



Factors Affecting the Knowledge & Consciousness about HIV/AIDS of Bangladeshi People

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Abstract

The aim of this paper is to investigate the differential patterns and influencing factors related to preliminary knowledge about HIV/AIDS with the preventive methods so that the sufficient level of awareness can be drag down into the people starting from floating people live in the higher society of our country to the grass root people. It has been found that above 62% respondents of the age group 25-29 always use the preventive measure at the time of sexual intercourse while 63.6% urban respondents have the access to condom at the time of sexual intercourse that is the indication of having the advanced sources of information those are being availed by the urban people. Analyzing the wealth index it can be observed that the respondents belonging to the richest slab of wealth index are more frequent in using condom (66.5%) than that of the respondents who are belonging to the poorest slab of the wealth index (53.1%). The print media has a very pivotal role in orienting people about the protective measure as we can observe that 71.7% respondents who used to read newspaper at least once a week use condom at the time of sexual intercourse. At a glance, the respondents who are literate and have the association to various mass and electronic media are more likely to have more preliminary and preventive knowledge with satisfactory awareness level.

Key Words: HIV/AIDS, Logistic Regression, Odds Ratio.

Introduction

AIDS is the name of diseases that has a devastating effect on human body which causes definite death of human being. This disaster has been spread all over the world and millions of people have been victimized by it's prolong and sharp claw which leading the largest cause of death in the world and the fourth leading cause of death overall. At the global level, the number of people living with HIV continues to grow – from 35 million in 2001 to 38 million in 2003 [1]. According to the latest estimates from UNAIDS, there were 36.7million people living with HIV in 2015, up from 33.3 million in 2010, the result of continuing new infections, people living longer with HIV, and general population growth [2]. Global prevalence (the percent of people ages 15-49 who are infected) has leveled since 2001 and was 0.8% in 2015 [2]. Globally, there were 1.8 million children living with HIV, 110,000 AIDS-related deaths, and 150,000 new infections among children in 2015. Since 2001, new HIV infections among children have declined by more than 70% [2].

Table 1: HIV Prevalence & Incidence by Region, 2015

Region	Total No. (%) Living with HIV	Newly Infected	Adult Prevalence
Global Total	36.7 million (100%)	2.1 million	0.8
Eastern and	19.0 million (52%)	960,000	7.1



Southern Africa			
Western and Central Africa	6.5 million (18%)	410,000	2.2
Asia and the Pacific	5.1 million (14%)	300,000	0.2
Western and Central Europe and North America	2.4 million (7%)	91,000	0.3
Latin America and the Caribbean	2.0 million (5%)	100,000	0.5
Eastern Europe and Central Asia	1.5 million (4%)	190,000	0.9
Middle East and North Africa	230,000 (<1%)	21,000	0.1

(UNAIDS,2015)

HIV in Bangladesh has continued to remain at relatively low levels in the most at risk population groups. The main reason for this low prevalence could be the early and sustained HIV prevention programs targeting high risk groups backed by a state-of-the-art surveillance system. Another contributing protective factor could be the high rates of male circumcision. There is, however, a concentrated HIV epidemic among injecting drug users (IDU), primarily due to sharing of unclean syringes and needles. As a result, the rate of new infections is still on the rise and Bangladesh is the only country in the South Asia Region where new infections are rising [3].

In Bangladesh, HIV prevalence has been remained under 1% but risky behaviour in some parts of the population is so expensive that it could be just a matter of time to become a wider epidemic [3]. Hence, vigorous and prompt action is needed to reduce t-he risky behaviours and prevent the virus from taking hold.

In Bangladesh, as in other countries in the region, HIV risk arises mainly from unprotected paid sex, sharing of used needles and syringes by IDU, and unprotected sex between men who have sex with men. Recent data suggest that there are two key areas for HIV in the country. HIV prevalence has started to increase amongst IDU in Dhaka, rising to 7% in 2007/08 in one neighborhood. This epidemic “hot spot” is clearly a priority. International returned migrant workers: This group accounts for the majority of passively reported cases of HIV in the country and may be a potential source of HIV transmission [3].

Scientist have different theories about the origin of HIV, but in recent study [3] of the ancestry of the virus that caused the AIDS epidemic, scientists have traced HIV to two strains of a virus found in



monkeys in Africa. The viruses probably passed into chimpanzees when the apes ate infected monkey meat.

Earlier studies have shown that HIV1, the virus that causes the most common form of human AIDS, originated from a simian immunodeficiency virus, or SIV, that is found in chimpanzee. But now chimps came to have SIV has been a mystery [4].

It was this form of SIV that spread into the human population to start the HIV 1 epidemic that has killed millions of people worldwide. The recombination of these of these monkey viruses happened in chimpanzees and chimps transmitted it to humans on at least three occasions (AIDS.com). The transfer between chimps and humans probably happened in 1959 from a man in Kinshasa, Democratic Republic of Congo [5].

As for humans, it is not such a good idea to hunt and eat monkeys because there is a risk for humans to come into contact with a new form of HIV. Genetic studies suggest that lower monkeys first became infected with SIV 100,000 years ago or even earlier. SIV was passed to chimps after the animals split up into different subspecies living as separate bands in West Africa and in southern and central Africa. In humans, HIV attacks and Kills white blood cells and eventually overwhelms the body's ability to replace them. Without these diseases-fighting white blood cells, the body becomes defenseless against infections that are easily controlled by the immune system in healthy people. In 1982 public health officials began to use the term "Acquired Immune Deficiency Syndrome" or AIDS, to describe the occurrences of opportunistic infections, Kaposi's sarcoma, and Peneumocystis Carinii Pneumonia (PCP) in previously healthy men. Formal tracking of AIDS cases began that year in the United States [6].

The virus was first named HTLV-III/LAV (Human T-cell lymphotropic Virus- type III/lymphadenopathy- associated virus) by an international scientific committee. This name was later on changed to HIV.

In 2004, the HIV/AIDS epidemics killed over three million people worldwide; that represents approximately six deaths every minute. Forty million people are HIV positive [7]. According to 2004, UNAIDS Report on the global AIDS Epidemic, "over the past two years, the number of people living with HIV has been risen in every region of the world.

The steepest increase occurred un East Asia, China in particular, with a 50% rise. The 40% increase of Eastern Europe and Central Asia in 2004 in that period is mainly due to Ukrain's expending epidemic and rapidly growing number of people living with HN in the Russian Federation". Sub- Saharan Africa, howeverm is still far and away the with the worst affected region, with the 25 million people living with HIV, representing two-thirds of the world's victim which some three quarters (75%) are infected women [8].

Objective of Study

HIV/AIDS is now a global phenomenon, one person is dying of AIDS every minute in Asia. With the global world through communication and migration, 40 million people are living with HIV among of



them 2.5 million children aged less than 15 years (AIDS/STD) [9]. According to the UN program on HIV/AIDS and the World Health Organization (WHO) 5 million people were newly infected with HIV in 2003 and 3 million died from AIDS [10]. So the study is an important in this context. Now, the main objectives of this study are:

- (i) To investigate the differential patterns of knowledge, sources and awareness of HIV/AIDS among married people.
- (ii) To identify the interaction effects of the factors which influence knowledge, sources of knowledge and awareness of HIV/AIDS among the married people.
- (iii) To provide the suggestions and policy implications.

Sources of Data

The data of this study was taken from the 2012 Bangladesh Demographic and Health Survey (BDHS 2012). The BDHS 2012 is a nationally representative survey from 10,996 women age 15-49 and 3,771 men aged 15-54 from 10,400 household covering 361 sample points (cluster) throughout Bangladesh 134 urban areas and 227 in the rural areas. The data has collected from these six administrative divisions for the country- Barisal, Chittagong, Dhaka, Khulna, Rajshahi and Sylhet. The present study utilizes the BDHS with having a sample of 12541.

Data and Methodology

The logistic regression model is being used in many different areas and has become the standard method of analyzing models in which the dependency of a binary response variable is being tested on a number of explanatory variables. Suppose that a response (dependent) variable Y can take one of the two values "0" or "1" i.e., occurrence or nonoccurrence of an event such as obesity of the diabetic patients. Variables of this type are often called binary or dichotomous variables. For dichotomous variable such as Y , one object is to develop a method for estimating P , where, P is the probability of occurrence of an event as a function of a number of independent variables. It has been shown theoretically and empirically, that when the dependent variable is dichotomous, the shape of the response function is frequently curvilinear. The logistic linear model is curvilinear response function, which has been found to be appropriate in cases involving a binary dependent variable. This response function assures that the estimated value of P (Probability of occurrence of an event) is always between 0 and 1.

Development of the model

In this problem the dependent variable is glucose tolerance of the diabetic patients (Y) which is taken to be dichotomous one. It takes on the value one ($Y=1$) with probability P (say) if respondent have high blood glucose level and zero ($Y=0$) with probability $1-P$ if the respondent have normal blood glucose level. Most of the explanatory variables are considered on the basis of availability of the information and hypothetically as well.

Now the expression P_i is given by

$$P_i = E[Y_i = 1 / X_{11} = 0, X_{12} = x_{12}, X_{13} = x_{13}, X_{21} = 0, X_{22} = x_{22}, X_{31} = 0, X_{32} = x_{32}, \\ X_{41} = 0, X_{42} = x_{42}, X_{51} = 0, X_{52} = x_{52}, X_{61} = 0, X_{62} = x_{62}, X_{71} = 0, \\ X_{72} = x_{72}, X_{81} = 0, X_{82} = x_{82}, X_{91} = 0, X_{92} = x_{92}, X_{10.1} = 0, X_{10.2} = x_{10.2}, X_{10.3} = x_{10.3}]$$



(Here the values of the variables corresponding reference category are considered as “0”).

That is

$$P_i = \frac{1}{1 + e^{-(\beta_0 + \sum \beta_j X_j)}}$$

And

$$1 - P_i = \frac{e^{-(\beta_0 + \sum \beta_j X_j)}}{1 + e^{-(\beta_0 + \sum \beta_j X_j)}}$$

Therefore,

$$\frac{P_i}{1 - P_i} = e^{\beta_0 + \sum \beta_j X_j}$$

Here the multiple binary logistic regression models is given by

$$\log \frac{P_i}{1 - P_i} = \beta_0 + \beta_1 X_{12} + \beta_2 X_{13} + \beta_3 X_{22} + \beta_4 X_{32} + \beta_5 X_{42} + \beta_6 X_{52} + \beta_8 X_{62} + \beta_9 X_{72} + \beta_{10} X_{82} + \beta_{11} x_{92} + \beta_{12} x_{10,2} + \beta_{13} x_{10,3} \dots \dots \dots (1)$$

Here an attempt has been made to examine the relationship between a dichotomous dependent variable (obesity of the diabetic patients) and a set of explanatory variables as selected and discussed earlier. The main feature of the analysis is to identify the factors behind obesity of the diabetic patients. In order to get the solution of the above problems, a well known and now-a-days widely used statistical techniques (multiple binary logistic regression model) is used.

The regression coefficient β_j can be obtain with the help of maximum likelihood estimation from the log likelihood function suggested by Cox and is given by

$$\text{Log}_e L(\beta_0, \beta_1, \beta_2, \dots, \beta_k) = \sum_{j=0}^k \beta_j t_j - \log_e \{1 + \exp(\sum_{j=0}^k \beta_j X_{ij})\}$$

Where $t_j = \sum_{i=1}^n X_{ij} Y_i$, $j = 0, 1, 2, 3, \dots, k$, and n is the number of respondents.

But we utilize the computer package SPSS (Statistical Package for Social Science) for windows base 10.0 version and the binary logistic regressor parameters β_j 's are iteratively obtained with the help of this package program.

Since the dependent variable Y_i is coded as “1” if the respondents are obese and “0” if the respondents are not obese, positive coefficient indicates that the respondent is more likely to be obese; on the other hand



negative coefficient indicates that the respondent is not likely to be obese. To obtain the increment of the regressor the odds ratio of the j^{th} regressor has been calculated which is anti-log of the j^{th} slope coefficient.

Empirical Result and Discussion

Before analyzing through logistic analysis we first made the bivariate distribution to get closer to the variables that are significantly associated with the dependent variables.

Here Table 2 shows the result of association of different attributes with their corresponding cross tabulation, calculated chi square and tabulated chi-square vales with respect to their corresponding ρ values, the significance level of association at 5% and finally the mean values of each group to enclose the average number of respondents in each of the group for the different independent variables.

As we can see from Table 2 that, in the case of making cross tabulation between age and the dependent variable it can be noticed that among the total male respondents of 12541, 62.9% respondents of age group 25-29 years have tendency to use condom at the time of making intercourse and on the other hand 42% respondents belonging to the age group of 15-19 years used to make intercourse without having any protection of condom. The association between the variables have the significant contribution to the respective dependent variable. This indicates that the younger aged population are more vulnerable in terms of having the likelihood of affecting the sexually transmitted diseases like HIV/AIDS. .

It has been observed that urban based respondents are more aware of using condom at the time of intercourse as it can be noticed rom the Table 2 that 63.6% urban respondents are habituated of using condom at the time of intercourse while 56.9% rural based respondents use condom at the time of intercourse. The variable has a significant contribution to the respective dependents variable that reflects that fact that having been facilitated by the different modern technology as internet and other social media the people of urban areas are becoming more conscious where due to the lack of information regarding the mode of transmission of HIV/AIDS and the probable protective measures the people of rural arrears are in more danger in prevalence of HIV/AIDS.

To make an analysis for the sake of assessing the contribution of electricity and TV to acquire knowledge about HIV, it has been noticed that the respondents who have the electricity facilities among them 60% are frequently using condom at the time of intercourse and the 62.8% respondents who have the access to TV are using the protective measure. On the other hand the respondents who are not being accessed to electricity at their household and who don't have any access to TV among them 55% and 55.6% respondents respectively are habituated to use condom. These two explanatory variables have the significant contribution to the respective dependent variable at the level of 5% level of significance.

For determinants the effects of factors on knowledge, sources and awareness of HIV/AIDS, the following model has been considered:

Model-1: If respondents use condom, it is 1, otherwise, it is 0.



The flowing Table 3 discloses the effects of different explanatory variables on the repective dependent variable.

It is noticed that the respondents belonging to the age group of 20-24 and 25-29 years of age are respectively 2.21 and 2.46 times more frequent in using condom than the respondents belonging to the age group of <20 years.

It can be seen from the Table 3 that urban people are 2.53 times more habituated in using condom at the time of intercourse than that of their counterpart rural people. It can be interpreted as, due to have the exposure to the modern world the urban people come to know about how to availing the protective measure to get rid of the pandemic.

Again it ahs been found that the respondents who have the TV at their home are 2.63 times more likely to get the verities of knowledge regarding HIV/AIDS through watching TV as one of the sources of gathering information.

As far as the wealth index is concerned it can be stated that the richest people are 2.325 times more habituated in using condom at the time of sexual intercourse than the respondents belonging to the poorest category in the wealth index. This variable is highly significant in the case of putting an effect on the respective dependent variables.

Access to the print media also make an individual more aware of the prevalence of HIV/AIDS. As we can observe from the Table 3 that the respondents who have the habit to read newspaper at least once a week are 2.125 times more conscious than that of the respondents who don't have any access to newspaper. Religion bondage always plays a significant contribution in the case of being conscious. This variable also have the significant contribution to the respective dependent variables.

Conclusion and Policy Implications

Discussion through various analytical methods it can be concluded that HIV/AIDS is no doubt a devastating pandemic in the history of mankind. Though in the recent times there are some antiretroviral drugs have been innovated but those are the remedies of this diseases. The drugs that could cure the HIV/AIDS are yet to be discovered [11]. So, the main process to keep the nation free from HIV/AIDS is to create awareness through the process of providing HIV related knowledge by the help of electronic and other media and also NGOs' and GOs' have a very indispensable role for the case of mitigating the pandemic. The following recommendation should must be implemented to kick out the pandemic from a society and nation as a whole:

1. Special arrangement should be made to spread the knowledge on correct use of condom including condom demonstration among people and especially among the couples [12].
2. Care and support programs as well as regular body check-up and voluntary counseling and HIV testing should be strengthened by both government and non-government programs [13].
3. AIDS education and awareness programs should be promoted among all the grass route people [14].



Table 2: Differential patterns of Using Condom at the time of sexual intercourse according to the various Socio-Demographic Characteristics

Variables	Always Use Condoms During Sex		Total	Calculated λ^2 and tabulated λ^2	Significance level of association at 5%
	No	Yes			
Age					
15-19	612 (42.0%)	845 (58.0%)	1457 (100%)	$\lambda^2_{cal.} = 23.226,$ d.f.=6 $\rho = 0.001$	Significant
20-24	98 (40.3%)	1462 (59.7%)	2447 (100%)		
25-29	988 (38.0%)	1610 (62.0%)	2598 (100%)		
30-34	848 (39.1%)	1320 (60.9%)	2168 (100%)		
35-39	616 (40.7%)	899 (59.3%)	1515 (100%)		
40-44	616 (40.7%)	899 (59.3%)	1351 (100%)		
45-49	464 (46.2%)	541 (53.8%)	1005 (100.0%)		
Total	5066(40.4%)	7475 (59.6%)	12541 (100.0%)		
Type of place of residence					
Urban	1860 36.4%	3246 63.6%	5106 100.0%	$\lambda^2_{cal.} = 56.314,$ d.f.=2 $\rho = 0.000$	Significant
Rural	3206 43.1%	4229 56.9%	7435 100.0%		
Total	5066 40.4%	7475 59.6%	12541 100.0%		
Household has: Electricity					
No	1328 44.4%	1661 55.6%	2989 100.0%	$\lambda^2_{cal.} = 27.070(a),$ d.f.=2 $\rho = 0.000$	Significant
Yes	3381 39.0%	5285 61.0%	8666 100.0%		
Not a dejure resident	357 40.3%	529 59.7%	886 100.0%		
Total	5066 40.4%	7475 59.6%	12541 100.0%		
Household has: Television					
No	2184 (44.8%)	2691 (55.2%)	4875(100%)	$\lambda^2_{cal.} = 67.287(a),$ d.f.=2 $\rho = 0.000$	Significant
Yes	2525 37.2%	4255 (62.8%)	6780 (100.0%)		
Not a dejure Resident	357 40.3%	529 (59.7%)	886 (100%)		
Total	5066 40.4%	7475 (59.6%)	12541 (100%)		
Household has: Refrigerator					
No	3582 (43.2%)	4702 (56.8%)	8284 (100.0%)	$\lambda^2_{cal.} = 95.727(a),$ d.f.=2 $\rho = 0.000$	Significant
Yes	1127 (33.4%)	2244 (66.6%)	3371(100.0%)		
Not a dejure resident	357 (40.3%)	529 (59.7%)	886 (100.0%)		
Total	5066 (40.4%)	7475 (59.6%)	12541 (100.0%)		



(Table 2..... be continued)

Wealth index					
Poorest	660 (46.9%)	747 (53.1%)	1407 (100%)	$\lambda^2_{cal.} = 9.560, d.f.=2$ $\lambda^2_{tab.} = 5.991 d.f.=2$ $\rho = 0.008$	Significant
Poorer	840 (44.4%)	1052 (5.6%)	1892 (100%)		
Middle	1134 (43.8%)	1456 (56.2%)	2590 (100%)		
Richer	1230 (40.1%)	1837 (59.9%)	3067 (100%)		
Richest	1202 (33.5%)	2383 (66.5%)	3585 (100%)		
Total	5066 (40.4%)	7475 (59.6%)	12541 (100.0%)		
Frequency of watching television					
Not at all	1607 (46.2%)	1872 (53.8%)	3479 (100.0%)	$\lambda^2_{cal.} = 78.561(a),$ $d.f.=2$ $\rho = 0.000$	Significant
Less than once a week	483 (42.8%)	646 (57.2%)	1129 (100.0%)		
At least once a week	2976 (37.5%)	4957 (62.5%)	7933 (100.0%)		
Total	5066 (40.4%)	7475 (59.6%)	12541 (100.0%)		
Frequency of reading newspaper or magazine					
Not at all	4266 (42.8%)	5698 (57.2%)	9964 (100.0%)	$\lambda^2_{cal.} = 125.579(a),$ $d.f.=2$ $\rho = 0.000$	Significant
Less than once a week	466 (33.1%)	943 (66.9%)	1409 (100.0%)		
At least once a week	325 (28.3%)	824 (71.7%)	1149 (100.0%)		
Total	5057 (40.4%)	7465 (59.6%)	12522 (100.0%)		



Table 3-: Logistic regression for the effects of HIV/AIDS on Preliminary Knowledge on HIV/AIDS as Dependent Variables and Socio-demographic Independent Variables

Characteristics	Coefficient (β)	Standard Error of Estimates	Significant	Relative Risk (Odd ratio)
Age				
<20 years	.....	.....	.....	1.000
20-24	0.796	0.614	0.0195	2.217
25-29	0.081	0.633	0.0493	2.464
30-34	0.598	0.536	0.2645	1.818
35+	0.210	2.091	0.0688	1.233
Type of place of residence				
Rural	.....	.....	.....	1.000
Urban	0.920	2.091	0.660	2.508
Household has: Electricity				
No	.....	.....	.....	1.000
Yes	0.266	0.593	0.654	2.508
Household has: Television				
No	.....	.....	.....	1.000
Yes	0.709	0.507	0.162	2.032
Household has Refrigerator				
No	.....	.....	.....	1.000
Yes	0.966	0.526	0.066**	2.627
Wealth index				
Poorest	.....	.....	.....	1.000
Poorer	0.104	0.440	0.813	1.110
Middle	0.135	0.589	0.051	1.865
Richer	0.146	0.611	0.048	1.982
Richest	0.158	0.615	0.046	2.325
Frequency of watching television				
Not at all	.....	.....	.....	1.000
Less than once a week	1.043	0.773	0.028	2.836
At least once a week	1.049	0.791	0.032	2.935
Frequency of reading newspaper or magazine				
Not at all	.....	.....	.....	1.000
Less than once a week	1.258	0.622	0.043**	3.517
At least once a week	1.563	0.756	0.056	4.125
Don't know	0.199	0.325	0.842	0.220
Constant	-2.546	1.251	0.042	
-2 log likelihood	223.673			
Model chi-square	45.582			
d.f.	15			

Note: "RC" within parenthesis refereed as the reference category; (*** p ,0.01, ** p ,0.050, * p ,0.1)



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