

## Prevalence of Viral Hepatitis among Antenatal Women at a Private Hospital in Enugu: A 5-Year Retrospective Review

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### ABSTRACT

**Background:** The inflammation of the liver as a result of infection by one or more classes of the viruses known as hepatitis is known as viral hepatitis. Hepatitis virus of public health importance and especially in pregnancy are majorly hepatitis-B and hepatitis-C. However, hepatitis-B appears to cause more harm both for the mother and her unborn child. Globally, hepatitis-B infections affect about 350 million people and these include pregnant women. It causes about 1.2 million deaths per annum and Nigeria is not spared from its onslaught. Proper knowledge about viral hepatitis is low resulting in a significant number of people living with the infection with its attendant consequences. This retrospective study becomes imperative as it will reveal the extent to which preventive programs of government have succeeded and to stimulate further study on the best approach in tackling the menace and reducing its consequences.

**Aim:** To determine the prevalence of hepatitis B and C among antenatal women in a private hospital from December 31, 2022 to January 1, 2018.

**Methodology:** This was a retrospective review of all the antenatal women at the hospital from December 31<sup>st</sup>, 2022 to January 1<sup>st</sup>, 2018

**Data analysis:** Data was analyzed with Statistical Product Service Solutions version 25.0 for windows and the result was presented using table, means, percentages and charts.

**Result:** From the data collated only 434 case files contained adequate information required for analysis. Out of the total, 148(34.1%) were aged 20-25 years, 122(28.1%) were aged 26-30 years and those aged 41 years or above were only 11(2.5%). Most of them were married constituting 95.2%. One hundred and sixty (36.9%) were small scale trader and 17(3.9%) were health workers whereas only 5(1.2%) were farmers. Forty percent of them were nulliparous whereas 1.9% were grand multiparous. Only 16(3.7%) of the clients had received blood transfusion in the past whereas the majority 418(96.3%) never received transfusion prior to screening. One hundred and ninety-nine (48.9%) did not have any prior knowledge their hepatitis-B status, 233(54.05%) were negative, and only 2(0.05%) were positive prior to the screening. On the other hand, 208(47.9%) of the clients did not have any knowledge of their hepatitis-C status, 226(52.1%) were negative and none was positive prior to their screening. The prevalence of hepatitis-B was 2.5% and that of hepatitis-C was 0.5%.

Age and marital status had no significant association with hepatitis-B infection; while occupation and parity showed significant association with a p-value of 0.001 and 0.03 respectively. It was also found that there was no significant association between age, marital status, occupation or parity and hepatitis-C infection; as all the variables had p-values of greater than 0.05. The relative risk (RR) of testing positive by those who were ignorant of their status was 2(2) for hepatitis-B and 0.99(0%) for hepatitis-C.

**Conclusion:** There is a low prevalence of hepatitis-B and C among our antenatal women, but the risk of testing positive by those ignorant of their hepatitis-B status is high.

### Keywords

Prevalence, Retrospective, Viral Hepatitis, Antenatal Women, Enugu.

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## Introduction

The inflammation of the liver arising from infections by certain viruses known as hepatitis viruses is known as viral hepatitis. The viruses include hepatitis A to E. However, the most important of them are hepatitis B and C. More than 350 million people are infected by hepatitis-B virus and more than 50% of them got infected either perinatally or early in childhood [1,2]. The World Health Organization estimated also that out of every 3 people in the world 1 is infected by hepatitis B or C [3] and that 1.1 million died from its complications in 2019 alone [3-5]. The prevalence of hepatitis virus infection differ from region to region across the globe and even within a given region due to certain dynamics that determine the risks of infection. Hope Nwoga et al. in 2021 found a hepatitis-B virus prevalence of 1% among antenatal women of ESUT Teaching Hospital, Enugu in a prospective cohort study and they concluded that hepatitis-B endemicity was low among the study population [6]. In a cross-sectional study of a large population of health workers in University of Nigeria Teaching Hospital, Enugu, UN Ijoma et al. found a sero-prevalence of 2.3% for hepatitis B and they concluded that there was a low prevalence of the infection in Enugu compared to other African countries [7]. Hepatitis-B seems to be a more important virus of global importance than hepatitis -C (HCV). However, hepatitis-C can cause significant liver complications in infected persons. In Nigeria, the prevalence of hepatitis-C is 2.2% [8]. Globally, about 110 million persons have been estimated to have a history of HCV infection while 80 million persons have a chronic infection [9]. These figures buttress the fact that HCV constitute a significant burden on global health. Unfortunately, there is yet no known vaccine for HCV.

The natural history of viral hepatitis infections and their complications suggest that effort should be put in place to eradicate the infection and stop the complications. This study will enable us estimate the burden of the condition among our antenatal women who are a sub-set of the entire community. This knowledge will guide the government and other policy makers as they institute measures to eradicate the infection.

## Aim

To determine the prevalence of hepatitis B and C among antenatal women at SEMINO Specialist Hospital from December 31, 2022 to January 1, 2018.

## Specific Objectives

To determine the:

- Prevalence of viral hepatitis infection
- Prevalence of hepatitis-B
- Prevalence of hepatitis-C
- The proportion of the women who knew their status before booking

## Study Location and Setting

The study was done in a private hospital, SEMIO Hospital,

Enugu. This is a specialist hospital located in Abakpa-Nike, a sub-urban area in Enugu-East LGA of Enugu State. The centre offers specialist care in women & maternal /child health such as preconception care, antenatal care (ANC), fertility services and special newborn care. It boasts of three consultant obstetricians one of which is a professor of maternal health, one adjunct consultant anaesthetist and a paediatrician, an array of nurses and midwives. It has a laboratory section headed by a laboratory scientist and investigations such as haematological, biochemical and microbiological tests are done in the laboratory. It also has an immunization and mini blood banking services that meet the hospital needs.

## Methodology

This was a retrospective review of all the antenatal women in the hospital from December 31<sup>st</sup>, 2022 to January 1<sup>st</sup>, 2018. Requisite data was collated from their case files using a specially designed Excel sheet. Information collected included biodata, hepatitis B and C status before and during the antenatal care and presence of symptoms. Case files that did not contain adequate information needed were dropped. The collated data were then transferred to Statistical Products and Service Solutions (SPSS) version 25.0 for analysis. The result was presented using table, means, percentages and charts.

## Results

From the data collated only 434 case files contained adequate information required for analysis. Table 1 below showed the socio-demographic distribution of the antenatal clients. Out of the total, 148(34.1%) were aged 20-25 years, 122(28.1%) were aged 26-30 years and those aged 41 years or above were only 11(2.5%). Most of them were married constituting 95.2%. One hundred and sixty (36.9%) were small scale trader and 17(3.9%) were health workers whereas only 5(1.2%) were farmers.

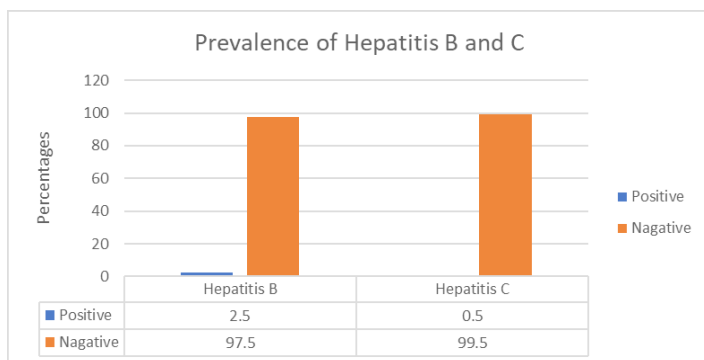
**Table 1:** Socio-demographics of patients.

Variable	Frequency	Percentage
<b>Age group</b>		
<20	90	20.7
20-25 years	148	34.1
26-30 years	122	28.1
31-35 years	63	14.5
41 years and above	11	2.5
<b>Marital status</b>		
Single	19	4.4
Married	413	95.2
Separated/divorced	2	0.5
<b>Occupation</b>		
Civil servant	94	21.7
Health workers	17	3.9
Farmer	5	1.2
Student	92	21.2
Unemployed	66	15.2
Trading	160	36.9

Table 2 below showed the distribution of the clients according to some clinical status. Forty percent of them were nulliparous whereas 1.9% were grand multiparous. Only 16(3.7%) of the clients had received blood transfusion in the past whereas the majority 418(96.3%) never received transfusion prior to screening. One hundred and ninety-nine (48.9%) did not have any prior knowledge their hepatitis-B status, 233(54.05%) were negative, and only 2(0.05%) were positive prior to the screening. On the other hand, 208(47.9%) of the clients did not have any knowledge of their hepatitis-C status, 226(52.1%) were negative and none was positive prior to their screening. From the data collated and analyzed, the prevalence of hepatitis-B was 2.5% and that of hepatitis-C was 0.5%.

**Table 2:** Distribution of clients according to some clinical status.

Variable	Frequency	Percentage
<b>Parity</b>		
0	177	40.80
1	92	21.20
2	85	19.60
3	46	10.60
4	26	6.00
5	6	1.40
6	2	0.50
<b>Previous transfusion</b>		
Yes	16	3.70
No	418	96.30
<b>Known Hepatitis B patient</b>		
Unknown	199	45.90
Negative	233	54.05
Positive	2	0.05
<b>Known Hepatitis C patient</b>		
Unknown	208	47.90
Negative	226	52.10
Positive	0	0.00
<b>Current Hepatitis B patient</b>		
Positive	11	2.50
Negative	423	97.50
<b>Current Hepatitis C patient</b>		
Positive	2	0.50
Negative	432	99.50



**Figure 1:** Prevalence of Hepatitis B and C.

Table 3 showed the associations between hepatitis-B and some socio-demographic variables.

Age and marital status had no significant association with hepatitis-B infection; while occupation and parity showed significant association with a p-value of 0.001 and 0.03 respectively.

**Table 3:** Association between current Hepatitis B with socio-demographics.

Variable	Positive N (%)	Negative N (%)	Total N (%)	X <sup>2</sup> (p value)
<b>Age group</b>				
20-25 years	3(27.3)	87(20.6)	90(20.7)	3.94(0.42)
26-30 years	6(54.5)	142(33.6)	148(34.1)	
31-35 years	2(18.2)	120(28.4)	122(28.1)	
36-40 years	0(0)	63(14.9)	63(14.5)	
41 years and above	0(0)	11(2.6)	11(2.5)	
<b>Marital status</b>				
Single	0(0)	19(4.5)	19(4.4)	0.57(0.75)
Married	11(100)	4.2(95)	413(95.2)	
Separated/ divorced	0(0)	2(0.5)	2(0.5)	
<b>Occupation</b>				
Civil servant	0(0)	94(22.2)	94(21.7)	21.99(0.001)*
Health workers	3(27.3)	14(3.3)	17(3.9)	
Farmer	0(0)	5(1.2)	5(1.2)	
Student	0(0)	92(21.7)	92(21.2)	
Unemployed	3(27.3)	63(14.9)	66(15.2)	
Trading	5(45.4)	155(36.6)	160(36.9)	
<b>Parity</b>				
0	1(9.1)	176(41.6)	177(40.8)	9.20(0.03)*
1-2	8(72.7)	169(40)	177(40.8)	
3-4	1(9.1)	71(16.8)	72(16.6)	
5 and above	1(9.1)	7(1.7)	8(1.8)	

Table 4 showed the association between current hepatitis-C status and some socio-demographic variables. It was found that there was no significant association between age, marital status, occupation or parity and hepatitis-C infection; as all the variables had p-values of greater than 0.05.

Table 5 showed the risk of testing positive for either hepatitis-B or C by a client who did not know her status ab-initio. Hence, with a relative risk (RR) of 2(2) for hepatitis-B there was a high risk of testing positive for a client who was not initially screened. However, the RR of 0.99(0) for hepatitis-C indicated a very low risk of testing positive for a client who had never been screened.

**Table 4:** Association between current Hepatitis C with socio-demographics.

Variable	Positive N (%)	Negative N (%)	Total N (%)	X <sup>2</sup> (p value)
<b>Age group</b>				
20-25 years	0(0)	90(20.8)	90(20.7)	5.14(0.27)
26-30 years	0(0)	148(34.3)	148(34.1)	
31-35 years	2(100)	120(27.8)	122(28.1)	

36-40 years	0(0)	63(14.6)	63(14.5)	
41 years and above	0(0)	11(2.5)	11(2.5)	
<b>Marital status</b>				
Single	0(0)	19(4.4)	19(4.4)	0.12(0.95)
Married	2(100)	411(95.1)	413(95.2)	
Separated/ divorced	0(0)	2(0.5)	2(0.5)	
<b>Occupation</b>				
Civil servant	0(0)	94(21.8)	94(21.7)	3.44(0.63)
Professional	0(0)	17(3.9)	17(3.9)	
Farmer	0(0)	5(1.2)	5(1.2)	
Student	0(0)	92(21.3)	92(21.2)	
Unemployed	0(0)	66(15.3)	66(15.2)	
Trading	2(100)	158(36.6)	160(36.9)	
<b>Parity</b>				
0	2(100)	175(40.5)	177(40.8)	2.92(0.41)
1-2	0(0)	177(41)	177(40.8)	
3-4	0(0)	72(16.7)	72(16.6)	
5 and above	0(0)	8(1.9)	8(1.8)	

**Table 5:** Risk of having Hepatitis B and C.

<b>Current hepatitis-B status</b>					
Variable	Positive	Negative	Total	X <sup>2</sup> (p value)	Odds(RR)
	N (%)	N (%)	N (%)		
<b>Known B Patient</b>					
Unknown	7(63.6)	192(45.4)	199(45.9)	1.44(0.23)	2(2)
Negative	4(36.4)	231(54.6)	235(54.1)		
<b>Current hepatitis-C status</b>					
	Positive	Negative	Total	X <sup>2</sup> (p value)	Odds(RR)
	N (%)	N (%)	N (%)		
<b>Known C Patient</b>					
Unknown	2(100)	206(47.7)	208(47.9)	2.18(0.14)	0.99(0)
Negative	0(0)	226(52.3)	226(52.1)		

## Discussion

The aim of this retrospective study was to determine the prevalence of hepatitis B and C among antenatal women in a private hospital from December 31, 2022 to January 1, 2013. From the result, the prevalence of hepatitis-B was 2.5% and that of hepatitis-C was 0.5%. The result showed a low prevalence of both viruses. Hepatitis-B appears to have taken a more prominent position globally, than C perhaps due to the virulence of the virus. A hospital-based study in a specialist centre in done in South-West, Nigeria on the seroprevalence of hepatitis-B and C, the results showed very high prevalence for the two viruses. The prevalence of B and C were 6.7% and 8.1% respectively [10]. These results are very high when compared with our findings and other literature and this could be due to the population studied, which were health workers, and it emphasizes the rising prevalence of the infection among health workers and the need to pay more attention to its prevention. In our own study, occupation has a significant influence on the prevalence of hepatitis-B but not on C. In a review of antenatal investigation results in ESUT

Teaching hospital in 2017, Okafor II et al. found a prevalence of hepatitis-B surface antigen positivity of 3.14% [11]. This result was similar to our result of 2.5%. Both studies were hospital based and retrospective in nature, however, the quoted study was done in a teaching hospital and did not include hepatitis-C prevalence. In another hospital-based, prospective, cohort study in 2021, done in Enugu, Nwoga et al. [6] found a hepatitis-B prevalence of 1% and concluded that the prevalence of hepatitis-B was low. This was a little lower than our findings. The seeming difference could be due to the difference in the study methodology, sample size, time and setting of the study. It may also reflect a general reduction in the prevalence of hepatitis-B in response to the various governmental and non-governmental programs to reduce hepatitis-B infections. As noted earlier, studies have focused more on hepatitis-B than C but significant work on hepatitis-C has been cited. In a cross-sectional study done at Obafemi Awolowo University Teaching Hospital, Ile-Ife, among 115 type-2 diabetic patients compared with 2,301 blood donors, the prevalence of hepatitis-C seropositivity was 2.2%, which was way higher than our prevalence of 0.5%. The difference in the prevalence could be due to differences in demographics of the participants in the two studies. While we studied 434 pregnant women, the above study was on 115 diabetic patients compared with 2,301 blood donors. Ours was a hospital-based, retrospective study among pregnant women. Secondly, a study by Ejele OA, et al. [12] done in the Niger Delta region of Nigeria revealed a hepatitis-C prevalence of 3%. This is quite high when compared with our finding of 0.5%. However, the studies were done in different regions with different population demographics. In another study done among students of Achievers University Idashen, Owo, in south-western Nigeria involving 70 respondents, the seroprevalence of hepatitis-C was 0% [13] similar to our finding. This could also be due to the small number of respondents involved in the study.

From our study, only 199(45.9%) and 208(47.9%) respectively were not aware of their hepatitis-B and C status prior to their screening. In a study among health workers [10] the knowledge of both viruses was high. For hepatitis-B, 89% were aware of the virus whereas 75.6% were aware of hepatitis-C. These were higher than the awareness of our clients, which could be due to the differences in their occupations. While they studied health workers our study was on all antenatal women many of whom are not health workers.

Currently, efforts are being made in establishing routine screening for hepatitis-C among antenatal women and the community at large as is currently done in ESUT Teaching Hospital, Enugu, to unravel the actual prevalence of the condition and direct on the best policies and programs to reduce or eliminate the infections and their attendant consequences.

## Conclusion

There is a low prevalence of hepatitis-B and C among our antenatal women, but the risk of testing positive by those ignorant of their hepatitis-B status is high.

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## Recommendations

More efforts should be channeled towards more enlightenment, screening and vaccination to prevent the infections and the attendant health complications.

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