

## ORIGINAL ARTICLE

Prevalence of HB<sub>s</sub>Ag Positive Cases in Pregnant WomanSayera Akhter<sup>1</sup>, Kishwar Sultana<sup>2</sup>, Rowshan Ara Begum<sup>3</sup>**Abstract :**

*With the objective to determine the HB<sub>s</sub>Ag status among the hospital patient in Obs and Gynae Department of HFRCMCH, Dhaka, a total 300 patients were purposively selected from the Obs and Gynae Department of this hospital. It was found that 12% were HB<sub>s</sub>Ag positive examining blood sample by ELISA test. HB<sub>s</sub>Ag positive cases were more among those who had history of previous surgery among the patient who might have exposed to hepatitis B virus during their disease or treatment, tooth extraction, had received blood or blood products, first aid and wound dressing, had parenteral drug addiction. Similarly the positive cases were more among those who had palpable liver, spleen, had ascitis, had given vaccination improperly, or not given against HBV, and who had reliable history of jaundice. Though there was greater percentage of HB<sub>s</sub>Ag positive cases among low family income group and illiterate.*

**Introduction:**

The hepatitis-B virus (HBV) infection is a major health problem throughout the world and in Bangladesh. Approximately 30% of the world population, have serological evidence of hepatitis B virus infection. It is estimated that 350 million of them have chronic HBV infection, about a million of who die each year from chronic liver disease, including cirrhosis of liver and cancer<sup>1,2,3</sup>. Asymptomatic carrier is the commonest source of infection with Hepatitis B virus. It is the major cause of morbidity and mortality. HB<sub>s</sub>Ag carrier rate is

0.1% to 2% of the population in the developed countries and very high rates 10% to 15% in Africa and Far East. Its prevalence varies from country to country and depends upon a complex mixture of behavioral, environment and host factors. It is highest in countries or areas where socio-economic status is poor for example the China, the South East Asia and South America. It is lowest in countries or areas with most industrialized countries, the carrier rate is usually less than 1% while in some Areas of Africa and East Asia it is higher than 30%<sup>4,5</sup>.

The exact situation of HBV infection in Bangladesh is still unknown. Limited survey of different population groups revealed high prevalence rate. A study reports that in Bangladesh carries rate is very high 9% to 12% of populations have seropositive markers indicative past infection with this virus<sup>6</sup>. So HBV infection appears to be moderately endemic in Bangladesh.

1. Resident, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College Hospital, Dhaka
2. Associate professor, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College, Dhaka.
3. Professor and Head, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College, Dhaka.

**Results:****Table- I:** Distribution of the patients by HBsAg status in their blood.

HBsAg test	Number of the patients	Percentages (%)
Positive	36	12.0
Negative	264	88.0
Total	300	100.0

**Materials and method:**

This is a cross sectional type of study. The study was conducted in Inpatient Department of Obs and Gynae at HFRCMCH in Dhaka. The data was collected from 01.12.10 to 02.04.11. The entire admitted patient in the

blood sample.

The data was collected in the interview schedule through interviewing the patients face to face. After interviewing the patient, the patient was examined for certain sign and was recorded in the checklist. 2 c.c. venous blood

**Table- II:** Distribution of the patients by education & HBsAg status.

Education	HBsAg status		Total (%)
	Positive (%)	Negative (%)	
Literate	21 (11.4)	163 (88.6)	116 (100)
Illiterate	15 (12.9)	101 (87.1)	184 (100)
Total	36 (12.0)	264 (88.0)	300 (100)

$$X^2 = 0.155, df = 1, P > 0.05$$

Obs and Gynae Department at HFRCMCH in Dhaka. The sample was selected purposively for the study. An interview schedule was developed for interviewing the patient. A check list was also developed for recording the clinical features of the patients. An investigation form was used for collected

was drawn from each patient in a disposable syringe and was collected in a cap fitted test tube and finally was sent to the HFRCMCH laboratory for the serological investigation.

All data were checked and edited after collection. Later the data were put into the computer and were analyzed with the help of

**Table- III:** Distribution of the patients by monthly income & HBsAg status.

Monthly income	HBsAg status		Total (%)
	Positive (%)	Negative (%)	
Below 5000	18 (37.5)	30 (62.5)	48 (100.0)
5000-10000	12 (16.2)	62 (83.8)	74 (100.0)
10000+	6 (3.4)	172 (96.6)	178 (100.0)
Total	36 (12.0)	264 (88.0)	300 (100.0)

$$X^2 = 43.354, df = 2, P > 0.05$$

**Table- IV:** Distribution of the patients by ANC visit & HBsAg status.

ANC visited	HBsAg status		Total (%)
	Positive (%)	Negative (%)	
Visited	9 (4.0)	215 (96.0)	224 (100)
Not visited	27 (35.5)	49 (64.50)	76 (100)
Total	36 (12.0)	264 (88.0)	300 (100)

$$X^2 = 53.35, df = 1, P > 0.05$$

soft ware programmer S.P.S.S for windows and Microsoft excel work sheet. Some measurements were done with the help of calculator. The data were presented in the form of tables, graphs, frequency distribution and cross tabulation.

An approval from the hospital authority of

Table- II shows that higher percentage of the patient were HBsAg positive and were illiterate. While lower percentage of the patients were HBsAg positive and literate.

Table- III shows that there was a higher percentage (62.5%) of HBsAg positive

**Table- V:** Distribution of the patients by Gravida & HBsAg status.

Gravida	HBsAg status		Total no. (%)
	Positive (%)	Negative(%)	
Primi	17 (11.2)	30 (62.5)	152 (100)
Multi	19 (12.8)	62 (83.8)	148 (100)
Total	36 (12.0)	172 (96.6)	300 (100)

$$X^2 = 0.194, df = 1, P > 0.05$$

HFRMCH was taken for conducting this study among all the admitted patients in the Obs and Gynae Department. Consent from each patient to do the study also was taken.

Table- I shows that out of 300 patient 36 (12%) were found HBsAg positive and 264 (88%) were HBsAg negative. The HBsAg status among the patients was the only dependable variable of this study. In this following pages, table of independent variable had been shown. Each table was followed by a cross tabulation of the same independent and dependent variables. Necessary statistical tests had been shown to find out the strength of association.

participants who had monthly family income less than 5 thousand taka. While a lower percentage (6%) of the participants were HBsAg positive who had monthly family income more than 10 thousand taka.

Table- IV shows that there were a higher percentage (35.5%) were HBsAg positive who were not visited in antenatal clinic. On the other hand there were a lower percentage of patient were HBsAg positive who were taken regular check up.

Table- V shows that higher percentage of the patients were HBsAg positive and were multigravida. While lower percentage of the patients were HBsAg positive and were primigravida.

Table- VI shows that majority (76.5%) of the patient were found HBsAg positive who had history of jaundice in the past. While the

group of people. So the present figure represents the HBsAg status of economically solvent group of people.

**Table- VI:** Distribution of the patients by History of jaundice & HBsAg status.

History of Jaundice	HBsAg status		Total (%)
	Positive (%)	Negative (%)	
Yes	13 (76.5)	4 (23.5)	17 (100)
No	23 (8.1)	260 (91.9)	283 (100)
Total	36 (12.0)	264 (88.0)	300 (100)

$$X^2 = 0.194, df = 1, P > 0.05$$

minority (8.1%) were HBsAg positive had no such history.

#### Discussion:

The major objective of the study was to determine the HBsAg status among the hospital admitted pregnant women in Obs and Gynae Department of HFRCMCH is Dhaka. For this purpose 2 c.c. of venous blood was collected and HBsAg was tested by ELISA technique in the laboratory of this hospital. The socioeconomic and demographic data of the patients were recorded by an interview schedule. This interview schedule was also used to find out certain risk factor that was known to be responsible in hepatitis B virus transmission. A check list also used to correlate certain clinical features of the patients with HBsAg status. Ultimately all dependable and independent variables were examined by tabulation and cross tabulation and statistical tests were done to fine out any association.

In this study it was seen that among the 300 admitted patients in the Obs and Gynae Department of HFRCMCH in Dhaka 12% was HBsAg positive. The HFRCMCH is a highly payable hospital for the economically solvent

This group of people definitely had higher education and awareness and purchasing capacity regarding health care than the other people of the country, and hence there is a chance of higher rate of HBsAg positive cases in the government hospital where the poorer people usually receive their health service. This can be confirmed by further study. A similar study was carried out by American society of tropical medicine and hygiene and it was found 3.5% of pregnant women were HBsAg positive. This figure does not indicate the true figure of hepatitis B virus infection. It is known that 90-95% cases of HBV infection are self limiting. So we can assume hepatitis B virus infection in Bangladesh much more higher than the present figure. But this should be confirmed by further prospective studies.

It was found that HBsAg positive cases higher among the illiterate people than the literate people, this finding indicates that literacy might have positive impact on awareness of Hepatitis B virus infection prevention. There was no significant difference between the high and low monthly income group and HBsAg status. The reason for this that all the patients were admitted in Obs and Gynae Department in HFRCMCH, had not come

from low socioeconomic classes. Those who had received blood or blood product were more HBsAg positive than those who had not history of surgery in the past had higher percentage 29% of HBsAg positive than who had never gone through any surgical intervention.

The patients who had history of first aid and wound dressing were more 29% of HBsAg positive than those who had no such history. The patient who had history of vaccination against hepatitis B virus had low percentage of HBsAg positive than whom had not given or improperly given vaccine.

The patient who had history of invasive investigation or treatment had increased chance of HBsAg positive than who had not investigated or treated. In the study there was 0% of HBsAg positive among drug abusers that is due to respondent may hide information regarding drug addiction. The HBsAg positive cases were high among the patients who had history of jaundice and less who had not, it might be due to invasion by HBV directly which caused jaundice. Clinical presentation with jaundice, ascitis, palpable liver, palpable spleen and spider naevi showed 34% of HBsAg positive.

The possibilities of increased percentage of HBsAg positive among the of the doctors, nurses and other medical personnel who were exposing to HBV positive cases have acquired cross infection during handling of the patients. It was known that like other medical staffs, all the staffs of HFRCMCH are not immunized to HBV vaccine, it may be a issue. Proper caution should be taken during management of labour to prevent cross infection. From this finding we can assume that all hospital staffs should be screened out

of HBsAg status and necessary immunization should be given to them.

Bangladesh has an intermediate prevalence of hepatitis B virus with a 4% HBsAg population<sup>7</sup>. In our study 12% of the pregnant women were HBsAg positive. Up to now, there are no true data on the prevalence of hepatitis B virus infection among the women of child bearing age in our country. The observed lower rate among pregnant women is not unexpected because the prevalence of HBsAg is more common among males.<sup>(8,9)</sup> Hepatitis B surface antigen is the earliest marker to appear in acute infection and these mothers might have had HBsAg as the only HBV marker at the time. Infection with HBV mutants may also be responsible for such serological findings.

However most of the HBsAg positive mothers were chronic carrier and a follow-up screening during pregnancy was not essential. To obtain the expected benefits of making HBsAg screening as a part of routine prenatal check-up, the test should be done during late third trimester.

Although the risk for neonatal hepatitis B infection is less with HBsAg negative mothers,<sup>(10,11,12,13)</sup> infection occur may be severe,<sup>14,15</sup> and fulminant hepatitis has been reported<sup>16</sup>. Thus immunization of all infants born to HBsAg positive mothers regardless of HBsAg status should be done as recommended<sup>17,18</sup>. Infection at birth or in the perinatal period is the most common mode of transmission of hepatitis B virus in endemic area, and it is now evident that routine screening of all pregnant women and neonatal vaccination would provide an acceptable control of perinatal transmission of HBV<sup>19,20</sup>.

**Conclusion:**

However universal immunization is necessary for achieving a maximum control over HBV because selective immunization of risk babies does not prevent the infections during childhood and other horizontal transmission. It is therefore important to evaluate the cost effectiveness before initiation of such program in Bangladesh to allow rational use of the limited resources for health care services. Universal immunization requires three doses of hepatitis vaccine for all infants, whereas selective immunization requires antenatal HbsAg screening and three doses of vaccine along with HBIG for the risk babies. If no vaccination is done there will be 4% HBsAg positive in the population, and overall approximately 90% carrier rate among them, 65 of the 1,800 children born would predictably become chronic hepatitis B carriers. It is assumed that HBsAg positive mothers transmit hepatitis B to their infant to a greater extent.

We therefore recommended a low cost hepatitis B vaccine to be included in our expanded program of immunization. Until such a national program can be initiated, routine antenatal screening of HBsAg status of mother and immunoprophylaxis of risk babies should be continued.

**References:**

1. World Health Organization, Hepatitis B vaccine: Making global progress. Epi Update 31. 1996. Geneva :WHO, 1996.
2. Lee W M. Hepatitis B Virus Infection. N Engl J Med 1997; 337: 1733-1745.
3. Beasley RP, Hwang LY, Lin CC, Chien Cs. Hepatocellular Carcinoma and hepatitis B virus. A Prospective study of 22707 men in Taiwan. Lancet 1981; 2:1129-1133.
4. Management guidelines, including information for health workers and patient. Introduction of hepatitis B vaccine into childhood immunization services. Department of vaccines and Biological World Organization, Geneva-2001; 4-7, 9.
5. Park J.E, Park (2000) Textbook of Preventive and Social Medicine, Jabalpur, India-sixteenth ed. P-159.
6. Khan FD, et al HBsAg Amongst Unscreened Operated Patients, Bangladesh Medical Council, Bulletin-vol. XV 11 June ISSN 0377-9238. 11.15.
7. Kane M. 1994. Global Plan of Action for Hepatitis B Immunization: Global Program for Vaccine and Immunization. Expanded program on Immunization. Geneva: World Health Organization.
8. Chaudhury RK, Nicholis ES, Kennedy DA, 1981. Prevalence of hepatitis B markers in Indochinese refugees. Can Med Assoc J 125: 1234-1246.
9. Kaur S, Rybicki L, Bacon BR, Gollan JL, Rustgi VK, Carey WD, and The National Hepatitis Surveillance Group, 1996 Performance characteristics and results of a large-scale screening program for viral hepatitis and risk factors associated with exposure to viral hepatitis B and C: results of the national hepatitis screening survey. Hepatology 24: 979-986.
10. Okada K, Kamiyama I, Inomata M, Imai M, Miyakawa Y, Mayumi M, 1976. e antigen and anti-e in the serum of asymptomatic carrier mothers as indicators of positive and negative transmission of hepatitis B virus to their infants. N Engl J Med 294: 746-749.

11. Beasley RP, Trepo C, Stevens CE, Szmuness W, 1977. The e antigen and vertical transmission of hepatitis B surface antigen. *Am J Epidemiol* 105: 94-98.
12. Lee AKY, Ip HMH, Wong VCW, 1978. Mechanisms of maternal-fetal transmission of hepatitis B virus. *J Infect Dis* 138: 668-371.
13. Shiraki K, Yoshihara N, Sakuri M, Eto T, Kawan T, 1980. Acute hepatitis B in infants born to carrier mother with the antibody to hepatitis B e antigen. *J Pediatr* 97: 768-770.
14. Sinatra FR, Shah P, Weissman JY, Thomas DW, Merritt RJ, Tong MJ, 1982. Perinatal transmitted acute interic hepatitis B in infants born to hepatitis B surface antigen-positive and anti-hepatitis B e-positive carrier mothers. *Pediatrics* 70: 557-559.
15. Delaplane D, Yogev R, Crussi F, Shulman ST, 1983. Fatal hepatitis B in early infancy: the importance of identifying HBsAg-positive pregnant women and providing immunoprophylaxis to their newborns. *Pediatrics* 72:176-180.
16. Immunization Practices Advisory Committee, 1984. Postexposure prophylaxis of hepatitis B. *MMWR Morb Mortal Wkly Rep* 33: 285-290.
17. Immunization Practices Advisory Committee, 1985. Recommendations for Protection against viral hepatitis. *MMWR Morb Mortal Wkly Rep* 34: 313-324, 329-335.
18. Stevens CE, Toy PT, Tong MJ, Taylor PE, Vyas GN, Nair PV, Gudavalli M, Krugman S, 1985. Perinatal hepatitis B virus transmission in the United States: prevention by passive-active immunization. *JAMA* 253:1740-1745.
19. Wong VCW, Ip HMH, Reesink HW, Lelie PN, Reerink-Brongers EE, Yeung CY, Ma HK, 1984. Prevention of the HBsAg carrier state in newborn infants of mothers who are chronic carriers of HBsAg by administration of hepatitis B vaccine and hepatitis B immunoglobulin: double-blind randomized placebo-controlled study. *Lancet* i: 921-926.
20. Stevens CE, Taylor PE, Tong MJ, Toy PT, Vyas GN, Nair PV, Weissman JY, Krugman S, 1987. Yeast-recombinant hepatitis B vaccine: efficacy with hepatitis B virus transmission. *JAMA* 257: 2612-2616.