The Research Journal of Medical Sciences
[E-ISSN: 3078-2481| P-ISSN: 3078-2473]
Available on: https://rjmsonline.com/
Volume: 08 | Issue: 01, 2026
DOI: 10.5281/zenodo.20702328

Research Article *Open Access*

Maternal and Perinatal Outcomes in Severe Preeclampsia: A Retrospective Observational Study at a Tertiary Care Centre

Dr. Durumutla Monica[1], Dr. Palli Sudhir Babu[2]

[1]*Postgraduate Resident, Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India.*
[2]*M.D. OBG, MBA, HHSM, Professor & HOD, Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India.*

Corresponding Author

Dr. Durumutla Monica
Postgraduate Resident, Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India.

Source of support: Nil.
Conflict of interest: None

Received: 13-05-2026
Accepted: 07-06-2026
Available online: 15-06-2026

Abstract

Background: Severe preeclampsia is a major hypertensive disorder of pregnancy and an important cause of maternal and perinatal morbidity and mortality worldwide, particularly in developing countries. Despite advances in obstetric care, it continues to contribute significantly to adverse fetomaternal outcomes. This study aimed to evaluate the maternal and perinatal outcomes associated with severe preeclampsia at a tertiary care centre.

Methods: A retrospective observational study was conducted in the Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India. Hospital records of women diagnosed with severe preeclampsia who delivered between September 2025 and February 2026 were reviewed. Maternal demographic characteristics, obstetric profile, maternal complications, and perinatal outcomes were analysed. A total of 50 women with severe preeclampsia were included in the study.

Results: Most women belonged to the 21–30 years age group (78%) and were primigravidae (68%). Severe preeclampsia was most commonly diagnosed at 34–35 weeks of gestation (52%). Maternal complications were observed in 15 patients, with placental abruption being the most common complication (40%), followed by eclampsia (26.7%). Adverse perinatal outcomes were observed in 28 cases, with intrauterine fetal death being the most frequent outcome (25%). Fetal growth restriction and respiratory distress syndrome each accounted for 21.4% of perinatal complications. The overall perinatal mortality was 24%.

Conclusion: Severe preeclampsia is associated with considerable maternal and perinatal morbidity and mortality. Placental abruption was the most common maternal complication, while intrauterine fetal death was the most frequent adverse perinatal outcome. Early diagnosis, vigilant antenatal surveillance, timely referral, and appropriate management at tertiary care centres are essential for improving fetomaternal outcomes.

Keywords: *Severe preeclampsia; Maternal outcomes; Perinatal outcomes; Placental abruption; Fetal growth restriction; Perinatal mortality.*

INTRODUCTION

Hypertensive disorders of pregnancy remain one of the leading causes of maternal and perinatal morbidity and mortality worldwide, particularly in low- and middle-income countries. Preeclampsia is a multisystem disorder characterized by new-onset hypertension occurring after 20 weeks of gestation, accompanied by proteinuria and/or evidence of maternal end-organ dysfunction. It affects approximately 2–8% of pregnancies globally and continues to pose a major public health challenge despite advances in antenatal surveillance and obstetric care.[1,2]

Preeclampsia results from abnormal placentation leading to impaired trophoblastic invasion of the spiral arteries, reduced

uteroplacental perfusion, endothelial dysfunction, systemic vasospasm, and inflammatory activation. These pathophysiological changes can affect multiple organ systems including the cardiovascular, renal, hepatic, hematological, neurological, and placental systems.[3,4]

Severe preeclampsia represents the more serious end of the disease spectrum and is associated with a substantially increased risk of maternal and fetal complications. According to the American College of Obstetricians and Gynecologists (ACOG), severe preeclampsia is characterized by severe hypertension (≥160/110 mmHg) and/or evidence of significant end-organ involvement.[1]

Maternal complications associated with severe preeclampsia include eclampsia, placental abruption, HELLP syndrome (Hemolysis, Elevated Liver Enzymes, and Low Platelet Count), acute kidney injury, pulmonary edema, disseminated intravascular coagulation, cerebrovascular accidents, and maternal death.[6,7] These complications contribute significantly to maternal morbidity and may necessitate urgent delivery irrespective of gestational age.

Adverse perinatal outcomes in severe preeclampsia primarily result from uteroplacental insufficiency and prematurity. Fetal growth restriction, oligohydramnios, preterm birth, respiratory distress syndrome, low birth weight, neonatal intensive care unit admission, intrauterine fetal death, and increased perinatal mortality are frequently encountered.[8,9,10] The risk of adverse neonatal outcomes increases with earlier gestational age at disease onset and greater disease severity.[7] The burden of preeclampsia is particularly high in developing countries where delayed diagnosis, inadequate antenatal care, limited access to tertiary healthcare facilities, and delayed referral systems contribute to poorer fetomaternal outcomes. Early identification of severe disease and timely intervention remain essential strategies for reducing complications and improving survival.[2,9,13]

Considering the significant impact of severe preeclampsia on maternal and perinatal health, the present study was undertaken to evaluate the maternal and perinatal outcomes associated with severe preeclampsia at a tertiary care centre and to analyse its distribution with respect to maternal age, parity, and gestational age.

RESEARCH OBJECTIVES

1. To assess the maternal complications associated with severe preeclampsia.
2. To evaluate the perinatal outcomes in pregnancies complicated by severe preeclampsia.
3. To analyse the distribution of severe preeclampsia with respect to maternal age, parity, and gestational age at diagnosis.

MATERIALS AND METHODS

Study Design and Setting

A retrospective observational study was conducted in the Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India. The study was undertaken to evaluate maternal and perinatal outcomes in pregnancies complicated by severe preeclampsia. Data were collected retrospectively from hospital records and labour room registers over a six-month period from September 2025 to February 2026.

Study Population

The study population comprised pregnant women diagnosed with severe preeclampsia who delivered at the tertiary care centre during the study period. A total of 50 women fulfilling the eligibility criteria were included in the study.

Inclusion Criteria

Women with severe preeclampsia at gestational age ≥34 weeks were included in the study. Severe preeclampsia was defined as blood pressure ≥160/110 mmHg associated with one or more severe features, including proteinuria (≥2+), persistent headache, blurred vision, eclampsia, elevated liver enzymes, thrombocytopenia (platelet count <100,000/mm^3), abruptio placentae, oligohydramnios, or fetal growth restriction.

Exclusion Criteria

Women with gestational age <34 weeks, pre-existing chronic renal disease, chronic hepatic disease, idiopathic hemolytic anemia, idiopathic thrombocytopenic purpura, and epilepsy were excluded from the study.

Data Collection

Relevant data were extracted from patient case records, labour room registers, and hospital medical records using a structured data collection proforma. Demographic variables included maternal age and parity. Obstetric variables included gestational age at diagnosis. Maternal outcomes assessed were eclampsia, placental abruption, HELLP syndrome, acute renal failure, atonic postpartum haemorrhage, and postpartum eclampsia. Perinatal outcomes evaluated included fetal growth restriction, respiratory distress syndrome, hypoxic ischemic encephalopathy, septicemia,

intrauterine fetal death, and neonatal death.

Outcome Measures
The primary maternal outcome was the occurrence of maternal complications associated with severe preeclampsia. The primary perinatal outcome was the occurrence of adverse perinatal outcomes, including fetal growth restriction, respiratory distress syndrome, intrauterine fetal death, neonatal death, septicemia, and hypoxic ischemic encephalopathy. Secondary outcomes included the distribution of severe preeclampsia according to maternal age, parity, and gestational age at diagnosis.

Statistical Analysis
Data were entered into Microsoft Excel and analysed using descriptive statistics. Results were expressed as frequencies and percentages. The results were presented in the form of tables for appropriate interpretation of maternal and perinatal outcomes.

Ethical Considerations
The study was conducted using retrospective data obtained from hospital records. Patient confidentiality and anonymity were maintained throughout the study. No patient identifiers were collected, recorded, or disclosed during data extraction and analysis.

RESULTS

Study Population Characteristics
A total of 50 women with severe preeclampsia were included in the study. The majority of women belonged to the 21–30 years age group (39, 78%), while 12% were younger than 20 years and 10% were older than 30 years. Primigravidae constituted 68% (34/50) of the study population, whereas multigravidae accounted for 32% (16/50). Severe preeclampsia was most commonly diagnosed at 34–35 weeks of gestation (26, 52%), followed by 36–37 weeks (16, 32%) and ≥38 weeks (8, 16%).

Table 1. Baseline Characteristics of the Study Population (n = 50)

Characteristic	Number of Patients (n)	Percentage (%)
Age Group (years)		
<20	6	12
21–30	39	78
>30	5	10
Parity		
Primigravida	34	68
Multigravida	16	32
Gestational Age at Diagnosis (weeks)		
34–35	26	52
36–37	16	32
≥38	8	16

Maternal Outcomes
Maternal complications were observed in 15 women with severe preeclampsia. Placental abruption was the most frequent maternal complication, accounting for 40% of reported maternal complication events, followed by eclampsia (26.7%). HELLP syndrome and atonic postpartum haemorrhage each accounted for 13.3% of complication events, while acute renal failure and postpartum eclampsia contributed 6.7% each.

Table 2. Maternal Complications among Women with Severe Preeclampsia

Maternal Complication	Number of Events (n)	Percentage (%)
Placental abruption	6	40.0
Eclampsia	4	26.7
HELLP syndrome	2	13.3
Atonic postpartum haemorrhage	2	13.3
Acute renal failure	1	6.7
Postpartum eclampsia	1	6.7

Percentages are calculated based on the total number of reported maternal complication events.

Perinatal Outcomes
Adverse perinatal outcomes were observed in 28 cases. Intrauterine fetal death (IUFD) was the most common adverse perinatal outcome, accounting for 25% of cases. Fetal growth restriction (FGR) and respiratory distress syndrome (RDS)

each accounted for 21.4% of adverse outcomes. Neonatal death occurred in 17.9% of cases, while septicemia, hypoxic ischemic encephalopathy (HIE), and combined RDS with HIE were less frequently observed.

Table 3. Perinatal Outcomes among Pregnancies Complicated by Severe Preeclampsia (n = 28)

Perinatal Outcome	Number of Cases (n)	Percentage (%)
Intrauterine fetal death (IUFD)	7	25.0
Fetal growth restriction (FGR)	6	21.4
Respiratory distress syndrome (RDS)	6	21.4
Neonatal death	5	17.9
Septicemia	2	7.1
Hypoxic ischemic encephalopathy (HIE)	1	3.6
RDS with HIE	1	3.6

The overall perinatal mortality was 24%, comprising seven intrauterine fetal deaths and five neonatal deaths.

DISCUSSION

Severe preeclampsia remains one of the leading causes of maternal and perinatal morbidity and mortality worldwide, particularly in developing countries where delayed diagnosis, inadequate antenatal surveillance, and limited access to tertiary healthcare facilities continue to adversely affect pregnancy outcomes.[13-15] The present retrospective observational study evaluated maternal and perinatal outcomes among 50 women with severe preeclampsia managed at a tertiary care centre and highlights the significant maternal and perinatal morbidity associated with severe preeclampsia in this setting.

In the present study, the majority of women with severe preeclampsia belonged to the 21–30 years age group (78%), and 68% were primigravidae. Similar findings were reported by Yadav et al., Ghimire et al., and Sibai et al., who observed that severe preeclampsia occurs more frequently among young primigravid women.[15-17] The predominance of primigravid women in the present study supports previous evidence that first pregnancies are at greater risk of developing severe preeclampsia, possibly due to abnormal placentation and maternal immunological maladaptation.[4,8,19]
Most women in the present study were diagnosed between 34 and 35 weeks of gestation (52%). This finding is comparable with observations from Yaliwal et al., who reported that severe preeclampsia commonly presents during the late preterm period.[18] Presentation between 34 and 35 weeks often necessitates close maternal-fetal surveillance and timely delivery to prevent progression to severe maternal and fetal complications.

Maternal complications were observed in 15 women in the present study. Placental abruption was the most common complication, accounting for 40% of reported maternal complication events. Similar observations have been reported by Steegers et al. and Duley, who identified placental abruption as an important contributor to maternal morbidity in severe preeclampsia.[9,19] Endothelial dysfunction, vasospasm, and impaired uteroplacental perfusion increase the risk of placental abruption, maternal haemorrhage, and fetal compromise.

Eclampsia was the second most common complication (26.7%) in the present study. Despite advances in obstetric care and widespread use of magnesium sulphate, eclampsia continues to occur, particularly in women presenting late or with inadequate antenatal care. Sibai reported that severe preeclampsia remains a major antecedent of eclampsia and contributes substantially to maternal morbidity and mortality.[14] HELLP syndrome was observed in 13.3% of women, reflecting the multisystem involvement associated with severe disease. Haram et al. similarly emphasized that HELLP syndrome remains one of the most serious complications of severe preeclampsia and is associated with increased maternal and perinatal risks.[20]

Perinatal outcomes were significantly affected in the present study. Adverse perinatal outcomes were documented in 28 cases. Intrauterine fetal death was the most common adverse outcome (25%), followed by fetal growth restriction and respiratory distress syndrome (21.4% each). Comparable findings have been reported by Ghimire et al. and Yadav et al., who demonstrated increased rates of fetal growth restriction, prematurity, low birth weight, and perinatal loss among pregnancies complicated by severe preeclampsia.[16,17] Chronic uteroplacental insufficiency, placental vascular pathology, and the need for early delivery contribute to fetal growth restriction, prematurity, respiratory morbidity, and perinatal mortality.[19,21]

The overall perinatal mortality rate in the present study was 24%, comprising both intrauterine fetal deaths and neonatal deaths. Although high, this rate is comparable to findings from other tertiary care centres managing severe preeclampsia in resource-limited settings.[16-18] Duley emphasized that hypertensive disorders of pregnancy remain a major cause of perinatal mortality globally, particularly where timely obstetric intervention and neonatal intensive care facilities are limited.[9]

The findings of the present study reinforce the importance of comprehensive antenatal care, early identification of high-

risk pregnancies, strict blood pressure control, seizure prophylaxis with magnesium sulphate, and multidisciplinary management involving obstetricians, physicians, anaesthesiologists, and neonatologists. International guidelines by ACOG, WHO, ISSHP, and FIGO emphasize timely diagnosis, close maternal-fetal surveillance, appropriate timing of delivery, and strengthening of referral systems as key strategies for reducing maternal and perinatal complications.[1,2,5,6,22,23]

The present study has certain limitations. The retrospective design limits assessment of causal relationships, and the relatively small sample size restricts generalizability of the findings. Being a single-centre study, the results may not represent the wider population. Nevertheless, the study provides valuable insight into the burden of severe preeclampsia and its associated outcomes in a tertiary care setting.

Overall, these findings emphasize the need for early diagnosis, timely referral, and evidence-based management to improve fetomaternal outcomes in pregnancies complicated by severe preeclampsia.

CONCLUSION

Severe preeclampsia is associated with considerable maternal and perinatal morbidity and mortality. Placental abruption was the most common maternal complication, while intrauterine fetal death was the most frequent adverse perinatal outcome. Early diagnosis, vigilant antenatal surveillance, timely referral, and appropriate management at tertiary care centres are essential for improving fetomaternal outcomes.

ACKNOWLEDGEMENTS

The authors acknowledge the Department of Obstetrics and Gynaecology, SVS Medical College and Hospital, Mahabubnagar, Telangana, India, for their support during the conduct of this study.

FUNDING

No external funding was received for this study.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Dr. Durumutla Monica contributed to study conception, data collection, data analysis, interpretation of results, manuscript drafting, and manuscript preparation. Dr. Palli Sudhir Babu contributed to study supervision, critical review of the manuscript, and final approval of the manuscript.

REFERENCES

1. American College of Obstetricians and Gynecologists. Gestational hypertension and preeclampsia. Obstet Gynecol. 2020;135(6):e237–e260.
2. World Health Organization. WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia. Geneva: World Health Organization; 2011.
3. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Hoffman BL, Casey BM, Spong CY. Williams Obstetrics. 26th ed. New York: McGraw-Hill Education; 2022.
4. Rana S, Lemoine E, Granger JP, Karumanchi SA. Preeclampsia: pathophysiology, challenges, and perspectives. Am J Obstet Gynecol. 2019;220(2 Suppl):S844–S866.
5. Brown MA, Magee LA, Kenny LC, Karumanchi SA, McCarthy FP, Saito S, et al. Hypertensive disorders of pregnancy: ISSHP classification, diagnosis, and management recommendations for international practice. Hypertension. 2018;72(1):24–43.
6. Magee LA, Brown MA, Hall DR, Gupte S, Hennessy A, Karumanchi SA, et al. The 2021 International Society for the Study of Hypertension in Pregnancy classification, diagnosis and management recommendations. Pregnancy Hypertens. 2022;27:148–169.
7. Chappell LC, Cluver CA, Kingdom J, Tong S. Pre-eclampsia. Lancet. 2021;398(10297):341–354.
8. Phipps EA, Thadhani R, Benzing T, Karumanchi SA. Pre-eclampsia: pathogenesis, novel diagnostics and therapies. Nat Rev Nephrol. 2019;15(5):275–289.
9. Duley L. The global impact of pre-eclampsia and eclampsia. Semin Perinatol. 2009;33(3):130–137.
10. Stevens W, Shih T, Incerti D, Ton TGN, Lee HC, Peneva D, et al. Short-term costs of preeclampsia to the health care system. Am J Obstet Gynecol. 2017;217(3):237–248.
11. Roberts JM, Hubel CA. The two-stage model of preeclampsia: variations on the theme. Placenta. 2009;30 Suppl A:S32–S37.
12. National Institute for Health and Care Excellence. Hypertension in pregnancy: diagnosis and management (NG133). London: NICE; 2019.

13. Abalos E, Cuesta C, Grosso AL, Chou D, Say L. Global and regional estimates of preeclampsia and eclampsia: a systematic review. Eur J Obstet Gynecol Reprod Biol. 2013;170(1):1–7.
14. Sibai BM. Diagnosis, prevention, and management of eclampsia. Obstet Gynecol. 2005;105(2):402–410.
15. Sibai BM, Dekker G, Kupferminc M. Pre-eclampsia. Lancet. 2005;365(9461):785–799.
16. Yadav S, Saxena U, Yadav R. Maternal and perinatal outcome in severe preeclampsia and eclampsia. Int J Reprod Contracept Obstet Gynecol. 2019;8(7):2765–2770.
17. Ghimire S, Chhetry M, Shrestha S. Fetomaternal outcome in severe preeclampsia and eclampsia. J Nepal Health Res Counc. 2020;18(1):87–92.
18. Yaliwal RG, Jaju PB, Vanishree M. Eclampsia and perinatal outcome: a retrospective study in a teaching hospital. J Clin Diagn Res. 2011;5(5):1056–1059.
19. Steegers EA, von Dadelszen P, Duvekot JJ, Pijnenborg R. Pre-eclampsia. Lancet. 2010;376(9741):631–644.
20. Haram K, Svendsen E, Abildgaard U. The HELLP syndrome: clinical issues and management. BMC Pregnancy Childbirth. 2009;9:8.
21. Phipps E, Prasanna D, Brima W, Jim B. Preeclampsia: updates in pathogenesis, definitions, and guidelines. Clin J Am Soc Nephrol. 2016;11(6):1102–1113.
22. Poon LC, Shennan A, Hyett JA, Kapur A, Hadar E, Divakar H, et al. The International Federation of Gynecology and Obstetrics (FIGO) initiative on preeclampsia. Int J Gynaecol Obstet. 2019;145(S1):1–33.
23. von Dadelszen P, Magee LA. Preventing deaths due to the hypertensive disorders of pregnancy. Best Pract Res Clin Obstet Gynaecol. 2016;36:83–102.