



Full Length Research Article

RISK FACTORS FOR ACQUISITION OF HIV INFECTION AMONG IDUS IN KOLKATA

¹Bhattacharya, M. K. ²Sharma Sarkar, B., ³Bagchi, S. R. and ^{4,*}Bhattacharya, A.,

¹National Institute of Cholera & Enteric Disease, Kolkata

²Bankura Sammilani Medical College, West Bengal

³Kalyani Medical College, West Bengal

⁴Post Graduate Medical Student, West Bengal Health University, India

ARTICLE INFO

Article History:

Received 30th October, 2015

Received in revised form

21st November, 2015

Accepted 11th December, 2015

Published online 31st January, 2016

Key Words:

Risk Factor,
HIV, IDUs.

ABSTRACT

It is a community based cross sectional epidemiological pilot study, so it is not enough to explore the all risk factors among IDUs in Kolkata, West-Bengal. Most IDUs are young and HIV was found to be significantly associated with those aged ≥ 26 years compared with those aged ≤ 25 years. In the present study it is revealed that the age group of the HIV sero-positive IDUs is 30 to 42 years and large portion of them are married. Most of the IDUs practiced unsafe sex (87.5), have the habit of sex with male (12.5%) and 75% visits commercial sex worker. Tidigestic was found to be the most frequently consumed drug for the injecting drug user in this study. However among the injectable drug users for development the strategies or controlling the transmission of HIV through I.V. route and the change of behavioral pattern among IDUs.

Copyright © 2016 Bhattacharya et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

India has been experiencing the most serious public-health challenge posed by HIV Epidemic since its first detection in 1986 (HIV and India, 1996), which can be attributed to geographical proximity with the neighboring at-risk zones, where poverty, ignorance, illiteracy, unhygienic livelihood, and lack of health education in a densely populated regions dangerously contributing to rapid spread of infection, not only in established at-risk zones, but also at neighborhoods where risk factors are silent & dormant what is more worrisome is that new ways are surfacing resulting in rapid & wide spread transmission. In an increasingly interconnected world, the effects of such an epidemic may be felt globally, both directly in terms of the spread of infection, and indirectly in terms of the overall security and economic and political health of the region. However, the problem of HIV is increasing every passing day, what was once perceived as a molehill slowly but surely turning into a mountain. India witnessed a sharp rise in the number of HIV infections, from a few thousands in the early 1990s to an estimated 3.8-4.6 million children and adults living with HIV/AIDS in 2002 that increased to 5.1 million cases in 2004 (www.nacioindia.org).

IN 2002, US National intelligence council (NIC) reported India is to be one of five second wave countries", where infections with HIV are on the verge of "breakout" from "high risk" populations in to the general population (Naik *et al*, AIDS 5:117-8). The prevalence data of HIV infection points towards its spread from urban to rural areas and from high – risk groups to the general population (Report of National AIDS control organization, 2005), also shows that around 1% of the adult (Age 15-49 years) populations were infected with HIV -1 in 2004. The activities of National AIDS Control Programme, launched in 1992, were strengthened in 1999 in view if the increasing HIV/AIDS cases in the country. Despite this sentinel surveillance data indicate that the number of HIV cases is in increasing continuously through out the country, with a major route of transmission being the heterosexual contacts (more then 86%) (Report of National AIDS control organization, 2005), Mathematical models and several epidemiological studies suggest that one-half to three quarters of all new HIV-1 infections are due to first or second generation infections related to male use of female sex work which is common (Naglerke *et al.*, 2002). Now India is estimated to have 3.2 million infected people. The different modes of transmission of the infection is by heterosexual route, homosexuality, intravenous drug abuse, vertical transmission by mother to child transmission.

**Corresponding author: Bhattacharya, A.,
Post Graduate Medical Student, West Bengal Health University, India.*

Injecting drug users (IDUs) seems to be adding salt to the wound contributing to the already increasing pace of spread of infection of HIV, which is already documented in several developing countries (Crofts *et al.*, 1998). IDU is likely to remain as one major risk as drug use expands from rural bordering areas in Southwestern China to the whole country, especially to urban areas (Qian *et al.*, 2005). India has also experienced a similar type of HIV spread among IDUs, seen for the first time in Manipur, a northeastern state of India bordering Myanmar, in 1990 (Naik *et al.*, 1991). Soft tissue infections. Including abscesses and cellulites are the major complications, which may result from sharing of injecting equipments in unhygienic conditions among IDUs. West Bengal is one of the eastern states of the country with a population of more than 80 million, HIV was not much of a problem till now and considered as one of the low prevent states of the country (State sentinel survey Report on HIV infection, 1998-2004). But geographical proximity with three international borders, Nepal Bhutan and Bangladesh and close communication with high prevalent northeastern states like Manipur and Nagaland pointing towards a clear and present danger that can announce itself without any prior notice. Hence in the present study proposal the impact of risk factors for spreading HIV among IDUs would be evaluated.

Justification of the study

- There is an estimated 13.2 million injecting drug users (IDUs) worldwide -78 percent of whom live in developing or transitional countries (Aceijas *et al.*, 2004). The sharing of contaminated injecting equipment has become a major driving force of the global AIDS epidemic and is the primary mode of HIV transmission in many countries throughout Eastern India.
- In south Asian region, large population of drug users belongs to the lower socio economic strata of the society. Non availability, rising cost and increasing tolerance to heroin were cited as factors that contributed to rise in use of injectable variants.
- Strong correlation is evident between drug usage and sex work (male and female). And this dangerous liaison is fuelling the HIV epidemics.
- In response to the increase in injecting drug use and its relation to the spread of HIV we need to evaluate the risk factor for acquiring HIV among IUD users to develop appropriate strategy and pragmatic long term approaches to hello drug using populations to prevent HIV.

Objective

- To identify the risk factors associated with HIV among IDUS in 15-49 age groups.
- To study the various epidemiological parameters causing HIV

MATERIALS AND METHODS

Study area

For administrative purposes the city of Kolkata is divided into 141 wards under Kolkata Municipal Corporation, of which 3 municipal wards were selected for the study. Each premise is

a building having official address, where a number of families live. A family has a single kitchen. The families use shared latrines with un flushed toilets. Most of the children below five years use shared toilets. The families use community tap waters for drinking as well as other house hold purposes, the treated water is supplied by the civic authorities 3 times a day. However, other water sources like tube wells, ponds are also in use for carrying out house hold works. The water lines lie in close proximity with the sewerage and soil water pipes. Most of the families have single earning member, main occupations are shop keepers and laborers, literacy rate among adults being more than 70%. The present study was undertaken in Tiljala slum area,

Drop In Centre (DIC)

Kolkata. This study was community based and crosses – sectional study comprising 50 subjects. Out of 50, 33 were IDUs and 17 their partners. Initial information about the study subjects was obtained from local leaders, NGO member and local health workers who act as key informants for this study. The purpose of the study was explained to all study subjects in detailed by trained social workers and were asked to participate voluntarily. Informed consent was obtained from each study subject. The study was approved by the Institutional Research Review Committee and Ethical Committee. All subjects who fulfilled the criteria were interviewed with the help of pre-tested semi structured questionnaire to study their knowledge, risk behavior and risk perceptions about the HIV.

Data collection

An epidemiological community based cross-sectional study was carried out among a total of 50 study individuals with HIV infection among IDUs and individual without HIV infection. A pre-designed and pre-tested semi structured questionnaire to study their knowledge, risk behavior and risk perceptions about the HIV along with their drug use and sexual risk behaviors.

Analysis

All data was entered into a computer using MS-EXCEL spread sheet. After data cleaning and editing, was analyzed using STATA.

RESULTS

In the present study a total of 50 individuals were interviewed and included in the study for analysis. Overall male female ratio was 33 (66%):17(34%). Among them individual were habituated to use injecting drugs. Among the 33(66%) IDUs 8(16%) and among the 17(34%) partner 1(2%) found HIV seropositive. The demographic features of IDUs (n=33) shown in Table1. Age distribution revealed that most of the IUDs aged between 30 to 42 years for HIV seropositive and 35 to 46 years for HIV seronegatives. About literacy rate, for HIV seropositives ,illiterate- 50%, educated more than secondary level (37.5%) educated as primary level, (12%) and for HIV seronegatives these portion were as follows ,illiterate (32%) educated more than secondary level(32%).educated up to primary level(63%) respectively.

Table 1. The demographic features of IDUs (n=33)

	IDU Pos	IDU Neg
Sex:		
Male	8(16%)	25(50%)
Female	1(2%)	16(32%)
Age:		
Mean	36.75 yrs	40 yrs
Std.Dev.	6.43	6.78
Education:		
Illerate	4(50%)	8(32%)
Primary	1(12.5%)	9(36%)
HS	3(37.5%)	8(32%)
Marital status:		
Married	5(62.5%)	12(48%)
Unmarried	1(12.5%)	11(44%)
Separated	2(25%)	2(8%)
Income:		
Nil	1(12.5%)	8(32%)
1 to <2500	5(62.5%)	8(32%)
2500 to <5000	1(12.5%)	7(28%)
5000+	1(12.5%)	2(8%)

About the marital status 62.5% of the seropositive individual are married, 12.5% are unmarried and remains (37.5%) are either divorced or separated. Among the HIV seronegative individual who using injecting drugs 48% married, 11% unmarried remains (8%) are separated. Among the IDUs with HIV seropositivity 62.5% had a income between Rs1—2500, 12.5% had income ranging Rs 2500 to Rs 5000, (12.5%) had no income and (12.5%) had income above Rs 5000. Among HIV seronegatives these portion were 32% (8/25), 28% (7/25), 32% (8/25) and 8% (2/25) respectively. Risk factor among IDUs for HIV infection shown in the Table 2; (n=33). There is nothing to say that all IDUs are drug addicted whether they are HIV seropositive or negative.

Table 2. Risk factor among IDUs for HIV infection

	IDU(HIV+ve) (n=8)	IDU(HIV-ve) (n=25)
Drug addiction	8 (100%)	25(100%)
Awareness:		
Ever heard of HIV	8(100%)	25(100%)
Ever shared of needle	8(100%)	12(100%)
Ever heard or seen condom	8(100%)	24(48%)
Ever visited commercial sex worker	6(75%)	7(28%)
Other sex partner	2(25%)	1(4%)
Sex with male	1(12.5%)	0(0%)
Condom use	7(87.5%)	11(44%)
Unsafe sex	7(87.5%)	23(92%)
Shared of food and cloths	0(0%)	1(4%)
Mother to child transmission	5(62.5%)	9(36%)

It is noticed that 100%(8) of IDUs with HIV seripositivity had the habit of share needle 100% heard about or seen condom, 75% (6) ever visit commercial sex worker. On the other hand 48%(24) seronegatives had Shared needles. 96% heard or seen condom, and 28% (7) had ever visit commercial sex worker. 25% (2) seropositives had other sex partner 12.5%(1) had the habit of sex with male 87.5%(7) use condom during sex, and 87%(7) practice unsafe sex, While 4%(1) seronegatives had other sex partner, none of them (0%) had male sex partner, 44%(11) use condom and 92%(23) practice unsafe sex respectively. None (0%) HIV positive individual shows the habit of share cloths and foods but one (4%) sero negatives shows this dirty habit. 62.5 % (5) seropositive mothers have the risk of transmission of their infection/ drugs to their child but 36%(9) seronegatives mothers have such.

Among the partner (17), 16 were HIV sero negative. (*The negligible 1% sero-positive partner are excluded*) The demographic features of them shown in the Table 3. The male female ratio were (6.25%) male and (93.75%) female. Maximum of them fall in the age group of 26 to 44 years. About literacy it was noted that, 31.25% (5) illiterate, 43.75% (7) educated as primary level and remaining 25% (4) had educated more than secondary level. Majority of them (81.25%) were married, one (6.25%) remain unmarried, and one (6.25%) widow and one (6.25%) was separated. Similar portion were noticed (22.22%) who had no income, (22.22%) had income between Rs.2500 to Rs 5000; (22.22%) had income above Rs.5000 and (33.33%) had income between Rs.1toRs.2500 (Table 3).

Table 3. The demographic features of partners of IDUs (n=16)

Sex:	
Male	1(6.25%)
Female	15(93.75%)
Age:	
Mean	±35.81 yrs
Std.Dev.	±9.72
Education:	
Illerate	5(31.25%)
Primary	7(43.75%)
HS	4(25%)
Marital status:	
Married	13(81.25%)
Unmarried	1(6.25%)
Separated	1(6.25%)
Widow	1(6.25%)
Income:	
Nil	2(22.22%)
1 to <2500	3(33.33%)
2500 to <5000	2(22.22%)
5000+	2(22.22%)

Table 4. The risk factor among HIV (-ve) partner of IDUs (n=16)

Drug addiction	0(100%)
Awareness:	
Ever heard of HIV	12(75%)
Ever shared of needle	0(0%)
Ever heard or seen condom	16(100%)
Ever visited commercial sex worker	0(0%)
Other sex partner	1(6.25%)
Sex with male	2(12.5%)
Condom use	11(73.33%)
Unsafe sex	12(100%)
Shared of food cloths	0(0%)
Mother to child	0(0%)

The Table 4 Showed the risk factor among HIV (-Ve) partner of IDUs (n=16). None of them were drug addicted, 75 % (12) heard about HIV infection. None 0% of them had shared needle, (for any other purpose) 100% heard or seen condom and none (0%) ever visit commercial sex worker. One (6.25%) had other sex partner, 2(12.5%) had the habit of sex with male. 73.33 % (11) use condom during sex and 75% (12) practiced unsafe sex. None of them had the habit of shared cloths or foods. No mother had the risk of transmission infection/drug to their child. Tidigesic was found to be the most frequently consumed drug for the injecting drug user, followed by AVIL (23.4 %), PHENERGAN (10.1 %), BROWN SUGAR (2.3%)

DISCUSSION

There is strong relation between IDUs with HIV infection/transmission of infection. The risk of transmission of HIV through shared needle is considered the second most potent route, after transmission of infected blood or its products (Des Jarlais, 1988). Sharing of injecting equipment was found 67.75% in Himalayan West Bengal, Eastern India, bordering Nepal, Bhutan, Bangladesh (Kamlesh Sarkar *et al.*, 2005). In our study we notice that 100% of IDUs with HIV Seropositivity and 48% of IDUs with HIV sero-negativity have the habit of sharing needles. Most IDUs are young and in their reproductive years. HIV was found to be significantly associated with those aged ≥ 26 years compared with those aged ≤ 25 years. In the above study it is revealed that the age group of the HIV sero-positive IDUs is 30 to 42 years and large portion of them are married. Other common route of transmission of HIV which coupled with injecting drug using is sexual route, most of the IDUs practiced unsafe sex (87.5%), have the habit of sex with male (12.5%) and 75% visits commercial sex worker. This is really made the alarming situation among IDUs for faster development of HIV infection for which an urgent and effective intervention is needed⁽¹²⁾.

Literacy status is poorly related to injecting drug using as we noticed in this study but IDUs who are HIV sero-positive are mostly illiterate which may be related to their poor knowledge about hygiene as they had the habit sharing of needles. Most of them had no income or income below Rs 2500. Tidigesic was found to be the most frequently consumed drug for the injecting drug user in this study. Injecting equipments though cheap but still sharing is common and no sterilization but flushing with available water is process of cleaning the equipment is common practice. The drugs are consumed 3 to 4 times a day through intravenous route where extravasations of blood and drug in soft tissue causes local mass effect and provide nutrient for bacterial infection. Needle- syringe exchange, health education, and early medical treatment should be the key strategies for abscess reduction among IDUs (Bhattacharya *et al.*, 2006). In another study, it is observed that failure to clean the skin before injection of drugs was associated with abscess (Vlahos *et al.*, 1992). When tidigesic is not available common replacement drugs are avil, phenergan, norphine, proxivon, nitrazepam. In Darjeeling and adjoining parts of Nepal the primary drug of choice is brown sugar which is commonly replaced by tidigesic and spasmoproxion (Kamlesh Sarkar *et al.*, 2005).

Conclusion

The present study which is community based epidemiological cross sectional pilot study, is not enough to explore the all risk factors among IDUs. However, an extensive and in-depth prospective large cohort case-control study are needed to explore the exact risk factors using unvaried and multivariate analysis among the injectable drug users for development the strategies or controlling the transmission of HIV through I.V. route and the change of behavioral pattern among IDUs in Kolkata, West-Bengal.

Acknowledgement

The study was funded by ICMR, Kolkata. We are grateful to Medical Collage Hospital Kolkata, National Medical Collage and ID&BG Hospital, Kolkata and Mr. Prabir Sinha, IDU Field Worker for giving strong support to carry out the study smoothly.

REFERENCES

- (State sentinel survey Report on HIV infection: status and Trend Analysis of HIV in West Bengal: 1998-2004; West Bengal state AIDS prevention and control Society).
- Bhattacharya, M.K., Naik, T.N., Palit, A. and Bhattacharya S.K. 2006. Impact of a harm reduction programme on soft tissue infection among Injecting Drug users, Kolkata; India. *J health popul Nutr*; mar 24)
- Crofts, N., Reid, G. and Deany, P. 1998. Injecting drug use and HIV infection in Asia. *The Asian harm reduction Network. AIDS*: 12 (Suppl b): S69-78.
- Des Jarlais *et al.* 1988, World Health Organisation. 1988 Des Jarlais, D., Friedman, S.R. and Stoneburner, 1998. HIV infection and intravenous drug use: Critical issues in transmission dynamics, infection outcomes and prevention, *Rev. infect Dis.* 10:151-157
- HIV and India: looking into the abyss. *Trop Med Int health* 1996 June; 1 (3): 295-304
- Kamlesh Sarkar, Baishali Bal, Rita Mukherjee, Sekhar Chakraborty, Swapan Kumar Niyogi, Malay Kumar Saha and Sujit Kumar Bhattacharya . Epidemic of HIV Coupled With Hepatitis C Virus Among Injecting Drug Users of Himalayan West Bengal, Eastern India, Bordering Nepal, Bhutan and Bangladesh ,Sarkar *et al.*; December 7, 2005;701 TFDJ328 -06, 41028,1-9.,
- Naglkerke, N.J., Jha, P., Devlas, S.J., Korenromp, E.L., Moses, S. and Blanchard, J. Fetal. 2002. Modeling HIV/AIDS epidemics in Bots wana and India: Impat of interventions to prevent transmission. *Bull World Health organ*; 80(2): 89-96.
- Naik, T.N. Sarkar, S., Singh, H.L., Bhunia, S.C., Singh, Y.I., Singh, P.K. *et al.* 1991. Intravenous drug users a new high -risk group for HIV infection in India. *AIDS* 5:117-8
- Qian, H.Z. Vermund, S.H. and Wang, N. 2005. Risk of HIV/AIDS in china: Sub population of special importance. *Sex Transm Infect*, 81: 442-447.
- Report of National AIDS control organization. Ministry of health Government of India 2005. Accessed on 5th may 2005.
- Report of National AIDS control organization. Ministry of health Government of India 2005 (www. Nacoindia.org).accessed on 5th may 2005.
- Report of National AIDS control organization. Ministry of health, government of India. 2005 (www.nacoindia.org) accessed on 5th May 2005
- The HIV/AIDS crises in India its spread from urban to rural areas and from high - risk groups to the general population.
- Vlahos, D., Sullivan, M., Astemborski, J. and Nelson, K.E. 1992. Bacterial infection and skin cleaning prior to injection among IDUs, *Public Health Rep.*,107:595-8.)
