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PREVALENCE OF COMPREHENSIVE KNOWLEDGE ABOUT HIV/AIDS AMONG EVER MARRIED MEN AND WOMEN IN BANGLADESH

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ABSTRACT

Comprehensive knowledge infers comprehending of AIDS prevention methods i.e. consistent condom use & having just one uninfected faithful partner, being conscious that a healthy person can have the HIV, and declining the common misconstructions of AIDS i.e. transmitting through mosquitoes & sharing food. Comprehensive knowledge of HIV becomes essential for all since the aspect of the HIV prevalent changes over the years. The prevalence of comprehensive knowledge on AIDS among ever married men & women based on the data take out from Bangladesh Demographic and Health Survey report 2007 is studied. In Bangladesh gender discrimination is seen every respect. This study finds female have less comprehensive knowledge than male (difference is 6.7%). Risk factors like administrative division, education, age at 1st marriage, wealth index, watching TV are significantly affecting comprehensive knowledge. Both sexes from Sylhet have less comprehensive knowledge than that of other divisions.

Keywords: AIDS, BDHS, Comprehensive Knowledge, HIV.

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is a name of immense emergency for human civilization. It is a life threating communicable disease caused by human immunodeficiency virus (HIV). It breaks down body's immune system, leaving the victim defenseless to a host of life threatening opportunistic contaminations, neurological disarrays or infrequent malignancy. Secondary infections lead to death if not adequately treated. According to World Health Organization (WHO) report 1992, a huge percentage among those infected with HIV die within 5 to 10 years. There is no remedy to get rid of this life threating disease; prevention is the only way out to get rid of this problem. In 1981 AIDS was first diagnosed at United States. Since then, more than 60 million people all over the world have been infected with the HIV & approximately 30 million people have died of AIDS. In year 2010, estimated numbers of people living with HIV were 34 million, 2.7 million newly identified & 18 million deaths occurred due to AIDS. About 1.9 million people in WHO African region acquired the HIV virus in year 2010, which is considered to be the most affected region in the world. The number of people living with HIV in Eastern Europe an Central Asia has risen around 250% in 2010 from 2001 (UNAIDS 2010). Gender inequality geared up HIV & AIDS epidemics all over the world. Women are excessively infected and affected by HIV & AIDS. Around 59% adults in Sub Shara Africa living with HIV are women & young women make up 75% of HIV positive. 15-25 years old in the region mostly transmitted through sex with HIV positive men (Leiter K.). In Bangladesh the first HIV case was identified in year 1989. Bangladesh latest round of serological surveillance 2011 showed that the prevalence of HIV in the general inhabitants appears less than 1 percent in all risk groups except for injecting drug users (IDU). In 2010, a total of 2088 HIV cases, of which 343 were new, 231 AIDS cases & 37 AIDS related deaths were reported in the national AIDS/STD program (National STD/AIDS Program (NASP)

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Report 2010). In 2007/08 among IDU, the overall prevalence was 1.2 percent. Among the administrative divisions, the rate is highest among male IDU in Dhaka. More than 75% of HIV cases were transmitted sexually & further 10% were transmitted to children from mothers through labor or breast-feeding (Askew I and Berer M, 2003). However, Bangladesh has a low infection rate but it is surrounded by high prevalence countries like India & Myanmar (Chowhury *et al.*1995). Frequent cross border movement of people in those countries from Bangladesh or vice versa will increase the quick spread of disease among Bangladeshi population. Bangladesh has several communal, financial, health determinants that may possibly yield an upsetting epidemic similar to HIV/AIDS. Several studies have recognized numerous reasons that are accountable for transmission of HIV in human body such as insecure sexual intercourse, intravenous injections with contaminated needles or syringes, unscreened blood transfusions, and transmission from an infected mother to her child during pregnancy, delivery or breastfeeding. Studies also reveal that a healthy person can infected by HIV. It can't be transmitted through food, insects. All these knowledge of preventions & misconceptions about transmission of HIV is identified as comprehensive knowledge on HIV/AIDS. Since the dimension of the HIV prevalent changes over the years consequently the comprehensive knowledge of HIV /AIDS turns out to be essential for all.

This study focuses on the prevalence of comprehensive knowledge on HIV/AIDS among ever married men & women in Bangladesh. Still the number of persons who ever heard about HIV/AIDS increases over the years in Bangladesh nevertheless the level of comprehensive knowledge on HIV may not be so satisfactory. In addition, gender inequality is a big concern in our country. Because of their sex & gender, women & girl face lots of trouble & discrimination in their life. This study examines comprehensive knowledge difference between men & women by different socio-economic characteristics. And also examines probable risk factors affecting this knowledge among ever married men & women.

MATERIALS AND METHODS

The data for this study were extracted from Bangladesh Demographic Health Survey (BDHS) report 2007, 2004, 1999-2000, & 1996-97. The 2007 BDHS was a fifth national demographic & health survey conducted in all over Bangladesh. BDHS 2007 provides information on fertility, child mortality, child nutrition, fertility preferences, use of family planning method, knowledge & attitudes towards HIV/AIDS & other sexually transmitted infections (STI), women empowerment, domestic violence, etc. BDHS 2007 used a stratified sample (stratification is carried out at each division into urban & rural regions) selected in two stages from the 2001 census frame (consist of 259532 enumeration areas (EAs)). Sample consist of 361 primary sampling unit (psu), among them 134 & 227 were selected from urban & rural areas respectively. In second stage, from each psu 30 households were selected using equal probability systematic method. All ever married women (15-49 years) & men (15-54 years) who slept in the selected households the night before the survey were suitable for the female & male survey respectively. For the male survey, 50 percent of total selected samples were chosen through systematic sample. Finally, the BDHS 2007 covers a nationally representative sample of 10,996 women of age 15-49 & 3711 men of age 15-54.

The entire sample was distributed, according to the purpose of this study, into two groups concerning the respondent's level of comprehensive knowledge on HIV/AIDS. Comprehensive knowledge coded as 1for yes & as 0 for no. It has been decided to understand the impact of independent variables such as age group (in 5 years), place, administrative division, education status, wealth index, marital status, age at 1st marriage, respondent occupation, watching TV on comprehensive knowledge of HIV among ever married men. Again for ever married women, all the independent variables considered for men, plus husband's education, contraceptive use, age at 1st birth, belong to any organization (such as Grameen Bank, ASA, BRAC, PROSHIKA, Mothers Club, BRDB & other organizations) were considered as independent variables.

The Pearson's chi-square test of independence was applied to test the existence of significant association between categories of comprehensive knowledge on HIV & selected background characteristics on both sexes. In addition, an exploratory data analysis has been executed to investigate whether there was any comprehensive knowledge difference exists between men & women in Bangladesh or not.

Due to the dichotomous nature of the dependent variables (i.e. binary, or 0-1), comprehensive knowledge on HIV (Yes vs. No), the technique of logistic regression has been used for the analysis. Logistic regression (Hosmer and Lemeshow, 1989) is used when the response or dependent variable was dichotomous while the predictor variables may be quantitative, categorical or both.

Let, $X = (x_1, x_2, \ldots, x_p)'$ be a vector of p covariates (or independent variables). The basic form of logistic regression model is then

$$P(y=1|x)=\pi(x_i)=\frac{\exp(x_i\beta)}{1+\exp(x_i\beta)}=P(x).$$

Where, α is a scale parameter and β is a p × 1 vector parameter. P(x) represents the probability that given by $P(y=0|x)=1-\pi(x_i)=\frac{1}{1+\exp(x_i\beta)}=1-P(x).$

Then a well-known transformation of P(x) known as logit transformation is defined as

$$g(x_i)=\log it_{[\pi(x)]}=\log[\frac{\pi(x)}{1-\pi(x)}]=x\beta$$

Or

$$g(x_i)=\beta_0+\beta_1x_{i1}+\beta_2x_{i2}+\cdots\cdots\cdots+\beta_kx_{ik}.$$

The coefficients are used to compute odds ratios (OR), which give the ratio of two odds of occurring an event (Y = 1). An odds ratio more than 1 indicates a positive association between the independent and dependent variables and an odds ratio less than 1 indicate a negative association. Odds ration equals to zero indicates there is no association between the variables. The logistic regression technique can be used not only to identify the risk factor but also to predict the probability of success

RESULTS AND DISCUSSION

Prevalence of comprehensive knowledge on HIV in Bangladesh: Figure 1 demonstrates a comparison of knowledge on HIV/AIDS between ever married men & women in Bangladesh over the time 1996-2007. Knowledge on HIV/AIDS defined as whether a respondent ever heard about HIV/AIDS. In the past 10 years, the knowledge of HIV has risen among ever married women to 67% in 2007 from 19% in 1996-1997. And among the men respondents such knowledge has increased from 33% in 1996-97 to 87% in 2007. For all surveyed years, the prevalence of knowledge about HIV/AIDS among ever married female respondents is lower compare to male. The knowledge difference among ever married male & female was 14% in the year 1996-97, and then it increased to 20% & 18% in the year 1999-2000 & 2004 respectively. In the year 2007 the difference increased by 20%. Finally, the knowledge difference of HIV/AIDS among male and female are becoming wider than the previous years although such knowledge has improved over time.

Figure 2 exhibits a straightforward comparison of comprehensive knowledge of HIV/AIDS between men & women who ever heard about HIV/AIDS in Bangladesh. Among male, who ever heard about HIV, around 83.2% do not possess comprehensive knowledge on HIV. Only 16.8% men do possess such knowledge. Again, around 89.9% female, who ever heard about HIV, do not have comprehensive knowledge on HIV. Rest of them (i.e. 10% women) has a good range of knowledge on HIV/AIDS. The comprehensive knowledge difference between male & female who ever heard about HIV is about 6.7%. This indicated that the male respondent have more comprehensive knowledge compare to female.

Figure 3 clearly shows comparison between male & female who do not have comprehensive knowledge about HIV/AIDS by different socio-demographic characteristics such as age of respondent, administrative division, place of residence, level of education, wealth index & watching TV. It demonstrates that irrespective of all background characteristics, proportion of female who do not have comprehensive knowledge on HIV is higher than that of male. As the age of respondent increases the proportion of person who do not have comprehensive knowledge increases irrespective of their gender. Among all administrative divisions, respondents from Sylhet possess least level of AIDS knowledge. Men & women living in urban areas have a higher level of AIDS knowledge than rural men & women. Highly educated male respondents have more knowledge deficiency than that of female. The level of comprehensive knowledge of both male & female increases as wealth index goes to richest from poorest status. Watching TV has a positive effect on comprehensive knowledge on HIV/AIDS.

Factors affecting comprehensive knowledge on HIV among ever-married men: Some selected socio-economic and demographic factors are investigated to determine their effect on the comprehensive knowledge on HIV/AIDS. In this part we have considered nine probable factors (Table 1) to identify the possible determinants of comprehensive knowledge on HIV. Table 1 shows effect of individual factors on comprehensive knowledge. Then binary logistic regression model (Table 2) is carried out to see the combined effect of selected factors on comprehensive knowledge. From Table 1, the association of variables like place of residence, administrative division, level of education, wealth index, age at 1st marriage & watching TV are statistically significant with comprehensive knowledge of HIV/AIDS among male at 1% level of significant (i.e. P-value < .01). But variables like age group (in 5 years), marital status & respondent occupation are found to be statistically insignificant.

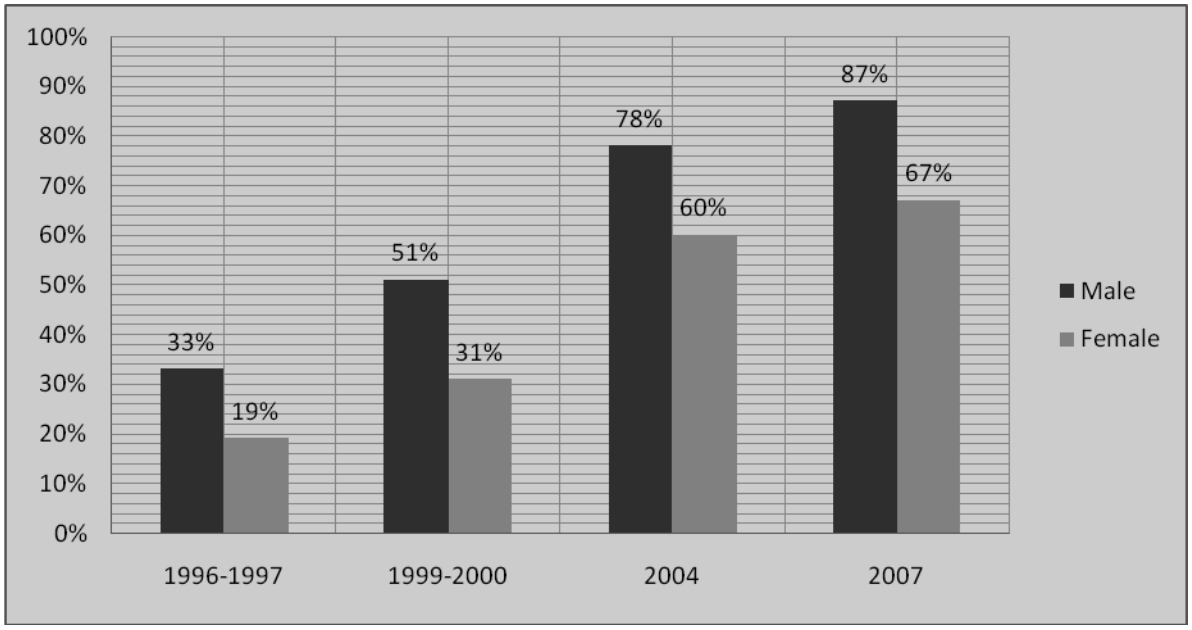

Figure 1. % of Ever Married Men & Women Who Have Knowledge on AIDS; Source: BDHS Report 1996-2007.

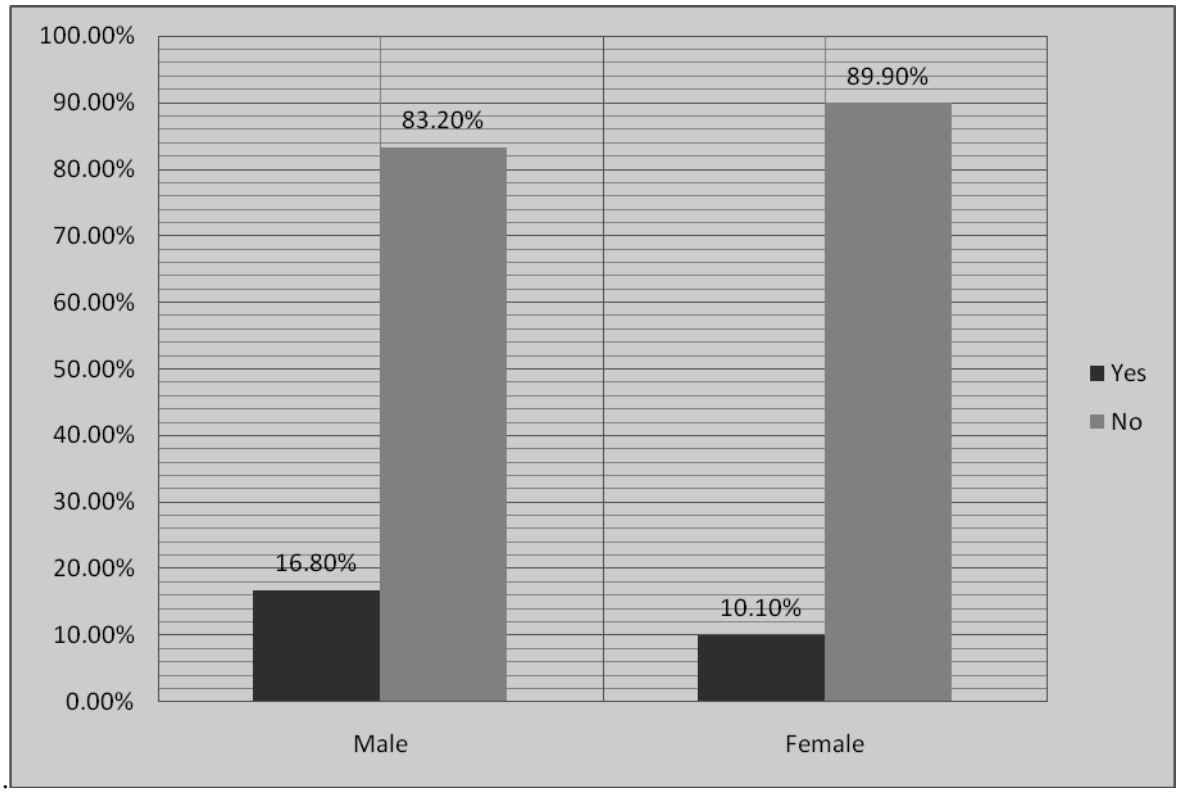

Figure 2: Comprehensive Knowledge of AIDS among Who Ever Heard on AIDS in Bangladesh. Source: BDHS 2007.

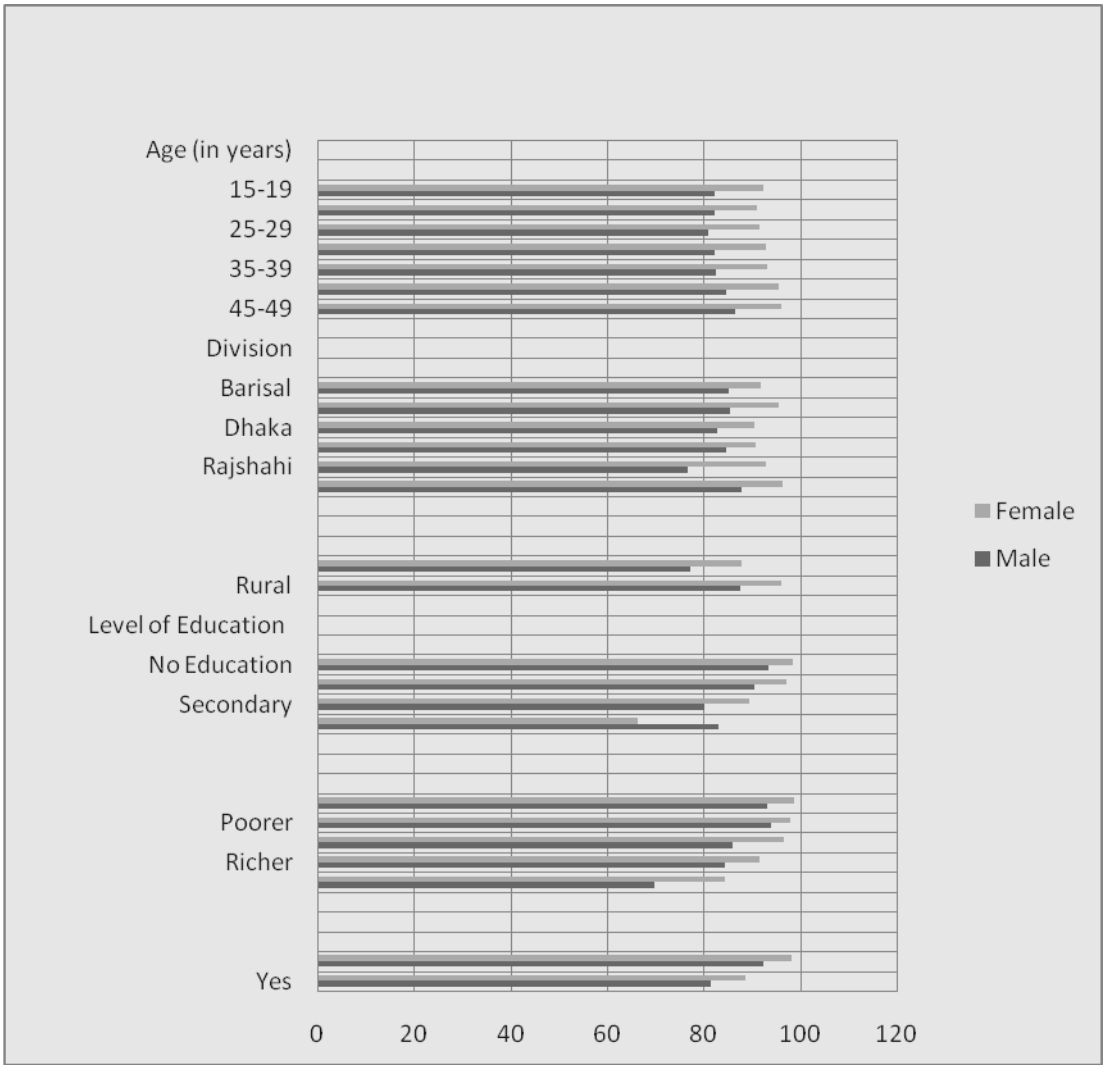

Figure 3. % of Men & Women Who Do Not Have Comprehensive Knowledge by Different Characteristics.

Table 1: Chi-square Test of association of Comprehensive Knowledge on HIV/AIDS for Males with Socio-Demographic Characteristics.

Variables	$\chi^2_{calculated}$	d.f.	P-value
Age Group in 5 years	7.087	7	0.42
Place of Residence [a]	59.48	1	.000
Administrative Division [a]	29.03	5	.000
Level of Education [a]	306.7	3	.000
Wealth Index [a]	202.4	4	.000
Marital Status	2.053	1	.152
Age at 1st Marriage [a]	30.228	1	.000
Respondent Occupation	.045	1	.832
Watching TV [a]	36.727	1	.000

[a] $p < 0.01$; [b] $p < 0.05$; [c] $p < 0.1$

Table 2. Results of Logistic Regression Analysis of Comprehensive Knowledge on HIV/ AIDS among Ever Married Male.

Covariates	B	S.E.	P- value	OR	95% C.I. for OR	
					Lower	Upper
Age (in years)						
15-19(RC)	-	-	-	-	-	-
20-24	-.553	.691	.424	.575	.149	2.229
25-29	-.730	.680	.283	.482	.127	1.826
30-34	-1.009	.685	.141	.365	.095	1.397
35-39	-.925	.681	.174	.396	.104	1.507
40-44	-1.050	.685	.125	.350	.091	1.341
45-49	-1.236	.687	.072	.291	.076	1.117
50-54	-.920	.685	.179	.399	.104	1.526
Administrative Division						
Sylhet (RC)	-	-	-	-	-	-
Barisal	.232	.224	.300	1.261	.813	1.956
Chittagong	.086	.209	.680	1.090	.724	1.642
Dhaka	.322	.199	.105	1.380	.934	2.038
Khulna	.209	.207	.313	1.233	.821	1.850
Rajshahi [a]	.705	.197	.000	2.024	1.375	2.977
Level of Education						
Illiterate (RC)	-	-	-	-	-	-
Primary	.269	.184	.144	1.309	.912	1.877
Secondary [a]	.852	.178	.000	2.343	1.653	3.321
Higher [a]	1.566	.191	.000	4.787	3.290	6.964
Wealth Index						
Poorest (RC)	-	-	-	-	-	-
Poorer	-.227	.274	.407	.797	.466	1.363
Middle [a]	.613	.238	.010	1.845	1.157	2.944
Richer [b]	.513	.237	.030	1.671	1.050	2.660
Richest [a]	1.034	.232	.000	2.814	1.784	4.437
Age at 1st Marriage						
≤ 22 years (RC)	-	-	-	-	-	-
> 22 years [a]	.317	.115	.006	1.373	1.096	1.720
Watching TV						
No (RC)	-	-	-	-	-	-
Yes [a]	.551	.185	.003	1.734	1.207	2.492
Constant [a]	-2.974	.729	.000	.051	-	-

RC: Reference category, [a] p< .01; [b] p< .05; [c] p< .1

The results of binary logistic regression analysis for male presented in Table 2 reveal that level of education, wealth index, age at 1st marriage, & watching TV have statistically significant relationship with comprehensive knowledge of HIV/ AIDS.

Among administrative divisions, the regression coefficient of the male from Rajshahi district is 0.705, corresponding odds ratio (OR) is 2.024, & confidence interval (C.I.) is 1.375 to 2.977. This implies that the comprehensive knowledge on HIV among male from Rajshahi is 2.024 times higher

than that of Sylhet. The regression coefficients for male having secondary & higher education level are respectively 0.852 (OR = 2.343) & 1.566 (OR = 4.787). The level of comprehensive knowledge among male having secondary and higher education level are 2.343 times & 4.787 times higher than that of illiterate male respectively. So education plays a vital role in improving respondent's level of comprehensive awareness on HIV/AIDS.

Male from middle wealth quintile are 1.84 times more likely to have knowledge on HIV/AIDS than male from poorest wealth quintile. The middle wealth quintile has significant relationship with the knowledge at 1% level of significance (i.e. P-value $\leq .01$). The knowledge of HIV among male from richest wealth quintile is 2.814 times higher than that of poorest wealth quintile. The regression coefficient for male having age more than 22 years at 1st marriage is 0.371 (OR = 1.373), which implies they are 1.373 more likely to have comprehensive knowledge than those male having age less than or equal to 22 years at 1st marriage. The covariate watching TV has positive & significant effect on the comprehensive knowledge. Male who watch TV is 1.74 times more comprehensively aware of HIV than those who do not watch TV.

Factors Affecting Comprehensive Knowledge on HIV among Ever-Married Women

In this part we have considered thirteen probable factors (Table 3) to identify the possible determinants of comprehensive knowledge on HIV among women. In Table 3 we have shown individual effect of factors on comprehensive knowledge. Then binary logistic regression model (Table 4) is carried out to see the combined effect of selected factors on comprehensive knowledge.

[a] $p < 0.01$; [b] $p < 0.05$; [c] $p < 0.1$

From table 3, the variables like age group (in 5 years), place of residence, division, level of education, wealth index, marital status, age at 1st marriage, husbands education, contraceptive use, age at 1st birth, belong to organization & watching TV are statistically significant with comprehensive knowledge of HIV/AIDS among female at 1% level of significant (i.e. P-value < .01). But respondent's occupation is statistically insignificant.

From table 4, place of residence, level of education, wealth index, age at 1st marriage & watching TV all are significantly associated with the comprehensive knowledge on HIV/AIDS among ever married female aged between 15-49 years. The regression coefficients for ever married females resided in urban areas is 0.422 & OR is 1.524 (C.I.: 1.23-1.88), it means ever married females resided in urban areas are 1.524 times more likely to have comprehensive knowledge on HIV than that of female resided in rural areas. It is because, in Bangladesh, urban areas get more focus than the rural or remote areas in any kind of promotional issues. Consequently, people living in urban areas are more aware on such social issues then people from rural areas. Again, among different administrative divisions, the level of comprehensive knowledge on HIV/AIDS for the ever married female from Barishal, Dhaka, & Khulna districts are respectively 1.675, 1.829, & 1.864 times higher than that of ever married female from Sylhet district. Ever married female possessing primary, secondary & higher education are 1.43, 4.38 & 11.70 times more likely to have knowledge on HIV than those of illiterate females respectively. Female aged between 15-49 years belong to richest wealth quintile are 2.33 times more likely to have knowledge on HIV than the female from poorest wealth quintile. Again, the regression coefficients for female having age more than 18 years at 1st marriage is 0.29 & OR is 1.34 (C.I.: 1.065-1.68), which implies female having age more than 18 years at 1st marriage are 1.34 times more likely to have knowledge on HIV than those below or at 18 years. So, early marriage of female plays a significant role in building incomplete comprehensive knowledge on HIV/AIDS. Again, the female who watch TV are 2.5 times more likely to have awareness on HIV than those who do not watch TV.

The pattern of associations of some factors like level of education, wealth index, age at 1st marriage, & watching TV with comprehensive knowledge of HIV/AIDS are similar irrespective of respondent's gender. In addition, administrative division and place of residence are risk factors for women.

Table 3. Chi-square Test of association of Comprehensive Knowledge on HIV/AIDS for Females with Socio-Demographic Characteristics.

Variables	$\chi^2_{calculated}$	d.f.	P-value
Age Group in 5 years [a]	47.163	6	.000
Place of Residence [a]	254.2	1	.000
Administrative Division [a]	80.373	5	.000
Level of Education [a]	1235	3	.000
Wealth Index [a]	552.7	4	.000
Marital Status [a]	13.189	1	.000
Age at 1st Marriage [a]	330.2	1	.000
Husbands Education [a]	216.1	1	.000
Contraceptive Use [a]	27.403	1	.000
Age at 1st Birth [a]	126.3	1	.000
Respondent Occupation	2.009	1	.156
Belong to Organization [a]	27.487	1	.000
Watching TV [a]	370.5	1	.000

Table 4. Results of Logistic Regression Analysis of Comprehensive Knowledge on HIV/AIDS among Ever Married Female.

Covariates	B	S.E.	P-value	OR	95% C.I. for OR	
					Lower	Upper
Place of Residence						
Rural (RC)	-	-	-	-	-	-
Urban [a]	.422	.108	.000	1.524	1.235	1.882
Administrative Division						
Sylhet (RC)	-	-	-	-	-	-
Barisal [b]	.513	.201	.011	1.675	1.125	2.478
Chittagong	-.205	.203	.313	.815	.547	1.213
Dhaka [a]	.604	.178	.001	1.829	1.29	2.593
Khulna [a]	.623	.187	.001	1.864	1.293	2.687
Rajshahi	.219	.189	.123	1.338	.925	1.936
Level of Education						
Illiterate (RC)	-	-	-	-	-	-
Primary [c]	.362	.188	.054	1.436	.994	2.074
Secondary [a]	1.477	.167	.000	4.378	3.158	6.068
Higher [a]	2.460	.193	.000	11.702	8.011	17.093
Wealth Index						
Poorest (RC)	-	-	-	-	-	-
Poorer	.154	.294	.600	1.167	.655	2.078
Middle	.413	.275	.133	1.512	.882	2.591
Richer [a]	.823	.260	.002	2.278	1.369	3.792
Richest [a]	.845	.266	.001	2.328	1.382	3.922
Age at 1st Marriage						
≤ 18 years (RC)	-	-	-	-	-	-
> 18 years [b]	.291	.116	.012	1.338	1.065	1.680
Watching TV						
No (RC)	-	-	-	-	-	-
Yes [a]	.918	.142	.000	2.504	1.897	3.305
Constant [a]	-5.177	.288	.000	.006	-	-

RC: Reference category, [a] p< .01; [b] p< .05; [c] p < .1

CONCLUSION

This study clearly shows that although knowledge on HIV/AIDS has increased over the years in both sexes at Bangladesh but the knowledge difference among men & women is severe. Ever married female between 15-49 years have significant knowledge difference than ever married male between 15-54 years. This difference is increasing over the past years in Bangladesh. From BDHS 2007, we have observed that the level of

comprehensive knowledge among the respondents who ever heard about HIV/AIDS is expectedly very poor irrespective of respondents' gender. Also proportion of women who do not have comprehensive knowledge on HIV is higher than that of men by different socio-economic factors. So women are more vulnerable regarding the knowledge on HIV. Gender inequality is predominantly accountable for such helpless situation. Due to rigid social customs & strong religious principles, women's & girls of Bangladesh are not feeling open to share in any kind of discussion related to sex, sexually transmitted disease like HIV/AIDS. Such unawareness is propelling the risk of HIV infection. Policy maker should consider this as a serious problem and urgently proceeds several comprehensive gender sensitive programs & interventions to expand women's in depth knowledge on HIV/AIDS.

This study, from both bivariate & multivariate techniques, also identified some potential risk factors such as administrative division, level of education, age at 1st marriage, wealth index, watching TV; these are significantly associated with the comprehensive knowledge on HIV/AIDS among ever married men & women. In addition, place of residence & administrative divisions are accountable risk factors for women. Education & exposure to mass media can play an important role in increasing awareness about HIV/AIDS. It is time to introduce sex education in our education curriculum to create comprehensive awareness about sexually transmitted diseases like HIV/ AIDS among both young male & female. Proper planning is required to use mass media efficiently. Government should take a time effective & comprehensive intervention programs to enrich the level of knowledge on HIV/AIDS among the inhabitants of Bangladesh.

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