



## 12 Studies on HIV/AIDS

### 12.1 Study on sexually transmitted infections among female sex workers of West Bengal

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#### **Introduction :**

India has been experiencing the most serious public-health challenge posed by HIV epidemic since its first detection in 1986. The country has made remarkable progress since last 10 year or more in control of communicable diseases indicated by gradual reduction of infant mortality rate over the years. However, the problem of HIV is seen to be increasing continuously since beginning till date. India has had a sharp increase 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. The prevalence data on HIV infection collected from various parts of the country indicate its spread from urban to rural areas and from high-risk to low-risk population (general population). The activities of the National AIDS Control Programme, launched in 1992, were strengthened in 1999 in view of the increasing HIV/AIDS cases in the country. Despite this, sentinel surveillance data indicate that the number of HIV cases is increasing continuously throughout the country, with a major route of transmission being the heterosexual contacts (more than 86%).

West Bengal, one of the eastern states of the country with a population of more than 80 million, has not recognized HIV much as a problem and is considered as one of the low prevalent states of the country. Geographically the state has three

international borders with neighboring countries, Nepal, Bhutan and Bangladesh, through which there are continuous migration of population. Nepal is already known to be a country from which HIV epidemic has spread to IDUs of adjoining part of West Bengal, India, across Indo-Nepal border. The state is also closely connected with high HIV prevalent north-eastern states like Manipur and Nagaland through its northern bordering town, Siliguri. On the other hand, the state capital, Kolkata, is considered one of the four major metropolitan cities of the country with a total population (including floating population) of more than 10 million. There is an estimated 50,000 sex workers operating in the state of West Bengal and about half of them were said to be working in the capital city of Kolkata. Another important factor, which might possibly have some role in HIV/STI transmission, is the presence of a seaport in Kolkata.

Objectives of this study were to study the prevalence of STIs indicated by HIV, VDRL, TPHA & HBV in sex workers of West Bengal and also to study the risk factors of HIV and their association

#### **Method of survey and sample collection:**

West Bengal has 19 districts. In step-1, these districts were initially categorized in to high, medium and low prevalent districts based on estimated number of sex workers prevalent in each district, as shown in table-1.

In step-2, two districts from each category were selected with a total of 6, were included for this survey. This included Darjeeling and Kolkata as high, Midnapore-East and 24 Parganas(N) as medium and Murshidabad as well as Purulia as low prevalent districts (Fig 12.1.1).



**Table 12.1.1** Categorization of districts of West Bengal based on rate of sex workers

Categorization of districts	Districts with rate of sex worker/100,000 indicated in parenthesis
<b>High Prevalent Districts</b> (rate of sex workers $\geq$ 50/100,000)	Kolkata (582.9), Darjeeling (71.6), CoochBehar (64.1), Jalpaiguri (140.6) and 24 Parganas [S] (54.3)
<b>Medium Prevalent Districts</b> (rate of sex workers = 11-50/100,000)	Uttar Dinajpur (21), Midnapore-East (40), Burdwan (38.74), 24 Pargarns[N] (15.59), Birbhum (12.9), Bankura (12.4), Hoogly (22.3) and Howrah (21.6)
<b>Low Prevalent Districts</b> (rate of sex workers = 1 to 10/100,000)	Maldah (9.6), Murshidabad (10),Purulia (5.2), Nadia (10), Dakshin Dinajpur (4.8) & Midnapore-West (8.2)

In step-3, sex workers of all brothels of selected districts were approached through local NGOs. Following this, they were asked to participate in this study after explaining them the purpose of it. All willing participants from each brothel were selected for this study. Sample size in each district was calculated using statcalc programme of Epi-Info version-6.2 and came to 541 in Kolkata, 244 in Darjeeling, 586 in

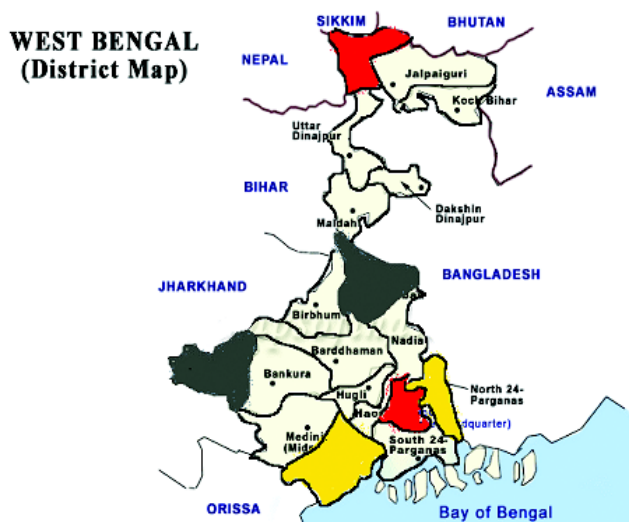


*Observation of record of patients at a Epidemic investigation in Tripura.*

Midnapore-East, 569 in North 24 Parganas, 116 in Purulia and 365 in Murshidabad. Informed consent was obtained from them for participating in this study. A pre-tested questionnaire was introduced to study their socio-demographic variables and risk behaviors by experienced social workers. This was followed by collection of 4-5 ml blood samples using unlinked anonymous method. Blood samples were collected in vacutainer containing EDTA and transported to the virology laboratory of This Institute, one of the national HIV referral laboratories of eastern India. HIV test was done by ELISA followed by another rapid test (tri-dot test) as per national guidelines of HIV testing. Detection of sexually transmitted infections was done by VDRL (Venereal Diseases Research Laboratory), TPHA (Treponema Palladium Haemoagglutination) and HBV (Hepatitis-B).

A total of 2076 subjects were included for this study. District-wise HIV sero-prevalence among brothel based sex workers revealed that sex workers of Darjeeling district had the highest HIV sero-prevalence (15.6%) followed by those of capital city, Kolkata (9.6%).





**Fig. 12.1.1** Districts selected from high, medium and low sex workers prevalent districts

Medium prevalent districts of Midnapore (East) and 24 Parganas (N) showed a sero-prevalence of 4.4% and 4.6% respectively whereas, low prevalent districts of Purulia and Murshidabad had the same of 2% and 1.7% respectively. Overall, average HIV sero-prevalence of sex workers of the state was found to be about 6% (Table 12.1.2). Data on sexually transmitted infections revealed that one third of the studied sex workers (31.3%) of the state were detected to be positive with TPHA, indicating past or present syphilis infection. Very high rates were observed among sex workers of districts of Darjeeling, Kolkata and 24 Parganas (N), ranging from 57 to 65%. Contrary to TPHA, VDRL indicates current syphilitic infection requiring treatment to avoid further spread. Overall, 11.6% were found to be VDRL positive among sex workers of West Bengal. Darjeeling had the highest VDRL positivity of about 34%, followed by 20% in 24 Parganas (N) and 14% in Kolkata reflecting poor STD intervention services (Table 12.1.3).



*Rural field practice area*

Asymptomatic HBV infection was found among sex workers of all studied districts excepting Darjeeling. Overall HBV seroprevalence of West Bengal was found 4.2% (n=52) that ranged from 3-6% (table-3). Surprisingly, there was no sex worker found infected with HBV in Darjeeling district, which could be due to small number of samples available for testing of HBsAg.

Age group-wise, 49% (n=269) of the studied subjects (n=549) belonged to age group of 21 - 30 year, followed by 37% (n=203) in 31 - 40 year. Rest included 7% (n=39) in the group of 11 - 20 year, 6.3% (n=35) in 41-50 year and 0.5% (n=3) were of above 50 year. Most subjects were married but remain separated from their husbands (46%). This means that they are rejected by their husbands without legal separation. Rest included married (27%), unmarried (15%), widower (9%) and divorcee (3%). Educationally 66% was illiterate followed by just literate of 16% (able to read and write their names only). Only 10% and 8% had primary and secondary level of education. Most (31%) had their daily income of rupees

101 - 200/- followed by that of rupees 51 - 100/- in 29% subjects and rupees 50/- or less in 24% of them. About 15% had daily income of rupees 201 - 500/- and only 1% had that



**Table 12.1.2** District-wise HIV sero-prevalence in brothel based sex workers

Categorization of districts (based on sex workers' rate)	Selected Districts	Number Tested	Number Positive	HIV sero-prevalence (%) with Confidence Interval at 95% level
High prevalent districts	Darjeeling	109	17	15.6% [9.3 - 23.8]
	Kolkata	622	60	9.6% [7.4 - 12.2]
Medium prevalent districts	Midnapore East	590	26	4.4% [2.8 - 6.3]
	24 Parganas (N)	194	9	4.6% [2.1 - 8.6]
Low prevalent districts	Purulia	50	1	2% [0.1 - 12]
	Murshidabad	511	9	1.7% [0.8 - 3.3]
All districts	Total	2076	122	5.9% [4.9 - 6.9]

of more than rupees 500/- (table 12.1.4).

Out of interviewed subjects (n=558), 399 subjects responded to the questions of addiction behaviour. Eighty eight percent (n=344) reported that they were addicted. Of them, 57.2% (n=197) were addicted to alcohol, 12.6% (n=43) addicted to tobacco and 12.6% (n=43) were addicted to both alcohol and tobacco. Forty nine percent sex workers (n=272) had duration of sex work of more than 5 year followed by 21% (n=118) of 3-5 year and 12% (n= 65) of 1-2 year. Only 18% (n=103) had duration of less than a year. Fifty seven percent (n=317) of the studied sex workers (n=558) were reported to entertain 3-4 clients daily followed by 28% (n=158) entertained 1-2 clients and only 15% (n=83) entertained five or more clients each day on an average. So far, condom use is concerned, 94.3% (n=526) reported to use condoms with their clients. Of them, 50.2% (n=264) reported to use it always, 30.8% (n=162) sometimes and rest 19% (n=100) used it rarely. Eighty percent of the studied sex workers (n=449) reported that they

did pre-coital examination of penis of their clients. Among them, 69% (n=310) reported to do it always, 22% (n=99) sometimes and 9% (n=40) rarely. Entertaining clients during menstruation increases the risk of HIV transmission. In this study, 24.5% (n=137) of the studied subjects were found entertained their clients during menstruation. Sex through anal route is considered to carry a higher risk of HIV transmission compared to vaginal sex (7,8). In this group, 2.5% of the subjects (n=14) reported to have anal sex whereas, 5% (n=28) had oral sex with their clients. Other risk behaviour includes group sex (sex with more than one clients at a time) and entertaining clients in hotels for higher income. In both the occasions, condom use is poor or questionable. In this study, 7.3% (n=41) of the studied subjects had group sex and 34.4% (n=192) had entertained their clients in hotels. About 51% of the subjects (n=286) suffered from one or more sexually transmitted infection within past one year. Lack of awareness on HIV/AIDS is considered an important risk factor. In this study, 92% subjects (n=514) heard about HIV/AIDS, 86.4% (n=444)



**Table 12.1.3** District-wise TPHA, VDRL & HBV (HBsAg) status of sex workers

Districts	TPHA		VDRL		HBV	
	No. Tested	No. Positive (%)	No. Tested	No. Positive (%)	No. Tested	No. Positive (%)
Darjeeling	40	26 (65%)	109	37 (33.9%)	41	0 (0%)
Kolkata	204	119 (58.3%)	373	52 (13.9%)	372	22 (5.9%)
Midnapore East	521	52 (10%)	312	18 (5.8%)	558	22 (3.9%)
Murshidabad	-	-	511	31 (6.1%)	-	-
Purulia	50	9 (18%)	50	3 (6%)	50	2 (4.0%)
24 Parganas (N)	190	109 (57.4%)	194	39 (20.1%)	194	6 (3.1%)
Total in WB	1005	315 (31.3%)	1549	180 (11.6%)	1215	52 (4.2%)

**Table 12.1.4** Marital, educational and daily income status of sex workers (n=558)

Marital Status		Educational Status		Daily Income Status	
Married	152 (27%)	Illiterate	371 (66%)	Up to Rs. 50/-	134 (24%)
Unmarried	83 (15%)	Just literate	87 (16%)	Rs. 51 - 100/-	162 (29%)
Separated	254 (46%)	Primary	54 (10%)	Rs. 101-200/-	169 (31%)
Divorcee	17 (3%)	Secondary	46 (8%)	Rs. 201-300/-	47 (8%)
Widow	52 (9%)	>Secondary	nil	Rs.301-500/-	38 (7%)
				Above Rs.500/-	8 (1%)



**Table 12.1.5** Risk factors for HIV with Odds Ratios and levels of significance

Variables	HIV +ve cases	HIV -ve cases	Odds Ratio	P value
Younger age of 20 years or less	7	32	3.06(1.14 - 7.94)	0.0009
Illiteracy	30	336	0.70	>0.05
Daily income of Rs. 50/- or less	9	125	0.89	>0.05
Duration of sex work of 3 year or higher	30	358	1.27	>0.05
Three or more clients entertained per day	33	358	1.99	>0.05
Entertaining clients in hotels	12	172	0.6	>0.05
Consistent condom use	20	261	0.99	>0.05
Suffered from STI within past one year	28	255	2.32(1.11 - 4.96)	0.01

knew about its transmission through unprotected sex, 39.7% (n=204) knew its transmission through contaminated syringes/ needles, 43.6% (n=224) knew its transmission through unsafe blood transfusion and 27% (n=139) knew about vertical transmission. Only 46% (n=234) of the studied subjects were aware of the fact that an apparently healthy looking person might suffer from HIV infection.

Lower age and suffering from STDs within past one year were found to be significantly associated with HIV infection in this study group. No statistical association was found with other risk factors like literacy, income/day, number of clients entertained by them, duration of profession, entertaining clients in hotel and consistent condom use (table-5).

