/children?" They were then read a list of four health effects for adults and four health effects for children. Additionally, for frequency analysis, the 'agree' and 'strongly agree' responses were combined into one category and the 'disagree' and 'strongly disagree' into another. This resulted in three categories of responses: 'agree', 'neither agree nor disagree', and 'disagree'.

### **Dependent Variable**

The dependent variable examined was perceptions about the health effects of passive smoking exposure. Question on perception was formulated to evaluate respondents' responses to question about the harm of passive smoking exposure. Respondents were asked breathing smoke from other people's cigarettes causes 'no harm', 'little harm', 'some harm', or 'a lot of harm'? The respondents who answered 'some harm' or 'a lot of harm' were considered perceiving passive smoking as harmful [12].

### **Analysis of Data**

Data collected during the study were checked in the field before they were entered and analyzed using the SPSS software (version 20, SPSS Inc., Chicago, IL,

USA). After descriptive analysis of demographic and social characteristics of the respondents, a chi-square test was used for examining whether or not an association existed between the respondents' level of perception and the socio-demographic characteristics. A p value of <0.05 was considered significant. Additionally, a binary logistic regression model was fitted with perceptions about passive smoking harm as the dependent variable. The independent variables included: age, sex, marital status, level of education, occupation, and type of family.

### **RESULTS**

Of the 656 respondents, about 64.9% were aged 15-19 years; over 77.4% were male; about 81.9% were single; and about 75.6% had nine or more years of education. Sixty-eight percent were students, and a highest majority (80.2 %) of the respondents belonged to the nuclear family.

Tables 1 and 2 shows the extent to which the respondents agreed that smoking was indeed a cause of each of the eight health effects in adults and children. Overall, the respondents had good knowledge on the relationship of passive smoking with asthma and cancer. However, their knowledge on the relationship of passive smoking with low birthweight, otitis media in children, and stroke in adults was limited. When asked about the specific adverse health effects, none responded that it can lead to otitis media in children.

**Table 1: Respondents' Level of Knowledge Regarding Health Effect of Passive Smoking on Adults (n-656)**

Variable	No.	%
<b>Passive smoking causes and aggravates asthma in adults</b>		
Strongly agree/ Agree	459	70.0
Neither agree nor disagree	145	22.1
Strongly disagree/ Disagree	52	7.9
<b>Passive smoking makes people more likely to suffer from cancer</b>		
Strongly agree/ Agree	558	85.1
Neither agree nor disagree	46	7.0
Strongly disagree/ Disagree	52	7.9
<b>Passive smoking raises the risk of heart attack</b>		
Strongly agree/ Agree	402	61.3
Neither agree nor disagree	189	28.8
Strongly disagree/ Disagree	65	9.9
<b>Passive smoking raises risk of a stroke</b>		
Strongly agree/ Agree	186	28.4
Neither agree nor disagree	350	53.4
Strongly disagree/ Disagree	120	18.3

Results are expressed as n (%).

**Table 2: Respondents' Level of Knowledge Regarding Health Effect of Passive Smoking on Children (n-656)**

Variable	No.	%
<b>Passive smoking causes low birthweight baby</b>		
Strongly agree/ Agree	40	6.1
Neither agree nor disagree	538	82.0
Strongly disagree/ Disagree	78	11.9
<b>Passive smoking causes and aggravates asthma in children</b>		
Strongly agree/ Agree	412	62.8
Neither agree nor disagree	196	29.9
Strongly disagree/ Disagree	48	7.3
<b>Passive smoking makes children more likely to suffer from cancer</b>		
Strongly agree/ Agree	542	82.6
Neither agree nor disagree	52	7.9
Strongly disagree/ Disagree	62	9.5
<b>Passive smoking causes otitis media</b>		
Strongly agree/ Agree	-	-
Neither agree nor disagree	438	66.8
Strongly disagree/ Disagree	218	33.2

Results are expressed as n (%).

When inquired about the effects of passive smoking on the foetus were inquired, only 6.1% mentioned that it might lead to low birthweight baby.

Although most (96.6%) respondents believed that breathing other people's smoke can cause serious illness in non-smokers, only 3.4% reported that

**Table 3: Association between Socio Demographic Profile and Level of Perception (n-656)**

Variable	Perceptions about passive smoking		p-value*
	Not harmful	Harmful	
	No. (%)	No. (%)	
<b>Age(Yrs)</b>			
15 to 19	53(12.5)	371(87.5)	0.752
20 to 24	31(13.4)	201(86.6)	
<b>Gender</b>			
Female	29(19.6)	119(80.4)	0.005
Male	55(10.8)	453(89.2)	
<b>Marital status</b>			
Married	31(26.1)	88(73.9)	< 0.001
Unmarried	53(9.9)	484(90.1)	
<b>Education level</b>			
No education	7(50.0)	7(50.0)	< 0.001
1 to 8 years of education	35(24.0)	111(76.0)	
9 or more years of education	42(8.5)	454(91.5)	
<b>Occupation</b>			
Other than students	47(22.5)	162(77.5)	< 0.001
Students	37(8.3)	410(91.7)	
<b>Type of family</b>			
Nuclear family	63(12.0)	463(88.0)	0.202
Joint family	21(16.2)	109(83.8)	

χ<sup>2</sup>-test was used. \*The level of significance at α=0.05.

**Table 4: Logistic Regression Analysis Considering Level of Perception as Dependent Variable**

Independent variable	$\beta$ coefficients	p-value*	OR	95 % CI for Exp ( $\beta$ )	
				Lower	Upper
<b>Age</b>	0.123	0.024*	1.131	1.016	1.259
<b>Gender</b>					
Female	Reference		1		
Male	0.452	0.107	1.572	0.908	2.722
<b>Marital status</b>					
Married	Reference		1		
Unmarried	0.640	0.117	1.896	0.853	4.213
<b>Education level</b>					
No education	Reference		1		
1 to 8 years of education	1.147	0.053	3.150	0.986	10.064
9 or more years of education	1.915	0.002**	6.788	2.016	22.850
<b>Occupation</b>					
Other than students	Reference		1		
Students	0.710	0.089	2.034	0.898	4.611
<b>Type of family</b>					
Nuclear family	Reference		1		
Joint family	0.166	0.597	1.180	0.638	2.183
Constant	-3.244	0.014	0.039		

$\beta$  for standardized regression coefficients; level of perception was taken as a dependent variable whereas others were taken as independent variables.

\*Significant at  $p$  value of  $<0.05$ ; \*\*Significant at  $p$  value of  $<0.01$ ; and CI=Confidence interval, OR=odds ratio.

exposure to passive smoking causes 'no harm', 9.5% reported that it causes 'little harm', 48.6% reported that it causes 'some harm', and 38.6% reported that exposure to passive smoking causes 'a lot of harm'. Results of categorical bivariate analyses showed that the socio-demographic characteristics, such as being male ( $p<0.01$ ), unmarried ( $p<0.001$ ), students ( $p<0.001$ ), educated ( $p<0.001$ ) were positively associated with perception (Table 3).

The adjusted odds of perceiving that breathing passive smoking causes 'some' or 'a lot of' harm was significantly higher among students with nine or more years of education ( $p<0.01$ , OR=6.79, 95% CI 2.02-22.85) (Table 4).

## DISCUSSION

The present study assessed the knowledge of young adults about the effects of passive smoking on health, and the perceptions of predictors of passive smoking harm. The findings shed light on beliefs about passive smoking in Bangladesh—one of the leading public-health threats to the country.

The findings showed that about 96.6% of the young adults aged 15-24 years believed that breathing other people's smoke can cause serious illness in non-smokers. This finding is comparable with those of the Global Adult Tobacco Survey (GATS) conducted in Bangladesh in 2009, which found that 95.2% of young adults were aware that exposure to other people's smoke causes serious illness in non-smokers [7]. This result of the present study is also consistent with the International Tobacco Control (ITC) survey conducted in Mauritius (96.3%) and France (95.8%) in 2010 [13].

Over 85% of the study subjects agreed that passive smoking causes lung cancer in adults, which is similar to the finding of the study by Abdullah *et al.* [14] and the 2010 ITC survey in Mauritius (83.4%), Canada (81.4%) [13]. The prevalence of higher knowledge may be because the aggressive media coverage focused on passive smoking as a causative factor for lung cancer. Findings also showed that respondents possessed good knowledge about the harms of passive smoking with 70% knowing that passive smoking causes asthma and 61.3% knowing that passive smoking causes heart attack in adults. These findings are

comparable to the findings of a study in Victoria, Australia [15]. However, the findings of our study revealed the major gaps in the knowledge of other health effects. For example, only 28% acknowledged that passive smoking causes stroke, which is one of the leading causes of mortality in Bangladesh [16]. This may be because of less attention of the media on this issue in the country. On the other hand, the mass people are more familiar to the factors, such as obesity, diabetes, and hypertension, which play an important role in developing stroke.

The exposure of children to passive smoking is associated with a wide range of adverse health outcomes for them [2, 6]. The knowledge of harmful effects is the key determinant in reducing the exposure of children to passive smoking as the legislations cannot reach the home, which is the primary place of passive smoking for children [17]. In our study, 62.8% of the respondents had knowledge about passive smoking causing childhood asthma, which was lower than the findings of a study by Abdullah *et al.* in Bangladesh where, overall, 91.2% of Bangladeshis were aware that passive smoking causes asthma in children [14]. The probable reason of the difference may be due to the age-group of the study population. In addition, most (93.9%) respondents of our study could not identify the specific effects of passive smoking on the foetus. This result is consistent with a study in Pakistan where pregnant women also were unaware of the foetal risks associated with passive smoking [18]. Moreover, none of our study respondents was aware of the association of passive smoking with otitis media. To the best of our knowledge, no studies recorded this relationship in this context and scenario. But these two issues are very important as both low birthweight babies (prevalence in Bangladesh is 26.2%, OECD Health Data 2012; UNICEF Childinfo, World Bank, World Development Index) and otitis media are the two major health outcomes prevalent in this part of the world, and passive smoking is a well-known preventable cause for these conditions.

The findings of our study further revealed that most (87.2%) respondents perceived that passive smoking causes 'some' or 'a lot of' harm; however, disparities in perceptions exist across different educational levels. The lower level of education was a significant predictor of having lower level of perception about the health effects of passive smoking exposure, which was similar to results of studies in Bangladesh [14] and the USA [12]. Illiteracy and lower level of education of respondents may be responsible for the lower level of

understanding regarding the health risks of passive smoking [19]. Illiterate people could be benefited from health warnings that are graphic, larger, and more comprehensive in nature [20]. To maintain a high level of knowledge among the Bangladeshi people, the existing tobacco-control promotional campaigns should be regularly continued.

## CONCLUSIONS

The study concludes that most young adults perceive passive smoking as harmful and educated young adults have better perception about harmful effects of passive smoking. However, findings reveal major gaps regarding knowledge about the diseases associated with passive smoking.

The findings of the study suggest that, targeted educational interventions should be established for the low literate group. Also, appropriate measures are needed to address the gaps of knowledge about the diseases associated with passive smoking.

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