

## Original article

# Recent Trend of HIV infection at Integrated Counselling and Testing Centre, Tertiary Care Hospital, Pune, Maharashtra

Kamble S<sup>1</sup>, Pednekar S<sup>2</sup>, Pol S<sup>2</sup>, Deshpande S<sup>2</sup>, Karyakarte R<sup>3</sup>

<sup>1</sup>Assistant Professor, Dept. of Microbiology, B.J. Govt Medical College, Pune

<sup>2</sup>Associate Professor, Dept. of Microbiology, B.J. Govt Medical College, Pune

<sup>3</sup>Prof. and Head, Dept. of Microbiology, B.J. Govt Medical College, Pune

Corresponding author- Dr Rajesh Karyakarte Email id- karyakarte@hotmail.com

### Abstract-

**Introduction:** Estimating HIV prevalence can be helpful to plan and implement preventive strategies. So this retrospective study was undertaken to know the profile of HIV infection among the clients attending ICTC, B. J. Govt. Medical College, Pune, for a period of five years, i.e., from April 2015 and March 2020.

**Material & Method:** A total of 53646 clients attended ICTC, B. J. Govt. Medical College, Pune from the year April 2015 and March 2020. A retrospective study was conducted among clients. Serum samples were collected after taking informed consent and pre-test counselling. HIV antibody testing using rapid kits was done in those who gave written consent and declared reactive as per National AIDS control organization (NACO) guidelines strategy III. Reporting and release of reports was done with post test counselling.

**Results:** Out of the total 53646 clients tested for HIV infection, 3848 (7.17%) were found to be HIV seropositive. Seropositivity was higher in male clients i.e. 2158 (56.08%) than female i.e. 1681(43.68%). Heterosexual route of transmission was the major route seen in 2336(62.12%) clients. Maximum HIV seropositivity was in the age group of 35-49 years (46.15%). Also decreasing trend of seropositivity was seen from 10.60 % in 2015-2016 to 5.74 % in 2018-2019 and little increase, 7.94% in 2019-2020.

**Conclusion:** HIV prevalence of 7.17% among the clients attending ICTC, B.J. Govt. Medical College Pune, puts light on the burden on HIV in this part of the country and suggests the need to focus on prevention efforts in high-risk groups. The HIV prevalence was in declining trend, indicating the effectiveness of NACP – III (National AIDS control program) interventional programs. ICTC data can be an important tool for planning and improving the National HIV/AIDS intervention strategy.

**Key words-**ICTC, HIV Seropositive, NACO, Trend

### Introduction-

Human immunodeficiency virus (HIV) is the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS). It is the biggest threat to mankind in last three decades. According to UNAIDS (2010) Global report in the world the number of people living with HIV are 33.3 million (1). India shares one tenth of the global HIV burden and overall 65% is attributed to South and South East Asia (2). As per the recently released India HIV Estimation 2017 report, HIV prevalence in India is estimated to be 0.22% (3). As per the latest HIV estimates report (2019) of the Government, India is found to have around 23.49 lakh people living with HIV/AIDS (PLHIV) in 2019. The HIV epidemic has an overall decreasing trend in country with estimated annual new HIV infections declining by 37% between 2010 and 2019 (4).

The risk behaviors and practices for HIV transmission in India include unprotected sexual intercourse more than 80%, IV drug use, and transfusion of contaminated blood and blood products. It is important to know that only an estimated 10 to 20% of those infected with HIV know that they are infected, who gets the treatment (2). To deal with this, the health care facilities are needed with proper knowledge of the HIV epidemiology in a particular region. This should be with respect to various sociodemographic factors, pattern of risk behavior and level of awareness in the population. The best effective approaches available are awareness of generation and lifestyle changes. An ICTC is a place where a person is counselled and tested for HIV, with proper consent(5). Integrated counselling and testing centre (ICTC) is the important component in preventing spread of HIV. It promotes behavioral changes to range of intervention in prevention and care. It ensures availability of counselling and testing services in an easily accessible, non-discriminating environment. The clients are treated with dignity and respect at ICTC. The Data generated in ICTC provides important clues to understand the epidemiology of disease in a particular region (2,6). Therefore, awareness about its occurrence and spread is very significant in protecting the people from the epidemic. That's why the National AIDS Control Programme lays maximum emphasis on the widespread reach of information, education or communication on HIV/AIDS prevention (1,7) Therefore, this study was undertaken to study the prevalence and trend of HIV and the pattern of socio-demographic and epidemiological distribution among HIV seropositive patients at ICTC centre in a tertiary care hospital in Pune.

#### **Aim –**

This study was carried out retrospectively to estimate the prevalence of HIV infection and risk factor of HIV infection, M: F ratio in reactive samples, age group in which HIV infection is more common, and its time trend in last 5 years among the patients attending ICTC, B. J. Govt. Medical College, Pune (including general clients, high-risk group excluding antenatal women).

#### **Materials and methods-**

A retrospective study was conducted from available records of all the patients who attended ICTC of our hospital between April 2015 and March 2020. The counsellors provided pre-test and post-test counselling and collected their anonymous and unlinked data in registers and log books as per National AIDS Control Organization (NACO) guidelines under strict confidentiality after taking informed consent. The data assessed included age, sex, behavioral pattern and HIV status of patients.

All clients at ICTC were given unique PID (Personal Identification Digit) number and he/she was directed for sample collection (3-5 ml of blood) at sample collection room at ICTC. Then testing was done in the HIV Laboratory, as per NACO guidelines with the 3 rapid test kits provided by MSACS/NACO.

The samples were considered as positive when found reactive by all three different methods with different principles and different antigens. HIV(1 and 2) antibody testing using rapid kits were done in those who gave written consent and declared reactive as per National AIDS Control organization (NACO) guidelines strategy III (6).

A serum sample is considered negative if the first screening test(E/R) was Non-reactive. If reactive, the sample was subjected to second and third test which utilizes different principle/or antigen from the first one. The reporting of positive samples were done as per strategy III of NACO guidelines. Strict External Quality Assurance program was followed with State Reference Laboratory(SRL) where quarterly samples were sent from our ICTC to SRL and

samples were received twice in a year from SRL. HIV infected persons were referred to Antiretroviral therapy (ART) centre of our hospital for further management.

### Results

**Table no 1-** Prevalence of HIV seropositivity from April 2015 to March 2020

Year	Total no. of patients	Total seronegative	Total seropositive	% of HIV Reactivity
April 2015- March 2016	9859	8813	1046	10.60
April 2016- March 2017	10276	9587	689	6.70
April 2017- March 2018	12008	11952	656	5.46
April 2018- March 2019	11449	10791	658	5.74
April 2019-March 2020	10054	9255	799	7.94
<b>Total</b>	<b>53646</b>	<b>49798</b>	<b>3848</b>	<b>7.17</b>

In this study the prevalence of HIV seropositivity was found to be 7.17%(3848/53646). (Table-1).

**Table no 2-** Age-wise distribution of HIV patients

Age group in years	April 2015- March 2016	April 2016- March 2017	April 2017- March 2018	April 2018- March 2019	April 2019- March 2020	Total	%
0-14	44	31	18	23	14	130	3.37
15-24	77	47	51	57	60	292	7.58
25-34	237	113	141	133	151	775	20.14
35-49	495	335	292	271	383	1776	46.15
>50	193	163	154	174	191	875	22.73

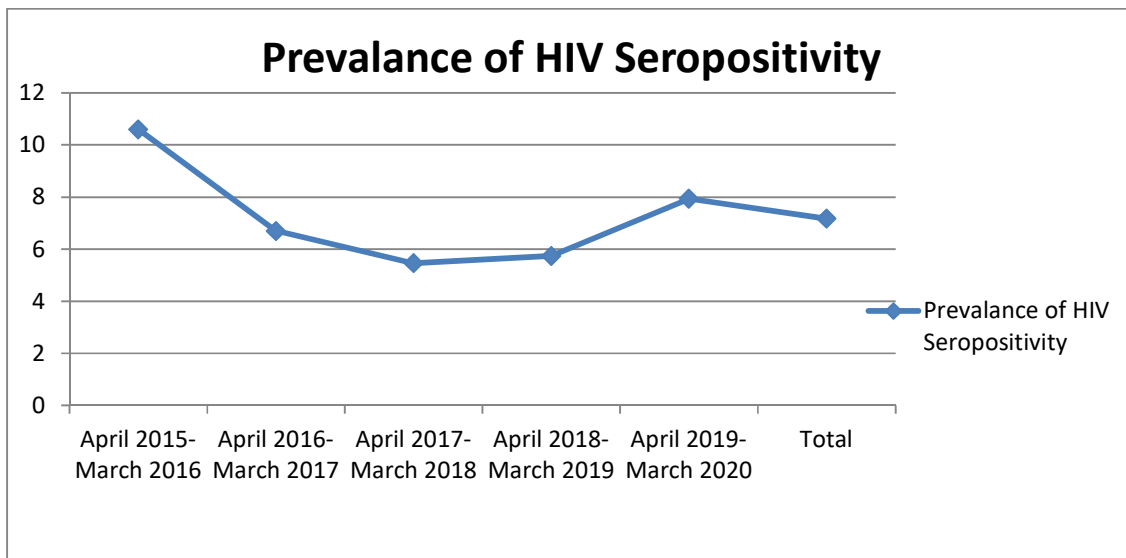
Maximum number of clients tested seropositive in the age group of 35-49 years (46.15%), followed by 22.73%, 20.14%, 7.58% and 3.37% in the age groups of more than 50 years, 25-34 years, 15-24 years and 0-14 years respectively. (Table -2)

**Table no3-** Prevalence of HIV seropositivity

Year	Total no. of patients	Total seronegative	Total seropositive	% of HIV
April 2015- March 2016	9859	8813	1046	10.60
April 2016- March 2017	10276	9587	689	6.70
April 2017- March 2018	12008	11952	656	5.46
April 2018- March 2019	11449	10791	658	5.74
April 2019-March 2020	10054	9255	799	7.94
<b>Total</b>	<b>53646</b>	<b>49798</b>	<b>3848</b>	<b>7.17</b>

The decreasing trend of seropositivity from 10.60 % in 2015-2016 to 5.74 % in 2018-2019 and 7.94% in 2019-2020 was observed in the present study. ( Table no 3) (Figure 1).

Fig.1-

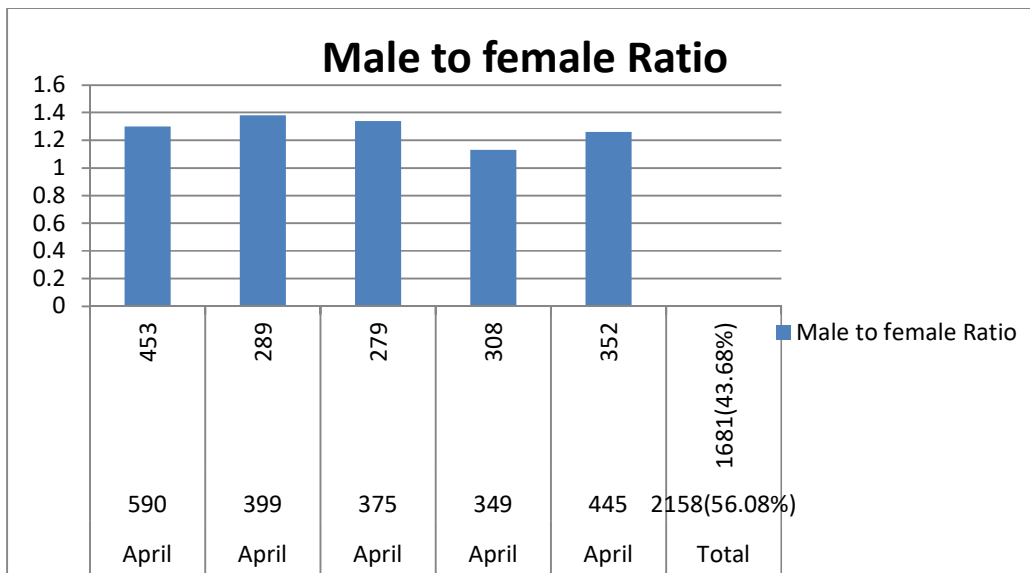


**Table no 4-** Male to Female ratio of seropositivity

Year	Seropositive Male	Seropositive female	Male to female Ratio
April 2015- March 2016	590	453	1.30
April 2016- March 2017	399	289	1.38
April 2017- March 2018	375	279	1.34
April 2018- March 2019	349	308	1.13
April 2019-March 2020	445	352	1.26
Total	2158(56.08%)	1681(43.68%)	

Maximum number of seropositivity was found in male patients 2158 (56.08%), followed by 1681 (43.68%) in female patients.( Table 4)

Fig.2-



**Table no 5-** Pattern of risk behavior among HIV positive patients

Mode of Transmission	April 2015- March 2016	April 2016- March 2017	April 2017- March 2018	April 2018- March 2019	April 2019- March 2020	Total(%)
Heterosexual	617	348	418	387	566	2336(62.12)
Homosexual	2	3	0	0	2	7(0.18)
Blood Transfusion	18	13	20	14	38	103(2.73)
Infected needles and syringe	4	3	2	1	2	12(0.31%)
Parent to child transmission	64	43	30	34	27	198(5.26)
Unknown	341	289	189	121	164	1104(29.36)
Total	1046	699	659	557	799	3760

Heterosexual route was the major form of transmission up to 62.12% followed by unknown reason of transmission 29.36%, followed by the route of mother to child transmission 5.26%. Through blood and blood products the transmission was 2.73%. Least transmission was observed by homosexual route and infected needles & syringes i.e. 0.18% and 0.31% respectively. (Table no 5)

#### Discussion-

Since there is no vaccine and cure available for HIV, counselling and testing becomes an important tool of intervention and control of HIV which is managed by ICTC centers in hospitals. Counselling for HIV especially pre-test counselling plays an important role in improving the acceptability for HIV testing (2). The overall prevalence of HIV in our ICTC centre was found to be 7.17% in five years and it varied from 10.60% to 5.74% from 2015-16 to 2018-19. However it was noticed that in the year 2019-20 it was increased to 7.94%. The little increase in the trend of seropositivity in the year 2019-20, emphasizes to take proper effective intervention strategies in preventing the spread of HIV. Integrated counseling play an important role in prevention and care. Also there is need of increased awareness and education to the society.

Over the years there was seen a significant number of patients increase from 9859 in the year April 2015-March 2016) to 10054 (in the year April 2019-March 2020). But the decreasing trend of seropositivity was observed in the present study. Varun et. al. and Meenu Meena from Udaipur, Rajasthan showed declining trend in HIV prevalence from the year 2010 to 2014 and year 2011 to 2015 respectively (1,9). This may be due to increase in global awareness about the disease, decreasing associated stigma, expanded coverage and better available diagnostic facilities by NACO.

In our study, the positivity rate was low in females in comparison to males but Vyas N. et al, 2009 in their six years ICTC based study showed higher positivity rates among females (10). However, Meenu Meena in 2011, in their 5 year study showed positivity rate low in females (1), which is similar to our study.

In the present study, it was seen that prevalence of HIV infection was 46.15% in the age group of 35-49 years (1776/3848), followed by 22.73%, 20.14%, 7.58% and 3.37% in the age groups of more than 50 years, 25-34 years, 15-24 years and 0-14 years respectively. Similar study conducted by Madkar et al, showed more prevalence of HIV infection in the age group of 35 - 49 years followed by 25 - 34 years of age group(11). Meenu Meena from Rajasthan in 2011, showed the prevalence of HIV infection was 81.38% in the age group of 15- 49 years (1). As per our national figure, it is observed that about 89% of the cases occurred among sexually active population aged 20 - 49 years ( 1,12)

In present study, children less than 15 years of age accounted for 3.37% of all the HIV infections in contrast to 7% of all infections in 2011 in India (12). Meenu Meena from Udaipur, Rajasthan in their study showed prevalence of 5.69% in children less than 15 years (1).

Unprotected Heterosexual contact has come out to be the most common mode of transmission of HIV in the present study with the rate of 62.12%. According to Vyas et al, the most common mode of transmission is also the heterosexual route in Jaipur with a prevalence rate of upto 81.6%(10), which is higher than our findings. But according to Lal et al, it was 84%( 8,13 ). However, Meenu Meena also documented unprotected heterosexual contact as the most common mode of transmission of HIV with the rate of 81.38%( 1), which is higher as compared to our findings.

In our study, risk factor for HIV transmission could not be elicited in 1104 (29.36%) patients as compared to Meenu Meena from Rajasthan, where the unknown route of transmission was seen in only 34(0.74%)

( 1). Overall, 0.18 % of all HIV positive cases reported homosexual activity during the study period. Meenu Meena at Rajasthan in 2011 have reported 0.28% of homosexual activity in their study(1). Due to the diverse sexual habits, poor access to awareness programs and less utilization of control measures, MSM in India are at higher risk of sexually transmitted infections including HIV (14).

In this study, the perinatal transmission accounted for 5.26% rate of transmission. Mother to child transmission may be low as compared to other mode of transmission in present study, since there is good implementation of ICTC2 in respect to screening and treatment of positive antenatal cases. Similarly, Meenu Meena and Urmila Chaudhary from Udaipur, Rajasthan showed low perinatal transmission of about 1.5% in a five year study( 1). Malhotra S et al. from New Delhi documented 4.9% for the perinatal transmission of HIV which is low as compared to our study( 2) . Transmission through blood transfusions has been nearly eliminated in developed countries by the routine mandatory screening of blood donation. In developing countries, it has yet to be eliminated, especially where HIV prevalence rates among blood donors are high and where screening of blood for HIV has not become routine(15). India still has many paid blood donors, contaminated blood and blood products account for about 2% of HIV infections(1). In the present study, we have documented 2.73% of transmission through blood and blood products, which is less common mode of HIV transmission which is similar to other studies ( 2,16,17). In similar study by Malhotra et al. from New Delhi showed 2.4% of HIV transmission through blood and blood products (2). Injection drug use (IDU) plays a critical role in the HIV epidemic in various regions, particularly in Asia and Southern Europe. According to studies in Southeast Asia, HIV prevalence among IDUs rose to 40% within 1 to 2 years after the first positive HIV test result. According to Vyas et al, 13 cases observed from the year 2002 to 2007

(10). In our study , the transmission through needles and syringes was 0.31%.Similarly , Malhotra et al. from New Delhi showed 0.8% ,low rate of transmission through needles and syringes ( 2).

The overall prevalence of HIV in our ICTC centre was found to be 7.17% in five years .Meenu Meena from Udaipur , Rajasthan showed (12.9%) of overall prevalence of HIV which is higher than our findings(1).Also Madkar et.al. documented (11.3%) of HIV prevalence(9). Malhotra S. from New Delhi showed 6.3% of HIV prevalence in their five year study (2) which is lower than our findings.

#### **Conclusion-**

The HIV infection in India is no longer concerned to high-risk population such as the intravenous drug users, men who have sex with men, truck drivers and commercial sex workers. The infection is gradually spreading from urban to rural areas and from high-risk groups to women who are mostly in monogamous marriages. ICTCs gives services like pre-test counseling, testing of HIV, post-test counselling, communication with ART center for treatment of positive patients. In this study, prevalence of HIV infection in patients attending ICTC is 7.17%. HIV prevalence puts light on the burden of HIV and suggests the need to focus on prevention efforts in high-risk groups.

There is a male preponderance over female from sexually active age group of 25 - 49 years and 35 – 49 years of age. Hence we should focus on this age group for the prevalence of high rate of HIV transmission. ICTC plays a key role in the diagnosis, management and prevention of spread of disease. In our study, HIV threatens the most productive segment of the society which is a serious cause of concern. This emphasizes the need of increased awareness and sex education to students and to the society.

#### **Limitations of the study-**

However, the present study has certain limitations. This is a retrospective study and hence the results are based on reporting and data collection by counsellors employed in the ICTC and hence bias may occur. This data is from ICTC in a tertiary care hospital and is not a true representation of the community. Additionally, this study excludes antenatal care patients which reflect general population, however this study can help in local planning and data can be used for policy decisions to improve the existing National HIV/AIDS intervention strategy.

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**Conflict of Interest** - There is no conflict of interest regarding the publication of this paper.

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