

Original Article

HEPATITIS B PREVALENCE AND RESPONSE RATE TO COUNSELING AMONG WOMEN OF CHILD-BEARING AGE IN THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA: A RETROSPECTIVE STUDY

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Abstract

Background: Hepatitis B is a chronic infectious disease caused by the Hepatitis B virus (HBV), which primarily damages the liver. This study assessed the prevalence and awareness of hepatitis B among women of childbearing age and their responses to counseling in the Federal Capital Territory (FCT), Abuja, Nigeria.

Methods: The study is a retrospective cross-sectional study of three (3) health facilities (A, B, and C) in the largest area council of the FCT from 2020 to 2022. The study included 859 women of childbearing age (18-49 years), and data regarding socio-demographic characteristics, HBV infection prevalence, and counseling sessions were gathered and analyzed by SPSS version 20 using descriptive statistics.

Results: The findings revealed that the prevalence rate of HBV infection among the women from the health facilities over three years (2020-2022) was 11.76%, with the highest prevalence in women aged 18-30 years. Seventy percent (n = 602) of the women across the facilities had formal education, 28% were aware of the disease, and 27% (n=27) of the infected women responded positively to counseling.

Conclusion: The prevalence of hepatitis B among women of childbearing age in the health facilities was high. The high level of formal education among the women did not translate into adequate awareness of HBV or a response to counseling, underscoring the need to promote effective hepatitis B awareness campaigns and introduce strategies that will encourage counseling to mitigate the burden of hepatitis B and help achieve the WHO's objective of eliminating the virus by 2030.

Keywords: Hepatitis B, prevalence, awareness, counseling, childbearing women, Abuja

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INTRODUCTION

Hepatitis B is a liver disease of particular concern, especially for women of childbearing age [1]. The disease manifests after the hepatitis B virus (HBV) invades the human body. The virus enters liver cells called hepatocytes and replicates its DNA many times in the nucleus, thereby destroying liver tissue and causing cirrhosis and liver cancer [2]. Routes of HBV transmission include unprotected sexual intercourse,

improper use of needles, and blood transfusions, among others [3].

HBV can persist in the human body for over 30 years without clinical symptoms after infection [1]. A distinct geographical distribution of HBV genotypes and subgenotypes has been reported [4-6]. In sub-Saharan Africa, hepatitis A, D, and E are the predominant HBV genotypes, while B and C HBV genotypes are highly endemic in West Africa, with a record

of over 8% hepatitis B surface antigen (HBsAg) chronic carriers [7].

In addition, pregnant women infected with the virus can transmit HBV to their unborn child [8]. According to the WHO, 296 million people were reported to have chronic hepatitis B infection in 2019, which mostly resulted in liver cirrhosis and hepatocellular carcinoma, with an estimated 820,000 annual deaths [1]. Nigeria is among the countries in Africa with a high prevalence rate of 9.5% HBV infection [9], and this has become a public health concern. While vaccination is important in curbing the transmission of viral infections, awareness and counseling have also been suggested to play significant roles in mitigating the burden of diseases, including HBV infection [10, 11].

Additionally, some studies in the past have reported the prevalence of HBV infection among women in Nigeria; however, few have emphasized women's response to counseling post-diagnosis [12, 13]. Hence, this study assessed the prevalence of hepatitis B among women of childbearing age in the Abuja Municipal Area Council (AMAC) of the Federal Capital Territory (FCT), Abuja, over three years (2020–2022), including their responses to counseling. The study is intended to inform policies toward achieving the WHO's target of eliminating hepatitis B by 2030.

MATERIALS AND METHODS

Study Design

This cross-sectional study used secondary data to examine the epidemiology of HBV infection among women of childbearing age across three undisclosed health facilities in the Abuja Municipal Area Council (AMAC) of the FCT, from January 2020 to December 2022. The three healthcare facilities (facilities A, B, and C) were randomly selected for the study. These health facilities provide services including diagnosis, vaccination, treatment, and counseling on hepatitis B disease.

Study Area

Abuja Municipal Area Council (AMAC) is one of the area councils of the Federal Capital Territory (Figure 1). Abuja is the capital city of Nigeria and lies between latitudes 8.25°N and 9.20°E of the equator and longitude 6.45°E and 7.39°E of the Greenwich Meridian. It is situated in the center of the country with a land mass of approximately 7,315km² in the Savannah region with moderate climate conditions. The FCT

is also located north of the Confluence of the popular Rivers Niger and Benue in the country.

Study Population and Data Collection

Secondary data of eight hundred and fifty-nine (859) women of childbearing age (18 to 50 years) who visited government-established health facilities A, B, and C from January 2020 to December 2022 were used for this study. Electronic medical records were used to collect information relating to the socio-demographic characteristics (age, marital status, and level of education) and prevalence of HBV infection, while the counseling register was used to collect information on response to counseling.

Method of Validation of Instrument

Instrument reliability and validation were done through one-on-one discussions with health counselors from the three healthcare facilities used for this study. The counselors from the healthcare facilities were instrumental in extracting relevant information from their database.

Data Analysis

Descriptive statistics were used for data representation using SPSS version 20. Frequency tables and percentages were utilized for categorical responses.

Ethical Approval

Ethical approval was sought and obtained from the health district head of Abuja Municipal Area Council, with the ethical approval number “AMAC-HD-45601” issued before the commencement of the study at the three health facilities. An approval was also issued by the National Open University of Nigeria Research and Ethical Committee to conduct this study, with the issuance of ethical approval number ETC/2025/04NOU201016569.

RESULTS

Table 1 depicts the number of women of childbearing age recruited from each health facility for this study from 2020 to 2022 and their socio-demographic characteristics. Facility A recorded a total of 323 women between 2020 and 2022; facility B recorded 288, while facility C recorded 248. The socio-demographic characteristics of the 859 recruited women showed that women aged 15-49 years were captured in the study. The mean age was 32, and the predominant age group was 18-30 years, representing 52.15% (n=448) of the recruited population. Five hundred and fifty-eight (558) of

the women, who make up 64.96%, were married, while 35.04% (n=301) were single.

The percentage of women with formal education was 70.08% (n=602), while others who make up 29.92% (n=257) had no formal education (Table 1). Figure 1 illustrates the level of awareness of hepatitis B disease among the women of childbearing age who visited health facilities A, B, and C for screening, respectively, for the period of three years (2020-2022). The results showed that health facilities A, B, and C recorded 70.59% (n=228), 72.21% (n=207), and 72.17% (n=179) number of women who were not aware of hepatitis B disease, respectively, before HBV screening, while the women who were aware of the disease from each health facility A, B, and C were 29.41% (n=95), 27.78% (n=80), 27.82% (n=69), respectively. Overall, this amounted to a cumulative average of 72% who were not aware of the disease and 28% who were aware of the disease, as depicted in Figure 1.

Table 2 depicts the overall and annual breakdown of the prevalence rates of HBV infection among women of childbearing age in the three health facilities from 2020 to 2022. The three healthcare facilities had an overall (2020-2022) HBV prevalence of 13.30% (n=43), 11.10% (n=32), 10.47% (n=26) for A, B, and C, respectively. This amounted to an average of 11.62% (n=84) for the three health facilities where the study was conducted. Health facility A recorded

the highest prevalence from 2020-2023, while health facility C recorded the least prevalence from 2020-2-23 (Table 3).

Additionally, the prevalence of hepatitis B cases recorded in each year (2020, 2021 and 2022) for the three health facilities showed that the highest prevalence rate of HBV infection (13.40%) among women of childbearing age was recorded in 2021 for the three health facilities (A+B+C) ; however, this declined to 11.80% in 2022, but the HBV prevalence in the three health facilities (A+B+C) for 2020 was 10% (Table 2). Figure 2 depicts the prevalence of HBV infection among women of childbearing age in the three health facilities for each year: 2020, 2021, and 2022.

All three health facilities (A, B, and C) recorded the highest cases of HBV infection among the women in 2021 and the lowest in 2020. Facility A recorded 3.71%, 4.95%, and 4.64% of women who tested positive for HBV infection for 2020, 2021, and 2022, respectively, while facility B recorded 3.12%, 4.51%, and 3.47%, respectively, and facility C recorded 3.22%, 4.03%, and 3.22% of HBV infection, respectively (Figure 2).

Figure 3 shows the overall response rate of women of childbearing age infected with HBV to counseling from the three facilities. Cumulatively, 73% (n=74) out of the 101 women of childbearing age infected with HBV did not show up for counselling, while 27% (n=27) responded to counselling.

Table 1: Number of recruited women of childbearing age from the health facilities and sociodemographic characteristics

Health facilities		Number of studied participants	
A		323	
B		288	
C		248	
		Total	859
Socio-demographic characteristics			
Age group in years		Frequency	Percentage (%)
18-30		448	52.15
31-40		276	32.13
41-50		135	15.72
Marital Status			
Married		558	64.96
Single		301	35.04

Education

Formal Education	602	70.08
Informal Education	257	29.92

Mean age = 32

Table 2: Overall and annual prevalence rate of HBV infection among women of childbearing age for the three healthcare facilities

Health facilities	Frequency	HBV Prevalence Percentage (%)
Overall Prevalence (2020-2022)		
A (323)	43	13.30
B (288)	32	11.10
C (248)	26	10.47
Cumulative Average	84	11.62
Annual breakdown of prevalence of HBV infection for facilities A+B+C		
Year	HBV Prevalence (A+B+C)	
2020	29	10
2021	39	13.4
2022	33	11.8
Total	101	11.9

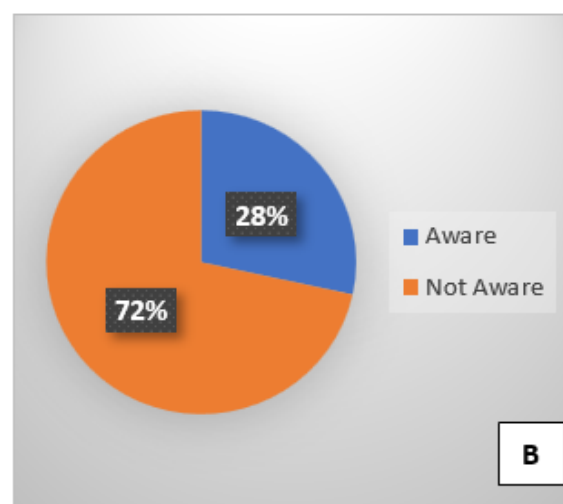
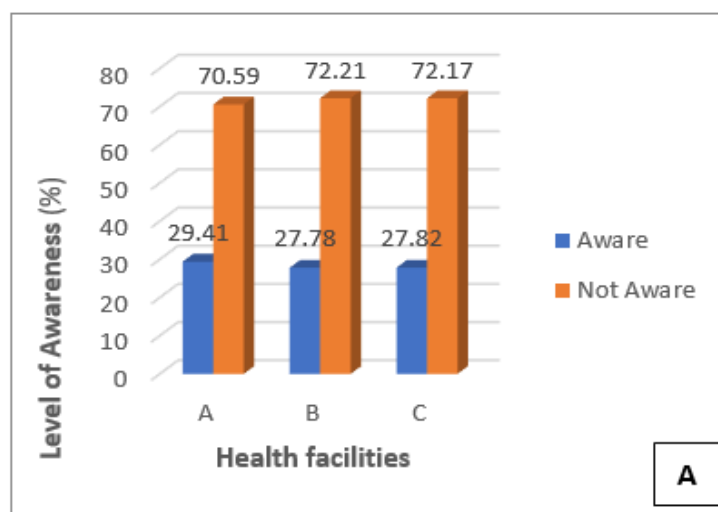


Figure 1: (a) Level of hepatitis B disease awareness among women of childbearing age from health facilities A, B, and C in AMAC, FCT-Abuja, respectively. **(b)** Overall level of hepatitis B disease awareness among the 859 women of childbearing age in health facilities A, B, and C from 2020 to 2022

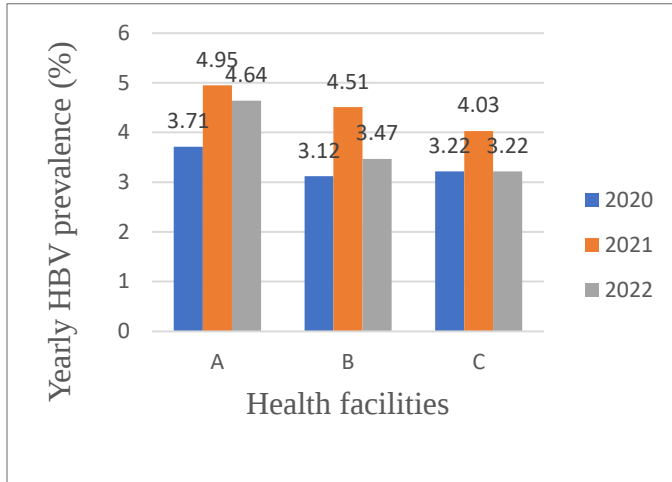


Figure 2: Annual prevalence of HBV in women of childbearing age from the A, B, and C healthcare facilities in FCT-Abuja from 2020 to 2022

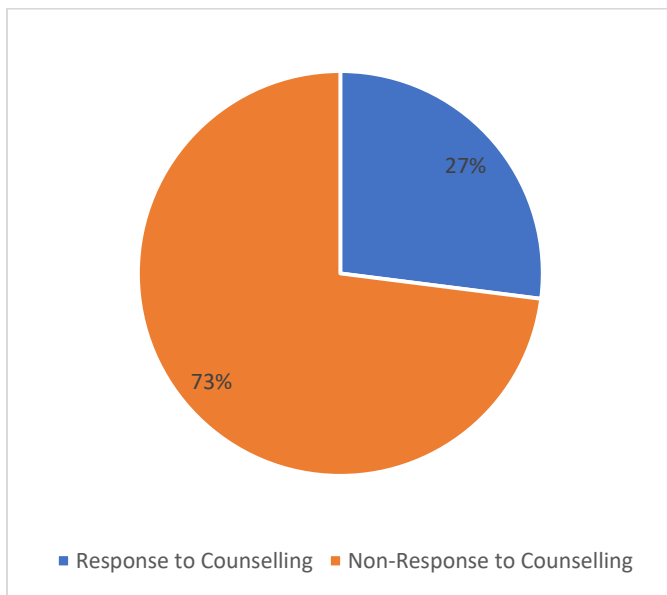


Figure 3: Overall response rate of women of childbearing age infected with HBV to counseling

DISCUSSION

This study, which investigated the HBV infection among women of childbearing age from three health facilities in Abuja Municipal Area Council of the Federal Capital Territory during the COVID-19 pandemic from 2020 to 2022, revealed that one hundred and one (101) women of childbearing age out of an entire 859 women screened for HBV infection were infected with the virus, which

amounted to 11.62% prevalence rate. This estimated burden effectively classifies HBV infection as highly endemic ($>8\%$) among the women across the three facilities according to the World Health Organization [14]. This, therefore, has added to more recent evidence for hepatitis B virus prevalence burden and spread in Nigeria.

The HBV infection prevalence rate of 11.62% from this study is similar to 11.6% reported in Maiduguri in northeast, Nigeria by [12] and in consonance with the 8.9% reported among this population in Port Harcourt by [15], but lower than the prevalence rate of 16.3% reported in Ibadan, southwest, Nigeria, by the same authors, as well as 8.9% prevalence rate reported in Lagos State, southwest Nigeria [16]. Two different Epidemiology studies on HBV infection among pregnant women in Abuja before the pandemic reported a prevalence rate of 7% and 8%, which were lower than the prevalence rate reported in this current study [17-18]. Similar studies from neighboring countries to Nigeria have also reported a high prevalence rate of HBV infection among other populations. For instance, in Limbe and Muyuka Health Districts of the South-west region of Cameroon, Eyong *et al.* [13] carried out a retrospective study on the prevalence of hepatitis B surface antigen (HBsAg), knowledge, and practice of hepatitis B prevention among pregnant women from 2014 to 2016.

The authors reported an aggregate prevalence rate of 5.7% and 7.5% from both districts, respectively, for the period of three years. This report by [13] was lower than the prevalence rate reported in this study for an aggregate of three years (2020-2022). The years 2020 and 2021 were regarded as the COVID-19 pandemic era, when the entire world was confronted with the deadly coronavirus disease that emerged from Wuhan, China, thus causing a serious health crisis and mortality during this period.

Although, this study did not investigate HBV infection with COVID-19 co-infection, however, it is possible that the pandemic contributed to the high prevalence rate of HBV infection observed among the women across the three health facilities especially in 2021 considered as the first phase of the pandemic since the severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2), the causative agent of COVID-19 can infect liver cells and hepatitis B is a liver disease. Clinical evidence has

revealed the association between COVID-19 and hepatitis B infection [19].

Furthermore, a total lockdown was introduced during the pandemic, though with a later gradual easing of the lockdown, the observed high prevalence rate of HBV among the women of childbearing age during the pandemic may be due to the high frequency of sexual activity of the women with their partners or some with multiple partners, especially during the lockdown, which makes them more likely to be infected.

According to Atilola et al [20], a good knowledge of HBV sexual transmission is a potent reduction tool for HBV infection. Higher infection rates of other infectious diseases, such as scabies, syphilis, and non-tuberculous mycobacteriosis, have also been linked to COVID-19 during the pandemic [21]. Similarly, the study of [22] reported COVID-19 infection with hepatitis B co-infection in Asokoro, FCT, Abuja, Nigeria in 2021 during the pandemic era. In related reports by [23] and [24], the high burden of HBV infection has been linked with HIV co-infection since both infections are commonly transmitted through blood and body fluids.

A case in point is a study by [25] with a reported prevalence rate of 15.5% of hepatitis B surface antigen in pregnant women who are HIV outpatients at a clinic in Benin City, Nigeria. In a previous study conducted by [26] in the same region, the prevalence of HBV and HIV infections was found to be 2.2% and 7.2%, respectively. This indicates that other co-infections can contribute to the burden of hepatitis B virus infection in a population. Moreover, treating viral infections is quite challenging; therefore, the presence of a viral disease can lead to or trigger other co-viral infections, as in some cases witnessed during the COVID-19 pandemic. The sharp decrease in the prevalence rate recorded among the women from the three facilities for 2022 could be a reflection of the gradual fallout of the COVID-19 pandemic, which probably reduced their co-infection with hepatitis B. The level of improvement in the treatment of COVID-19 may also have contributed to the reduction observed in 2022.

The high prevalence rate of HBV recorded across the health facilities in AMAC, FCT-Abuja for 2020, which subsequently was followed by a sharp increase in the

prevalence rate for 2021 and a decline in 2022 may be attributed to sampled population, methodological differences in virus detection, level of awareness, cultural and social practices and behavioral differences in the potential risk factors of HBV infection [13]. The study revealed that the majority (70.08%, n=602) of the women of child-bearing age screened for HBV had one formal education or the other; however, this did not translate into better awareness about HBV infection among the women.

It is possible that the poor level of awareness of HBV transmission also contributed to the high infection rate. Perhaps a better understanding of HBV transmission by the women would have been effective in reducing the burden of the disease among these women during this period. Atilola *et al.* [20] earlier established that a good knowledge of HBV sexual transmission is a potent reduction tool for HBV infection. In a related study carried out by [27], the author attributed the high burden of HBV infection in Nigeria to poor awareness of HBV infection and the availability of its vaccine.

The findings of Frambo et al [28] and Abongwa et al [29] also showed a poor level of knowledge on HBV transmission among pregnant women in the northwest and Buea health districts of Cameroon, respectively. This low level of awareness corroborates the report by [30] that awareness, knowledge of transmission, vaccine prevention and control of HBV remains low in affected populations, especially women of reproductive age and pregnant women in developing countries.

Despite the available counselling sections in the three health facilities, the study observed a low turnout (27%, n=27) of women infected with HBV to counselling. This low turnout may be attributed to the fear of stigmatization. Stigmatization and discrimination are among the factors that hinder access to and care for treatment for chronic hepatitis B patients [31]. Therefore, community engagement of women of childbearing age by stakeholders and the government is very crucial in HBV awareness creation to actualize the WHO's objective of eliminating the virus by 2030.

CONCLUSION

The findings of the study revealed that the prevalence rate of HBV infection among women of childbearing age in the health facilities used for this study was high during the

COVID-19 pandemic. The study concludes that the COVID-19 era and poor awareness contributed to the high prevalence rate of HBV among this population, suggesting more awareness campaigns on the prevention and control of hepatitis B, particularly with vaccination, if the burden of the disease is to be curbed towards achieving Sustainable Development Goal No. 3 (Good and well-being for all).

LIMITATIONS IN THE STUDY

This study did not cover all the health facilities in AMAC, FCT-Abuja, where tests and counseling of hepatitis B are carried out, and so cannot be used to generalize the prevalence rate of HBV among women of childbearing age in FCT, Abuja, Nigeria.

Conflict of interest

The authors declare that there are no conflicts of interest.

Authors Contribution

JCA and OEO gathered the data, BE and ECA drafted the first manuscript, OAI analyzed the data, proofread and drafted the manuscript, OAS and OAI supervised the work. All authors read and approved the final manuscript.

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