

# Trend of HIV seroprevalence in ANC attendees and utilisation of PPTCT services at a tertiary care hospital, West Bengal, India

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## ABSTRACT

*HIV seropositive pregnant woman can vertically transmit the disease to paediatric population. Effective utilization of PPTCT services can reduce disease spread. The study aims at determining seroprevalence of HIV in antenatal women with their demographic characteristics and utilization of PPTCT services to minimize the risk of mother to child transmission.*

*A retrospective study was done among pregnant women attending antenatal clinic of a tertiary care hospital for six years from March 2013 to March 2019. Pre-test counselling, HIV testing, and post-test counselling were done as per NACO guidelines. Antiretroviral prophylaxis was given to seropositive women and their children. Analysis of demographic data of seropositive women and assessment of utilization of PPTCT services was done.*

*53969 patients (59.87%) out of 90134 have accepted HIV testing. Forty-eight women were found to be seropositive with a seroprevalence rate of 0.09%. Majority of seropositive women were young multigravida, have secondary education and belonging to rural area. Ten out of forty-eight partners of seropositive women were found to be HIV seronegative. Out of the 48 seropositive women, one (2%) opted for pregnancy termination, and 45(93.7%) had delivered in our institution. All mother and baby pairs have received antiretroviral prophylaxis.*

**Keywords:** Antenatal, Human immunodeficiency virus, PPTCT, Seroprevalence

## I. INTRODUCTION:

In India, HIV was first reported in 1986 from Chennai. Since then our country experiences a sharp rise in number of people living with HIV. Six Indian states are considered as high prevalence states i.e. Manipur, Nagaland, Andhra Pradesh, TamilNadu, and Maharashtra. West Bengal is considered as low prevalence state. India launched National AIDS Control Programme (NACP) in the year 1987. PPTCT program was launched in 2002 under NACP

II. UNAIDS aims to end HIV pandemic by 2030, adopting 90-90-90 strategy that is 90% of people living with HIV (PLHIV) know their status, 90% of diagnosed PLHIV are on treatment and 90% of PLHIV on treatment achieve an undetectable viral load by 2020.<sup>[1]</sup> India is committed to achieve the global 90-90-90 target by 2020.

India is considered as low prevalence nation though it has the third largest number of people living with HIV/AIDS.<sup>[2]</sup> Adult HIV prevalence is estimated to be 0.30% in male and 0.22% in female. National adult (15-49 yrs) HIV prevalence in India is estimated to be 0.26%, as per NACO report 2015-2016.<sup>[3]</sup> The overall HIV prevalence among ANC clinic attendees, was considered a proxy for prevalence among the general population. National prevalence rate is 0.29% in the country, with an overall declining trend.<sup>[4]</sup> HIV data from antenatal women has been used to monitor trends in general population and prevalence in young children.<sup>[5,6]</sup>

More than 70% of HIV infections are result of heterosexual transmission and over 90% of infections in childhood result from mother to child transmission.<sup>[7]</sup> Mother can transmit the disease to her child during pregnancy (23-30%), at the time of birth (50-65%), by breastfeeding

(12-20%)<sup>[8]</sup>. Children (<15 years) accounted for 12% of total new infections<sup>[4]</sup>. The risk of transmission of HIV from infected mother to her children is estimated to be around 20-45% without any intervention.<sup>[9]</sup> With effective PPTCT programme, the risk of vertical transmission of HIV among children can be reduced to less than 2%.<sup>[10]</sup>

Estimation of HIV seroprevalence in pregnant women provides essential information about status of effective implementation of AIDS control program. PPTCT helps to predict and monitor spread of HIV among young children.

Very few studies are available from West Bengal showing the trend of HIV prevalence in antenatal population. This led us to carry out this study at a tertiary care hospital in West Bengal. This study was done to determine the prevalence of HIV

in pregnant women and to analyse the services provided in PPTCT centres.

## II. MATERIALS & METHODS

This retrospective hospital based study was done at Murshidabad Medical College and Hospital, Berhampore, West Bengal from March 2013 to March 2019

**A. Study design** Retrospective observational study

**B. Study Location** Study was done at a tertiary care teaching hospital in the Department of Microbiology

**C. Study duration** March 2013 to March 2019

### D. Inclusion criteria

1. HIV Seropositive pregnant Women
2. Newly registered in ANC
3. Attended ICTC

Pregnant women who attended antenatal clinic and registered in this hospital were advised to undergo HIV screening after pre-test counselling and informed consent. Here pre-test counselling, HIV testing and post-test counselling was done by trained personnel as per NACO guidelines. Counselling comprised of information about HIV infection, its mode of spread, importance of HIV testing, and preventive measures that are available for reducing mother to child transmission. Data about socio-demographic and obstetric factors were gathered. After counselling women was offered HIV testing by opt-out approach. Only those who were willing for test were tested for HIV after informed consent using three different rapid tests as per NACO guidelines. Post-test counselling was done according to the test results. Partner testing was offered to all pregnant women. Information about MTP services was given to those who did not want to continue their pregnancy. For those who intended to continue their pregnancy were advised for regular follow up at ANC and PPTCT centre. Confidentiality of data was maintained throughout the study. All the seropositive patients were advised for institutional delivery. Those women who tested positive for HIV and delivered before April 2014 were given prophylactic single dose Nevirapine therapy at the time of delivery and from April 2014 onwards seropositive women were

referred to ART centre for lifelong ART regimen (Triple drug regimen) irrespective of their CD4 count and WHO clinical stage as per updated NACO guidelines for prevention of mother to child transmission of HIV.

## III. RESULT

During the study period from March 2013 to March 2019, pregnant mothers who registered at antenatal clinic at Murshidabad Medical College & hospital in West Bengal, pre-test counselling was offered to them but only 90,134 attended the counselling. Among them 53969 (60.41%) accepted HIV testing. Out of these, 48 patients were found to be HIV seropositive with a prevalence rate 0.09% (Table 1).

TABLE I

PPTCT Services and HIV Seropositivity in Antenatal Women

Women attended pre-test counselling	Women accepted HIV testing	% Women HIV tested	Women found HIV positives	% Seropositivity
90134	53969	59.87 %	48	0.09 %

In present study out of 53969 pregnant women 48 women were found positive with HIV seroprevalance rate 0.09%.

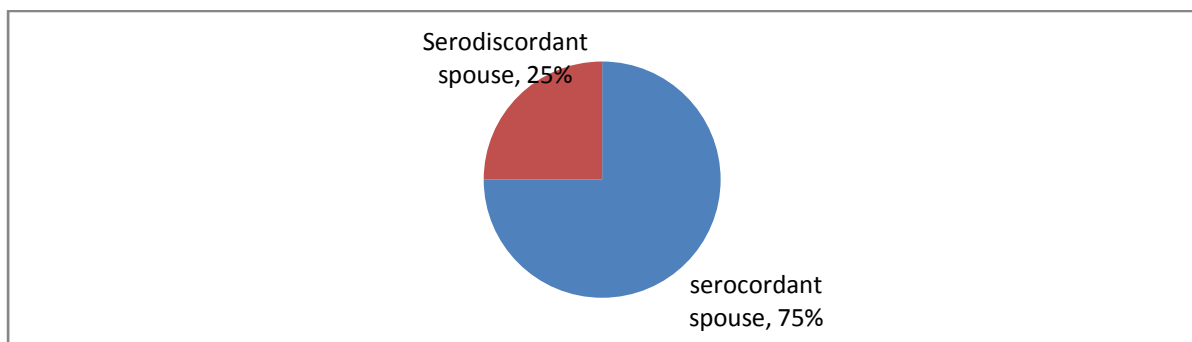
**TABLE II**  
Demographic Characteristics of Seropositive Women

Demographic characteristics (n=48)		No of seropositive	%
Age	18-25 yrs.	27	56
	26-30yrs	20	42
	31-35 yrs.	1	2
Religion	Hindu	24	50
	Muslim	23	48
	Others	1	2
Residence	Rural	27	56
	Urban	21	44
Education	Illiterate	7	15
	Primary	16	33
	Secondary	22	46
	Graduate	3	6
Gravidity	Primigravidity	22	46
	Multigravida	26	54
Contraceptive practice	OCP	5	10
	IUD	Nil	0
	None	43	90
Serostatus of Husband	Positive	30	63
	Negative	10	20.8
	Refuse HIV testing	8	16

In the present study, 56% HIV positive women are in 18 to 25 years age group followed by 26 to 30 years group (42%). One 32 yrs old pregnant woman was declared HIV seropositive. 54% seropositive pregnant women were multigravida, 56% HIV positive women come from rural area. Majority of seropositive women were Hindu by religion. Majority

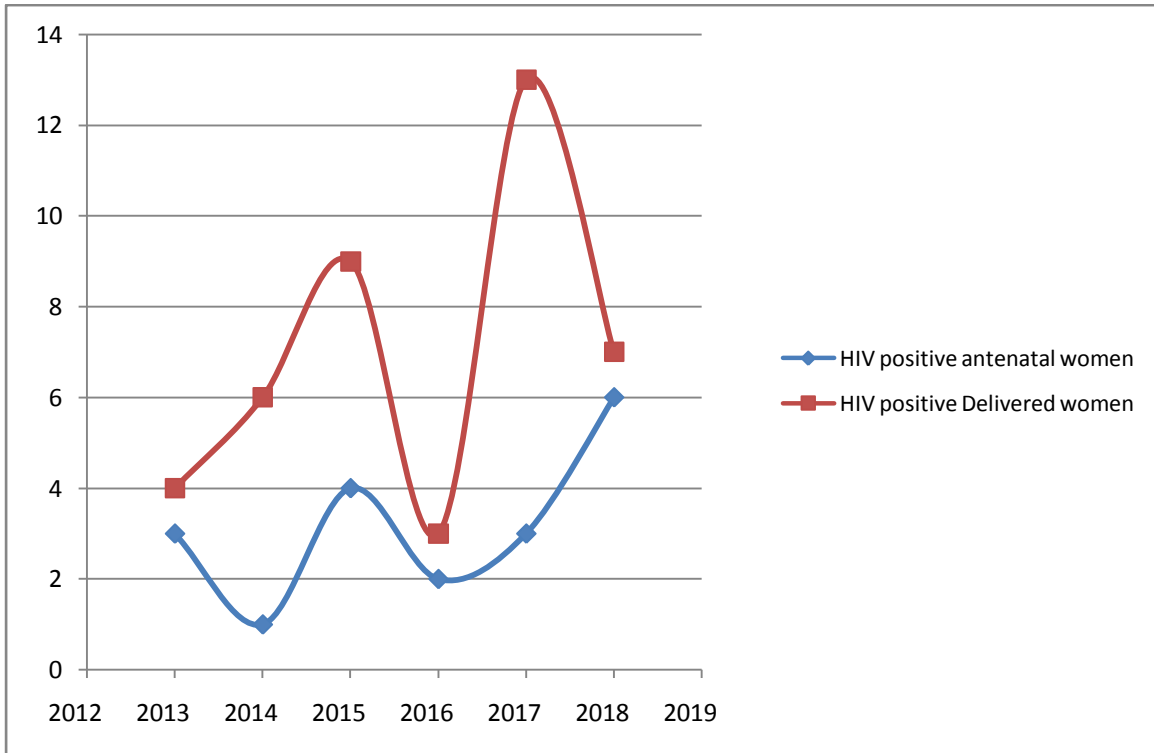
had secondary education and were not using any kind of contraceptive methods

Husbands of 10 HIV positive pregnant women out of 40 HIV positive pregnant women were confirmed to be negative giving 25% serodiscordant result (taking consideration of refusal of husband for testing).



**Fig1:** Serostatus of spouse

Total number of pregnant women tested positive for HIV as well as women delivering in our hospital per year during study period shows a variable trend.



**Fig 2: Year wise trend of HIV positive status in antenatal women and delivered women in Murshidabad Medical College, West Bengal**

Majority of seropositive women attended the antenatal clinic regularly for follow up. Only 2% women opt for MTP. Forty five women (95.8%) who continued with their pregnancy delivered in our institution. 62% women of them delivered vaginally

and 38% women delivered by caesarean section. Two patients delivered at sub-divisional hospital of nearby area. All, of the mother and babies delivering at our institution, had received ARV prophylaxis.

**TABLE III**  
**Outcome of pregnancy**

	No of woman/ new-born	%
Termination of pregnancy	1/48	2
Delivery in our Institute	45/48	93.7
Live birth	45/45	100
Vaginal delivery	28/45	62
Caesarean section	17/45	38
Antiretroviral prophylaxis		
Mother	45	100
Child	45	100

#### IV. DISCUSSION

The NACO Technical Estimate Report (2015) estimated that out of 290 lakhs annual pregnancies in India, 35,255 occur in HIV positive pregnant women. In the absence of any intervention an estimated (2015) cohort of 10,361 infected babies will be born annually.<sup>[11]</sup>

The PPTCT programme aims to prevent the perinatal transmission of HIV from an HIV infected pregnant mother to the new-born baby. It aims to control the increase in number of new patients by controlling infections in new-born babies. This programme entails counselling and testing of pregnant women in the ICTCs. As on 31st August 2016 in India there were 20,756 Integrated Counselling and Testing Centres (ICTC), most of these were in government hospitals, which offered PPTCT services to pregnant women.<sup>[11]</sup> Globally over the past few years the PPTCT interventions have transitioned from the use of single dose Nevirapine to the use of multidrug antiretroviral therapy. It has efficiently decreased the rate of transmission of HIV from mother- to-child to the level of less than 5%9 Screening for HIV in pregnant women plays the most important role in reducing mother to child transmission and thus helps in reducing the risk of HIV infection in the paediatric population. Estimation of seroprevalence of HIV infection in pregnant women provides necessary information for an effective implementation of PPTCT programme.

The HIV testing in ICTC can be offered as either opt- in or opt- out approach. Centre for Disease Control (CDC) recommends an opt out approach as the testing rate is 85-98%<sup>[12]</sup> In the present study the overall acceptance of HIV testing using opt-out approach is 59.87%. Joshi et al and Sinha et al reported higher (83% and 79% respectively) while Kulkarni et al reported a lower (43.13%) acceptance rate of HIV testing using the opt-out approach.<sup>[13-15]</sup> But Parameshwari et al. and Chaudhari et al reported HIV testing in 100% and 96% antenatal cases respectively.<sup>[16,17]</sup> To achieve high rates of counselling and testing, good counselling skills and experience of the counsellor is fundamental.

The average HIV seropositivity among women attending antenatal clinic in India is 0.29% as per NACO annual report 2015-2016.<sup>[4]</sup> The present study reveals a prevalence rate of 0.09%. Recent studies from different authors have reported different seropositivity rates, ranging from 0.08% to 1.03%. Kaur G et al reported a seroprevalence of 0.08% in Jammu which is similar to our study.<sup>[18]</sup> Mehta et al. from Jamnagar, Gujarat reported 0.38% and Kulkarni et al from Nanded, Maharashtra reported 0.76% seroprevalence in antenatal women.<sup>[19]</sup> Sibia et al reported a high (1.03%) seropositivity from Punjab.<sup>[20]</sup>

The most recent data of 14th round of HIV Sentinel Surveillance among ANC clinic attendee's shows that Maharashtra (0.32%), Punjab (0.32%), Rajasthan (0.32%) and Tamil Nadu (0.27%) recorded HIV prevalence similar to the national prevalence (0.29%).

We observed that majority of seropositive women were multigravida, belongs to rural area and had secondary education similar to the observations made by Kaur G et al and Kwatra et al in their studies.<sup>[18,21]</sup> In the present study majority of seropositive women (56%) were in 18-25 year of age group. Ukey et al and Hussain T et al also made similar observation.<sup>[22, 23]</sup>

Husbands of 63% women were found to be HIV seropositive in the present study, Kaur G et al and Ukey et al reported higher seropositivity (80% and 96.59% respectively) in the spouses of such patients. In our study, almost one fifth of seropositive women had serodiscordant partners. This is an important observation as it shows that females can be the Index case where both partners are seropositive. It also underlines the need to involve both the partners in voluntary HIV testing and counselling. Husbands of 8 out of 48 HIV positive women did not turn up for HIV test due to lack of awareness of the importance of HIV counselling and testing or of social stigma.

A three dimensional approach is needed to prevent babies from acquiring HIV from their mothers. These are (i) primary prevention of HIV in women of child bearing age (ii) Prevention of unintended pregnancies among women living with HIV (iii) Prevention of HIV transmission from pregnant women infected with HIV to their child.

In the present study only 2% of seropositive women opted for pregnancy termination. Kwatra et al and Chaudhary et al reported that 11% and 17% of their patients respectively opted for pregnancy termination.<sup>[24]</sup> Forty five (81.57 %) seropositive women in our study got delivered at our institute. Tayade et al reported 78.07% institutional deliveries in their study.<sup>[25]</sup> In our study only 38% women were delivered by caesarean section and remaining 62% women had normal vaginal delivery. Joshi reported 41.66% and Choudhary et al reported 42.86 % caesarean rates. Caesarean section is not recommended for prevention of mother-to-child transmission unless there is an obstetric indication for the same.

Safe delivery practices have been observed in our Institute by taking work precautions such as avoiding artificial rupture of membranes, repeated vaginal examinations, assisted instrumental delivery, invasive foetal monitoring procedures, episiotomy and prematurity.

India has transitioned from the single dose Nevirapine strategy to that of multi-drug ARV prophylaxis. According to the new guidelines of NACO, effective from 1st January 2014, pregnant women who are found to be HIV positive are initiated on lifelong ART irrespective of CD4 count and WHO clinical Staging; their new-born (HIV exposed) babies are initiated on 6 weeks of Syrup Nevirapine immediately after birth so as to prevent transmission of HIV from mother to child and is extended to 12 weeks of Syrup Nevirapine if the duration of the ART

of mother is less than 24 weeks. <sup>[11]</sup>All the mother-baby pairs delivering at our institute (100%) had received ARV prophylaxis. Chaudhary et al and Tayade et al also reported 100% coverage, thus emphasising the good counselling skills of health providers and concern of mothers towards safety of their child. HIV infected mothers were counselled about hazards of mixed feeding. They regularly attended ANC to follow-up for their own well being and well being of their children, to prevent HIV transmission during post natal period

### CONCLUSION

Our study reveals that the seroprevalence of HIV infection in antenatal women is relatively low in this region compared to the national average. Education, empowering women, reducing gender inequalities, literacy and creating awareness about HIV in the general population are directly needed to improve acceptance of HIV counselling and testing among pregnant mother. It also helps to overcome the social stigma attached to this disease. We have to strengthen preventive programme among high risk as well as low risk population. Motivation of their partner or spouses to accept the HIV testing is the key pivot to identify the undiagnosed population. We have succeeded to break into the tip of the iceberg only. A lot of hard labour is still required to reach into the depths of the ocean called HIV. What we have already done to control this problem is remarkable but a monumental task still remains ahead to be completed as fast as possible. When the level of health education succeeds in encompassing majority of our population it will clearly help to reduce the burden of this HIV epidemic. The incidence of acceptance of therapeutic measures by seropositive mothers, to minimize mother-to-child transmission of HIV, will also rise. With the optimum utilisation of PPTCT services and new multidrug ART in seropositive pregnant patients, we can hope to safeguard our present and future generations

### ACKNOWLEDGEMENT

Authors would like to thank Dr. Manash Sarkar, HOD, Microbiology, Dr. Mahua Bose, Associate professor, Microbiology, Dr. Ranjan Basu, Assistant Professor, Microbiology for their inspiration. We would like to give special thanks to Kakali Saha and Sanghamitra Saha, Councilors ICTC Centres, Murshidabad Medical College & Hospital, Murshidabad for their help in data collection and analysis

Funding No funding sources

Conflict of interest none declared

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