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Risky Sexual Behaviors and HIV Vulnerability of Male Migrant Workers in Rajshahi City, Bangladesh

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Abstract

Background: Human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) presents a serious healthcare threat to young individuals in Bangladesh and worldwide. This study aimed at to explore the risky sexual behaviors and HIV vulnerability of male migrant workers in Rajshahi City, Bangladesh.

Methods: Data and necessary information were collected from a random sample of 200 male migrant workers living in Rajshahi City, Bangladesh. To analyze the data, both bivariate and multivariate analyses were used as the statistical tools.

Results: The results confirmed that migrant workers are more likely to be engaged in risky sexual relationships which increased the risk of HIV infection. The determinants, educational status, watching adult movies or pornographic materials, smoking habit and taking illegal drugs have shown significant effects on the likelihood of engaging in risky sexual behaviors. The respondents know that HIV/AIDS causes sure deaths. It does significantly reduce the likelihood of engaging in risky sexual behaviors and it does not completely mediate the effects of viewing pornographic materials, smoking, consuming illegal drugs and being illiterate.

Conclusions: The hypothesis supports that the migrant workers are more engaged in risky sexual behaviors. More research is needed in this area. There is an urgent need for a comprehensive program to prevent the migrant workers from risky sexual behaviors as well as HIV infections.

Keywords: HIV/AIDS; Risky sexual behavior; Male migrant workers; Logistic regression model

Introduction

Acquired Immunodeficiency Syndrome (AIDS) is an illness caused by the Human Immunodeficiency Virus (HIV), one of the major public health concerns in the globe. AIDS began in the 1980s and expended into a pandemic in the 1990s. Since then, it has been steadily increasing and there are approximately 34 million people currently infected with HIV. Almost 29 million people have died of AIDS-related causes since the beginning of the epidemic. While cases have been reported all over the world, 97% of the infected persons reside in low and middle-income countries, particularly in sub-Saharan Africa [1]. Most people living with HIV or at risk of HIV do not have access to prevention, care or treatment, and up to now there is still no complete cure yet [2]. HIV primarily affects those in their most productive years; about half of new infections are among those under the age 25 years [1]. HIV not only affects the health of individuals, it impacts households, communities, and the development and economic growth of nations [3,4]. New global efforts have been mounted to address the epidemic, particularly in the last decade.

National HIV infection levels in Asia are low compared with those in Africa. On the other hand, an estimated 2.70 million people became newly infected with the virus and 2.00 million people died of AIDS related causes in 2007 [5]. Nevertheless, even though prevalence rates may be low, the large populations of many Asian nations mean that a high numbers of people with HIV infection [3, 6]. In Asia, the total number of people living with HIV is thought to be nearly 4.90 million. Around half (2.40 million) of these were in India followed by China (740,000), Thailand (530,000) and Myanmar (240,000). Every day almost 1000 persons become infected with HIV and over 800 persons die from AIDS mostly because of inadequate access to HIV and sexually transmitted diseases (STDs) prevention and treatment services in Asia. In Bangladesh, the overall HIV prevalence is 0.01%. It is estimated that currently there are 12,000 [7,700-19,000] people living with HIV in Bangladesh [1] and the risk groups for populations are increasing tremendously and Bangladesh is turning to the concentrated epidemic [7]. The HIV prevalence rate has increased from 1.40% in 2000 to 7.00% in 2007 among people who inject drugs [8]. The National AIDS/STD Program (NASP) of Bangladesh reports that between 2.20 and 3.90 million people are estimated to be at increased risk of acquiring HIV [9].

In Bangladesh, the first case of HIV was detected in 1989. In 2011, a total of 445 new cases of HIV infection, 251 new AIDS cases, and 84 deaths due to AIDS were reported. The reported number of HIV-positive people in Bangladesh increased from 363 in 2003 to 1,207. By the end of 2011, the number of HIV-positive people had increased to 2,533, an increase of more than double in four years. However, the estimated number of HIV/AIDS cases remains at 7,500, including both the likelihood of incomplete reporting and the potential for growth of epidemic in Bangladesh [10]. Yet, estimates of the HIV affected population in Bangladesh could be much higher. Different organizations and professionals working in the field of HIV/AIDS hold the opinion that the actual figure of HIV/AIDS infection is much higher than the figure reported by the government. Bangladesh is considered to be the early stages of an HIV epidemic, there are a number of worrying signs. The scale of population movements currently experienced by developing countries and especially in Bangladesh is a growing concern for the spread of STDs and HIV/AIDS [11-17]. Migration increases vulnerability to HIV/AIDS, as the migrants are far away from their families and partners, living in poverty and all too often exploited [18-20]. Many migrants travel without partners; therefore, to address their basic need, they tend to develop new sexual relationships, which in turn may result in increased risk of HIV infection [21]. Separation from family and socio-cultural norms and a sense of anonymity that offers more sexual freedom and availability of some disposal income in hand leads to the adoption of high-risk behavior such as alcohol and drug-use and unprotected sex with a person with unknown sexual history, making migrants a vulnerable group for HIV infection [22]. Moreover, because most migrants live away from their families they tend to feel an increased sense of isolation. The resulting isolation leads migrants to seek companionship and sexual intimacy, which may increase vulnerability to HIV infection [23]. But, no sound study has been concentrated on migration and HIV vulnerability in Rajshahi City, Bangladesh. Therefore, the main objectives are to identify the risky sexual behaviors and HIV vulnerability of male migrant workers in Rajshahi City, Bangladesh.

Data and Methods

The data for this study come from a cross-sectional sample survey which was conducted in Rajshahi City, Bangladesh. The survey was conducted by using a self-administrated questionnaire. The questionnaire consisted of closed ended questions about demographic information, migration history and causes of migration, social networking, habits of smoking and drug abuse, condom use, sexual behavior and HIV/AIDS related knowledge. The sample size for the study was 200 male migrants in Rajshahi City aged 15 years and above. Multi-stage sampling methods were used to collect the sample. A cluster sampling method was used to interview the male migrants. The in-depth interviews of migrants were conducted with the objective of understanding the dynamics of social network and to identify the relative influence of contextual, social network, and personal factors in contributing to sexual risk in the migrant population using a cross sectional design and targeted network sampling plan. For descriptive statistics, frequencies and percentages were calculated. For hypotheses testing, multivariate (binary logistic regression) analysis was carried out. The statistical analyses were performed using SPSS Version 20 (IBM SPSS Inc., Chicago, IL).

Statistical Analyses

In this research, much emphasis has been given to predictor variables that influence the risky sexual behaviors of the respondents and knowledge about HIV/AIDS. The predictor variables were categorized as: age, marital status, education, Occupation, Income, Occupation, Types of Household, Connection of Place of origin, knowledge of AIDS and Watching Pornographic materials. The response variable, "engaged in illegal sex" was used to determine whether or not the respondent engaged in risky sexual behavior, and was coded as 1 for yes and 0 otherwise. Both bivariate and multivariate analyses were performed for this study. In bivariate analysis, proportions were compared using the chi-square test to determine significant associations between knowledge and awareness of HIV/AIDS and risky sexual behaviors. The binary logistic regression technique was used to evaluate the effects of a select group of variables on the probability of engaging in risky sexual behaviors among male migrants.

Results

Selective descriptive statistics of male migrant workers are presented in Table 1. More than half of the migrants (53.50%) moved to the city for economic reason. As expected, an overwhelming majority of migrants in the urban areas were from rural areas. The other important reasons stated were found the availability of irregular workers (24.00%), unemployment (11.00%) and landlessness (10.00%). Of the total migrants, 41.50% migrants were aged ≤ 30 years of age, 39.50% were 31-40 years and 19.00% were ≥ 41 years of aged. Among the respondents almost all (91.00%) were married and more than half of the respondents (61.00%) were illiterate. In case of occupation, 77.00% of the respondents were rickshaw pullers and labor, 19.50% were small scale businessmen and a few (3.50%) were in other professions. More than half (51.00%) of the migrants' earnings were ≤ 5000 Tk. /month. A small number of migrants (16.50%) were living in their own house, while half (51.00%) were living in rented housing and one third (32.50%) were sharing the accommodation with their relatives. A majority of the migrants (58.00%) were living together with two to four persons, 30.00% were living with five to eight persons, and a few (8.00%) were living with more than eight persons and alone (4.00%) were living. The three-fourths (75.00%) of the migrants were using tube-well as the source of drinking water. Most of the migrants (70.00%) were using electricity as the source of lighting. A large proportion of migrants (81.00%) were living in this city more than one year. Around half of the migrants (53.00%) meet their family members in each month. In case of money sending to their family members, it is found that half of them (53.00%) stated that they do not send money. The three- fourths (75.00%) of the respondents have come the study area made by their own decision. In the case of workplace environment, most of them (56.50%) felt good about their workplace environments.

Variables	Frequency (N)	Percentage (%)
Age		
≤ 30 years	83	41.5
31-40 years	79	39.5
≥ 41 years	38	19
Marital status		

Unmarried	18	9
Married	182	91
Educational status		
Illiterate	122	61
Literate	78	39
Occupation		
Rickshaw puller and labor	154	77
Business	39	19.5
Services	7	3.5
Monthly income		
≤ 5000 Tk.	102	51
>5000Tk.	98	49
Type of Housing		
Owner	33	16.5
Renter	102	51
Relative's house	65	32.5
Living with		
Single	8	4
2-4 members	116	58
5-8 members	60	30
>8 members	16	8
Sources of water		
Tube well	150	75
Supply water	50	25
Sources of light		
Electricity	140	70
Kerosene oil	60	30
Reason of coming		
Unemployment	22	11
Landlessness	20	10
Economic problem	107	53.5
Irregular work	48	24
Family pressure	3	1.5
Duration of migration		
< 1 Year	38	19
> 1 year	162	81
Native place visit		
Within one month	106	53
Within1to12 months	46	23
After 1 year or more	48	24
Money sent to family		
No money	106	53
≤1000 Tk.	60	30
>1000 Tk.	34	17
Inspired to come		
Family	34	17
Friends/relatives	16	8
Own decision	150	75
Work place Environment		
Good	113	56.5
Medium	72	36
Bad	15	7.5
Total	200	100

Table 1: Socio-demographic characteristics of the male migrant workers in Rajshahi City, (n=200)

Descriptive statistics on knowledge and awareness regarding HIV/AIDS among the male migrants are presented in Table 2. Most of the respondents (71.50%) have heard about HIV/AIDS, with the source of information reported as radio (7.50%), TV (34.00%), newspapers or magazines (4.00%), friends and relatives (28.00%) and others (26.50%). The two-thirds of the respondents (66.50%) indicated that they were aware that death is the final consequence of HIV/AIDS infection, yet a good number of respondents (33.50%) were not aware regarding deaths due to AIDS. Though Bangladesh is a greater risk of HIV/AIDS infection, only 44.50% were aware of the risk, but 19.00% did not know and 36.50% indicated they did not have any idea about HIV infection. Moreover, only 42.50% of the respondents were known that HIV/AIDS is contagious disease. More than two-fifths (42.00%) respondents did not have any idea about the medication of it and only 28.00% respondents knew about HIV/AIDS. More than half (56.50%) respondents were informed about the unsafe sexual activities is a mode of HIV transmission. As shown in Table 2, little over one-third (35.00%) respondents were watching TV regularly. A few workers (18%) reported that they were watching adult movies on a regular basis, while around half (42.50%) of the workers reported that they were watching adult movies very often but, more than half (59.00%) were involved to see different types of pornographic materials. Similarly, a large proportion of migrants (81.50%) reported that they have a habit of smoking, and most of them (74.50%) indicated that they were used illegal drugs. In case of sexual behaviors, around half of the respondents (48.00%) have engaged in illegal sex with sex workers and more than half (63.50%) did not use condoms.

Variables	**Frequency (N)**	**Percentage (%)**
Do you know about HIV/AIDS		

No	57	28.5
Yes	143	71.5
Sources of information		
Radio	15	7.5
Television	68	34
News paper	8	4
Friends/relatives	56	28
Others	53	26.5
AIDS results in death		
No	67	33.5
Yes	133	66.5
Is Bangladesh at risk		
Yes	89	44.5
No	38	19
No idea	73	36.5
Is HIV/AIDS contagious		
Yes	85	42.5
No	48	24
No idea	67	33.5
Is any medicine available for HIV/AIDS		
Yes	60	30
No	56	28
No idea	84	42
Causes of HIV/AIDS		
Unsafe sexual relation	113	56.5
Blood transmission	26	13
More use of same cringe	23	11.5
Others	38	19
Watching T V.		
Yes	70	35
No	19	9.5
Irregular	111	55.5
Watching adult movie		
Yes	36	18
No	79	39.5
Irregular	85	42.5
Pornographic materials		
No	82	41
Yes	118	59
Smoking habit		
No	37	18.5
Yes	163	81.5
Taking illegal drugs		
No	51	25.5
Yes	149	74.5
Illegal Sex		
No	104	52
Yes	96	48
Condom use		
No	127	63.5
Yes	73	36.5
Total	200	100

Table 2: Distribution of migrants' knowledge and awareness of HIV/AIDS and risky behaviors, (n=200)

Table 3 presented the associations of the migrant workers' socio-demographic characteristics and their risky sexual behaviors. The bivariate analysis () identified that respondents' age, educational status, occupational status, housing types, and native place visit are statistically significant with their illegal sexual activities. More than half of the respondents (60.20%) are less than or equal to 30 years of age reported engaging in illegal sex with multiple sex worker, while 40.50% of those 31 to 40 years of age and 36.80% of those over age 40 reported to have engaged in illegal sexual behaviors with multiple sex partner ($p<0.05$). Among migrants, those who are married accounted for the largest number of those engaging in illegal sex, but the difference between prevalence rates for married (47.80%) and unmarried (50.00%) was not statistically significant. Illiterate migrants have a significantly higher rate of participation in illegal sex with multiple partner ($p<0.01$) compared to migrants who are literate (35.90%). There is also an association between occupation type and illegal sex. Migrants who are rickshaw pullers (51.30%) and in service occupations (85.70%) have higher rates of engaging in illegal sex compared to those in business occupations (28.20%). Similarly, type of housing is related to illegal sex ($p<0.01$), where those who live with relatives (60.00%) have the highest rate of participation in illegal sex, followed by those who are renting (47.10%) and those who own their own house (27.30%). Likewise, migrants with native place visit within one month (56.60%) have the highest rate of illegal sex participation, while those with native place visit from 1 month to 12 months (45.70%) and after 1 year (31.20%) have illegal sex participation rates that are 10 to 25 percentage points lower ($p<0.05$). Income and duration of migration were not significantly associated with illegal sex. These data suggest that there are significant associations between illegal sex and age, educational status, occupation, type of housing and timeframe of native place visit.

	Engage in risky sexual behaviors			
Variables	**No**	**Yes**	**Total**	***P values**
Age				
≤ 30 years	33 (39.80%)	50 (60.20%)	83 (100.00%)	0.013*
31-40 years	47 (59.50%)	32 (40.50%)	79 (100.00%)	
≥ 41 years	24 (63.20%)	14 (36.80%)	38 (100.00%)	
Marital status				
Unmarried	9 (50.00%)	9 (50.00%)	18 (100.00%)	0. 859
Married	95 (52.20%)	87 (47.80%)	182 (100.00%)	
Educational status				
Illiterate	54 (44.30%)	68 (55.70%)	122 (100.00%)	0.006*
Literate	50 (64.10%)	28 (35.90%)	78 (100.00%)	
Occupation				
Rickshaw puller and labor	75 (48.70%)	79 (51.30%)	154 (100.00%)	0.005*
Business	28 (71.80%)	11 (28.20%)	39 (100.00%)	
Service	1 (14.30%)	6 (85.70%)	7 (100.00%)	
Monthly income				
≤ 5000 Tk.	52 (51.00%)	50 (49.00%)	102 (100.00%)	0.768
>5000Tk.	52 (53.10%)	46 (46.90%)	98 (100.00%)	
Type of Housing				
Owner	24 (72.70%)	9 (27.30%)	33 (100.00%)	0.009*
Renter	54 (52.90%)	48 (47.10%)	102 (100.00%)	
Relative's house	26 (40.00%)	39 (60.00%)	65 (100.00%)	
Duration of migration				
< 1 Year	18 (47.40%)	20 (52.60%)	38 (100.00%)	0.525
> 1 year	86 (53.10%)	76 (46.90%)	162 (100.00%)	
Native place visit				
Within one month	46 (43.40%)	60 (56.60%)	106 (100.00%)	0.013*
Within1to12 months	25 (54.30%)	21 (45.70%)	46 (100.00%)	
After 1 year or more	33 (68.80%)	15 (31.20%)	48 (100.00%)	

Table 3: Association of respondents' socio-demographic characteristics and their risky behaviors Note: Chi-square test (*P<0.05)

Table 4 presents the results of bivariate analysis between engage in illegal sexual activities with the migrant workers' knowledge and awareness about HIV/AIDS. The bivariate analysis identified that the factors AIDS results in death, causes of HIV/AIDS, watching pornographic materials, smoking habit, and taking illegal drugs are significantly associated with the engagement in risky sexual behaviors. While roughly three-fourths of the migrants had knowledge about HIV/AIDS, surprisingly, there is no significant difference in the rate of illegal sex when compared to those who indicated they had no knowledge of HIV/AIDS (44.80% vs. 56.10%). However, migrants who reported that they know (41.40%) that AIDS results in death have a lower rate of illegal sexual behavior than those who are not aware (61.20%) that AIDS results in death (p<0.01). Knowledge of the causes of HIV/AIDS is also related to illegal sex, where migrants who know that the disease is transmitted through unsafe sexual relations (39.80%) have the lowest rate of illegal sex participation and those who know it is transmitted through blood have the highest rate of illegal sex participation at 65.40% (p<0.05). Migrants who report knowledge that

HIV/AIDS is caused by sharing syringes and through other means have illegal sex participation rates of 52.20% and 57.90%, respectively. Interestingly, migrants who report involvement with pornographic material (33.10%) have a significantly lower rate of illegal sex participation than those who are not involved (69.50%) with pornographic material ($p<0.01$). Migrants who report that they have a smoking habit (51.50%) have a higher rate of illegal sex participation than those who do not smoke (32.40%; $p<0.05$). However, migrants who take illegal drugs (36.20%) have a significantly lower rate of illegal sex participation than those who do not use illegal drugs (82.40%; $p<0.01$). No significant differences were observed in the rate of illegal sex participation between migrants who use condoms and those who do not.

	Engage in risky sexual behaviors			
Variables	**No**	**Yes**	**Total**	***P values**
Do you know about HIV/AIDS				
No	25 (43.90%)	32 (56.10%)	57 (100.00%)	0.146
Yes	79 (55.20%)	64 (44.80%)	143 (100.00%)	
AIDS results in death				
No	26 (38.80%)	41 (61.20%)	67 (100.00%)	0.008*
Yes	78 (58.60%)	55 (41.40%)	133 (100.00%)	
Causes of HIV/AIDS				
Unsafe sexual relation	68 (60.20%)	45 (39.80%)	113 (100.00%)	0.050*
Blood transmission	9 (34.60%)	17 (65.40%)	26 (100.00%)	
Use of same syringe	11 (47.80%)	12 (52.20%)	23 (100.00%)	
Others	16 (42.10%)	22 (57.90%)	38 (100.00%)	
Pornographic materials				
No	25 (30.50%)	57 (69.50%)	82 (100.00%)	0.000*
Yes	79 (66.90%)	39 (33.10%)	118 (100.00%)	
Smoking habit				
No	25 (67.60%)	12 (32.40%)	37 (100.00%)	0.036*
Yes	79 (48.50%)	84 (51.50%)	163 (100.00%)	
Taking illegal drugs				
No	9 (17.60%)	42 (82.40%)	51 (100.00%)	0.000*
Yes	95 (63.80%)	54 (36.20%)	149 (100.00%)	
Condom use				
No	69 (54.30%)	58 (45.70%)	127 (100.00%)	0. 384
Yes	35 (47.90%)	38 (52.10%)	73 (100.00%)	

Table 4: Association between migrant workers' knowledge and awareness about HIV/AIDS and risky sexual behaviors Note: Chi-square test (*$P<0.05$)

The results of logistic regression, including beta coefficients and odds ratios, are presented in Table 5. The odds ratio (OR) is interpreted as the proportionate change in the odds of an event occurring for a one unit change in the value of a given predictor variable. The OR for the reference category is 1 by definition. The results show that among various individual level indicators, educational status is important predictor. The OR of risky sexual behavior are 63.30% (OR=0. 367, 95% CI=0.170-0.790) lower for literate migrants compared to illiterate migrants. It is interesting to note that educational status does not act as deterrent in adopting the risky sexual behavior; or it may be that those who are involved in risky sexual behavior are illiterate. Occupation is another important characteristic that influences the likelihood of engaging in risky sexual behavior. Migrants who are working in service occupations are 8.933 (OR=8.933, 95% CI=0.889-89.707) times more likely to engage in risky sexual behavior than migrants who are rickshaw pullers.

While income and frequency of visitation to native place were found to be non-significant, migrant's place of residence is significantly related to participation in risky sex. Migrants who are renting their place of residence or residing with relatives are 3.448 (OR=3.448, 95% CI=0.979-12.139) times and 3.529 (OR=3.529, 95% CI=1.003-12.414) times more likely to be involved in risky sexual behavior, respectively, compared to migrants who own their own home. The migrants who know that AIDS results in death are 47.40 % (OR=0.526, 95% CI=0.250-1.109) less likely to be participate in risk sex than those who do not. The viewing of adult movies is one of the strongest predictors of risky sexual behavior. In fact, viewing adult movies increases the odds of risky sexual behavior by a factor of 4.109 (OR=4.109, 95% CI=1.880-8.978) times, compared to migrants who do not view adult movies. Those migrants who take illegal drugs have an 85.60% (OR=0.144, 95% CI=0.061-0.338) lower likelihood of risk sexual behavior than those who do not take illegal drugs.

Variables	Co-efficient (β – values)	Standard error (S.E)	Odds ratio (OR)	95% CI of odds ratios	
				Lower limit	Upper limit
Age					
≤ 30 years (RC)					
31-40 years	-0.304	0.449	0.738	0.306	1.779
≥ 41 years	0.403	0.653	1.496	0.416	5.377
Marital status					
Unmarried (RC)					
Married	0.578	0.6	1.782	0.55	5.778
Educational status					
Illiterate (RC)					
Literate	-1.002*	0.391	0.367	0.171	0.79
Occupation					
Rickshaw puller and Labor (RC)					
Business	-0.267	0.515	0.766	0.279	2.101
Service	2.190*	1.177	8.933	0.889	89.707
Monthly income					
≤ 5000 Tk. (RC)					
>5000Tk.	0.506	0.413	1.659	0.738	3.731
Place of residence					
Owner (RC)					
Renter	1.238*	0.642	3.448	0.979	12.139
Relative's house	1.261*	0.642	3.529	1.003	12.414
Native place visit					
Within one month (RC)					
Within1to12 months	-0.747	0.469	0.474	0.189	1.188
After 1 year or more	0.1	0.598	1.106	0.343	3.566
Do you know AIDS results in death?					
No (RC)					
Yes	-0.642*	0.38	0.526	0.25	1.109
X-rated/Adult movie					

No (RC)					
Yes	1.413*	0.399	4.109	1.88	8.978
Taking illegal drugs					
No (RC)					
Yes	-1.941*	0.437	0.144	0.061	0.338

Table 5: Results of Logistic Regression of Determinants of Risky Sexual Behavior Note: *P<0.05, RC= Reference category

Discussion

The main objective of this study was to examine the relationships between knowledge and awareness of HIV/AIDS and risky sexual behaviors among male migrant workers in Rajshahi City, Bangladesh. Migration is a phenomenon of growing significance worldwide. The twentieth century was a period of massive transfer of population due to changing socio-economic and demographic milieu of both developed and developing countries. In developing countries, development projects in urban areas and poverty in rural areas have resulted in a large number of migrant workers in urban areas. In addition to individual risk-factors of HIV/AIDS infections, migrant laborers are also exposed to various environmental risk-factors, such as easy availability of commercial sex workers, exposure to pornographic materials, etc., which also increase their vulnerability to HIV infection. Findings from the bivariate analysis suggest that most of the variables selected for the study have significant effects on participation in risky sexual behavior (Tables 3 and 4). Bivariate analysis suggests that age is an important variable in predicting the relationships of knowledge and awareness of HIV/AIDS and sexual behaviors among the respondents. However, multivariate analysis does not support these findings. Previous findings showed that age, educational attainment, marital status, urban residence, and social influence of family have significant effects on risky sexual behaviors [24]. Our results indicate that migrants less than 30 years of age (60.20%) had the highest rate of illegal/risky sexual behaviors. However, the differences between age groups were not statistically significant when controlling for other factors in the study. On the other hand, educational attainment and occupational status did have significant effects on whether or not migrants participate in risky sex. Migrants with no education and working in service occupations were more likely to engage in risky sexual behavior.

Many migrants have come to Rajshahi City, and most have migrated alone, often leaving their wives and children at the place of origin, from various parts of Rajshahi division and other parts of the country. Almost half (61.00%) of these migrants are poorly educated, employed in low paid contractual jobs (77.00%) and, as a result, forced to live in slum areas. These two factors are significantly associated with participation in risky sexual behavior that puts these migrants at increased risk for contracting HIV/AIDS. Previous research has shown that remarkable social and environmental factors coupled with lack of education and income make migrants more prone to indulge in risky behavior [25]. Our findings suggest that migrants who are uneducated, unaware that AIDS results in death, employed in service occupations and watch adult movies are significantly more likely to engage in risky sexual behavior. Moreover, migrants who rent their place of residence or reside with relatives are more likely to engage in risky sex than those who actually own their residence. These finding suggests a strong linkage between socioeconomic status and risky sexual behavior, where those with higher status are less likely to engage in risky sex, thereby reducing their risk of HIV infection.

While illegal drug use has been identified as an important predictor of unprotected/risky sexual practices, our data suggest that illegal drug use operates differently for migrants in Rajshahi City [26]. More specifically, migrants who use illegal drugs are actually less likely to engage in risky sexual behavior than those who do not. This finding may suggest that in the situation of migrants in Rajshahi City, use of illegal drugs may be method of self-medicating in order to alleviate the feelings of isolation, loneliness and deprivation that accompany their circumstances, thereby reducing the impulse to engage in risky sexual activity. It is difficult to determine the extent to which migrants substitute illegal drugs for risky sex, and this is certainly an area in need of additional research in the future.

In Bangladesh, majority of the migrants are poor and illiterate and come from rural areas. Most migrants work as laborers on construction sites, factory workers or in other informal activities in cities, earning too little to have formal housing in the cities. Most of them live in slums in sub-human living conditions. The vulnerability to HIV infection is often greatest when people find themselves living and working in conditions of poverty, powerlessness and social instability, conditions which apply to most of the migrants in Bangladesh. Poor economic conditions make it difficult for cities to adequately manage the increasing population, thus leading to economic and social inequality that makes poor people vulnerable to acute health problems thereby creating challenges for health care and over-stretching existing infrastructure [18, 20]. Additionally, young people represent a large proportion of the urban population and the sexual behavior of this group is associated with deteriorating living conditions, pervasive poverty and the urban character of the HIV epidemic [19]. As mentioned before, the overall HIV prevalence is low in Bangladesh. However, given the increasing migrant population, concentration of population in urban areas, pervasive poverty, unsanitary living conditions, and large youth population, it has all the ingredients to become a large epidemic [27-29]. Sex between men and sex workers in Bangladesh are illegal, which has a significant impact on HIV prevention. Sex workers, both brothel and street-based, have reported high client turnover, by Asian standards. It is believed that most of the HIV infected people do not disclose the fact that they are infected with the HIV virus, and are hardly interested to ask for treatment and health care due to the social stigma associated with HIV/AIDS and the fear of discrimination.

Conclusion

The existing socio-demographic differentials in the home based networking among migrants in Rajshahi City suggest that the male

migrants who are involved in pornographic materials and taking illegal drugs regularly have greater chance to involve in risky sexual behaviors. The results show that among various individual level indicators, marital status and deaths due to AIDS are important predictors of risky sexual behaviors. Age, education, monthly income, visiting the native place also influence the migrants to involve themselves in the risky sexual activity. Taking illegal drugs also affects the health of the migrants, develop mental illness as well. All these predictors increase the desire for sex among migrants and get affected in HIV. Consequently, it is a matter of major concern that migrant workers in Rajshahi City are in high risk to be infected HIV. The findings of this study confirmed that migrant populations are more likely to engage in sexual relationships that may result in increased risk of HIV infection. This study also suggests that illiteracy, and being unaware about HIV/AIDS results in death and watching adult movies increase the likelihood of engaging in risky sexual behaviors.

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Competing Interest

The authors declare that they have no competing interests.

Contribution of Authors

All authors have contributed to the conceptualization, conduct, and analysis of this research, and all authors have participated in the manuscript drafting, editing, and revising. All authors have approved the final version of this manuscript.

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