

Original Research Article

HIV reactivity trends in a tertiary care teaching hospital in Himachal Pradesh: a ten-year ICTC based retrospective analysis

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ABSTRACT

Background: Despite being a low HIV prevalence nation, India has the third largest number of PLHAs in the world. The study aimed to explore the prevalence, pattern of socio-demographic and epidemiological distribution among HIV sero-positive patients in this part of Himachal Pradesh. Objective was to estimate the prevalence of HIV infection among the clients who had attended the ICTC for a period of ten years, i.e. from 2008 to 2017.

Methods: A retrospective descriptive analysis of secondary data from the National AIDS control program from the year 2008 through 2017 was done.

Results: Overall prevalence of HIV positivity amongst the clients attending the centre was observed to be 2.1%. Out of the total 55610 clients tested for HIV infection, 40.4% were male, 25.4% were female (excluding ANCs) and 34.2% were Ante-natal cases. Overall, seropositivity was higher among males (58%) than females (40%). However, amongst the groups, higher prevalence has been observed to be present in the females (3.3%) over males (3%) and Ante-natal cases (0.12%). Belonging to the female sex [OR 1.99 (95% CI: 1.77-2.24)] and male sex [OR 2.07 (95% CI: 1.84- 2.33)] had higher odds of having HIV sero-positivity than Ante-natal cases [OR 0.04 (95% CI: 0.02-0.05)]. Heterosexual route of transmission was the major route seen in 70.1%. Maximum HIV seropositivity was in the age group of 25 - 34 years (35.4%).

Conclusions: The trends over the last 10 years show no steady pattern. Hence, there is a need for scaled up and sustained efforts focused on the males of reproductive age group for the prevention and control of HIV infection.

Keywords: HIV, Heterosexual, ICTC, Seropositivity

INTRODUCTION

HIV infections are being reported worldwide, with 34.2 million affected population worldwide as per Joint United Nations Programme on HIV/AIDS (UNAIDS) organization in 2012.¹ Though India is categorized as a low HIV prevalence nation, it has the third largest number of PLHAs (people living with HIV and AIDS). In India, among 2.39 million PLHAs, 39% are females and 3.5% are children with an adult prevalence of 0.31%

among general population (2009).² HIV prevalence has declined from 0.41% in 2000 to 0.31% in 2009 and new cases have declined by 56% over the past decade from 0.27 million new infections in 2000 to 0.12 million in 2009.² The estimated prevalence of HIV infection in Himachal Pradesh is reported to be 0.19% with 4498 PLHA in 2010.³

Integrated counseling and testing centre (ICTC) is the key component in preventing spread of HIV, promote

behavioral changes to range of intervention in prevention and care ensuring availability of professional, client centered counselling and testing services in an easily accessible, non-discriminating environment where clients are treated with dignity and respect. Data generated in ICTC may provide important clues to understand the epidemiology of disease in a particular region.¹ Therefore, this study was undertaken to study the prevalence of HIV and to explore the pattern of socio-demographic and epidemiological distribution among HIV sero-positive patients at ICTC centre in a tertiary care hospital in Himachal Pradesh.

METHODS

The study was done by Secondary data analysis of all the clients who attended ICTC of Dr. RPGMC Kangra at Tanda (H.P) between January 2008 and December 2017.

The protocol for HIV testing was completely in accordance to National AIDS Control Organization (NACO) guidelines, which include pretest counselling, informed consent, HIV testing, post-test counseling and maintaining confidentiality. For the diagnosis of HIV infection, rapid diagnostic kits provided by NACO from time to time were used.

All serum samples reactive in the first rapid test were reconfirmed by two other rapid tests based on different principles or using different antigens. The services at ICTC were provided by a trained counsellor and a laboratory technician. ICTC has been participating in national external quality assurance program also.

The samples were considered as positive when found reactive by all three different test methods. HIV1 and HIV2 antibody testing using rapid test kits were done in those who gave written consent and declared reactive as per NACO guidelines strategy III.⁴ Antibodies to HIV were tested initially with a CombAids rapid test (Span Diagnostics).

The samples tested positive in the first method were subjected to tests with two different rapid tests, i.e. SD BIOLINE HIV-1/2 3.0 rapid test (Standard Diagnostics, Inc. Korea) and Signal HIV rapid test (Span Diagnostics).

All tests were done according to manufacturer's instructions. All the data was entered in the Microsoft Excel sheet and the percentages were calculated. Chi square test for trend was applied to test the significance of the year wise data using Epi info version 7.

RESULTS

Total clients attended the ICTC of Dr. RP Government Medical College Kangra at Tanda in year 2008 to 2017 were 55,610. Maximum number of patients (8069) attended ICTC in year 2013 and the least in 2008 (2218). An increasing trend was noted from 2008 to 2013 in all the groups (Figure 1).

Out of the total 55,610, 40.4% were male, 25.4% were female (excluding ANCs) and 34.2% were antenatal (ANC) cases (Figure 2). The trend does not follow a steady pattern with spurts in 2010-11 and 2015-16 and a decline later (Figure 4).

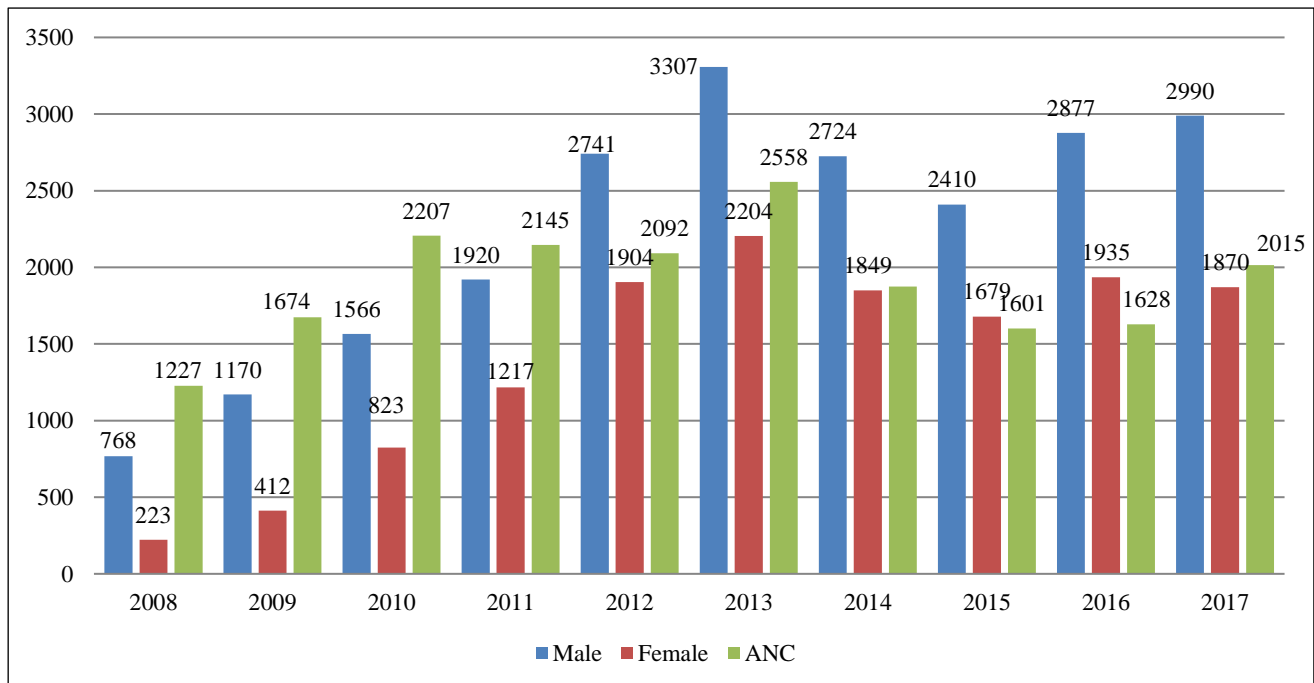


Figure 1: Distribution of number of clients attending ICTC center from year 2008-2014 at DRPGMC Kangra at Tanda, Himachal Pradesh.

A total of 55,610 samples were tested during study period, out of which, 1167 (2.1%) were found to be reactive for HIV 1.

Among antenatal cases, 23/19021 (0.12%) were found reactive. No sample was found reactive for HIV2. Number of HIV reactive patients were found gradually decreasing from 4.7% to 1.7% over a period of 7 years (2008-2014).

Maximum number of HIV reactive patients 106 (4.7%) were found in the year 2008, and least 98 (1.2%) in year 2013 (Table 1).

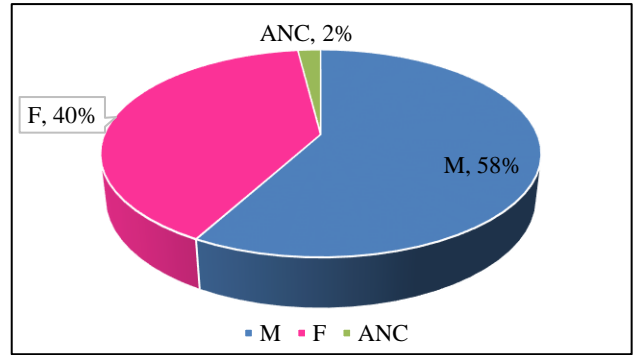


Figure 2: Overall distribution of HIV reactive persons from year 2008-2014.

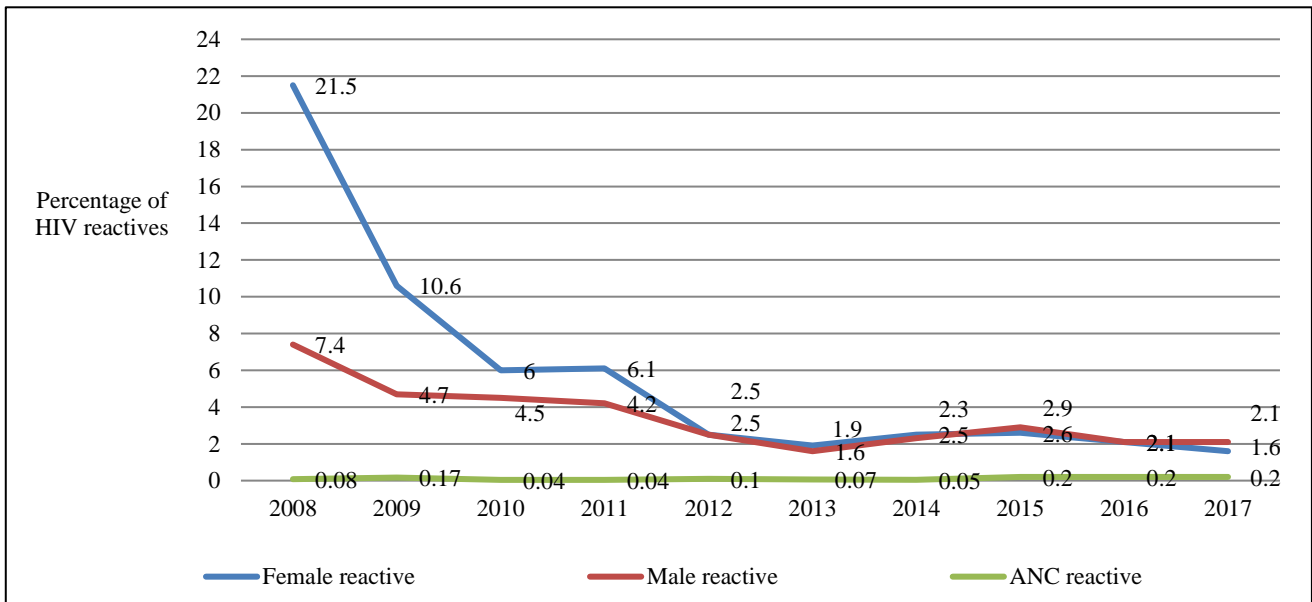


Figure 3: Year wise trend of HIV reactive at ICTC of DRPGMC Kangra at Tanda, Himachal Pradesh.

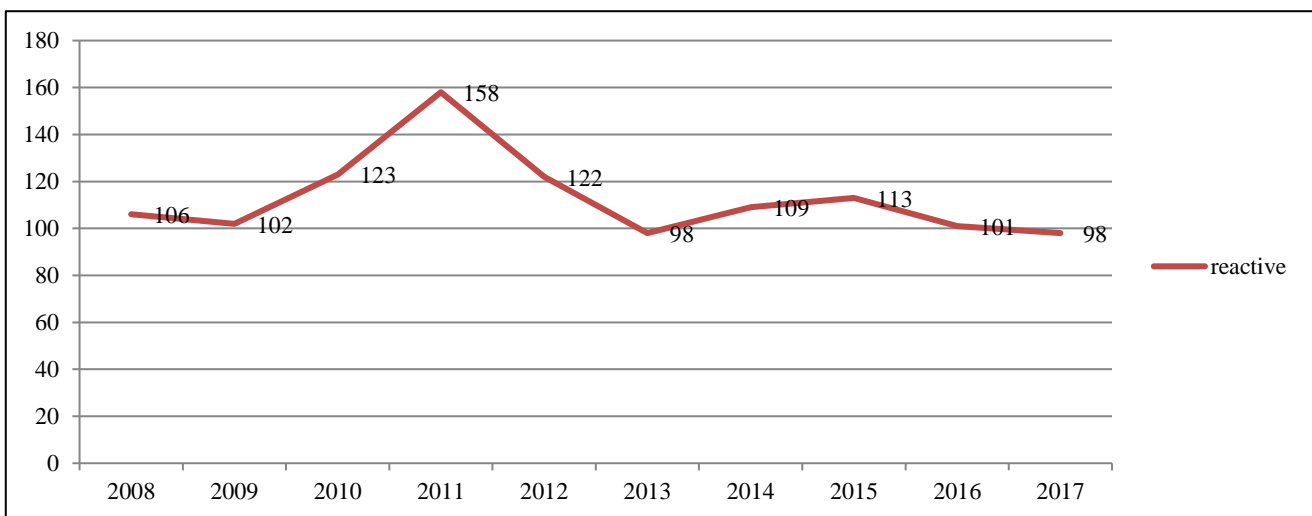


Figure 4: Trend of overall HIV reactive from 2008-2017.

Table 1: Number of HIV reactive patients attending the ICTC center in year 2008-2017.

Year	Total attended	Reactive	Percentage
2008	2218	106	4.7%
2009	3256	102	3.1%
2010	4596	123	2.6%
2011	5282	158	2.9%
2012	6717	122	1.8%
2013	8069	98	1.2%
2014	6447	109	1.7%
2015	5690	113	1.9%
2016	6440	101	1.6%
2017	6875	98	1.4%
Total	48705	1032	2.1%

Maximum numbers of reactive samples belonged to age group 35-49 years followed by in the age group of 25-34 years and >50 years as 179, 64 and 63 respectively. Least numbers of reactive samples (13) were found in age group of <20 years.

The proportion of the patients found to be HIV and TB co-infected among HIV reactive patients was highest in

year 2009 i.e. 21/102 (20.5%) and least 8/158 (5.0%) in year 2011 (Table 2). An overall prevalence of 8.8% was observed in TB-HIV co infected patients.

Out of all female clients attended ICTC, the proportion of female and male HIV reactive patients decreased from 2008 to 2014 and this trend was statistically significant (p=0.00). Among all reactive patients, an overall prevalence of 0.19% was reported for ANC reactive.

Table 2: HIV and TB co-infected patient attending ICTC center in year 2008-2017.

Year	HIV reactive	HIV-TB co infected	%
2008	106	14	13.2%
2009	102	21	20.5%
2010	123	10	8.1%
2011	158	8	5.0%
2012	122	7	5.7%
2013	98	5	5.1%
2014	109	7	6.4%
2015	115	6	5.2%
2016	105	7	6.6%
2017	98	7	7.1%

Table 3: Year wise trend of HIV reactive percentages.

Year	Female attended	Female reactive (%)	Male attended	Male reactive (%)	ANC attended	ANC reactive (%)
2008	223	48 (21.5)	768	57 (7.4)	1227	1 (0.08)
2009	412	44 (10.6)	1170	55 (4.7)	1674	3 (0.17)
2010	823	50 (6.0)	1566	72 (4.5)	2207	1 (0.04)
2011	1217	75 (6.1)	1920	82 (4.2)	2145	1 (0.04)
2012	1904	48 (2.5)	2741	71 (2.5)	2092	3 (0.1)
2013	2204	42 (1.9)	3307	84 (1.6)	2558	2 (0.07)
2014	1849	46 (2.5)	2724	62 (2.3)	1874	1 (0.05)
2015	1679	44(2.6)	2410	69(2.9)	1601	3(0.2)
2016	1935	40(2.1)	2877	61(2.1)	1628	4(0.24)
2017	1870	30(1.6)	2990	64(2.1)	2015	4(0.19)
Total	14116	467	22473	677	19021	23
P value		0.00		0.00		0.66

Table 4: Odds' ratio in various groups.

Variable	P value	Odds Ratio	CI (Lower)	CI (Upper)
Male gender	<0.00	2.07	1.84	2.33
Female gender	<0.00	1.99	1.77	2.24
Antenatal case	<0.00	0.04	0.02	0.05

The ANC reactive proportion also decreased from 0.08% to 0.06%; however this trend was not statistically significant (p=0.66; Table 3). An overall trend of HIV reactive patients at the ICTC of the tertiary care centre

shows a variable trend with the cases increasing from the baseline of 4.7% in 2008 to 2.6% in 2010, followed by an upsurge to 2.9% in 2011 and again downward trend till 2014 (1.7%). There was another upsurge in 2015 to 1.9%

and thereafter a downward trend has been observed in 2016 (1.6%) and in 2017 (Figure 3). No HIV-2 reactive case was found. Belonging to the female sex [OR 1.99 (95% CI: 1.77-2.24)] and male sex [OR 2.07 (95% CI: 1.84- 2.33)] had higher odds of having HIV seropositivity than ante-natal cases [OR 0.04 (95% CI: 0.02-0.05)] (Table 4).

DISCUSSION

In recent years a number of countries including India with generalized epidemics have observed a decline in HIV prevalence due to improvement in National AIDS Control Programme. As per the recently released, India HIV estimation 2015 report, National adult (15-49 years) HIV prevalence in India is estimated at 0.26% (0.22-0.32%) in 2015. In 2015, adult HIV prevalence is estimated at 0.30% among males and at 0.22% among females. The adult HIV prevalence at national level has continued its steady decline from an estimated peak of 0.38% in 2001-03 through 0.34% in 2007 and 0.28% in 2012 to 0.26% in 2015. Similar consistent declines are noted both in males and females at the national level. The present study has documented the prevalence of HIV infection among a large number (N = 55610) of patients attending ICTC in a tertiary care hospital situated in North India. Over the study period, HIV screening was increased (2218 in 2008 to 6447 in 2014) and prevalence of HIV was decreased (4.7% to 1.7%) owing to the more public awareness created by different media groups and improved surveillance system.

In a study conducted at tertiary care centre of Shimla, HP (2000-10), HIV sero-prevalence of 5.0% in ICTC clinic attendees was found higher than our study where HIV sero-reactivity was 2.2%.⁵ Sekar et al, gave similar declining trend of HIV infection in Southern India as in our study.⁶ Sherwal et al, also mentioned declining trends in prevalence rate from 5.9% in 2008 to 3.2% in 2012 in New Delhi.⁷ The overall prevalence of HIV in an ICTC centre of tertiary care centre of North India was found to be 6.3% in five years and it varies from 8.4% in 2009 to 3.8% in 2013.⁸ NACO mentioned the declining trends in HIV prevalence from 0.41% in 2001 through 0.36% in 2006 to 0.31% in 2009 in the country while Vyas et al reported increasing trends in prevalence of sero-reactive from period 2002 (12.2%) to 2007 (17.3%).^{9,10} The HIV prevalence among states ranges from 1.5% to 18.5% in India.¹¹

During the later years, number of attendees increased and prevalence of reactive population decreased owing to the public awareness created by different media groups and improved surveillance system. Similar remarkable decrease was seen in the prevalence rate from 2009 to 2013 and regular increase in the number of clients for HIV testing was observed each year from 2009 to 2013 in a study by Malhotra et al.⁸ These factors might have contributed the bias in patient selection in previous year being responsible for the high prevalence. Another

possible reason for increase in number of clients could be change of counselling and testing centre from voluntary (VCTC) to integrated counselling and testing centre (ICTC).

The male number of attendees was more in all the years as compared to females however the prevalence of reactivity was more among females (3.65%). Among ANCs it was found to be 0.09%. This was in contrast to other studies where prevalence was higher in males than females.^{2,8,12-15} Such findings are expected because Indian societies are almost universally male dominated and naturally women are even more disinclined than men to get tested for intense fear of stigmatization and social discrimination. In our study, we have observed that there is significant increase in the percentage of female clients attending ICTC from 2008 to 2013. The percentage of reactive samples has decreased from 21.5% (48/223) in 2008 to 2.3% (46/ 1849). Similar type of trend was observed by Sherwal BL et al and Vyas N et al in 2005 and 2009 respectively.^{7,10} This may be attributed to increased awareness about the disease; lesser stigma associated with it nowadays, expanded coverage and better available diagnostic facilities and IEC activities. Sex-wise distribution of estimated HIV infected female population in India was found to be 39%.¹⁵ There are a number of factors i.e. biological, socio-cultural and economic which make women and young girls more vulnerable to HIV and AIDS. The major source of infection is through heterosexual transmission and as compared to men, women are at a biological disadvantage in contracting HIV. HIV infection is more easily transmitted from men to women than from women to men. The male-to-female transmission during sex is about twice as likely as female to male transmission.¹⁶

The prevalence of TB-HIV co-infected patients was 9.1% from 2007-2014. Gupta M reported 11.6% of referrals from DOTS centers whereas cross-referrals from DOTS centers and NGO/CBO were found to be quite poor in their study suggesting that TB-HIV collaboration was in a nascent stage until now.¹⁷

The overall prevalence of ANC positive cases in seven years has remained below 1% with a decline from 0.08% to 0.06%. With continued focused prevention and care program in Tamil Nadu, the state has achieved a decline in the HIV prevalence in the state to 0.25% of ANC (2000-2006), which also contributes to the apparent reduction in HIV prevalence in south India as a whole.¹⁸

The present study has certain limitations. This is a retrospective study and data is from ICTC in a tertiary care hospital and is not a true representation of the community.

This study can however help in local planning and contribute data for policy makers to improve the existing national HIV/AIDS intervention strategies.

CONCLUSION

The HIV prevalence trend over 10 years did not follow a steadily decreasing trend thereby indicating the need for sustained efforts to carry forward the unfinished agenda of the Millennium development goals aimed at ending the AIDS epidemic. The infection is gradually spreading from urban to rural areas and from high-risk groups to women who are mostly in monogamous marriages. There is a male preponderance over females from sexually active age group of 21-40 years of age though maximum number of reactive patients were between age group of 35-49 years. Hence, there is a need for scaled up and sustained efforts focused on this age group for the prevention and control of HIV infection. There is also a need to empower adolescent girls and women by increasing their knowledge about HIV. ICTC data can be an important tool for planning and improving the national HIV/AIDS intervention strategy.

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