HIV Seroprevalence among the Patients or Clients Obtaining Blood Sample at BSMMU Virology Laboratory

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ABSTRACT

Departments of Virology (DVs), BSMMU receive patients from every background, socioeconomic group and health status. Hence, DVs can play a critical role in offering human immunodeficiency virus (HIV) testing and help in the national strategy of early HIV detection. The present study was conducted on 1208 patients attending DVs after taking Institutional Review Board approval. They were screened for HIV antibodies by three rapid/simple assay tests having different principles/antigens as per the WHO guidelines. Forty four (3.6%) of the 1208 patients were HIV reactive and 1164(96.4%) were negative respectively. Distribution of patients on the basis of gender where 894 (74.1%) were male and 313 (25.9%) were female out of 1208 patients or clients. Distribution of study subject on the basis of exposure history where 378(38.8%) patients or clients had history of exposure and 830 (68.7%) patients or clients did not. Distribution of the patients on the basis of purpose of screening where patients were in three groups (Screening before operation, Positive exposure history and To exclude HIV infection during failure of drug Rx) where 776(64.2%) patients were done anti-HIV test due to screening purpose before operation, 378(31.1%) patients were done this test due to Positive exposure history exposure history and 54(4.5%) patients done this due to exclude HIV infection during failure of drug treatment. Prevalence of HIV infection was more among 21-40yrs age group than other age group(18mon-20yrs,41-60yrs&>60yrs) which is not significant . Data shows there was significant association of anti-HIV positivity with exposure history of the patients or clients. Prevalence of HIV infection was more among patients or clients who had history of exposure. Prevalence of HIV was more among the patients who were done screening test due to failure of drugs than other two purposes. Bangladesh is still considered as a low HIV/AIDS prevalent country. However, it is at a critical moment in the course of its AIDS epidemic. It is estimated that there are 13,000 HIV-positive people in the country and that HIV prevalence in the adult population is less than 0.01%. However, the country's vulnerability is very high. National HIV surveillance indicates that the rate of HIV infection among street-based sex workers in central Bangladesh is high compared with sex workers in other parts of South Asia. HIV among injecting drug users is already 10.5%.The presence of covert multi-partner sexual activity and denial, the low level of knowledge and low condom use, unsafe professional blood donations, lack of a desirable environment and violation of Human Rights, all contribute to the spread of HIV in Bangladesh. Thus, the study emphasizes the need for expansion of routine voluntary HIV counseling and testing to all the patients who come to the DV and practicing universal work precautions by health care workers.

Keywords: bangladesh, department of virology, human immunodeficiency virus, rapid test, universal work precautions

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I. INTRODUCTION

The department Virology (DV) is an ideal place for public health interventions and provides ready access to the health care system, offering a great opportunity for human immunodeficiency virus (HIV) testing and counselling. DVs receive patients from every background, socioeconomic group and health status. Hence, DVs are a key component of the health care safety net. Patients not linked with health

services are particularly likely to seek care in an DV when medical concern arises.[1] The country faces a concentrated epidemic, and it's very low HIV-prevalence rate is partly due to prevention efforts, focusing on men who have sex with men, female Sex workers and intravenous drug users. [2] However, it has been seen that HIV infection is diagnosed most of the times with one or the other opportunistic infection (OI), particularly in developing countries. At the time of diagnosis, most of the patients have advanced disease and are at a higher risk of OIs and death.

Emergencies in HIV-infected patients can occur at any stage of the disease. DVs can play a critical role in offering HIV testing and help in the national strategy of early HIV detection. Early detection will allow the infected individuals to take full advantage of Anti retroviral therapy (ARTs) and preventive medicines for opportunistic infections.[3] Emergency medical personnel must assiduously guard against accidental needle stick injury by practicing universal work precautions (UWPs) strictly as they present the greatest risk for health care work-related HIV infection.[4]

II. METHODS

The present study was conducted on 1208 patients from Department of Virology, BSMMU for HIV antibodies after taking approval from the Institutional Review Board. Detailed history was taken. Pre-test counseling of the patients was performed and their informed consent was taken before blood sample collection. HIV antibodies were detected by ELISA and various rapid/simple assay tests using different antigens and principles as per the WHO guidelines provided at Department of Virology BSMMU.

Patient's serum was first tested using Enzyme Linked Immuno Sorbent Assay (ELISA) was done to detect specific antibody to HIV using 3rd generation enzyme immune assay, Biotest; Germany. Capillus were done on HIV positive serum to recheck the results of ELISA test. The sensitivity and specificity of the biotest Anti-HIV TETRA ELAISA was 100% and 99.83%. In case of HIV rapid tests (capillus) that can be obtained through the WHO bulk procurement scheme they have been evaluated and have met pre set criteria. The levels of sensitivity and specificity of Capillus is greater than or equal to 99%. In case of test in Parallel sample were positive in both test that sera is positive for HIV. It should be remembered that no test 100% sensitive and 100% specific. WHO recommends serial testing in most setting because more economic, a second test being required only when the initial test is positive. The results were tabulated and analyzed using the chi-square test and P -value <0.05 was taken as statistically significant. Post-test counseling was carried out for those who were found to be HIV reactive and were referred to the ART Center, BSMMU, for treatment.

III. RESULTS

A total of 1208 study subjects were tested for antibody to HIV by ELISA and capillus method. The seroprevalence of anti-HIV in Patients or clients is shown in figure 1. Out of 1208 subjects, 44(13.6%) were positive and 1164(96.4%) were negative respectively.

Fig. 1. Distribution of study subjects by anti-HIV antibody test

Table 1 shows the mean age of patients or clients were 41.51 years ranging from 18 month to more than 60 yrs. Highest percentage of patients were in 21-40 years of age group (72.5%) followed by 18 month to 20 years age group (13.6%) and lowest percentage were present in more than 60 years age group (0.8%). Distribution of patients on the basis of gender where 894 (74.1%) were male and 314 (25.9%) were female out of 1208 patients or clients. The table also shows distribution of study subject on the basis of exposure history where 378(31.1%) patients or clients had history of exposure and 830 (68.7%) patients or clients did not. Table shows the distribution of the patients on the basis of purpose of screening where patients were in three groups (Screening before operation, Positive exposure history and To exclude HIV infection during failure of drug Rx) where 776(64.2%) patients were done anti-HIV test due to screening purpose before operation, 378(31.1%) patients were done this test due to Positive exposure history exposure history and 54(4.5%) patients done this due to exclude HIV infection during failure of drug treatment.

TABLE I: DEMOGRAPHIC PROFILE OF THE STUDY POPULATION (N=1208)

	Frequency	Percentage
Age		
18 month-20yrs	164	13.6
21-40yrs	876	72.5
41-60yrs	158	13.1
>60yrs	10	0.8
Total	1208	100
*Mean Age=41.51;range=18mon->60yrs		
Gender		
Male	894	74.1
Female	314	25.9
Exposure history		
Yes	378	31.1
No	830	68.7
Purpose of screening test		
Screening before operation	776	64.2
Positive exposure history	378	31.1
To exclude HIV infection during failure of drug Rx	54	4.5

Data shows there was no significant association between age of study subjects and HIV infection in figure 2. Prevalence of HIV infection was more among 21-40 yrs age group than other age group(18mon-20yrs, 41-60yrs & >60yrs) which is not significant.

Fig. 2. Relationship between age of the patients or clients and anti-HIV antibody test

Data in figure 3 shows there was significant association of anti-HIV positivity with exposure history of the patients or clients. Prevalence of HIV infection was more among patients or clients who had history of exposure.

Fig. 3. Association of anti-HIV positivity with exposure history of the patients or clients

Data shows there was significant association between HIV positive patients or clients and purpose to exclude HIV during failure of treatment. Prevalence of HIV was more among the patients who were done screening test due to failure of drugs than other two purpose.

TABLE II: RELATIONSHIP BETWEEN AGE OF THE PATIENTS OR CLIENTS AND ANTI-HIV ANTIBODY TEST

Purpose of screening	Anti-HIV antibody test		Total	P value
	Positive	Negative		
Screening before operation	4(0.5%)	772(99.5%)	776	0.000
Positive exposure history	25(6.6%)	353(93.4%)	378	
To exclude HIV during failure of Rx	15(27.8%)	39(72.2%)	54	
Total	44	1164	1208	

IV. DISCUSSION

HIV infection is becoming a global public health problem. The pandemic is not homogeneous within regions, with some countries more afflicted than others.^[15] Even at the country level, there are wide variations in infection levels between different areas. The number of people infected with HIV continues to rise in most parts of the world, despite the implementation of prevention strategies, Sub-Saharan Africa being by far the worst-affected region, with an estimated 36.9 million at the end of 2017, 1.8 million individuals worldwide became newly infected with HIV in 2017^[5]. South & South East Asia has an estimated 12% of the global total.^[6,16,17,18]

This study was a cross sectional study carried out with the aim to determine the HIV seroprevalence among patients/clients obtaining blood sample at BSMMU virology laboratory. Study shows that the mean age of patients or clients were 41.51 years ranging from 18 month to more than 60 yrs. Highest percentage of patients were in 21-40 years of age group (72.5%) followed by 18 month to 20 years age group (13.6%) and lowest percentage were present in more than 60 years age group (0.8%). Prevalence of HIV

infection was more among 21-40yrs age group than other age group (18mon-20yrs, 41-60yrs & >60yrs) which is not significant. Highest percent of all new HIV infections occur among young people between 15-24 years old^[7,8]. Sexually transmitted infections have significant implications for the vulnerability of young people to HIV. High rates of STIs among young people reveal the high levels of unprotected sex, which puts them at risk for contracting HIV. STIs are most frequent in young people aged 15-24, and 50 per cent of all HIV infections are among young people, most of whom contract HIV before they are 20 years old^[9].

The seroprevalence of anti-HIV in Patients or clients is shown in figure 1. Out of 1208 subjects, 44(13.6%) were positive and 1164(96.4%) were negative respectively. On a global scale, the HIV epidemic has stabilized, although with unacceptably high levels of new HIV infections and AIDS deaths. In December 2018, about 1,700 people have been newly affected by the virus. Around 4,700 people are diagnosed with the virus. However, only 2,470 AIDS affected people in the country are receiving antiretroviral therapy (ART), according to the report. However, UNAIDS reported there were some 11,000 people living with HIV out of a total population of 150 million^[3,10]. According to UNAIDS adult prevalence rate was <.01% at end of 2005. Gender inequity, condoned both culturally and socially in parts of Asia, heightens the vulnerability of women and girls at many levels. Unequal access to education means that girls often have less access to important information to protect their health and well being. Distribution of patients on the basis of gender where 894 (74.1%) were male and 313 (25.9%) were female out of 1207 patients or clients. Cultural mores are more likely to allow men to have multiple sex partners and patronize commercial sex establishments while wives are expected to remain faithful^[11]. New trends in the epidemic are revealing that faithful, monogamous wives are now becoming infected when their husbands bring home the virus^[12].

Unprotected sexual intercourse, whether men with men or women with men, is the most common way of transmitting HIV. Between 85-90 percent of new infections are transmitted through sexual intercourse^[13]. Distribution of study subject on the basis of exposure history where 378(38.8%) patients or clients had history of exposure and 830 (68.7%) patients or clients did not. Data shows there was significant association of anti-HIV positivity with exposure history of the patients or clients. Prevalence of HIV infection was more among patients or clients who had history of exposure. In the context of HIV epidemics, the notion of “bridging” refers to the group of people who connect high risk and low risk populations. Men who sex with commercial Sex workers and also with monogamous wives are an example of a bridging population. The larger the bridging group, the greater the risk of transmission into the general population. HIV spreads extensively in populations where the level of sex partner exchange is sufficiently high.^[14]

Distribution of the patients on the basis of purpose of screening where patients were in three groups (Screening before operation, Positive exposure history and To exclude HIV infection during failure of drug Rx) where 776(64.2%) patients were done anti-HIV test due to screening purpose before operation, 378(31.1%) patients were done this test due to Positive exposure history exposure history and 54(4.5%) patients done this due to exclude HIV infection

during failure of drug treatment. Data shows there was significant association between HIV positive patients or clients and purpose to exclude HIV during failure of treatment. Prevalence of HIV was more among the patients who were done screening test due to failure of drugs than other two purposes. For instance, a study by Julien et al. posited that Positive HIV results were found in 8.3% of case during preoperative testing in a low resource country.^[19,20] No other study found to compare this study finding. However, despite the availability of this widening array of effective HIV prevention tools and methods and a massive scale-up of HIV treatment in recent years, new infections among adults globally have not decreased sufficiently.

V. LIMITATION

Like other studies, this study has some limitations. First, being a cross sectional study, we only observe cannot determine variable of HIV. Secondly, the choice of only one tertiary hospital for the study.

VI. CONCLUSION

HIV testing should be integrated with screening for other infections such as viral hepatitis, sexually transmitted diseases and tuberculosis. Because populations disproportionately affected by HIV are also disproportionately affected by these infections, integrating these services can significantly improve health care services. Thus, the study emphasizes the importance of offering rapid HIV testing to all patients who present in the VD with or without symptoms. Routine testing might increase the linkage of HIV-positive persons to health and prevention services earlier in the course of infection, which might result in improved long-term prognosis and reduced HIV transmission.

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