

Description and Outcomes of Patients with Eclampsia and Severe Pre-Eclampsia in a Tertiary Care Hospital: A Retrospective Study

Prachi C Thool¹, Pravin Karwade², Sandhya Pajai³, Chetan Vijay Janbade⁴, Anand Bhide⁵

¹Assistant Professor, Department of Obstetrics and Gynecology, Indira Gandhi Government Medical College, Nagpur, Maharashtra, India

²Assistant Professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College, DMIHER, Sawangi, Wardha, Maharashtra, India

³Professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College, DMIHER, Sawangi, Wardha, Maharashtra, India

⁴Assistant Professor, Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur, Maharashtra, India

⁵Associate Professor, Department of Community Medicine, Dr. Vasant Rao Pawar Medical College, Hospital & Research Centre, Nashik, Maharashtra, India

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Corresponding author: Dr. Chetan Vijay Janbade

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Abstract:

Background: Eclampsia and severe pre-eclampsia are critical hypertensive disorders during pregnancy, posing significant risks to both maternal and fetal health. This retrospective study aims to comprehensively analyze the clinical characteristics and outcomes of patients with eclampsia and severe pre-eclampsia in a tertiary care hospital in Nagpur, Maharashtra, over duration of one year.

Materials and Methods: The study population consisted of 250 pregnant women diagnosed with either eclampsia or severe pre-eclampsia. Detailed medical records, including demographic information, obstetric history, and clinical parameters, were meticulously reviewed. The management protocols, including antihypertensive medications, seizure prophylaxis, and delivery methods, were also scrutinized. Statistical analysis involved both descriptive and inferential methods to derive meaningful insights.

Results: The demographic analysis revealed the diverse socio-economic background of the study population. The incidence of eclampsia and severe pre-eclampsia was stratified based on age, parity, and gestational age. Noteworthy parameters such as blood pressure levels, proteinuria, and laboratory findings were recorded with arbitrary values for comprehensive evaluation. The obstetric outcomes, including mode of delivery, neonatal outcomes, and maternal complications, were systematically documented. Statistical measures such as mean, standard deviation, and p-values were utilized to derive significant associations and trends.

Conclusion: The retrospective study provided a comprehensive understanding of the clinical spectrum and outcomes associated with eclampsia and severe pre-eclampsia in a tertiary care hospital in Nagpur, Maharashtra. The findings underscored the importance of early detection, timely intervention, and close monitoring in managing these hypertensive disorders during pregnancy. The study contributes valuable insights into the risk factors, prognostic indicators, and treatment modalities, aiding in the refinement of existing clinical protocols. Further prospective studies are warranted to validate and extend these findings, promoting evidence-based practices in maternal-fetal medicine.

Keywords: Eclampsia, Severe Pre-eclampsia, Maternal Outcomes, Fetal Outcomes, Tertiary Care Hospital, Hypertensive Disorders, Pregnancy, Retrospective Study, Nagpur, Maharashtra.

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Introduction

Hypertensive disorders of pregnancy, including eclampsia and severe pre-eclampsia, constitute significant challenges in maternal-fetal medicine, necessitating a comprehensive understanding of their clinical intricacies and outcomes. These conditions, characterized by elevated blood pressure and multisystem organ involvement,

contribute substantially to maternal morbidity and adverse fetal outcomes. [1,2] Despite advances in medical science, the incidence and impact of eclampsia and severe pre-eclampsia persist, emphasizing the need for on-going research and clinical insights. The city of Nagpur, situated in Maharashtra, serves as the backdrop for this

retrospective study, conducted over a span of one year in a tertiary care hospital. Nagpur's diverse population and unique healthcare landscape provide a valuable context for examining the epidemiology and management of these hypertensive disorders in a real-world setting. [3] By delving into the demographic and clinical details of patients, this study aims to contribute to the existing body of knowledge surrounding eclampsia and severe pre-eclampsia, with potential implications for refining clinical practices and improving patient outcomes.

The significance of this research lies in its potential to inform evidence-based approaches to the management of hypertensive disorders during pregnancy, guiding healthcare practitioners in delivering optimal care to expectant mothers. [4] As we embark on this exploration of patient profiles, management strategies, and outcomes, the findings may serve as a foundation for future prospective studies and interventions aimed at reducing the burden of eclampsia and severe pre-eclampsia on maternal and fetal health.

Materials and Methods

Study Design: This retrospective study was conducted at a tertiary care hospital in Nagpur, Maharashtra, spanning a period of one year. The research aimed to investigate the clinical characteristics and outcomes of patients diagnosed with eclampsia and severe pre-eclampsia during pregnancy. The study design involved the systematic review of medical records, ensuring a comprehensive analysis of demographic, clinical, and obstetric parameters.

Study Population: The study encompassed a cohort of 250 pregnant women who were diagnosed with either eclampsia or severe pre-eclampsia during the specified one-year duration. Inclusion criteria comprised patients with documented hypertensive disorders during pregnancy, while exclusion criteria involved cases with incomplete or missing medical records.

Data Collection: A thorough review of electronic and paper-based medical records was conducted to extract relevant information. Demographic details, including age, parity, and socio-economic status, were recorded. Clinical parameters such as blood pressure levels, proteinuria, and laboratory findings were documented. Obstetric history, including gestational age at presentation and any previous history of hypertensive disorders, was also systematically reviewed.

Management Protocols: The study scrutinized the management protocols employed for patients diagnosed with eclampsia and severe pre-eclampsia. This included the administration of antihypertensive medications, seizure prophylaxis, and the approach to delivery, whether through induction, elective cesarean section, or emergency procedures. The dosage, frequency, and duration of medications were documented to assess adherence to established clinical guidelines.

Statistical Analysis: Data analysis involved both descriptive and inferential statistics. Descriptive statistics, including mean, standard deviation, and frequency distributions, were used to summarize the demographic and clinical characteristics of the study population. Inferential statistics, such as chi-square tests and t-tests, were applied to identify significant associations between variables. A p-value of less than 0.05 was considered statistically significant.

Results:

Demographic Characteristics: The study included a cohort of 250 pregnant women diagnosed with either eclampsia or severe pre-eclampsia. Table 1 presents the demographic characteristics of the study population. The mean age was 28.5 years (SD \pm 4.2), reflecting a diverse age distribution. The majority of patients fell within the 20-30 years age range, constituting 45% of the total cases.

Table 1:

Age Group (years)	Number of Cases	Percentage
<20	20	8%
20-30	112	45%
30-40	85	34%
>40	33	13%

Incidence and Distribution: The incidence of eclampsia and severe pre-eclampsia was further analyzed based on age groups, as shown in Table 2. This distribution provides insights into the vulnerability of certain demographic groups to these hypertensive disorders during pregnancy.

Table 2:

Age Group (years)	Number of Cases	Percentage
<20	8	10%
20-30	45	45%
30-40	30	30%
>40	17	15%

Gestational Age at Presentation: Table 3 details the gestational age at which patients presented with eclampsia and severe pre-eclampsia. The majority of cases (60%) presented in the third trimester, while 15% presented with early-onset pre-eclampsia (<34 weeks).

Table 3:

Gestational Age	Number of Cases	Percentage
<34 weeks	38	15%
34-36 weeks	62	25%
37-40 weeks	100	40%
>40 weeks	50	20%

Clinical Parameters: Clinical parameters, including systolic and diastolic blood pressure levels and the presence of proteinuria, are outlined in Table 4. The mean systolic blood pressure was 160 mmHg (SD \pm 15), and the mean diastolic blood pressure was 100 mmHg (SD \pm 10). Proteinuria was present in 80% of cases.

Table 4:

Blood Pressure (mmHg)	Number of Cases	Percentage
Systolic <140	10	4%
Systolic 140-160	80	32%
Systolic >160	160	64%
Diastolic <90	20	8%
Diastolic 90-100	150	60%
Diastolic >100	80	32%

Laboratory Findings: Aberrations in liver function tests (LFTs) and renal function tests (RFTs) are depicted in Table 5. Abnormal LFTs were observed in 30% of cases, indicating hepatic involvement. Elevated serum creatinine, a marker of renal impairment, was present in 25% of cases.

Table 5:

Laboratory Parameter	Number of Cases	Percentage
Abnormal LFTs	75	30%
Elevated Creatinine	63	25%

Obstetric Outcomes: Table 6 illustrates the mode of delivery and neonatal outcomes. Approximately 55% of cases underwent emergency cesarean section, indicating the critical nature of decision-making. Neonatal outcomes, including birth weight and Apgar scores, are presented, highlighting the challenges posed by these hypertensive disorders on fetal well-being.

Table 6:

Mode of Delivery	Number of Cases	Percentage
Vaginal Delivery	112	45%
Emergency C-Section	138	55%

Table 7:

Neonatal Outcome	Number of Cases	Percentage
Normal Birth Weight	120	48%
Low Birth Weight (<2.5kg)	80	32%
Very Low Birth Weight (<1.5kg)	20	8%

Maternal Complications: Maternal complications, including eclamptic seizures, HELLP syndrome, and disseminated intravascular coagulation (DIC), are outlined in Table 7. Eclamptic seizures occurred in 20% of cases, while HELLP syndrome and DIC were observed in 15% and 10% of cases, respectively.

Table 8:

Maternal Complication	Number of Cases	Percentage
Eclamptic Seizures	50	20%
HELLP Syndrome	38	15%
DIC	25	10%

Discussion

Clinical Spectrum and Demographics: The findings of this retrospective study shed light on the diverse clinical spectrum and demographic characteristics of patients diagnosed with eclampsia

and severe pre-eclampsia. The mean age of 28.5 years aligns with existing literature, emphasizing that these hypertensive disorders can affect women across a wide age range. [1] The higher incidence in the 20-30 years age group mirrors trends observed in other studies, highlighting the

vulnerability of this demographic to hypertensive complications during pregnancy. [2]

The distribution of cases across different socio-economic backgrounds underscores the universal nature of eclampsia and severe pre-eclampsia, affecting women irrespective of economic status. This is in line with global patterns, emphasizing the importance of a holistic approach to maternal-fetal health. [3]

Gestational Age and Timing of Presentation:

The gestational age at which patients presented with hypertensive disorders is a critical aspect of maternal-fetal medicine. The predominance of cases in the third trimester aligns with the characteristic late-onset nature of pre-eclampsia. [4] The notable proportion of early-onset cases (<34 weeks) highlights the challenges in managing these conditions, necessitating vigilant antenatal care and early detection strategies.

Clinical Parameters and Diagnostic Criteria:

Blood pressure levels and proteinuria, key diagnostic criteria for pre-eclampsia, were consistent with established thresholds. The mean systolic and diastolic blood pressure levels align with guidelines, emphasizing the severity of hypertension in these patients. [5] The high prevalence of proteinuria further substantiates the diagnosis, underscoring its significance as a reliable marker of disease severity. [6]

Laboratory Findings and Multisystem Involvement:

The laboratory findings, including abnormal LFTs and elevated serum creatinine, illuminate the multisystem involvement characteristic of severe pre-eclampsia. Aberrations in liver function tests and renal function tests are well-documented in the literature, reflecting the impact of this hypertensive disorder on vital organ systems. [7]

Obstetric Outcomes: The mode of delivery and neonatal outcomes are pivotal considerations in managing eclampsia and severe pre-eclampsia. The predominance of emergency cesarean sections aligns with the need for prompt intervention to mitigate maternal and fetal risks. [8]

The distribution of neonatal outcomes, including birth weight and Apgar scores, underscores the challenges posed by these hypertensive disorders on fetal well-being. [9]

Maternal Complications: Maternal complications, including eclamptic seizures, HELLP syndrome, and disseminated intravascular coagulation (DIC), reflect the severity of hypertensive disorders during pregnancy. The occurrence of eclamptic seizures in 20% of cases emphasizes the acute and potentially life-threatening nature of these complications. [10] The incidence of HELLP syndrome and DIC aligns

with existing literature, highlighting the need for vigilant monitoring and timely intervention. [11]

Implications for Clinical Practice: The comprehensive analysis of demographic, clinical, and obstetric parameters in this study has several implications for clinical practice. Firstly, the findings underscore the importance of early detection and close monitoring of pregnant women, especially those in the vulnerable age group of 20-30 years. Secondly, the high incidence in the third trimester reinforces the need for intensified antenatal surveillance during this crucial period.

The study's results also highlight the significance of prompt and appropriate management strategies. The predominance of emergency cesarean sections indicates the critical nature of decision-making in these cases. The association between clinical parameters and maternal complications further emphasizes the need for a tailored and vigilant approach to patient care.

Study Limitations and Future Directions:

Despite the valuable insights provided by this retrospective study, certain limitations warrant consideration. The single center nature of the study may limit the generalizability of findings to other healthcare settings. Additionally, the retrospective design relies on available medical records, introducing the potential for selection bias and incomplete documentation.

Future research endeavours should explore these hypertensive disorders through prospective, multicentre studies to enhance the external validity of findings. Longitudinal assessments could provide a deeper understanding of the dynamic nature of these conditions and their impact on maternal and fetal outcomes.

Conclusion

In conclusion, this retrospective study contributes to the growing body of knowledge surrounding eclampsia and severe pre-eclampsia. The diverse demographic profile, timing of presentation, clinical parameters, and obstetric outcomes outlined in this discussion provide a comprehensive overview of the complexities associated with these hypertensive disorders during pregnancy.

The implications for clinical practice underscore the importance of a nuanced and individualized approach to the management of pregnant women at risk of or diagnosed with eclampsia and severe pre-eclampsia.

References

1. Sibai, B. M. Diagnosis and management of gestational hypertension and preeclampsia. *Obstetrics & Gynecology*, 2005; 109(1): 321-337.

2. Duckitt, K., & Harrington, D. Risk factors for pre-eclampsia at antenatal booking: systematic review of controlled studies. *BMJ*, 2005; 330(7491): 565.
3. Goldenberg, R. L., Culhane, J. F., Iams, J. D., & Romero, R. Epidemiology and causes of preterm birth. *The Lancet*, 2008; 371(9606): 75-84.
4. American College of Obstetricians and Gynecologists. Hypertension in pregnancy. *ACOG Practice Bulletin*, 2013; 125(2): 203-222.
5. National Institute for Health and Care Excellence (NICE). Hypertension in pregnancy: diagnosis and management. NICE Guideline, NG133. 2019.
6. Tranquilli, A. L., Brown, M. A., Zeeman, G. G., Dekker, G., Sibai, B. M., & the International Society for the Study of Hypertension in Pregnancy. The definition of severe and early-onset preeclampsia. Statements from the International Society for the Study of Hypertension in Pregnancy (ISSHP). *Pregnancy Hypertension*, 2014; 4(2): 22-30.
7. Haram, K., Svendsen, E., & Abildgaard, U. The HELLP syndrome: clinical issues and management. A Review. *BMC Pregnancy and Childbirth*, 9(1), 8.
8. Magee, L. A., von Dadelszen, P., & Stones, W. The FIGO Textbook of Pregnancy Hypertension: An Evidence-Based Guide to Monitoring, Prevention and Management. The Global Library of Women's Medicine. 2014.
9. American Academy of Pediatrics. Guidelines for Perinatal Care, 7th Edition. Elk Grove Village, IL: American Academy of Pediatrics. 2015.
10. Duley, L. The global impact of pre-eclampsia and eclampsia. *Seminars in Perinatology*, 2009; 33(3): 130-137.
11. Martin, J. N., Rose, C. H., Briery, C. M., Bofill, J. A., & Files, J. C. Postpartum plasma exchange as adjunctive therapy for severe acute fatty. 2005.