

Prevalence of HIV Infection among Pregnant Women attending Antenatal Clinics at a Tertiary Care Hospital in Hardoi, Uttar Pradesh: A Retrospective Observational Study

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ABSTRACT

Introduction: Determining the seroprevalence of Human Immunodeficiency Virus (HIV) in pregnant women offers essential data for monitoring the trend of HIV and assists in prevention from mother-to-child transmission.

Aim: To determine the prevalence of HIV infection among pregnant women.

Materials and Methods: A retrospective observational study was conducted at Autonomous State Medical College, Hardoi, Uttar Pradesh, India from July 2016 to June 2019. A total of 6,974 pregnant females were referred to the antenatal clinic during the study period, and all were included in this study. HIV antibodies were tested using the three ELISA/Rapid/Supplemental tests protocol. A woman was identified as HIV infected if tested positive on more than two HIV ELISA tests. The data were entered into MS Excel and analysed using Statistical

Package for the Social Sciences (SPSS) version 22.0. A Chi-square test was employed to assess the association between the variables.

Results: Out of 6,974 females, a total of 32 (0.46%) pregnant females were found to be seropositive (13 patients from July 2016 to June 2017, 10 patients from July 2017 to June 2018, and 9 patients from July 2018 to June 2019). Among the 32 HIV-positive pregnant women, 2 (6.3%) were aged <20 years, 19 (59.4%) were aged 21-30 years, 9 (28.1%) were aged 31-40 years, and 2 (6.2%) were aged over 40 years. Illiteracy was associated with seropositivity, as 53.1% of seropositive patients were illiterate.

Conclusion: Seroprevalence has been decreasing in recent years, indicating that we are on the right track. However, efforts should be made to provide universal access to antenatal care and services for prevention parent-to-child transmission of HIV/AIDS.

Keywords: Antenatal care, Human immunodeficiency viruses, Pregnancy

INTRODUCTION

A large population in India consists of HIV-infected individuals, with high prevalence in states such as Tamil Nadu, Andhra Pradesh, Telangana, and Karnataka, and low to mid prevalence in other states [1]. According to the National AIDS Control Organisation, the national adult HIV prevalence is estimated to be 0.21% in 2021, with a prevalence of 0.22% among males and 0.19% among females [2]. The prevalence of HIV in Uttar Pradesh is 0.10% (0.08-0.14). However, the prevalence of HIV among pregnant women in India is of great concern, especially for preventing HIV in children. Mother-to-child transmission of HIV is the most common cause of HIV transmission in children.

Screening in antenatal women is important because HIV can be transmitted from an infected mother to her child during pregnancy, labour, delivery, and through breastfeeding. Reported transmission rates ranged from 13-32% in industrialised countries and 25-48% in developing countries [3]. In breastfeeding infants, upto 20% may acquire HIV through breastfeeding, depending on the duration of breastfeeding and other risk factors such as the presence of mastitis, breast abscess, and other local factors. In children under 15 years old, mother-to-child transmission is by far the most significant route of HIV infection transmission [3]. The drift of new or incident infections, especially in young people who have recently become sexually active, is the most delicate indicator to track the course of the HIV epidemic [4]. Unfortunately, measuring incidence directly is challenging, but prevalence in young women is an indirect but useful method [4-6].

Hence, this study was planned with the aim of determining the prevalence of HIV seroprevalence among pregnant women attending

antenatal clinics at Autonomous State Medical College, Hardoi, Uttar Pradesh, India.

MATERIALS AND METHODS

A retrospective observational study was conducted at Autonomous State Medical College, Hardoi, Uttar Pradesh, India, from July 2016 to June 2019. The data collected was from the official record of the District Hospital, which was attached to the Medical College. The analysis of the data was done from July 2021 to September 2021.

Inclusion criteria: All pregnant females registered at the ANC Clinic of the District Hospital, which was attached to the Autonomous State Medical College, Hardoi, were included in the study.

Exclusion criteria: Those who were already HIV-infected (previously detected) were excluded from the study.

Data were collected and analysed from a total of 6,974 pregnant women who were tested during the three-year period from July 2016 to June 2019. HIV antibodies were tested using the three ELISA/Rapid/Supplemental tests protocol, as per the guidelines laid down by the World Health Organisation (WHO Testing strategy III). Positive test results were disclosed only after post-test counseling of the patients. Antibodies to HIV (1 and 2) were initially tested using an ELISA kit (Adaltis™, Italy), and repeatedly reactive samples were tested by a rapid test (Tri-dot, J Mitra & Co, India). The reactive sera were further confirmed by Western Blot (BioRad, USA). A woman was identified as HIV-infected if she tested positive on more than two HIV ELISA tests.

Data on socio-demographic and maternal-associated clinical data, as well as the laboratory test result records, were recorded on a predefined checklist.

STATISTICAL ANALYSIS

The data were entered into MS Excel and analysed using SPSS version 22.0. A Chi-square test was employed to assess the association between variables.

RESULTS

A total of 32 (0.46%) pregnant females were found to be seropositive out of 6,974 females.

[Table/Fig-1] depicts the year-wise prevalence of HIV among pregnant females, where the prevalence decreased from 0.56 in 2016 to 0.37 in 2019.

Year	HIV +ve	HIV -ve	Total
July 2016- June 2017	13 (0.56)	2272 (99.44)	2285
July 2017-June 2018	10 (0.43)	2282 (99.57)	2292
July 2018-June 2019	09 (0.37)	2388 (99.63)	2397
Total	32 (0.46)	6942 (99.54)	6974

[Table/Fig-1]: Prevalence of HIV year-wise.

The mean age of study participants was 25±3.7 years. Illiteracy was associated with seropositivity, as 53.1% of seropositive patients were illiterate [Table/Fig-2].

Characteristic		HIV +ve	HIV -ve	p-value
Age (years)	<20	2 (6.3)	711 (10.3)	0.77
	21-30	19 (59.4)	3540 (50.9)	
	31-40	9 (28.1)	2178 (31.4)	
	>40	2 (6.2)	513 (7.4)	
Religion	Hindu	15 (46.9)	3805 (54.8)	0.332
	Muslim	14 (43.8)	2204 (31.7)	
	Other	03 (9.3)	933 (13.5)	
Residence	Urban	13 (40.6)	2440 (35.1)	0.51
	Rural	19 (59.4)	4502 (64.9)	
Educational status	Illiterate	17 (53.1)	1627 (23.4)	<0.001
	Primary	8 (25)	1467 (21.1)	
	High School	6 (18.8)	2010 (28.9)	
	Graduate and above	1 (3.1)	1838 (26.6)	
Gestational age (weeks)	<37	10 (31.3)	1990 (28.7)	0.32
	37-40	18 (56.2)	3185 (45.9)	
	>40	4 (12.5)	1767 (25.4)	
Gravida	Primigravida	17 (53.1)	4045 (58.3)	0.55
	Multigravida	15 (46.9)	2897 (41.7)	

[Table/Fig-2]: HIV seroprevalence by maternal characters.

DISCUSSION

In present study, the seroprevalence of HIV among pregnant women was 0.46%, which was higher than the national average [7]. Various studies, such as those conducted by Nayak AK et al., Mandel S et al., Giri PA et al., Devi R and Shyamala R, and Patil VM et al., reported prevalence rates of HIV to be 0.5%, 0.56%, 0.41%, 0.45%, and 0.44%, respectively [8-12]. Contrary to present study results, even higher prevalence rates were found in the studies of Ashatagi GS et al., at KEM Hospital Belgaum (0.7%), Parmeshwari S et al., conducted at Government Hospital, Namakkal district (0.77%) and Gupta S et al., conducted in North India (0.88%) [13-15]. The difference may be due to the fact that North India and Uttar Pradesh are considered low-prevalence regions for HIV.

In the present study, out of 32 HIV-positive pregnant women, 2 (6.3%) were aged <20 years, 19 (59.4%) were aged 21-30 years, 9 (28.1%) were aged 31-40 years, and 2 (6.2%) were aged over 40 years. Similarly, a study by Ashatagi GS et al., revealed that out of 716 pregnant women who availed of Prevention of Parent to Child Transmission of HIV/AIDS services, 360 (50.28%) were

in the age group of 21-25 years, 209 (29.19%) were in the age group of 15-20 years, 133 (18.58%) were in the age group of 26-30 years, and 14 (1.95%) were in the age group of 31-35 years [13]. The present study showed that low literacy was associated with a higher seropositivity among pregnant women. This was similar to a study by Nayak AK et al., who found that all their seropositive patients had below secondary level education or were illiterate [8]. In the current study, the gestational age at delivery was preterm (<37 weeks) among 31.3% of women. This result was similar to a study by Desai RS et al., who noted an incidence of preterm delivery of around 34.5% among HIV-positive women [16]. Temmerman M et al., reported that prematurity was observed in 21.1% of neonates born to HIV-positive women compared to 9.4% of those born to HIV-negative women [17].

In the current study, 53.1% of women were primigravida, and 46.9% were multigravida. Contrary to present study, Nayak AK et al., reported that the majority (62.5%) were second gravida [8]. A study by Patil VM et al., showed that the majority (53.83%) were primigravida and 46.2% were multigravida [12]. Prevalence rates of HIV seropositivity in pregnant women in different published studies are tabulated in [Table/Fig-3] [8,9,11-15,18-20].

Study	Place	Seroprevalence
Gupta S et al., (2007) [15]	AIIMS, New Delhi	0.88%
Parmeshwari S et al., (2009) [14]	Namakkal, TN	0.70%
Ashatagi GS et al., (2011) [13]	Belgaum, Karnataka	0.70%
Devi A and Shyamala R, (2012) [11]	Renga Reddy Dist, AP	0.45%
Nayak AK et al., (2017) [8]	Cuttak	0.5%
Mandel S et al., (2010) [9]	West Bengal	0.56%
Patil VM et al., (2016) [12]	Maharashtra	0.44%
Sayare PC et al., (2017) [18]	Akola	0.44%
Shah I et al., (2017) [19]	Mumbai	1.4%
Anand NA et al., (2019) [20]	Ahmedabad	0.3
Present study (2023)	Hardoi	0.46%

[Table/Fig-3]: Review of literature-seropositivity of HIV [8,9,11-15,18-20].

Present study also demonstrates a decline in HIV infection among pregnant women, which shows increased awareness about the disease and methods of prevention in the general population in recent years. Thus, it is necessary to constantly monitor the trend of HIV prevalence in pregnant women so that appropriate action can be taken as and when required. With effective counseling, education, and awareness about HIV, the prevalence of HIV infection among pregnant women can be controlled, and with Prevention of Parent to Child Transmission (PPTCT), mother-to-child transmission of HIV can be further decreased. Therefore, policies to raise awareness among couples about HIV would help in reducing HIV seroprevalence in pregnant women.

Limitation(s)

The present study was a hospital-based study conducted over a period of three years; therefore, the findings cannot be generalised to the entire population. The retrospective nature of the study itself is a limitation.

CONCLUSION(S)

Seroprevalence has been found to be decreasing in recent years. Therefore, universal access to antenatal care and PPTCT services should be provided. The utilisation of PPTCT services can be improved by creating awareness among pregnant women about the need for and benefits of getting tested.

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