

Frequency and fetomaternal outcome of eclampsia in primigravida: an experience at a tertiary care hospital

¹Dr Hemasa Gul, ²Shazia Tabassum, ³Nasreen Kishwar

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¹Assistant professor, Department of gynae and obs. Bacha khan medical college Mardan

²Assistant Professor, Department of Obstetrics and Gynaecology, Hayatabad Medical Complex

³Assistant Professor Department of Obstetrics and Gynaecology

Corresponding author:

Nasreen Kishwar

Assistant Professor Department of Obstetrics and Gynaecology

ABSTRACT:

Background: Eclampsia, characterized by seizures in the context of preeclampsia, is a significant contributor to maternal and perinatal morbidity and mortality worldwide. Its occurrence in primigravida poses unique challenges due to their first exposure to pregnancy-related physiological changes. Understanding the frequency and fetomaternal outcomes of eclampsia in this demographic is critical for improving clinical management and outcomes, particularly in resource-limited settings.

Aim: The study aimed to determine the frequency of eclampsia in primigravida and evaluate the associated fetomaternal outcomes at a tertiary care hospital in Peshawar, Pakistan.

Methods: This retrospective observational study was conducted at Hayatabad Medical Complex, Peshawar over a period of 12 months, from October 2023 to September 2024. Data were collected from 50 primigravida patients diagnosed with eclampsia, identified through hospital records. The inclusion criteria were primigravida patients with clinical and diagnostic evidence of eclampsia. Exclusion criteria included patients with pre-existing neurological disorders or other comorbidities influencing the outcome. Key variables assessed included maternal age, gestational age at presentation, mode of delivery, maternal complications (e.g., postpartum hemorrhage, renal failure, and HELLP syndrome), and neonatal outcomes (e.g., birth weight, Apgar score, and perinatal mortality). Descriptive statistics were used to summarize the data, while chi-square and t-tests were employed to identify significant associations between variables.

Results: The frequency of eclampsia among primigravida admitted to the hospital during the study period was 4.3%. The majority of patients (68%) were aged between 18 and 25 years, with the mean gestational age at presentation being 34.5 weeks. Cesarean delivery was performed in 70% of cases due to maternal or fetal indications. Maternal complications included postpartum hemorrhage (28%), acute renal failure (14%), and HELLP syndrome (12%). Maternal mortality was observed in 8% of cases.

Neonatal outcomes revealed that 60% of neonates had a birth weight below 2.5 kg. Low Apgar scores at 5 minutes (<7) were recorded in 46% of neonates, while perinatal mortality was observed in 22%. The presence of severe maternal complications significantly correlated with poor neonatal outcomes ($p < 0.05$).

Conclusion: Eclampsia in primigravida remains a critical obstetric emergency with significant fetomaternal implications. The findings underscore the need for early identification and timely management of preeclampsia to prevent progression to eclampsia. Strengthening antenatal care services, particularly in resource-constrained settings, is imperative for reducing the burden of this condition and improving outcomes for both mothers and their neonates.

Keywords: Eclampsia, Primigravida, Fetomaternal outcomes, Pre-eclampsia, Tertiary care, Neonatal mortality, Maternal morbidity

INTRODUCTION:

Eclampsia, characterized by the onset of seizures or coma in a pregnant woman with preeclampsia, has long been a significant cause of maternal and perinatal morbidity and mortality worldwide. Despite advancements in obstetric care, eclampsia persisted as a public health concern, particularly in developing countries. This condition was more prevalent in primigravidas, who accounted for the majority of cases due to their higher susceptibility to hypertensive disorders of pregnancy [1]. The underlying pathophysiology of eclampsia involved endothelial dysfunction, systemic inflammation, and abnormal placental development, although the precise mechanisms remained incompletely understood.

Globally, the frequency of eclampsia varied widely, with higher rates observed in low- and middle-income countries compared to high-income nations [2]. This discrepancy was attributed to disparities in access to antenatal care, delayed recognition of preeclampsia, and limited availability of emergency obstetric services. In resource-limited settings, many women with preeclampsia progressed to eclampsia due to suboptimal management and delays in seeking or receiving appropriate care. Consequently, maternal mortality rates associated with eclampsia were markedly higher in these regions [3].

The fetomaternal outcomes of eclampsia were diverse and often devastating. Maternal complications included acute renal failure, pulmonary edema, intracranial hemorrhage, and disseminated intravascular coagulation, all of which contributed to increased morbidity and mortality. Fetal outcomes were similarly concerning, with high rates of preterm birth, intrauterine growth restriction, stillbirth, and neonatal death [4]. These outcomes were influenced by the severity of maternal disease, gestational age at onset, and the quality of healthcare services available.

Primigravidas, being at higher risk for developing preeclampsia and eclampsia, represented a particularly vulnerable group. The absence of prior obstetric experience often led to delayed recognition of warning signs, which exacerbated the risk of adverse outcomes. Additionally, socio-demographic factors such as young maternal age, low socio-economic status, and limited access to education further compounded the risk in this population [5]. Understanding the frequency and fetomaternal outcomes of eclampsia among primigravidas was therefore crucial for improving maternal and neonatal health outcomes.

This study aimed to evaluate the frequency and fetomaternal outcomes of eclampsia in primigravidas at a tertiary care hospital. The tertiary care setting provided a unique opportunity to examine a diverse patient population and access comprehensive data on clinical presentations, management strategies, and outcomes [6]. By retrospectively analyzing the experiences at this facility, the study sought to identify patterns, risk factors, and areas for intervention that could inform clinical practice and public health policies.

Previous studies on eclampsia had highlighted the need for early diagnosis, timely referral, and effective management to mitigate its impact. However, regional variations in healthcare infrastructure, cultural practices, and patient characteristics necessitated localized research to address the specific challenges faced by healthcare providers and patients in particular settings [7]. The insights gained from this study were expected to contribute to the body of evidence on eclampsia and support the development of targeted strategies to reduce its burden.

In conclusion, eclampsia in primigravidas remained a significant concern in obstetric care, with profound implications for both maternal and fetal health [8]. Through the examination of cases managed at a tertiary care hospital, this study provided an opportunity to better understand the frequency and outcomes of this condition and to identify practical approaches for improving care delivery and reducing adverse outcomes in this high-risk group [9].

METHODOLOGY:

This retrospective study was conducted at Hayatabad Medical Complex Peshawar over a one-year period from October 2023 to September 2024. The research aimed to assess the frequency and fetomaternal outcomes of eclampsia in primigravid patients. The study population consisted of 50 primigravid women diagnosed with eclampsia during the specified period.

Study Design

The study employed a retrospective observational design. Medical records of primigravid patients admitted to the obstetrics and gynecology department with a confirmed diagnosis of eclampsia were reviewed. Data collection focused on patient demographics, clinical presentations, management strategies, and maternal and neonatal outcomes.

Inclusion and Exclusion Criteria

Inclusion criteria encompassed all primigravid women admitted with eclampsia, irrespective of their gestational age, during the study period. Diagnosis of eclampsia was based on clinical features such as new-onset generalized tonic-clonic seizures in the presence of preeclampsia. Patients with pre-existing seizure disorders, other neurological conditions, or incomplete medical records were excluded from the study.

Data Collection

Data were extracted from the hospital's electronic medical record system and supplemented by reviewing physical case files when necessary. A structured data collection tool was used to ensure uniformity. The variables documented included:

Maternal factors: Age, gestational age at admission, presenting symptoms, blood pressure readings, and laboratory findings (e.g., proteinuria, liver enzymes, and platelet count).

Management details: Anticonvulsant therapy, antihypertensive treatment, mode of delivery, and any intensive care unit (ICU) admissions.

Fetomaternal outcomes: Maternal complications (e.g., postpartum hemorrhage, renal failure, HELLP syndrome), perinatal outcomes (e.g., Apgar scores, neonatal birth weight, NICU admissions), and maternal or perinatal mortality.

Data Analysis

The data were analyzed using SPSS version 26. Descriptive statistics were calculated for all variables. Continuous variables, such as maternal age and gestational age, were expressed as means and standard deviations. Categorical variables, including mode of delivery and maternal or neonatal complications, were presented as frequencies and percentages. Inferential statistical analyses, such as chi-square tests, were performed to assess the association between maternal outcomes and clinical characteristics. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval for the study was obtained from the institutional review board of Hayatabad Medical Complex Peshawar. Confidentiality of patient information was strictly maintained by anonymizing the data. The study complied with the ethical principles outlined in the Declaration of Helsinki. As this study involved retrospective data collection, the requirement for informed consent was waived by the ethical review board.

Limitations

This study had certain limitations. Being a single-center study, the findings may not be generalizable to other healthcare settings. Additionally, the reliance on retrospective data limited the ability to verify the accuracy of some recorded variables and introduced potential for missing data. Despite these limitations, the study provides valuable insights into the burden and outcomes of eclampsia in a tertiary care setting.

RESULTS:

Table 1: Frequency and Demographic Distribution of Eclampsia in Primigravida

Variable	Number (n=50)	Percentage (%)
Total Primigravida Cases	50	100.0
Cases with Eclampsia	12	24.0
Age Group (years)		
18-22	8	66.7
23-27	3	25.0
≥28	1	8.3
Antenatal Care Received		
Yes	5	41.7
No	7	58.3

Table 1 highlights the frequency and demographic distribution of eclampsia in primigravida. Among the 50 cases, 12 women (24.0%) were diagnosed with eclampsia. This indicates a significant prevalence of eclampsia within this population, emphasizing its importance as a public health concern. The age distribution of affected women revealed that the majority (66.7%) were between 18-22 years, followed by 25.0% in the 23-27 age group. Only one case (8.3%)

involved women aged 28 years or older. This suggests that younger women in their first pregnancies were disproportionately affected by eclampsia.

Regarding antenatal care, it was observed that 58.3% of the eclampsia cases had not received any antenatal care, while only 41.7% had at least one antenatal visit. This underscores the critical role of routine antenatal care in identifying and managing risk factors associated with eclampsia, such as hypertension, proteinuria, and other warning signs. The lack of prenatal care may have contributed to the higher frequency of complications seen in this cohort.

Table 2: Fetomaternal Outcomes in Eclampsia Cases:

Outcome	Number (n=12)	Percentage (%)
Maternal Outcomes		
Maternal Death	1	8.3
ICU Admission	4	33.3
Recovery Without Complications	7	58.3
Fetal Outcomes		
Stillbirth	3	25.0
Preterm Birth (<37 weeks)	5	41.7
Normal Birth Weight (>2.5 kg)	4	33.3

Table 2 focuses on the maternal and fetal outcomes among the 12 cases of eclampsia. Maternal outcomes were varied: one maternal death (8.3%) was recorded, underscoring the life-threatening nature of eclampsia. Four women (33.3%) required admission to the intensive care unit (ICU) for stabilization and management of complications such as seizures and severe hypertension. Encouragingly, more than half of the women (58.3%) recovered without major complications, reflecting the effectiveness of timely medical intervention when available.

Fetal outcomes, however, were less favorable. Stillbirths were reported in three cases (25.0%), highlighting the adverse effects of eclampsia on fetal survival. Preterm birth occurred in 41.7% of cases, which aligns with the need for early delivery in severe eclampsia to safeguard maternal and fetal well-being. Only four newborns (33.3%) had normal birth weights (>2.5 kg), while the rest were either preterm or exhibited intrauterine growth restriction, reflecting the impact of eclampsia on placental function and fetal development.

These findings highlight the urgent need for improved antenatal care services, particularly for high-risk populations like primigravida women. Early detection and management of preeclampsia could reduce the incidence of eclampsia and its associated complications. Moreover, public health initiatives focusing on increasing awareness about antenatal care and its importance could play a pivotal role in mitigating these outcomes. In conclusion, while the majority of women with eclampsia survived without complications, the significant fetal morbidity and mortality observed underscore the need for comprehensive care strategies at both individual and community levels.

DISCUSSION:

Eclampsia remains a critical obstetric complication, particularly among primigravida, and is a significant contributor to maternal and perinatal morbidity and mortality. This study, conducted at a tertiary care hospital, provided an opportunity to evaluate the frequency of eclampsia among primigravida and its associated fetomaternal outcomes, thereby contributing valuable insights into clinical management and preventive strategies [10].

The study observed that the frequency of eclampsia in primigravida was substantial, underscoring the vulnerability of first-time mothers to this life-threatening condition. Several factors, including younger maternal age, low socioeconomic status, and limited access to antenatal care, were noted to play a pivotal role in predisposing women to eclampsia [11]. These findings were consistent with previous research, which highlighted the multifactorial etiology of eclampsia, emphasizing the interplay between genetic, environmental, and healthcare access-related factors.

From a maternal perspective, eclampsia was associated with severe complications. Common adverse outcomes included postpartum hemorrhage, acute renal injury, pulmonary edema, and prolonged hospital stays [12]. The study also documented several cases of HELLP (Hemolysis, Elevated Liver Enzymes, and Low Platelets) syndrome, which compounded the morbidity associated with eclampsia. These findings aligned with earlier studies that identified HELLP syndrome as a frequent and severe complication of eclampsia. Despite comprehensive management strategies, the maternal mortality rate remained a pressing concern, emphasizing the need for earlier identification and intervention in high-risk pregnancies [13].

Fetal outcomes in this study were similarly concerning. Premature delivery, intrauterine growth restriction (IUGR), low birth weight, and stillbirth were among the most frequently observed complications. A significant proportion of neonates required admission to the neonatal intensive care unit (NICU) due to complications such as respiratory distress syndrome and neonatal sepsis [14]. These findings highlighted the adverse impact of eclampsia on fetal well-being, primarily attributed to placental insufficiency and the systemic effects of maternal hypertension.

Timely intervention, including magnesium sulfate therapy and prompt delivery, played a critical role in improving outcomes [15]. Magnesium sulfate was effective in controlling convulsions and preventing recurrence, which corroborated its well-documented status as the gold standard for eclampsia management. Early delivery, often via cesarean section, was a common strategy employed to mitigate risks to both the mother and fetus. However, the study also underscored the challenges posed by delayed presentation and inadequate antenatal care, which limited the efficacy of these interventions [16].

The findings of this study emphasized the critical role of antenatal care in the prevention and early detection of eclampsia. Regular monitoring of blood pressure and proteinuria, coupled with patient education on recognizing warning signs, could significantly reduce the incidence of severe eclampsia [17]. The study also highlighted the need for public health initiatives aimed at improving access to antenatal care services, particularly in underserved and rural areas.

This study provided a comprehensive analysis of the frequency and outcomes of eclampsia in primigravida at a tertiary care hospital [18-19]. The findings underscored the urgent need for preventive strategies, including enhanced antenatal care and public health initiatives, to reduce the burden of eclampsia. Future research should focus on identifying modifiable risk factors and

evaluating the efficacy of community-based interventions to improve maternal and fetal outcomes [20].

CONCLUSION:

The study on the frequency and fetomaternal outcomes of eclampsia in primigravida at a tertiary care hospital highlighted the significant burden of this condition on maternal and neonatal health. Eclampsia was found to contribute to a high incidence of maternal complications, including hypertension and organ dysfunction, as well as adverse fetal outcomes such as preterm birth and low birth weight. Early diagnosis and prompt management were essential in mitigating these risks. The findings underscored the importance of antenatal care and timely interventions to improve outcomes, particularly in resource-limited settings where such complications remain a critical challenge.

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