

# Seroprevalence of HIV transmission from mother to child during the antenatal period.

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**ABSTRACT:-** OBJECTIVE: the purpose of this study is to estimate the prevalence of HIV infection among the pregnant mothers attending ICTC at Rajindra hospital and medical college, Patiala for a period of 1 year i.e. April 2014 to March 2015. The children born to the seropositive mothers were regularly tested for their seropositivity till date. MATERIAL AND METHOD: a total of 2695 clients attended ICTC and serum samples were collected after taking informed consent and pre test counselling was done. In India for all ICTCs, NACO, a National guideline has been followed for HIV testing, reporting and release of results with post test counselling. RESULTS; out of the total 2695 mothers tested for HIV, 21 (0.77%) were found seropositive. With intervention i.e. starting of ART, out of children born to 21 seropositive mothers 2 (9.5%) babies became seropositive till date (approx. 6 months). Conclusion: HIV prevalence of 0.77% among the mothers attending ICTC RH, Patiala puts light on the risk of MTCT. On proper prevention and counselling for ART risk of transmission of HIV to baby is reduced to 9.5% against without intervention (which is about 25-35% globally). This study focuses that prevention of MTCT of HIV in infants is the Gold standard for decreasing prevalence of HIV among children.

**INDEX TERMS:** - ART, HIV, ICTC, MTCT, PMTCT, Seropositivity

## INTRODUCTION

Mother-to-child transmission (MTCT) is by far the largest source of HIV infection in children below the age of 15 years.<sup>1</sup> Child gets infected during pregnancy, childbirth (also called labor or delivery) or breastfeeding.<sup>2</sup> So far, the AIDS epidemic has claimed the lives of nearly 3 million children, and another 1 million are living with HIV today.<sup>3</sup> In 2012, only 900,000 pregnant women living with HIV globally accessed PMTCT services- a coverage of 62%. In the same year, 58% of pregnant women received ART for their own health compared with the 64% of all adults. In many countries, less than half of the pregnant women living with CD4+ count less than 350 (the threshold limit for starting ART, set by WHO 2010 guidelines), receive the treatment for themselves.<sup>2</sup> The number of children newly infected with HIV in 2012 were 35% lower than in 2009 due to intervention at correct time.<sup>4</sup> Between 2001-2012, the incidence of new HIV infection among children fell by 52% through NACP. However, there is still estimated 2,60,000 new HIV infections in this group.<sup>2</sup> Globally, there are around 12 million women of

childbearing age who are HIV-positive. And the number of infants who acquire the virus from mothers is rising rapidly in a number of places, notably India and South-East Asia. In the absence of preventive measures, the risk of baby acquiring the virus from an infected mother ranges from 15-25% in industrialized countries and 25-35% in developing countries.<sup>3</sup> There are estimated 2.39 million people living with HIV/AIDS of which, 39% are females and 3.5% are children with an adult prevalence of 0.31% in 2009. HIV infection among pregnant women poses particular risks to their family, offspring and health workers at the time of delivery.<sup>5</sup> In India during 2010-11, 6.6 million out of total 27 million pregnant women were counseled and tested, 16,954 out of 43,000 estimated HIV positive pregnant women were identified.<sup>6</sup>

## AIM AND OBJECTIVES

Seroprevalence of HIV transmission from mother to child during the antenatal period.

## METHODOLOGY<sup>5</sup>

1. **The study area and population:** This study was carried out in the Department of Microbiology, in a tertiary care referral hospital of Patiala, India. The sample population included all pregnant women registered during the study period and counseled at the antenatal clinics of this hospital.
2. **Sample collection and processing:** Verbal informed consent was obtained from each pregnant woman prior to sample collection. Five ml venous blood sample was collected in a sterile plain container from all pregnant women who came for testing. Blood was allowed to clot for 30 minutes at room temperature (25–30°C) and serum was separated after centrifugation at low speed. The serum samples were then stored at 4°C and were tested within 48 hrs.
3. **HIV serology:** HIV antibodies were tested by the three Rapid tests protocol as per the guidelines laid down by the World Health Organization (WHO Testing strategy III) and Government of India. All positive test results were disclosed only after post test counseling of the patients. Antibodies to HIV (1&2) were tested initially with a SD BIOLINE HIV-1/2 3.0 Rapid Test [Standard Diagnostics, Inc. Korea]. The samples tested positive in the first method were subjected to tests with two different rapid tests i.e. PAREEKSHAK HIV 1/2 Triline Card Test [Bhat Bio-Tech India (P) Ltd.] and PAREEKSHAK HIV 1/2 Rapid Test Kit (TRISPOT) [Bhat Bio-Tech India (P) Ltd.]. The samples were considered as positive when found reactive by all three different methods. All tests were done according to manufacturer's instructions.
4. **Statistical analysis:** The data were analyzed in percentages and compared with other studies.

## RESULT

In the study conducted, a total of 2695 mothers were tested for HIV in the antenatal period. Out of these 21 (0.77%) came out to be HIV positive (these were advised to start the ART according to the latest recommendations by WHO). The infants of the HIV positive mothers (n=21) were then tested for HIV and 2 (9.5%) children came out to be HIV positive.

### SEROPREVALENCE OF HIV CLIENTS

Year	Total sero-positive	Total sero-negative	Total
April 2014- March 2015	21	2674	2695

### TRIMESTER IN WHICH HIV STATUS WAS

#### INVESTIGATED

Year	Trimester in which HIV status was investigated			Total
	1st	2nd	3rd	
April 2014- March 2015	4	7	10	21

### Age Group of HIV prevalence

Year	Age in years				Total
	15-20	20-25	25-30	30-35	
April 2014- March 2015	2	9	6	4	21

### Type of Delivery

Year	Institutional delivery	Domiciliary delivery	Total
April 2014- March 2015	19	2	21

**TRANSMISSION OF INFECTION IN THE CHILDREN  
 BORN TO HIV POSITIVE MOTHERS**

Year	Sreoprevalence among children born to HIV positive mothers at 6 weeks of testing.		Total
	Total Sero-positive	Total Seronegative	
April 2014- March 2015	2	19	21

**DISCUSSION**

Unawareness of their HIV status among women and its consequences pose a major threat to the social and economic development of a country. The children who could be prevented from acquiring HIV infection are not prevented. It is a blot on our developmental achievements. It is a problem not only in developing world but also in developed world. We must consider a reproach to our science and technology and also to our social and economic structure. Problems encountered are social stigma, fear of getting a positive result, unawareness about the disease etc.

The present study has documented the seroprevalence of HIV infection among pregnant women in a tertiary care hospital situated in Patiala, Punjab. To the best of our knowledge, only a few studies on HIV prevalence in the antenatal women are available from North India. Hence, this study was planned to determine the rate and trends of HIV seroprevalence among pregnant women attending antenatal clinics at the tertiary care hospitals in North India.

The overall attendance was 2695. ‘Opt-in’ or ‘opt-out’ approaches are available while offering HIV testing but Centre for Disease Control (CDC) recommends an opt-out approach as the testing rate is 85-98%.<sup>7</sup> WHO and UNAIDS introduced a routine opt-out approach in countries with high prevalence.<sup>8</sup> The clients come under PPTCT. The present study shows seropositivity among 0.77% of the ANC’s tested in the tertiary care hospital. This is high as compared to the seroprevalence among the general population (0.37%). In the similar study carried out by Dash *et al.* the overall sreoprevalence was observed to be 0.66% in 2012, observation of 0.56% was noted by Mandal *et al.* in 2010, 0.77% by Parmeshwari *et al.* in 2009 and 0.72% by Nagdeo *et al.* in 2007.<sup>9,10,11</sup> While Punjab is a low prevalence state, then also the seroprevalence among pregnant women is significant. We observed that, majority of seropositive pregnant women were married, residence of rural areas with low socio-economic status, were either illiterate or studied up to the primary level and not used any contraceptive. In spite of the fact that the majority are illiterate, such a large number pregnant women are screened for HIV. 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).<sup>12</sup> Most of the ANC’s reported in the 3<sup>rd</sup> trimester for getting their HIV status checked, signifying the fact that they must have been counseled by their respective doctor to get their HIV status checked. We should try to screen as many mothers as possible in the 1<sup>st</sup> trimester and the same point is being emphasized in our institution. The woman who is HIV positive should start treatment before pregnancy through counseling but majority start after 1<sup>st</sup> trimester of pregnancy. This is due

to the false belief that the ART drugs have teratogenic effects whereas studies have proved that earlier the initiation of therapy more effective is the prevention of transmission.<sup>13</sup> According to the 2013 data of PPTCT there are estimated 27 million pregnancies in India per year. Out of this, 8.83 million ANC's received HIV counseling and out of these 12,551 were HIV positive. Chances of transmission of HIV infection from mother to child are 7% during antenatal period, 15% during delivery and 15% during postnatal period (through breastfeeding).

In March 2013, approximately 0.1 million HIV positive children were registered under ART regimen (Anti-Retroviral therapy). From 2004-2013, the number of ANCs under PPTCT have increased from 0.8-8.83 million.<sup>14</sup> Under the present study the seroprevalence among the children born to HIV positive mothers was 9.5%, because of the fact that all the mothers who were tested to be HIV positive received ART according to the national guidelines. It has also been studied that without intervention during the antenatal period, the rate of transfer of HIV infection from mother to child is quite high i.e. it goes up to 20-45% as against with intervention where it comes down to approximately 10%. According to a study carried out by Dash *et al.* a steady fall has been seen in the HIV seroprevalence from 1.53% in 2006 to 0.34 % in 2012(compiled data up to April 2012).<sup>5</sup>

According to the present study the maximum prevalence of HIV was seen in the age group of 20-25 years of age with mean age of 22.5 years followed by 25-30 years of age. Dash *et al.* noted the mean age of positive women was  $24.31 \pm 3.9$  years. The HIV infection was highest in the age group of 25 to 29 years (41.86%) closely followed by 20 to 24 yrs (41.39%).

Ukey *et al.* reported that HIV infection was highest in the age group of 19-24 years (46.94%) followed by 25-29 years (31.29%).<sup>23</sup> It may be because of the fact that 20 to 29 years is the most sexually active age group.<sup>15</sup>

*Special attention:* In this study it was also observed that the mother- to- child transmission of HIV infection was more prevalent in the domiciliary delivery then the institutional delivery. This could be attributed to the fact that deliveries are carried out by skilled doctors under hygienic conditions along with all the emergency facilities present to prevent the transmission as well as seroprevalence.

## CONCLUSION

HIV/AIDS infection in children below the age of 15 years is mainly due to transmission from mother to child during child bearing, child birth and breastfeeding. This study report shows that mothers attending ICTC in medical college Patiala shows prevalence of HIV infection in pregnant mothers in 0.77%. This study reports for the first time the seroprevalence of HIV among children born to HIV positive mothers up to the age of 1 year of the child to be 9.5%. Hence we should focus on pregnant mothers during their antenatal checkups to get HIV status tested. This would help in the development of the appropriate policies and strategies to reduce the spread of HIV from mother to child.

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