

Prevalence of Hepatitis B Among Antenatal Patients: A Seroepidemiological Study

S R Patil (Professor and Head) ¹, **Priyanka Mane**(Assistant Professor)¹, and Sanjay S Patil(Professor)²

¹Professor and Head Department of Microbiology, Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth (Deemed to be university), Karad, Maharashtra, India

²Department of Ob & Gyn , Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth (Deemed to be university), Karad, Maharashtra, India.

Corresponding author: Priyanka M Mane (Assistant Professor)

Department of Microbiology, Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth (Deemed to be university), Karad, Maharashtra, India

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KEYWORDS	Abstract: Background: The transmission of the h	epatitis B virus from mother to infants through
Hepatitis B surface	vertical transmission is a significant and critical	pathway for infection. Often, hepatitis B virus
antigen. Pregnant	infections in pregnant women remain unnoticed [1]–[3]. The presence of hepatitis B surface antigen
women Perinatal	(HBsAg) in the bloodstream is the initial serological	l marker that signals an active HBV infection. This
trongmission	research aims to assess the prevalence of HBsAg a	mong asymptomatic and healthy pregnant women
	during the antenatal period. Methods: This study wa	s conducted within a hospital setting and spanned
Seroprevalence	one year. A comprehensive analysis involved scree	ening 1200 antenatal patients for the presence of
	hepatitis B surface antigen (HBsAg)Results: The s	study revealed that the prevalence rate of HBsAg
	stood at 1.04%, with 15 positive cases identified out	of the 1200 individuals tested.Notably, the highest
	prevalence was observed among the 26-30 age group	b, accounting for 48% of the cases, followed by the
	31-35 age group at 30.9%, and the 20-25 age gro	up at 22.1%.Conclusion: Implementing universal
	HBV screening for all pregnant women, regardless	of risk factors, can effectively decrease both the
	prevalence and associated risks of HBV infection [4]]–[6].

I. INTRODUCTION

Hepatitis B virus infection is a widespread global issue and represents a significant public health concern. Each year, over 20 million people worldwide contract this virus, result- ing in approximately 360-400 million individuals becoming chronic carriers of hepatitis B. Tragically, HBV-related dis- eases lead to more than 1.6 million deaths annually, ranking HBV infection as the 10th leading cause of death on a global scale. India is estimated to have up to 10% of the 360 million chronic carriers of hepatitis B worldwide [7], [8]. The prevalence of hepatitis B carriers varies across different regions of India and is reported to be approximately 4.8%. Hepatitis B infection can manifest in a range of clinical presentations, spanning from asymptomatic carrier states to acute self-limiting infections, severe hepatic failure, chronic hepatitis leading to cirrhosis, and ultimately, hepatocellular carcinoma [9]-[12]. The detection of hepatitis B surface antigen (HB- sAg) in the bloodstream acts as the primary serological indicator, signifying an ongoing HBV infection, regardless of whether it's acute or chronic. Frequently,

HBV infections can remain asymptomatic, resulting in delayed identification of HBV-related liver conditions and promoting continued virus transmission [13], [14]. Pregnant women represent a particularly susceptible demographic, with the potential for transmitting infections to their newborns if they themselves are infected. Vertical transmission, where the infection is passed from mother to infant, plays a critical role in the spread of HBV. This mode of transmission, occurring during fetal and neonatal stages, can result in adverse consequences such as impaired cognitive and physical development in the affected children during their later years [15], [16]. Without the implementation of immunoprophylaxis measures, ap-proximately 20-40% of women who test positive for HBsAgcan transmit the virus to their newborns. To effectively reduce the incidence of chronic infections, it is crucial to employ strategy that involves maternal screening. а which Furthermore, post-exposure prophylaxis, includes immediate HBV vaccination for all infants born to HBsAg-positive mothers, ideally combined with immunoglobulin prophylaxis, proves to be an effective



approach. Consequently, this study was undertaken to ascertain the prevalence of HBsAg in asymp- tomatic pregnant women who are in overall good health [17], [18].

II. MATERIAL AND METHODS

This study spanned a duration of one year and aimed to assess the prevalence of Hepatitis B surface antigen (HBsAg) as a serological marker for viral infection in pregnant women

Age Group	(years)	No. of HBsAg positive cases (%)
20-25	3(23.1%)	
26-30	6(48.1%)	
31-35	4(28.8%)	

TABLE 1: HBsAg - Age specific seroprevalence.

attending the antenatal outpatient department. All expectant mothers visiting the outpatient department were given the option to undergo the test, and those who agreed to partic- ipate were included in the study after providing informed consent [19]. In total, 1200 antenatal women were screened for HBsAg using the sandwich ELISA immunoassay method, and the results were subsequently recorded.

III. RESULTS

The study comprised 1200 cases, all falling within the age range of 20 to 35 years. Among these 1200 cases, 15 preg- nant women were identified as seropositive for HBsAg. This resulted in a calculated prevalence rate of 1.04%. [20]

The study revealed varying prevalence rates within differ- ent age groups, with the highest prevalence observed among women aged 26-30 years at 48.1%, followed by those aged 31-35 years at 28.8%, and lastly, the age group of 20-25 years at 23.1%. Additionally, it's worth noting that one of the patients who tested positive for HBsAg also tested positive for HIV infection. Furthermore, all the women who tested positive for HBsAg were monitored throughout their preg- nancy, and upon delivery, their babies received a combined treatment of hepatitis B vaccine and specific immunoglob- ulin during the early neonatal period. This intervention was implemented to prevent the transmission of the virus from mother to child.

IV. DISCUSSION

Screening asymptomatic individuals plays a crucial role in the early detection, timely diagnosis, and effective inter- vention for diseases, particularly when dealing with condi- tions that often exhibit no symptoms, such as chronic HBV infection. The USPSTF16 recommends screening pregnant women for hepatitis B virus (HBV) infection during their initial prenatal visit. In our current study, the seroprevalence of HBsAg among pregnant women was found to be 1.04%. This figure aligns with similar findings in other studies, with a reported seroprevalence of 0.8% by Dwivedi M and colleagues, 0.62% in the study by Parveen S et al, 0.82% according to Chaterjee S et al, 1.1% reported by Pandy et al, and 1.11% reported by Sibia P et al [21]. In their comprehensive review of hepatitis B epidemiology, Lodha etal proposed a prevalence rate of 1-2% for India as a whole. However, it's important to note that within our country, significant regional variations in prevalence exist. Notably, Prakash et al reported a notably high prevalence of 9.5% in North India [19], [20]. Furthermore, a comprehensive review conducted by the Indian National Association for the Study of the Liver (INASL) has established a consensus figure of 4.7% as the national average for the carrier state, taking into account the diversity in prevalence across different regions of the country. A systematic review conducted by Ashish Batham et al, examining the prevalence of hepatitis B in India, reported a point prevalence of 2-6% among the non- tribal population and a notably higher point prevalence of 16.8% among the tribal population. In our own study, we observed that the prevalence of HBV infection was most prominent in the age group of 26-30 years, with a rate of 48.1%. This finding aligns with research by Pontius Bayo et al [22], [23], which discovered a higher prevalence of HBV infection among women aged 20 years or younger (20%) compared to older women. Additionally, Frambo AAB et al found that the highest prevalence was observed in the age group of 15-19 (20%), followed by the age group of 30- 34 (13.64%) [15]. These results collectively highlight the variability in HBV infection prevalence across different age groups. Infants born to mothers who test positive for HBsAg should promptly receive a combination of 0.5 ml of Hepatitis B Immunoglobulin and the Hepatitis B vaccine within 12 hours of birth. Perinatal transmission is responsible for a significant portion, ranging from 30-50%, of all chronic HBV infections. The US Preventive Services Task Force (USP- STF) has established that universal

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prenatal screening for HBV infection offers compelling evidence in substantially reducing perinatal transmission of HBV and the subsequent development of chronic HBV infection [24]. Notably, their assessment did not uncover any published studies describing adverse effects or harms associated with screening for HBV infection in pregnant women.

V. CONCLUSION

Screening all pregnant women for HBV infection, regardless of their risk factors, and raising awareness about HBV in-fection are essential steps to mitigate the prevalence and risk of HBV infections. Failure to diagnose and manage pregnant women with HBV properly could result in a substantial future burden of the disease, both in terms of its impact on society and the strain it places on healthcare resources.

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CONFLICTS OF INTEREST

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTIONS

All authors equally contributed to preparing this article.

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