

Prevalence and knowledge of hepatitis B infection in pregnant women in a primary health center of Patna district, Bihar

Sanjay Pandey¹, Pallavi Lohani¹, Ria Roy¹, Ditipriya Bhar², Alok Ranjan¹, Pragya Kumar¹, C. M. Singh¹

¹Department of CFM, AIIMS, Patna, Bihar, ²Consultant, National Institute of Epidemiology (ICMR), Chennai, Tamil Nadu, India

ABSTRACT

Introduction: There is a risk of chronic hepatitis B virus (HBV) infection to the newborn through perinatal transmission from a hepatitis B surface antigen (HBsAg) positive mother that can later cause liver cirrhosis or hepatocellular carcinoma. This study was undertaken in a primary health center (PHC) in the Patna district to determine the prevalence of HBV among pregnant women and assess their knowledge across different characteristics. **Methodology:** A cross-sectional study was done among 275 pregnant women attending the PHC for the first time, using consecutive sampling. The study duration was 12 months. Socioeconomic, obstetric, risk history, and levels of knowledge about hepatitis B were collected followed by rapid diagnostic test (RDT) for serum HBsAg. Univariate analysis was used to compare the knowledge levels across different background characteristics. The significance was set at $P < 0.05$. **Results:** Hepatitis B-positive pregnant women were 0.4%. Out of the 275 participants, only 43 had heard about hepatitis B. The mean knowledge score was 0.65 (± 1.73) with 1.45% having adequate knowledge. The knowledge score was significant across education ($P 0.040$), category ($P 0.022$), hepatitis B immunization status ($P 0.003$), and risk factor ($P 0.039$). **Conclusion:** Knowledge was higher in the literate women belonging to the general category and higher social class, who received hepatitis B vaccination. However, the overall level of knowledge among the pregnant women was very poor, so they should be targeted for quality health education. Additionally, identifying the afflicted pregnant women through point-of-contact diagnosis will aid in community prevention of chronic hepatitis B.

Keywords: Health education, hepatitis B, knowledge score, pregnant women, vaccination

Introduction

Hepatitis B is a major public health problem, affecting more than 350 million people worldwide.^[1] This viral infection attacks the liver and can cause both acute and chronic diseases. About 780,000 people die every year due to the complications of hepatitis B, including cirrhosis and liver cancer.^[2] The chance of chronicity depends on the age at which the HBV

is contracted. The chronic infection develops more in the infants (90%) through perinatal transmission, than the young children aged 1–6 years (30–50%), and children above 6 years and adults (5%) with HBV infection. Once chronic hepatitis is established, 15–40% develop liver cirrhosis and hepatocellular carcinoma.^[3] India is currently in the intermediate endemicity zone with a prevalence of 2–7% (average 4%), and a disease burden of approximately 50 million.^[4]

HBV transmission results from horizontal transmission (exposure to contaminated blood or body fluids, blood transfusion, contaminated needles, syringes, and sharps); unprotected sexual contact with an

Address for correspondence: Prof. (Dr.) Sanjay Pandey, Department of CFM, AIIMS, Patna, Bihar, India. E-mail: drsanjayp69@gmail.com

Received: 21-04-2021

Revised: 03-07-2021

Accepted: 05-07-2021

Published: 05-11-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_731_21

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Pandey S, Lohani P, Roy R, Bhar D, Ranjan A, Kumar P, et al. Prevalence and knowledge of hepatitis B infection in pregnant women in a primary health center of Patna district, Bihar. J Family Med Prim Care 2021;10:3675-81.

infected person; as well as vertical or perinatal transmission (from mother to child). Mother-to-child transmission is the most common mode of transmission in areas with high endemicity. There is a risk of HBV transmission to the newborn delivered by a hepatitis B surface antigen (HBsAg) positive woman, which amplifies if the woman is also hepatitis B envelope antigen (HBeAg) positive.^[5] The transmission rate is estimated to be 90% when the mother is positive for hepatitis B e antigen (HBeAg) irrespective of the viral DNA in her serum. However, if the mother is negative for HBeAg and/or viral DNA, the transmission rate decreases to 10–30%.^[6]

Different regions of the country report different seropositivity rates. Recent studies have reported HBsAg positivity among pregnant women ranging from 0.8 to 1.1%.^[7-9]

Planning of pregnancy and management of chronic HBV during pregnancy includes recognition of maternal virologic status, assessment of liver disease severity, and minimization of risk for mother-to-infant transmission of the infection. Decisions regarding the use of antivirals need to be individualized. For mothers on antiviral therapy, breastfeeding is not recommended.^[10] Also, immunization of the newborn within 24 h of birth is very important.

This study was undertaken in a Primary Health Center in the rural block of Naubatpur, Patna. We aimed to estimate the prevalence of hepatitis B infection among pregnant women and to assess their knowledge about hepatitis B infection, its symptoms, complications, modes of transmission, and different factors associated with it.

Methodology

An analytical cross-sectional study was conducted in Naubatpur PHC of Patna district which comes under the rural field practice area of AIIMS Patna. All consecutive pregnant women attending the PHC were included in the study. Those pregnant women visiting the PHC for the first time for ante-natal check-up were included in the study to avoid duplication of study subjects. The sample size was determined by using Taro Yamane's formula which is given as: $n = N / (1 + Ne^2)$ [where n = corrected sample size, N = population size, and e = margin of error (MoE), which has been taken as $e = 0.05$]. The adjustment for a finite population was made based on the OPD data of the PHC for the past year (665 pregnant women). The computed sample size came out to be 250. Keeping a 10% non-response rate, a total of 275 subjects were tested for HBsAg positivity. They were informed about the purpose of the study and informed consent was obtained verbally before the initiation of the interview. The participants were interviewed using a pre-tested, semi-structured questionnaire regarding the sociodemographic profile and questions regarding the knowledge and awareness about hepatitis B.

Sociodemographic profile, obstetric, and other relevant history

Age was recorded and classified into two categories: 19–29 years, and 30 or above years of age, depending on the age criteria

of high-risk pregnancy. Their education status, occupation, religion, caste, and socioeconomic status according to the revised BG Prasad Scale 2019^[11] were recorded and categorized. The socioeconomic class was grouped into three classes as “Upper Class,” “Middle Class,” and “Lower Class” for ease of data analysis. The upper-middle, middle, and lower middle were grouped in the “Middle Class.” Obstetric history included their current gestational age, gravida, and the number of living issues. The women were subsequently asked about any history of hepatitis B infection, immunization, and exposure to the risk factors of the disease.

Knowledge regarding Hepatitis B disease

To evaluate knowledge about the hepatitis B disease, participants were inquired about the basic knowledge about hepatitis B, its symptoms, prevention, testing, complication, vaccination, mode of transmission, routes to perinatal transmission, and treatment of hepatitis B. For each question, the responses were either “Yes/No/Not Known.” Each correct response was given a score of ‘1’ and each incorrect response was given a score of ‘0.’ The question “can HBV infection be prevented with exercise?” has the correct answer as “No” while the rest of the questions with dichotomous answer, have the correct answer of “Yes.” Questions on the mode of transmission, route of perinatal transmission, and treatment of hepatitis B, had multiple correct answers. Thus, depending upon the number of correct responses, weighed score was given. For example, the mode of transmission had four correct responses as blood transfusion, sexual contact with an infected partner, sharing a needle with an infected person, and mother-to-child transmission. Thus, each correct response was given a 0.25 weighed score. Similarly, the route of mother-to-child transmission had three correct responses: within utero, during delivery, and during breastfeeding. For each correct response, a 0.33 score was given.

A composite variable of knowledge score was generated and the cut-off score of 8/17 was kept, keeping in mind the level of difficulty of the questions and the study population. The cut-off was comparable to the study done by Frambo *et al.*^[12] A cut-off score of at least 8/17 correct responses was defined as “adequate knowledge” and a score below this value as “inadequate knowledge.” After the interview, the blood sample of the subject was collected and tested for the presence of HBsAg using a rapid test (ASPEN HBsAg Rapid Test Cassette) for the qualitative detection of HBsAg.^[13] The result was read at 15 min.

Data analysis

Data were analyzed in SPSS version 22. Categorical data were summarized in frequency and percentages while quantitative data were expressed as mean and standard deviation. The Chi-square test was used to compare the awareness with the background characteristics of the participants. The knowledge of hepatitis B was assessed by determining how many participants had correct responses to the questions on hepatitis B. A knowledge score from the total number of correct answers was generated from each participant, and Univariate analysis was used to compare the score across factors like socioeconomic data, obstetric history,

history of hepatitis B infection, and risk factors. Statistical significance was set at $P < 0.05$.

Ethical clearance

Permission to carry out the study was obtained from the Institutional Ethical Committee of AIIMS, Patna (IEC/AIIMS/Pat/260). The study protocol was explained to the patient/guardian and informed written consent was obtained from each subject to be enrolled in the study in the vernacular language. The participants were free to withdraw their participation from the study at any point during the interview. The confidentiality and anonymity of the data were maintained during the conduction, analysis, and reporting of the study. The report of the HBsAg was informed immediately to the participants and family members. Participants with a positive report were referred to the Obstetrics and Gynecology department OPD of AIIMS, Patna, for further management of the HBV infection and care of the newborn.

Results and Observations

Socio-demographic profile of the participants and other relevant history

Out of the 275 pregnant women who came to the PHC and enrolled in the study, only one woman, or 0.4% of the total participants, tested positive for hepatitis B. Table 1 shows that 93.8% of them were below the age of 30 years. About one-third of the participants were illiterate. Almost all the participants were homemakers and the socioeconomic status of the majority ranged from middle class to lower class according to the BG Prasad Scale 2019.^[11] Regarding the obstetric history, almost half of the women were in their first trimester during the visit. More than half of all the mothers were primigravida whereas 44% were multigravida. About 80% of them had received at least one dose of tetanus toxoid during their current pregnancy.

Of all the women in the study, only about eight women recalled having previously received hepatitis B vaccine. Nearly 5 and 10% of the women reported a history of themselves suffering from jaundice and/or any liver disease, and similar history regarding their family members, respectively. Among the major risk factors, four out of five women had an ear and/or nose piercing, one-fourth had a history of tattooing or any form of scarification, 10.5% had intravenous drugs administered in the past, 9.1% had a history of surgery and abortion each, 3.6% had a past blood transfusion, and only about 1% had a history of Sexually transmitted infections (STI).

Knowledge-based assessment regarding various aspects of Hepatitis B

The knowledge of the participants was assessed regarding the hepatitis B virus, symptoms of hepatitis B, its prevention, testing, complications, vaccination, modes of transmission, and treatment. Out of 275 participants, only 43 had heard about hepatitis B. It was observed that out of 43 participants, only one-fifth knew that hepatitis B is a virus and it affects the

Table 1: Background characteristics of pregnant women (n=275)

Characteristics	n, %, 95% CI
Age Group (in years)	
19-29	258, 93.8 (90.5-96.2)
≥30	17, 6.2 (3.8-9.5)
Educational Status	
Illiterate	91, 33.1 (27.7-38.8)
Literate	184, 66.9 (61.2-72.3)
Occupational Status	
Homemaker	265, 96.4 (93.6-98.1)
Skilled	5, 1.8 (0.7-3.9)
Unskilled	5, 1.8 (0.7-3.9)
Religion	
Hindu	262, 95.3 (92.3-97.4)
Muslim	13, 4.7 (2.7-7.8)
Category	
General	49, 17.8 (13.6-22.7)
OBC	147, 53.5 (47.5-59.3)
SC/ST	79, 28.7 (23.6-34.3)
Social Class	
Upper Class	4, 1.5 (0.5-3.5)
Middle Class	196, 71.3 (65.7-76.4)
Lower Class	75, 27.2 (22.3-32.7)
Obstetric History	
Gestational Age (in weeks)	
First Trimester	47, 17.1 (12.9-21.9)
Second Trimester	134, 48.7 (42.8-54.6)
Third Trimester	94, 34.2 (28.7-39.9)
Gravida	
1 (Primigravida)	147, 53.5 (47.5-59.3)
2-4 (Multigravida)	121, 44.0 (38.2-49.9)
≥5 (Grand Multigravida)	7, 2.5 (1.1-4.9)
Status of Hepatitis B immunization	
Yes	8, 2.9 (1.4-5.5)
No	208, 75.6 (70.3-80.4)
Not Known	59, 21.5 (16.9-26.6)
History of Jaundice/Liver Disease	
Yes	12, 4.4 (2.4-7.3)
No	263, 95.6 (92.7-97.6)
History of Jaundice/Liver Disease in any family member	
Yes	23, 8.4 (5.5-12.1)
No	195, 70.9 (65.3-76.1)
Not Known	57, 20.7 (16.3-25.8)
History of Risk	
Past surgery	25, 9.1 (6.1-12.9)
Blood Transfusion	10, 3.6 (1.9-6.4)
Abortion	25, 9.1 (6.1-12.9)
Sexually Transmitted Disease	3, 1.1 (0.3-2.9)
Tattooing/Scarification	67, 24.4 (19.6-29.7)
More than one sexual partner	2, 0.7 (0.1-2.4)
Intravenous drug abuse	29, 10.5 (7.3-14.6)
History of ear and nose piercing	223, 81.1 (76.1-85.4)

liver. Approximately 30% of these participants knew that the vaccine can prevent infection and 40% of them knew that it is available free of cost in government health facilities. A similar proportion of the participants knew that the infection can be

tested by a blood test (30%) and the testing should be done in pregnancy (19%). Regarding the mode of transmission, maximum participants (30%) knew about the sexual route of transmission, followed by blood transfusion, (16.3%) and mother-to-child transmission (11.6%). Only two participants knew that hepatitis B is transmitted during delivery, and eight participants knew about its allopathic mode of treatment [Table 2].

Knowledge score and its association with socio- demographic profile and other relevant histories [Table 3]

In the present study, it was found that 271 (or 98.5%) women had inadequate knowledge (score less than 8/16), and merely 4 (or 1.5%) women had knowledge of adequate level (score of 8/16 or more).

The overall mean knowledge score was 0.65 (95% CI: 0.447– 0.858) out of 17. The mean knowledge score across all categories is also determined. Statistically significant difference

in the knowledge score was observed only across the education status (*P* 0.040), category of the participants (*P* 0.022), the status of hepatitis B immunization (*P* 0.003), and history of risk factor (*P* 0.039). However, the knowledge was very poor among pregnant women.

Discussion

Hepatitis B is prevalent in 3–4.2% of the population in India with more than 40 million carriers and 115,000 deaths every year.^[14] The first Global Health Sector Strategy (GHSS) on viral hepatitis B and C aims to eliminate the disease as a public health problem by 2030 under Sustainable Development Goals. Under GHSS, immunization, harm reduction to injecting drug use (IDUs), blood and injection safety, testing and treatment, and prevention of mother-to-child transmission are the five strategies to be implemented.^[15] The latter is a very important measure as mother- to- child transmission (MTCT) contributes highly to the burden of chronic hepatitis B. Mishra *et al.*^[16] mention in their study that 1.09% of the indoor

Table 2: Knowledge-based assessment of pregnant women regarding various aspects of hepatitis B infection [n=43]

Knowledge-based questions regarding hepatitis B	Responses (n, %, 95% CI)
Basic knowledge about Hepatitis B infection	
1. Hepatitis B infection is caused by a virus.	9, 20.9% (8.26-33.60)
2. Liver can be affected by the HBV infection.	9, 20.9% (8.26-33.60)
Knowledge about symptoms of hepatitis B infection	
3. Jaundice is the most common symptom of HBV infection.	6, 13.9% (31.63-24.74)
4. HBV-infected patients can be without any symptoms.	1, 2.33% (-2.36-7.02)
5. HBV infection remains lifelong.	1, 2.33% (-2.36-7.02)
Knowledge about prevention of hepatitis B infection	
6. HBV infection can be prevented with exercise.	1, 2.33% (-2.36-7.02)
7. HBV infection can be prevented with good hand hygiene.	6, 13.95% (3.16-24.74)
8. HBV infection can be prevented with a balanced diet.	3, 6.98% (-0.96-0.15)
9. HBV infection can be prevented with a vaccine.	13, 30.23% (15.93-44.53)
Knowledge about testing of hepatitis B infection	
10. HBV infection can be tested by blood test.	13, 30.23% (15.93-44.53)
11. Hepatitis B testing should be done in each pregnancy	19, 44.19% (28.72-59.65)
Knowledge about complications of hepatitis B infection	
12. Hepatitis B causes liver cancer.	2, 4.65% (-1.91-11)
Knowledge about vaccination of hepatitis B	
13. A complete set of hepatitis B vaccine requires three injections of vaccines.	3, 6.98% (-0.96-14.91)
14. Government provides free hepatitis B vaccine to newborns	18, 41.86% (26.49-57.22)
Knowledge about different modes of transmission	
15. Knowledge about modes of transmission of hepatitis B	
Blood transfusion	7, 16.28% (4.78-27.78)
Sexual activity	13, 30.23% (15.93-44.53)
Mother-to-child transmission	5, 11.63% (1.65-21.61)
16. Knowledge about mother-to-child transmission of hepatitis B	
Through breastfeeding	5, 11.63% (1.65-21.61)
Within utero	4, 9.30% (.26-18.35)
During delivery	2, 4.65% (-1.91-11.21)
Knowledge about treatment	
17. Knowledge about treatment of hepatitis B	
Allopathic	8, 18.6%, (6.49-30.72)
Homeopathic	3, 6.98% (-0.96-14.91)
Ayurvedic	1, 2.33%, (-2.37-7.02)

Table 3: Univariate Analysis of the Knowledge Score across socioeconomic data, obstetric history, and history about the hepatitis B infection (n=275)

Characteristics	Knowledge Score	
	Mean (±SD)	P
Age group (in years)		
19-29	0.638 (1.716)	0.591*
≥30	0.872 (2.024)	
Educational Status		
Literate	0.803 (1.974)	0.040*
Illiterate	0.348 (1.041)	
Occupational Status		
Homemaker	0.673 (1.761)	0.582†
Skilled	0	
Unskilled	0.2 (0.447)	
Religion		
Hindu	0.653 (1.766)	0.980*
Muslim	0.641 (0.886)	
Category		
SC/ST	0.219 (0.613)	0.022†
OBC	0.769 (2.036)	
General	0.999 (1.856)	
Social Class		
Upper Class	1.313 (2.625)	0.573†
Middle Class	0.690 (1.759)	
Lower Class	0.519 (1.626)	
Gestational Age		
First trimester	0.638 (1.481)	0.941†
Second trimester	0.622 (1.604)	
Third trimester	0.703 (2.020)	
Gravida		
1 (Primigravida)	0.622 (1.953)	0.919†
2-4 (Multigravida)	0.678 (0.428)	
≥5 (Grand Multigravida)	0.857 (1.864)	
Status of hepatitis B immunization		
No	0.687 (1.856)	0.003†
Not Known	0.288 (0.645)	
Yes	2.446 (2.726)	
History of jaundice/liver disease		
No	0.634 (1.708)	0.412*
Yes	1.055 (2.263)	
History of jaundice/liver disease in any family member		
No	0.647 (1.691)	0.522†
Not Known	0.526 (1.219)	
Yes	1.014 (2.868)	
History of risk factor		
Yes	0.753 (1.886)	0.039*
No	0.190 (0.456)	

*Unpaired t-test. †One-way ANOVA

antenatal patients were HBV positive at a tertiary care center in Madhya Pradesh, which is comparable to its prevalence in India. In our study, the prevalence came out to be very low in comparison (0.4%) that is representative of the antenatal women living in the Naubatpur area only. Pregnant women with a high HBV level during the third trimester should be administered antiviral medications which decrease the risk of vertical transmission. Hepatitis B immunoglobulin (HBIG)

given to the neonate at birth can help prevent the development of the infection.^[17] An almost similar prevalence of hepatitis B among pregnant women was reported by a study conducted in an antenatal clinic of Ghana: 3.3%.^[18]

In a study conducted in Nairobi, Kenya, in Africa, where the hepatitis B prevalence is higher than in India in the general population as well as antenatal women, the level of awareness regarding hepatitis B was found to differ significantly across the maternal education level.^[19] Additionally, in a case-control study conducted among a rural population in Phulwarisharif block of Patna, Bihar, to examine the risk factors for hepatitis B transmission in the rural area, 50% of the cases and 62% of the controls were aware of the hepatitis B disease, 40% in each group were aware of blood transfusion, and 20% about sexual route as a mode of spread. However, only 4% of the cases and 13% of the controls knew about the hepatitis B vaccination,^[20] whereas in our study, 30% of the mothers knew about the sexual route and 16% about the blood transfusion. This is similar to a study conducted in three slums of Mumbai by Jha *et al.*^[21] where 22 and 55% of the pregnant women were aware of the respective modes of transmission. Similar findings were reported from a study conducted among pregnant women in Ethiopia. The study reported that approximately 80% of the women were unaware of the modes of transmission of hepatitis B.^[22]

The knowledge score was adequate in only 1.5% of the women in our study, whereas in the study done by Frambo *et al.*^[12] in Cameroon, Africa, showed this percentage to be at 16%, which is comparatively higher, but still indicates a low awareness about the disease and its potential for chronic morbidity in mothers and newborns alike. There was a very high prevalence found in that study (9.4%). Another study done in Cameroon, however, demonstrated an excellent knowledge level among more than half of the pregnant mothers attending the ante-natal care (ANC) clinic but had adopted poor practices regarding the prevention and transmission of HBV, leading to a higher prevalence (5.7 and 7.5% in two districts).^[23] Thus poor hygienic practices and risky behaviors such as not vaccinating, using shared needles, piercings and tattooing, unchecked blood transfusion, and unsafe sexual practices leading to STI are also very concerning risk factors for contracting hepatitis B.^[24] Even after adequate knowledge, sensitization drives and campaigns for specific education about hepatitis B among pregnant women are of paramount importance to prevent mother-to-child transmission.

Significant association of the knowledge score of the women attending the ANC clinic in Naubatpur was found across their education status ($P = 0.040$), caste category ($P = 0.022$), history of hepatitis B immunization ($P = 0.003$), and exposure to risk factor (0.039). In other studies, similar associations were found especially with the education level of the study participants. A study conducted in Uganda, Africa, by Nankya-Mutyoba *et al.*,^[25] found both the awareness level and knowledge associated significantly with the residence and higher educational status of the pregnant women ($P < 0.001$). Apart from educational

status and vaccination history, multigravida was also reported to be significantly associated with good knowledge and a positive attitude.^[26] In Bihar or India, such association with knowledge scores has not been done previously, which highlights the gap between health education and prevention of hepatitis B. The literacy rate of Naubatpur is 71.76%. In that the female literacy rate is merely 63.00% according to the Census 2011 data.^[27] This points toward the low reach of health education from the school level to the children and adolescents, which is an important risk factor for the contraction and transmission of the virus once they get exposed to the other risk factors.

Additionally, it can be observed from the current study that most pregnant women have poor knowledge about hepatitis B infection and its transmissibility. The primary care physicians can address this issue by generating awareness while the pregnant women attend the primary health centers for antenatal check-ups. This approach can help in reducing the burden of hepatitis B. Also, those pregnant women who miss their ANC can be targeted through campaigns involving frontline workers.

There were notable strengths of the study such as specific objectives, the novelty of conducting the assessment, use of different pre-tested semi-structured questions to test the awareness and knowledge levels across all the relevant determinants, the opportunity of universal rapid testing of HBsAg to the pregnant women, adequate sample size, and examination of the factors that lead to poor knowledge about the disease among a high-risk group for the disease. However, there were a few limitations also. The subjectivity of the awareness and perception about the disease can lead to information bias among the participants. Also, the sample is representative of only the Naubatpur area, and not of the whole of Bihar or India, which reduces the generalizability of this study.

Conclusion

Although in India, the estimated burden of hepatitis B is very high, the prevalence in our study was only 0.4%. Still, the low prevalence does not outweigh the importance of the prevention and control measures to reduce morbidity and mortality arising out of hepatitis B. Preventing mother-to-child transmission is a very important way to mitigate this, in line with SDG 2030 goal 3. In our study, knowledge and awareness were higher in literate women belonging to the general category and higher social class, who received hepatitis B vaccination. However, the overall level of knowledge among pregnant women was very poor. They had poor knowledge about the disease as well as its transmission. So, to reduce the burden of the disease, they should be targeted for quality health education. Additionally, identification of the afflicted pregnant women through point-of-contact diagnosis will aid in the prevention of chronic hepatitis B in the community.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other

clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Lok ASF. Chronic hepatitis B. *N Engl J Med* 2002;346:1682-3.
2. WHO | hepatitis B [Internet]. WHO. World Health Organization; May 22, 2020. Available from: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>.
3. Gentile I, Borgia G. Vertical transmission of hepatitis B virus: Challenges and solutions. *Int J Womens Health* 2014;6:605-11.
4. Ray G. Current scenario of hepatitis B and its treatment in India. *J Clin Transl Hepatol* 2017;5:277-96.
5. Mustapha GU, Ibrahim A, Balogun MS, Umeokonkwo CD, Mamman AI. Seroprevalence of hepatitis B virus among antenatal clinic attendees in Gamawa Local Government Area, Bauchi State, Nigeria. *BMC Infect Dis* 2020;20:194.
6. Wei J, Xue S, Zhang J, Wang S, Wang B. Study of the relationship in pregnant women between hepatitis B markers and a placenta positive for hepatitis B surface antigen. *J Perinat Med* 2015;43:191-9.
7. Chatterjee S, Ravishankar K, Chatterjee R, Narang A, Kinikar A. Hepatitis B prevalence during pregnancy. *Indian Pediatr* 2009;46:1005-8.
8. Dwivedi NI, Misra SP, Misra V. Seroprevalence of hepatitis B infection during pregnancy and risk of perinatal transmission. *Indian J Gastroenterol* 2011;30:66-71.
9. Pande C, Sarin Patra S. Prevalence, risk factors, and virological profile of chronic hepatitis B virus infection in pregnant women in India. *J Med Virol* 2011;83:962-7.
10. Kumar M, Singh T, Sinha S. Chronic hepatitis B virus infection and pregnancy. *J Clin Exp Hepatol* 2012;2:366-81.
11. Dalvi TM, Khairmar MR, Kalghatgi SR. An update of BG Prasad and Kuppuswamy socio-economic status classification scale for Indian Population. *Indian J Pediatr* [Internet]. Feb 8, 2020. Available from: <http://link.springer.com/10.1007/s12098-020-03200-7s>.
12. Frambo AAB, Atashili J, Fon PN, Ndumbe PM. Prevalence of HbsAg and knowledge about hepatitis B in pregnancy in the Buea Health District, Cameroon: A cross-sectional study. *BMC Res Notes* 2014;7:394.
13. ASPEN. One step Hepatitis B Surface Antigen Test Device (Serum/Plasma). Available from: [https://www.rapidtest.com/pdf/HBsAg_Serum_Plasma_WB_RapiCard\(08-15-2015\).pdf](https://www.rapidtest.com/pdf/HBsAg_Serum_Plasma_WB_RapiCard(08-15-2015).pdf).
14. World hepatitis Day 2016 - Know hepatitis - Act now [Internet]. Mar 23, 2021. Available from: <https://www.who.int/news-room/events/detail/2016/07/28/default-calendar/world-hepatitis-day-2016>.
15. Global hepatitis Programme [Internet]. Mar 23, 2021. Available from: <https://www.who.int/teams/>

global-hiv-hepatitis-and-stis-programmes/hepatitiss/strategic-information.

16. Mishra S, Purandre P-, Thakur R, Agrawal S, Alwani M. Study on prevalence of hepatitis B in pregnant women and its effect on maternal and fetal outcome at tertiary care centre. *Int J Reprod Contracept Obstet Gynecol* 2017;6:2238-40.
17. Jin J. Screening for hepatitis B in pregnant women. *JAMA* 2019;322:376.
18. Kwadzokpui PK, Akorsu EE, Abaka-Yawson A, Quarshie SS, Amankwah SA, Tawiah PA. Prevalence and knowledge of hepatitis B virus infection among pregnant women in the Ningo-Prampram District, Ghana. *Int J Hepatol* 2020;2020:7965146.
19. Ngaira JAM, Kimotho J, Mirigi I, Osman S, Nganga Z, Lwembe R, *et al.* Prevalence, awareness and risk factors associated with hepatitis B infection among pregnant women attending the antenatal clinic at Mbagathi District Hospital in Nairobi, Kenya. *Pan Afr Med J* 2016;24:315.
20. Lohani P-, Kumar A, Singh R, Sinha RK, Mukherjee M. A study of risk factors of hepatitis B infection among rural adult population of Patna, Bihar. *Int J Community Med Public Health* 2017;4:4654-60.
21. Jha S, Devaliya D, Bergson S, Desai S. Hepatitis B knowledge among women of childbearing age in three slums in Mumbai: A cross-sectional survey. *Hepatol Med Policy* 2016;1:5.
22. Gebrecherkos T, Girmay G, Lemma M, Negash M. Knowledge, attitude, and practice toward hepatitis B virus among pregnant women attending antenatal care at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. *Int J Hepatol* 2020;2020:5617603.
23. Eyong EM, Yankam BM, Seraphine E, Ngwa CH, Nkfusai NC, Anye CS, *et al.* The prevalence of HbsAg, knowledge and practice of hepatitis B prevention among pregnant women in the Limbe and Muyuka health districts of the South West region of Cameroon: A three-year retrospective study. *Pan Afr Med J* 2019;32:122.
24. Park, K. Viral hepatitis. In: Park's Textbook of Preventive and Social Medicine. 25th ed. Jabalpur (India):M/s Banarsidas Bhanot Publishers; 2019. P. 233-4.
25. Nankya-Mutyoba J, Aizire J, Makumbi F, Atuyambe L, Ocama P-, Kirk GD. Correlates of hepatitis B awareness and disease-specific knowledge among pregnant women in Northern and Central Uganda: A cross-sectional study. *Hepatol Med Policy* 2018;3:14.
26. Dagne M, Million Y, Destaw B, Adefris M, Moges F, Tiruneh M. Knowledge, attitude, and associated factors toward vertical transmission of hepatitis B virus among pregnant women attending antenatal care in tertiary hospitals in Amhara Region, Northwest Ethiopia: A cross-sectional study. *Int J Womens Health* 2020;12:859-68.
27. Naubatpur Nagar Panchayat City Population Census 2011-2021 | Bihar [Internet]. Mar 24, 2021. Available from: <https://www.census2011.co.in/data/town/801376-naubatpur-bihar.html>.