



## **Prevalence of Hepatitis B amongst Asymptomatic Persons Visiting Braithwait Memorial Specialist Hospital (BMSH), Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author BUF designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors CDO and GA managed the analyses of the study. Author GA managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

Hepatitis B virus infection is a major public health problem; it infects more than 400 million people worldwide. In recent years, the overall prevalence of this virus has declined due to its vaccine that is now in circulation. Hepatitis B virus causes liver injury by an immune response against the virus-infected liver cells but it's not directly cytopathic, but immunosuppression enhances replication and can lead to direct cytotoxicity. In this study, A survey was conducted amongst 200 randomly selected general out-patients within the ages of 10-80 years with pregnant women inclusive who are attending the Braithwait Memorial Specialist Hospital (BMSH) Nigeria, in order to ascertain the prevalence of Hepatitis B virus infection among patients attending Braithwait Memorial Specialist Hospital in Rivers State, Nigeria and the general knowledge of the people about this highly infectious disease. Sera collected were screened for the presence of Hepatitis B surface antigen ( )

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using Labacon Diagnostic Test Strip (Hangzhou Biotest Biotech Co., Ltd China) and a total of 32 out of the 200 respondents tested positive of Hepatitis B surface antigen, giving a percentage of 16% (32/200). Questionnaires were distributed to the subjects in order to ascertain their perceptions about the disease, and to obtain useful socio-demographic information. There was a poor management and prevention control of the disease and this may have accounted for the prevalence of 16% in the study population.

*Keywords: Hepatitis B; HBsAg; Asymptomatic persons; prevalence and braithwait.*

## 1. INTRODUCTION

Hepatitis B virus infection is a major public health problem worldwide; roughly 30% of the world's population show serological evidence of current or past infection. Hepatitis B virus is a partly double-stranded DNA virus with several serological markers: HBsAg and anti-HBs, HBeAg and anti-HBe, and anti-HBc IgM and IgG. It is transmitted through contact with infected blood and semen [1]. Hepatitis B virus was discovered in 1966 and we are yet to understand fully its intricacies. Hepatitis B viral infection is a major health problem with preference for the liver and is known to commonly lead to chronic infections [2]. The chronic infections increases the risk of death from childhood hepatic failure, cirrhosis of the liver to liver cancer. Globally, over 300 million people have chronic liver infections and about 600,000 people die annually from acute or chronic complications of hepatitis B infection [3]. The highest prevalence of hepatitis B infection is in sub-Saharan Africa and East Asia. Majority of the people in these regions become infected during childhood and between 5–10% of the adult population are chronically infected [4].

Several studies in children and adult have recorded prevalence rates of hepatitis B surface antigen (HBsAg) ranging from 4.1% to 44.7% varying from one region to another [5]. In a study done by Musa et al. [6], the pooled prevalence of HBV in Nigeria was 13.6% and for children were 11.5%. HBV prevalence in Nigeria also varied by the screening method used; the result varied from 12.3% by enzyme-linked immunosorbent assay; 17.5% by immunochromatography; and 13.6% by HBV DNA polymerase chain reaction. Thus, hepatitis B Virus infection is hyper-endemic in Nigeria and may be the highest in sub-Saharan Africa.

Hepatitis B virus (HBV) is a major cause of morbidity and mortality worldwide, accounting for over 360 million cases of chronic hepatitis and 620,000 deaths per year. More than 8% of the

population are infected in Sub-Sahara Africa (SSA) and it is a major cause of chronic liver diseases.

HBV account for a substantial portion of liver diseases worldwide and infected individuals can remain asymptomatic for decades. However, more than 80% of them become chronic carriers which result in an increased risk of liver cirrhosis, liver cancer and liver failure 20 - 30 years later [7].

In Nigeria, many investigators have found high HBV prevalence in adults and infants. Musa et al. [8] in his study, found that among 440 HIV positive patients, 12.3% were co-positive for HBV although pregnant women are generally considered low risk for HBV infection. In southern parts of Nigeria, up to 58.1% of patients with chronic liver disease were found HB positive.

The virus has been detected in peripheral mononuclear cells, tissues of pancreas, spleen, kidney and skin, and fluids like saliva, semen, sweat, breast milk, tears, urine and vaginal secretion [9].

In view of the advantages of early detection and prevention, this study is designed to determine the prevalence of HBV in an apparently healthy population. This is with a view to providing data for further research and awareness campaign for the need to know one's hepatitis status.

## 2. MEATERIALS AND METHODS

### 2.1 Study Area

This study was carried out from 21<sup>st</sup> May through 7<sup>th</sup> June 2018 at Braithwait memorial Specialist Hospital (BMSH), with focus on 200 patients attending General out-patient department (GOPD) with pregnant women inclusive and were randomly selected within the ages of 10 to 80 years. The patients were requested to fill a set of questionnaire which was completed and returned immediately.

## 2.2 Sample Collection

For the purpose of this study, blood samples were collected by venous puncture techniques. Blood samples were collected and transferred into a sterile ethylene plain bottle and properly labelled. The serum was then screened with a one-step Labacon Diagnostic test strip.

## 2.3 Hepatitis B Surface Antigen (HBsAg) Detection

The Hepatitis B surface antigen was tested using an in-vitro diagnostic kit “ LABACON HBsAg test strip” manufactured by Hangzhou Biotest Biotech Co., Ltd China.

The test strip is a qualitative, solid phase, two sides, sandwich immunoassay.

The Hepatitis test strip was dipped into each tube containing serum with the arrow pointing

downwards for 10 minutes, before checking and interpreting the results.

## 3. RESULTS AND DISCUSSION

### 3.1 Results Based on Specific Objectives

A total of 200 asymptomatic persons volunteered to participate in the study and the prevalence of hepatitis B virus was calculated to be 16% (32/200). There was a marked difference in the distribution of HBsAg by age group, sex and marital status. Individuals of both sexes who were above 50 years had the lowest prevalence. The distribution of HBV infection according to gender was statistically significant. However, higher prevalence was recorded among female respondents 8.5% (17/200) than the male respondents 7.5% (15/200).

**Table 1. Prevalence of HBV infection in relation to knowledge and risk factors among the study population**

S/n	Factors	Number Screened	Positive (%)
1	<b>Heard of HBV before</b>		
	Yes	182	10 (5%)
	No	18	14(7%)
2	<b>Screened for HBV before</b>		
	Yes	38	7(3.5)
	No	162	25(12.5)
3	<b>Ever received HBV immunization</b>		
	Yes	146	0
	No	54	22(11%)
4	<b>Family History of HBV</b>		
	Yes	12	9(4.5%)
	No	188	23(11.5%)
5	<b>Do You take alcohol</b>		
	Yes	32	13(6.5%)
	No	168	19(9.5%)
6	<b>Do you share clothing?</b>		
	Yes	30	11(5.5%)
	No	170	21(10.5%)
7	<b>Are you a health worker</b>		
	Yes	30	2(1%)
	No	170	30(15%)
8	<b>Are you pregnant</b>		
	Yes	50	2(1%)
	No	150	30(15%)
9	<b>Ever had blood transfusion</b>		
	Yes	94	6(3%)
	No	106	26(13%)

There was an observed statistical significant difference between HBs Ag and marital status. Out of the 105 singles of both males and females who participated in the screening exercise, the seropositive prevalence was 10.5% (21/200).

Furthermore, out of the 95 married respondents with pregnant women, non-pregnant women and men inclusive. 2.5% (5/200) married males were found positive, 2% (4/200) non-pregnant females and 1% (2/200), of the 50 pregnant women that was screened were positive mothers of hepatitis B virus. Similarly, the prevalence of hepatitis B was highest in patients with age group 21 to 40 years i.e 9.5% (19/200). Followed by 1.5% (3/200) prevalence in age group 10 to 20 years.

The hepatitis B was not detected in male patients within the age of 60 to 80 years. But was detected in female patients of the same age with the prevalence of 0.5% (1/200)

Based on the assessment of the administered questionnaires, 91% (182/200) have heard of hepatitis B before, 9% (18/200) have not heard of it before, hence exhibiting a high knowledge of the disease.

73% (146/200) have been previously vaccinated of the virus and none was found positive, 27% haven't been vaccinated before thus giving rise to 11% positive. 6% (12/200) have had a family history of hepatitis B and 4.5% (9/200) were found positive. 19% of the respondents have been screened of the virus before while 81% have not been vaccinated.

15% (30/200) previously shared clothing and 5.5% were found positive. 16% (32/200) drink alcohol and smoke cigarette 9.5% of them testing positive. 15% (30/200) were health workers and 1% positive was found.

There were 2 positive cases observed among 5% (10/200) of the study population which had participated in voluntary blood donation before this study was conducted.

Of the respondents 47% (94/200) were found to have undergone blood transfusion and a positive of 3% was indicated.

This survey has revealed a 16% (Figs. 1 and 2) prevalence of HBsAg among randomly selected general out patients attending Braithwait Memorial Specialist Hospital (BMS) Port Harcourt, River State, Nigeria, indicating the occurrence of HBV infection among asymptomatic individuals. This further means that HBV infection is endemic in the area of study, and this may be attributed to poor management of its mode of transmission, individual behaviour and practices in the study population.

The prevalence reported in this study is higher than 8.3% prevalence reported in a previous study conducted by Luka et al. [10] at Ahmadu Bello University Zaria, Kaduna State, Nigeria. The prevalence of 16% reported in this study is also higher than, 12.6%, 9.3% and 14% prevalence reported by many researchers [11,12,13] in Nnewi, Akwa and Abakiliki, Nigeria respectively.

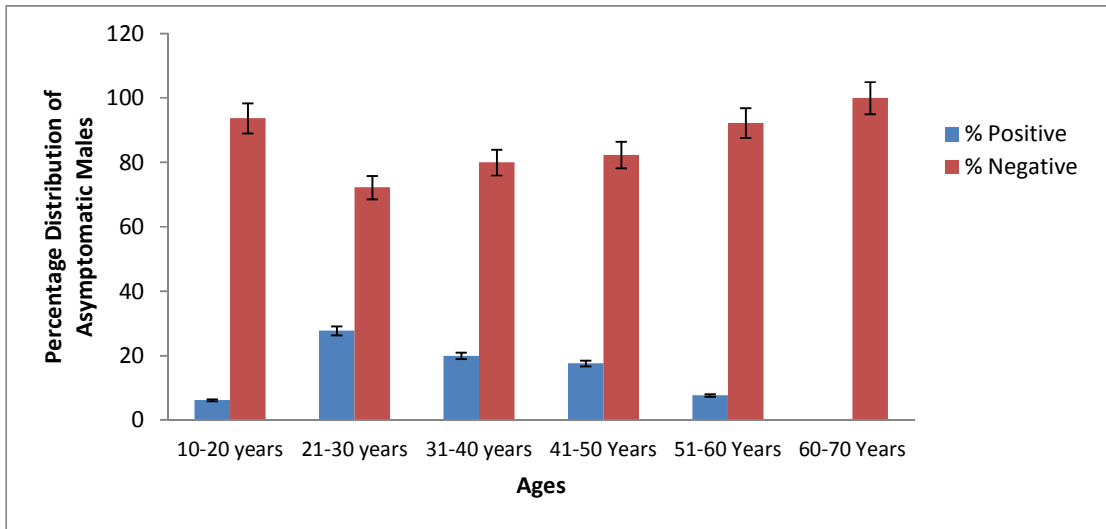
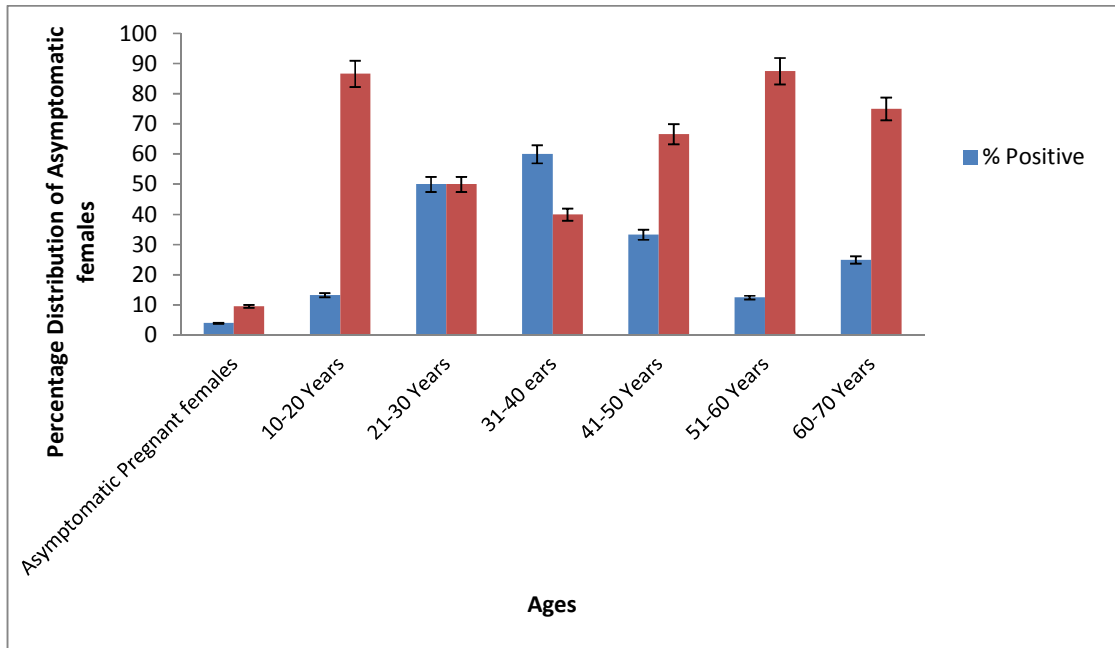


Fig. 1. Distribution of asymptomatic males



**Fig. 2. Asymptomatic females**

This present study revealed a high prevalence of HBsAg among the young and middle aged.

This study is in agreement with some of the studies conducted by Eke et al. [14] in Nnewi, Nigeria over time, which have shown no significant difference in the occurrence of HBV infection between male and female [15,16]. This therefore suggests that gender is not a predisposing factor, but that both male and female are equally predisposed to HBV infection. The lower HBV infection observed among married people may be more particularly with regards to being faithful to their spouses and keeping away from having multiple sexual partners.

The low prevalence of HBV infection among persons well informed about the disease could be as a result of the fact that, the knowledge acquired about prevention and control of the disease was translated into practice by this group of people. Likewise, persons with poor knowledge or who haven't heard about the HBV infection, transmission, prevention and control, had no prior knowledge and this probably increased their chances of exposure to the virus.

The low prevalence of people going for voluntary screening for HBV only reiterates the rate of poor knowledge about HBV infection in the study population.

The low prevalence of people who share clothing could be as a result of poor knowledge and poor hygiene. Knowledge of one's status is key to adopting adequate measures which could avert negative consequences in the future.

Immunization is regarded as the most effective control measures for HBV; the vaccine is said to be safe and effective in prevention of chronic carrier state development [17]. The statistically significant association between hepatitis B immunization status and seropositive of HBsAg in this study collaborates the above statement, as none of the respondents who has been immunized prior to this study had HBV infection.

Blood donation and transfusion are important risk factors of HBV infection. Transfusion of infected blood is major risk factor, this observation is in agreement with studies by many researchers [18,19,20]. Which rank blood transfusion of blood products as the most common risk factor for HBV transmission.

#### 4. CONCLUSION

The prevalence of hepatitis B in asymptomatic persons attending the General Out-Patient Department (GOPD), in Braithwait Memorial Specialist Hospital (BMSH), appeared to be 16% (32/200).

According to World Health Organisation (WHO) and global epidemiological distribution of the hepatitis B virus, the 16% indicates a high prevalence.

Despite the fact that 91% (182/200) of the respondents have heard of the virus before as shown by the administered questionnaires, there was still a high prevalence of the virus.

This may be due to the following reasons.

1. They only heard of the hepatitis B virus and may not have known how to avoid its route of transmission.
2. They might have known how to avoid its route of transmission but did not adhere properly to the rules and regulations.

Based on these findings, I therefore recommend that the following should be put into practice

There should be accurate behavioural modifications

Abstinence from unprotected sex with an infected individual.

Active immunization

Hepatitis B awareness campaign to enlighten the masses about the virus, its route of transmission, prevention and control strategies.

## CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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