



“ HIV/AIDS IN PREGNANT WOMEN: FIVE YEAR MAPPING AT A TERTIARY CENTRE IN EASTERN UTTAR PRADESH”.

Gynecology

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ABSTRACT

Introduction: India ranked third in the world in having largest HIV epidemics equating 21.17 lakhs people living with HIV/AIDS despite showing a declining prevalence rates at national level from a peak of 0.38% in 2003 to 0.26% in 2015 due to its large population. Women constitute 40.5% and children <15 years constitute 6.54% with vertical transmission being 5.4% of all the routes of infections.

Aims: To study the trend of HIV/AIDS in pregnant women at a tertiary care centre in Eastern Uttar Pradesh

Material and Methods : A cross sectional study was conducted in pregnant women in Department of Obstetrics and Gynaecology, MLN Medical College, Allahabad, Uttar Pradesh between January 2011 to December 2015. HIV tests were carried out as per the NACO and WHO guidelines. An annual comparative data of different demographic variables, delivery trends and breast feeding patterns was made for 5 years.

Results : The average HIV prevalence rate was 0.53%. Though non-significant (p value >0.05), seropositivity was high in women aged 25-29 years and in multigravidas. Illiterates had significantly higher (p value <0.05) prevalence than graduates. Percentage of ART coverage in seropositive women and breast feeding in newborn babies increased significantly (p value <0.05) from 2011 to 2015.

Conclusions : Better counseling provided by PPTCT and ICTC centre is crucial for better perinatal outcome. However, scaling up of effective interventions is still limited in our country because of inadequate access to antenatal and postnatal services thus necessitating an integrated approach.

KEYWORDS

HIV , PPTCT , ART , ICTC

Introduction Global

After the first reported case of HIV in 1980s, a massive increase in new infections and death due to AIDS was noticed in 1990s. At the height of the AIDS crisis, almost 3.7 million people were diagnosed with HIV in 1997.¹ But following that fortunately the number of new diagnoses began to slow with eventual decline in AIDS related deaths. Between 2000 and 2015, new HIV infections fell by 35%, AIDS-related deaths fell by 28% with greatest reduction amongst children by 52%. These reductions are attributed to reduced infectiousness of PLHIV on ART, introduction and expansion of preventive programs like mother-to-child transmission (PMTCT) and introduction of harm-reduction programs focusing on safer sex and outreach to high-risk populations.^{2,3} In 2015, 77% (69–86%) of the estimated 1.4 (1.3-1.6) million pregnant women living with HIV globally received effective ARV drugs to avoid transmission to their children.⁴

India

India ranked third in the world in having largest HIV epidemics equating 21.17 lakhs (17.11 lakhs–26.49 lakhs) people living with HIV/AIDS despite showing a declining prevalence rates at national level from an estimated peak of 0.38% in 2001-03 through 0.34% in 2007 to 0.28% in 2012 to 0.26% in 2015; due to its huge population of 1.2 billion.^{5,6,7} UNAIDS gap report, 2016 showed India had 2.1 million PLWH; 0.3% adult HIV prevalence; 86,000 new infections; 68,000 deaths due to HIV/AIDS and 43% adult on ART in year 2015. Out of 2.1 million PLWH, women constitute 40.5% and children <15 years constitute 6.54%. Vertical transmission of infection to the child makes 5.4% of all the routes of infections.⁸

ANC

HIV prevalence among ANC clinic attendees, considered proxy for general population is 0.35%.⁹ The NACO Technical Estimate Report (2015) estimated that out of 29 million annual pregnancies in India, 35,255 occur in HIV positive pregnant women and in the absence of any intervention, an estimated cohort of 10,361 infected babies will be born.¹⁰ To reduce the burden of HIV among children, the National AIDS Control Programme (NACP) launched Prevention of Parent to Child (HIV) Transmission (PPTCT) services in the year 2002 aiming to

prevent the perinatal transmission of HIV. Twelve high prevalence States (Andhra Pradesh & Telangana, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal) require 88% of all PPTCT needs in the country.¹¹ Major detriment for success of these programmes are the percentage of pregnant woman in that area attending antenatal clinics and current statistics show that only about 70% of estimated pregnant women in India are enrolled into antenatal care (ANC) clinics and less than 60% of all deliveries are institutional deliveries and less than 30% women know their HIV status.

To reduce MTCT, ARV prophylaxis guidelines from January, 2014 recommends initiation of lifelong ART to all positive pregnant females irrespective of gestation period, CD4 count and WHO clinical Staging. Additionally their newborn babies are initiated on 6 weeks of Syrup Nevirapine immediately after birth that may be extended to 12 weeks if the duration of the ART to mother was less than 24 weeks.¹⁰

Material and Methods

Type of study: Cross sectional Study

Place of Study: PPTCT Centre, Department of Obstetrics and Gynaecology, MLN Medical College, Allahabad.

Sample collection: Done from Pregnant mothers visiting 'PPTCT (Prevention of Parent To Child Transmission of HIV/AIDS) Centre' of Department of Obstetrics and Gynaecology. The department had been having 100% referral of antenatal women attending the ANC clinic to the PPTCT centre since its inception in September 2005. After registration all the pregnant women were routinely advised to undergo HIV screening after pretest counseling and informed consent done by trained counselors. HIV tests were carried out as per the NACO and WHO guidelines that included serum antibody detection in routine hours and whole blood finger prick test in emergency patients with confirmation by serum antibody detection tests in cases of positivity.¹² Study also included pretested HIV positive antenatal women, referred from outside. An annual comparative data of different demographic variables, delivery trends and breast feeding patterns was made after reviewing statistics of last 5 years.

Inclusion criteria: All the patients undergoing counselling and testing of HIV in the PPTCT Centre.

Exclusion criteria: The patients who did not give consent for testing.

Statistical Analysis: P-value calculations.

OBSERVATION:-

Table 1,2-Between January 2011 to December 2015. A total of 12857 pregnant women were counselled, out of which 12129 (94.33%) opted for testing. Total number of ANC's counseled gradually increased with increasing years. Similarly, percentage of women opted for testing also increased from 83.45% to 97.73%.

Average seropositivity in total study population was 0.53% (65/12129) during the study period of five years. In year wise review, the seropositivity in antenatal women was 0.31% in 2011 with a sharp rise up to 0.9% in 2012 followed by gradual decline in 2013 (0.48%) and 2014(0.38%) with again rise up to 0.64% in 2015, though the difference

was not statistically significant (p value- 0.2436). Table 1 also shows distribution of seropositivity in different age groups.

Among seropositive women, there was high significant difference of occurrence in different age groups (p value = 0.00017) with majority (46.15%) were between 25-29years, followed by age group 20-24years (30.76%), followed by age group >30years (21.48%) with their age predispositions amongst total tested ANC's being 0.24%; 0.16% and 0.11% respectively. Seroprevalence was lowest (1.5%) in adolescents with a very low (0.008%) age predisposition for positivity. Horizontal review of data in different years in table 1 shows that seropositivity was detected amongst pregnant women of 20-24years and 30-34 years age only in year 2011. But, with increasing years seropositivity encompassed all the age groups excepting adolescents where only one positivity was detected in year 2013. Overall age specific prevalence of seropositivity in different age groups showed a peak in reproductive years that is 20-24 years(0.88%) & 25-29 years (0.80%) and nadir (0.05%) in adolescent pregnancies.

Table 1 Year and age wise distribution of ANC counseled and tested

Distribution of ANC Counseled, Tested, Seropositive				Age specific distribution of seropositive ANC									
Year (January – December)	Total ANC counseled	Total ANC tested No. (%)	Total HIV positives No. (%)	15-19 years		20-24 years		25-29 years		30-34 years		>35 years	
				Total tested (No)	Total seropositive No (%)	Total tested (No)	Total seropositive No (%)	Total tested (No)	Total seropositive No (%)	Total tested (No)	Total seropositive No (%)	Total tested (No)	Total seropositive No (%)
2011	1910	1594 (83.45)	5(0.31)	186	0	283	2 (0.70)	495	0	377	3 (0.79)	253	0
2012	2167	2107 (97.23)	19(0.90)	272	0	393	6 (1.5)	452	10 (2.2)	647	3 (0.46)	343	0
2013	2766	2463 (81.01)	12(0.48)	426	1(0.23)	422	4 (0.94)	804	6 (0.74)	496	0	315	1(0.31)
2014	3668	3633 (99.86)	14(0.38)	618	0	713	1(0.14)	987	10(1.07)	769	2(0.26)	546	1(0.18)
2015	2346	2332 (97.73)	15(0.64)	462	0	452	7(1.5)	991	4(0.40)	208	2(0.96)	219	2(0.91)
Total	12857	12129(94.33)	65(0.53)	1964	1(0.05)	2263	20(0.88)	3729	30(0.80)	2497	10(0.40)	1676	4(0.23)
P value	0.2436 (Not Significant)			0.00017 (Significant)									

Table 2:- Distribution and Predispositions of Demographic Variables

Demographic characteristic (age, parity, education)	Characteristic subgroup	Distribution of ANCs tested total=12129 (n) (%)	Distribution of seropositive ANCs total=65 (n) (%)	Demographic variable (Age, Education, Parity) specific prevalence of HIV Cases Positive Cases/Total no. of ANCs tested in that group	Demographic predisposition of HIV cases Positive Cases/total ANCs tested
Age (in years)	<20	1964 (16.2)	1 (1.5)	0.05	0.008
	20-24	2263 (18.65)	20 (30.76)	0.88	0.16
	25-29	3729 (30.74)	30 (46.15)	0.80	0.24
	30-34	2497 (20.58)	10 (15.38)	0.40	0.08
	>35	1676 (13.81)	4 (6.1)	0.23	0.03
Education	Illiterate	3760 (31.0)	31 (47.69)	0.82	0.25
	Primary	3748 (30.90)	20 (8)	0.53	0.16
	Secondary	2623 (21.62)	8 (12.3)	0.30	0.06
	Graduate	1998 (16.47)	6 (9.2)	0.30	0.04
Parity	Primigravidae	5240 (43.20)	25 (38.46)	0.47	0.20
	Multigravidae	6889 (56.79)	40 (61.53)	0.58	0.32

Table 2,3:-On analyzing the educational statistics seropositivity was maximum (47.69%) in illiterate women and minimum (9.2%) in graduates that was statistically significant (p value= 0.018). Year wise analysis in relation to education showed continuous year wise rise of positivity from 0.62% in 2011 to 1.5% in 2015 amongst illiterate women and variable data in other educational groups.

On analyzing the gravidity, though statistically insignificant (p value= 0.2590) multigravidas were more (61.53%) than primigravidas (38.53%) amongst seropositive women with higher overall positivity rates of 0.52% vs. 0.38%. Year wise positivity increased continuously amongst multigravidas from 0.41% in 2011 to 0.66% in 2015 with slight variable results in primigravidas that increased from 0.15% in 2011 to 0.62% in 2015 but showed a slight fall in year 2014.

Table 3 :- Year wise Distribution based on Educational status and parity

Year	Illiterate	HIV positivity Rate		Primary education	HIV positivity Rate		Secondary education	HIV positivity Rate		Graduate	HIV positivity Rate		P value
		No	%		No	%		No	%		No	%	
2011	638	4	0.62	569	1	0.17	204	0	0	183	0	0	0.0184 (significant)
2012	860	11	1.27	526	7	1.3	329	0	0	392	1	0.25	
2013	835	4	0.47	826	3	0.36	386	3	0.77	416	2	0.48	
2014	1050	6	0.57	1127	7	0.62	733	1	0.13	723	0	0	
2015	377	6	1.5	700	2	0.28	971	4	0.41	284	3	1.05	
Total	3760	31	0.82	3748	20	0.53	2623	8	0.30	1998	6	0.30	

PARITY							
Year	Primigravidae (n=5240)	HIV positives (n=25)		Multigravidae (n=6889)	HIV positives (n=40)		P value
		No.	%		No.	%	
2011	641	1	0.15	953	4	0.41	
2012	845	4	0.47	1262	6	0.47	
2013	997	5	0.50	1466	7	0.47	
2014	1637	3	0.18	1996	11	0.55	
2015	1120	7	0.62	1212	8	0.66	
Total	5240	20	0.38	6889	36	0.52	0.2590 (Not Significant)
P value	0.1607 (Not Significant)			0.4570 (Not Significant)			

Table 4:- There were total 162 seropositive ANC's registered at our centre including women tested at our centre and referred from outside. ART coverage was only 40% in year 2011 that significantly increased (p value= 0.0005) up to 92% in year 2015. Out of 162 seropositive

women; 18 (11.1%) were either lost to follow up or were transferred, 20 (13.8%) had either MTP or spontaneous abortion; 12 (8.33%) had stillbirths and 112 (77.7%) had live births with two twin deliveries.

Table 4 :- Obstetrical outcome

Year	No. of Seropositive ANC's tested at			ANCs on ART		LFU/ transferr ed	Obstetrics Outcomes N=144						
	Our centre	Outside	Total	N	%		No.	Live		Stillbirth		Abortion	
								No.	%	No.	%	No.	%
2011	5	25	30	12	40	6	19	79.16	1	4.16	4	16.66	
2012	19	17	36	20	55	5	25+1	80.64	3	9.67	3	9.67	
2013	12	25	37	30	81	4	24+1	72.72	1	3.03	8	24.24	
2014	14	19	33	29	87	2	22	70.96	5	16.12	4	12.9	
2015	15	11	26	24	92	1	22	88	2	8	1	4	
Total	65	97	162	115	71	18 (11.1%)	112+2	77.7	12	8.33	20	13.8	
P value				0.00055 (Significant)									

Table 5 :- Out of these 114 neonates, 19 (16.66%) expired after delivery. Nevirapine suspension was given only in 78.9% neonates in year 2011 but gradually the coverage increased to 100% in year 2015. The trend of feeding showed more inclination towards replacement

feeding initially with 57.89% in year 2011 but with passing years it shifted to breastfeeding with 77.27% coverage with significant variation (p value=0.0106)

Table 5 :- Neonatal survey

Year	No. of livebirths	Received NVP		Breastfeeding		Replacement feeding		Neonatal deaths	
		No.	%	No.	%	No.	%	No.	%
2011	19	15	78.9	8	42.1	11	57.89	4	21.05
2012	25+1	24	92	8	30.76	17	65.38	2	7.69
2013	24+1	22+1	92	17+1	72	7	28	8	32
2014	22	21	95.45	14	63.63	8	38.09	4	18.18
2015	22	22	100	17	77.27	6	27.27	1	4.54
Total	114	105	92.1	65	57	49	42.98	19	16.66
P value				0.0106 (Significant)					

Discussion

Yearwise increase in number of ANC's counseled and percentage of women opting to get tested depicts increasingly effective counseling and awareness amongst pregnant women. Though the average HIV prevalence of 0.53% amongst pregnant women, obtained in this study is higher than the documented average HIV prevalence of 0.35% among pregnant women in India and documented prevalence of 0.21% in this part of north India i.e. Uttar Pradesh, our results are comparable to the results obtained by Ruchika Garg et al in 2016 in a similar kind of study done in a referral health center of north India over 10 years where the prevalence of HIV seropositivity amongst pregnant women was 0.58%^{13,14, 15,16}. The reason for this difference between NACO data and our results is explained by the fact that ours is a tertiary referral hospital based survey while the NACO uses sentinel surveillance system. Literature shows varied prevalence rates in different years in different parts of the country like 0.88% by Gupta et al in 2007 in a tertiary hospital of north India; 0.70% by Ashatagi et al in 2007 in Belgaum; 0.41% by Giri et al in 2011 in rural pregnant women of south India and 0.88% by Sarkate et al in 2012 in Mumbai.^{17,18,19}

Sporadic increased positivity in different years needs consideration as it may be bothersome if it is a result of increasing new infections or might be relaxing if it shows increased detection rates influenced by increased ANC registrations, effectively increasing counseling-testing and improved awareness among women putting them in doubts regarding their HIV status and forcing them for deliberate voluntary visit to HIV counseling and testing centers.

Higher HIV prevalence among young reproductive population shows maximum risk and exposure to the infection in this and younger age

groups and thus they can be utilized as the target population for more influential counseling for testing and more importantly changing their risky behaviors.

National statistics had shown 0.04% positivity in 15-19 year and 0.18% in 20-24 year age group in India.²⁰ Seropositivity amongst adolescent pregnancies were lowest in our study that differ from the observations by Saroj et al in the districts nearby Agra showing high positivity rates of 1.55% and Gupta et al in the areas nearby Delhi showing 1.48% positivity. These differences are attributed to different sociodemographic sexual behavior and awareness in western and eastern areas of Uttar Pradesh.

Maximum positivity during reproductive years is due to detection while getting tested as routine during pregnancy and low positivity amongst adolescent pregnancies might be due to non-detection during window period of recent HIV infections. Eventhough low, the positivity amongst adolescents emphasize more vigorous and focused approach to them for counseling to practice safe sex and importance of early HIV screening as this is the lot which is going to age and produce children in the future.

As demonstrated in this study, decreasing HIV infections with increasing education had been almost universally shown by all the studies. Illiteracy is continuously putting women at risk for encountering HIV infections, whereas educated women are having variable and almost static awareness on HIV. Higher predisposition of HIV infections with lower education levels and sporadic positivity in higher educational groups signify the importance of discreet understanding regarding HIV transmission and precautions in all women irrespective of their educational status.

Multigravidas have higher HIV positivity risk as also shown by Saroj et al; 61.8% prevalence amongst all seroreactive women. The increased risk is due to tendency of having more risk of heterosexual exposure as well as more chances of detection during pregnancy screening.

Differing percentages of ART coverage were according to differing recommendations to start ART in HIV positive pregnant women in different years. Initially ART initiation during pregnancy was recommended only selectively depending on the CD-4 counts, but WHO guidelines 2013 and NACO, 2013 recommended triple drug ART regimen [tenofovir (TDF 300 mg)+ lamivudine (3TC, 300 mg)+ efavirenz (EFV600 mg)] for all pregnant and breastfeeding women irrespective of their CD 4 count and then for life time to reduce MTCT to less than 5%.^{2,6}

High percentages of abortions are due to their own complications or due to their preferred choice of getting aborted after knowing HIV status and possible complications in neonates. Women who opted to continue their pregnancy had comparative live birth rates, still births and neonatal deaths to the study done by Shiva Gautam et al in 2016 in HIV positive pregnant women at Ahmedabad, who got live birth rate of 82% and neonatal deaths of 14%.²³ The rate of still birth documented for non- high risk pregnant population is 3.1-6.2 per thousand births that shows comparatively high rates of stillbirths in HIV positive pregnant women.²³

Increasing number of babies who received nevirapine (NVP) and breastfeed is the outcome of increasingly effective PPTCT services in successive years reflecting better counseling, care and compliance. This trend of improvements had also been shown by the study done by Prameela et al in 2015 at Mysore, where the data improved to 97.8% neonates receiving nevirapine and 65.2% women preferring breastfeeding by year 2015.²⁴

Conclusion

Multipronged approach including literacy, education regarding understandability of HIV infection, emphasizing knowledge about knowledge about the self-status, awareness regarding transmission to the baby and its protection and sensitization to various government and government-aided programs and their uptake by pregnant women will definitely help in reducing new infections.

Better counseling provided by PPTCT centre and ICTC centre in our hospital and initiation of ART irrespective of CD4 count and continuing it lifelong (after NACO 2013) are the backbone of improved perinatal outcome with reduced perinatal transmission and thus it should be emphasized.

However the scaling up of effective interventions for the prevention of HIV transmission from mother to child (PPTCT) is still limited in our country because of inadequate access to antenatal and postnatal services thus necessitating an integrated approach.

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