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Prevalence of HIV in a Rural Tertiary Care Centre in Marathwada Region of Maharashtra: A Four Year ICTC Based Study

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A B S T R A C T

India has the second highest HIV burden globally with an estimated 23.19 lakh PLHIV in 2020 that's why HIV/AIDS continues to be a public health challenge in India Earlier This study was carried out to estimate the prevalence of HIV infection in tertiary care hospital. A retrospective study of the clients attending the ICTC (excluding ANC clients) from January 2018 to December 2021. All the clients were counselled and informed consent was taken from them by ICTC counsellors Then HIV test was done in the HIV Diagnostic Laboratory, as per NACO guidelines. Seroprevalence for HIV infection was found to be0.72 % (472/65,661). Seropositive males constituted more than females. Maximum number of clients tested seropositive in the age group of 35 - 49 years (48.9%). This study provides an important clue to understand the epidemiology of HIV/AIDS in and around the rural part of marathwada region of Maharashtra. This helps to establish an effective local planning for care, treatment and preventive strategies.

Introduction

It is estimated that around 37.9 million people were living with HIV (PLHIV)/AIDS globally by the end of 2018(UNAIDS, 2019). Even with low prevalence, India has the second highest HIV burden globally with an estimated 23.19 lakh PLHIV in 2020. In view of this burden, HIV/AIDS continues to be a public health challenge in India (NACO Technical report, 2020). The adult HIV incidence has decreased by more than 50% from 2001 to 2013 (Manjunath *et al.*, 2019). The first case of immunodeficiency virus in India was reported in Chennai in 1986 (Paranjape *et al.*, 2016). In 1987, the National AIDS Control Programme (NACP) was launched under the Ministry of Health and Family Welfare, Government of India, to coordinate national responses to the spread of infection. Its activities included surveillance, blood screening, and health education for HIV (Manjunath *et al.*, 2019). Main risk behaviours and practices associated with a higher risk of HIV transmission in India include

unprotected sexual inter- course, IV drug use, and transfusion of contaminated blood and blood products. Heterosexual route is the most common route of transmission in India which is associated with the factors like presence of untreated ulcerative sexually transmitted infections, irregular use of condoms, frequency of sexual contact, and age at sexual initiation. HIV is an infection which many people have fears, prejudices or negative attitudes about. Stigma can result in people with HIV being insulted, rejected, gossiped about and excluded from social activities (Narain *et al.,* 1994). Early descriptions of HIV epidemiology created a general perception that HIV infection was largely restricted to sex workers, truck drivers, and IDUs. Now the infection has spread further into the general population (Ambhore *et al.,* 2016). A new hope has been seen recently in the AIDS epidemic with all the global efforts for the effective treatment and prevention programmes (Sherwal *et al.,* 2015; Nitin Arun *et al*., 2016).

Till date, no vaccine is available to prevent HIV infection; available treatment can only prolong life to some extent and complete cure is not possible. If we study the epidemiology of HIV, then we can use the collected data in a better way to reduce the incidence of HIV infection by formulating preventive steps.

Therefore, the present study was conducted on attendees of ICTC, Department of Microbiology SRTRGMC Ambajogai

This study was carried out retrospectively to estimate the prevalence of HIV infection in the clients attending ICTC at Department of Microbiology SRTRGMC Ambajogai

Materials and Methods

This is a retrospective study of General clients (excluding ANC clients) who attended ICTC, SRTRGMC Ambajogai Dist. Beed Maharashtra from January 2018 to December 2021. All the clients attending the ICTC(excluding ANC clients) were counselled and informed consent was taken from them by ICTC counsellors. The data pertaining to the clients including name, age, sex, occupation, education, marital status, risk factor associated were documented in the register by ICTC counsellors. All clients at ICTC were given unique PID number and he/she was directed for sample collection (3 - 5 ml of blood) at primary sample collection room at ICTC. Then HIV test was done in the HIV Diagnostic Laboratory, as per NACO guidelines with the 3 rapid test kits provided by MSACS/NACO. The protocol of the rapid tests performed as per NACO guidelines was as follows: The first test kit was of highest sensitivity and the specificity increases with second and third kit. Therefore, when the test with first test kit is negative, second and third kit tests were not done and the result is negative for that tested sample. If the first test is positive, then second and third rapid kit tests were performed and if these two tests were also positive, then the final result was given as positive for that tested sample (NACO Testing Guidelines, 2015).

Results and Discussion

Over a period of four years from January 2018 to December 2021, 65661 clients were screened for HIV infection. Out of 65661 clients, 468 were tested positive for HIV1 infection and 04 cases were found positive for HIV2 infection. (Figure 1)

In this study the seroprevalence of HIV was found to be 0.72% (472 /65661). Overall positivity rates among attendees were found to be 0.68% (135/19733), 0.73% (138/18965), 0.84% (98/11,669) and 0.66% (101/15294) in the years 2018, 2019, 2020 and 2021 respectively (Table 1)

Maximum number of clients tested seropositive in the age group of 35- 49 years (48.9%), followed by the age groups of 50 yrs and above (25.6%), 25-34 years (16.5%), 15-24 years (6.35%) and less than 14 years (2.54%) respectively. All four HIV-2 cases were in the age group 50 & above years,2 males and 2 females. The comparison of seropositivity in various age groups is depicted in table 2 and Figure 2. Seropositive males (270) constituted more than

females (202) (Figure4). When the ratio of male to female clients was analyzed in these age groups highest male to female ratio 2.25:1 was observed in the age group of 25 - 34 years followed by 2:1 in clients above the age of 0-14 years. Almost similar ratio of male to female clients (1:1) was observed in 15-24 years and 35-49 years of age group. However the ratio of male to female clients in the age group of 50 years and above was 1:88. Overall male to female ratio of the seropositive group over the years 2018, 2019, 2020 and 2021 was 1.18:1, 1.38:1, 1.28:1 and 1.59:1 respectively (Table 3).

The present study highlights the seroprevalence of HIV infection among a large number (N = 66,661) of clients (excluding ANC clients) attending ICTC in a tertiary care hospital at rural marathwada region of Maharashtra. Present study shows seropositivity of 0.72% among clients attending this ICTC. This is high as compared to the Maharashtra state and national seroprevalence of HIV among the adult general population. National adult (15–49 years) HIV prevalence was estimated at 0.22% (0.17%–0.29%) in 2020; 0.23% (0.18%–0.31%) among males, and 0.20% (0.15%–0.26%) among females. Among the States/UTs, in 2020, Maharashtra had an estimated adult HIV prevalence of 0.35%. Mizoram had the highest estimated adult HIV prevalence of 2.37%, followed by Nagaland (1.44%) and Manipur (1.15%), all of which were States in northeast India. Andhra Pradesh (0.66%), Meghalaya (0.53%), Telangana (0.48%) and Karnataka (0.45%) were the other States with adult prevalence higher than 0.40%. Besides these States, Delhi, Puducherry, Punjab, Goa and Tamil Nadu had an estimated adult HIV prevalence greater than the national prevalence (0.22%), while Haryana and Chhattisgarh had an estimated adult HIV prevalence in the range of 0.20–0.21%(NACO Technical report, 2020). This may be attributed to either increased awareness about the disease; lesser stigma associated with it nowadays, expanded coverage and the availability of anti retroviral therapy (ART). The HIV-2 epidemic has largely been limited to West Africa. In present study 4(0.85%) cases were reactive for HIV-2 which is in accordance to other studies which confirm that HIV-2 is relatively rare in Asia (Agrawal *et al.*, 2010).

This study shows that males (57.2%) had higher seropositivity than females (42.8%) with male to female ratio 1.34:1. This finding is almost consistent with other studies (Ambhore *et al.*, 2016; Sherwal *et al.*, 2015, Laghawe *et al.*, 2015; Goel *et al.*, 2016). Male preponderance observed in our study might have been due to fact that females are still not availing of the medical facilities as compared to males. Considering the national data based on information, women are less likely to visit clinic/testing centers. This is because females are generally tested after the diagnosis of their husbands. There are a number of factors-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 infection (Ambhore *et al.*, 2016). Hence, Programs for increasing female attendance in the health care centers should be carried out.

In this study, higher percentage of seropositivity (48.9%) was found in age group 35-49 years. The age groups ranging from 15 years to 49 years cover the (339/472)71.8% of all seropositive patients.

According to Vyas *et al.,* (2009) the positivity rate is ranging from 85.99% to 90.55% in the age group of 15 - 49 years and according to Madkar *et al.,* (2011) the prevalence of HIV infection was highest in the age group of 30 - 39 years followed by 20 - 29 years (Vyas *et al.*, 2009) (Madkar *et al.,* 2011). As per our national figure and study done by Haider *et al.*, (2016) it is also observed that about 89% of the cases occurred among sexually active persons aged 20 - 49 year (NACO Annual report 2015-16), (Haider *et al.*, 2016).

Table.1 Seroprevalence of HIV from Years 2018-2021

Year	Total No. of Clients	Total Seropositive /Reactive	Sero prevalance	Male	Female
2018	19733	135	068%	73	62
2019	18965	138	0.73%	80	58
2020	11669	98	0.84%	55	43
2021	15294	101	0.66%	62	39
Total	65661	472	0.72%	270	202

Table.2 Age wise distribution of seropositive clients

Year	Age Group In years				
	0-14	15-24	25-34	35-49	50 and above
2018	3	10	20	68	34
2019	4	9	26	55	44
2020	4	5	17	51	21
2021	1	6	15	57	22
Total	12	30	78	231	121

Table.3 Age and Sex wise distribution of seropositive clients

Year	Age Group in years										Ratio M:F year wise
	0-14		15-24		25-34		35-49		50 & above		
	M	F	M	F	M	F	M	F	M	F	
2018	2	1	4	6	11	9	36	32	20	14	1.18:1 (73:62)
2019	2	2	3	6	21	5	26	29	28	16	1.38:1 (80:58)
2020	4	-	4	1	12	5	23	28	12	9	1.28:1 (55:43)
2021	-	1	4	2	10	5	29	28	19	3	1.59:1 (62:39)
Total	8	4	15	15	54	24	114	117	79	42	1.34:1 (270:202)
%	66.67%	33.34%	50 %	50 %	69.23%	30.77 %	49.35 %	50.65 %	65.29 %	34.71 %	

Fig.1 HIV 1 & HIV 2 distribution in seropositive clients

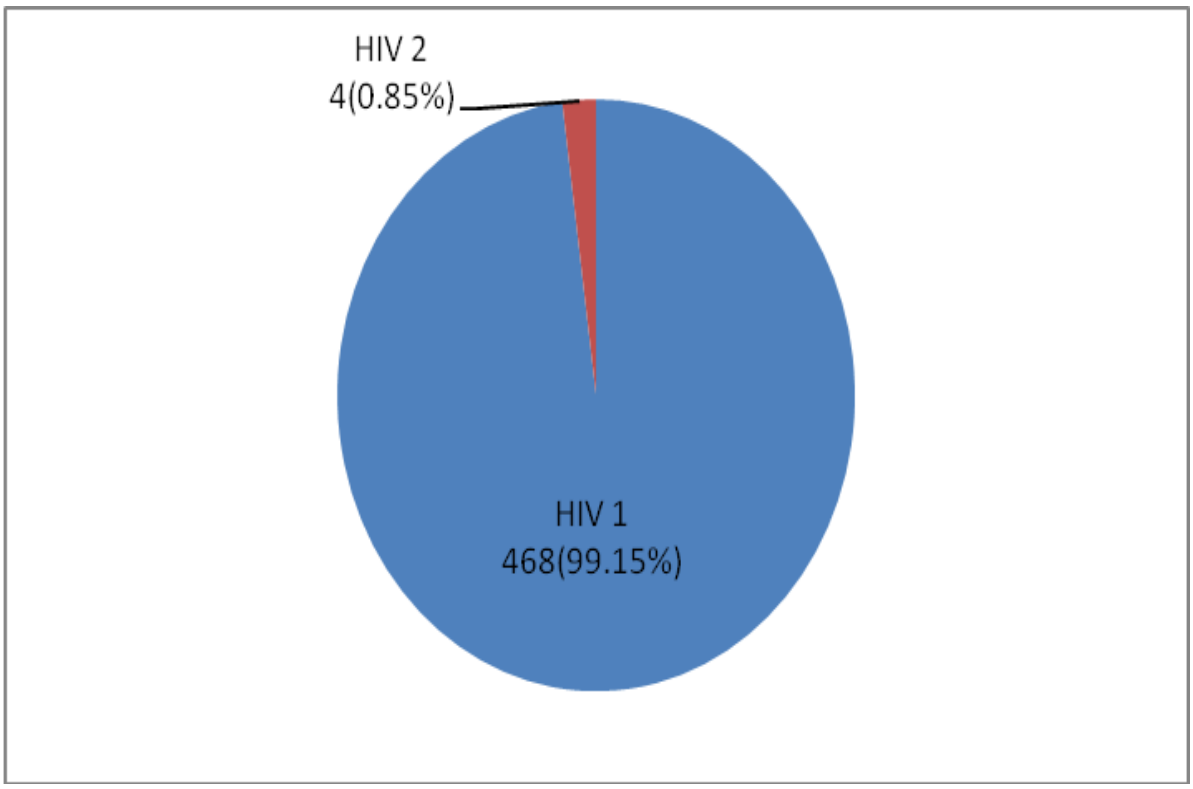


Fig.2 Age wise distribution of seropositive clients

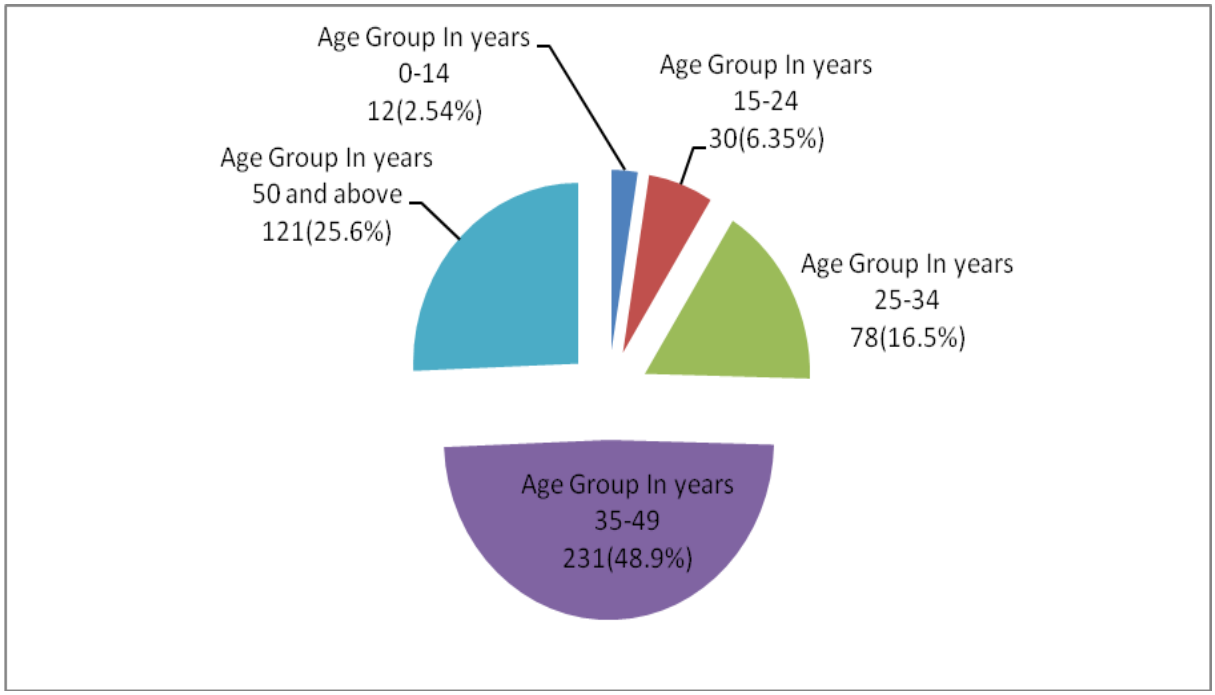


Fig.3 Gender wise yearly distribution of seropositive clients

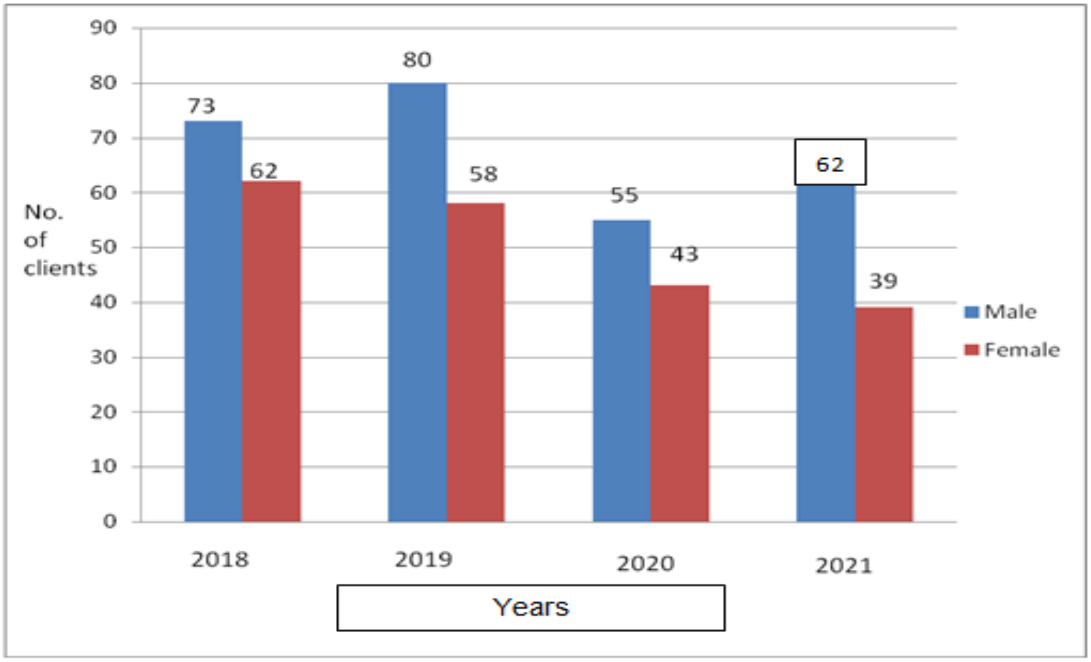
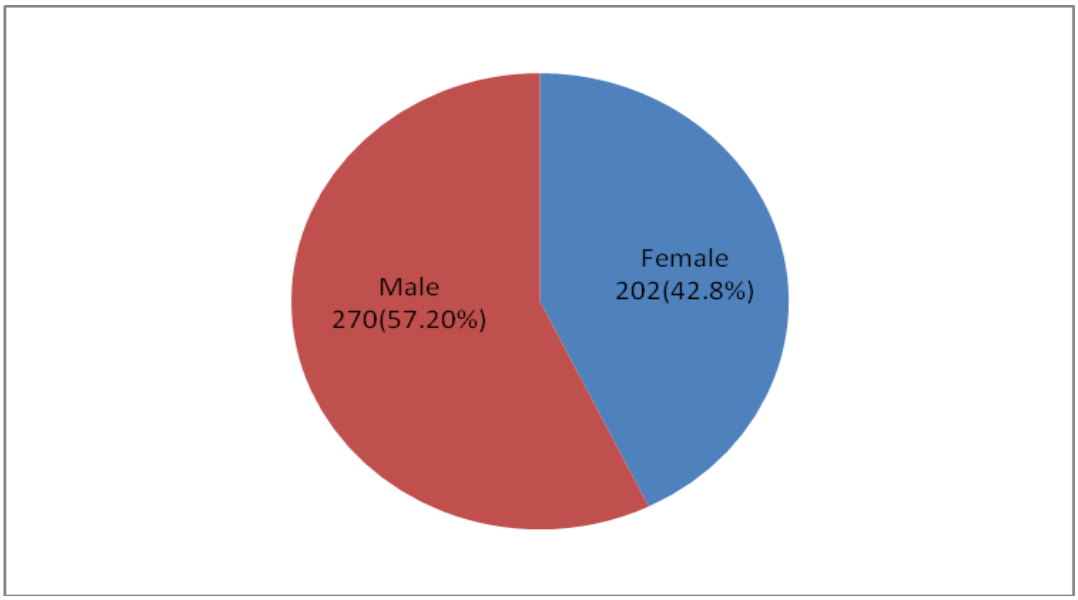


Fig.4 Gender wise distribution of seropositive clients



ICTCs are important for prevention, detection and care of HIV infection. This ICTC caters to a huge population being located in the rural part of Marathwada region of Maharashtra. ICTC gives services like pre-test counselling, testing of HIV, post-test counselling, communication with ART centre for treatment of positive patients. With these services, this centre is taking responsibilities in terms of testing HIV infections, helping in behavioral modifications of high-risk people through counselling as well as care and support of the people living with HIV. This study reports for the first time the seroprevalence of HIV among the clients attending ICTC in this tertiary care hospital. In this

study, prevalence of HIV infection in clients attending ICTC is 0.72%. There is a male preponderance over female from sexually active age group of 15 – 49 years of age. Hence we should focus on this age group especially male group for the prevalence of high rate of HIV transmission.

This study provides an important clue to understand the epidemiology of HIV/AIDS in rural Maharathwada region of Maharashtra and helps as an effective local planning for care, treatment and support of those infected also to formulate preventive strategies for those who are at risk. This would also help in the development of the appropriate policies and strategies to reduce the spread of HIV infection in India. All these findings suggest the need for the scaling up of focused prevention efforts among these groups.

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