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Advertisement Restriction and Tobacco Consumption: A Case Study of Dhaka Rickshaw-pullers

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Abstract

Tobacco control policies are essential to improve the life of the poor as well as the economic welfare of the country. Bangladesh loses 5% of its GNP due to malnutrition. The level of poverty increased because of tobacco consumption both at the individual and national level. The consumption of a pack per day of an inexpensive brand like Navy can constitute 4% of household income. If tobacco consumption can be eliminated, it will save US \$ 15 million annually which is used to import tobacco, and will increase job opportunities by 18% if smokers spend their money on other goods and services, as well as increase investment in housing, education and health care. This paper investigates the null hypothesis that increase of advertising restriction will not decrease tobacco consumption among the poor rickshaw-pullers of Bangladesh and uses a limited version of the rational addiction model. This paper shows that advertising restriction has a positive impact on the poor rickshaw pullers of Bangladesh since it decreases the consumption of tobacco. If the new law becomes effective, it can save the lives of millions of citizen from health hazards and death.

Introduction

Bangladesh is one of the poorest and most overpopulated countries in the world. Half of its population live below the poverty line (defined as consuming less than 2122 calories/day). According to the Bangladesh Bureau of Statistics (BBS), most households are not capable of spending more than \$82 dollar per month. Thirty percent of the households are classified as very poor, twenty-two percent as poor,

and less than 1% as rich (Efroymsen et al., 2001). The Bangladesh government and NGOs are trying to figure out numerous solutions for hunger and poverty; millions still do not get enough food for their daily need, and do not have access to adequate housing, education and healthcare.

Tobacco control policies are essential to improve the life of the poor as well as for the economic welfare of the country. The level of poverty and malnutrition has increased because of tobacco consumption both at the individual and the national level. Bangladesh loses 5% of its GNP due to malnutrition. The consumption of a pack per day of an inexpensive brand like Navy can constitute 4% of household income. For the poorest 6%, smoking a pack per day can consume 46% of their household income or 76% of household expenditure. Expensive brand like Marlboro would require 56% of the average income of a Bangladeshi. (Efroymsen et al., 2001)

Overall, if tobacco consumption can be eliminated, it will save US \$ 15 million annually, the amount used to import tobacco, and will increase job opportunities by 18%, if smokers spend their money on other goods and services, as well as increase investment in housing, education and health care. As a result, approximately 10.5 million children can be saved from hunger while 350 children under age five can escape death daily from malnutrition. (Efroymsen et al., 2001). Even though administration can not eliminate the consumption of tobacco overnight, it can implement a strict tobacco control policy to reduce tobacco consumption.

Dr. Nurul Islam, a nationally recognized professor and physician, has felt that it is imperative to implement a law to control tobacco usage for Bangladeshi citizens. His observation was that the previous laws were very weak and were never implemented adequately. After considering his petition, the National Assembly, in order to control smoking and tobacco-related product's production, usage, marketing and advertising, enacted a legislation which prohibits any person from smoking in public places and on public transport vehicles on March 15th, 2005,. The law also prohibits any citizen of Bangladesh from distributing or even proposing to distribute any free sample to the public to promote tobacco sale. Citizens should not make agreements or contracts with other person to donate, give prize or scholarship or arrange tournament to promote tobacco usage. The legislation also restricted any citizen from

- a) Broadcasting, and advertising tobacco in movie theatres, or government and non-government radio and television channels.
- b) Selling any film or audio containing tobacco advertisements



- c) Publishing any books, magazines, leaflets, handbills, billboards, newspaper or even print tobacco advertisements in Bangladesh.
- d) Supplying or distributing among the public any leaflet, handbill or document containing any tobacco product's brand name , color, logo, trade mark, sign, symbol, and advertisement.
- e) The management at all public places or public transportations should display the cautionary sign "Stay away from smoking, it's a punishable offense" both in Bengali and English.
- f) Every tobacco producing industry should label the packet of the tobacco product with the following cautions in big letters, clearly, visibly and boldly (covering at least 30 percent of total space):
 - a) Smoking causes death
 - b) Smoking causes strokes
 - c) Smoking causes heart diseases.
 - d) Smoking causes lung cancer.
 - e) Smoking causes breathing problems

However, since most tobacco consumers of Bangladesh are illiterate i.e. unable to read and write, those rules literally have no impact on them because they spend their whole life to gather necessities for the family.

Objective

The main objectives of the study are as follows:

1. To investigate the effect of the increase of advertising restriction on tobacco consumption among the poor rickshaw-pullers of Bangladesh.
2. To investigate consumption patterns and consumption sensitivity to increased price of tobacco of this group of people.
3. To study the feasibility of implementing the law or awareness to reduce tobacco consumption.

Background Reading:

Cigarettes and other forms of tobacco use are addictive, Patterns of tobacco use are

regular and compulsive and a withdrawal syndrome usually accompanies tobacco abstinence. The pharmacological and behavioral processes of tobacco addiction are similar to addiction to drugs such as heroin and cocaine. In the ranking of addictives of psycho-active drugs, nicotine was determined to be more addictive than heroine, cocaine, alcohol, caffeine and marijuana (Islam, 2005).

Tobacco consumption leads to fatal diseases such as cancer, lung and heart diseases, causing about 3.5 million deaths each year, which is to say about 10,000 deaths throughout the world per day. One million deaths occur in developing countries such as Bangladesh (Islam, 2005). Tobacco smoking is a major cause of chronic bronchitis, emphysema and lung cancer as well as a major risk factor for myocardial infraction, certain pregnancy-related and neonatal disorders etc. Smoking has been associated with cancer, cerebrovascular and peripheral vascular diseases and peptic ulcer disease; smokers also suffer from acute respiratory illness.

The global tobacco epidemic is predicted to claim premature death of some 250 million children and adolescents. At present a third of these occur in developing countries. It is also predicted that tobacco will soon become the leading cause of death and disability, killing more than 10 million people annually- 2 million in China alone by 2020. Tobacco causes more deaths worldwide than HIV, Tuberculosis, Maternal Mortality Rate, Motor Vehicle Accident, homicidal and suicidal deaths combined (Islam, 2005). Passive smoking also has a dangerous effect on infant deaths, respiratory illnesses and middle ear diseases in babies and children, and leads to lung cancer, and heart disease in adults. Children are put at risk because smoking by their parents increase the likelihood that in time they themselves will take up smoking (Islam, 2005).

Tobacco consumption has fallen over the past 20 years in most high-income countries such as Britain, Canada, the United States, Australia and most northern European countries. Demand is projected to continue to fall, dropping to 2.05 million tons in 2010. This is 10 percent lower than the 1998 figure (2.2 million tones). (Action on Smoking and Health, 2004)

As smoking prevalence in the developed countries is gradually declining, international tobacco manufacturers have targeted underdeveloped countries like Bangladesh to revive sales. The general rural people who consume tobacco based products are illiterate and completely unaware of the dangers and harm of consuming tobacco (Islam, 2005). As a result, tobacco consumption rates in developing countries are expected to increase to 5.09 million tones - a 1.7 percent growth rate between 1998 and 2010. If the present trend continues unchecked, tobacco-recorded deaths in

developing countries will rise from one million to seven million a year until 2030. The report of the World Health Organization starts that tobacco kills 11000 people per day world wide. By the year 2020 it will cause 17.7% of all deaths in developed countries and 10.9% of all deaths in developing countries (Islam, 2005).

As a pre-emptive measure to fight back such encroachment into their profits, the tobacco industry is now engaging in aggressive marketing tactics and hitting soft targets in countries like Bangladesh gearing their promotion to the teenage population (Islam, 2005). Studies of WHO shows that prevalence of tobacco usage (smoking and non-smoking) in Bangladesh is 55% in the population and 57% among hospital outpatients aged 30 years and above. Males consume more tobacco than females in Bangladesh unlike any other developing country. Population data show that 9% of people aged 30 and above suffer from eight tobacco related diseases (ischemic heart diseases, pulmonary disease, lung cancer, strokes, oral cancer, cancer larynx, chronic obstructive pulmonary diseases, pulmonary tuberculosis, and Burger's disease), and 41% of them are attributable to tobacco. Hospital data indicate that 29% of inpatients aged 30 years and above have eight tobacco-related diseases. These tobacco-related diseases have been causing death among 16% of the population. Moreover, those data indicate that 9% deaths of Bangladesh are attributable to tobacco (Acharys et al., 2005).

The cost of tobacco-related illness in Bangladesh is estimated to be 27.4 billion taka and total benefit from the tobacco sector is 24.8 billion taka-20.3 billion taka collected as tax revenue on the domestic consumption of tobacco and 4.5 billion taka earned as wages in tobacco production. Thus the cost of tobacco usages outweighs the benefit from tobacco revenue and wages by 2.6 billion taka. Therefore, the Bangladesh economy should benefit from controlling tobacco consumption by implementing strict rules and regulations (Acharys et al., 2005).

Research Design:

According to the Becker-Murphy model, or the rational addiction model (Becker, Grossman and Murphy,1994) past consumption of some goods influence their current consumption by affecting the marginal utility of current and future consumption. Greater past consumption of harmfully addictive goods such as cigarettes stimulate current consumption by increasing the marginal utility of current consumption more than the present value of the marginal harm from future consumption. Therefore, past consumption is reinforcing for addictive goods. The Becker-Murphy model has several empirical implications for addictive behavior that

include a bimodal distribution of consumption, quitting by "cold turkey", a negative cross effect, larger long-run than short-run elasticity of demand, larger responses to anticipated than unanticipated price changes, and larger response to permanent than temporary price changes (Becker, Grossman and Murphy,1994). However, in absence of information about past consumption, I have modeled the tobacco expenditure of rickshaw puller as a function of the consumer's income like any other consumption function. The expected sign of the parameter estimates of income is positive.

The model I can be specified as

$$\text{Log (Expense_tobacco)} = \alpha + \beta_1 \text{ Income} + \epsilon \dots\dots\dots(\text{Model I})$$

I am investigating the effect of advertising restrictions on the consumption of the tobacco as a non-price effect. If the rickshaw pullers has not seen the advertisement of tobacco on TV, radio, and newspaper, I have assumed that tobacco restriction is effective, and so I have setup the dummy variable "Ad_restriction" to 1. The expected sign of the parameter estimates of income is positive but the expected sign of the parameter estimates of AD_Restrict is negative.

$$\text{Log (Expense_tobacco)} = \alpha + \beta_1 \text{ Income} + \beta_2 \text{ AD_Restrict} + \epsilon \dots\dots\dots(\text{Model II})$$

I have also included three variables such as education level , age as policy variable and children as a budget constraint. As I have mentioned earlier in the paper, most rickshaw- pullers are illiterate and helpless, I will try to determine if increase in education or age can play a significant role in reducing tobacco consumption. In order to determine the education impact, the data have been divided into two groups based on completion or not completion of compulsory primary education (up to Fifth grade of school) .

The model can be specified as

$$\text{Log (Expense_tobacco)} = \alpha + \beta_1 \text{ Income} + \beta_2 \text{ high_educ} + \beta_3 \text{ Age} + \beta_4 \text{ AD_Restrict} + \epsilon \dots\dots(\text{Model III})$$

$$\text{Log (Expense_tobacco)} = \alpha + \beta_1 \text{ Income} + \beta_2 \text{ low_educ} + \beta_3 \text{ Age} + \beta_4 \text{ AD_Restrict} + \epsilon \dots\dots(\text{Model IV})$$

Table 1 briefly describes the variables used in the above models and their expected sign. This paper investigates the null hypothesis that increase of advertising restriction will not decrease tobacco consumption among the poor rickshaw-pullers of Bangladesh.

Data

The data were collected from Muhammadpur Metropolitan area's rickshaw-pullers. Rickshaw-pullers are three-wheel cycle drivers who manage their livelihood by carrying people from one place to another. They are mostly uneducated and live from hand to mouth. They live in slums, and can barely afford the necessities of life. They represent the poorer section of the population of Bangladesh. A number of rickshaw pullers were selected who reside in the suburbs of Dhaka City on a random basis. Basically there is no difference among the rickshaw-pullers regarding their jobs and their standard of living. So the selected group is likely to be representative of the bigger clusters of the rickshaw-puller.

The data were collected by reading the questions of the survey to the respondents and recoding their answers. There were almost five hundred rickshaw-pullers in the location. 250 of them were taken as samples. Data were collected over a period of three months from June to August, 2005. The demographic information, expenditure pattern on tobacco and necessities, and awareness of the newly passed law, knowledge about hazard of tobacco, and their behavior if the price of tobacco were to be increased were collected through a questionnaire.

Limitations

The findings of the study can not be applied to all the citizens of Bangladesh because the paper focuses only the poor rickshaw-pullers of this country.

Results

The rickshaw-pullers of Bangladesh spend on an average around Tk. 532 for tobacco consumption per month, which is equal to 81% of their average expenditure on rent or 48% of their average expenditure on food. For these reasons, some researchers have remarked that Dhaka rickshaw-pullers are never too poor to smoke (Efroymsen & Ahmed, 2001). From the demographic patterns, we can see that half of the rickshaw-pullers start smoking around the age of 18 or less. I asked them whether they know that tobacco is harmful for their health. To my great surprise, all of the rickshaw-pullers seemed to be aware of the harmful effect of tobacco. Moreover, they know that passive smoking is also harmful. Of the 250 respondents, 205 persons reported as smokers i.e. almost 80% of rickshaw-puller smokes. 204 persons reported that they will smoke less or will not smoke at all if the price increases i.e. their opinion shows that they are highly price sensitive.

The model I is statistically significant because F-statistics is significant at one percent level. However, the adjusted R² of 4.67% i.e. only 4.7 percent change of log

of monthly tobacco consumption is explained by the variable income. We find that rickshaw-pullers will smoke even if there is no income since β_1 is 5.7923. However, an one taka increase in income will increase spending on tobacco by approximately 0.0001248 taka. This implies that consumption among rickshaw-pullers have reached the addictive level because a significant variation in income does not affect consumption significantly. However, income as an explanatory variable is significant at the five percent level in our one-tail test.

From model II, we find that Advertisement restriction can permanently decrease tobacco consumption level. Moreover, if the respondent had not restricted himself to any advertisement, then spending on tobacco would have decreased by 0.14. The explanatory dummy variable AD-Restrict is statistically significant at 10 percent level, and the parameters estimate of AD_Restrict is negative. For this reason, it can be said that advertising restrictions do impact on the reduction of tobacco consumption. From model III and model IV, we also find that advertisement restrictions decrease tobacco consumption. Moreover, if respondents are educated and have not seen any ads then the log of spending on tobacco would decrease by 0.13 whereas if the respondents are not educated and have not seen any ads then the log of spending on tobacco would decrease by 0.10375. Although the explanatory power of the independent variables of all models is not strong, the models are statistically significant at one percent level. Thus, in this paper, I reject the null hypothesis that increase of advertising restriction will not decrease tobacco consumption among the poor rickshaw pullers of Bangladesh. Moreover, my findings suggest that education plays an important role in the reduction of tobacco consumption.

Conclusion

Advertising restriction has a positive impact on the poor rickshaw puller of Bangladesh since it decreases the consumption of tobacco amongst them. If the new law becomes effective, it can save the lives of millions of citizen from health hazards and death. However, the citizens of Bangladesh are yet to receive any benefit of the anti-tobacco law because "the anti-tobacco law has been rendered ineffective due to flouting of the law and people's ignorance about the legal provision. The law has failed to stop smoking in public places and it has hardly any effective on the sale of cigarettes and tobacco products". (Meheriban, *The Daily Star*, December 19, 2005). Therefore, the government should take more aggressive steps to reduce this violent epidemic from the country. What follows are some proposals to make the anti-tobacco law effective:

- The government has started to list voters throughout the country. It can issue

voter cards throughout the country which will be used to ensure that tobacco products can be bought only by adults. (minimum age to be a voter of Bangladesh is 18)

- The government will increase excise tax on the tobacco industry which will be largely used to launch an anti-tobacco campaign and to subsidize treatment of tobacco-related diseases among the citizens.
- The government should enforce laws to control the black market. Tobacco industries like British American Tobacco of Bangladesh always argue that increase in tax will increase black market dealings of tobacco. No doubt policy makers have to be conscious of the activation of the black market, but they should not let the tobacco industry pay less tax simply because of their weakness in controlling the black market. Although consumers always oppose any incremental tax policy on their necessities, the survey by WBB (Work for Better Bangladesh, 2002) shows that 80% smokers and 93% non-smokers support increased tax on tobacco product (Ahmed and Alam, 2005).
- The government should ask all public places to reserve a place for smokers.

There should be one designated authority to whom citizens can complain; not a vague "law enforcement authority" clause. Moreover, they should always be ready report any violation of anti-tobacco laws.

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Appendix A

Table1 Definition, means and standard deviation of variables (s.d=standard deviation)			
Variables	Description	Expected Sign	Actual Sign
Income	Per month income of the rickshaw puller	+	+
Level_educ	The highest grade of school attend by the rickshaw puller	-	+

Age	The age of the rickshaw puller at the time of survey	-	-
Ad_Restrict	Dummy variable which is set to 1 if the rickshaw puller haven't seen any AD	-	-
Expense_tobacco	Expenditure on tobacco	Dependent variable	Dependent variable

Source: Survey Conducted By Mariam Jamila, Muhammadpur, Dhaka, 2005

Table 2 Regression Results (Dependent variable: the natural logarithm of monthly tobacco expenses)				
Variables	Equation 1	Equation 2	Equation 3	Equation 4
Intercept	5.79236 (0.12681)***	5.77971 (0.12686)***	5.75160 (0.16693)***	5.85709 (0.17410)***
Income	0.00012487 (0.00003757)**	0.00013181 (0.00003782)**	0.00012744 (0.00003783)***	0.00012744 (0.00003783)***
High_educ			0.10549 (0.06121)**	
Low_educ				-0.10549 (0.06121)**
Age			0.00055595 (0.00381)	0.00055595 (0.00381)
Ad_Restrict		-0.14080 (0.10184)*	-0.13458 (0.10167)*	-0.10375 0.10439
N	205	205	205	205
F	11.05	6.50	6.50	4.01
Adjusted R2	0.0467	0.0510	0.0510	0.0555

Notes:

1. The figures are the coefficient and the standard errors are given in parenthesis.
2. * denotes .10 level of significance, ** denotes .05 level of significance ,
 *** denotes .01 level of significance
3. Mean of the dependent variable (the natural log of monthly tobacco expense) is 6.24