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Identifying the Determinants of Awareness About HIV/AIDS Among Ever Married Women in Bangladesh

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ABSTRACT

The HIV (human immunodeficiency virus) infections recently emerged as a public health issue across the globe and particularly in developing countries. Knowledge and positive attitudes are essential for the prevention and treatment of HIV/AIDS. This study aims to identify the determinants of awareness about HIV/AIDS among ever-married women in Bangladesh. The 2014 Bangladesh Demographic and Health Survey data were utilized for this purpose. Univariate, bivariate and multivariate analyses have been performed to analyze the data. This study showed that about 70% of ever-married women heard about HIV/AIDS. Chi-square test of independence suggested that the age of respondents, place of residence, division, respondents' education, wealth index, mass media exposure, working status of respondents and husband's education are significantly associated with awareness about HIV/AIDS of women in Bangladesh. Women of Dhaka division are found more likely to have knowledge about HIV/AIDS than women of other divisions. Middle-class and Rich women are more likely to have awareness about HIV/AIDS than poor women in Bangladesh. The odds ratio indicated that HIV/AIDS awareness among women increases with the increase of schooling and age. This study recommends education and mass media campaigns as strong determinants of HIV/AIDS awareness among women in Bangladesh.

1. Introduction

Acquired immunodeficiency syndrome (AIDS) is now a global concern. AIDS is known as a transmittable and chronic disease caused by HIV. Initially, HIV can damage a person's immune system at once, eventually, it develops AIDS and leads to death (Mamtaz, 1999). In this physical condition, the immune system collapses and causes serious infections. As a result, the impact of HIV/AIDS is a substantial and major challenge or threat to the human population of a country.

In 2013, UNAIDS presented that HIV/AIDS transmission showed considerable infections among women globally and indicated the key reason for death. It was also reported that almost 17.7 million women aged 15-44 years were infected with AIDS (UNAIDS, 2013). At the end of 2019, it is reported that an estimated 38 million people are suffering from HIV/AIDS. In 2019, the number of HIV/AIDS deaths was reported 6.9 million, and 1.7 million people were found newly infected (UNAIDS, 2019).

Bangladesh detected the first HIV cases in May 1990. Khan *et al.*, (1997) discussed that male dominance and gender violence are associated with HIV/AIDS issue and concluded that women are frequent victims of AIDS. In Bangladesh, HIV risk showing a high rate because of some risk determinants such as poor health services, insecure sex practice and shortage of proper or adequate screening practice (Sarkar *et al.*, 2006, Azim *et al.*, 2008, Khosla, 2009, Rahman *et al.*, 2009 and Hossain *et al.*, 2014).

The HIV risk remains alarming in Bangladesh because of its significant amount of prevalence across neighboring countries such as India, Nepal, and Myanmar (UNAIDS, 2011). Among Southeast Asian countries, Bangladesh had the lowest HIV rate in 2012 (WHO, 2012) and HIV/AIDS cases increased since 2014 (UNAIDS, 2018). According to UNAIDS (2018) report, in Asia and Pacific regions, the prevalence of people living with HIV/AIDS (15-25 years) was as high compared to 2016 and newly infected HIV/AIDS cases were reported as 2.7 million. Since 2019, a total of 7374 people infected with HIV/AIDS in Bangladesh, of which 1242 died. In 2019, 919 people identified as HIV positive and 170 people died due to AIDS, the highest ever in a single year in Bangladesh

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(Ministry of Health and Family Welfare, 2011; 2019).
Several studies have been conducted to find out the level of awareness among women in Bangladesh using both primary and secondary data (Asaduzzaman *et al.*, 2016; Mondal *et al.*, 2012; Rahman *et al.*, 2009). In Bangladesh, many studies examine different socio-economic and demographic factors associated with HIV/AIDS among ever-married women (Asaduzzaman *et al.*, 2016; Yaya *et al.*, 2016 and Hosain and Islam, 2016).
The government of Bangladesh wants to eliminate HIV/AIDS from the country by 2030. In this context, there is a need for renewed attention and additional research to know the present awareness about HIV/AIDS status and determine socio-demographic determinants related to HIV/AIDS awareness among ever-married women in Bangladesh. Hence, the present study uses Bangladesh Demographic and Health Survey (BDHS) 2014 data to investigate the association of different factors with HIV/AIDS awareness among ever-married women of Bangladesh. The general objective is to identify the determinants of the awareness about HIV/AIDS among married women in Bangladesh. The specific objectives of this study are to determine the prevalence and the extent of awareness about HIV/AIDS among married women with socio-economic and demographic variables.

2. Materials and Methods

2.1. Data

The study uses a nationally representative set of cross-sectional data extracted from the Bangladesh Demographic and Health Survey (BDHS) 2014 (NIPROT, 2014). A total of 18,245 ever-married women aged 15-49 were identified in the 2014 BDHS survey and 17,863 were interviewed. This study uses 17,863 ever-married women of Bangladesh as a sample.

2.2. Variables

The age of respondents, religion, respondent's education, division, place of residence, wealth index, mass media exposure, current working status of respondents and husbands' education are used as independent variables. In this data set, the variable respondent's age is categorized into four categories, such as 15 to 24, 25 to 34, 35 to 44 and 45 to 49. Division variable has seven categories; these are Dhaka, Chattogram, Barishal, Khulna, Rajshahi, Rangpur and Sylhet. This study categorizes religious variables as Muslim, Hindu and Other. Respondent's education and husband's education both consist of four categories: no education, primary, secondary and higher education.
In BDHS 2014, wealth index categories are poorest, poorer, middle, richer and richest. For this study converts the five categories into 3 categories. The first category is created by combining poorest and poorer which is poor, the second category is middle, the third category rich is created by merging richer and richest. Women's current employment status has two categories: No (Unemployed) and Yes (Employed). Respondent's occupations are categorized into agricultural worker, business and profession and the rest of the professions are denoted as others.
Mass media exposure variable is created by adding the variables watching TV, listening Radio and reading Newspaper in a week or Not, categorized as yes for media access and no for not access to media. The response variable is considered as 'Ever Heard of HIV/AIDS' coded as yes (1) and not at all (0).

2.3. Analytical Techniques

Univariate analysis showed the percentage distribution of background variables. In bivariate analysis, chi-square test is performed to investigate the association between socio-demographic factors and women's awareness about HIV/AIDS in Bangladesh. Based on the bivariate analysis results, variables that showed statistically significant association with women's awareness about HIV/AIDS were simultaneously entered into the binary logistic regression model. Binary logistic regression examines the net effect of each explanatory variable on the dependent variable.

3. Results and Discussion

Table 1 revealed that about two-thirds of the women (70.5%) in Bangladesh were aware of HIV/AIDS. From table 2, it is observed that most of the women's age (36%) are between 25-34 year's group, while only 10% women's age are 45 or more. Most of the women are Muslims (90.3%). Seventeen percent respondents are from Dhaka division, 16%, 12%, 15%, 14%, 14% and 12% respondents are from Chittagong, Barisal, Khulna, Rajshahi, Rangpur and Sylhet division respectively.
A higher percentage of women (66%) lived in rural areas and 34% of women lived in urban areas. Most of the women (38%) completed secondary education, followed by 29% of women who completed primary education, 24% of women did not receive any education and 9.60% of women have higher education. It is revealed that 28% of women's husbands do not have any education, 27% of women's husbands have completed primary education, 30% of women's husbands completed secondary education, and 15% have higher secondary education. About 69% of respondents are currently employed and 31.5% are not currently employed.
Table 3 showed the association of HIV/AIDS awareness among ever-married women in Bangladesh with various demographic and socio-economic factors. The age group of 15-24 years showed the highest proportion of awareness about HIV/AIDS (75.6%) while 55.7% of respondents in the age group 45-49 years had an awareness of HIV/AIDS. The level of awareness about HIV/AIDS is increasing with the increase of the age of the respondents. It is seen that awareness about HIV/AIDS has a significant association with the age of the respondents. This result is similar to the other study (Yaya *et al.*, 2016).
Table 3 presented that Eighty-three percent of urban

Table 1. Distribution of women awareness about HIV/AIDS in Bangladesh (N = 17863)

Variables	Categories	No. of Respondents	Percentage
Ever Heard HIV/AIDS	Yes	12593	70.5
	No	5270	29.5

Table 2. Distribution of socio-economic and demographic variables of respondents (N = 17863)

Variables	Categories	No. of Respondents	Percentage
Respondents Age	15-24	5184	29.00
	25-34	6355	35.60
	35-44	4510	25.20
	45-49	1814	10.20
Religion	Islam	16135	90.30
	Hindu	1592	8.90
	Other	136	0.80
Division	Barisal	2142	12.00
	Chittagong	2865	16.00
	Dhaka	3093	17.30
	Khulna	2581	14.40
	Rajshahi	2512	14.10
	Rangpur	2531	14.20
	Sylhet	2139	12.00
Place of Residence	Urban	6167	34.50
	Rural	11696	65.50
Respondents Education Level	No education	4206	23.50
	Primary	5226	29.30
	Secondary	6722	37.60
	Higher	1709	9.60
Respondent Occupation	Agriculture Worker	2614	14.60
	Business and Profession	1773	9.90
	Others	13476	75.40
Wealth Index	Poor	6611	37.00
	Middle Class	3621	20.30
	Rich	7631	42.70
Media Exposure	Yes	11270	63.10
	No	6593	36.90
Respondents' Current Working Status	Yes	5624	31.50
	No	12239	68.50
Husband Education Level	No education	5065	28.40
	Primary	4855	27.20
	Secondary	5266	29.50
	Higher	2677	15.00

women have ever heard about HIV/AIDS whereas 64% of rural women have ever heard HIV/AIDS. Higher educated women show the highest percentage (99.4%) of having awareness about HIV/AIDS and no educated women are found to have the lowest percentage (40.7%) of having awareness about HIV/AIDS. The result showed that the awareness about HIV/AIDS are highest (87.5%) among rich respondents and the lowest (50.1%) across poor respondents.

From table 3, it is seen that HIV/AIDS awareness

Table 3. Association of awareness about HIV/AIDS with selected variables (N = 17863)

Characteristics	Awareness about HIV/AIDS		Total (100%)	χ^2-value (P- value)
	Yes	No		
	Frequency (%)	Frequency (%)		
Respondents Age Group				
15-24	3918 (75.6)	1266 (24.4)	5184 (100)	426.585 (0.000) *
25-34	4790 (75.4)	1565 (24.6)	6355 (100)	
35-44	2874 (63.7)	1636 (36.3)	4510 (100)	
45-49	1011(55.7)	803 (44.3)	1814 (100)	
Place of Residence				
Urban	5125 (83.1)	1042 (16.9)	6167 (100)	719.632 (0.000) *
Rural	7468 (63.9)	4228 (36.1)	11696 (100)	
Religion				
Muslim	11454 (71.0)	4681(29)	16135 (100)	23.293 (0.000) *
Hindu	1059 (66.5)	533 (33.5)	1592 (100)	
Other	80 (58.8)	56 (41.2)	136 (100)	
Respondents' Education Level				
No education	1713 (40.7)	2493 (59.3)	4206 (100)	3500.906 (0.000) *
Primary	3320 (63.5)	1906 (36.5)	5226 (100)	
Secondary	5862 (87.2)	860 (12.8)	6722 (100)	
Higher	1698 (99.4)	11 (0.6)	1709 (100)	
Wealth Index				
Poor	3313 (50.1)	3298 (49.9)	6611 (100)	2389.074 (0.000) *
Middle	2600 (71.8)	1021(28.2)	3621(100)	
Rich	6680 (87.5)	951(12.5)	7631(100)	
Media Exposure				
Yes	9499 (84.3)	1771 (15.7)	11270 (100)	2791.06 (0.000) *
No	3094 (46.9)	3499 (53.1)	6593 (100)	
Respondent Working Status				
Yes	3810 (67.7)	1814 (32.3)	5624 (100)	29.896 (0.000) *
No	8783 (71.8)	3456 (28.2)	12239 (100)	
Husband Education				
No Education	2448 (48.3)	2617 (51.7)	5065 (100)	2468.566 (0.000) *
Primary	3193 (65.8)	1662 (34.2)	4855 (100)	
Secondary	4405 (83.6)	861(16.4)	5266 (100)	
Higher	2547 (95.1)	130 (4.9)	2677 (100)	
Division				
Barisal	1570 (73.3)	572 (26.7)	2142 (100)	371.391 (0.000) *
Chittagong	2041 (71.2)	824 (28.8)	2865 (100)	
Dhaka	2403 (77.7)	690 (22.3)	3093 (100)	
Khulna	2035 (78.8)	546 (21.2)	2581(100)	
Rajshahi	1669 (66.4)	843 (33.6)	2512 (100)	
Rangpur	1556 (61.5)	975 (38.5)	2531 (100)	
Sylhet	1319 (61.7)	820 (38.3)	2139 (100)	

Note: *indicates at 1% level of significance

across ever-married women in Bangladesh is significantly associated (P-value<0.01) with predictors such as place of residence, religion, division, respondents' education, wealth index, mass media exposure, respondent working status and husband's education. This result is consistent with the studies (Mondal *et al.*, 2012; Rahman and

Table 4. Results of binary logistic regression model on awareness about HIV/AIDS

Parameter	β	S.E.	df	P-value	Exp (β)	95% C.I. for Exp(β)	
						Lower	Upper
Age of Respondents							
15-24®					1		
25-34	0.414	0.054	1	0.000*	1.512	1.360	1.682
35-44	0.214	0.060	1	0.000*	1.238	1.100	1.393
45-49	-0.087	0.076	1	0.251	0.917	0.790	1.064
Division							
Barisal®					1		
Chittagong	-.536	0.079	1	0.000*	0.585	.501	0.683
Dhaka	0.240	0.082	1	0.003*	1.271	1.083	1.492
Khulna	-0.105	0.080	1	0.192	0.901	0.770	1.054
Rajshahi	-0.580	0.079	1	0.000*	0.560	0.480	0.654
Rangpur	-0.534	0.078	1	0.000*	0.587	0.504	0.683
Sylhet	-0.369	0.080	1	0.000*	0.692	0.591	0.810
Place of Residence							
Urban®		1					
Rural	-0.296	0.051	1	0.000*	0.744	0.673	0.822
Respondents Education Level							
No Education®					1		
Primary	0.386	0.063	1	0.000*	1.472	1.301	1.665
Secondary	0.906	0.101	1	0.000*	2.476	2.032	3.015
Higher	3.201	0.323	1	0.000*	4.555	3.037	6.247
Respondent Currently Working Status							
No®		1					
Yes	0.010	0.065	1	0.883	1.010	0.889	1.146
Religion							
Islam ®					1		
Hinduism	-0.262	0.071	1	0.000*	0.769	0.670	0.884
Others	-0.515	0.243	1	0.034**	0.597	0.371	0.961
Wealth Index							
Poor ®					1		
Middle class	0.147	0.060	1	0.013**	1.159	1.031	1.302
Rich	0.396	0.067	1	0.000*	1.485	1.304	1.692
Husband Education							
No Education®					1		
Primary	0.111	0.050	1	0.026**	1.117	1.013	1.231
Secondary	0.490	0.059	1	0.000*	1.633	1.455	1.832
Higher	0.780	0.112	1	0.000*	2.181	1.752	2.714
Mass Media Exposure							
No®					1		
Yes	0.951	0.047	1	0.000*	2.589	2.361	2.839

Note: ® represents the reference category, * and ** indicates 1% and 5% level of significance.

Rahman, 2007) since they found that women education, husband education, husband occupation, age at marriage, watching TV and area of residence were significantly associated with the level of awareness of HIV/AIDS of married women.

Table 4 presented the results of the binary logistic regression model as a multivariate technique to examine the effect of each predictor variable on HIV/AIDS

awareness among women in Bangladesh. In statistical analysis, each predictor is considered in a dummy variable scheme. Regression coefficients, Odds ratio (OR) along with 95% confidence interval (CI) of OR are used to compare different groups. The odds ratio of age group indicated that the women of age 25-34 and 35-44 years are 1.36 and 1.10 times respectively more likely to have awareness about HIV/AIDS compared to young age women (15-24 years). Women resides in Dhaka division are found 27% more likely to be aware about HIV/AIDS comparing to Barishal division respondents. The odds ratio also represented that Chittagong, Dhaka, Khulna, Rajshahi, Rangpur and Sylhet division's respondents' awareness about HIV/AIDS are 0.585, 0.901, 0.817, 0.560, 0.587 and 0.692 times less likely than women who reside in Barishal division. The level of HIV/AIDS awareness among rural women are identified 0.744 times less than that of the ever-married women living in urban areas. Middle-class and rich women are 1.159 and 1.489 times respectively more likely to have ever heard of HIV/AIDS than poor women in Bangladesh. Education is believed to play a significant role in determining her social status. Women who have primary education are 1.472 times more aware of HIV/AIDS than those who have no education. Similarly, respondents who studied up to secondary and higher secondary education are 2.476 and 24.555 times, respectively, more likely to have heard of HIV/AIDS than women having no education. The level of awareness about HIV/AIDS among the ever-married women who have media exposure is found 2.589 times higher than that women who do not have media access. Women whose husbands have a higher education have heard HIV/AIDS 1.752 times more likely compared with those who have completed primary education.

4. Conclusions and Recommendations

This study observed that about two-third of ever-married women are aware of HIV/AIDS in Bangladesh. From the bivariate analysis, it is revealed that division, age of respondents, place of residence, respondents' education, wealth index, mass media exposure, women employment status and husband's education are significantly associated with awareness about HIV/AIDS of ever-married women in Bangladesh. Women with higher education are more likely to hear about HIV/AIDS than women having no education. Media exposure also appeared as a significant factor influences ever heard of HIV/AIDS of women in Bangladesh. This study recommends ensuring education for all women since educated women are found more aware of HIV/AIDS. Government, NGOs and other development agencies should take enough intervention programs on radio, TV and newspaper for the general population at large to increase knowledge and awareness about HIV/AIDS among women in Bangladesh.

References

Asaduzzaman, M., Higuchi, M., Sarker, M. A. B., & Hamajima, N. (2016). Awareness and knowledge of HIV/AIDS among.married women in rural Bangladesh and exposure to media: A secondary data analysis of the 2011 Bangladesh demographic and health survey. *Nagoya Journal of Medical Science, 78*(1), 109–118.

Azim, T., Chowdhury, E. I., Reza M., Faruque M. O., Ahmed, G., Khan, R. Rahman, M., Parvez M. M., Jana S., & Strathdee S. A. (2008). Prevalence of infections, HIV risk behaviors and factors associated with HIV infection among male injecting drug users attending a needle/ syringe exchange program in Dhaka, Bangladesh. *Subst Use Misuse, 4*3(14), 2124-2144.

Hosain, M. T., & Islam, M. Z. (2016). Factors affecting knowledge, attitudes and behavior of HIV/AIDS: A study on Bangladesh. *Australian Journal of Business Science Design & Literature, 09*(02).

Hossain, M., Mani, K. K., Sidik, S. M., Shahar, H. K., & Islam, R. (2014). Knowledge and awareness about STDs among women in Bangladesh. *BMC Public Health, 14*(1), 775.

Khan, A. (1997). Knowledge on AIDS among Female Adolescents in Bangladesh: Evidence from the Bangladesh Demographic and Health Survey Data. *Centre for Health and Population Research: 20*(2), 130-137.

Khanam, P. A., Khuda, B., Khane, T. T., & Ashraf, A. (1997). Awareness of sexually transmitted disease among women and service providers in rural Bangladesh. *International Journal of STD & AIDS, 8*(11), 688-696.

Mamtaz, A. (1999). Response to the Pandemic in Bangladesh. *Journal of Preventive and Social Medicine (JOPSOM), 18*(1), 74-83.

Ministry of Health and Family Welfare (2019). Directorate General of Health Services.National AIDS/STD Programme.Ministry of Health and Family Welfare, Government of Bangladesh; Bangladesh.

Ministry of Health and Family Welfare (MOHWF). (2011). *Journal of National HIV Serological Surveillance.* National AIDS/STD Program, Directorate General of Health Services.

NIPORT (2014). Bangladesh Demographic and Health Survey (BDHS), National Institute of Population Research and Training (NIPORT), Dhaka, Bangladesh.

Rahman, M. S., & Rahman, M. L. (2007). Media and education play a tremendous role in mounting AIDS awareness among married couples in Bangladesh. *AIDS Research and Therapy, 4*, 10-17.

Rahman, M. M., Kabir, M., & Shahidullah, M. (2009). Adolescent knowledge and awareness about AIDS/ HIV and factors affecting them in Bangladesh. *Journal of Ayub Medical College, Abbottabad, 21*(3), 3–6.

Sarkar, K., Bal, B., Mukherjee, R., Chakraborty, S., Niyogi, S. K., Saha, M. K., & Bhattacharya, S. K. (2006). Epidemic of HIV coupled with hepatitis C virus among injecting drug users of Himalayan West Bengal, Eastern India, bordering Nepal, Bhutan, and Bangladesh. *Substance use and Misuse, 41*(3), 341–352.

UNAIDS (2019). World AIDS Day Report, Joint United Nations Program on HIV/AIDS,Switzerland. UNAIDS (2018). Asia and Pacific. Retrieved from http://www.unaids.org/en/regionscountries/asiaandpacific.

UNAIDS (2011). World AIDS Day Report, Joint United Nations Program on HIV/AIDS, Switzerland.

World Health Organization, Regional Office for South-East Asia. (2012). HIV/AIDS in the South-East Asia region: Progress report 2011. http://www.searo.who.int/entity/hiv/ documents/hiv-aids_in_south-east_asia.pdf.

Yaya, S., Bishwajit, G., Danhoundo, G., Shah, V., & Ekholuenetale, M. (2016). Trends and determinants of HIV/AIDS knowledge among women in Bangladesh. *BMC Public Health, 16*(1), 812.