Quest Journals
Journal of Medical and Dental Science Research
Volume 13~ Issue 4 (April 2026) pp: 52-55
ISSN(Online): 2394-076X ISSN (Print):2394-0751
www.questjournals.org

Research Paper

Fetomaternal Outcomes among Pregnant Women with Hepatitis B Infection in a Tertiary Hospital in North West Nigeria

Mustapha Seleem Ayodeji[1], Adamu Aisha Nana[1], Nwobodo Emmanuel I[2], Nasiru Abdullahi[3], Ladan Ashiru Argungu[1], Ibrahim Umar Augie[1], Saidu Ibrahim[1], Adeyemo Kabir Olayinka[1], SaaduSaadat Olatinuke[4]

1. Department of Obstetrics and Gynecology, Federal Teaching Hospital/ Federal University, Birnin Kebbi, Nigeria
2. Department of Obstetrics and Gynecology, UsmanuDanfodiyo University, Sokoto, Nigeria
3. Department of Medical Microbiology, Federal Medical Centre, Abuja, Nigeria
4. Department of Nursing, Federal Teaching Hospital, Birnin kebbi Nigeria
Corresponding author: Dr Mustapha Seleem Ayodeji. Department of Obstetrics and Gynecology, Federal Teaching Hospital, Birnin kebbi, Nigeria

***Abstract**: Hepatitis B infection is a major public health concern worldwide. Seroprevalence of HBV is still high in pregnancy most especially in the developing countries. Studies have reported inconsistencies in the occurrence of adverse pregnancy outcomes among HBsAg positive pregnant women. The aim of the study was to assess the feto-maternal outcomes of pregnancies complicated by maternal hepatitis B infection among women attending ANC at FMC Birnin kebbi. A total of 53 HBV positive pregnant women were recruited between July 2021 and April 2022, and the pregnancy outcomes were compared with 53 HBV negative women. Blood samples were collected and tested for HBV using an in vitro diagnostic kit (LabACON kits) by Citus Diagnostic Inc. British Columbia, Canada. Data obtained was imputed into SPSS version 26 and analysed using same software. There was no significant difference in the prevalence of GDM (18.9% vs 17.8%, p = 0.8), Hypertensive disorder of pregnancy (7.5% vs 11.3%, p = 0.506), PROM (9.4% vs 7.5%, p = 0.727), APH (3.8% vs 1.95%, p = 0.858), PPH (1.9% vs 0%, p = 0.315) between participants with HBV infection and those without the infection. There was also no significant association found between maternal HBV status and occurrence of adverse perinatal outcomes. In conclusion, there were no significant association between maternal HBV infection and adverse pregnancy outcomes.*

***Keywords**: Hepatitis B Virus Infection, Pregnancy Outcome, Pregnancy*

Received 08 Apr., 2026; Revised 12 Apr., 2026; Accepted 18 Apr., 2026

I. Introduction

Hepatitis B Virus (HBV) is a double stranded DNA virus which belongs to Hepadnaviridae family and it is estimated that more than 2 billion people have been infected by HBV worldwide.[1,2] It is a major public health concern as it is one of the major diseases of the liver commonly causing hepatocellular carcinoma and cirrhosis as well as a leading cause of death globally.[2,3]

The primary routes of transmission of HBV infection are through contact with HBsAg blood or other body fluid from those who are chronic hepatitis B carriers or who have acute hepatitis B infection and through sexual exposure.[3,4,5] Mother to child transmission (MTCT) of HBV is also an important mode of viral propagation.[5] About 10-20% of HBsAg reactive women transmit the virus vertically to their neonates, while up to 90% of transmissions occur in those who are seropositive for both HBsAg and HBeAg.[6,7]

In addition to the risk of MTCT, emerging research suggests that maternal hepatitis B infection may contribute to other adverse pregnancy outcomes. Although results are inconsistent across studies, there are increased risk of gestational diabetes mellitus (GDM), miscarriages, preterm delivery, and antepartum and postpartum hemorrhage. The reason for these adverse pregnancy outcomes is not fully understood, however this can be explained by the fact that HBV infection is a chronic inflammatory state that can precipitate acute hepatitis flares and further complications.[8,9,10]

Several studies have been done to determine the seroprevalence of hepatitis B infection among pregnant women in various parts of the world. However, there is paucity of data regarding association between maternal HBV infection and adverse pregnancy outcomes.

The limited studies available on the subjects have yielded conflicting results. Most of these studies were done in developed countries like United State where the prevalence rate for the disease is less than 1% and few have evaluated the impact of maternal HBV infection on pregnancy outcome in low resource countries like Nigeria which is classified among the countries that are endemic for viral hepatitis.

The primary purpose of this study was to determine whether there is an association between maternal HBV infection and adverse pregnancy outcomes such as gestational diabetes, antepartum and postpartum hemorrhage, pre-eclampsia, preterm delivery, low birth weight, and birth asphyxia in a HBV endemic area like ours. Knowing the level of risk these women are exposed to in relation to HBV infection could inform the proper design and implementation of preventive measures such as awareness raising campaigns and uptake of HBV vaccination. This could also contribute to policy formulation on the need for routine screening for hepatitis B infection at booking for ANC. This will go a long way in reducing the overall prevalence and complications associated with HBV infection.

II. Materials And Methods

This study was conducted at the antenatal clinic of Federal Teaching Hospital, Birnin kebbi, Nigeria between July 2021 and April 2022. It included 53 HBsAg-positive women that attended and delivered at the facility and matched for age and parity with women who were HBsAg-negative within the study period. The participants were interviewed by the investigator and research assistants using a semi-structured questionnaire to obtain relevant information after explaining the purpose of the study and a written informed consent was obtained. A formal approval for the conduct of the research was obtained from the Health Research Ethical Committee (HREC) of the institution.

Each of the participants was taken to a side lab attached to the clinic where the blood sample was collected. A structured pro forma was used to collect information which included (1) maternal characteristics including age, parity, marital status, educational level, fasting blood sugar, 2 hours post-prandial, systolic blood pressure, diastolic blood pressure, PROM, APH and PPH; (2) birth outcomes: gestational age at delivery, mode of delivery, birth weight and Apgar score at 5 minutes. For the purpose of this study, the primary outcomes were GDM, hypertensive disorder of pregnancy, preterm delivery and birth asphyxia while the secondary outcome measures were PROM, APH, PPH, low birth weight and foetal outcome. The case files of the participants were tagged with a sticker designed purposely for this study for ease of identification.

The data generated from the study were analysed using Statistical Package for Social Science version 26 (SPSS Inc. Illinois, USA). Descriptive statistics were done for quantitative variables. Categorical variables were presented in numbers and percentages while continuous variables were presented in mean and standard deviation. Chi-square test was used to assess associations between HBV positivity and categorical variables while independent Student's t-test was used for continuous variables. P value of less than 0.05 (at 95% confidence interval) was considered to be statistically significant.

III. Results

The obstetric characteristics of the respondents are as shown in table I. The parity of the respondents ranged from 0-8, with multipara constituting more than half (57%) of the total. The gestational week of delivery was similar within HBV infected (38.85±1.54) and HBV non-infected (39.34±1.47) mothers. Eighty-five percent (45/53) of women with HBV infection had spontaneous vaginal delivery as compared to 92% among the non-infected group. The proportion of caesarean section between HBV positive and HBV negative (8% vs 2%) was not statistically significant (p = 0.113).

There was no significant difference in both maternal primary outcome measures (i.e. incidence of gestational diabetes mellitus and hypertensive disorders of pregnancy), and secondary outcome measures, (prelabor rupture of membranes, antepartum haemorrhage and postpartum haemorrhage) between respondents who were positive and those who were negative for HBsAg. (Table II).

There are no significant statistical differences in the mean birth weight, 5th minute APGAR score and fetal outcome between babies of HBV infected mothers compared to the HBV non-infected as shown in table III.

Table I: Obstetric characteristics of respondents.

Characteristics	HBV-positive n (%)	HBV-negative n (%)	P value
Age (mean in years)	27.45 ± 4.92	27.47 ± 5.06	
Parity			
Nullipara	15 (28.3)	14 (26.4)	
Multipara	30 (56.6)	32 (60.4)	0.921[a]
Grandmultipara	8 (15.1)	7 (13.2)	

GA at delivery in weeks, mean ± SD			
Spontaneous vertex delivery	45 (84.9)	59 (92.4)	
Caesarean delivery	8 (15.1)	2 (3.8)	0.113[a]
Others*	0 (0.0)	2 (3.8)	

Note [a] = chi square test [b] = Breech delivery/Instrumental delivery

Table II: Maternal HBV Infection and Occurrence of Adverse Maternal Outcome.

Complications	HBV-positive n (%)	HBV-negative n (%)	P value
Fasting blood glucose (Mean ± SD)	4.598 ± 0.852	4.391 ± 0.790	0.488[a]
2 hours Postprandial (Mean ± SD)	6.136 ± 1.705	6.142 ± 1.264	0.875[a]
GDM	10 (18.9)	9 (17.8)	0.800[b]
PIH/Pre-eclampsia	4 (7.5)	6 (11.3)	0.506[b]
PROM	5 (9.4%)	4 (7.5%)	0.727[b]
APH	2 (3.8)	1 (1.95)	0.858[b]

Note [a] = t test [b]= chi square test

Table III: HBV infection and perinatal outcome

Characteristics	HBV-positive n (%)	HBV-negative n (%)	P value
Birth weight (g), mean ± SD	3.14 ± 0.441	3.08 ± 0.424	0.406[a]
5th minute APGAR score			
<7	2	0	0.153[b]
≥7	51	53	
Fetal outcome (Alive)[c]	53 (100)	53 (100)	

Note [a] = t test, [b] = chi square test, [c] = all the deliveries were live births, no perinatal death

IV. Discussion

This study investigated the association between HBsAg status and pregnancy outcomes in a high burden HBV region. The relationship between HBV infection and other pregnancy outcomes is controversial. The findings in this study do not support an increased risk of adverse maternal or foetal outcomes compared to the control group. There was no increased risk of GDM, preterm delivery or birth asphyxia which were the primary outcomes in this study. Other pregnancy associated morbidity (PROM, PIH/Pre-eclampsia, APH and PPH) were also not significantly different by HBV status in this group. These findings are similar to the findings of Cui et al, Umar et al, Bajema et al, Zhao et al and Reddick et al.[9,11,12,13,14] In a retrospective studies done by Peng et al., the incidence of GDM was compared between HBsAg-positive pregnant women and HBsAg-negative controls. Though, the results indicated that maternal HBsAg carriage could be an independent risk factor for GDM, there was no significant association found.[15]

Studies done in other high-burden settings in Asia have suggested an association between maternal HBV infection and other non-transmission-related adverse outcomes. Tan et al in a retrospective study of adverse maternal outcome found a higher risk of GDM, PPH, Intrahepatic cholestasis and caesarean section among pregnant women who are HBsAg positive.[8] However, no statistical associations were found between HBsAg positivity and the occurrence of pre-eclampsia. In another retrospective done by Wu et al., significant association was found between maternal HBsAg-positive status and high risk of gestational diabetes mellitus (GDM), intrahepatic cholestasis of pregnancy, preterm birth and neonatal asphyxia.[16] Other studies done by Tse et al in Hong kong and Saleh-Gargari in Iran have shown that women that were HBsAg positive had higher incidences of preterm labor, gestational diabetes mellitus and antepartum haemorrhage, increased risk of hospitalization period after delivery, preterm labor, gestational hypertension, preterm premature rupture of membranes intrauterine fetal death, still birth, and NICU admission.[17,18] In another study, HBsAg-positivity is significantly associated with an increased risk of preeclampsia among pregnant Sudanese women, with infected women showing nearly 3 times higher odds of developing the condition.[19]

The absence of adverse pregnancy outcomes observed in our study and those reported elsewhere could be related to the chronic character of HBV infection. In this population we expect that most of the women will have acquired their HBV infection preconceptionally or during childhood. The inconsistency can also be affected by the small sample size in this study. HBV DNA testing was also not done among the infected participants due to non-availability and cost as a limitation to the study. This will have been important in proper categorization of the chronicity of the disease.

V. Conclusion

This study found that there were no adverse maternal or foetal outcomes among both the HBV infected and HBV non-infected mothers thereby suggesting no associations between maternal hepatitis B status and occurrence of adverse maternal or foetal outcomes.

References

[1]. Jameson JL, Fauci AS, Kasper DL, Hauser SL, Loscalzo J (editors). Harrison's Principle of Internal Medicine. 20th Edition. New York: McGraw Hill, 2018.
[2]. World Health Organization (WHO). Hepatitis B. Available at: www.who.int/topics/hepatitis/factsheets/en
[3]. Michielsen P, Ho E. Viral hepatitis B and hepatocellular carcinoma. Acta Gastroenterol Belg 2011;74(1):4-8.
[4]. Foster G, O'Brien A. Liver disease. In: Feather A, Randall D, Waterhouse M, editors. Kumar & Clark's clinical medicine. 10th ed. London: Elsevier; 2020:914-932.
[5]. Gonzague J, Nicole N, Woottichai K. Current progress in the prevention of mother-to-child transmission of hepatitis B and resulting clinical and programmatic implications. Infect Drug Resist 2019; 12: 977-987.
[6]. Veronese P, Dodi I, Esposito S, Indolfi G. Prevention of hepatitis B virus infection. World J Gastroenterol. 2021;27(26):4182-4193.
[7]. Gentile I Borgia G. Vertical transmission of hepatitis B virus: challenges and solution. 2014;6:605-11.
[8]. Tan J, Liu X, Mao X et al. HBsAg positivity during pregnancy and adverse maternal outcomes: a retrospective cohort analysis. J Viral Hepat 2016; 23:812-9.
[9]. Cui AM, Cheng XY, Shao JG, et al. Maternal hepatitis B virus carrier status and pregnancy outcomes: a prospective cohort study. BMC Pregnancy Childbirth 2016; 16:87
[10]. Kritina LB, Helen CS, Mark WT et al. Maternal hepatitis B infection and pregnancy outcomes in the United States: a population-based cohort study. Open Forum Infect Dis 2018;5:134.
[11]. Umar A, Ukwu A, Shehu C, Abdulmumini Y, Nasir S. The outcome of pregnancy amongst hepatitis B virus positive pregnant women in a tertiary institution in Nigeria. ejpmr 2018;5(1):375-381.
[12]. Bajema KL, Karita HCS, Tenforde MW, Hawes S, Heffron R. Maternal hepatitis B infection and pregnancy outcomes in the United States: a population-based Cohort Study. Open Forum Infect Dis, 2018;5(6):134
[13]. Zhao Y, Chen T-I, Song H-q, Huang P-y, Wang L-y, Liu W, et al. (2020) Effects of maternal hepatitis B surface antigen positive status on the pregnancy outcome; a retrospective study in Xiamen, China, 2011-2018. PLoS ONE 15(3):e0229
[14]. Reddick KL, Jhaveri R, Gandhi M, James AH, Swamy GK. Pregnancy outcomes associated with viral hepatitis. J Viral Hepat. 2011;18:394-398.
[15]. Peng, S., Wan, Z., Lin, X. et al. Maternal hepatitis B surface antigen carrier status increased the incidence of gestational diabetes mellitus. BMC Infect Dis, 2019;19:147.
[16]. Wu K, Wang H, Li S, Zhang H, Zhu B. Maternal hepatitis B infection status and adverse pregnancy outcomes: a retrospective cohort analysis. Arch Gynecol Obstet. 2020;302(3):595-602
[17]. Tse KY, Ho LF, Lao T. The impact of maternal HBsAg carrier status on pregnancy outcomes: a case-control study. J Hepatol 2005; 43:771-5
[18]. Saleh-Gargari S, Hantoushzadeh S, Zendehdel N, Jamal A, Aghdam H. The association of maternal HBsAg carrier status and perinatal outcome. Hepat Mon, 2009;9(3):180-184.
[19]. Ahmed M.A, Sharif M.E, Rayis D.A, Nas A, Adam I. Hepatitis B infection and preeclampsia among pregnant Sudanese women. Virol J, 2018;15:20-25.