

## Prevalence Of Hepatitis B And HIV And Their Co-infection In Female Sex Workers In Nagpur Region

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**Abstract: Background and Aim:** The Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV), have common modes of transmission. Globally, sexually transmitted infection (STI) rates are the highest among population subgroups such as sex workers. Objective is to - (i) Study of Hepatitis B infections and HIV infection in female sex workers (ii) Co-infection rate of HBV and HIV among this population (iii) Simultaneous comparison of infection HBV and HIV infection in healthy female population(blood donar). **Methodology:** This study was conducted in the department of microbiology IGGMC Nagpur from October 2014 to August 2015. Their sera were tested for the HBsAg and HIV antibodies. **Results:** A total 400 samples were tested (200 samples of female sex workers and 200 samples of healthy female blood donors. The seropositivity of HBV in FSWs is 1.5% and of HIV is 2%, none of FSWs were coinfecting with both the infections. That of healthy female donors HBV prevalence is 0.5% and HIV is also 0.5% similarly none were coinfecting with both the infections. **Conclusion:** The prevalence of Hepatitis-B virus infection and HIV infection is low among the female sex workers in Nagpur region. Similarly prevalence in healthy female population is also low. Targeted intervention among the risk group is effective measure in decreasing the hepatitis B infection rate. [Singh M NJIRM 2016; 7(1):23-25]

**Key Words:** FSWs, HBV, High risk group, HIV.

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**Introduction:** The Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV), have common modes of transmission, namely sexual, parenteral and prenatal, the most common being sexual transmission<sup>1</sup>. HIV prevalence at national level is 0.27%, while that of HBV is 4% ranges from 1-13%. Globally, sexually transmitted infection (STI) rates are the highest among population subgroups such as sex workers. A history of multiple sex partners, irregular condom use by the clients, and co-infection with other STIs constitute the potential risk factors which are associated with the HIV and HBV infection among the FSWs. Dual infection of HIV and HBV can lead to reactivation of HBV infection and also increase in replication of HIV.

Hepatitis B virus (HBV), belongs to *Hepadnaviridae* family of viruses. Virus possesses several antigens of importance for diagnosis and pathogenesis (koneman). HBV has distinctive geographical distribution. World is divided into three areas according to its prevalence as high(>8%) , intermediate(2-8%) and low(<2%) endemicity<sup>2</sup>.

Human immunodeficiency virus (HIV) is a member of the *genus Lentivirus* belongs to the family *Retroviridae*<sup>3</sup>. Group M is the most prevalent and is subdivided into eight subtypes. Serotype C found mainly in Asia.

According to the a NACO definition, female sex worker (FSW) is an adult woman, who engages in consensual sex for money or payment in kind, as her principal means of livelihood. Two terms used in context of FSWs are brothel based and non-brothel based. Brothel-based sex workers are those whose clients contact them in recognized brothels. Non-brothel based are sex workers operate usually from their homes, contacting their clients on the phone or through word of mouth or through middlemen<sup>4</sup>.

HIV prevalence in Female Sex Workers at national level is 2.67% in 2011<sup>5</sup>. Similarly prevalence of HB V in infection are also high in sex workers. This study was conducted to know the prevalence rate and co-infection rate of HIV and HBV in high risk group such as female sex workers (FSWs).

### Selection of cases-

1. **Inclusion criteria:** Age range 18-45years, For healthy female population- Healthy blood donar.
2. **Exclusion criteria:** Age <18years and >45years Previously diagnosed positive cases

**Material and Methods:** It is an observational study, carried out in Department of Microbiology, Indira Gandhi Govt. Medical College, Nagpur, from October 2014 to August 2015. Sample were collected from FSWs referred from ICTC (Integrated Counseling and

Testing Centre) and mobile ICTC, simultaneously we screened for healthy female blood donors for the same period. Total of 400 samples tested, out of which 200 sample were of FSWs and 200 samples of were healthy female blood donors.

Their sera was tested for the

- HBV hepatitis B surface antigen(HBsAg) by Enzyme immunoassay test (one step cassette style HbsAg test). HBsAg Test positive samples were confirmed by ELISA test
- HIV antibodies was tested as per the strategy III of the NACO Guidelines<sup>6</sup>.

**Results:** A total of 200 samples of female sex workers and 200 samples of healthy female donors were tested for HBV antigen and HIV antibodies. Among the FSW 3 were positive for HBV infection while 4 were positive for HIV infection none of the FSW were having the coinfection of HBV and HIV. So, seropositivity rate of HBV in FSW in our study is 1.5% while of HIV is 2%. Among the healthy female donors 1 were positive for HBV infection and 1 were positive for HIV infection giving the seropositivity of 0.5% and 0.5% respectively similarly none showed the coinfection.

**Table 1: Agewise distribution of sample of FSWs and their positivity rate of HBV and HIV**

Age Group	No. of FSW	HBV positive (%)	HIV positive (%)
18-25	64	1(0.5%)	-
26-35	90	2(1%)	3(1.5%)
36-45	46		1(0.5%)
Total	200	3(1.5%)	4(2%)

Note – None of the FSWs were coinfecting with both the infections

**Table 2: Agewise distribution of sample of healthy female blood donors and their positivity rate**

Age Group	No. of Female donors	HBV positive (%)	HIV positive (%)
18-25	65	-	-
26-35	90	1(0.5%)	1(0.5%)
36-45	45		-
Total	200	1(0.5%)	1(0.5%)

Note – None of the healthy female donors were coinfecting with both the infections

**Discussion:** Seroprevalence of HIV and HBV infections has been high in risk group population including the female sex workers. Though they share same route of

transmission, they differ in their prevalence by geographical area. Overall prevalence of HBV and HIV in India is 4% and 0.27% respectively<sup>7,5</sup>.

**Table 3 : Agewise positivity rate in brothel and non brothel based FSWs**

Age Group	No. of FSWs	Brothel (n=100)		Non-brothel (n=100)	
		HIV	HBV	HIV	HBV
		Positive (%)			
18-25	64	1(0.5%)	1(0.5%)	-	-
26-35	90	-	1(0.5%)	2(1%)	1(0.5%)
36-45	46	1(0.5%)	-	-	-
Total	200	2(1%)	2(1%)	2(1%)	1(0.5%)

Note :- None of brothel and non-brothel FSWs were coinfecting with both the infections

There has been noted decline in HIV prevalence among Female Sex Workers at national level (5.06% in 2007 to 2.67% in 2011)<sup>5</sup>. Maharashtra state prevalence of HIV in FSWs is 6.89%,<sup>8</sup> against national average of 2.67%. HIV modifies the natural history of HBV infection, with higher rates of the carrier state, replicative disease, and progression to advanced liver disease among persons with HIV/HBV co infection<sup>9</sup>.

In the present study seropositivity of HBV in FSWs is 1.5% and that of healthy female donors is 0.5%, seropositivity of HIV in FSWs is 2% and of healthy female is 0.5%, while none of the FSWs and healthy female donors was co infected with HIV and HBV. According to study done by Desai *et al*<sup>1</sup> prevalence rate among FSWs for HIV was 42%, HBV was 8% and co infection rate was 2.8%. While in P. K. Nigam, S. K. Shrivastava<sup>10</sup> study seroprevalence of HBV and HIV was 8.33% and 5% respectively. And in Shethwala *et al*<sup>9</sup> study HBV prevalence was 3.33% and HIV is 11.66% co infection rate was 2%.

Vulnerability to HIV and HBV are more in early age group of 15-25yrs due to lack of education and awareness about the disease and also indulgence of in early sexual debut, sexual coercion and violence, drug trafficking<sup>11</sup>. In contrast to this, positivity rate in our study were more in the age group of 26-35 years followed by age group of 18-25 years. The education status of maximum cases in our study was atleast upto the secondary school which reflects their awareness about the disease and acquiring the mode of its prevention. And also this study is done on targeted intervention population who were aware about the

disease and can acquire its prevention mode. All the FSWs were fully aware of the disease and were using condoms with their clients which is a main contributing reason of decreased positivity rate in this study.

In our study there is no significant difference in positivity rate of brothel and non-brothel based FSWs.

**Conclusion:** Prevalence of Hepatitis-B virus infection and HIV infection among the female sex workers is low in Nagpur region. Similarly prevalence in healthy female population is also low. None of female among both the population were co infected with HBV and HIV. Low prevalence reflects that targeted intervention among the risk group is effective measure in decreasing the hepatitis B infection and HIV infection rate.

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