

1 **PREVALENCE OF HEPATITIS B AMGONST ASYMPTOMATIC PERSONS VISITING**
2 **BRAITHWAIT MEMORIAL SPECIALIST HOSPITAL (BMSH), NIGERIA.**

3
4 **ABSTRACT**

5 Statistics has shown that Hepatitis B virus infects more than 400 million people worldwide. In
6 recent years, the overall prevalence of this virus has declined due to its vaccine that is now in
7 circulation. Hepatitis B virus causes liver injury by an immune response against the virus-
8 infected liver cells but it's not directly cytopathic, but immunosuppression enhances replication
9 and can lead to direct cytotoxicity. In this study, A survey was conducted amongst 200 randomly
10 selected general out-patients within the ages of 10-80 years with pregnant women inclusive who
11 are attending the Braithwait Memorial Specialist Hospital (BMSH) River State, Nigeria, in order
12 to ascertain the prevalence of Hepatitis B virus infection among patients attending Braithwait
13 Memorial Specialist Hospital in Rivers State, Nigeria and the general knowledge of the people
14 about this highly infectious disease. Sera collected were screened for the presence of Hepatitis B
15 surface antigen (HBsAg) using Labacon Diagnostic Test Strip (Hangzhou Biotest Biotech Co.,
16 Ltd China). Questionnaires were distributed to the subjects in order to ascertain their perceptions
17 about the disease, and to obtain useful socio-demographic information. A total of 32 out of the
18 200 respondents tested positive of Hepatitis B surface antigen, giving a percentage of 16%
19 (32/200). There was a poor management and prevention control of the disease and this may have
20 accounted for the prevalence of 16% in the study population.

21 **INTRODUCTION**

22 Hepatitis B virus infection is a major public health problem worldwide; roughly 30% of the
23 world's population show serological evidence of current or past infection. Hepatitis B virus is a
24 partly double-stranded DNA virus with several serological markers: HBsAg and anti-HBs,
25 HBeAg and anti-HBe, and anti-HBc IgM and IgG. It is transmitted through contact with infected
26 blood and semen (Trépo *et al.*, 2014). Hepatitis B virus was discovered in 1966 and we are yet to
27 understand fully its intricacies. Hepatitis B viral infection is a major health problem with
28 preference for the liver and is known to commonly lead to chronic infections (Ocama *et al.*,
29 2005). The chronic infection increases the risk of death from childhood hepatic failure, cirrhosis
30 of the liver to liver cancer. Globally, over 300 million people have chronic liver infections and
31 about 600,000 people die annually from acute or chronic complications of hepatitis B infection
32 (WHO, 2014). The highest prevalence of hepatitis B infection is in sub-Saharan Africa and East
33 Asia. Majority of the people in these regions become infected during childhood and between 5–
34 10% of the adult population is chronically infected (WHO, 2016).

35 Several studies in children and adult have recorded prevalence rates of hepatitis B surface
36 antigen (HBsAg) ranging from 4.1% to 44.7% varying from one region to another (Ugwuja, *et*
37 *al.*, 2010). In a study done by Musa, *et al.*, (2015), the pooled prevalence of HBV in Nigeria was
38 13.6% and for children were 11.5%. HBV prevalence in Nigeria also varied by the screening
39 method used; the result varied from 12.3% by enzyme-linked immunosorbent assay; 17.5% by
40 immunochromatography; and 13.6% by HBV DNA polymerase chain reaction. Thus, hepatitis B
41 Virus infection is hyper-endemic in Nigeria and may be the highest in sub-Saharan Africa.

42 Hepatitis B virus (HBV) is a major cause of morbidity and mortality worldwide, accounting for
43 over 360 million cases of chronic hepatitis and 620,000 deaths per year. More than 8% of the
44 population are infected in Sub-Sahara Africa (SSA) and it is a major cause of chronic liver

45 diseases. Estimated that 44% of cirrhotic liver disease and 47% of hepatocellular carcinoma
46 cases in Sub-Sahara Africa are attributed to HBV.

47 HBV account for a substantial portion of liver diseases worldwide and infected individuals can
48 remain asymptomatic for decades. However, more than 80% of them become chronic carriers
49 which result in an increased risk of liver cirrhosis, liver cancer and liver failure 20 - 30 years
50 later (Ugwuja *et al.*, 2010).

51 In Nigeria, many investigators have found high HBV prevalence in adults and infants. Musa, *et*
52 *al.*, (2015) in his study, found that among 440 HIV positive patients, 12.3% were co-positive for
53 HBV although pregnant women are generally considered low risk for HBV infection. In southern
54 parts of Nigeria, up to 58.1% of patients with chronic liver disease were found HB positive.

55 Hepatitis B virus (HBV) is the causative agent of hepatitis B infection. It is 50 - 100 times more
56 infectious than HIV with many carriers not realizing they are infected with the virus, thus it is
57 often referred to as a “silent killer. The minimum infectious dose is so low that such practices
58 like sharing a tooth brush or a razor blade can transmit infection. The virus has been detected in
59 peripheral mononuclear cells, tissues of pancreas, spleen, kidney and skin, and fluids like saliva,
60 semen, sweat, breast milk, tears, urine and vaginal secretion (Chen, *et al.*, 1996).

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

65

66 **METERIALS AND METHOD**

67 **STUDY AREA**

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

73 **SPECIMEN**

74 A serum specimen is recommended for this diagnosis

- 75 • Serum can be separated from the clot in an ethylene di-amine tetra acetate (EDTA) bottle,
76 within one hour after collection.

77 **SAMPLE COLLECTION**

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

81 **HEATITIS B SURFACE ANTIGEN (HBsAg) DETECTION.**

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

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

85 The Hepatitis test strip was dipped into each tube containing serum with the arrow pointing
86 downwards for 10 minutes, before checking and interpreting the results.

87 **RESULT INTERRETATION**

88 After the 10 minutes,

- 89 • A red line appearing on the control line (C) alone indicates a negative result.

- Two red lines on the test (T) and control (C) line indicates a positive result showing the presence of the hepatitis B surface antigen.
- A red line appearing on the test (T) line alone indicates an invalid result and the test should be repeated.

PRECAUTIONS TAKEN

The precautions taken in the course of this work are as follows:

- Only asymptomatic persons were considered
- The use of grossly haemolysed samples were avoided
- The test strip was checked for date of expiration.
- Mixed screening was avoided to ensure accurate result interpretation.
- Laboratory coat and gloves were worn during the whole procedure to prevent direct contact with the samples.
- The work bench was properly disinfected using bleaching agent and ethanol before and after the test.
- Care was taken to avoid spillage of the blood samples which could be contagious.
- The test needles were perforated and properly discarded.

RESULTS AND DISCUSSION

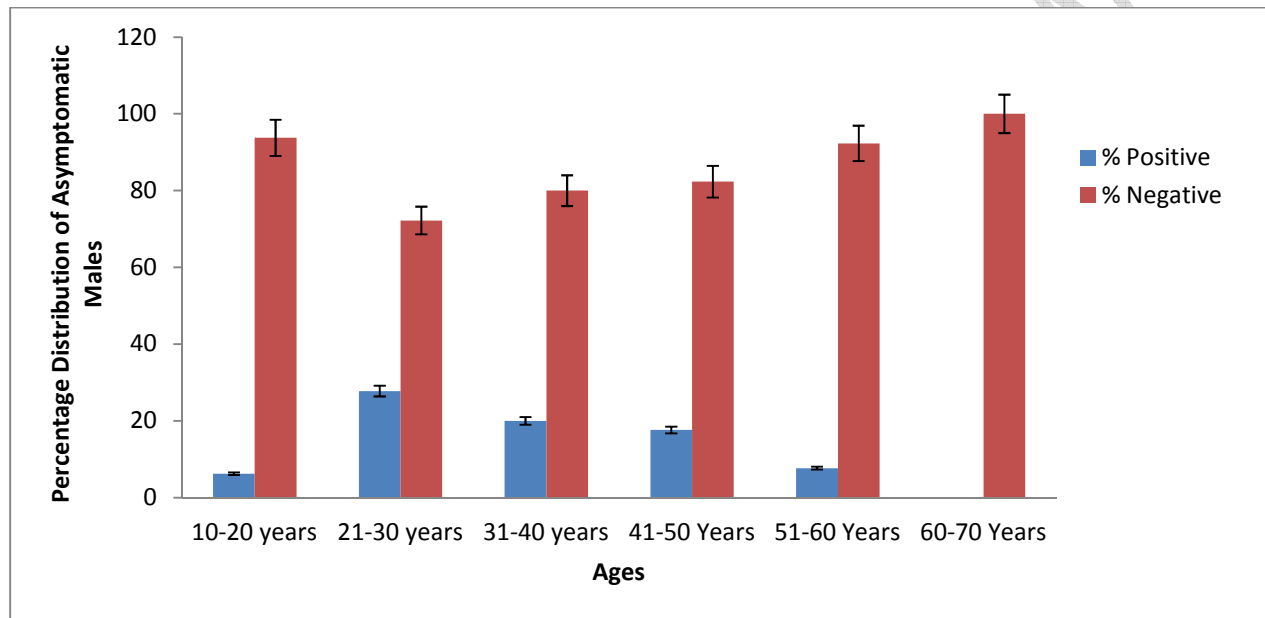
Table 1. Prevalence of HBV Infection in Relation To Knowledge and Risk Factors among the Study Population

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

	Yes	30	2(1%)
	No	170	30(15%)
8	Are you pregnant		
	Yes	50	2(1%)
	No	150	30(15%)
9	Ever had blood transfusion		
	Yes	94	6(3%)
	No	106	26(13%)

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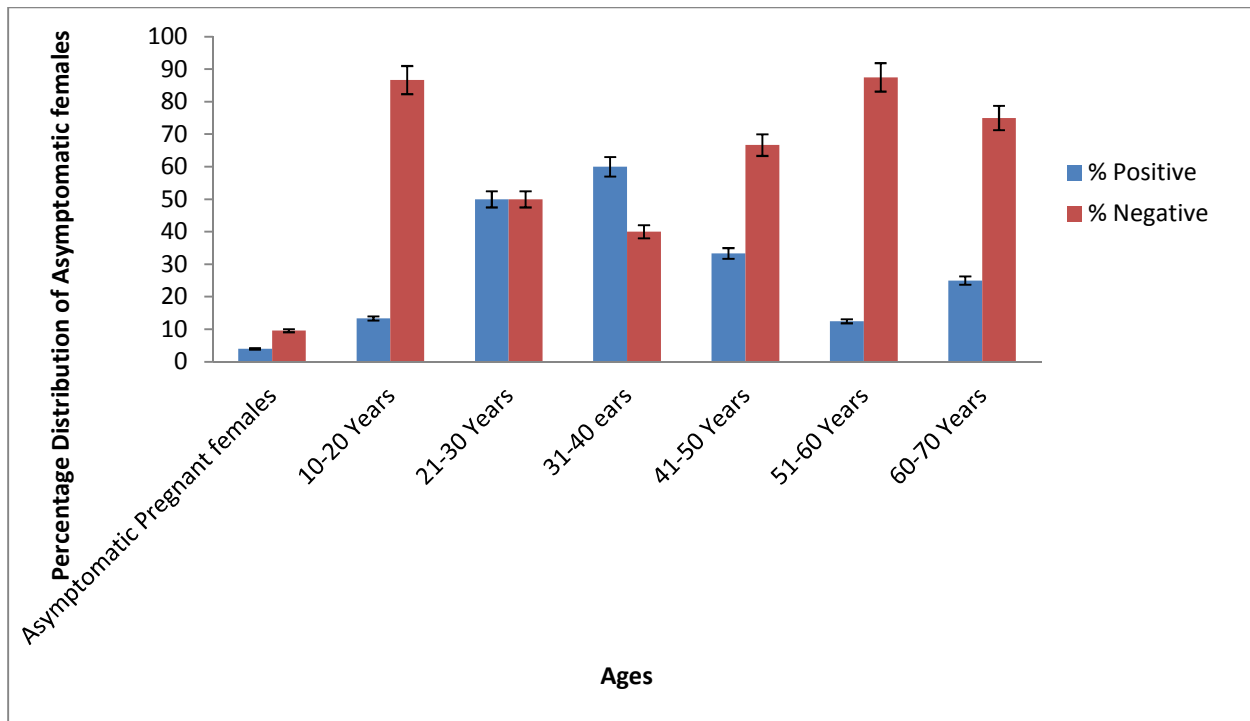
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Fig.1. Distribution of Asymptomatic males



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115 Fig.2. Asymptomatic Females

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RESULTS BASED ON SPECIFIC OBJECTIVES

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

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

127 Furthermore, out of the 95 married respondents with pregnant women, non-pregnant women and
128 men inclusive. 2.5% (5/200) married males were found positive, 2% (4/200) non-pregnant
129 females and 1% (2/200), of the 50 pregnant women that was screened were positive mothers of
130 hepatitis B virus. Similarly, the prevalence of hepatitis B was highest in patients with age group
131 21 to 40 years i.e 9.5 % (19/200). Followed by 1.5% (3/200) prevalence in age group 10 to 20
132 years.

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

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

138 73% (146/200) have been previously vaccinated of the virus and none was found positive, 27%
139 haven't been vaccinated before thus giving rise to 11% positive. 6% (12/200) have had a family

140 history of hepatitis B and 4.5% (9/200) were found positive. 19% of the respondents have been
141 screened of the virus before while 81% have not been vaccinated.

142 15% (30/200) previously shared clothing and 5.5% were found positive. 16% (32/200) drink
143 alcohol and smoke cigarette 9.5% of them testing positive. 15% (30/200) were health workers
144 and 1% positive was found.

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

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

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

155 The prevalence reported in this study is higher than 8.3% prevalence reported in a previous study
156 conducted by Luka *et al.* (2008) at Ahmadu Bello University Zaria, Kaduna State, Nigeria. The
157 prevalence of 16% reported in this study is also higher than, 12.6%, 9.3% and 14% prevalence
158 reported by (Ezegebudo *et al.*, 2008., Ugwuja *et al.*, 2010 and Chukwuka *et al.*, 2004) in Nnewi,
159 Akwa and Abakiliki, Nigeria respectively.

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

161 This study is in agreement with some of the studies conducted by Eke *et al.* (2011) in Nnewi,
162 Nigeria over time, which have shown no significant difference in the occurrence of HBV
163 infection between male and female (Kaine and Okafor, 1983 and Emechebe *et al.*, 2009). This
164 therefore suggests that gender is not a predisposing factor, but that both male and female are
165 equally predisposed to HBV infection. The lower HBV infection observed among married
166 people may be more particularly with regards to being faithful to their spouses and keeping away
167 from having multiple sexual partners.

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

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

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

178 Immunization is regarded as the most effective control measures for HBV; the vaccine is said to
179 be safe and effective in prevention of chronic carrier state development (WHO, 1998). The
180 statistically significant association between hepatitis B immunization status and seropositive of
181 HBsAg in this study collaborates the above statement, as none of the respondents who has been
182 immunized prior to this study had HBV infection.

183 Blood donation and transfusion are important risk factors of HBV infection. Transfusion of
184 infected blood is major risk factor, this observation is in agreement with studies by (Multimer *et*

185 *al.*,1994., Ali *et al.*,2006 and Sarwar *et al.*,2010). Which rank blood transfusion of blood
186 products as the most common risk factor for HBV transmission.

187 **SUMMARY**

188 The prevalence of hepatitis B in asymptomatic persons attending the General Out-Patient
189 Department (GOPD), in Braithwait Memorial Specialist Hospital (BMSH), appeared to be 16%
190 (32/200).

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

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

195 This may be due to the following reasons.

- 196 1. They only heard of the hepatitis B virus and may not have known how to avoid it's route
197 of transmission.
- 198 2. They might have known how to avoid its route of transmission but did not adhere
199 properly to the rules and regulations.

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

201 There should be accurate behavioural modifications

202 Abstinence from unprotected sex with an infected individual.

203 Active immunization

204 Hepatitis B awareness campaign to enlighten the masses about the virus, it's route of
205 transmission, prevention and control strategies.

206 **RECOMMENDATION**

207 In order to effectively manage hepatitis B surface antigen virus to an extent in which it will seem
208 that the virus has been eliminated, the following should be taken into consideration.

- 209 • Sharing of clothing should be avoided as this is one of the major routes of transmitting
210 the virus.
- 211 • Individuals should always in go for screening exercises to help them know their status. If
212 positive, treatment should be started immediately and if negative, he or she should be
213 vaccinated to remain safe.
- 214 • Pregnant mothers should be tested appropriately to know their status.
- 215 • Excessive intake of alcohol should be discouraged as this could trigger the inactive
216 carrier state.
- 217 • Those who are already positive should always go for check-ups at 6-12 month intervals,
218 to know their ALT levels.
- 219 • They should not be stigmatized, but universal precautions should be carefully taken.
- 220 • They should not donate blood, tissue, organ or semen as these could transmit the virus.
- 221 • New born babies should be vaccinated at birth with active and passive immunization
222 within 12 hours of the birth.
- 223 • In summary, every individual should be vaccinated of HBsAg virus as this will go a long
224 way in controlling the disease.

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UNDER PEER REVIEW