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Research Article

Ten years' trend of HIV seroprevalence among Indian pregnant women attending antenatal clinic at tertiary hospital in Dhule, Maharashtra, India

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ABSTRACT

Background: In India, HIV epidemic is in fourth decade and has the heterogeneity. The trend indicated HIV infection spreads from high risk behavior groups to general population. Maternal to foetal HIV transmission rate is found to vary from 20 to 25% in absence of any interventions. Newly infected persons contribute to the total number of persons living with HIV, they will progress to disease and death over the time and are a potential source of further infection. Maternal HIV status directly affects the perinatal transmission and hence the paediatric HIV cases. This transmission of HIV from mother to child can be prevented by appropriate measures. So this study is intended to identify ten years' trends in HIV seroprevalence among antenatal population at a tertiary hospital in Dhule, Maharashtra, India.

Methods: Retrospective study of ICTC evaluation of pregnant women attending antenatal clinic at obstetrics and gynaecology department of Shri Bhausaheb Hire Government Medical College in Dhule, Maharashtra, India. Blood samples were collected after informed consent and pre-test counseling. The samples were tested for HIV antibodies as per WHO and NACO guidelines. The data of ten years period from January 2004 to December 2013 was evaluated to identify the trends of HIV seroprevalence among pregnant women attending antenatal clinic.

Results: 309 pregnant women were HIV positive out of 70453 tested from 84608 ANC women during the study period. The overall prevalence for the 10 years was 0.44%. HIV prevalence had reduced from 0.89% in 2004 to 0.17% in 2013. Maximum HIV positive women i.e. 63.2% were 18 to 23 years old, primigravida (53.8%) and from rural area (58.5%). Mother to foetal transmission was noted 10 babies were detected to be HIV positive while 223 were HIV negative. 10 HIV positive mothers decided for MTP, while in 36 neonatal death was noted.

Conclusions: Declining HIV seroprevalence rate is noted among pregnant women attending the antenatal clinics from 2004 to 2013. The effective implementation of prevention of parent to child transmission of HIV/AIDS (PPTCT) programmed is helping in control of the spread of HIV.

Keywords: HIV, Heterogeneity, Perinatal, Seroprevalence, Dhule, Antenatal, PPTCT

INTRODUCTION

In India, Human Immunodeficiency Virus (HIV) epidemic now is in fourth decade and has the heterogeneity. The epidemic pattern had shifted from highest risk groups to bridge population and then to general population. The trend indicated HIV infection spreads from high risk behaviour groups to general population. The national adult HIV prevalence has steadily declined from 0.49% in 2001 to 0.27% for year 2011.[1]

HIV had existed from many years. Number of people living with HIV continues to grow along with the number

of deaths due to acquired immunodeficiency syndrome (AIDS). Trends show that the number of people acquiring HIV infection and dying from HIV related causes continue to increase in some parts of world.1

Women represent about half of all people living with HIV worldwide and HIV is the leading cause of death among women in reproductive age.[2]

Maternal to fetal HIV transmission rate found to vary from 20 to 25% in absence of any interventions.[1] HIV infected infants and children progress rapidly to AIDS. This transmission of HIV from mother to child can be prevented by appropriate measures.

In India, prevention of parent to child transmission (PPTCT) of HIV program was started under National AIDS control program (NACP) in year 2002. The primary aim of PPTCT was HIV testing of every pregnant women and eliminate transmission of HIV from mother to child. PPTCT intervention has gone through transition to multi-drug antiretroviral (ARV) prophylaxis and now to lifelong antiretroviral treatment (ART) for all pregnant and breast feeding women living with HIV. All Pregnant women get HIV diagnostic, prevention, care and treatment services under PPTCT.[1]

Data from antenatal clinics indicated rising HIV prevalence among women, which in turn contribute to increasing HIV infection in children. An integrated Counselling and Testing centers service (ICTCs) of HIV is critical for achievement of prevention, care and treatment objectives of the National AIDS control programme.

HIV testing services are provided to pregnant women for prevention of parent to child transmission. Overall the ICTCs act as care and support services for those who need programme for prevention of parent to child transmission of HIV. The PPTCT programme involves counselling and testing of pregnant women, detection of positive pregnant women and the administration of ARV prophylaxis to HIV positive pregnant women and their infants, to prevent the mother to child transmission of HIV.

Though India is categorized as low HIV prevalence nation, it has the third largest number of people living with HIV/AIDS (PLWHA). There are estimated 2.39 million people living with HIV/AIDS of which, 39% are women and 3.5% are children with an adult prevalence of 0.31% in 2009.[3]

The NACO sentinel surveillance data for the state of Maharashtra, India reported HIV prevalence of 0.25% in 2003, 0.38% in 2004 and 0.25% in 2005.[4,5]

A study by Gupta et al noted an increasing trend of HIV seroprevalence of 0.88% from 2003 to 2006 among pregnant women in North India.[6] So the present study was undertaken to evaluate the 10 years trend of HIV seroprevalence from 2004 to 2013 among pregnant women attending antenatal clinic in tertiary care government hospital.

METHODS

This descriptive study was conducted in department of obstetrics and gynaecology of Shri Bhausaheb Hire Government Medical College and Hospital in Dhule, Maharashtra, India. Study design was retrospective in nature by collecting data of the ante natal care clinics of the hospital. The data was collected for 10 years from Jan 2004 to December 2013 from ANC register and hospital registration system. . All pregnant women attending the antenatal clinic for consultation and those coming directly for delivery in the hospital were taken into consideration. Altogether 98640 mothers had enrolled in the hospital during the period of 2004 to 2013. Routine offer of HIV counseling and testing to all pregnant women enrolled into the antenatal care was done at Standalone ICTC in the hospital. Samples were processed as per NACO guidelines.[7]

Testing of HIV antibodies was done as per the guidelines laid down by the world health organization (WHO Testing strategy III) by three ELISA/Rapid/Supplemental tests. The first test for antibodies to HIV (1 and 2) was by combaids-RS advantage –ST (Span, Arkay Pvt Ltd, Surat, Gujrat, India), Second repeat test by AIDSCAN Trispot test (Bhat Bio-Tech, Karnataka, India) the repeat reactive samples were tested by SD Bioline immune-chromatographic test (SD Bio standard Diag. Pvt Ltd, Haryana, India). The samples which tested positive with all above tests were considered to be positive. Post-test counselling was done by same counsellor who did pretest counselling. Study was approved by Institutional ethical committee. Quantitative analysis of the data was done. Data was presented in frequency and percentage distribution in tabular and graphical form.

RESULTS

A total of 98640 new antenatal women registered for period of 10 years from 2004 to 2013 were included in this study. Out of these 84608 were ready for counselling and 70453 willingly had their HIV testing. 71.4% had their HIV testing done under ICTC. It was noted that 309 ANC mothers were HIV positive during the period thus HIV prevalence rate was 0.44%.

Prevalence of HIV in antenatal women was highest from 2004 to 2006 i.e. 0.89%, 0.85% and 0.86% respectively. Further a decrease in prevalence was noted from 2007 i.e. from 0.69% till it was 0.17% in 2013. The numbers of women tested were 3491, 3899, 6618, 5906, 5959, 7407, 9102, 8701, 9757 and 9613 in the year 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013 respectively. The number of women tested positive were 31, 33, 57, 41, 37, 33, 29, 16, 16 and 16 in consecutive

years. Therefore HIV seroprevalence was 0.88%, 0.85%, 0.86%, 0.69%, 0.62%, 0.44%, 0.31%, 0.18%, 0.16% and 0.17% in 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013 respectively, which indicates a decreasing trend in prevalence of HIV/AIDS (Table 1).

Table 1: Year wise HIV testing of ANC patients.

YEAR	ANC registration	ANC counselling	ANC testing	ANC positive	ANC HIV positive %
2004	7818	6135	3491	31	0.89
2005	8459	7196	3899	33	0.85
2006	9326	8505	6618	57	0.86
2007	10374	8104	5906	41	0.69
2008	10070	6719	5959	37	0.62
2009	10336	7856	7407	33	0.45
2010	9918	9850	9102	29	0.32
2011	10361	9348	8701	16	0.18
2012	10888	10430	9757	16	0.16
2013	11090	10465	9613	16	0.17
Total	**98,640**	**84608**	**70453**	**309**	**0.44**

In 2004, lower percentage of women i.e 78.47% had opted for HIV counselling which later raised in subsequent years to be above 90% and in 2013, 94.36% were counselled. HIV testing in ANC mothers was had also increased from 44.65% in 2004 to 86.68% in 2013. Also decline in the percentage of HIV positivity status in tested pregnant women attending ANC clinic in noted from 2004 till 2013 (Figure 1).

Younger women i.e. within 18 to 23 years were predominantly i.e. 63.2% HIV positive out of total 309. There was decreasing percentage of HIV positive status among older age groups so that only 0.6% women were HIV positive above 34 years age. The higher younger age group women trend was through the period from 2004 to 2013 (Table 2).

Of 309 women, 53.8% HIV positive women were primigravida and 46.2% were multigravida. There was dominant number of HIV positive primigravida women from 2004 to 2012 except for 2013 where HIV positive status was predominant among multigravida (Table 3).

Within 309 HIV positive women, 58.5 % were from rural region and 41.5 % were from urban region. Educational status of 36.3% HIV positive women was up to secondary level and 31.3% had primary education only, while 21.7% were illiterate out of total 309 ANC women (Table 4).

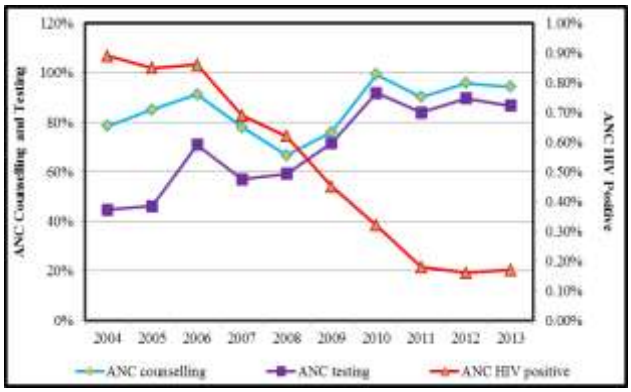

Figure 1: Percentage distribution of counselling and testing of ANC women and HIV positivity.

Table 2: Age group of HIV positive ANC patients in each year.

Age group (years)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total No. (%)
18-23	20	25	39	25	22	17	18	9	11	9	195 (63.2%)
24-28	8	5	16	12	9	14	8	4	5	4	85 (27.5%)
29-34	2	3	2	4	6	2	3	3	0	2	27 (8.7%)
>34	1	0	0	0	0	0	0	0	0	1	2 (0.6%)
Total	31	33	57	41	37	33	29	16	16	16	309

Table 3: Gravida status of HIV positive ANC patients in each year.

Gravida	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total No. (%)
Primigravida	20	19	31	21	12	17	21	9	10	6	166 (53.8%)
Multigravida	11	14	26	20	25	16	8	7	6	10	143 (46.2%)
Total	31	33	57	41	37	33	29	16	16	16	309

Table 4: Residential and educational status of HIV positive ANC patients in each year.

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total No. (%)
Residence	Rural	23	19	19	32	24	19	21	9	10	5	181(58.5%)
	Urban	8	14	38	9	13	14	8	7	6	11	128 (41.5%)
Educational Status	Illiterate	9	8	12	8	8	9	7	3	1	2	67 (21.7%)
	Primary	7	16	19	16	13	12	12	6	9	2	112 (36.3%)
	Secondary	10	5	18	14	11	9	8	6	6	10	97 (31.4%)
	Graduation	5	4	8	3	5	3	2	1	0	2	33 (10.6%)

Table 5: Testing result of children and outcome of HIV positive mother in each year.

Baby	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
HIV positive	3	2	2	1	1	0	1	0	0	0	10
HIV negative	21	18	48	34	27	24	18	9	12	12	223
Still birth	4	6	3	2	1	3	5	3	2	1	30
Death	3	6	4	3	5	6	4	3	2	0	36
MTP	0	1	0	1	3	0	1	1	0	3	10

With appropriate interventions according to PPTCT guidelines there were 269 live births out of 309 HIV positive mothers revealed during ANC testing. Maternal to foetal HIV transmission was noted in 10 babies testing HIV positive at the end of 18 months while 223 tested negative for HIV. There were 35 neonatal deaths to the HIV positive mothers during the 10 years period. Intra uterine foetal deaths were noted in 30 while 10 HIV positive women had underwent medical termination of pregnancy (Table 5).

DISCUSSION

The present retrospective study is 10 years trend of HIV seroprevalence from 2004 to 2013 among women attending antenatal clinic of tertiary care hospital in Dhule, Maharashtra, India.

HIV prevalence among adults (ages 15-49) in India was estimated at 0.3% in 2009, with higher rates in the south and southeast regions.[8] India has the greatest number of people living with HIV/AIDS in Asia-an estimated 2.4 million as of 2009.[9] It is estimated that there are between 22,000 and 61,000 HIV pregnant women living with HIV in India. Though the WHO report shows the percentage of pregnant women tested for HIV increased from 2% in 2005 to 23% in 2010, testing coverage was still low till 2010.[10]

Mother to child transmission is by far the most significant route of transmission of HIV infection in children below the age of 15 years.[11] In India 5% of HIV infection are attributable to parent to child transmission. The transmission occurs from mother to child during pregnancy, labour and delivery or breast feeding. It is estimated that out of 27 million pregnancies every year, nearly 49000 occur in HIV positive mothers

Perinatal transmission accounts for 4% of the total HIV infection load in India.[12] The project "Prevention of Parent to Child Transmission of HIV /AIDS" (PPTCT) was initiated as per NACO guidelines due to high prevalence of HIV/AIDS. The best practices in PPTCT in India is the outreach approach, used by the ICTC to ensure that HIV positive women who are tested are followed up before, during and after an institutional delivery, and provided with anti-retroviral prophylaxis.[13]

According to 2003 statistics out of 35 states of India , six states i.e four southern (AP, Tamil Nadu, Maharashtra, And Karnataka) and two in north eastern India (Manipal, Nagaland) had generalized epidemics with HIV prevalence rated above 1% in pregnant women .We started this study from January 2004 and completed in December 2013. IN the beginning of this study prevalence of HIV at this institute was 0.88 % and it decreased upt o 0.16 % in December 2014.

HIV sentinel surveillance (HSS), data from the pregnant women at Antenatal clinics shows considerable differences continue to exist in the prevalence rates across different geographical regions of India. In Maharashtra, Dhule district is one of 7, where ANC HIV prevalence remained at 1% or more during at least three out of six rounds of HSS from 2004 to 2011, including the last round of HSS 2010-11. For the first time in HSS 2010-11, none of the states have shown HIV prevalence of 1% or more among ANC clinic attendees.[14]

Giri et al. in their study in Maharashtra have seen a significant decline of 0.75% (2008) to 0.22% (2011) in ANC attendees. Pregnant women from the rural area who accepted HIV testing after counselling and attended the ANC clinic, only 0.41% were HIV positive.[15] While a study by Gupta et al. done in North India revealed that the prevalence of HIV was 0.88%.[6] Ashtagi GS et al. in their study observed that the prevalence of HIV among pregnant women attending the ANC clinic was 0.70%, majority 63.83% were multigravida and 36.17% were primigravida.[16]

The studies conducted by Joshi et al and Sinha et al the acceptance of HIV testing was 83% and 79% respectively, the finding in our study of.[17,18] In India, the HIV prevalence among ANC attendees has reduced gradually from about 0.9% in 2003-2004 to 0.35% in 2012-2013.[19]

Young women are more vulnerable to the HIV epidemic than men. The virus is more easily passed to young women because of their immature vaginal tracts and easily torn tissues; meanwhile, gender inequities in many countries prevent young women from negotiating safer sexual practices including condom use.[20]

To decrease prevalence of HIV-AIDS, it is quite important to decrease social stigma, social myths, increase awareness among society starting from teenagers and college students regarding safe sex practices and self-care. A good trained staff, proper counselling regarding disease, ANC care and institutional delivery is must.

The steady dip in prevalence rate could be a result of effective awareness programms and education regarding HIV especially in young adults after implementation of National AIDS Control Programme (NACP-III, 2007-2012). The overall goal of NACP- III was to halt and reverse the epidemic in India over the five years by integrating programmes for prevention, care, support and treatment. Intervention programmes such as HIV awareness and safe sex education are usually focused on young adults and our data showed a favorable impact of such programmes.

Information, education and communication and mainstreaming strategic communication plays a vital role in addressing the whole spectrum of the HIV programme from prevention, treatment to care and support. It is integrated with all programme components with the objective of HIV prevention and increasing utilization of services.[3]

The key strategies include

- Enhancing awareness and knowledge levels among general population to promote safe behavior, focusing specially on youth and women
- Motivating and sustaining behavior change in a cross-section of identified population at risk, including high risk groups and bridge populations
- Generating demand for services; and
- Strengthening the enabling environment by facilitating appropriate changes in societal norms that reinforce positive attitudes, beliefs and practices to address stigma and discrimination.[3]

CONCLUSIONS

The Prevention of Parent to Child Transmission of HIV/AIDS (PPTCT) programme implemented through integrated counselling and testing centres II (ICTCs) is effective in fulfilling its objective. The National AIDS control organisation through the family welfare department and the people's initiative are working in the predefined strategic approach to curtail the epidemic. This comprehensive, family centred clinical and supportive service has empowered the pregnant woman to take her own decisions and prevent the transmission of HIV to her infant by continuous information, education and counselling. If the system is followed properly, 100% counselling and testing can be achieved through ICT C. So the declining seroprevalence rate of HIV among the pregnant women indirectly indicates that prevention campaigns are working, condom usage and safe sexual behaviour has increased.

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REFERENCES

1. Park K. Park's textbook of preventive and social medicine. 23rd Edition. Banarsidas Bhanot Publishers, India; 2015:343-355.
2. U.S. global health policy, The Global HIV/AIDS Epidemic Fact sheet; 2012.
3. Annual Report 2010-2011. Government of India: National AIDS control organization (NACO), 2007.

Available from: http://www.nacoonline.org. Accessed 2007.
4. National AIDS control organization (NACO), Government of India Annual Report. 2002-2004 http://www.nacoonline.org. Accessed 2004.
5. HIV/AIDS epidemiological Surveillance and Estimation report for the year NACO, April 2006 http://www.nacoonline.org. Accessed 2006.
6. Gupta S, Gupta R, Singh S. Seroprevalence of HIV in pregnant women in North India: a tertiary care hospital based study. BMC Infectious Diseases. 2007:7:133.
7. Baveja UK. HIV Antibody testing with special reference to HIV-1. In HIV testing manual, laboratory diagnosis, biosafety and quality control. National AIDS Control Organisation: New Delhi; 45-67.
8. Government of India, Ministry of health and family welfare, United Nations general assembly special session country report: India; 2010.
9. Joint United Nations programme on HIV/AIDS, Report on the Global AIDS Epidemic; 2010.
10. World Health Organization, Joint United Nations Programme on HIV/AIDS, United Nations Children's Fund, Towards Universal Access: Scaling up Priority HIV/AIDS Interventions in the Health Sector. Progress report; 2011.
11. NACO Guidelines for the prevention of mother to child transmission of HIV available at http:// www.naco.nic.in/pmtct.html.
12. NACO Guidelines for the prevention of mother to child transmission of HIV http://www.naco.nic.in/pmtct.html.
13. WWW. UNICEF.org / India/ -HIV_aids.
14. HIV sentinel Surveillance 2010-11: a technical breif. National AIDS Control Organization (NACO), Government of India; 2012.
15. Giri PA, Bangal VB, Phalke DB. Prevalence of HIV among rural pregnant women attending antenatal clinics at pravara rural hospital, Loni, Maharashtra, India. International Journal of Health and Allied Sciences, 2012;1(1):13-15.
16. Ashatagi GS, Metgud CS, Walvekar PR, Naik VA. Prevalence of HIV among rural pregnant women attending PPTCT services at KLE Hospital, Belgaum. Al Ameen J Med Sci. 2011;4:45-8.
17. Joshi U, Kadri A, Bhojiya S. Prevention of parent to child transmission services and interventions-coverage and utilization: a cohort analysis in Gujarat, India. Indian J Sex Transm Dis. 2010;31:92-8.
18. Sinha A, Roy M. An ICMR task force study of prevention of parent to child transmission (PPTCT) service delivery in India. Indian J Public Health. 2008;52:200-2.
19. National AIDS control organization, department of AIDS control, and Ministry of health and family welfare; government of India, HIV Sentinel Surveillance 2012-13, A Technical Brief, http://www.naco.gov.in/upload/NACP%20-%20IV/HSS%20 TECHNICAL% 20BRIEF/HIV% 20Sentinel% 20Surveillance% 20Technical% 20Brief.pdf.
20. Joint United Nations Programme on HIV/AIDS (UNAIDS). 2006 Report on the Global AIDS Epidemic. Geneva, Switzerland: UNAIDS; 2006.

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