

# Status of Hepatitis B, C, E and A in Healthy Asymptomatic Persons and Child Bearing Age Groups Females in Varanasi, U.P., India

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**Abstract – Hepatitis B and C are common viral hepatitis, which can lead to cirrhosis or carcinoma of liver. These types of hepatitis are many times asymptomatic but can transmit the disease after blood transfusion and body fluid contact. Aim of present study was to see asymptomatic carrier of hepatitis B, C, E and A in our area (Varanasi, Uttar-Pradesh, India).**

**Our study referred asymptomatic patients from different surgical wards, comprising of pregnant females, blood donors and elderly persons. In 19 HBsAg positive cases liver function test (LFT) was also done. HBsAg, Anti HCV IgG, Anti HAV IgM and Anti HEV IgM were done by card test.**

**We were screened 2343 non-jaundice persons which were included 47% females (childbearing age group females were 50%, out of which 19% were pregnant and 81% were non pregnant ) over all HBsAg positivity among non-jaundice persons were 2.94%, in which 3.15% males and 2.71% females. The HBsAg positivity was high (8.4%) in pregnant females as compare to non-pregnant females (2.7%).**

**Total 552 healthy blood donor including 526 males and 26 females were tested for HBsAg. Female donors had high HBsAg positivity (7.70%) as compared to male blood donors (3.23%).**

**81 patients were screened for Anti HAV IgM and Anti HEV IgM. Only one female (2.71%) and one male (2.28%) were positive for Anti HAV IgM and Anti HEV IgM.**

**Out of total 533 patients, only one male (0.3%) and one female (0.49%) was positive for Anti HCV IgG, Total 125 healthy elderly persons (40 males and 85 females) were tested for HBsAg, these elderly persons were residing in Kumbh Mela at Allahabad for religious purification of body. None of the male, but one female (1.18%) was positive for HBsAg. These elderly persons also were screened for Hepatitis A, E and C. None was positive for hepatitis C. Only one patient was positive for both Anti HEV IgM and Anti HAV IgM.**

**Liver function test was done in 19 HBsAg positive cases only. Most common finding was rise of SGPT (63.17%) followed by rise of SGOT (52.64%), alkaline phosphatase (58%), indirect bilirubin (58%). None had raised total and direct serum bilirubin.**

**Thus we concludes that hepatitis C is uncommon in our area and both hepatitis B and C are less common in religious elderly person while pregnant females and non-pregnant females, blood donor have high HBsAg positive carrier status.**

**Key Words: Hepatitis B, Hepatitis C Hepatitis in elderly person, Hepatitis in pregnant ladies, hepatitis B, C, E A in asymptomatic carriers.**

## INTRODUCTION

Hepatitis B virus is a member of hepadna virus family which causes inflammatory illness of liver and further progress into cirrhosis and Hepatocellular carcinoma (HCC). The disease has caused epidemic in the parts of Asia and Africa while endemic in china (Zheng *et al.*, 2012). There are three hepatitis B prevalence endemicity of the world, high (>8%), medium (8% to 2%) and low (<2%). India has got medium endemicity (Tandon *et al.*, 1996), (Nitesh *et al.*, 2013).

HBsAg is first virology marker detectable in serum. It is detectable during acute symptomatic as well as chronic asymptomatic carrier stage. The HBsAg Positivity among carrier was 400 million worldwide. The prevalence of HBsAg in India was 9%. It was highest (5.5%) in Madras and lowest (0.97%) in Chandigarh (Tandon *et al.*, 1996).

Important mode of transmission of hepatitis B from perinatal, sexual contact and mainly it is spread by exposure to infected blood and body secretions. The risk group in India is professional blood donors, injection and drug users, sexual contact and referred patients from different wards. The important mode of transmission of hepatitis B virus is (35%-50%) is perinatal (Shu-Lin *et al.*, 1998). The risk of mother infecting the baby is best correlated with the proportion of women of childbearing age groups who are HBsAg positive.

HBsAg Positivity amongst pregnant women in India has regional variation. Different worker showed different prevalence of HBsAg positivity. According to the government of India HBsAg positivity in childbearing age group female is 1.1% (Pande *et al.*, 2011).

Other Viruses causing hepatitis are Hepatitis A virus (HAV), hepatitis C virus (HCV), Hepatitis E virus (HEV) and Hepatitis D virus (HDV). Hepatitis A and E are enterically transmitted disease. It is endemic in India. HAV belong to picorna virus. The sensitive and specific serological marker for HAV is anti HAV IgM while HEV transmitted via feco-oral and water stream route causes sporadic hepatitis. HCV is detected by Anti HCV IgG Antibody.

Aim of the present study is to see prevalence of HBsAg, hepatitis C, A and E virus in non-jaundice

asymptomatic patients, healthy pregnant ladies, blood donors and healthy persons attending the Kumbh mela at sangam of Allahabad. Study has also attempted to see the liver function tests in asymptomatic carriers

## MATERIAL AND METHODS

Total 2343 patients referred from various departments (Medicine, Surgery and Obstetrics & Gynecology) of S.S. Hospital Banaras Hindu University were studied. All these patients did not have any clinical features of jaundice. Hepatitis profile was done because patients were undergoing some operation or were healthy pregnant females.

Besides this 125 cases living in kumbh mela area of Allahabad in kalpwas were taken for study. These patients were elderly mostly after 50 years and were asymptomatic.

In all cases for hepatitis B was tested by HBsAg test by card method, which was of ACON Company. It was supplied by M/S Avadh Diagnostics. Anti HCV IgG, Anti HEV and Anti HAV IgM was also done by card method. Hepatitis C Card was of ACON co. supplied by M/S Avadh scientific while Anti HEV IgM and Anti HAV IgM kits were supplied by M/S Tulip Diagnostic.

In all cases detail clinical examination and clinical details were recorded. In 19 of HBsAg positive cases where HBsAg was positive, liver function test (Serum bilirubin, conjugated, unconjugated, SGOT, SGPT Alkaline phosphatase) was done by auto analyzer supplied by M/S Randox.

## RESULT

Total 2343 patients (1,238 males and 1,105 females) were screened for Hepatitis B surface Antigen (HBsAg). These patients did not have any jaundice, these cases were admitted in surgical wards of ENT, Surgery, Orthopedics and Gyanae for various operations. Another group of patients were pregnant females who came for routine antenatal check-up in obstetrics and gynecology departments. In all these cases HBsAg was done as routine test for check-up to see any hidden evidence of hepatitis B. 69 cases out of 2,343 (2.94%) were HBsAg positive.

Analysis of HBsAg positivity according to the sex of the patients revealed that males were more HBsAg carrier (3.15%) as compared to female (2.71%). Age wise analysis showed both in males and females, maximum positivity was seen between 17 years to 50 years.

Among males 43.58%, 30.76% and 15.38% HBsAg positive cases were in age groups of 31-51 years, 51-70 years and 17-30 years respectively. Young male patients (1-16 years) were 10.24% HBsAg positivity. Contrary to this, in female, maximum number of HBsAg positive cases (66.66%) were in between 17-30 years followed by 31-50 years (23.33%). Only two female children (6.66%) of age group 2-16 years and one elderly lady (3.31%) of 78 years was HBsAg positive (Table-1)

Correlation of HBsAg with young age was significant (P=.001) while correlation of HBsAg positivity with sex of the patients was none significant. (Table-1)

**Table-1. HBsAg prevalence in referred asymptomatic patients from S.S. Hospital BHU Varanasi**

Age Groups	Male(No.=1,238)			Female(No.1,105)			Total HBsAg Positive cases in particular age Group (%)
	Total of case	No.	HBsAg Positive cases (%)	Total of case	No.	HBsAg Positive cases (%)	
≤ 1 years	6		2 (5.12)	0		0 (0)	2 (0.09)
2-16 years	122		2 (5.12)	68		2 (6.66)	4 (0.17)
17-30 years	374		6(15.38)	466		20(66.6)	26(1.10)
31-50 years	317		17(43.58)	345		7(23.33)	24(1.03)
51-60 years	198		6(15.38)	144		0(0)	6 (0.25)
61-70 years	149		6(15.38)	59		0 (0)	6 (0.25)
71-80 years	49		0 (0)	20		1 (3.31)	1 (0.04)
≥81 years	23		0 (0)	3		0 (0)	0 (0)
Total	1238		39 (3.15)	1105		30 (2.71)	69 (2.94)

Parenthesis indicate percentage

Out of the total 552 female patients, 107 patients were pregnant and 445 were non pregnant referred cases from various surgical units. Interestingly in pregnant females HBsAg positivity was high (8.4%) as compared to non-pregnant females (2.7%). (Table-2)

**Table-2. Prevalence of HBsAg among pregnant women.**

HBsAg status	Pregnant females		Non-Pregnant females	
	Number	%	Number	%
HBsAg Positive cases	9	8.4	12	2.7
HBsAg Negative cases	98	91.6	433	97.3
Total	107	100	445	100

HBsAg was also done in 552 blood donors who were clinically asymptomatic, Out of these 19 donors (3.45%) were positive. HBsAg positivity according to sex again showed that in female positivity was more (7.70%) as compared to males (3.24%). HBsAg positivity according to various age groups in donors again showed that mostly HBsAg positive males (3.45%) and females (7.70%) were between 18 to 35 years of age. Only one 56 years old male was positive for HBsAg (Table-3).

**Table-3. HBsAg Prevalence among Voluntary blood donors**

Age Groups(Age in years)	Male(No.=526)		Female (No.=26)		Total cases in age group
	HBsAg Positive cases	HBsAg Negative cases	HBsAg Positive cases	HBsAg Negative cases	
18-25	7 (1.33)	185	1 (3.85)	6	199
26-35	9 (1.72)	197	1 (3.85)	9	216
36-45	0 (0)	94	0 (0)	7	101
46-55	0 (0)	32	0 (0)	2	34
56-65	1 (0.19)	1	0 (0)	0	2
Total	17 (3.23)	509 (96.77)	2 (7.70)	24 (92.31)	552

Only 81 out of 2343 case were tested for Anti HEV IgM and Anti HAV IgM. Only one male and one female were positive for Anti HEV IgM (1.23%) and one female (1.23%) was positive for Anti HAV IgM (Table- 4).

**Table-4. Anti HAV IgM and Anti HEV IgM Status in Asymptomatic referred patients from different wards of S.S. Hospital, BHU.**

Age Group(Age in years)	Anti HAV IgM		Anti HEV IgM	
	Male(No.=44)	Female(No.=37)	Male(No.=44)	Female(No.=37)
≤20	0 (0)	0 (0)	1 (2.28)	0 (0)
21-40	0 (0)	1 (2.71)	0 (0)	0 (0)
41-60	0 (0)	0 (0)	0 (0)	1 (2.71)
61-80	0 (0)	0 (0)	0 (0)	0 (0)
Total =81	0 (0)	1(2.71)	1 (2.28)	1 (2.71)

Besides these 533 healthy persons were also tested for anti HCV, only two patients (0.38%) were positive which included one male (0.31%) and one female (0.49%) case. (Table-5)

**Table-5. HCV positivity in referred patients**

Age Groups (Age in years)	Male (No.=326)		Female (No.=207)	
	Positive	Negative	Positive	Negative
≤ 1	0 (0)	2 (0.61)	0 (0)	0 (0)
2-16	0 (0)	19 (5.83)	0 (0)	12 (5.80)
17-30	0 (0)	75 (23.01)	1 (0.49)	70 (33.82)
31-50	0 (0)	97 (29.75)	0 (0)	69 (33.33)
51-60	1 (0.31)	56(17.18)	0 (0)	31 (14.98)
61-70	0 (0)	65 (19.94)	0 (0)	21 (10.14)
71-80	0 (0)	7 (2.15)	0 (0)	2 (0.97)
≥ 81	0 (0)	4 (1.23)	0 (0)	1 (0.48)

Percentage in parenthesis

HBsAg, Anti HEV IgM, Anti HAV IgM and Anti HCV IgG was done in 129 healthy elderly persons who were living in tents in Kumbh Mela in winter to purify their system. Out of these 129 cases, 23 cases were between 45 to 49 years and 106 persons were between 50 to 60 years. All were taking bath in sangam water (Junction of Ganga, Jamuna and

Saraswati River) at Allahabad city of Uttar-Pradesh. Out of this only one (1.18%) female of 61 year was HBsAg positive (Table-6).

**Table- 6. Prevalence of HBsAg among elderly persons attending Kumbh Mela.**

Age Group (In Years)	Male (No.=40)		Female (No.=85)	
	HBsAg Positive cases	HBsAg Negative cases	HBsAg Positive cases	HBsAg Negative cases
<49	0(0)	8(20)	0(0)	15(17.6)
50-60	0(0)	5(12.5)	0(0)	23(27.05)
>61	0(0)	27(67.5)	1(1.18)	46(54.12)
Total	0(0)	40 (100)	1(1.18)	84(98.82)

Percentage in parenthesis

One female was positive for both Anti HEV IgM and Anti HAV IgM, although clinically she was non jaundiced and asymptomatic. Anti HEV IgM and Anti HAV IgM was done to see whether these hepatitis are transmitted by river water or not in kalpwashe (Table-7)

**Table-7. Anti HAV IgM, Anti HEV IgM and Anti HCV IgG Status among healthy elderly persons attending Kumbh Mela.**

Group of Investigation	HBsAg Positive cases	HBsAg Negative cases
Anti HAV IgM	1 (0.78)	128 (99.22)
Anti HEV IgM	1 (0.78)	128 (99.22)
Anti HCV IgG	0 (0)	129 (100)

Percentage in parenthesis

Only 19 HBsAg positive referred cases from S.S. Hospital were tested for liver function tests e.g. SGOT, SGPT, Alkaline Phosphatase, total Bilirubin, direct Bilirubin and indirect Bilirubin.. Most common finding in liver function test was raised SGPT (63.17%) followed by SGOT (52.64%), out of this 42.11% patient had risen of both SGOT and SGPT. Alkaline Phosphatase and indirect bilirubin were raised in 58%. Interestingly in 5 cases all SGOT, SGPT, Alkaline phosphatase were normal and only rise of indirect bilirubin was seen. In none of the cases total and direct bilirubin was seen (Table-8)

**Table-8. Liver Function Test in HBsAg Positive cases.**

Groups of Investigations	Increased	Normal
Only SGOT	2(10.53)	8(42.11)
Only SGPT	4(21.06)	7(36.85)
Both SGOT and SGPT	8(42.11)	5(26.32)
Alkaline phosphatase	11(58)	8(42.11)
Total bilirubin	0 (0)	19(100)
Direct bilirubin	0(0)	19(100)
Indirect bilirubin	11(58)	8(42.11)

Percentage in parenthesis

## DISCUSSION

Hepatitis B is a very common problem throughout the world. In India about 50 million populations is hepatitis

B carrier and its prevalence varies 2 to 8%. (Datta, 2008). these carriers can transmit the hepatitis B. In our place we found HBsAg positivity in 2.95% in routine screening of 2343 patients who were mostly cases of surgical wards but no jaundice was present in them.

Contrary to our study in some of the countries like Madagascar, incidence of hepatitis B carrier is very high (10.4%). Hepatitis B is endemic in China also. In 1992 prevalence of carrier was 9.75% (Xia *et. al.*, 1996), while study conducted in China in 2012 has shown slightly reduced incidence of 7.4 %. (Zheng *et. al.*, 2012). In Pakistan prevalence of hepatitis B in asymptomatic person was 8.06% in general population (Nafees *et. al.*, 2009).

The present study noticed that hepatitis B positivity was maximum between 17 to 55 years of age in both sex (2.65%), While after 55 years prevalence was low (0.30%).

Similar to our study, in India increased prevalence of hepatitis B in young adults but chronic carrier state was high in children (28.8%) as compared to adults (7.7%) (McMahon *et. al.*, 1985).

We screened 552 blood donors and found the prevalence of hepatitis B surface antigen (HBsAg) to be 3.45% and again positivity in both male (3.05%) and female (7.70%) were in between 18 to 35 years of age. In Northern India HBsAg positivity among blood donors were 2.76% (Singh *et. al.*, 2004). Lower prevalence (1.717%) of HBsAg among blood donors in Kanpur (Jaiswal *et. al.*, 2007). Another study in India reported only 0.82% HBsAg positivity which included 0.86% males and 0.30% females among blood donors (Mohan *et. al.*, 2013). Contrary to our country in Nigeria blood donors screening have showing high prevalence of hepatitis B (14.3%) and all these donors were between 20 to 40 years of age (Uneke *et. al.*, 2005).

Pregnant females referred for routine checkup in present study had high prevalence of HBsAg (8.4%) as compared to non-pregnant females (2.7%). Different workers have also reported increased prevalence of HBsAg in pregnant females. In Sudan 5.6% pregnant women are hepatitis B positive (Elsheikh *et. al.*, 2007). In Ghana the positivity of HBsAg in pregnant females was very high (15.5%) (Cho *et. al.*, 2012). In Northern India study conducted in pregnant women has found high endemicity of hepatitis B carrier (9.5%) (Prakash *et. al.*, 1998).

Probably Immunosuppression in pregnancy is responsible for increased prevalence because virus is not cleared due to poor cell mediated immunity.



HBsAg positivity in present study was low in elderly persons. It is 2.6% in person between 17 to 55 years, while after 55 years it was 0.213%. In screening of elderly persons living in tents of Kumbh Mela also showed low positivity of HBsAg (1.19%). Hepatitis B infection is rare in most of the European countries in elderly persons (James, 1997) but a French study done in person over 65 years of age admitted in rehabilitation ward and nursing home revealed a very high carrier rate (16.7%) against 5% of adult population (James, 1997). Another study have done in old peoples and found a very high incidence of hepatitis B carrier (59%) (Kondo *et. al.*, 1993).

Probably in our country mostly elderly person becomes religious have less sexual activity and because of this incidence of hepatitis B carrier is less.

Liver Function Test (LFT) done in 19 cases showed mild abnormalities in all cases but none of the person had elevated total bilirubin or direct bilirubin. In 58% cases Alkaline Phosphatase and Indirect bilirubin was raised common finding was elevated SGPT followed by SGOT, Alkaline phosphatase and indirect bilirubin. Since total bilirubin and direct bilirubin was normal hence none of the patient developed jaundice.

Contrary to hepatitis B, hepatitis C is uncommon in our study. In screening 129 samples of Kumbh Mela we did not find any Anti HCV positivity whereas in screening of surgical patients showed total HCV positivity was 0.38% which included 0.31% of male and 0.49% in females.

Like us, a study (Elsheikh *et. al.*, 2007). showed low prevalence of hepatitis C virus carrier in pregnant Sudanese women (0.6%), whereas in India it is 0.4% (Jaiswal *et. al.*, 2007). to 0.5% (Singh *et. al.*, 2004).

Contrary to our study workers in Pakistan, Lahore reported very high prevalence of Anti HCV antibody (10.3%) (Nafees *et. al.*, 2009).

Interestingly none of the hepatitis B and hepatitis C positive patients gave history of blood transfusion or any surgical operation. Some cases had past history of taking some injections by doctors. Similarly to us, Elsheikh *et al*, 2007 also reported that blood transfusion, Surgical operation, Circumcision, Dental manipulation did not contribute significantly to hepatitis B virus positivity.

Thus our present study concludes that hepatitis B and C are uncommon in elderly persons but asymptomatic pregnant females has higher incidence of hepatitis B positivity. Hepatitis C infection in our areas is very low.

Study also concludes that probably sexual mode of transmission is more common than blood transfusion and intravenous drug abuser, in our area.

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