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Prevalence and Socio-Demographic Correlates (Age and Parity) of HBV Infection Among Pregnant Women in Oyo State

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Abstract

Hepatitis B virus (HBV) is still a major public health problem in sub-Saharan Africa, especially because of the risk of transmission of the infection from mothers to their babies at birth. This study set out to establish the level of sero-prevalence of HBV, maternal perception and THE relationship between maternal age, parity, and sero-status in Oyo State. A Descriptive cross-sectional design was used and consisted of 100 respondents for the questionnaire and 622 respondents for the laboratory. The HBV sero-prevalence came out to be 6.8%. There was a general lack of understanding of long-term effects and general epidemiological trends, although the respondents generally had an understanding of the transmission routes. There were significant correlations of HBV status with maternal age (p=0.002) and parity (p=0.019), with the highest prevalence being seen in women aged 35–44 and with five pregnancies. The investigation concludes that HBV is a persistent problem that needs to be addressed by enhancing routine antenatal screening, health education targeting mothers and strengthening vaccination programs to stop mother-to-child transmission.

Keywords: Hepatitis B Virus (HBV), Pregnant Women, Sero-prevalence, Maternal Age, Parity.

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INTRODUCTION

The Hepatitis B virus (HBV) belongs to the Hepadnaviridae family and is a small DNA virus that infects the liver potentially leading to acute or chronic hepatitis (Sticher *et al*., 2025). Chronic HBV infection is one of the causes of liver cirrhosis and HCC worldwide (Vlachogiannakos & Papatheodoridis, 2020). Chronic HBV infection continues to be a significant health burden worldwide especially in Africa and the Western Pacific region (Quang & Lemoine, 2024). HBV prevalence remains high in Africa compared to global averages with some sub-Saharan African locations having intermediate to high endemicity (Simporé *et al*., 2024).

HBV infection in pregnancy is a significant public health issue as the infected mother can infect her infant in the perinatal period (Adeyemi *et al*., 2020). The perinatal transmission is of particular importance since infections that occur at birth or early childhood have a higher risk of becoming chronic infections (Kartini & Syamsul, 2022). The importance of antenatal screening for HBV has been highlighted in Nigerian and regional studies, as it offers a chance to identify pregnant women with HBV and prevent mother-to-child transmission (MTCT) (Erhabor *et al*., 2020). The cornerstone of reducing HBV transmission in pregnancy is preventive strategies that include routine antenatal screening, timely birth-dose vaccination and infant immunization (Mustapha *et al*., 2020).

Education and awareness regarding HBV are significant as they can impact uptake of screening, vaccination and preventive measures amongst pregnant women (Ade-Ojo *et al*., 2023). The studies conducted in Nigeria have indicated a low level of awareness of HBV among pregnant women, while knowledge of its transmission, causes and prevention is often incomplete (Madubueze *et al*., 2022). Antenatal (pre-birth) women who know about HBV transmission and its potential risks to both mother and child may be more likely to seek preventive services (Ade-Ojo *et al*., 2023). This then means that it is pertinent to include knowledge and perception assessment in the studies of pregnant women about HBV infection.

Socio-demographic and obstetric factors are generally analysed as factors associated with HBV infection in pregnant women, such as maternal age and parity (Erhabor *et al*., 2020). While age might relate to cumulative exposure to HBV-related risk factors, Nigerian studies have found varying associations with age and HBV status (Adeyemi *et al*., 2020). Repeated pregnancies could be argued to lead to exposure to more health care procedures and more other exposure events making parity a more consistent reportable correlate of HBV infection. The variations in the burden of HBV in different geographical regions of Nigeria make it important to study the situation to gain insight into the sero-prevalence of HBV infection, maternal perceptions of the disease, and the association between age, parity and HBV infection among pregnant women.

LITERATURE

Hepatitis B Virus Infection

HBV is a small DNA virus that mainly infects the liver and could lead to acute or chronic hepatitis (Sticher *et al*., 2025). Chronic HBV infection is clinically significant since it may lead to liver cirrhosis and hepatocellular carcinoma (HCC) (Vlachogiannakos & Papatheodoridis, 2020). The way HBV is transmitted includes perinatal, sexual, horizontal and parenteral (via exposure to infected blood or contaminated medical equipment) (Aguh *et al*., 2023).

Vaccination is a crucial cornerstone of HBV prevention especially birth-dose vaccination and ensuring infant immunisation programmes are completed (Odebisi-Omokanye, 2026).

The epidemiology of HBV infection globally and in Africa

Chronic hepatitis B infection is a significant public health challenge worldwide and is affecting hundreds of millions of people (Quang & Lemoine, 2024). Hepatitis B is not equally distributed in the world, with Africa and the Western Pacific having a higher proportion of chronic infections (Sticher *et al*., 2025). HBV prevalence is still higher than the global average in Africa with some sub-Saharan African countries being considered intermediate- or high-endemic countries (Simporé *et al*., 2024). Nigeria has been categorised as a high-endemic country and various studies reported high prevalence of HBV seroprevalence in both general, antenatal and high-risk populations (Bafa & Egata, 2020).

HBV Infection during Pregnancy

Hepatitis B surface antigen testing of the mother attending the antenatal clinic is a common way of assessing HBV infection in pregnancy (Magaji *et al*., 2020). Pregnant women are an important screening group since maternal HBV infection can lead to mother-to-child transmission in the antenatal, delivery or early post-natal period (Adeyemi *et al*., 2020). The seroprevalence of HBV among pregnant women in Nigeria and the region has been reported to vary due to geographical and population differences and how it was screened for (Kpossou *et al*., 2023). Thus, routine antenatal screening and immediate connection of mothers and newborns to appropriate preventive care are essential for the prevention of the spread of HBV during pregnancy (Valamparampil & Kelly, 2023).

Transmission of HBV from mother to Child

A significant source of HBV infection transmission in highly endemic areas is mother-to-child transmission (Kartini & Syamsul, 2022). The chance of developing chronic HBV infection is higher in the case of infection that occurs at birth or early childhood (Enebe *et al*., 2024). Identifying HBV-positive mothers in the antenatal period is important as this will enable health workers to plan newborn prophylaxis and vaccination (Erhabor *et al*., 2020). One of the most effective interventions to lower the transmission risk of HBV from mother to infant is timely birth-dose vaccination (Miao, 2022).

Pregnant women's awareness and understanding of HBV

Pregnant women's knowledge of HBV is relevant as it may impact the uptake of screening, vaccination and preventive health measures (Ade-Ojo *et al*., 2023). The evidence from Nigeria indicates that many pregnant women might know about HBV, but not fully about its etiology, transmission, risk factors, and prevention strategies (Madubueze *et al*., 2022). Increased willingness to take preventive measures during pregnancy has been linked to good knowledge of HBV (Ade-Ojo *et al*., 2023). This demonstrates the need to incorporate HBV education into antenatal care to allow pregnant women to have better knowledge of HBV infection and prevention (Ejodameme, 2024).

HBV infection risk factors

The risk factors for HBV include unsafe injection practices, blood transfusion, sexual exposure and contact with infected blood or body fluids (Garba *et al*., 2022). Other forms of exposure to HBV have been linked to skin-breaking practices like tattooing, piercing, and some dental or

traditional practices (Assefa *et al*., 2023). Horizontal transmission, especially in childhood, and perinatal transmission (mother to child) play significant roles in HBV endemicity in Africa (Jatau *et al*., 2020). Other risk factors for HBV in Nigeria include limited access to HBV vaccination and screening services, family history of prior HBV infection, and home delivery (Omisakin *et al*., 2025).

Maternal Age and HBV Infection

A correlation between maternal age and HBV infection has been investigated in pregnant women (Abay *et al*., 2024). Age may also be a factor in HBV status, as older women might be at risk of having been exposed for a longer period of time (Erhabor *et al*., 2020). Other studies show inconsistent trends with age, indicating that the relationship between age and HBV infection status could differ among populations and/or contexts (Adeyemi *et al*., 2020). This fluctuation underscores the significance of conducting local studies to determine the variability in HBV infection by maternal age groups (Abay *et al*., 2024).

Parity and HBV Infection

Another obstetric correlate for HBV infection, parity has also been studied in pregnant women (Mustapha *et al*., 2020). The cumulative exposure to obstetric procedures, healthcare visits, delivery experiences or other risk factors may be associated with higher parity (Adeyemi *et al*., 2020). A few studies from Nigeria indicate that parity was more consistently linked to HBV infection than age although the results are inconsistent across different studies, study locations and designs (Erhabor *et al*., 2020). A parity analysis is therefore important to investigate whether there is patterning of reproductive history and HBV status among pregnant women in Oyo State (Abay *et al*., 2024).

The Theoretical Underpinning

The Health Belief Model is relevant to this study because it provides an understanding of the relationship between the perception of disease threat and the benefits of prevention and how this may influence health-related behaviors (Ade-Ojo *et al*., 2023). Perceived susceptibility could be associated with the pregnant women's beliefs about the risk of infection with HBV (Madubueze *et al*., 2022). Women's perceived severity could be their awareness of the potential impact of HBV on their mothers, on pregnancy, and on their newborn child (Adeyemi *et al*., 2020). Perceived benefits may include the perceived value of antenatal screening, vaccination and newborn prophylaxis. HBV prevention services may be underutilized due to factors like lack of knowledge, cost, stigma, access, and poor service delivery (Ejodameme, 2024).

METHODOLOGY

Study Design

The study used a descriptive cross-sectional design to determine the prevalence and socio-demographic factors associated with Hepatitis B virus infection among pregnant women. This design was deemed suitable because the participants' knowledge/perception, age, parity and HBV status were taken at the same time point.

Study Area

The study was carried out in Moniya Primary Health Care Centre, Ibadan, Oyo State, Nigeria.

Within Moniya and other communities, the health facility offers maternal and child health services, such as antenatal care, services to pregnant women.

Study Population

The study population was pregnant women attending the antenatal clinic at Moniya Primary Health Care Centre, Ibadan. The study participants were pregnant women available in the study period and willing to participate in the study.

Sample Size

The study involved 100 pregnant women. The study was conducted among the respondents from Moniya Primary Health Care Centre Ibadan.

Sampling Technique

The convenience sampling technique was applied in the study. The health centre attendees during the data collection period who willingly agreed to participate were selected until a total of 100 was achieved.

Eligibility Criteria

Pregnant women participated in the study if they were attending the antenatal clinic at Moniya Primary Health Care Centre and provided informed consent. Those who declined to participate in the study, to fill out the questionnaires, or to have a blood sample taken were not included in the study.

Data Collection

The data were collected through a structured questionnaire designed to draw information in relation to the objectives of the study. There were four parts to the questionnaire. Socio-demographic information including age and parity was obtained in Section A. In the second section B, respondents' knowledge/perception of the causes/transmission of HBV infection in pregnant women was evaluated. Section C was related to the risk factors for hepatitis B infection in pregnant women. In section D, knowledge/perception regarding the effect of Hepatitis B infection on pregnant women was evaluated. The participants were also asked to have blood drawn for testing of the Hepatitis B virus (HBV). Each participant's blood was analyzed to determine her hepatitis B virus status. The positive or negative status of HBV was determined by the rapid diagnostic test result.

Study Variables

HBV status of pregnant women was the primary outcome variable. Maternal age and parity were considered as independent variables. Other variables were respondents' knowledge/perception of the causes of HBV, risk factors associated with HBV and effects of HBV infection in pregnancy.

Data Collection Procedure

The purpose of the study was explained to eligible pregnant women attending antenatal care at the health facility. Persons who agreed to take part in the study were requested to fill out the questionnaire as needed. Trained health workers collected blood samples for the detection of hepatitis B after the questionnaire was completed. Confidentiality was maintained by using

participant codes not names to cross-reference the questionnaire responses with the test result for the presence of HBV.

The Analysis of Data

The information gathered from the questionnaire and the results of the HBV test were coded and analysed using SPSS and MS Excel. Frequencies and percentages were used to summarize socio-demographic characteristics. Sero-prevalence of HBV infection was determined as the number of participants with HBV positive divided by the number of participants tested and multiplied by 100. HBV infection was measured by the age group of the mother and by parity. Chi-square test and/or Fisher's exact test were used to assess the association between maternal age parity and HBV status. P value < 0.05 was considered statistically significant.

Ethical Consideration

All participants were informed and agreed to participate in the study. Participants were assured that their answers and test results would be treated as confidential and only used for research. Personal identifiers were not used in the analysis.

RESULTS/FINDINGS

Demographic Characteristics of Respondents

The study involved 100 pregnant women who were attending Moniya Primary Health Care Centre, Ibadan. Response rate was 100 % because all questionnaires were distributed and returned. Demographic data collected included age, marital status and number of pregnancies/parity.

Table 1: Distribution of Pregnant Women by Age Group

Age group	Frequency (n)	Percentage (%)
16–24 years	32	32.0
25–34 years	53	53.0
35–44 years	15	15.0

The age distribution of the respondents is given in Table 1. Out of 100, 53 respondents (53.0%) were aged 25–34 years and more than half of the pregnant women were within this age group. The third most common age group was 16-24 years with 32 (32.0%) respondents. The age group with the least representation was those aged 35-44 with 15 respondents representing 15.0% of the study population. This indicates that most of the respondents were within the 25–340years age range.

Table 2: Distribution of Pregnant Women by Marital Status and Age Group

Marital status	16–24 years n (%)	25–34 years n (%)	35–44 years n (%)	Total n (%)
Single	4 (12.5)	1 (1.9)	0 (0.0)	5 (5.0)
Married	28 (87.5)	52 (98.1)	15 (100.0)	95 (95.0)

Table 2 showed that 66% of respondents were married while 34% were not. The marital status of respondents by age groups is presented in Table 2, which shows that 66% of the respondents were married, whereas 34% were not. 95 (95.0%) respondents were married and 5 (5.0%) were not. 28 of the 32 respondents aged 16-24 years (87.5%) were married and 4 were single (12.5%). The age group 25 to 34 had the highest number of married persons, with 52 of the 53 (98.1%) respondents being married and 1 (1.9%) single. Among the respondents, all belonged to the age group 35-44 years and were married.

Table 3: Distribution of Pregnant Women by Number of Pregnancies and Age Group

Number of pregnancies	16–24 years n (%)	25–34 years n (%)	35–44 years n (%)	Total n (%)
First pregnancy	25 (78.1)	14 (26.4)	5 (33.3)	44 (44.0)
Second pregnancy	6 (18.8)	19 (35.8)	1 (6.7)	26 (26.0)
Third or more pregnancy	1 (3.1)	20 (37.7)	9 (60.0)	30 (30.0)

Table 3 indicate the distribution of respondents by number of pregnancies by the age groups. In total 44 respondents (44.0%) had their first pregnancy, 26 respondents (26.0%) had had their second pregnancy and 30 respondents (30.0%) had had three or more pregnancies. The majority of respondents aged 16-24 years (25 or 78.1%) were experiencing their first pregnancy. Twenty (37.7%) of the 60 aged 25-34 years were in their third pregnancy, closely followed by 19 (35.8%), who were in their second pregnancy. There were 9 respondents (60.0%) aged 35-44 who had 3 or more pregnancies.

Table 4: Distribution of Pregnant Women by Number of Pregnancies and Marital Status

Number of pregnancy	Single n (%)	Married n (%)	Total n (%)
First pregnancy	2 (40.0)	42 (44.2)	44 (44.0)
Second pregnancy	3 (60.0)	23 (24.2)	26 (26.0)
Third or more pregnancy	0 (0.0)	30 (31.6)	30 (30.0)

Table 4 shows the distribution of respondents according to the number of pregnancies and marital status. There were 5 single respondents, with 2 of whom (40.0%) were in their first pregnancy, and 3 of whom (60.0%) were in their second pregnancy. None of the single respondents reported having three or more pregnancies. Of the 95 married respondents, 44.2% (42) were in their first pregnancy, 24.2% (23) were in their second pregnancy, and 31.6% (30) were in their third or more pregnancies. It is observed that the first pregnancy was the highest category among respondents with 44.0% of the total sample.

Causes of HBV in Pregnant Women

Table 5: Distribution of Respondents by Perceived Causes of HBV in Pregnant Women

Causes of HBV	SA	A	D	SD	Mean	SD
Having more than one sexual partner is a sure way of contracting STDs including HBV	53 (53.0)	34 (34.0)	6 (6.0)	7 (7.0)	3.33	0.88

Pregnant women with chronic HBV infection can transmit the virus to their babies	41 (41.8)	56 (57.1)	1 (1.0)	0 (0.0)	3.41	0.51
People who were born to a mother with HBV or live with someone who has HBV are more vulnerable to contracting the infection	32 (32.3)	48 (48.5)	18 (18.2)	1 (1.0)	3.12	0.73
One can get HBV through contact with an infected person's blood, semen, body fluid, or through sexual contact with an infected person	32 (32.0)	49 (49.0)	14 (14.0)	5 (5.0)	3.08	0.81
There is a rising prevalence of blood-borne infections such as HBV among women in Nigeria	25 (25.5)	47 (48.0)	12 (12.2)	14 (14.3)	2.85	0.97
Reduction in peripartum blood exposure and avoidance of breastfeeding during and immediately after birth can reduce the rate of mother-to-child transmission of HBV	28 (28.0)	56 (56.0)	12 (12.0)	4 (4.0)	3.08	0.75

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; Mean = weighted mean score; SD = standard deviation.

Table 5 shows the respondents' perceptions of the causes of HBV in pregnant women. The item with the highest mean score (3.41 ± 0.51) was that pregnant women with chronic HBV infection can transmit the virus to their babies. This means that there was high consensus among respondents and a lesser variation in responses. The second item, having more than one sexual partner to contract STDs including HBV, also had a high mean score of 3.33 and a standard deviation of 0.88, indicating that there was a mix of responses with many people agreeing with it. The lowest mean score was obtained for the statement on the increased incidence of blood-borne infections like HBV among women in Nigeria (mean = 2.85, SD = 0.97). The overall mean scores were greater than 2.50 suggesting that the respondents generally agreed with the causes of HBV listed.

Risk Factors Associated with Hepatitis B in Pregnant Women

Table 6: Distribution of Respondents by Perceived Risk Factors Associated with HBV in Pregnant Women

Risk factors associated with HBV	SA	A	D	SD	Mean	SD
Blood-borne infections among women may pose particular risks to their foetus and health workers exposed at the time of delivery	29 (29.0)	36 (36.0)	33 (33.0)	2 (2.0)	2.92	0.84
The prevalence of HBV infection is greatest in rural areas	26 (26.0)	35 (35.0)	25 (25.0)	14 (14.0)	2.73	1.00
There is adequate and sufficient enlightenment and educational	28 (28.0)	33 (33.0)	22 (22.0)	17 (17.0)	2.72	1.06

programmes on HBV infections, causes, and effects in the maternity centre						
Low ratio of qualified health workers to patients increases the prevalence and spread of the virus	31 (31.0)	43 (43.0)	17 (17.0)	9 (9.0)	2.96	0.92
Scarcity of data on the prevalence of HBV in Nigeria makes planning of prevention and intervention strategies more difficult	18 (18.8)	38 (39.6)	28 (29.2)	12 (12.5)	2.65	0.93
The carriage rate of HBsAg is higher among females than males	25 (25.0)	30 (30.0)	27 (27.0)	18 (18.0)	2.62	1.05

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; Mean = weighted mean score; SD = standard deviation.

Respondents' perception of the risk factors for HBV infection in pregnant women is summarized in Table 6. The statement with the highest mean score was that a low ratio of qualified health workers to patients increases the prevalence and spread of the virus with a mean score of 2.96 and a standard deviation of 0.92. The blood-borne infections declared by the women were followed by the statement that blood borne infection may be hazards to the foetus and health workers who are exposed during delivery, which had a mean of 2.92 and a standard deviation of 0.84. The lowest mean score was recorded for the statement that the carriage rate of HBsAg is higher in females than males with mean of 2.62 and standard deviation of 1.05. While all mean scores are above 2.50, the relatively high standard deviations for some items indicate the views of the respondents were spread around, particularly for enlightenment programmes and HBsAg carriage rate.

Effects of Hepatitis B in Pregnant Women

Table 7: Distribution of Respondents by Perceived Effects of Hepatitis B in Pregnant Women

Effects of hepatitis B	SA	A	D	SD	Mean	SD
HBV is a major concern because of the attendant long-term morbidity and mortality of the infection	33 (33.7)	50 (51.0)	13 (13.3)	2 (2.0)	3.16	0.73
Acute hepatitis B in pregnancy has been shown to induce premature labour and prematurity with its attendant effects	35 (35.0)	48 (48.0)	17 (17.0)	0 (0.0)	3.18	0.70
Apgar scores may be lower in newborns of HBsAg carriers, with a higher risk of intraventricular haemorrhage	26 (26.5)	56 (57.1)	12 (12.2)	4 (4.1)	3.06	0.74
Acute hepatitis B can cause liver failure	32 (32.0)	58 (58.0)	8 (8.0)	2 (2.0)	3.20	0.67
Chronically infected persons may remain asymptomatic for decades and may die from complications of HBV	27 (27.3)	44 (44.4)	18 (18.2)	10 (10.1)	2.89	0.92

Infants or young children infected with HBV may die prematurely from cirrhosis or hepatocellular carcinoma	35 (35.7)	44 (44.9)	14 (14.3)	5 (5.1)	3.11	0.84

Note. SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; Mean = weighted mean score; SD = standard deviation.

Respondents' perceptions of the impact of hepatitis B in pregnant women are shown in Table 7. The highest mean score was 3.20 with a standard deviation (SD) of 0.67, which suggested a high level of agreement and relatively consistent responses for the statement "Acute hepatitis B can cause liver failure. The other statement was that acute hepatitis B during pregnancy could cause premature labour and prematurity which had a mean of 3.18 and a standard deviation of 0.70. The lowest mean score was obtained for the statement regarding “chronically infected people can be asymptomatic for decades, and can die from the complications of HBV” (2.89 with a 0.92 standard deviation). The overall mean scores were above 2.50 indicating that subjects in general agreed with the listed effects of Hepatitis B in pregnancy.

Testing of Hypotheses

H_o: There is no significant relationship between the parity of pregnant women and the prevalence of Hepatitis B virus

Table 8: Relationship between Parity and Hepatitis B Virus Status among Pregnant Women

HBV result	Parity 1-time	Parity 2-times	Parity 3-times	Parity 4-times	Parity 5-times	Total
Negative, n (%)	201 (92.6)	156 (94.5)	166 (94.9)	51 (91.1)	6 (66.7)	580 (93.2)
Expected count	202.3	153.9	163.2	52.2	8.4	580.0
Positive, n (%)	16 (7.4)	9 (5.5)	9 (5.1)	5 (8.9)	3 (33.3)	42 (6.8)
Expected count	14.7	11.1	11.8	3.8	0.6	42.0
Test	**Value**	**df**	**p-value**			
Pearson Chi-square	11.815	4	0.019			
Likelihood ratio	7.319	4	0.120			
Linear-by-linear association	0.691	1	0.406			
N of valid cases	622					

Note. Percentages are calculated within each parity group. HBV = Hepatitis B virus.

As shown in Table 8, the distribution of HBV status by parity is shown. The HBV positivity rate was 6.8% among 622 pregnant women. The positivity rate of the pregnant women for HBV was 6.8% out of 622 pregnant women. The highest prevalence of HBV positivity was reported by women of parity 5-times with 33.3% (3/9) of women being positive. The women of parity 4 times had 5 positive cases out of 56 (8.9%). Among the women with parity 1-time, 5.5% and 5.1% were found to be positive, for women with parity 2-times and 3-times,

respectively. Also, the distribution of the chi-square result for the association of parity with HBV status. The Pearson chi-square test revealed a significant difference between parity and level of HBV status ($\chi^2(4, N = 622) = 11.815$; $p = 0.019$). The p-value is less than 0.05 so the null hypothesis is rejected. Hence, parity is significantly associated with the HBV infection status of the pregnant women studied.

H_0: There is no significant relationship between the age of pregnant women and the prevalence of Hepatitis B virus

Table 9: Relationship between Age Group and Hepatitis B Virus Status among Pregnant Women

HBV result	**16–24 years**	**25–34 years**	**35–44 years**	**Total**
Negative, n (%)	216 (93.9)	318 (94.6)	46 (82.1)	580 (93.2)
Expected count	214.5	313.3	52.2	580.0
Positive, n (%)	14 (6.1)	18 (5.4)	10 (17.9)	42 (6.8)
Expected count	15.5	22.7	3.8	42.0
Test	**Value**	**df**	**p-value**	
Pearson Chi-square	12.168	2	0.002	
Likelihood ratio	9.065	2	0.011	
Linear-by-linear association	4.012	1	0.045	
N of valid cases	622			

Note. Percentages are calculated within each age group. HBV = Hepatitis B virus.

HBV status by age group is presented in Table 9. Of 622 pregnant women analyzed, 42 were positive for HBV and had an overall positivity rate of 6.8%. The highest rate for HBV, 17.9% (10) was seen in women aged 35-44 years. Next, 16–24-year-old females with 14 of 230 (6.1%) having positive results. Women aged 25-34 years had the lowest positivity rate with 18 of 336 tests positive (5.4%). Next, the result of the chi-square test of association between age group and HBV status. There was a statistically significant relationship between age group and HBV status when using Pearson chi-square ($\chi^2(2, N = 622) = 12.168$, $p = 0.002$). The p-value is less than 0.05; therefore the null hypothesis is rejected. Thus, the results indicated that the maternal age group is statistically related to HBV infection status.

DISCUSSION

The results revealed an HBV sero-prevalence of 6.8% indicating the existence of HBV infection among the pregnant women who participated in the facility laboratory data. This is similar to the overall distribution profile of HBV infection in Africa, which has been classified as intermediate–low endemic (Simporé et al., 2024). The observed prevalence also aligns with the findings of other studies which have shown that the prevalence of HBV in Nigeria at health institutions including hospitals and antenatal clinics is often in the mid-single digits to low double digits depending on the institution, population characteristics and testing methods (Adewuyi et al., 2025). The prevalence of HBV in this study (6.8%), however, seems lower than the prevalence rates reported in some studies conducted in Nigeria, which reported

prevalence rates in general adult populations of 8-12% and some antenatal population of HBV seroprevalence (Bafa & Egata, 2020). Possible reasons for this difference include variations in geographical settings, sample characteristics, vaccination status, antenatal screening practices, or variations in approach to laboratory testing.

The results on perception and knowledge indicated high agreement among the respondents on the important statements concerning the possible causes and transmission of HBV, particularly the possibility of mother-to-child transmission and sexual transmission, and contact with infected blood or body fluids. It is closely consistent with literature indicating the possible modes of transmission of HBV include the perinatal, sexual, horizontal and parenteral routes (Aguh et al., 2023). The high mean score of the statement "pregnant women who are chronically HBV-infected can transmit the virus to their babies" is also in line with studies that consider perinatal transmission as a significant route of HBV persistence in highly endemic countries (Kartini & Syamsul, 2022). The relatively lower mean score for the statement on increasing blood-borne infections among women in Nigeria, however, indicates that there may have been some differences in the knowledge about the direct transmission routes compared to the general epidemiological trends. This corroborates previous Nigerian studies that suggest that although awareness of HBV might exist among pregnant women, knowledge of its transmission, prevention, and public health burden may be incomplete (Ade-Ojo et al., 2023; Madubueze et al., 2022).

The findings on perceived risk factors indicated moderate consensus on the possible role of blood-borne infections at the time of delivery, limited data, HBsAg carriage patterns, low ratio of qualified health workers to patients and rural location on HBV risk. This is consistent with prior studies that have established blood exposure, unsafe injections, contaminated instruments, blood transfusion, and health-system-related exposures as all being significant risk factors for transmission of HBV (Garba et al., 2022). The identification by respondents of blood-borne exposure as a risk to foetus and health workers is similar to studies that highlight the need for surveillance and infection prevention measures in the antenatal health sector (Valamparamil & Kelly, 2023). The moderate difference in responses for enlightenment programmes and HBsAg carriage indicates that there is a level of uncertainty among the respondents, which is supported by other findings in Nigeria which demonstrate that there is variable knowledge of HBV among respondents, and that this might be influenced by education, occupation and access to antenatal health information (Ade-Ojo et al., 2023; Lisker-Melman et al., 2020). This showed that antenatal service is a critical opportunity for structured education, screening, counselling, and linkage to prevention services for HBV.

Hypothesis testing revealed a significant association between parity and HBV status, and between age group and HBV status. The parity-HBV association corroborates the findings of other previous Nigerian studies and African studies that found parity as a potential correlate of HBV infection in pregnant women (Mustapha et al., 2020). The increased HBV positivity in women with parity 5 may reflect cumulative exposure to pregnancy-related procedures, deliveries, or other factors throughout the life span, as consistent with prior research findings on parity and repeated obstetric exposure and risk for HBV infection (Adeyemi et al., 2020; Erhabor et al., 2020). The strong correlation between age and HBV status is also consistent with literature reporting age as a correlate of HBV status in pregnancy, but the results are not always consistent across studies (Abay et al., 2024). The highest positivity rate was seen in women aged 35-44 years, which may be due to cumulative life-time exposure; however varied results in the past literature indicate that local epidemiology, immunisation coverage, antenatal

attendance and access to screening could affect the relationship between age and HBV infection (Schmit et al., 2023).

IMPLICATION TO RESEARCH AND PRACTICE

The results of this study suggest that HBV infection among pregnant women is still a significant public health problem, and should be given greater consideration in the antenatal healthcare services. Routine HBV screening should be promoted for all pregnant women, and health education should be provided on HBV transmission, risk factors, consequences, vaccination and prevention of mother-to-child transmission in practice. The significant relationship between age, parity and HBV status also indicates that more attention should be paid to pregnant women in different age and parity groups during counselling and screening for healthcare workers. The study recommends that the prevalence of HBV infection and knowledge gaps among pregnant women and the socio-demographic factors associated with it should be adequately studied in Nigeria in larger community and facility-based studies in Oyo State to gather more robust evidence for the condition.

CONCLUSION

This study revealed that HBV infection continues to be a public health problem for pregnant women attending Moniya Primary Health Care Centre, Ibadan. Overall, the respondents showed some understanding of the causes, risk factors and consequences of HBV but some knowledge gaps were still identified. Maternal age, parity and HBV status were also found to have significant relationships with the findings. Thus, the increasing burden of HBV infection among pregnant women and newborns needs to be controlled by strengthening routine antenatal HBV screening, health education, vaccination and prevention of mother-to-child transmission.

FUTURE RESEARCH

In order to increase the generalizability of the findings, more pregnant women from various health facilities in Oyo State should be included in the future study. Other potential factors affecting HBV infection including education, occupation, vaccination status, blood transfusion history, previous surgery status and antenatal care attendance, should also be explored in further studies. Additionally, a qualitative study could also be beneficial to gain insight into the beliefs, misconceptions, and barriers to HBV screening and vaccination among pregnant women.

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