

Preventive Knowledge About HIV/AIDS Infection among Msm in Rajshahi City, Bangladesh

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ABSTRACT

Globally, HIV/AIDS is major killer disease and public health concern and men who have sex with men (MSM) have higher rates of HIV/AIDS and other sexually transmitted infections (STI) than women and heterosexual men. The assessment of vulnerability to human immunodeficiency virus (HIV/AIDS) infection among men who have sex with men (MSM) has long been an interesting topic to population and health researchers. The aim of this study was an effort to assess the determinant factors of preventive knowledge about HIV/AIDS infection among MSM in Rajshahi City, Bangladesh. It was a cross-sectional study with a sample size of 103 MSM. The data and necessary information were collected through a semi structured questionnaire from a drop-in center in Rajshahi City, Bangladesh. The preventive knowledge on HIV/AIDS was measured by eight different questions. Both bivariate and multivariate analyses were used to analyze the data to find the associated risk factors on HIV/AIDS among MSM. The results revealed that around half of the MSM (44.66%) were not aware HIV/AIDS infection. Respondents' education, employment status, marital status, a habit to sex with many women, using condoms, how many time MSM per week, information sources about HIV/AIDS, and having a personal risk of HIV/AIDS infection were found significantly ($p < 0.05$) associated with preventive knowledge about HIV/AIDS infection. Finally, binary logistic regression model identified that education, using condoms, information sources about HIV/AIDS, and having personal risk of HIV/AIDS infection were the most prominent predictors. The MSM were not enough aware of HIV/AIDS infection. In this study strongly recommended advocacy, communication for social mobilization programs should be taken to increase the preventive knowledge about HIV/AIDS infection among MSM population.

Keywords: HIV/AIDS; MSM; Sexually transmitted diseases, Binary logistic regression model

INTRODUCTION

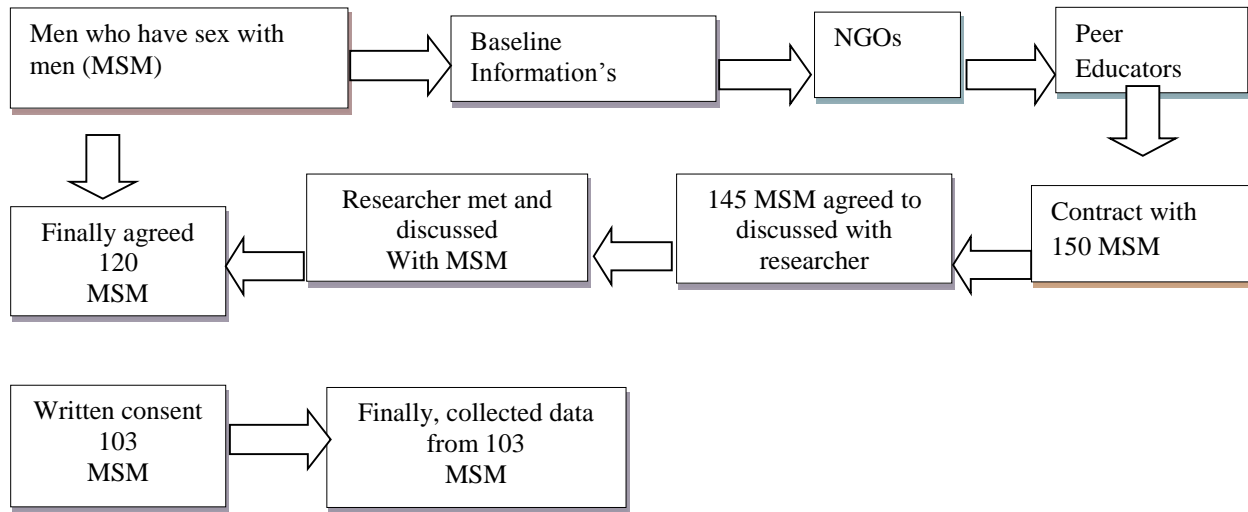
Men who have sex with men (MSM) is a term that includes all men who engage in consensual male to male sex, including those who identify as gay, bisexual or heterosexual and including men who are the sex workers. The bisexual MSM have a much higher burden of HIV/AIDS epidemic than other adult men in low and middle-income countries, including the countries with a traditionally generalized HIV/AIDS epidemic ($>1\%$ prevalence) (1, 2). In the United States and Peru, HIV/AIDS incidence among MSM is estimated at close to 3% per year (3, 4). In Cameroon, the national prevalence of HIV/AIDS is 4.50%, among them 37% HIV/AIDS infected are MSM (5). Also, the incidence of HIV/AIDS among MSM has been estimated to be over 8.0% per year in Brazil (6) and even higher among some subpopulation such as young black MSM (7). However, the higher and rising HIV/AIDS prevalence among MSM has now been documented thought much of the Asia Pacific region and accounted for approximately a third value of the Pacific's HIV/AIDS transmissions (8). In India, HIV/AIDS prevalence among MSM is 7.4%, ranging from 0.0% (in Bihar and Himachal) to 17.6% (in Karnataka) (9, 10). In Nepal, around 8.7% HIV prevalence among MSM was reported (11). Higher prevalence of HIV/AIDS among MSM were also observed in Thailand (8.3%) (12), Indonesia (5.2%) (NAIDSPAC, 2010) and Myanmar (28.8%) (DH & WHO, 2009). Given the HIV/AIDS patterns in South Asia, Bangladesh continues to be among the countries with lowest HIV prevalence (<0.01

(MOHFW, 2012), but it is found about 0.3% HIV/AIDS prevalence among MSM (NASP, 2011). The actual prevalence is quite low compared to the other countries in Southeast Asia, however, their actual number is quite significant. In Bangladesh, there may be approximately 2% of males are engaged in same sexual behavior (13). The lower condom use, multiple and varied partners, association with intravenous drug users (IDU) and blood sales had also been reported among MSMs which increased their risk of HIV/AIDS infection in many studies (APCOM & UNAIDS, 2008). In Bangladesh, the significant numbers of MSM and the risky sexual behavior have been reported. However, the prevention efforts have primarily focused on heterosexual transmission, particularly female sex workers and their male clients (9). Only one in 10 MSM has access to lifesaving HIV/AIDS prevention and treatment service (UNDP & APCOM, 2010) and most of them are not aware of their own risk of transmission (9). To the best of our knowledge recently this type of study has not been conducted yet in Bangladesh. Special attention should be paid to MSM considering their potential influence on their wife and family and their contribution to the nation's workforce in near future in a particular nation. Due to their unique role in near future in the society, it is important to investigate the knowledge regarding infectious disease like HIV/AIDS. Therefore, this study was undertaken to identify the determinant factors of preventive knowledge about HIV/AIDS transmission among MSM in Rajshahi City, Bangladesh.

MATERIAL AND METHODS

Data and necessary information were collected of 103 MSM from one drop-in center (DIC) named Modhumita at Laxmipur in Rajshahi City, Bangladesh. Respondents were interviewed using a standard questionnaire through purposive sampling technique. Preventive knowledge i.e., respondents have knowledge about HIV/AIDs transmission wise were considered as the outcome variable. In order to measure the knowledge level, the respondents were asked 8 different questions to respond either “yes” or “no”.

Data collection procedure: Particular attention was given to identify issues related with knowledge assessment on HIV/AIDs among MSM. The following data were collected from each selected MSM: i) general and specific information of TB (ii) socio-economic and demographic characteristics of MSM (iii) knowledge on HIV/AIDs. The data were collected by using a semi-structured questionnaire.



Explanatory variables: The explanatory variables in this study were education (X_1) (illiterate, 0; literate, 1), marital status (X_2) (unmarried, 0; married, 1), employment status (X_3) (unemployed, 0; employed, 1), having habit of sex with many women (X_4) (no, 0; yes, 1), using condom at the time of sex with wife (X_5) (no, 0; yes, 1), using condom at the time of MSM sex (X_6) (no, 0; yes, 1), information sources HIV/AIDs (X_7) (no, 0; yes, 1), personal risk of affecting HIV/AIDs (X_8) (no risk, 0; have risk, 1).

Outcome variables: The dependent variable in this study was preventive knowledge on HIV/AIDs, which was measured by eight dissimilar questions, namely: i) Sexual characteristics of the respondents ii) Heard HIV/AIDs? iii) How spreading HIV? iv) Risk of affecting HIV/AIDs personally? v) How to prevent HIV/AIDs? vi) Do you think that HIV may be spreading through polygamy? vii) Do you think that HIV can be preventing through religion? viii) Preventive awareness?

Statistical analysis: To examine the relationships between preventive knowledge with background determinant factors of the respondents. Initially, frequency distribution was used to explore the current situation of the respondents. The Chi-square test was used to identify the significant factors of preventive knowledge about HIV/AIDs infection. In multivariate analysis, a binary logistic regression model was used to evaluate the effects of some factors contributed to preventive knowledge about HIV/AIDs infection. In the binary logistic regression model, eight explanatory variables were used. The underlying multiple logistic regression model corresponding to each variable is:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 \quad (1)$$

where, p, the probability of the respondents has the preventive knowledge (coded 1) and 1-p, the probability of otherwise (coded 0); $X_i, i = 1, 2, \dots, 8$ are the explanatory variables; β_0 , the intercept term, and $\beta_i, i = 1, 2, \dots, 8$ are the unknown logistic regression coefficients. The Statistical Package for Social Sciences (SPSS) version 17.0 (SPSS Inc, Chicago, IL, USA) was used for statistical analysis.

RESULTS

The percentage distributions of the respondents by their socio-demographic characteristics are presented in Table 1. A total of 103 MSMs participated in this study. Among them, most of the respondents (81.55%) were very young (≤ 30 years) and higher percentage were found among secondary educated (44.66%), unmarried (70.87%), students (23.33%), less income (60.19%) (<3000BDT per month) and less expenditure (70.87%) (<3000BDT per month) respondents.

The percentage distribution of the respondents by their MSM sex-related characteristics is presented in Table 2. The results revealed that among the respondents, 15.54% was not used condoms at the time of sex with their wives. Moreover, around one-third respondents (33.98%) were not used condoms at the time of MSM sex. Again, around one-fourth (23.30%) of the respondents whose MSM frequency per week were found nine or more. But

63.11% got only less than 50Tk per sex and 39.81 earned 500-1000Tk. in a month through MSM sex.

Table 1: Socio-demographic characteristics of the respondents

Table 2: Sexual characteristics of the respondents

Variables	Frequency (n)	Percentage (%)
Age (in years)		
< 22	36	34.95
22-30	48	46.60
>30	19	18.45
Education		
Illiterate	17	16.50
Primary	31	30.10
Secondary	46	44.66
Higher secondary	9	8.74
Marital status		
Married	30	29.13
Unmarried	73	70.87
Occupation		
Service	16	15.53
Business	23	22.33
Agriculture	9	8.74
Student	24	23.33
Labor	19	18.45
Others	12	11.65
Monthly income (in taka)		
<3000	62	60.19
3000-5000	27	26.21
>5000	14	13.60
Monthly expenditure (in taka)		
< 3000	73	70.87
3000-5000	22	21.36
>5000	8	7.77
Total	103	100.00
Characteristics		
Using condoms at the time of sex with wife		
No	16	15.54
Yes	15	14.56
No wife	72	69.90
Using condoms at the time of MSM		
No	35	33.98
Yes	68	66.02
Frequency of male-to-male sex per week		
≤ 3	34	33.01
4-8	45	43.69
> 8	24	23.30
Habit of sex with many women		
No	73	70.87
Yes	30	29.13
Earning per sex (in Taka)		
<50	65	63.11
50-100	30	29.13
>100	8	7.76
Monthly income through MSM (in Taka)		
<500	23	22.33
500-1000	41	39.81
>1000	39	37.86
Total	103	100.00

Note: 'MSM, male sex with male'

The factors related to preventive knowledge about HIV/AIDS infection of MSM and their distribution are presented in Table 3. The results revealed that all the respondents (100%) have previously heard about HIV/AIDS through any way of information. The health

worker was the primary source of information (54.37%) about HIV/AIDS infection. Another source of information's regarding HIV/AIDS infections were TV/Radio (36.89%) and press media/newspaper (8.74%). Though all of the respondents were previously heard about HIV/AIDS infection variability observed in the cases of respondent's idea about the transmission of HIV/AIDS. Blood transmission (30.10%) was identified the primary causes of HIV/AIDS transmission.

Table 3: Percentage distribution of knowledge related factors about HIV/AIDS among MSM in Rajshahi City

Variables	Frequency (n)	Percentage (%)
Heard HIV/AIDS		
Through TV/Radio	38	36.89
Through press media/newspaper	9	8.74
Through health worker	56	54.37
How spreading HIV		
Blood transmission	31	30.10
Through needle	15	14.57
If pregnant women have HIV, children may have HIV	4	3.88
If HIV affected mother feed her breast milk	3	2.91
Unprotected sex male to female	20	19.41
Unprotected sex male to male	6	5.83
If one male has a habit of unprotected sex with more female	17	16.50
If one female has a habit of unprotected sex with more male	7	6.80
Risk of affecting HIV/AIDS personally		
High risk	45	43.69
No risk	16	15.53
Unknown	42	40.78
How to prevent HIV/AIDS		
Using condom at the time of sex	56	54.37
Avoiding sex with more than one male or female	30	29.13
Don't use needle which had used by others	9	8.74
Using blood which is free from HIV/AIDS	8	7.76
Do you think that HIV may be spreading through polygamy		
Yes	90	87.38
No	13	12.62
Do you think that HIV can be preventing through religion		
Yes	41	39.81
No	62	60.19
Preventive awareness		
Fully aware	57	55.34
Not aware	46	44.66
Total	103	100.0

Some others cause of transmission of HIV/AIDS were reused needle (14.57%), infected mother to child (3.88%), unprotected sex between male to female sex (19.41%) and male to male sex (5.83%), unprotected sex with more

female (16.50%) and more male (6.80%). About two fourth (40.78%) of the MSM were not known their own risk of affecting HIV/AIDS. Variability was also observed about the preventive ways of HIV/AIDS infection. Using a condom (54.37%) at the time of sex was the most noticeable preventive ways of HIV/AIDS. Some others ways of HIV/AIDS prevention were avoiding sex with more than one male or female (29.13%), avoiding previously used needle (8.74%) and used of safe blood (7.76%). Moreover, 87.38% reported that HIV/AIDS spread out through polygamy. About 39.81% respondents think that HIV/AIDS can be prevented through the religious activities.

Table 4: Association between preventive knowledge about HIV infection with socio-demographic factors

Characteristics	Preventive knowledge		
	Not aware (%)	Fully aware (%)	Total (%)
Age group (in years)			
< 22	13(36.11)	23(63.89)	36(100.00)
23-30	24(50.00)	24(50.00)	48(100.00)
30+	9(47.37)	10(52.63)	19(100.00)
Education*			
Illiterate	11(64.71)	6(35.29)	17(100.00)
Literate	35(40.70)	51(59.30)	86(100.00)
Employment status*			
Employed	40(43.96)	51(56.04)	91(100.00)
Unemployed	6(50.00)	6(50.00)	12(100.00)
Marital status*			
Married	15(50.00)	15(50.00)	30(100.00)
Unmarried	31(42.47)	42(57.53)	73(100.00)
Having habit of sex with many women*			
No	31(42.57)	42(57.53)	73(100.00)
Yes	15(50.00)	15(50.00)	30(100.00)
Using condom at the time of sex with wife*			
No	10(62.50)	6(37.50)	16(100.00)
Yes	5(33.33)	10(66.67)	15(100.00)
Using condom at the time of MSM*			
No	22(62.86)	13(37.14)	35(100.00)
Yes	24(35.35)	44(64.65)	68(100.00)
How many time MSM per week*			
≤ 3	12(35.29)	22(64.17)	34(100.00)
4-8	28(62.22)	17(37.78)	45(100.00)
>9	6(25.25)	18(75.75)	24(100.00)
Hearing about HIV/AIDS*			
Through mass media	28(59.57)	19(40.43)	47(100.00)
Health workers	18(32.14)	38(67.86)	56(100.00)
Risk of affecting HIV/AIDS*			
Yes	19(42.22)	26(57.78)	45(100.00)
No	27(46.55)	31(56.45)	58(100.00)
Total	46(44.66)	57(55.34)	103(100.00)

Note: ‘**’, significant at p<0.01’, ‘*’, significant at p<0.05’

Chi-square test (χ^2) was used to determine the factors associated with preventive knowledge as a bivariate

technique. Table 4 reveals that respondent’s education, employment status, marital status, having habit of sex with many women, using condom at the time of sex with wife, using condom at the time of MSM, how many times MSM per week, hearing about HIV/AIDS and risk of affecting HIV/AIDS are significantly associated (p< 0.05) with the level of preventive awareness about HIV/AIDS infection.

Thereafter, impacts of the associated factors on “preventive knowledge” are identified the binary logistic analysis and the results are presented in Table 5. Education (illiterate vs. literate, OR:2.687, 95% CI:1.276-7.945), using condom at the time of MSM (no vs. yes, OR: 3.522, 95% CI: 1.883-6.590),using condom at the time of sex with wife (no vs. yes, OR:3.073, 95% CI:1.222-7.729), hearing about HIV/AIDS (through electronic and press media vs. through health worker, OR:2.888, 95% CI:1.425-3.859) and risk of affecting HIV/AIDS (have risk vs. no risk, OR:0.324, 95% CI:0.154-0.682) were found to be significant predictors of preventive knowledge about HIV/AIDS infection.

Table 5: Logistic regression for the effects of selected independent variables on preventive knowledge

Variables	Coefficient (β)	Odds Ratio (OR)	95% CI for OR	
			Lower	Upper
Education				
Illiterate (r)	.....	1.000		
Literate	1.353*	2.687	1.276	7.945
Marital status				
Married (r)	.....	1.000		
Unmarried	0.277	1.319	0.722	3.743
Employment Status				
Unemployed (r)	.....	1.000		
Employed	-0.275	0.759	0.403	1.430
Having habit of sex with many women				
No (r)	.....	1.000		
Yes	0.393	1.481	0.488	4.498
Using condoms at the time of sex with wife				
No (r)	.....	1.000		
Yes	1.123*	3.073	1.222	7.729
Using condoms at the time of male-to-male sex				
No (r)	....	1.000		
Yes	1.259**	3.522	1.883	6.590
Hearing about HIV/AIDS				
Through mass media (r)	.....	1.000		
Through health workers	1.118*	2.888	1.425	3.859
Risk of Affecting HIV/AIDS				
Have risk (r)	.....	1.000		
No risk	-1.127**	0.324	0.154	0.682

Note: ‘r’, the reference category’, ‘HIV, human immunodeficiency virus’, ‘AIDS, acquired immune deficiency virus’, ‘**p<0.01’, ‘*p<0.05’, ‘CI, confidence interval’

DISCUSSION

There are a number of factors that place MSM groups in Bangladesh at high risk for the expanding epidemic of HIV/AIDS infection. Among of them, unequal and unavailable access to health care is main biomedical factors affecting the risk profile of Bangladeshi MSM worker (16, 17). Historically HIV/AIDS-related health care is designed to focus on the heterosexual transmission with little acknowledge the contribution of male homosexual behavior (9). It is around 10 years that the routine national HIV/AIDS and syphilis surveillance included MSM, male sex workers and hijra in its list of core high-risk group (18) but special services to address them is rare. The present study reveals that around 40.78% MSM worker don't have any idea about their own risk of affecting HIV/AIDS. We cannot justify our findings due to the absence of literature. But this finding demanded the border range of services for MSM worker to increase their idea about HIV/AIDS.

MSM behavior is not an accepted norm in Bangladeshi culture, where the family roles include heterosexual marriage and having children. As a result, MSM worker may not report their own sexual identity and may deny such behavior (17). Though men in the sample who disclose their identity, whether by choice or necessity, reported negative social consequences such as family rejection, public humiliation, harassment by authorities, and ridicule by health care workers (9). This tendency leads to the larger number of MSM worker is out of the formal health care facilities. In this study, it was also identified that MSM worker who was known about HIV/AIDS from health worker was 2.888 time more aware of HIV/AIDS. This situation demanded the larger activities of health workers regarding the MSM issues. Furthermore, health workers with specific training on the structural, community, and individual barriers that MSM face have been able to effectively provide specialized care to the population and overcome certain barriers to care (19-21). Although large public hospitals often provide subsidies and are therefore more financially accessible, they commonly lack specialized MSM services which can discourage care seeking, especially for MSM sexual health needs (21).

Again, the present study also found that literate MSM worker was 2.687 times more aware about HIV/AIDS than the illiterate one. Similar results were also observed in others study in Bangladesh (17, 22) and Swaziland (23). Increased level of education helps to disclose the same sex practice to health worker (23). This would be helpful to establish health inequality between the general population and MSM (20) and reduced the vulnerability of MSM.

Either the MSM worker were used a condom at the time of sex with the wife or at the time of MSM were more aware than men still do not use condoms at the time of MSM. Consistent with other studies (9, 17, 23), this finding indicates the importances of increasing the condom use rate to reduce the vulnerability of HIV/AIDS epidemic. In this perspective increasing effort to promote the condom use and ensure easy access to condoms and lubricants for MSM are important.

There are several limitations to this study. The data gathered comes from the group of people that are assumed to represent the larger populations. Again the behavioral data collected by the interviewer-administered surveys were likely skewed by social desirability bias, despite

efforts to ensure strict confidentiality and interviewer training. MSM populations are also historically difficult to analyze due to the isolation from mainstream society. This problem is compounded by the cultural and religious factors. So that larger scale survey would be required by controlling these difficulties to know the exact position of MSM for the purpose of knowledge regarding HIV/AIDS.

CONCLUSIONS

There is now overwhelming evidence that the epidemic among MSM is well established and increasing in Bangladesh. Preventive knowledge about HIV/AIDS infection among the MSM population has a great importance in the case of reducing and controlling this epidemic. By considering this issue, the present study documented the knowledge of MSM worker regarding HIV/AIDS issues. We have collected information from 103 MSM workers. Among of them that around 40.78% MSM do not have any idea about their own risk of affecting HIV/AIDS. A Higher level of awareness regarding HIV/AIDS issues was observed among literate, hearing about HIV/AIDS from a health worker, MSM idea about their own risk of affecting HIV/AIDS and using a condom at the time of sex with husband and wife. These situations demand the special program for MSM worker to reduce the vulnerability of HIV/AIDS. Increasing education among MSM worker and improvement of the health care facilities are important in these perspectives.

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Competing interest: The authors declare that they have no competing interest.

Authors' contributions: MNIM conducted the review and drafted the manuscript, MRI and MNH conceived of the idea and helped draft and edited the manuscript. MMR, MRK and MS conducted the critical revision the manuscript. All the authors read and approved the final version of the manuscript.

Ethical considerations: Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Abbreviations: HIV: Human Immune Deficiency Virus; AIDS: Acquired Immune Deficiency Syndrome; CI: Confidence Interval; IDU: Injecting Drug Users; MSM: Male Sex with Male, MSW: Male Sex Worker; FSW: Female Sex Worker; MOHFW: Ministry of Health and Family Welfare; TK: Bangladeshi currency (78TK=1 US\$).

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