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Original Research Article

A study on prevalence of HIV infection among pregnant women attending antenatal clinic in a tertiary care hospital, Cuttack, India

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ABSTRACT

Background: Estimating the HIV seroprevalence in a low risk population such as pregnant women provide essential information for monitoring trend of HIV in general population and assist in prevention from mother to child transmission.
Methods: This study was conducted in SCB Medical College and Hospital, Cuttack, India between February 2014 to August 2014 which includes 1600 pregnant women who attended antenatal clinic. Blood sample collected after pretest counselling and informed consent, tested for HIV antibodies as per NACO guidelines. First antibody test was ELISA. If initial result was positive, it was confirmed by two other supplemental tests.
Results: Out of 1600 pregnant women, 8 found to be HIV-positive with seroprevalence rate of 0.5%. Majority of seropositive women (87.5%) were in the age group of 20-30 Years. 12.5% were in 15-19 years of age. The seroprevalence was high in less than 20 years of age (1.9%), with higher reproductive history (2.4%), and in illiterates (3%). Majority of HIV positive women's husband were migrants followed by truckers.
Conclusions: This study indicates a marginal increase in HIV prevalence in antenatal women even though our study population is not representative of whole India because it is a hospital based study with limited sample size. Mother to child transmission of HIV infection during pregnancy, delivery or breast feeding is responsible for more than 90% of pediatrics AIDS. Proper antenatal screening, interventions and preventive strategies during pregnancy, delivery and breastfeeding will bring down the mother to child transmission of HIV.

Keywords: HIV, Pregnant women, Seroprevalence

INTRODUCTION

The first AIDS case was detected in India in 1986 and since then HIV infection has been reported in all states and union territories. India launched a National AIDS Control Program in 1987. Six Indian states are considered to have high HIV-AIDS prevalence (>1%) are Manipur, Nagaland, Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra. The prevalence of HIV infection among pregnant women in India is coming down and current prevalence is around 0.7% but still India is the top 10 countries with high prevalence of HIV among pregnant women and third largest country in HIV epidemic.

HIV prevalence has been increasing among pregnant women in many regions within the country. Illiteracy, early marriage, violence and sexual abuse against women are the major socioeconomic reasons for their vulnerability to HIV infection.

The NACO Technical Estimate Report (2015) estimated that out of 29 million 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 which emphasizes screening for HIV in pregnant women and proper implementation of PPTCT programme.

Screening in antenatal women is important, because HIV can be transmitted from an infected mother to her child during pregnancy, labour and delivery and through breast feeding. Reported transmission rates ranged from 13-32% in industrialized countries and 25-48% in developing countries.[1] In breast feeding infants up to 20% may acquire HIV through breast feeding depending on the duration of breast feeding and other risk factors such as presence of mastitis, breast abscess and other local factors.[2] In children less than 15 years mother to child transmission is by far the most significant rout of transmission of HIV infection.[3] While heterosexual contact is the commonest mode of spread in this country, perinatal transmission accounts for 4% of total HIV infection load in India.[4] Mother to child transmission of HIV infection during pregnancy, delivery or breast feeding is responsible for more than 90% of pediatric AIDS. As the HIV positive women in India are increasing in number, consequently the number of babies acquiring infection in the prenatal period is also expected to increase if the infection goes undetected during pregnancy. There for screening at an early stage of pregnancy may help in prompt counseling and thereby reducing the risk of perinatal transmission.

Estimating the seroprevalence of HIV in a low risk population such as pregnant women provides essential information for an effective implementation of AIDS control program, to predict the seroprevalence in young children and also for the monitoring of HIV spread within our country.

Very few studies are available from Odisha showing the correct trend in HIV prevalence in antenatal population which led us to carry out this study at a tertiary care hospital in Odisha.

This study was done to determine the seroprevalence of HIV in pregnant women attending antenatal clinic at SCB Medical College and Hospital, Cuttack, Odisha, India.

METHODS

This is a retrospective hospital based descriptive study which included 1600 pregnant women who attended antenatal clinic of SCB Medical College and Hospital, Cuttack, India, from February 2014 to August 2014.

Pregnant women registered at antenatal clinic of this hospital were routinely advised to undergo HIV screening. Blood sample was collected after pretest counseling and informed consent. The sample was tested for HIV antibodies as per NACO guidelines. Usually the first antibody test was ELISA. If the initial result is positive, it is confirmed using two other supplemental tests. After the HIV test result is known, post test counseling is done and the result is declared. Confidentiality of data was maintained at all the time. Proper antenatal care is given. Hospital delivery is advised for them following universal precaution. Data about socio-demographic variables were collected as per predesigned questionnaires. Available data was analyzed in Microsoft Excel, percentage and proportion was calculated.

RESULTS

Numbers of pregnant women included in the study were 1600. Majority of pregnant women tested for HIV were in the age group of 20-30 years (93.5%) (Table 1). Among all the tested pregnant women, 4.2% were illiterate. Majority of the women were primigravida (70.2%) followed by second gravida (27.2%) and third gravid or more (2.6%) (Table 2).

Table 1: Age wise distribution of pregnant women tested for HIV.

Age (Years)	No. of Pregnant Women	%
<20	51	3.2
20-30	1496	93.5
>30	53	3.3
Total	1600	100

Table 2: Distribution of pregnant women tested for HIV according to different characteristics.

		Number	%
Literacy	Illiterate	67	4.2
	Primary education	669	41.8
	Secondary education	742	46.4
	higher education	122	7.6
	Total	1600	100
Locality	Rural	649	40.6
	Urban	951	59.4
	Total	1600	100
Gravida	G1	1123	70.2
	G2	435	27.2
	G3 and More	42	2.6
	Total	1600	100

Table 3: Age wise distribution of seropositive pregnant women.

Age (years)	No. of HIV-Positive Pregnant Women	% positivity
15-19	1	12.50%
20-30	7	87.50%
>30	0	0%
Total	8	100%

Out of 1600 pregnant women tested for HIV, 8 were found to be positive accounting for seroprevalence rate of 0.5%. Majority of the HIV positive pregnant women (87.5%) were in the age group of 20-30 years followed by 15- 19 years (12.5%). None of the pregnant women of more than 30 years of age was detected positive for HIV (Table 3 and Figure 1). The youngest seropositive pregnant woman was aged 18 years and the oldest was 28 years of age.

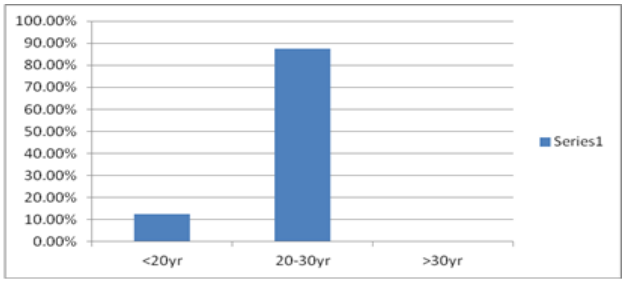

Figure 1: Age wise distribution of seropositive pregnant women.

Socio-demographic profile and the order of birth among seropositive pregnant women are depicted in Table 4.

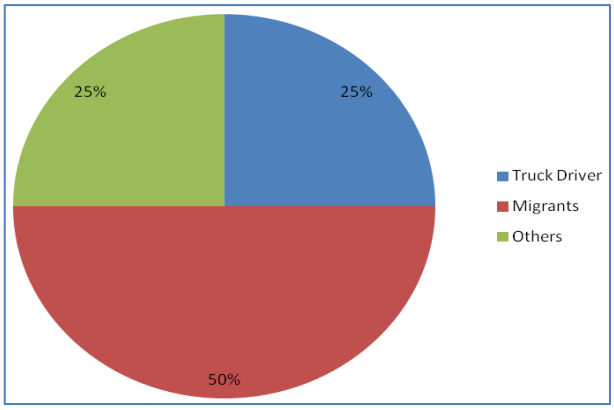

Figure 2: Distribution of seropositive pregnant women according to husband's occupation.

Education status among the seropositive pregnant women showed that 75% had secondary education and 25% were illiterate.

Among the seropositive pregnant women in the present study majority were second gravida (62.5%). Primigravida constitutes 25% and 12.5% belonged to higher order of birth.

Table 4: Socio-demographic factors of HIV positive pregnant women.

Characters	No.of pregnant women tested for HIV	No. of seropositive Pregnant Women	Percentage among seropositive pregnant women
Age			
15-19 years	51	1	12.5 %
20-30 years	1496	7	87.5%
>30 years	53	0	0.00%
Total	1600	8	100%
Literacy			
Illiterate	67	2	25%
Primary	669	0	0.00
Secondary	742	6	75%
Higher	122	0	0.00%
Total	1600	8	100%
Gravida			
G1	1123	2	25%
G2	435	5	62.5%
G3 or More	42	1	12.5%
Total	1600	8	100%
Locality			
Rural	649	5	62.5%
Urban	951	3	37.5%
Total	1600	8	100%

Seropositivity rate was higher among rural domiciles accounting for 62.5% compared to urban pregnant women.

Association of HIV with seropositive pregnant women husband's occupation shows majority of husbands of seropositive pregnant women are migrants (50%) followed by truckers (25%). All the seropositive women acquired the infection from their husbands (Figure 2).

DISCUSSION

India's socio-economic status, traditional social ills, cultural myths on sexuality and a huge population of

marginalized people make it extremely vulnerable to HIV/AIDS.[5] Since the first case reported in 1986 in Chennai in South India, HIV had spread rapidly from urban to rural areas and from high-risk groups to the general population.[6] In a country of over one billion population and 5.2 million HIV positive adults in the age group of 15-49 years, India is now faced with multiple HIV epidemics.[7] Heterosexual contact remains the major mode of transmission, thereby resulting in a growing population of HIV infected women (38% in the year 2005).[8] The parent to child transmission occurs in approximately 25% to 35% of HIV infection load in India.[4]

In the present study, 1600 pregnant women screened for HIV after pretest counseling and informed consent, prevalence rate of HIV was found to be 0.5%. The average HIV prevalence among women attending antenatal clinic in India is 0.48% as per NACO annual report 2010-2011. The result of our study is in agreement with national average HIV prevalence among antenatal women. Mandel et al from West Bengal observed the seroprevalence rate of 0.56% which is comparable to our study.[9] Similarly Studies done by Giri et al from Loni, Maharashtra; Devi et al from Renga Reddy district, AP and Patil et al, in Dhule, Maharashtra observed the prevalence of HIV as 0.41%, 0.45% and 0.44% respectively.[10-12]

Different authors have reported different seropositivity rates, ranging from 0.16 % to 0.88%. The figures vary widely between the various states of India. Parmeshwari et al from Namakkal District, Tamil Nadu; Kulkarni et al from Nanded, Maharashtra and Nagdeo et al (2007) from Hingna, Nagpur, Maharashtra reported seroprevalence rate of 0.70%, 76% and 0.72% respectively.[13-15]

Both the studies done by Gupta et al in North India and Sarkate et al in Maharashtra revealed the seroprevalence rate of 0.88% among pregnant women.[16,17]

Studies conducted by Khokar et al in a tertiary care hospital in Gujurat and Farhana Aljabri et al in a tertiary care hospital in South India observed the prevalence rate of HIV as 0.39% and 0.27% respectively.[18,19] Chaudhuri et al in Kolkata, WB reported low prevalence rate of o.17%.[20] Recently studies done by Preethkanwal et al in Punjab and Sayare et al in Akola, Maharashtra revealed prevalence rate of 1.03% showing higher prevalence in those areas.[21,22]

In our study out of total 8 HIV-positive pregnant women 7 (87.5%) were in the age group of 20 to 30 years, followed by 1 (12.5%) in the age group of less than 20 years. Giri et al found in their study of the total 50 HIV positive women17 (34%) were aged 18-23 years, 21 (42%) aged 24-28 years.[10]

Table 5: Depicting various study results of seroprevalence in pregnant women in India.

Study	Location	Seroprevalence
Mandel et al (2010)[9]	West Bengal	0.56%
Giri et al (2012)[10]	Loni, Maharashtra	0.41%
Devi et al (2012)[11]	Renga Reddy Dist, Andhra Pradesh	0.45%
Patil et al (2016)[12]	Maharashtra	0.44%
Parmeshwari et al (2009)[13]	Namakkal Dist., Tamil Nadu	0.70%
Kulkarni et al (2013)[14]	Nanded, Maharashtra	0.76%
Nagdeo et al (2007)[15]	Hingna, Nagpur, Maharashtra	0.72%
Gupta et al (2007)[16]	North India`	0.88%
Sarkate et al (2015)[17]	Maharashtra	0.88%
Khokar et al (2015)[18]	Gujurat	0.39%
Farhana Aljabri et al(2012)[19]	South India	0.27%
Chaudhury et al (2007)[20]	Kolkata, West Bengal	0.17%
Preetkanwal S et al (2016)[21]	Punjab	1.03%
Poonam C et al (2016)[22]	Akola, Maharashtra	1.03%
Present study (2014)	Cuttack, Odisha	0.50%

Similarly a recent study done by Sayare et al (2016), Akola, Maharashtra revealed that the maximum no of client tested positive were in the age group of 20-29 years comprising of 77.8%.[22] A study carried out in western India by Ukey et al in 2003-2004 reported that the most affected age group was 18-24 years.[23] It indicates the prevalence was high among newly sexually active pregnant women. Young women are more vulnerable to HIV epidemic and the virus is more easily passed to young women because of their immature vaginal tract and easily torn tissue; mean while gender inequities in many countries prevent safer sexual practice including condom use. In our study, we found only 53 women aged more than 30 years, who were tested for HIV over a period of 6 months. Though we could not find any HIV positive pregnant women in this age group, yet this number of pregnant women is very small to comment upon.

In our study among the seropositive women 25% were illiterate and 75 % were educated up to secondary level.

The number of illiterate women opting for screening during antenatal visit was low i.e. 67, out of which 2 were found to be positive accounting for 3% of illiterate women. Out of 742 literate women (up to secondary level) 6 were found positive (0.8%). The prevalence of the seropositivity among illiterate pregnant women was very high (3%) as compared to literate women (0.8%). The possible reasons of this high prevalence could be their ignorance about HIV infection and its mode of transmission, because they belong to low socioeconomic status whose husbands migrate to other states for work, contract the infection there and then infect their wives, low access to health care facility and higher rates promiscuous activities of their husbands.

Among HIV-positive pregnant women in the present study majority 5 (62.5%) were second gravid contrary to the study done by Patil et al where majority (53.83%) were primigravida and 46.2% were multigravida.[12] In our study it is possible that these women were infected in past but were detected during this study period, when HIV testing for these women were made available.

Ashtagi et al in their study observed that among the HIV-positive pregnant women attending ANC clinic 63.83% were multigravida and 36.17% were primigravida.[24] The spread of HIV occur in various ways including through the clients of sex workers and "bridge population" the most important of which appear to be long distance trucker and men who migrate between states for seasonal work, in construction and other industries.[25] In our study 50% seropositive pregnant women husbands were migrants and 25% seropositive pregnant women were truck driver.

Truckers and migrants may become infected while away and infect their wives when they return home. It is not socially appropriate for wife to discuss using condoms with her husband. She is not able to negotiate safe sex.

.This study was conducted over a period of 6 months including 1600 pregnant women. Among them 8 women were found to be positive for HIV infection accounting for seroprevalence rate of 0.5%. Majority were in the age group of 20-30 years. The seroprevalence was high in women in 15-19 years of age group (1 positive case among 51 tested i.e. 1.9%), with higher reproductive history and in illiterates. Majority of HIV positive women's' husbands were migrants followed by truckers.

The HIV seroprevalence rate among pregnant women in Odisha is 0.43% and the average seroprevalence among women attending antenatal clinic in India is 0.48%. (As per NACO Annual report 2010-2011. Our study indicates a marginal increase in HIV prevalence in antenatal women as compared to the data provided by NACO-2011) (0.43%) though similar seroprevalence of 0.56% was observed by Mandel et al in 2010 in our neighbour state of West Bengal.[9]

Even though our study population is not representative of whole India because of ours is a hospital based study with limited sample size. Rise in seroprevalence among pregnant women will directly transform into high prenatal transmission and reciprocal increase in pediatric AIDS cases. Mother to child transmission of HIV infection during pregnancy, delivery or breast feeding is responsible for more than 90% of paediatrics AIDS.

Appropriate antenatal screening, intervention and preventive strategies during pregnancy, delivery and breastfeeding will bring down the mother to child transmission of HIV. There for it may be recommended that every pregnant women should be screened for HIV after pretest counseling and obtaining informed consent, even though curative treatment is not available at present we can minimize, if not prevent the pediatric infection by early screening followed by short chemotherapy, safe delivery and modified infant feeding.

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