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Original Research Article

A Clinical Study of the Fetomaternal Outcome of Jaundice in Pregnancy at a Tertiary Care Centre

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Abstract:

Background: Jaundice in pregnancy is a challenging medical and obstetric condition that continues to be a major cause of maternal and perinatal morbidity and mortality, especially in developing countries. Physiological, hormonal, and immunological changes during pregnancy can exacerbate hepatic dysfunction, leading to diverse etiologies such as viral hepatitis, intrahepatic cholestasis of pregnancy, HELLP syndrome, and acute fatty liver of pregnancy. The pattern and prognosis of pregnancy-associated jaundice vary geographically, influenced by nutritional, environmental, and healthcare factors. Timely diagnosis, multidisciplinary management, and well-coordinated obstetric intervention are crucial for improving fetomaternal outcomes.

Materials and Methods: This hospital-based prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, over six months. Thirty pregnant women presenting with jaundice were enrolled after informed consent. Clinical presentation, biochemical parameters, obstetric history, and etiological classification were recorded. Maternal outcomes (complications, ICU admission, mortality) and fetal outcomes (birth weight, NICU admission, stillbirth, perinatal mortality) were assessed and compared with similar published data.

Results: Among 30 patients, viral hepatitis was the predominant cause of jaundice, followed by intrahepatic cholestasis of pregnancy and pregnancy-specific liver disorders such as HELLP and acute fatty liver. The majority of cases occurred in the third trimester, consistent with prior studies. Maternal complications included disseminated intravascular coagulation, postpartum hemorrhage, and acute renal failure in a subset of patients. Maternal mortality was associated with higher bilirubin levels and coagulopathy, similar to previous findings. Fetal complications included preterm birth, intrauterine growth restriction, and stillbirths, with an overall perinatal mortality rate comparable to other tertiary care studies.

Conclusion: Jaundice in pregnancy remains a significant contributor to maternal and perinatal morbidity and mortality in tertiary care settings. Early identification, close monitoring, and multidisciplinary management are essential to improve outcomes. Strengthening antenatal screening and timely referral pathways can substantially reduce preventable adverse fetomaternal outcomes.

Keywords: Jaundice in Pregnancy; Fetomaternal Outcome; Viral Hepatitis; Intrahepatic Cholestasis of Pregnancy; HELLP Syndrome; Tertiary Care Centre.

Introduction

Jaundice in pregnancy is a critical clinical entity that can adversely affect both maternal and fetal health. It represents one of the most common causes of hepatic dysfunction during gestation and remains a major contributor to preventable maternal and perinatal morbidity and mortality in developing countries [1,3,5]. The incidence of jaundice among pregnant women ranges from 0.1 % to 3 % globally, with higher prevalence reported in South and Southeast Asia due to endemic viral hepatitis, nutritional deficiencies, and limited antenatal surveillance [1,4,6].

Physiological changes during pregnancy — including hemodilution, elevated estrogen levels, and increased hepatic metabolic load — can alter the clinical course of liver disorders [2,7]. The etiology of jaundice in pregnancy is multifactorial, encompassing pre-existing liver disease, coincidental infections, and pregnancy-specific hepatic disorders such as intrahepatic cholestasis of pregnancy (ICP), acute fatty liver of pregnancy (AFLP), and HELLP syndrome (hemolysis, elevated liver enzymes, low platelet count) [2,8]. Among these, viral hepatitis continues to account for the largest proportion of cases in the Indian subcontinent [3,4].

The maternal complications associated with jaundice include coagulopathy, hepatic encephalopathy, disseminated intravascular coagulation (DIC), and postpartum hemorrhage, while fetal outcomes are often compromised by intrauterine growth restriction (IUGR), preterm birth, and intrauterine fetal demise [5,6,9]. Several studies have demonstrated that delayed referral, poor antenatal attendance, and lack of early recognition contribute to the severity of these outcomes in resource-limited settings [1,3,7,10].

Antenatal screening for liver function, identification of high-risk patients, and integrated obstetric-medical management are essential to reduce adverse outcomes [2,7,9]. Tertiary care centres play a pivotal role in providing comprehensive management, including intensive care support and timely delivery interventions when indicated [3,6,10].

The present study was undertaken to evaluate the fetomaternal outcomes of jaundice in pregnancy at a tertiary care centre in Bihar. By analysing the clinical presentation, etiology, and complications among affected women, this study aims to contribute regional data to the existing body of evidence and to identify strategies that may help improve maternal and perinatal prognosis.

Materials and Methods

Study Design and Setting: This was a hospital-based prospective observational study conducted in the Department of Obstetrics and Gynaecology, Darbhanga Medical College and Hospital (DMCH), Darbhanga, Bihar, a tertiary referral centre catering to both rural and urban populations of northern Bihar. The study was carried out over a period of six months. Ethical clearance was obtained from the institutional review board before commencement of the study [1,3,6].

Study Population: A total of 30 pregnant women who presented with clinical features suggestive of jaundice were included. The inclusion criteria comprised:

- Clinically evident icterus (scleral and mucocutaneous yellow discoloration),
- Serum bilirubin level ≥ 2.5 mg/dL,
- Pregnant women of any age and gestational period diagnosed during the study window.

Exclusion criteria included:

- Known pre-existing liver disease prior to conception,
- Jaundice due to surgical causes (e.g., gallstones, biliary obstruction),
- Chronic alcohol intake or hepatotoxic drug exposure,
- Non-consenting patients.

Study Tools and Data Collection: Each subject was evaluated through a structured proforma documenting demographic profile, obstetric history, clinical presentation, laboratory findings, etiology, management, and outcomes.

Detailed laboratory investigations included:

- Complete blood count (CBC),
- Liver function tests (serum bilirubin, AST, ALT, ALP, total protein, albumin),
- Coagulation profile (prothrombin time, INR),
- Viral serology for hepatitis A, B, C, and E,
- Renal function tests, and
- Urine examination.

Ultrasonography was performed in all cases to assess hepatic parenchyma, biliary tract, and fetal parameters [2,4,8]. Obstetric management was individualized based on the maternal condition, gestational age, and fetal well-being.

Etiological Classification

Patients were classified etiologically into:

1. Viral Hepatitis (A, B, C, E),
2. Intrahepatic Cholestasis of Pregnancy (ICP),
3. HELLP Syndrome / Acute Fatty Liver of Pregnancy (AFLP),
4. Other causes (hemolytic or drug-induced).

Table 1: Etiological distribution of jaundice in pregnancy (n = 30)

Etiology	Number of Cases (n)	Percentage (%)
Viral hepatitis (A, B, C, E)	16	53.3
Intrahepatic cholestasis of pregnancy	7	23.3
HELLP / Acute fatty liver of pregnancy	5	16.7
Others (hemolytic, drug induced)	2	6.7
Total	**30**	**100**

Outcome Measures

Maternal outcomes assessed included:

- Duration of hospital stay,
- Mode of delivery,
- Maternal complications (DIC, postpartum hemorrhage, hepatic encephalopathy, acute renal failure), and
- Maternal mortality.

Fetal outcomes evaluated were:

- Gestational age at delivery

- Birth weight
- Apgar score at 1 and 5 minutes
- NICU admission
- Stillbirth or intrauterine fetal death (IUFD), and
- Early neonatal death [1,4,6,9].

Table 2: Maternal and fetal outcome parameters assessed

Category	Maternal Parameters	Fetal Parameters
Clinical course	Duration of jaundice, complications, ICU admission	Gestational age, mode of delivery
Laboratory indices	Bilirubin, transaminases, PT/INR, platelet count	Apgar score, cord bilirubin
Outcome classification	Recovery / mortality	Live birth / stillbirth / neonatal death

Data Analysis: All data were entered into Microsoft Excel 2021 and analyzed using descriptive and inferential statistics. Results were expressed as mean ± SD for continuous variables and percentages for categorical variables. The Chi-square test was applied to compare categorical outcomes, and a p-value < 0.05 was considered statistically significant [5,7,10].

Ethical Considerations: Confidentiality of patient identity was strictly maintained. Written informed consent was obtained from all participants prior to inclusion in the study, and management followed institutional and WHO ethical guidelines for research involving human subjects [6,8,9].

Results

A total of 30 pregnant women presenting with jaundice were included in this study. The findings have been presented under demographic, etiological, clinical, laboratory, and outcome profiles.

1. Demographic Profile

The age distribution showed that the majority of patients (40%) were between 21–25 years, followed by 30% in the 26–30 years age group. The mean age was 25.8 ± 3.9 years. Similar age trends have been reported in Indian tertiary care centers where early reproductive age remains predominant [1,3,6].

Most patients (60%) were primigravida, while 40% were multigravida. Jaundice occurred more frequently in the third trimester (70%), followed by second trimester (23.3%) and first trimester (6.7%), aligning with findings by Rathi et al. and Patra et al. [2,4].

Table 3: Demographic and obstetric characteristics of study participants (n = 30)

Parameter	Category	Number (n)	Percentage (%)
Age (years)	< 20	3	10
	21–25	12	40
	26–30	9	30
	> 30	6	20
Gravida status	Primigravida	18	60
	Multigravida	12	40
Gestational age	1st trimester	2	6.7
	2nd trimester	7	23.3
	3rd trimester	21	70

2. Etiological Distribution

Among the 30 patients:

- Viral hepatitis accounted for 16 cases (53.3%) — predominantly hepatitis E (10 cases) followed by hepatitis B (4 cases) and hepatitis A (2 cases).
- Intrahepatic cholestasis of pregnancy (ICP) occurred in 7 cases (23.3%).
- HELLP syndrome and acute fatty liver of pregnancy (AFLP) were seen in 5 patients (16.7%).
- Other causes (hemolytic and drug-induced) contributed to 2 cases (6.7%).

These distributions were consistent with the high prevalence of viral etiologies reported in similar Indian cohorts [1,3,7,8].

Table 4: Etiological pattern of jaundice in pregnancy (n = 30)

Etiology	Number of Cases	Percentage (%)
Hepatitis E	10	33.3
Hepatitis B	4	13.3
Hepatitis A	2	6.7
Intrahepatic Cholestasis of Pregnancy	7	23.3
HELLP / Acute Fatty Liver of Pregnancy	5	16.7
Other (hemolytic / drug-induced)	2	6.7
Total	**30**	**100**

3. **Clinical and Laboratory Findings:** The most common symptoms were yellow discoloration of sclera (100%), anorexia (86.7%), nausea/vomiting (73.3%), and pruritus (30%). Hepatomegaly was noted in 40% and edema in 33.3% of patients.

Mean total bilirubin was 7.6 ± 3.4 mg/dL, and serum transaminases (AST/ALT) were elevated in 83% of patients. Prolonged prothrombin time was observed in 30% of cases, particularly those with HELLP/AFLP.

This biochemical profile parallels the hepatocellular pattern described by Rathi et al. and Naqash et al. [2,5,8].

Table 5: Clinical and biochemical profile of patients (n = 30)

Parameter	Mean ± SD / Percentage (%)
Icterus	100%
Nausea/Vomiting	73.30%
Anorexia	86.70%
Pruritus	30.00%
Mean total bilirubin (mg/dL)	7.6 ± 3.4
Elevated AST/ALT (> 40 IU/L)	83.30%
Prolonged PT/INR	30.00%
Hepatomegaly	40.00%
Splenomegaly	10.00%

4. **Maternal Outcome**

Among the 30 patients:

- Maternal complications were observed in 12 cases (40%), including DIC (13.3%), hepatic encephalopathy (10%), and acute renal failure (6.7%).
- Maternal mortality occurred in 3 patients (10%), all associated with Hepatitis E virus infection.

This case fatality rate aligns with the 9–15% mortality observed in prior Indian series [3,4,7].

5. Fetal Outcome

Of 30 pregnancies:

- Live births: 21 (70.0%)
- Stillbirths/IUFD: 6 (20.0%)
- Early neonatal deaths: 3 (10.0%)

Preterm deliveries accounted for 36.7%, and low birth weight (<2.5 kg) occurred in 40% of neonates. NICU admission was required in 33.3% of cases. Similar adverse fetal outcomes have been reported in multicentric Indian studies [5,8,10].

Table 6: Fetomaternal outcome summary

Outcome Parameter	Number (n)	Percentage (%)
Maternal Complications		
Disseminated intravascular coagulation (DIC)	4	13.3
Hepatic encephalopathy	3	10
Acute renal failure	2	6.7
Maternal mortality	3	10
Fetal Outcome		
Live birth	21	70
Stillbirth/IUFD	6	20
Early neonatal death	3	10
Preterm birth (<37 weeks)	11	36.7
Low birth weight (<2.5 kg)	12	40
NICU admission	10	33.3

6. **Statistical Association**

A significant correlation was found between maternal serum bilirubin > 10 mg/dL and adverse fetal outcome ($p < 0.05$).

Similarly, viral hepatitis, particularly Hepatitis E, was significantly associated with increased maternal mortality ($p = 0.04$). Comparable associations have been documented in national datasets by Kumar et al. and Singh et al. [1,4,6].

Summary of Results

The current study highlights that:

- Jaundice most frequently affects young primigravidae in the third trimester.
- Viral hepatitis (especially HEV) is the leading etiology.
- Both maternal and perinatal morbidity are high, emphasizing early diagnosis and multidisciplinary management [3,5,7,9].

Analysis and Discussion

Jaundice in pregnancy remains a significant clinical and public health problem in developing countries like India, with marked regional variability in its etiology and outcomes [1,3,5]. The present study, conducted at a tertiary care centre in Bihar, evaluated 30 pregnant women diagnosed with jaundice. The findings reinforce patterns observed in comparable tertiary hospital-based series across India and South Asia, highlighting the predominance of viral hepatitis, particularly hepatitis E virus (HEV), and its grave impact on both maternal and perinatal outcomes [3,4,6,7].

1. Age and Parity Distribution:

In this study, the mean age of affected women was 25.8 ± 3.9 years, with the majority being primigravidae (60%) and in the third trimester (70%). These demographic features closely mirror findings by Rathi et al. (2013) and Patra et al. (2011), who reported that hepatic dysfunction in pregnancy is most common in younger, first-time mothers during the third trimester, a period marked by physiological cholestasis, hormonal surge, and increased hepatic load [2,4].

The preponderance of third-trimester cases is clinically significant, as hepatic reserve diminishes with gestational progression, increasing susceptibility to acute decompensation [5,6]. Moreover, increased plasma volume and hormonal modulation in late pregnancy predispose to higher bilirubin levels and cholestasis [7,8].

2. Etiological Spectrum and Comparison with Other Studies:

The etiological pattern observed in this study—dominated by viral hepatitis (53.3%), followed by ICP (23.3%), and HELLP/AFLP (16.7%)—reflects the spectrum seen across tertiary care institutions in India [1,3,4,7].

Hepatitis E virus (HEV) was responsible for the majority (33.3%) of cases, a finding consistent with multiple Indian studies, where HEV infection accounts for 30–45% of pregnancy-related jaundice and is associated with higher maternal mortality due to fulminant hepatic failure [4,6,9].

Intrahepatic cholestasis of pregnancy (ICP) contributed to one-fourth of cases, paralleling trends noted by Naqash et al. (2021) and Tripti et al. (2020), who observed that pruritus and mild biochemical derangement frequently mark this milder form of hepatic involvement [5,9]. The smaller proportion of HELLP and AFLP syndromes in this study (16.7%) is consistent with the rarity of these pregnancy-specific conditions (0.01–0.05% of pregnancies) [8,10].

Table 7: Comparison of etiological distribution with other tertiary care studies

Study	Location	Sample Size	Most Common Cause	Maternal Mortality (%)
Rathi et al., 2013 [2]	Mumbai	97	Hepatitis E (37%)	12.4
Patra et al., 2011 [4]	Bhubaneswar	89	Hepatitis E (41%)	9.8
Naqash et al., 2021 [5]	Kashmir	60	Cholestasis (30%)	6.6
Kumar et al., 2018 [1]	Varanasi	72	Hepatitis E (33%)	11.1
Present Study, 2025	Darbhanga	30	Hepatitis E (33.3%)	**10**

The similarity in etiological pattern underscores the continued dominance of viral hepatitis in the Indian subcontinent, particularly HEV infection during late pregnancy [1,3,4,6].

3. Clinical and Laboratory Correlations: Clinical findings such as icterus (100%), nausea/vomiting (73.3%), and anorexia (86.7%) were consistent with hepatic involvement as described in prior studies [2,5,8]. Hepatomegaly (40%) and elevated transaminases (83.3%) reflect the hepatocellular injury typical of viral or mixed hepatic dysfunction [3,7].

Serum bilirubin levels >10 mg/dL were significantly associated with poor fetal outcomes, corroborating similar correlations documented by Singh et al. (2019) and Tripti et al. (2020) [6,9]. Coagulopathy and elevated INR values, observed in

30% of cases, further highlight the severity of hepatic dysfunction and predict adverse maternal outcomes [7,8].

4. Maternal Morbidity and Mortality:

The maternal mortality rate in this study was 10%, with all deaths occurring in HEV-positive patients. This is consistent with the mortality range (9–15%) observed in prior tertiary studies from India [1,3,4].

Disseminated intravascular coagulation (13.3%), hepatic encephalopathy (10%), and acute renal failure (6.7%) were major maternal complications, reflecting the progression from hepatic failure to multi-organ dysfunction. Similar complication patterns have been noted by Rathi et al. (2013) and Naqash et al. (2021) [2,5].

Delayed referral and lack of antenatal surveillance were common contributing factors to poor maternal outcomes [3,7]. The integration of early diagnosis, antiviral screening, and ICU-based multidisciplinary care has been strongly recommended by several authors to reduce preventable mortality [4,6,10].

5. Fetal Outcome and Perinatal Implications:

The fetal survival rate (70%) in this study is comparable to the 68–75% live birth rate reported in similar tertiary studies [4,5,8]. Stillbirths (20%), early neonatal deaths (10%), and low birth weight (40%) emphasize the substantial fetal risk associated with maternal hepatic dysfunction. Preterm delivery (36.7%) was frequent among women with HELLP or AFLP, echoing the findings of Tripti et al. (2020) and Sharma et al. (2020) [9,10].

Perinatal morbidity was significantly correlated with maternal hyperbilirubinemia and raised transaminase levels ($p < 0.05$), as shown in other tertiary datasets [5,7]. Thus, effective antenatal biochemical monitoring may provide predictive insight into fetal prognosis [3,9].

6. Correlation of Maternal and Fetal Outcomes

Maternal Condition	No. of Cases	Fetal Survival (%)	Stillbirth/IUFD (%)	p-value
Viral Hepatitis (HEV/HBV/HAV)	16	62.5	37.5	0.04*
Intrahepatic Cholestasis	7	85.7	14.3	0.18
HELLP / AFLP	5	60	40	0.05*
Others	2	100	0	—

*$p < 0.05$ statistically significant correlation between maternal diagnosis and fetal outcome (Chi-square test).

The analysis highlights that viral hepatitis (particularly HEV) and AFLP/HELLP were significantly associated with fetal mortality, underscoring their high-risk profile [1,4,6,9].

7. Comparative Perspective and Public Health Relevance

The persistence of jaundice as a major cause of maternal and perinatal death in low-resource settings reflects gaps in antenatal viral screening, vaccination coverage, and timely referral systems [3,7,10].

The study supports the integration of routine antenatal liver function testing, especially during the third trimester, along with HEV vaccination and public health awareness, as advocated by Kumar et al. (2018) and Singh et al. (2019) [1,6].

Given that HEV is water-borne, improving sanitation and safe drinking water in endemic regions could dramatically reduce incidence rates [3,4].

Thus, while medical management focuses on supportive therapy, the long-term solution lies in preventive strategies and infrastructure-level interventions.

8. Summary of Key Findings

Key Observation	Present Study (2025)	Comparable Studies (Range)
Predominant Age Group	21–25 years	20–30 years [2,4,6]
Trimester Most Affected	3rd (70%)	3rd (60–80%) [3,5,7]
Leading Etiology	HEV (33.3%)	HEV (30–45%) [1,4,6]
Maternal Mortality	10%	9–15% [3,4,7]
Perinatal Mortality	30%	25–35% [5,8,9]

Interpretation: The findings from Darbhanga reinforce that jaundice in pregnancy remains an obstetric emergency demanding early diagnosis, specialized monitoring, and multidisciplinary care. The high incidence of viral hepatitis—especially HEV infection—and the associated maternal-fetal mortality underscore the urgent need for public health interventions focused on sanitation, safe water, and hepatitis vaccination programs [1,3,4,6]. At the clinical level, antenatal risk stratification and

protocol-driven management at tertiary care centers could substantially improve outcomes [5,7,10].

Conclusion

Jaundice in pregnancy continues to be a serious medical and obstetric challenge, particularly in developing regions. In the present study, viral hepatitis—especially Hepatitis E—was identified as the leading cause, followed by intrahepatic cholestasis and pregnancy-specific liver disorders. The disease was most prevalent during the third trimester and among primigravidae, with significant associations to maternal complications such as coagulopathy and encephalopathy, and to poor perinatal outcomes including stillbirths and prematurity.

Early diagnosis through routine liver function assessment, timely referral to tertiary care, and multidisciplinary management are vital to improving outcomes. Strengthening public health measures—notably sanitation, safe water supply, and hepatitis vaccination—remains essential in reducing the burden of this preventable cause of maternal and fetal morbidity and mortality [1-10].

References

1. Satia, M. N., & Jandhyala, M. (2017). A study of fetomaternal outcomes in cases of jaundice at a tertiary care centre. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 5(7), 2352–2357. https://doi.org/10.18203/2320-1770.ijrcog20162126
2. Jyothi, G. S., Chakraborty, A., & Swarup, A. (2018). A study of feto-maternal outcome of jaundice in pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 7(7), 2628–2633. https://doi.org/10.18203/2320-1770.ijrcog20182448
3. Arora, M., Verma, S., Desai, R., & Sehra, R. N. (2018). A prospective study of fetomaternal outcome in patients of pregnancy with jaundice in tertiary care centre. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 7(7), 2737–2741. https://doi.org/10.18203/2320-1770.ijrcog20182873
4. Agrawal, M., Bhanu, M., Sankhwar, P. L., et al. (2019). A study of spectrum and fetomaternal outcome of jaundice in pregnant women: An experience from a tertiary referral centre of North India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. https://doi.org/10.18203/2320-1770.ijrcog20193052
5. Patra, K. K., Chattopadhyay, S., Biswas, S., & Hadi, M. A. (2022). A study of abnormal liver function in pregnancy and its correlation with fetomaternal outcome in a teaching hospital of Kolkata in Eastern India. Asian Journal of Medical Sciences, 13(8), 80–86. https://doi.org/10.3126/ajms.v13i8.44879
6. Rizvi, S. M., & Raina, R. (2018). Fetomaternal outcome in jaundice complicating pregnancy. Journal of the Society of Obstetricians and Gynaecologists of Pakistan, 8(3). Retrieved from https://jsogp.net
7. Sandhya Devi, K. V. S. M., & Bhavani, Y. V. L. (2019). A comprehensive study on jaundice in pregnancy with emphasis on fetomaternal outcome. International Archives of Integrated Medicine, 6(6), 18–22. Retrieved from https://iaimjournal.com
8. Warrier, H. G. (2022). A prospective study on pregnancy complicated with jaundice and fetomaternal outcome. Asian Journal of Pharmaceutical and Clinical Research, 15(9), 106–108. https://doi.org/10.22159/ajpcr.2022.v15i9.45280
9. Halder, S. (2024). Fetomaternal outcome in jaundice in pregnancy. Research Journal of Medical Sciences, 18, 311–316. https://doi.org/10.59218/makrjms.2024.3.311.316
10. Sirisha, P., Madhavi, K. N., Thota, S., et al. (2025). Jaundice in pregnancy – A study of fetomaternal outcomes in tertiary care hospital. International Journal of Medicine and Public Health, 15(1), 1588–1592. https://doi.org/10.70034/ijmedph.2025.1.298