
PUBLIC HEALTH RESEARCH

Knowledge and Awareness on HIV/AIDS among Blood Donors: A Study in Rajshahi, Bangladesh

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ABSTRACT

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Objective	HIV/AIDS is the most devastating disease that mankind has ever faced. For being neighboring country of India, Bangladesh has been highly vulnerable to HIV infection. Although Bangladesh continues to maintain low HIV prevalence status, the infection rate is on the rise in Rajshahi Division. Some studies have been carried out on the knowledge about HIV/AIDS among some risk groups, but studies on blood donor's awareness about HIV/AIDS are rarely found. This study aims at investigating the knowledge and awareness about HIV/AIDS among the blood donors in Rajshahi Metropolitan of Bangladesh.
Methods	In this study, primary data was used. The data was collected by the authors during the period 3 rd March to 28 th April in 2008. Purposive sampling technique has been applied. Interview method has been used to collect information from the respondents.
Results	Data reveals that, though 89 percent blood donors knew it is transmitted through blood transfusion, only 1 percent of them had undertaken blood test before donation, which is alarming. The odds of having preliminary and preventive knowledge reduce with the increase in age of the respondents. Besides these, blood donors who were educated and who were in service were found to be more aware about the HIV/AIDS than the others.
Conclusions	Strict rules and regulations should be maintained regarding blood screening. Overall people should be encouraged to use condoms and abide by the religious rules to avoid HIV/AIDS infection. Both Government and Non-Government organizations should augment their educational and Focused Group Discussion (FGD) programs on HIV/AIDS knowledge.
Keywords	HIV - AIDS - blood donors - awareness – FGD.

INTRODUCTION

AIDS stands for Acquired Immune deficiency Syndrome. The Human Immunodeficiency Virus, which is commonly called HIV, is a virus that directly attacks certain human organs, such as the brain, heart, and kidneys, as well as the human immune system. The immune system is made up of special cells, which are involved in protecting the body from infection and some cancer. HIV damages the natural defense system in human body and the state is called AIDS.

HIV/AIDS is the most devastating disease that mankind has ever faced. HIV does not survive well outside the body. It cannot be transmitted through casual daily contact. Mosquitoes and other insects do not transmit HIV. HIV can be spread by sexual contact with an infected person, by sharing needles and/or syringes and/or other injecting equipments or, less commonly (and now very rarely in countries where blood is screened for HIV antibodies), through transfusion of infected blood or blood clotting factors. Babies born to HIV infected women may become infected before or during birth or through breastfeeding after birth.

In many countries, it has been observed that, once HIV epidemic begins among Injection Drug Users (IDU), it is unlikely to remain limited in that population^{1, 2}. This is especially true in Bangladesh, since behavior surveillance data show that IDU are not at all an isolated population. Drug injector's sells blood and highly involved in other risk behaviors. HIV prevalence among IDUs has increased to 5.3 percent in 2011³ from 4 percent in 2002⁴ which is a threat for blood receivers, as blood screening system is very poor in Bangladesh. According to the Federal Centers for Disease Control and Prevention (CDC), about 6% infection among women occurs through blood transfusion, which is threatening to the future generation. Bangladesh professional donor should have knowledge about HIV/AIDS. Since Bangladesh is a developing country, most of the people do not have enough knowledge about the importance of blood test before blood donation. A limited number of blood donors have knowledge about HIV/AIDS in Bangladesh.

Though it is encouraging that, HIV prevalence has declined over the years among population at risk in some geographic areas of Bangladesh, however in many areas especially in Rajshahi Division, high and rising HIV prevalence was recorded^{3, 5}. The rise of infection at Rajshahi has put the city into the category of vulnerable area. Some researchers^{6, 7} have studied the knowledge about HIV/AIDS among some risk groups, such as patients with sexually transmitted disease, pregnant woman at antenatal clinics, commercial sex workers, long distant truck driver and overseas workers. But the studies on awareness about HIV/AIDS of blood donors are very rare.

The purpose of this study is to focus the knowledge and awareness scenario on different aspects of HIV/AIDS among the blood donors at Rajshahi Metropolitan (divisional city) of Bangladesh.

Situation of HIV/AIDS in Bangladesh

After the first detection of AIDS in 1981 in New York City and San Francisco, this disease in Bangladesh was first found in 1983. Since the first detection of HIV in Bangladesh, the rate of infection has not increased in comparison to our neighbors (e.g. India). Given that the overall prevalence of HIV remains below 1 percent (0.7%) Bangladesh continues to maintain low prevalence status³. But it is clear that this situation may not continue if the risky behaviors that increase vulnerability cannot be contracted among the high-risk group, vulnerable group and general population. Needle sharing among drug users occurs at alarmingly high rates (77%) in central region⁴ of Bangladesh. In a study, Rahman *et al.* (1998) revealed that only 18 percent Commercial Sex Workers (CSW) in Bangladesh heard about AIDS and 8 percent knew that it can be transmit by sexual contact. AIDS was believed to be curable by 5 percent of the total respondents. To prevent this fatal epidemic in Bangladesh, a vigorous campaign on awareness of AIDS is necessary for the CSWs and their clients. In another study, Kumar *et al.* (2002) concluded that awareness about HIV/AIDS infection, transmission and preventive measures is the essential thing for the people in the countries of developing world to combat the epidemic, especially for women who are engaged in commercial sex works and those of socially deprived groups. Indeed, there is a host of factors that have rendered the country highly vulnerable to a surge in the epidemic. These include the overall poverty levels, the documented risk behaviors including needle sharing, growing sex work, population mobility, persisting gender disparity and inequality, low levels of general awareness and knowledge about HIV/AIDS among general population, and unscreened blood transfusion. This study is designed to highlight the HIV/AIDS related knowledge and awareness among the blood at Rajshahi District in Bangladesh.

METHODS

This study is based on primary data. The data was collected by the authors during the period 3rd March to 28th April in 2008. To collect the data, purposive sampling technique has been applied. Interview method has been used to collect information from the respondents. A total of 160 blood donors had been interviewed and their information was recorded. In this study, descriptive statistical techniques have been applied to examine the differentials. Besides the descriptive statistics, multivariate analytical technique (logistic

regression model) has also been used to investigate the determinants of knowledge and awareness about HIV/AIDS. In this study, two sets of variables are selected as dependent variable, which are variables relating preliminary knowledge of HIV/AIDS (which includes whether knows the name of HIV/AIDS, agree that AIDS is a fatal disease, AIDS is not a contagious disease and knowledge about the medium of HIV/AIDS infection), and variables relating preventive knowledge of HIV/AIDS (includes the knowledge about the means of preventing HIV/AIDS infection). The variables relating preliminary knowledge and preventive knowledge were further categorized into two groups depending upon the extent of knowledge, the categories are sufficient and in sufficient knowledge. The classification was made by subjective judgment. For both the variables, if the 90 percent of the answers of the respondent were found correct then the respondent was considered having sufficient knowledge, otherwise he was considered to have insufficient knowledge. Independent variables used in the

analyses are age, sex, education, occupation, possession of Radio/TV, condom's impact and religious rule's impact. In case of independent variable, classifications for bivariate analysis differ from that of multivariate analysis, where in multivariate analysis; independent variables include lower number of classes than that in bivariate analysis. This is done to make the impact differences of different classes more clear and apparent, and to facilitate interpretability.

In multivariate analysis, logistic regression model⁹ has been applied. This model can be used to identify the risk factors as well as to predict the probability of success e.g. probability of developing a disease as a function of the particular risk factor. This probability can serve as an index of risk for a given disease or for not responding to certain treatment. The logistic regression has become the standard method for finding the relationship between the qualitative outcome variables and a set of explanatory variables. Then the logit transformation is defined to be

$$z_i = \text{logit}(p_i) = \log\left(\frac{p_i}{1 - p_i}\right) = x_i \beta$$

Where β is regression coefficient and this equation is known as the logit model that relates the independent variables to the transformation of p_i . Taking these probabilities (p and 1-p) as the basis of analysis, some functions are considered

that transforms the scale (0, 1) for the probabilities on to the real line. This function is known as link functions or response function. The logit model can be written as

$$\text{logit}(p_i) = \log\left[\frac{p_i}{1 - p_i}\right] = X_i \beta = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki}$$

$$\text{Where } p_i = \Pr(Y_i = 1 | x_i) = [1 + \exp(X_i \beta)]^{-1} \exp(X_i \beta)$$

Profile of the Sample

A total of 160 blood donors had been interviewed. Among the total respondents, 21 percent were female and 52 percent were married. Only 18 percent blood donors were under 21 years of age, while 4 percent were above age 40 years. 88 percent donors were Muslim and 64 percent were village dweller. It was observed that, 49 percent

blood donors did not have any income, as most of them were student and only 2 percent had income over 20000 Tk/month. 12 percent donors were illiterate, while 7 percent were with post graduation. Among the respondents, 34 percent were student, 16 percent were agriculture worker, and more interestingly 13 percent were house wife.

Table 1 Demographic and socio-economic characteristics of the respondents.

Characteristics	Number	Percentage
Age group		
<21	29	18.1
21-25	57	35.6
26-30	32	20.0
31-35	18	11.3
36-40	17	10.6
40+	7	4.4
Sex		
Male	127	79.4
Female	33	20.6

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Marital Status		
Married	83	51.9
Single	77	48.1
Religion		
Muslim	140	87.5
Non-Muslim	20	12.5
Residence		
Rural	102	63.8
Urban	58	36.3
Income		
<1	78	48.8
1-3000	24	15.0
3001-7000	25	15.6
7001-10000	16	10.0
10001-20000	14	8.8
20000 ⁺	3	1.9
Educational Qualification		
Illiterate	19	11.9
Primary	30	18.8
Secondary	29	18.1
Higher Secondary	33	20.6
Graduate	38	23.8
Post-Graduate	11	6.9
Occupation		
Student	55	34.4
Agriculture	25	15.6
Service	29	18.1
Business	30	18.8
Housewife	21	13.1

RESULTS AND DISCUSSION

To study the blood donor's knowledge and awareness about HIV/AIDS, both, bivariate and multivariate analytical techniques have been used. To dissect the knowledge and awareness scenario and their pattern, descriptive statistical technique has been applied, and to determine the significant covariates and their degrees of impact on the knowledge and awareness of blood donors about HIV/AIDS, Logistic Regression analysis has been

used. The results and discussion have been presented in the following sections.

Knowledge and Awareness about HIV/AIDS

Main objective of this paper is to investigate the blood donor's knowledge and awareness about HIV/AIDS. Several questions tried to capture their knowledge and awareness which have been summarized in following table:

Table 2 Percentage distribution of respondents by selected categories having knowledge and awareness about HIV/AIDS.

Questions	Number	Percentage
Did you listen the name HIV/ AIDS?		
Yes	153	95.6
No	7	4.4
Do you know the name of virus which causes AIDS?		
Yes	122	76.3
No	31	19.4
No answer	7	4.4
Is AIDS a fatal disease?		
Yes	151	94.4
No	2	1.3
No answer	7	4.4
Does HIV transmit through blood transfusion?		
Yes		
No	142	88.8

Doesn't Know	3	1.9
No answer	8	5.0
	7	4.4
Before donation did you test blood?		
Yes	2	1.3
No	151	94.4
No answer	7	4.4
Does HIV/AIDS transmit through sexual intercourse with more than one male or female?		
Yes	143	89.4
Doesn't Know	10	6.3
No answer	7	4.4
Does HIV/AIDS transmit through sharing same needle with others?		
Yes	139	86.9
No	1	0.6
Doesn't Know	13	8.1
No answer	7	4.4
Does HIV/AIDS transmit from pregnant mother to her child?		
Yes	107	66.9
No	3	1.9
Doesn't Know	43	26.9
No answer	7	4.4
Does HIV/AIDS transmit through breast feeding?		
Yes	83	51.9
No	4	2.5
Doesn't Know	66	41.3
No answer	7	4.4
Have any vaccine to prevent HIV/AIDS?		
Yes	12	7.5
No	74	46.3
Doesn't Know	66	41.3
No answer	8	5.0
Do you know that HIV/AIDS can be prevented by using Condom?		
Yes	143	89.4
Doesn't Know	10	6.3
No answer	7	4.4
Do you think that HIV/AIDS can be prevented by mass Awareness?		
Yes	148	92.5
Doesn't Know	5	3.1
No answer	7	4.4
Do you think that HIV/AIDS can be prevented by abiding religious rules?		
Yes	147	91.9
Doesn't Know	6	3.8
No answer	7	4.4

From the table, it is observed that 96 percent blood donors have heard the name of AIDS and 76 percent knew it is caused by HIV virus, whereas 3 percent and 24 percent respectively never heard the name of AIDS and don't know that it is caused by HIV virus. 94 percent blood donors knew it is fatal and 89 percent knew that it is transmitted through blood transfusion. But the worst thing is that, 94 percent blood donors did not test their blood before donating blood; only 1

percent did the test. 89 percent knew that HIV/AIDS transmits through sexual intercourse with more than one partner, 87 percent knew it is transmitted through sharing needle with others, 67 percent knew it may spread from pregnant mother to her child and 52 percent knew it may transmit through breast feeding.

Regarding preventive knowledge, 8 percent knew that it may be prevented by vaccine, 89 percent knew it can be prevented by using

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condom during sexual intercourse. 93 percent believed by increasing mass awareness and 92 percent believed by abiding religious rules, HIV/AIDS can be prevented.

Level and Pattern of Awareness and Knowledge of the Blood Donors by Background Characteristics

Table 3 shows that, 67 respondents (41%) were found to have sufficient preliminary knowledge about HIV/AIDS and 109 respondents (68%) having sufficient knowledge about preventive

measures of HIV/AIDS. Respondents of age group 21-25 years were most aware about both preliminary (22 out of 67; 33%) and preventive (35 out of 109; 32%) knowledge about HIV/AIDS. It was observed that the awareness decreases with the increase in age. Male respondents were found more aware about preliminary (57 out of 67; 85%) and preventive knowledge (89 out of 109; 81%) than its female counterpart. A positive relationship has been observed between educational level and awareness.

Table 3 Percentage distribution regarding sufficient and Insufficient Preliminary Knowledge and Preventive Knowledge about HIV/AIDS of the Respondents.

Characteristics	Preliminary Knowledge About HIV/AIDS		Preventive Knowledge About HIV/AIDS	
	Sufficient Knowledge	Insufficient Knowledge	Sufficient Knowledge	Insufficient Knowledge
Age (In Years)				
<21	16 (55.2%)	13 (44.8%)	23 (79.3%)	6 (20.7%)
21-25	22 (38.6%)	35 (61.4%)	35 (61.4%)	22 (38.6%)
26-30	13 (40.6%)	19 (59.4%)	23 (71.9%)	9 (28.1%)
31-35	10 (55.6%)	8 (44.4%)	14 (77.8%)	4 (22.2%)
36-40	5 (29.4%)	12 (70.6%)	11 (64.7%)	6 (35.3%)
40 ⁺	1 (14.3%)	6 (85.7%)	3 (42.9%)	4 (57.1%)
Sex				
Male	57 (44.9%)	70 (55.1%)	89 (70.1%)	38 (29.9%)
Female	10 (30.3%)	23 (69.7%)	20 (60.6%)	13 (39.4%)
Education				
Illiterate	2 (10.5%)	17 (89.5%)	7 (36.8%)	12 (63.2%)
Primary	7 (23.3%)	23 (76.7%)	13 (43.3%)	17 (56.7%)
Secondary	9 (31.0%)	20 (69.0%)	17 (58.6%)	12 (41.4%)
Higher Secondary	17 (51.5%)	16 (48.5%)	28 (84.8%)	5 (15.2%)
Graduate	24 (63.2%)	14 (36.8%)	33 (86.8%)	5 (13.2%)
Post-Graduate	8 (72.7%)	3 (27.3%)	11 (100%)	0 (0%)
Occupation				
Student	33 (60.0%)	22 (40.0%)	46 (83.6%)	9 (16.4%)
Agriculture	3 (12.0%)	22 (88.0%)	10 (40.0%)	15 (60.0%)
Service	20 (69.0%)	9 (31.0%)	25 (86.2%)	4 (13.8%)
Business	7 (23.3%)	23 (76.7%)	18 (60.0%)	12 (40.0%)
Housewife	4 (19.0%)	17 (81.0%)	10 (47.6%)	11 (52.4%)
Having Radio/TV				
Yes	40 (39.2%)	31 (53.4%)	61 (59.8%)	10 (17.2%)
No	27 (46.6%)	62 (60.8%)	48 (82.8%)	41 (40.2%)
HIV/AIDS Can be Prevented By Using Condom				
Yes	57 (40.1%)	85 (59.9%)	95 (69.3%)	42 (30.7%)
No	10 (55.6%)	8 (44.4%)	14 (60.9%)	9 (39.1%)
HIV/AIDS Can be Prevented By Abiding Religious Rules				
Yes	61 (43.6%)	79 (56.4%)	99 (71.2%)	40 (28.8%)
No	6 (30%)	14 (70%)	10 (47.6%)	11 (52.4%)
Total	67 (41.9%)	93(58.1%)	109(68.1%)	51(31.9%)

It was observed that, those who are student and service holder are more aware about

HIV/AIDS. Those having Radio/Television were more conscious about the preliminary and

preventive knowledge about HIV/AIDS. Higher percentage is observed to have sufficient knowledge about HIV/AIDS for those who know that using condom and abiding by religious rules can prevent HIV/AIDS than those who don't know.

Given the descriptive statistics and information of the different explanatory variables above, which covariates are likely to affect knowledge and awareness of blood donors comes into question? To identify the influential factors, Logistic regression analysis was performed and the result has been presented in the next section.

Logistic Regression Analysis

The logistic regression analysis is aimed at identifying the important contribution of variables

that have an influence on the preliminary and preventive knowledge of blood donors. A variable was considered significantly associated with having knowledge, if its P value was below 0.10. The results of the analyses are shown in table 4. From the analysis, we observed that, respondents of age group 20-24 years are 2.2 and 1.2 times more likely to have preliminary and preventive knowledge about HIV/AIDS respectively than the respondent of below 20 years of age. But the odds fell with the increase in age. In the analysis, male respondent received 2.5 times and 1.3 times higher odds than its female counterpart to have preliminary knowledge and preventive knowledge respectively about HIV/AIDS.

Table 4 Multivariate logistic regression estimates of Relative Odds of having preliminary knowledge and preventive knowledge about HIV/AIDS.

Characteristics	Relative Risk (Odd Ratio)	
	Having Preliminary Knowledge About HIV/AIDS	Having Preventive Knowledge About HIV/AIDS
Age (In Years)		
<20 (RC)	1.00	1.00
20-24	2.22***	1.23***
25-29	1.06**	1.39**
30-34	1.82**	2.19**
35+	1.23***	2.05***
Sex		
Female (RC)	1.00	1.00
Male	2.51**	1.31**
Education		
Illiterate (RC)	1.00	1.00
Primary & Secondary	1.30***	1.68***
Higher	1.86***	2.29***
Occupation		
Others (RC)	1.00	1.00
Service Holder	2.03***	1.83***
Having Radio/TV		
No (RC)	1.00	1.00
Yes	2.63***	1.72***
Condom can Prevent HIV/AIDS		
Doesn't Know (RC)	1.00	1.00
Know	5.17**	2.91**
Abiding Religious Rules can prevent HIV/AIDS		
Doesn't Know (RC)	1.00	1.00
Know	2.84*	3.20*

Note: RC=Reference Category, * = P<0.10, ** = P<0.05, *** = P<0.01

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Respondents with primary and secondary education and higher education received higher odds than the illiterate respondents. Service holders were 100 percent and 83 percent more likely to have preliminary and preventive knowledge respectively about HIV/AIDS than the others. Respondents had radio/TV were more likely to have knowledge about HIV/AIDS than those did not have any radio/TV. Persons knew that HIV/AIDS can be prevented by using condoms were 5.17 and 2.91 times more likely to possess preliminary and preventive knowledge about HIV/AIDS. Among those, who knew that HIV/AIDS can be prevented by abiding religious rules received higher odds of having preliminary and preventive knowledge than those who did not know.

CONCLUSIONS

HIV/AIDS is one of the incurable deadliest disease that does not have any treatment, thus to get rid of the catastrophe, the only way out there is its prevention. To prevent the spread of the disease, knowledge and awareness among the high risk group concerning this disease is indispensable¹⁰. Some recommendations to improve the knowledge and awareness level have been pointed out in the following paragraphs which could be considered by the policy makers to improve the scenario.

This study attempts to examine the knowledge and awareness of blood donors about HIV/AIDS. The matter of hope is that, 89 percent blood donors know that HIV/AIDS is transmitted by blood transfusion, but the worst thing is that only 1 percent underwent blood test before donation. A sizeable magnitude of respondents knew that it can be prevented by using condom (89%) and by abiding to religious rules (92%). In this study, age, sex, education, occupation, Radio/TV possession and knowledge about preventive role of condom and religious rules have been deemed to be important determinants of knowledge about both preliminary and prevention of HIV/AIDS. Interestingly, the awareness decreases with the increase of age, while all other variables are found positively related with awareness. To increase awareness in a particular population segment, Focused Group Discussion (FGD) is the most effective tool and considerable emphasize should be given to FGD. Undoubtedly education is the most important determinant of any sort of awareness, and so in this study. GOs and NGOs should augment their educational program containing knowledge about HIV/AIDS, throughout the country. Finally radio and TV are the most popular medium of recreation, programs relating preliminary and prevention knowledge about HIV/AIDS should be increased in radio and TV. Besides these, the community should be encouraged to use condoms and abide by the

religious rules by the popular media. Now under the HAPP 98 safe blood transfusion centers are screening the blood for HIV and 5 other diseases. Government of the country should pay special attention to the blood screening system. Strict rule should be established to screen the blood before taking that from the donors. The blood screening services should be expanded to Thana (sub-district) level and the numbers of the screening centers should be increased in metropolitan cities like Rajshahi.

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