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# ECLAMPSIA AND ITS CONSEQUENCES: INSIGHTS FROM A SERIES OF CLINICAL CASES

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## ABSTRACT

**Background:** Eclampsia remains a life-threatening obstetric emergency with significant maternal and fetal morbidity, especially in low-resource settings. 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 analyse the clinical characteristics and outcomes of patients with eclampsia and severe pre-eclampsia in a tertiary care hospital in Eluru, West Godavari District Andhra Pradesh. **Aims and Objectives:** Our primary aim was to describe maternal and perinatal outcomes in eclampsia cases at Alluri Sitarama Raju Academy of Medical Sciences (ASRAM). The objectives were to: (1) To describe the demographic and obstetric profile of women with eclampsia (age, parity, marital duration, ANC visits).(2) To describe in detail the clinical course (gestational age at eclampsia onset, mode of delivery, maternal complications), (3) To describe maternal and neonatal outcomes (mortality, birthweight, NICU admission), and (4)To contextualize our findings with recent studies and international guidelines.(5) To identify care gaps and recommend measures to improve antenatal surveillance and timely intervention.We also sought to identify study design limitations and propose recommendations for future research and care protocols. **Materials and Methods:** We retrospectively reviewed 12 cases of eclampsia managed at our tertiary hospital, Alluri Sitarama Raju Academy of Medical Sciences (ASRAM), to analyse clinical features, management, and outcomes. **Results:** Our findings showed that most cases involved primigravida women of young age, predominantly 20–25 years old (58%) (Table 1). Gestational hypertension preceding eclampsia was diagnosed mostly at 28–37 weeks (58%). Antenatal care was suboptimal – 83% had <4 antenatal visits. After diagnosis of eclampsia, 83% delivered by emergency caesarean (Table 2). Maternal complications occurred in 33% (PRES, cardiomyopathy, HELLP, or thromboembolism), but there were no maternal deaths. One stillbirth (8.3%) occurred; the remainder (91.7%) were liveborn, with 75% having birthweight ≥1.5 kg (Table 3). **Conclusion:** Our findings – mostly primi gravida, young age, and frequent caesarean delivery – echo other Indian and African reports. Current guidelines (NICE, FOGSI) emphasize prevention (low-dose aspirin for high-risk women) and standardized management (IV magnesium sulphate, controlled delivery). We recommend improved antenatal surveillance and adherence to protocols (e.g. prophylactic low-dose aspirin, $MgSO_4$) educating pregnant women about the warning signs of eclampsia and ensuring treatment compliance to reduce the incidence of eclampsia and optimize outcomes. Study limitations (small retrospective series) underline the need for larger, prospective research with standardized reporting.

## INTRODUCTION

Eclampsia – new-onset generalized seizures in a woman with pre-eclampsia – is a major cause of obstetric morbidity and mortality globally. Although rare in high-resource countries (incidence ~0.016–0.10%), eclampsia remains common in developing regions, with reported rates of 50–151 per 10,000

deliveries. Eclampsia incidence in India has been observed to range from 0.179 to 3.7 percent. According to World Health Organization (WHO) estimates, hypertensive disorders during pregnancy contributed to 16% of maternal deaths.[8] Risk factors include nulliparity, young maternal age, multiple gestation and inadequate antenatal care. In India, hypertensive disorders (including eclampsia) account for ~7% of maternal deaths. Despite international guidance (e.g. NICE NG133, FOGSI HDP guidelines) on prevention and management, clinical practice and outcomes vary by setting.[9,10] 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] 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.[3] At ASRAM, eclampsia continues to be encountered in young, unbooked primigravidas. However, there are few published data on our local experience. This study aims to analyse the clinical profile, management, and outcomes of women with eclampsia at ASRAM and to compare these findings with recent Indian and international literature and guidelines (AJOG, IJOG, RCOG/NICE, FOGSI, UpToDate). We also identify study limitations and suggest improvements for design and reporting.

## MATERIALS AND METHODS

We conducted a retrospective case series of all women diagnosed with eclampsia and managed at ASRAM. Eclampsia was defined as tonic-clonic seizures in pregnancy or postpartum with coexisting hypertension. Institutional ethical approval was obtained. Hospital records were reviewed for demographic data (age, marital age, parity, booking status), obstetric variables (gestational age at first seizure, type of eclampsia – antepartum/intrapartum/postpartum, number of antenatal visits), management details (anticonvulsants, antihypertensives, delivery mode), and outcomes. Maternal outcomes included complications (PRES, HELLP syndrome, cardiomyopathy, thromboembolism, ICU admission, death, etc). Neonatal outcomes included livebirth vs stillbirth, birthweight, Apgar scores, and NICU admission. Data were analysed descriptively. Results are presented as counts and percentages, with key findings summarized in tables.

## RESULTS

**Baseline Characteristics (Table 1):** A total of 12 patients were included in the study, all had singleton pregnancies and 83.3% were primigravida. Ages ranged 18–30 years; 58.3% were 20–25 years, 25% were 26–30, and 16.7%were <20 years (Table 1). Time from marriage to conception was ≤1 year in 66.7% and >1 year in 33.3%. Only 16.7% had ≥4 antenatal visits; 83.3% had <4 visits.

**Table 1: Demographic characteristics of study subjects**

| Characteristic | n (%) |
|---|---|
| **Age (years)** | |
| 18–19 | 2 (16.7%) |
| 20–25 | 7 (58.3%) |
| 26–30 | 3 (25.0%) |
| **Parity** | |
| Primiparous | 10 (83.3%) |
| Multiparous | 2 (16.7%) |
| **Antenatal visits** | |
| < 4 visits | 10 (83.3%) |
| ≥ 4 visits | 2 (16.7%) |
| **Time to conception** | |
| ≤ 1 year married | 8 (66.7%) |
| > 1 year married | 4 (33.3%) |
| **Gestational age at eclampsia onset** | |
| 20–28 weeks | 2 (16.7%) |
| 28+ to 37 weeks | 7 (58.3%) |
| > 37 weeks | 3 (25.0%) |

Obstetric Course: Onset of hypertension/eclampsia occurred mainly in late preterm (58.3% at 28+ to 37 weeks) and term (25% >37 weeks) gestation (Table 1). Antepartum eclampsia predominated (all seizures occurred before or during labour; none were late postpartum). Mean gestational age at first seizure was approximately 35 weeks.

**Table 2:**

| Outcome | n (%) |
|---|---|
| **Mode of delivery** | |
| Caesarean section | 10 (83.3%) |


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| | |
|---|---|
| Vaginal | 2 (16.7%) |
| **Maternal complications** | |
| None | 8 (66.7%) |
| PRES | 1 (8.3%) |
| Peripartum cardiomyopathy | 1 (8.3%) |
| HELLP syndrome | 1 (8.3%) |
| Pulmonary embolism | 1 (8.3%) |

**Delivery and Management (Table 2):** After stabilization (IV magnesium sulphate, antihypertensives), 10 women (83.3%) underwent emergency lower-segment caesarean section, typically for fetal distress or failure to progress; 2 (16.7%) had vaginal deliveries. (This high caesarean rate aligns with other series – e.g. 52–62% LSCS in India – reflecting fetal compromise or induction practices.) All women received standard $MgSO_4$ therapy (per FOGSI recommendations: 4 g IV loading, 1 g/hr infusion for 24h postpartum). Antihypertensives (labetalol or nifedipine) were used to control severe hypertension per protocols. Induction of labour was undertaken after maternal stabilization whenever feasible, in line with FOGSI guidance.

**Maternal Complications and Outcomes (Table 2):** Four patients (33.3%) developed major complications: one had posterior reversible encephalopathy syndrome (PRES), one peripartum cardiomyopathy (ejection fraction <35%), one HELLP syndrome (haemolysis, elevated liver enzymes, low platelets), and one pulmonary thromboembolism (Table 2). The remaining 66.7% had no sequelae. There were no maternal deaths. All patients ultimately improved; ICU care was required in two cases (cardiomyopathy and thromboembolism). Our absence of maternal mortality compares favourably with the case fatality rates reported in India (2–9%) and sub-Saharan Africa (often >10%).

**Table 3:**

| Outcome | n (%) |
|---|---|
| Live births | 11 (91.7%) |
| Stillbirths | 1 (8.3%) |
| **Birth weight** | |
| ≥ 2.5 kg (normal) | 7 (58.3%) |
| 1.5–2.49 kg (low) | 1 (8.3%) |
| 1.0–1.49 kg (very low) | 2 (16.7%) |
| < 1.0 kg (extremely low) | 2 (16.7%) |
| NICU admission | 6 (50.0%) |

**Perinatal Outcomes (Table 3):** There were 12 infants (including one set of twins). Eleven were live born (91.7%) and one was an intrauterine demise (8.3%) occurring in a severely preterm 28-week case with fetal bradycardia. Birthweights ranged 0.9–2.98 kg: 58.3% were ≥2.5 kg (normal), 8.3% (n=1) 1.5–2.49 kg (low), 16.7% (n=2) 1.0–1.49 kg (very low), and 16.7% (n=2) <1.0 kg (extremely low) (Table 3). Six infants (50%) were preterm (<37 weeks) and required NICU admission for respiratory support. One neonatal death occurred (the 28-week stillbirth). Thus perinatal mortality was 8.3%, lower than figures reported elsewhere (up to 40% in some low-resource studies).

## DISCUSSION

In this case series, eclampsia affected predominantly young primiparous women with poor antenatal care, consistent with other reports. Approximately 0.8% incidence (12 cases among ~1500 deliveries) aligns with developing-country estimates (0.5–3.8%). In contrast, a South Indian centre reported only 0.7% incidence, whereas a rural Bihar hospital found 2.3%. These variations likely reflect differences in referral patterns and preventive care. Our cohort's mean age (~23 years) and primigravidity rate (92%) resemble the Nigerian and Tanzanian data, where >40% of eclamptic women were <25 years and nulliparous. High parity is uncommon in eclampsia. The distribution of cases across different socioeconomic 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.[4]

Poor booking and low antenatal visits were notable in our series (83% had <4 visits), mirroring the Nigerian finding that lack of antenatal care is a major risk factor. This underscores the need for improved community education and access to antenatal monitoring. All were unbooked cases at ASRAMS, but the low visit count implies suboptimal care. In contrast, Fernandes et al. (urban India) reported 95% of eclamptic patients were unbooked.[5] Our mode of delivery findings (83% caesarean) were higher than some series (Meena et al. reported ~62%; Fernandes ~52%). This may reflect local practice (e.g. opting for caesarean in severe pre-eclampsia to expedite delivery) and fetal condition at presentation. Despite high caesarean rate, maternal outcomes were good, suggesting timely intervention. All our patients received intravenous magnesium sulphate; FOGSI recommends this regimen as first-line seizure prophylaxis (4g IV loading plus 1g/hr maintenance). This aligns with RCOG and UpToDate protocols


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which prioritize $MgSO_4$ for preeclampsia/eclampsia management. The maternal complication rate (33%) included typical sequelae of severe preeclampsia: PRES, cardiomyopathy, HELLP, thromboembolism. No cases of placental abruption or acute pulmonary edema were observed, whereas other series often report abruption (10–14%) and PPH. Our single case of cardiomyopathy highlights that eclampsia can precipitate cardiovascular collapse. Importantly, maternal mortality was zero, which is lower than in many reports (2–10% in Indian studies; ~30% in the Nigeria series). This suggests effective acute management once patients reach tertiary care. Perinatal outcomes were relatively favourable: 91.7% live births and only one stillbirth (8.3%). This stillbirth occurred in the smallest extremely preterm infant (900g), illustrating the high perinatal risk in such cases. In comparison, Dasari et al. found stillbirth in eclampsia/pre-eclampsia at only 0.1%, reflecting a larger denominator including all deliveries. Other studies have reported perinatal mortality up to 29–40% in eclampsia. Our lower rate may reflect the small sample or aggressive neonatal care. Low birthweight was common (41.7% <2.5 kg), a known consequence of hypertensive disorders and preterm delivery.

The mode of delivery and neonatal outcomes are pivotal considerations in managing eclampsia and severe pre-eclampsia. The predominance of emergency caesarean sections aligns with the need for prompt intervention to mitigate maternal and fetal risks.[6] The distribution of neonatal outcomes, including birth weight and Apgar scores, underscores the challenges posed by these hypertensive disorders on fetal well-being.[7]

**Comparison with Guidelines:** Current guidelines stress prevention and standardized management. NICE (NG133) recommends low-dose aspirin (75–150 mg) from 12 weeks for women at high risk (chronic hypertension, diabetes, renal disease, autoimmune disease, prior pre-eclampsia) or multiple moderate risk factors. [9] We did not have systematic high-risk screening or aspirin prophylaxis (aspirin use was rare), suggesting an area for improvement. Notably, NICE explicitly advises against salt restriction and against unproven supplements (magnesium, fish/omega-3 oils, and vitamins C/E) for preeclampsia prevention. [9] Our advice to patients (low-salt diet, omega-3) as noted in the draft was not supported by evidence. Instead, proven measures include aspirin in high-risk women and calcium supplementation in those with low dietary intake (per WHO and Cochrane reviews).[10,11] For acute management, FOGSI and NICE both endorse intravenous magnesium sulphate as the anticonvulsant of choice. We followed the Zuspan regimen of $MgSO_4$ infusion and continued antihypertensives intrapartum as per FOGSI advice. Both guidelines favour induction of labour with vaginal delivery as soon as feasible after stabilization, reserving caesarean for obstetric indications. In practice, almost all our patients were actively managed for delivery once stabilized. NICE also recommends critical-care monitoring for severe cases and judicious use of corticosteroids if <34 weeks (our protocol included steroids in early eclampsia cases).

**Discussion of Findings in Context:** Compared to the Jharkhand prospective cohort by Kar et al. (2025), which combined severe preeclampsia and eclampsia, our series has a higher proportion of eclampsia (all cases) but similarly affected a young rural/tribal population. Kar et al. reported 20.8% HELLP, 15% ARF, 15% PPH and 43.3% low-birthweight, which are somewhat higher complication rates than ours; this may be due to inclusion of milder severe preeclampsia cases and larger sample (n=120). Our limited sample likely underestimates rarer events.

Internationally, the outcomes of our series are better than in many low-resource settings. For example, Alemie et al. (2023) found unfavourable maternal outcomes in >25% of eclampsia cases (maternal death 0.6%) in Ethiopia. In Port Harcourt, Nigeria, maternal survival was only 70.4% (8 of 27 died) in eclampsia. Differences may reflect healthcare access: our patients were already in a tertiary centre. Notably, high-quality obstetric care (rapid $MgSO_4$, BP control, prompt delivery) can dramatically lower mortality, as seen here and in Fernandes' report of zero maternal deaths.

**Strengths and Limitations:** This descriptive series provides a detailed profile of eclampsia at ASRAM, including both maternal and neonatal outcomes, and situates our experience in current literature. However, limitations include its small sample size (N=12) and retrospective design. Rare outcomes (e.g. maternal death) cannot be fully assessed. There was no control group (e.g. normotensive or preeclamptic women) for comparison of outcomes. Data quality depends on record completeness (e.g. exact time of seizure onset or postpartum follow-up beyond discharge may be missing). We did not systematically capture information on race, socioeconomic status, or patient-level social determinants. Additionally, "eclampsia" in this series was limited to antepartum/intrapartum cases – cases with seizures beyond 48 hours postpartum may have been missed if patients were discharged.

To improve future research, we suggest a prospective cohort design with larger multi-centre samples to increase generalizability. Including a comparator group (e.g. matched preeclamptic women without seizures) could help identify specific risk factors. Standardized reporting (using STROBE guidelines) and a defined protocol for data collection would enhance data quality. Better documentation of antenatal interventions (e.g. aspirin use) and postpartum follow-up (to capture late eclampsia) is recommended.


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## CONCLUSION

Eclampsia at our centre primarily affects young, unbooked primiparous women in late pregnancy, often necessitating emergency caesarean delivery. Although maternal mortality was prevented with aggressive management, significant risks remain for both mother and child. Comparison with recent Indian and international studies underscores the persisting burden of this condition in low-resource settings. Adherence to evidence-based guidelines – including prophylactic aspirin for high-risk women and magnesium sulphate for seizure control – is crucial.[9,10] Enhanced antenatal care coverage and education about pre-eclampsia symptoms are needed to detect and prevent eclampsia early. Future studies should aim for more rigorous design and reporting to build the evidence base for improving outcomes in eclampsia.

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