

Research Article

Knowledge, Attitude, and Perception of Hepatitis-B Vaccine among Pregnant Women Attending Primary Health Facilities in Obio/Akpor LGA, Rivers State

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Abstract

Background: Pregnant women are at high risk of mother-to-child transmission, and a lack of education about the knowledge of the Hepatitis B vaccine (HBV), especially in developing countries like Nigeria, contributes to an increase in cases. The study aimed to assess the knowledge, attitude, and perception (KAP) of the Hepatitis B vaccine among pregnant women attending primary health care facilities in Obio/Akpor Local Government Area, Rivers State, Nigeria. **Methodology:** A facility-based cross-sectional survey was conducted in 8 primary health care facilities, between August and September 2024, using a well-structured questionnaire and analysed using descriptive statistics and analysis of variance (ANOVA) test. **Results:** The distribution of the respondents revealed a diverse educational background. While a significant proportion had no formal education (34.9%), the majority attained a tertiary education (40.1%). The KAP level showed that most respondents (76.1%) had moderate knowledge about the HBV, while only a few (3.7%) had high knowledge. While nearly half had a moderate attitude (48.0%) and perception (48.6%), only 21.6% and 15.9% had a high attitude and perception, respectively. The major source of information for the vaccine was the health staff (61.4%), followed by social media (19.9%) and town announcers (16%). All the socio-demographic characteristics were significantly associated with KAP of HBV, except marital status, educational level and occupational status, which were not significantly associated with perception towards HBV. **Conclusion:** This study revealed that most respondents had moderate knowledge, attitude, and perception towards the Hepatitis B vaccine, influenced by socio-demographic factors. Health education and promotion programmes should be strengthened to improve the knowledge, attitude, and perception of the Hepatitis B vaccine among pregnant women. We also recommend the integration of HBV and its awareness into routine antenatal care (ANC) services in the primary health facilities.

Keywords

Knowledge, Attitude, Perception, Hepatitis-B Vaccination

1. Introduction

Hepatitis B virus (HBV) infection is a major global health concern, with an estimated 296 million people living with chronic HBV worldwide [1]. Nigeria carries one of the high-

est burdens of HBV, with a prevalence of 12.2% in the general population [2] and the highest number of children infected with HBV globally [3]. Experts have raised concerns about

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the rising cases of HBV in Nigeria, estimating that 19 million people are living with the disease, making it one of the most impacted countries by hepatitis on the African continent [4].

HBV spreads through four primary modes of transmission: (i) vertical transmission, (ii) horizontal transmission via contact with body fluids such as saliva, shared toothbrushes, and secretory skin lesions, (iii) sexual transmission, and (iv) parenteral transmission through blood contact, transfusion, or re-used syringes and needles [5]. Vertical transmission, in particular, is a significant route of infection, especially among pregnant women, who represent a high-risk group for HBV in Nigeria [6].

HBV infection during pregnancy is associated with severe complications, including an increased risk of chronic HBV development, perinatal transmission, and accelerated HBV-related liver damage [7]. Pregnant women with chronic HBV may experience adverse outcomes such as placental abruption, gestational hypertension, gestational diabetes mellitus, fetal growth restriction, intraventricular hemorrhage in the fetus, and neonatal asphyxia [8]. Acute HBV infection during pregnancy can lead to preterm labour and birth, while chronic HBV increases the risk of progression to cirrhosis [9]. Additionally, HBV infection during pregnancy has been linked to increased maternal and perinatal mortality [10].

Effective prevention of HBV mother-to-child transmission requires strengthened screening protocols, improved health education, and timely vaccination [11]. These approaches would necessitate that expectant mothers recognize the importance of hepatitis B virus (HBV) screening as well as vaccination while pregnant, along with its advantages.

Lack of knowledge about the Hepatitis B vaccine remains a significant barrier to disease prevention. Perhaps there is little or no evidence about the knowledge, attitude, and perception among pregnant women regarding the Hepatitis B vaccine. Vaccination and increased awareness are effective strategies for reducing the prevalence of Hepatitis B [12]. However, the level of knowledge regarding the vaccine has not been sufficiently explored among pregnant women in Nigeria. Assessing their knowledge, attitudes, and perceptions (KAP) is essential for preventing HBV infection, as health education can help reduce vertical transmission [13]. The findings from this study are crucial, as they can guide health planners and program managers in designing vaccination programs and implementing preventive strategies. This study aimed to assess the KAP of pregnant women toward Hepatitis B vaccination in Obio/Akpor, Nigeria, and to identify factors influencing vaccine uptake. Understanding these factors is critical for developing targeted interventions to improve vaccine acceptance and reduce the burden of HBV in this high-risk population.

2. Methods

Study setting

The study was conducted in health facilities offering ante-

natal care services in Obio/Akpor Local Government Area, Rivers State, Nigeria. Rivers State is one of the 36 States of Nigeria, located within latitude $4^{\circ} 18' 58.294''\text{N}$ - $5^{\circ} 43' 15.652''\text{N}$ and longitude $6^{\circ} 24' 7.883''\text{E}$ - $7^{\circ} 35' 58.683''\text{E}$ in the south-southern part of Nigeria [14]. Obio/Akpor is bounded by Port Harcourt (local government area) to the south, Oyigbo to the east, Ikwerre to the north, and Emohua to the west. It is located between latitudes $4^{\circ} 45'\text{N}$ and $4^{\circ} 60'\text{N}$ and longitudes $6^{\circ} 50'\text{E}$ and $8^{\circ} 00'\text{E}$ [15]. The study area has about 17 primary healthcare facilities.

Study Design and Study Population

A facility-based cross-sectional study was conducted among pregnant women attending primary health care facilities in Obio/Akpor LGA, Rivers State, Nigeria. Pregnant women below the age of 18 and those who were mentally ill were excluded from the study.

Sample size and Sampling Techniques

The calculated sample size of 352 (minimum sample size of 258 plus 50% for non-response) was estimated using the Cochran formula for cross-sectional studies at a 95% confidence level, a 5% error margin, and 13.1% prevalence [16]. Eight facilities were randomly selected, and the respondents were selected using systematic sampling techniques.

Data collection instruments and procedures

Data was collected using a semi-structured questionnaire from August 17th to September 27th 2024. The questionnaire was divided into four parts: demographics and KAP. The demographic characteristics were gender, age, marital status, occupation, educational level, monthly income, gestational week, decision-making, and cultural beliefs. The KAP section had 8 questions relating to knowledge, 6 questions relating to attitude, and 5 questions relating to perception. Data for the correct answer was coded 1, and incorrect/I don't know was coded 0 points. The KAP was categorized into low (<40%), moderate (40–70%), and high (>70%). The questionnaire was administered to the study population during their visits to the selected healthcare facilities on antenatal care (ANC) days. The validity of the instrument was evaluated by conducting a pre-test among 28 pregnant women, and corrections were made to improve the quality of the instrument. The Cronbach's Alpha (CA) was calculated as 0.76, indicating an acceptable internal consistency [17].

Statistical analysis

Data were entered into the Statistical Package for the Social Sciences (SPSS) version 26. The baseline characteristics of the study participants were analyzed using descriptive statistics, such as frequencies and percentages, while a chart was used to analyze the source of information on the Hepatitis B vaccine. The association between KAP and socio-demographic factors was tested using the Analysis of Variance (ANOVA) test, and statistical significance was set at $p\text{-values} < 0.05$.

3. Results

Sociodemographic factors of respondents

The study included a total of 352 respondents who participated voluntarily. The distribution of respondents according to their socio-demographic characteristics is shown in Table 1. The age distribution showed that the majority, 182 (51.7%), were aged between 25 and 29 years, while 147 (41.8%) were between 30 and 36 years. Only 6.5% of respondents were aged 20 to 26 years. The majority of the respondents, 57.4% were married, 34.7% were single, while smaller proportions were divorced, 3.4%, separated, 2.8%, or widowed, 1.7%.

For educational attainment, 40.1% of participants had a tertiary education, 34.9% had no formal education, 14.8% had primary education, and 10.2% had secondary education. Occupational status showed that 56.8% of respondents were unemployed, while 43.2% were employed. The distribution of monthly income indicated that 44.3% earned between #30,000 and #100,000, 29% earned below #30,000, and 26.7% earned above #100,000.

In terms of pregnancy trimesters, most respondents 81.3% were in their second trimester, with 9.4% in the first trimester and 9.4% in the third trimester. Decision-making within the household revealed that 45.5% of respondents made decisions mostly by themselves, 38.6% reported joint decision-making with their partners, and 15.9% indicated that their partners made most of the decisions. The mean age (with standard deviation) of the respondents is 28.88 ± 2.88 years.

Table 1. Socio-demographic factors of respondents.

Characteristics	Number (N=352)	Percentage (%)
Age as at last birthday		
20-26	23	6.5
25-29	182	51.7
30-36	147	41.8
Marital status		
Divorced	12	3.4
Married	202	57.4
Separated	10	2.8
Single	122	34.7
Widow	6	1.7
Educational level		
No formal education	123	34.9
Primary	52	14.8
Secondary	36	10.2
Tertiary	141	40.1

Characteristics	Number (N=352)	Percentage (%)
Occupational status		
Employed	152	43.2
Unemployed	200	56.8
Monthly income		
#30,000-100,000	156	44.3
Above #100,000	94	26.7
Below #30,000	102	29
Pregnancy trimesters		
First trimester	33	9.4
Second trimester	286	81.3
Third trimester	33	9.4
Decision making		
Both of us	136	38.6
Mostly me	160	45.5
Mostly my partner	56	15.9

Knowledge, attitude and perception of Hepatitis B vaccine among respondents

Figure 1 showed that the majority of the respondents (61.4%) who had heard about the Hepatitis B vaccine obtained their information from health staff. Other sources included social media (19.9%), announcers (16%), and posters (12.2%). Radio and community members both accounted for 11.1% each, while the internet also contributed 11.4%. Television was the least mentioned source, with only 6.8% of participants reporting it as their information source. Family members and newspapers were less frequently cited, with 4.8% and 8.5% of participants mentioning them, respectively, as shown in Figure 1.

Furthermore, the results presented in Tables 2-4 highlight participants' knowledge, attitude, and perception regarding Hepatitis B vaccination. A significant majority (79.3%) of respondents were aware of the Hepatitis B vaccine, while 15.6% were unaware of it. When asked if the vaccine could be taken during pregnancy, 42.3% responded negatively, while 27.3% were unsure. Regarding the vaccine's ability to prevent Hepatitis B disease, more than half of the respondents 67% believed it could prevent Hepatitis B disease, while 33% were not confident about it.

Only a few 30.4% believed the vaccine could be taken during pregnancy, whereas 42.3% disagreed, and 27.3% were unsure. Among those who reported that the vaccine should not be taken during pregnancy, the majority (68.5%) suggested the vaccine should be taken after childbirth, 21.4% before pregnancy, and 10.1% did not know. Most respondents (67%) recognized that the vaccine could prevent Hepatitis B disease,

and 46% identified the correct full dose as 3–4 doses. However, knowledge of side effects was limited, with 36.9% unsure and only 31.8% believing the vaccine could prevent mother-to-child transmission. The attitude of respondents toward Hepatitis B vaccination revealed key findings.

A majority (67.3%) expressed a positive attitude toward the willingness to get vaccinated if the vaccine were made available, though 32.7% were unwilling. Additionally, 62.5% were willing to pay for the vaccine if it wasn't free. However, 54% of respondents did not believe the Hepatitis B vaccine should be included in routine antenatal care for pregnant women. While 67.3% indicated they would not advise others to get vaccinated, a few of the respondents (32.7%) showed a positive attitude towards encouraging others to get vaccinated. Additionally, 59.9% believed the benefits of vaccination outweighed the risks, with 18.8% disagreeing and 21.3% unsure. Over half (52.6%) were likely to seek more information on their own, and 46% supported recommending the Hepatitis B vaccine inclusion in antenatal care.

Perception-related responses revealed that 47.7% of participants trusted the government to provide good-quality vaccines, while the majority (47.2%) preferred to receive the Hepatitis B vaccine at a government hospital. However, only 31.3% believed the Hepatitis B vaccine was safe, with the majority, 68.8% expressing doubts about its safety. Additionally, 42% acknowledged that not taking the vaccine could increase the risk of contracting the disease.

The levels of knowledge, attitude, and perception (KAP) regarding the Hepatitis B vaccine among the respondents were assessed, and the results are summarized below (Table 5). Respondents' knowledge was measured using 8 questions, with a total score range of 0–8. The mean knowledge score was 4.80 ± 1.81 , indicating a moderate level of knowledge overall. When categorized, 20.2% of respondents had low knowledge, 76.1% demonstrated moderate knowledge, and 3.7% exhibited high knowledge levels. This suggests that most respondents have a moderate understanding of the Hepatitis B vaccine, though there remains a segment with limited knowledge. Attitudes toward the Hepatitis B vaccine

were evaluated through 6 questions, with scores ranging from 0 to 6. The mean attitude score was 3.31 ± 1.67 , reflecting a generally moderate attitude. Among the respondents, 30.4% had a low attitude, 48% displayed a moderate attitude, and 21.6% had a high attitude. This indicates that while a significant portion of respondents have a positive attitude, a considerable proportion still has a less favourable stance toward the vaccine. Perception regarding the Hepatitis B vaccine was assessed using 5 questions, with scores ranging from 0 to 5. The mean perception score was 3.17 ± 1.29 , suggesting that, on average, respondents had a moderate perception of the vaccine. In terms of categorization, 35.5% of respondents had a low perception, 48.6% had a moderate perception, and 15.9% had a high perception. These findings suggest that while many respondents have a balanced view, there is still a notable proportion that holds less favourable perceptions of the vaccine.

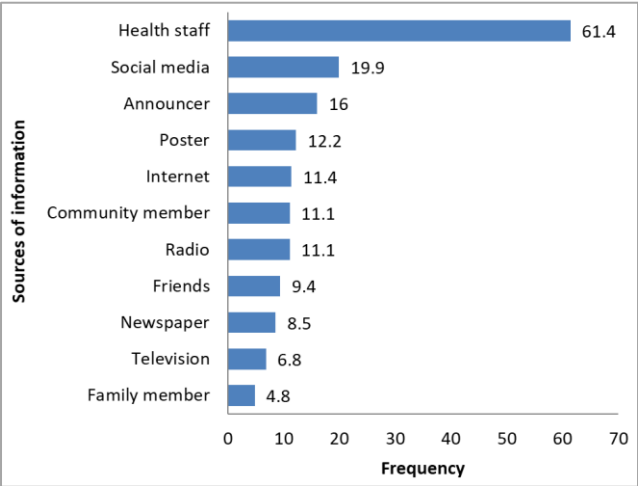


Figure 1. Primary sources of information on Hepatitis B vaccination among pregnant women in the study population (n=352). Data are presented as percentages of the total study population and ranked in descending order. The majority of participants cited healthcare providers as their main source of information.

Table 2. Knowledge of Hepatitis B Vaccination among Respondents.

Variable	Frequency (N)	Percentage (%)
Knowledge		
Are you aware of vaccination for Hepatitis B		
Yes	279	79.3
No	55	15.6
I don't allow	18	5.1
Can the Hepatitis B vaccine be taken during pregnancy?		
Yes	96	30.4

Variable	Frequency (N)	Percentage (%)
No	149	42.3
I don't know	107	27.3
If no, when do you think the hepatitis B vaccine should be taken?		
After childbirth	102	68.5
Before pregnancy	32	21.4
I don't know	15	10.1
Can the hepatitis B vaccine prevent Hepatitis B disease?		
Yes	236	67
No	116	33
What is the recommended full dose for hepatitis B vaccination?		
1-2	162	46
3-4	125	35.5
5-6	65	18.5
Common side effects of Hepatitis B vaccine may include injection site pain, soreness, headache, fever, and fatigue.		
Yes	112	31.8
No	138	39.2
I don't know	102	29

Table 3. Attitude of Hepatitis B Vaccination among Respondents.

Variable	Frequency (N)	Percentage (%)
If vaccines against Hepatitis B were made available, would you go for vaccination?		
Yes	237	67.3
No	115	32.7
If the vaccine is not free of charge, are you willing to pay to get vaccinated?		
Yes	237	32.7
No	115	67.3
Would you advise your family members, friends, and the community to go for Hepatitis B vaccination?		
Yes	237	32.7
No	115	67.3
Does the benefit of getting vaccinated against hepatitis b vaccine outweigh the risks?		
Yes	211	59.9
No	66	18.8
I don't know	75	21.3
Are you likely to seek more information about hepatitis b vaccination on your own?		
Yes	185	52.6
No	167	47.4
Would you recommend the hepatitis B vaccine as a routine part of antenatal care for pregnant women?		

Variable	Frequency (N)	Percentage (%)
Yes	162	46
No	190	54

Table 4. Perception of Hepatitis B Vaccination among Respondents.

Perception	Frequency (N)	Percentage (%)
Do you trust the government to be providing good-quality vaccines?		
Yes	168	47.7
No	114	32.4
I don't know	70	19.9
Where would you prefer to get the Hepatitis B vaccination?		
Private hospital	83	23.6
Government hospital	166	47.2
Primary health centres	103	29.3
Do you believe the hepatitis b vaccine is safe?		
Yes	110	31.3
No	242	68.6
Do you believe that not taking the Hepatitis B vaccine increases your risk of getting the disease?		
Yes	148	42
No	98	27.8
I don't know	106	30.1
Do you think the Hepatitis B vaccine benefits those already infected or recovered?		
Yes	130	36.8
No	75	21.3
I don't know	147	41.8

Table 5. Number of questions, scores, and level of KAP regarding Hepatitis-B Vaccine.

Levels	Number of questions	Range of scores	Total score (Mean±SD)	Level (%)		
				Low	Moderate	High
Knowledge	8	0-8	4.80±1.81	20.2	76.1	3.7
Attitude	6	0-6	3.31±1.67	30.4	48.0	21.6
Perception	5	0-5	3.17±1.29	35.5	48.6	15.9

Sociodemographic factors associated with the knowledge, attitude and perception towards Hepatitis B vaccine

Table 6 displays the results from the ANOVA test involving

some demographics that have a significant association with Knowledge, attitude, and perception. Age was significantly associated with knowledge, attitude, and perception, with

p-values of 0.000 across all variables. Participants aged 30–36 years demonstrated the highest mean knowledge scores (4.932 ± 2), followed closely by those aged 25–29 years (4.934 ± 1.51). These results suggest that older age groups are more likely to have better knowledge. Similarly, for attitude, participants aged 30–36 years had the highest scores (4.02 ± 1.89), indicating a more favourable attitude compared to younger participants.

Similarly, marital status was statistically significant for knowledge and attitude ($p = 0.000$) but not for perception ($p = 0.333$). Single participants had the highest mean knowledge scores (5.49 ± 1.77), followed by widowed participants (4.83 ± 1.60), while divorced participants scored the lowest (4.02 ± 1.88). For attitude, single participants again had the highest scores (4.20 ± 1.79), indicating a more favourable attitude, while divorced participants recorded the lowest scores (2.20 ± 1.98). Education was another significant factor influencing knowledge and attitude, with p-values = 0.000 for both variables. Participants with tertiary education recorded the highest mean knowledge scores (5.573 ± 1.76), far exceeding those with no formal education (4.58 ± 1.22). For attitude, tertiary-educated participants again had the highest scores (4.26 ± 1.74), while those with primary and secondary education scored lower.

Furthermore, monthly income and occupational status were also pivotal, with significant differences between them.

Monthly income was significantly associated with all three variables (knowledge, attitude, and perception), with p-values = 0.000. Respondents earning #30,000–100,000 monthly had the highest knowledge scores (5.54 ± 1.68), while those earning below #30,000 scored the lowest (3.88 ± 1.46). Similarly, for attitude, participants in the highest income group scored the highest (3.85 ± 1.80), while those earning below #30,000 had the lowest scores (2.33 ± 1.16). Also, occupational status showed significant relationships with knowledge and attitude ($p = 0.000$) but not with perception ($p = 0.726$). Employed participants had higher knowledge (5.37 ± 1.77) and attitude (3.94 ± 1.86) scores compared to their unemployed counterparts.

In addition, the stage of pregnancy was significantly associated with participants' knowledge, attitude, and perception. Pregnancy trimester was significantly associated with knowledge ($p = 0.000$), attitude ($p = 0.000$), and perception ($p = 0.003$). Participants in their second trimester recorded the highest mean knowledge (4.98 ± 1.83) and attitude scores (3.62 ± 1.60), while those in their first trimester had the lowest scores for both variables. Perception scores were also highest among second-trimester participants (3.75 ± 0.93).

Table 6. Association between socio-demographic characteristics and Knowledge, Attitude, and Perception of respondents toward Hepatitis B vaccination.

Characteristics	Mean $\pm$ Standard Deviation					
	Knowledge	P-value	Attitude	P-value	Perception	P-value
Age (Years)		0.330		0.000		0.005
20-28	4.69 $\pm$ 1.79		2.741 $\pm$ 1.33		2.95 $\pm$ 1.36	
29-36	4.88 $\pm$ 1.82		3.71 $\pm$ 1.76		3.33 $\pm$ 1.22	
Marital status		0.341		0.000		0.000
Married	4.40 $\pm$ 1.68		2.83 $\pm$ 1.35		3.12 $\pm$ 1.23	
Unmarried	5.40 $\pm$ 1.83		4.02 $\pm$ 1.83		3.25 $\pm$ 1.38	
Educational status		0.000		0.000		0.138
Basic education	4.36 $\pm$ 1.22		2.73 $\pm$ 1.19		3.10 $\pm$ 1.24	
Higher education	5.23 $\pm$ 2.07		3.81 $\pm$ 1.86		3.24 $\pm$ 1.34	
Occupational status		0.000		0.000		0.726
Employed	5.37 $\pm$ 1.77		3.94 $\pm$ 1.86		3.20 $\pm$ 1.43	
Unemployed	4.36 $\pm$ 1.71		2.83 $\pm$ 1.31		3.15 $\pm$ 1.18	
Monthly income		0.000		0.000		0.000
#30,000-100,000	5.54 $\pm$ 1.68		3.85 $\pm$ 1.80		3.51 $\pm$ 1.38	
Above #100,000	4.56 $\pm$ 1.83		3.47 $\pm$ 1.43		3.22 $\pm$ 1.12	
Below #30,000	3.88 $\pm$ 1.46		2.33 $\pm$ 1.16		2.62 $\pm$ 1.09	

Characteristics	Mean ± Standard Deviation					
	Knowledge	P-value	Attitude	P-value	Perception	P-value
Pregnancy trimesters		0.000		0.000		0.003
First trimester	3.42 ±1.47		1.63 ±1.47		3.17 ±1.28	
Second trimester	4.98 ±1.83		3.62 ±1.60		3.75 ±0.93	
Third trimester	4.60 ±1.25		2.30 ±0.98		3.18 ±1.29	

4. Discussion

To our knowledge, there is currently little data regarding HBV vaccination KAP among pregnant women in Nigeria. The results from this study indicated that while the majority (79.3%) of pregnant women have heard about the Hepatitis B vaccine, there remains a considerable gap in knowledge regarding its administration during pregnancy. The findings from this study revealed a higher level of knowledge about the Hepatitis B vaccine (76.1%) compared to previous studies. For instance, [18] reported that only 34% of women knew about the vaccine, while [19] found that 76% of pregnant women had inadequate knowledge about Hepatitis B infection. Similarly, [20] reported that only 19.6% of women were specifically aware of the Hepatitis B vaccine. This suggests that knowledge levels in the current study are significantly higher than those reported in earlier research. Furthermore, the findings revealed that the main source of information for pregnant women about the Hepatitis B vaccine was health staff/workers. This aligns with the findings of [18], who reported that 53% of women received information from healthcare workers, and [20], who found that 68.1% of women identified healthcare workers as their primary source of information. These similarities highlight the critical role of healthcare providers in disseminating information about Hepatitis B vaccination, particularly among pregnant women.

The study revealed that pregnant women in Obio-Akpor LGA demonstrated a predominantly moderate level of attitude (48%) toward Hepatitis B vaccination, with smaller proportions exhibiting high (21.6%) or low (30.4%) levels. This contrasts with the findings of [21] and [13] in Ethiopia, who reported more favourable attitudes (53.3% and 54%, respectively) among pregnant women toward Hepatitis B vaccination. Similarly, [22] reported a more positive attitude (55.96%) among medical students compared to the findings of this study. These differences may be attributed to variations in healthcare access, education levels, or cultural perceptions between the study populations. The moderate attitude level observed in this study is particularly significant when examining specific behavioural indicators. While 67.3% of respondents expressed willingness to vaccinate if the vaccine were available, this positive inclina-

tion was offset by other factors: only 32.7% were willing to pay for vaccination, and an equally small percentage (32.7%) would actively recommend it to others compared to the findings of [23] who reported that all (100%) their study participants were willing to recommend the vaccine. This suggests that while many women acknowledge the benefits of vaccination, practical and financial barriers may hinder full acceptance. Several socio-demographic factors were significantly associated with vaccination attitudes, including age, marital status, pregnancy trimester, income, occupational status, and educational level. This aligns with previous studies by Han et al. [24] and Hang et al. [25], which also found that educational level was significantly associated with positive attitudes. More educated respondents in this study were more likely to have favourable attitudes toward vaccination, likely because they had greater access to health information through various media sources. This exposure may enhance their understanding of Hepatitis B prevention and foster more positive attitudes compared to women without formal education.

The distribution of perception levels indicated that 35.5% of participants had low perception, 48.6% had moderate perception, and only 15.9% had high perception. Perceptions regarding vaccine safety and efficacy also influenced vaccine uptake. About 45.5% of respondents made their own health decisions, while 38.6% relied on joint decision-making with their partners. Similar findings were reported, with higher perception levels (91.1%) among students in a tertiary hospital in Jos, Nigeria, and Thailand [26, 27]. A higher perception level was also reported in Ethiopia (81.7%) [28]. Additionally, a good level of perception was observed in a Ugandan study among non-health workers regarding the Hepatitis B vaccine [29].

This difference may be associated with the fact that most medical students perceive themselves at a higher risk of HBV infection due to hospital-related activities. Having a positive perception is a key factor in adopting healthy and preventive behaviours [26].

The study also identified several socio-demographic factors associated with knowledge, attitude, and perception (KAP). Age was significantly correlated with knowledge, while marital status showed a statistically significant association with both knowledge and attitude. Additionally, monthly income and occupational status were linked to KAP, particularly concerning attitude and perception. These findings align with the work

of [18], who reported similar associations, noting that age and income were significant predictors of knowledge regarding the Hepatitis B vaccine. Education was another significant factor influencing knowledge and attitude. This study also supports the findings of [30], who reported that pregnant women know about the Hepatitis B vaccine, which is based on their educational level, antenatal care (ANC) visits, ethnicity, and occupation. [16], supported that educational level determines the knowledge of the Hepatitis B vaccine. Approximately 42.3% of respondents incorrectly believed that the vaccine should not be taken during pregnancy, while 27.3% were uncertain. [19] were of a similar view that many people are not aware of the Hepatitis B vaccine. This underscores the need for improved education and awareness campaigns tailored towards pregnant women during antenatal care visits. The misconception about vaccine safety during pregnancy could be attributed to inadequate health education from healthcare providers or a general lack of trust in vaccine efficacy and safety.

The study was conducted in selected health facilities within Obio-Akpor LGA, which may not be fully representative of other regions in Nigeria, thereby limiting the generalizability of the findings. Additionally, self-reported data may be subject to recall bias, and the reliance on questionnaires could introduce response bias, as participants might provide socially desirable answers rather than their true perspectives.

5. Conclusion

The study revealed that pregnant women in Obio-Akpor LGA had moderate knowledge, attitudes, and perceptions regarding the Hepatitis B vaccine. Significant associations were found between respondents' knowledge levels and their attitudes and perceptions toward vaccination. Based on these findings, health education campaigns should be intensified during antenatal visits to address misconceptions and improve vaccine uptake. The government and relevant stakeholders should subsidize or provide free vaccines to enhance accessibility. Additionally, healthcare providers should actively recommend vaccination to pregnant women to reduce HBV transmission and improve maternal and child health outcomes.

Abbreviations

HBV	Hepatitis B Virus
KAP	Knowledge, Attitude and Perception
ANC	Antenatal Care
LGA	Local Government Area

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Author Contributions

Zorka Nwinee: Conceptualization, Data curation, Software, Writing – original draft, Writing – review & editing

Amaka Azubuike Ogba: Conceptualization, Methodology, Project administration, Supervision, Writing – original draft

Anthony Ike Wegbom: Conceptualization, Methodology, Project administration, Software, Supervision, Validation, Writing – original draft, Writing – review & editing

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Consent and Ethical Approval

The research received approval from the Faculty of Basic Medical Sciences, Rivers State University Research and Ethics Committee (RSU/FBMS/REC/24/081), and permission from the Rivers State Primary Health Management Board, Port Harcourt.

Conflict of Interest

The authors declare no conflicts of interest.

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