

# A study of HIV positive patients in a tertiary care hospital of central India

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## Abstract

**Background:** A retrospective observational study was carried out to find out the reliable trend of HIV/AIDS cases in the central region of the country with the following objectives. **Objectives:** 1. To study the HIV trends in the general population of the sub-national geographic level of the country i.e. Chhattisgarh state. 2. To find out correlation and association among total HIV positive, male and female Cases and HIV positive female Cases. 3. To know regression analysis between total HIV Positive Cases and HIV male and female Cases as well as HIV Male Positive Cases. **Methodology:** A retrospective observational study was carried out from the year 2000 to 2013 i.e. 14 year duration. The data of HIV Positive Cases were obtained from an Integrated Counseling and Testing Center (ICTC) of Bilaspur District. The Correlation between HIV Positive male Cases and HIV Positive female Cases was obtained by SPSS 11.5 Version. The two Lines of Regression have been obtained between total HIV positive cases, first from HIV positive female cases and second from HIV positive male cases. **Results:** There was increasing trend of HIV positives. The Mean and SD of HIV total positive cases were (125.71+137.06). The Mean and standard deviation (SD) of HIV positive Male and Female were (91.86+104.24), (33.86+34.64) respectively. Overall the correlation between total HIV positives and HIV male cases and HIV female Cases was highly positive at district level ( $r=0.9$ ,  $p<0.01$ ) which was found to be highly statistically significant.

**Keywords:** HIV- Human Immunodeficiency Virus, ART-Anti Retroviral Treatment PPTCT- Prevention of parent to Child Transmission, HSS-HIV Sentinel Surveillance, ICTC-Integrated Counseling and Testing Center.

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## INTRODUCTION

The HIV/AIDS epidemic is one of the world's most serious public health and social problems. India, the third largest economy in Asia and eleventh largest of the world and has the second largest population around the globe<sup>1,2</sup> with more than 1.2 billion people, half of whom are adults of the sexually active age group. Moreover, the prevalence of HIV infection in India has been steadily

increasing over the past few decades<sup>3,4</sup>. Thus, even with a small increase in India's HIV/AIDS prevalence rate thereby would imply a significant component of the world's HIV/AIDS burden. According to the data available from National Family Health Survey 3 (NFHS-3), during 2005-06, 2.5 million people in India are infected with HIV<sup>5</sup>. The first case of HIV infection was reported in Chennai in 1986 which has since spread to all states and union territories. At present, India has the third largest number of HIV and AIDS cases after South Africa and Nigeria. Sentinel surveillance conducted by the National AIDS Control Organization (NACO) shows that in the general population HIV prevalence is low (0.25-0.43%), but among high-risk groups, HIV prevalence is much more. In at least five states, HIV prevalence among injecting drug users (IDU) is even more than 10%, with a highest prevalence of 24% among IDUs are HIV positive in Maharashtra. Prevalence is also elevated among female sex workers and men who have sex with men<sup>6</sup>. Commercial sex workers (CSW) and their clients are at

the highest risk for HIV infection and transmission<sup>4</sup>. Certain states in India like Andhra Pradesh, Tamil Nadu, Maharashtra Karnataka, Nagaland and Manipur have been reported to have high number of HIV infected population in India<sup>3</sup>. With this view and above context, the present study was carried out with following objectives.

**OBJECTIVES**

1. To study the HIV trends in the general population of the sub-national geographic level of the country i.e. Chhattisgarh state.
2. To find out correlation and association among total HIV positive, male and female Cases and HIV positive female Cases.
3. To know regression analysis between total HIV Positive Cases and HIV male and female Cases as well as HIV Male Positive Cases.

**MATERIALS AND METHODS**

A study was carried out at ICTC center of a tertiary care hospital of Bilaspur district of Chhattisgarh. Bilaspur district has ten blocks these are Belha, Pathariya, Mungeli, Takhatpur, Lormi, Kota, Gourella, Pendra, Marwahi, Masturi. The information on Human Immunodeficiency Virus (HIV) positives i.e. total number of cases and sex wise number with percentage received Anti Retro-Viral Therapy (ART) treatment at Integrated Counseling and Testing Center (ICTC) of HIV/AIDS in a tertiary care hospital of Chhattisgarh was obtained. A record of 14 year duration was obtained from year 2000 to 2013 year. The statistical analysis was performed using SPSS software version 11.5. All values were expressed in the form of percentages, Mean and standard deviation and the chi square test and correlation coefficient were applied wherever necessary. Statistical significance was set at P =0.05. The Two linear regressions had been drawn between dependent variable Total HIV positive cases and independent variable HIV male and female cases, and these were found to be highly statistically significant i.e. p< 0.01.

**RESULTS**

The HIV/AIDS positive cases in Bilaspur district from year 2000 to 2013 is shown in table1. In this table there are 1760 HIV cases registered from year 2000 to 2013.

There was increasing trend of HIV positive cases as shown in the table1. In the year 2000 HIV cases were 19 (1.08%), in 2001 - 11 (0.64%), in 2002 - 20 (1.14%), in 2003 - 29 (1.65%), in 2004 - 24 (1.36%), in 2005 – 61 (3.47%), in 2006 – 79 (4.49%), in 2007 – 83 (4.72%), in 2008 – 95 (5.40%), in 2009 - 137(7.78%), in 2010 - 150(5.52%), in 2011 – 244 (13.86%), in 2012 - 475(26.99%) and at the end of 2013 there were 333 (18.92%) HIV positive cases. The maximum cases recorded in year 2012 i.e. 475 total HIV positive, out of these HIV positive male were 362 (76.21%) and HIV positive female were 113 (23.79%). There was sudden increase in trend of HIV positive male in 2011 (205), in the 2012 (362), in the year 2013 (230), similarly in the no. of Female HIV positive cases in 2011 (39), 2012 (113) and 2013(103). In the table 2, The Mean and Standard deviation (SD) of HIV positive male and female were (91.86±108.25), (33.86/34.64) as well as the mean and S.D. of total HIV positive cases was (125.71±137.067). In the table3, the correlation coefficient (r) =0.93, p<0.01 between HIV positive male and HIV positive female, which was highly significant. The correlation coefficient (r) =0.99, p<0.01 between HIV positive male and HIV total positive cases, which was highly significant, and the correlation coefficient (r) =0.96, p<0.01 between HIV Female and HIV total positive cases, which was highly significant. We have also drawn the line of regression  $Y=1.309+0.99X$ , where dependent variable (Y) is total positive cases and independent variable (X) is HIV positive male, which had linear effect with statistically highly significant p<0.01. Another the line of regression  $Y=3.80+0.960X$ , where dependent variable(Y) is total positive cases and independent variable (X) is HIV positive female which had linear effect with statistically highly significant p<0.01. In the Figure1 HIV positive cases of Bilaspur district were according to year wise i.e. the HIV positive cases of Bilaspur district according to years. If we look that in the year 2012, had maximum cases i.e. 475 and the minimum cases recorded in the year 2001 i.e.<sup>11</sup>. The HIV positive cases were increasing year-wise. Overall percentage of HIV positive Male patients was quite high as compare to percentage of HIV female patients year-wise as shown in multiple bar diagram.

**Table 1: Year wise (2000-2013) HIV Positive Cases**

Sr. No.	Year	Male	%Male	Female	%Female	Total	%Total
1	2000	15	78.95	4	21.05	19	1.08
2	2001	7	63.64	4	36.36	11	0.63
3	2002	14	70.00	6	30.00	20	1.14
4	2003	22	75.86	7	24.14	29	1.65
5	2004	17	70.83	7	29.17	24	1.36
6	2005	41	67.21	20	32.79	61	3.47
7	2006	52	65.82	27	34.18	79	4.49

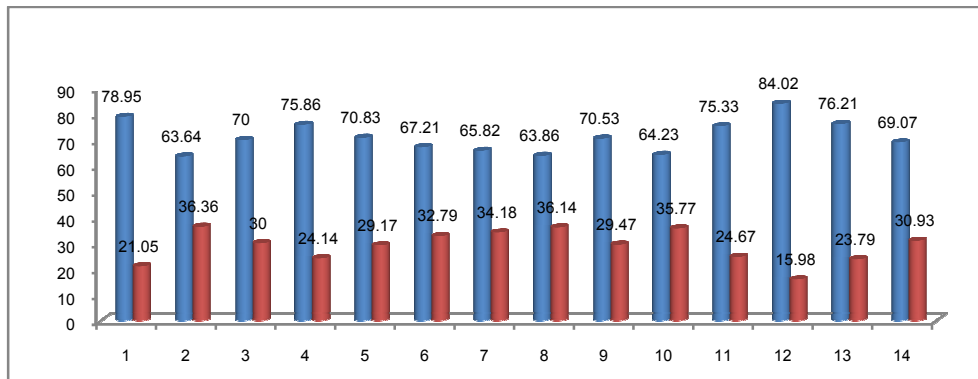
8	2007	53	63.86	30	36.14	83	4.72
9	2008	67	70.53	28	29.47	95	5.40
10	2009	88	64.23	49	35.77	137	7.78
11	2010	113	75.33	37	24.67	150	8.52
12	2011	205	84.02	39	15.98	244	13.86
13	2012	362	76.21	113	23.79	475	26.99
14	2013	230	69.07	103	30.93	333	18.92
<b>Total</b>		<b>1286</b>	<b>73.07</b>	<b>474</b>	<b>26.93</b>	<b>1760</b>	<b>100</b>

**Table 2:** The Mean and Standard deviation of HIV Total Positive, Male and Female

HIV Cases	Male	Female	Total
Mean	91.86	33.86	125.71
Std. Deviation	104.248	34.641	137.067

**Table 3:** The correlation among Total HIV, Male and Female

		Male	Female	Total
MALE	Pearson Correlation	1	.930(**)	.996(**)
	Sig. (2-tailed)	.	.000	.000
	N	14	14	14
FEMALE	Pearson Correlation	.930(**)	1	.960(**)
	Sig. (2-tailed)	.000	.	.000
	N	14	14	14
TOTAL	Pearson Correlation	.996(**)	.960(**)	1
	Sig. (2-tailed)	.000	.000	.
	N	14	14	14



**Figure 1:** Percentage of HIV Positive Males and Females form 2000-2013 year -wise (Blue Bars = Males %, Brown bars=Females %)

## DISCUSSION

In this study we have analyzed the year wise distribution of HIV positive cases as well as gender wise distribution of these cases. Based on this analysis a trend was observed according to years. The HIV positive cases had been increasing from year 2000 to 2013. Similarly Number of HIV positive male patients were increasing year-wise. The correlation coefficient ( $r=+0.9$ ) between HIV positive male and HIV positive female patients was positive. Similarly the correlation among HIV total and HIV Male, HIV Female were positive. With this correlation more HIV positive were expected in upcoming years in the geographical region.

## CONCLUSION

Observations of one ICTC Center of state had shown increasing trend of HIV positives. This increasing trend

was more in males. There were two more centers in the state and we guess the scenario. The status of the HIV/AIDS cases and there day by day increasing numbers are alarming the whole human race to take necessary action in time to save itself. And one more finding of this study was that the HSS program data has potential for providing reliable HIV trends at any sub-national and national level therefore more detail analysis is required at every ICTC of the country, and as more HIV positive are expected in upcoming years. Our recommendation is that we have to emphasize on control and prevention of HIV/AIDS and further more detailed analysis is required in different geographical regions of the country.

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