

Original Research

Perinatal Outcome and Preventable Causes of Morbidity and Mortality in Eclampsia: A Cross-Sectional Observational Study in a Tertiary Hospital in Bangladesh

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Abstract

Background: Eclampsia poses a substantial threat to perinatal health in developing countries, with Bangladesh experiencing a notable impact on infant well-being. This cross-sectional observational study, conducted at Enam Medical College Hospital, Savar, Dhaka, aimed to investigate perinatal outcomes in eclampsia patients and identify preventable causes of perinatal mortality and morbidity associated with this condition. The study period spanned from June 2015 to July 2017, with a focus on understanding the specific factors contributing to adverse perinatal events in this population. **Methods:** A total of 155 eclampsia patients were enrolled in the study, resulting in the delivery of 161 babies, including six sets of twins. The study employed a comprehensive observational approach, assessing maternal and fetal conditions to analyze their correlation with perinatal outcomes. Data collection and analysis were conducted in the Department of Obstetrics and Gynaecology at the tertiary hospital, employing standard protocols and statistical methods to derive meaningful insights. **Results:** The study revealed a perinatal death rate of 27.32%, with stillbirth accounting for 15.52% and early neonatal death for 11.80%. In contrast, 84.47% of babies were born healthy. Among live-born neonates, 27.94% experienced jaundice, while 30.88% had no complications. Prematurity emerged as a significant contributor to perinatal loss in eclampsia cases. The findings underscore the critical role of early referral of eclampsia patients, the implementation of timely resuscitative measures, and improved neonatal care as potential avenues to enhance perinatal outcomes. **Conclusion:** In conclusion, this study highlights the importance of addressing stillbirth as a predominant component of perinatal death in eclampsia cases. Prematurity was identified as a key factor contributing to adverse perinatal outcomes. Early referral of eclampsia patients and the implementation of resuscitative measures, coupled with enhanced neonatal care, are crucial interventions that can potentially mitigate perinatal morbidity and mortality associated with eclampsia in the context of a tertiary hospital setting in Bangladesh. These findings provide valuable insights for healthcare practitioners and policymakers to guide strategies aimed at improving perinatal outcomes in similar healthcare settings.

INTRODUCTION

Eclampsia, characterized by convulsions occurring in association with pregnancy complicated by preeclampsia, represents a formidable global challenge in maternal and perinatal health.¹The staggering prevalence of preeclampsia, affecting ten million women annually worldwide, contributes

to a grim statistic of 76,000 maternal deaths, with a disproportionate burden on Low and Middle-Income Countries (LMICs).²⁻³ Notably, women in these developing nations face a tenfold higher risk of developing eclampsia compared to their counterparts in developed countries.

In the context of Bangladesh, as is mirrored in other developing nations, eclampsia emerges as a significant contributor to maternal and perinatal morbidity and mortality. Despite a reported decrease in its incidence to 0.2%-0.5% of all deliveries globally, Bangladesh continues to grapple with a 5% incidence of eclampsia, making it one of the five major causes of maternal mortality in the country.⁴⁻⁵ The repercussions extend beyond maternal health, with eclampsia being implicated in stillbirths and neonatal injuries and deaths.

Eclampsia's impact on perinatal outcomes is multifaceted, encompassing low-birth weight (LBW), Intrauterine Growth Retardation (IUGR), neonatal asphyxia, hyperbilirubinemia, sepsis, and prematurity. A 2017 survey indicated a concerning 29% perinatal death rate among eclampsia patients in a hospital setting, with another study reporting a 32.8% perinatal death rate in patients with eclamptic conditions. However, the scarcity of facilities, limited-service provisions, and challenges in accessibility and affordability have constrained the conduct of comprehensive studies investigating the fetal and maternal outcomes of eclampsia in Bangladesh.

Given the paucity of evidence and the pressing need to address the complex dynamics of eclampsia-related perinatal outcomes, we undertook this study. Our aim is to assess perinatal outcomes concerning the clinical types and management of eclampsia in a tertiary hospital setting in Savar, Dhaka, Bangladesh. By shedding light on these crucial aspects, we aspire to provide novel evidence that can inform policy planners, guide the formulation of strategies to improve perinatal outcomes in eclampsia, and stimulate further research in this critical area of maternal and child health.

Objectives

General Objective: The primary aim of this study is to investigate perinatal morbidity and mortality associated with eclampsia in Bangladesh.

Specific Objectives:

1. To measure the prevalence of perinatal death among women with eclampsia in Bangladesh.
2. To identify and analyze the causes of eclampsia in women in Bangladesh.

By addressing these specific objectives, we aim to contribute valuable insights into the perinatal outcomes of eclampsia in the context of Bangladesh, with a focus on understanding the prevalence of perinatal death and elucidating the causes of eclampsia in this population. This information is crucial for informing targeted interventions and strategies aimed at improving maternal and perinatal health outcomes in the face of eclampsia.

Materials and Methods

Study Design: We conducted a descriptive cross-sectional study at Enam Medical College Hospital, Savar, Dhaka, Bangladesh, spanning from June 2015 to July 2017.

Study Population: The study population comprised Eclampsia patients admitted to the Department of Gynecology & Obstetrics at Enam Medical College Hospital during the specified two-year period. A total of 155 patients were selected based on clinical diagnosis and admission during the study duration.

Inclusion Criteria: Eclampsia patients admitted to the Gynecology & Obstetrics department during the study period were included in the sample. Diagnosis was primarily made based on historical information and clinical presentations, supplemented by minimal aids.

Data Collection:

- **Face-to-Face Interviews:** Verbal consent was obtained through proper administrative procedures, following which face-to-face interviews were conducted with the eclampsia patients. The interviews aimed to gather detailed information about the patients' medical history and clinical presentation.
- **Examination Findings & Investigation Reports:** Clinical examinations were performed to supplement the diagnostic process, and investigation reports were collected for a comprehensive understanding of each patient's condition.

- **Semi-Structured Questionnaire & Checklist:** A semi-structured questionnaire and checklist were utilized to systematically gather relevant data, ensuring a comprehensive approach to understanding the perinatal outcomes associated with eclampsia.

Ethical Considerations: Verbal consent was obtained from each patient before conducting interviews and examinations. The study adhered to ethical guidelines, and patient confidentiality was strictly maintained.

Exclusion Criteria: Patients were excluded if they met the following criteria:

- Discharged within 48 hours of delivery.
- Cases other than clinically confirmed eclampsia.

Data Verification and Analysis: Following data collection, rigorous checks for consistency were carried out, and necessary corrections were made as needed. The collected data were analyzed using the STATA computer software to derive meaningful insights into perinatal morbidity and mortality associated with eclampsia in the study population.

Results

The study participants, primarily within the 20-30 age range (60.0%) and predominantly of low socio-economic status (47.6%), reflected a demographic vulnerable to eclampsia in Bangladesh. Parity demonstrated a correlation with perinatal mortality, revealing an 18.2% mortality rate in women with higher parity (>3). Irregular antenatal care was associated with a higher perinatal mortality rate (29.6%), emphasizing the importance of consistent monitoring. Pregnancies with a gestational age of less than 28 weeks exhibited a significantly higher perinatal mortality rate (60.0%), emphasizing the critical nature of early gestational care. While 84.5% resulted in live births, 27.3% experienced perinatal death, comprising 11.8% early neonatal deaths and 15.5% stillbirths. Perinatal conditions among live births included jaundice (28.0%), septicemia (19.9%), and respiratory distress (17.0%). The study underscores the need for targeted interventions, improved antenatal care, and comprehensive perinatal strategies to optimize outcomes in this vulnerable population,

providing critical insights for healthcare planning and policy formulation.

Table 1: Background profile of the study participants (n=155)

Age (years)	N (%)
<20	37 (23.9)
20-30	93 (60.0)
>30	25 (16.1)
Mean \pm SD	26.6 \pm 6.3
Socio-economic status	
Low	74 (47.6%)
medium	81 (53.4%)

Table 2: Characteristics of maternal factors with perinatal mortality (n=155)

Parameters	Total birth (%)	Perinatal death (%)
Parity		
0	52 (33.5)	12 (23.1)
1-2	92 (58.4)	30 (32.6)
>3	11 (7.1)	2 (18.2)
Antenatal care		
None	43 (27.7)	14 (32.6)
Irregular	81 (52.3)	24 (29.6)
Regular	26 (16.8)	7 (27.0)
Duration of gestation (weeks)		
<28	10 (6.5)	6 (60.0)
29-36	79 (51.0)	30 (38.0)
>37	61 (39.4)	11 (18.0)

Table 3: Outcome of pregnancies among the study participants (n=155)

Perinatal Outcome	N(%)
Live Birth	136 (84.5)
Survived	115 (71.4)
Early neonatal death (END)	19 (11.8)
Stillbirth (SB)	25 (15.5)
Macerated	3 (1.9)
Fresh SB	22 (13.6)
Perinatal death (END + SB)	44 (27.3)

Table 4: Distribution of perinatal conditions among live birth (n=136)

Parameters	N(%)
Jaundice	38 (28.0)
Septicemia	27 (19.9)
Respiratory distress	23 (17.0)
Neonatal convulsion	6 (4.4)
No complains	42 (30.9)

Discussion

Hypertensive disorders during pregnancy, particularly eclampsia, represent significant

contributors to maternal mortality worldwide. The complications associated with hypertensive disorders, such as abruptio placentae, disseminated intravascular coagulation, cerebral hemorrhage, hepatic failure, and acute renal failure, underscore the potential lethality of these conditions. In our study, out of 210 cases, 155 meeting inclusion criteria were examined, revealing a notably high perinatal death rate of 27.32%. This rate, while higher than some studies, aligns with reports from Bangladesh⁶, where perinatal death rates range from 26.8% to 32.1%. A review of studies presented at the First International Conference of Obstetrics and Gynecology in Bangladesh indicated perinatal mortality in eclampsia varying from 31% to 41%, considerably higher than the general perinatal mortality rate in the country (70 per thousand live births). Comparable studies in developed countries report perinatal mortality in pre-eclampsia ranging from 35 to 160/1000 live births.⁷⁻¹¹

The study population demonstrated concerning trends, with 27.74% having no antenatal care (ANC), and 52.25% receiving irregular ANC or attending the hospital for the first time after referral, primarily stemming from low socioeconomic backgrounds.¹² The majority of patients belonged to the 20-30 age group, aligning with findings that eclampsia is prevalent among adolescent and young pregnant women. Primigravida (58.35%) showed a significant association with eclampsia, consistent with immunological explanations for preeclampsia and eclampsia, with this group exhibiting the highest perinatal death rate (PND). Gestational age below 37 weeks (6.45%) also saw the highest PND at 60%. Despite 84.47% of cases resulting in live births, stillbirths in eclamptic patients stood at 15.52%, consistent with previous studies in Bangladesh. The perinatal death rate of 27.32% in our study aligns with similar rates reported in different settings.¹³⁻¹⁸

Analysis of complications among live births revealed that 30.88% had no complications, while 27.94% developed neonatal jaundice, 19.85% had septicemia, 16.91% suffered from respiratory distress, and 4.41% experienced neonatal convulsions. These statistics echo findings from previous studies in Bangladesh, suggesting commonality in perinatal outcomes in this context.¹⁹⁻²⁰

The observed causes of stillbirths, such as late patient arrival after the onset of fits leading to severe intrauterine hypoxia and death, highlight systemic issues including lack of public awareness, inadequate antenatal checkups, the marginalized role of females in decision-making, poor communication systems, and drawbacks in conservative patient management. Early neonatal deaths may be attributed to the high rate of eclampsia in preterm pregnancies, resulting in increased preterm deliveries and subsequent perinatal losses. Additionally, the availability and skill level of neonatal care facilities may influence early neonatal outcomes.

In summary, this discussion elucidates the complex interplay of factors contributing to perinatal outcomes in eclampsia. Addressing these multifaceted challenges requires a comprehensive approach, focusing on improving antenatal care access, public awareness, and the quality of neonatal care facilities. These findings underscore the need for targeted interventions and policy initiatives to mitigate the impact of eclampsia on maternal and perinatal health in Bangladesh.

Conclusion

In conclusion, this study provides crucial insights into the perinatal outcomes of eclampsia in a Bangladeshi population, emphasizing the substantial impact of hypertensive disorders during pregnancy on maternal and neonatal health. The observed high perinatal death rate, particularly in the context of stillbirths and early neonatal deaths, underscores the urgency of targeted interventions. Factors such as inadequate antenatal care, irregular care, and the prevalence of eclampsia in younger, primigravid women contribute to the complexity of perinatal outcomes. The findings also reveal common neonatal complications among live births, including jaundice, septicemia, respiratory distress, and convulsions. Challenges such as late patient arrival, reflecting broader issues in public awareness, antenatal care utilization, and healthcare decision-making, contribute to adverse outcomes. The association of eclampsia with preterm deliveries highlights the need for improved neonatal care facilities. Overall, this study advocates for comprehensive strategies encompassing enhanced antenatal care,

increased public awareness, and improved neonatal care to address the multifaceted challenges posed by eclampsia. These findings are essential for informing evidence-based interventions and policies aimed at improving maternal and perinatal health outcomes in similar settings, ultimately contributing to the reduction of eclampsia-related morbidity and mortality in Bangladesh.

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