Original article

Evaluation of Morbidity and Mortality of Eclampsia at Brahmanbaria Medical College and Hospital

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Abstract

Background:
Eclampsia is a severe and life-threatening complication of pregnancy, characterized by the onset of seizures in a woman with preeclampsia. This hypertensive disorder of pregnancy is associated with a range of maternal complications, presenting a significant challenge in obstetric care. Maternal complications of this nature can significantly affect both maternal and perinatal health, potentially leading to higher rates of mortality and morbidity.

Objective:
This study was aimed to evaluate the morbidity and mortality of eclampsia in Brahmanbaria Medical College and Hospital.

Methods:
This cross-sectional observational study was conducted at Brahmanbaria Medical College and Hospital, Brahmanbaria, Bangladesh, from January 2021 to December 2021. The study included 56 pregnant women with eclampsia purposively. Demographic and clinical information was recorded, and data analysis and dissemination were carried out using MS Office tools.

Results:
Regarding perinatal outcomes, 80% of cases resulted in live births, with a 57% survival rate. Among live births, 4% experienced post-birth mortality, and 11% faced early neonatal death. Among live births (n=45), a significant 69% experienced intrauterine growth restriction (IUGR). Maternal complications included abruptio placenta in 32% of cases, HELLP syndrome in 5%, and maternal death occurred in 5% of cases.

Conclusions:
Eclampsia assessment shows complex perinatal and maternal outcomes. Live births are common, but survival is challenging. High post-birth and neonatal mortality highlight newborn vulnerability. Intrauterine growth restriction (IUGR) worsens newborn health concerns. Maternal issues like abruptio-placenta, HELLP syndrome, and maternal death further complicate matters.

Keywords: Eclampsia, Morbidity, Mortality, Perinatal complications

Introduction:

Eclampsia is defined as the occurrence of a seizure in a woman who meets the criteria for pre-eclampsia.[1] It represents a critical cause of morbidity and mortality during pregnancy, childbirth, and the postpartum period.[2] Eclampsia is characterized by the occurrence of convulsions in women with pregnancy complicated by pre-eclampsia.[3] Estimating the incidence and global burden of eclampsia remains a challenging task; currently, only seven countries have comprehensive national data on this topic.[4] A study conducted in 2013 on preeclampsia and eclampsia revealed that the prevalence of eclampsia varies widely, ranging from up to 4% in Nigeria to 0 to 0.1% in Europe, with Brazilian studies reporting an incidence of 0.6%.[4,5] The incidence of eclampsia in developed countries is estimated to be approximately 5-7 cases per 10,000 deliveries. In contrast, the incidence varies significantly in developing nations, ranging from 1 case per 100 to 1 case per 1700 pregnancies.[6] Eclampsia is a severe medical condition that poses a significant threat to the health and survival of both the mother and baby during pregnancy.[7] It can lead to various complications, including cerebral hemorrhage, renal failure, pulmonary edema, placental abruption, and fetal distress. As a result, it's crucial to identify the risk factors associated with eclampsia and develop effective management strategies to

enhance maternal and perinatal outcomes.[8] Several risk factors have been linked to eclampsia, such as being a first-time mother (primigravida), carrying multiple fetuses, a history of hypertension or pre-eclampsia, obesity, diabetes, and renal disease.[9] Early detection and management of pre-eclampsia can prevent the development of eclampsia and reduce the risk of adverse outcomes.[10] Antenatal care, which includes regular monitoring of blood pressure and urine protein levels, plays a critical role in identifying women at risk of pre-eclampsia and ensuring timely intervention.[11] Even with the advancements in medical knowledge and technology, eclampsia remains a significant contributor to maternal and perinatal morbidity and mortality on a global scale.[12] The objective of this current study was to evaluate the morbidity and mortality of eclampsia at Brahmanbaria Medical College and Hospital.

Methods:

This was a cross-sectional observational study conducted in the Department of Gynecology & Obstetrics at Brahmanbaria Medical College and Hospital, Brahmanbaria, Bangladesh, spanning from January 2021 to December 2021. The study included a total of 56 pregnant women diagnosed with eclampsia as the study subjects. Sample selection was carried out using a purposive sampling technique. Before data collection, written consent was obtained from all participating pregnant women. The study included pregnant women presenting with eclampsia, regardless of their booking status. Pregnant women with eclampsia with other chronic ailments and comorbidities were excluded from the study. Close monitoring and treatment were provided to the patients throughout their hospital stay, and maternal and perinatal outcomes were assessed. Pregnant women with hypertension and convulsion occurred before 20 weeks of gestation, those who were discharged within 48 hours of delivery and those with conditions other than clinically confirmed eclampsia were also excluded. Demographic and clinical information of all participants was documented, and data analysis was performed using MS Office tools.

Results:

Most of our participants (52%) belonged to the 20-30 years age group, with 27% and 21% of cases falling into the >30 and <20 years age groups, respectively. (Figure-1) When examining the socio-economic status of the participants, we found that approximately two-thirds (66%) were from lower-class families, while 23% came from middle-class backgrounds. (Figure-2) In terms of parity, about two-thirds of cases (63%) had 2-3 parities, followed by 30% with no parity, and 7% with more than 3 parities. (Figure-3) Our study also revealed that a significant portion of participants (63%) received irregular antenatal care, with 29% not receiving antenatal care at all, and only 9% receiving proper antenatal care. (Table-I) Furthermore, three-fourths of our participants (75%) had a gestational age of 29-36 weeks, while 18% had a gestational age of more than 37 weeks, and 7% had a gestational age of less than 28 weeks. (Figure-4) Regarding perinatal outcomes, out of all cases, 80% resulted in live births, with a survival rate of 57%. Among live births, 4% experienced post-birth mortality, and 11% faced early neonatal death. Among cases without live births, 5% were stillbirths, and 4% were macerated. Overall, the perinatal death rate, which includes early neonatal deaths and stillbirths, stood at 16%. (Table-II) Among the live births (n=45), complications included jaundice in 36% of infants, septicemia in 11%, respiratory distress in 20%, and neonatal convulsions in 9%. Moreover, a substantial 69% of newborns experienced intrauterine growth restriction (IUGR), highlighting a range of health issues among them. (Table-III) Maternal complications included abruptio placenta in 32% of cases, HELLP syndrome in 5%, acute renal failure (ARF) and cerebral hemorrhages each in 4%, and disseminated intravascular coagulation (DIC) in 2%. Sadly, 5% of cases resulted in maternal death, highlighting the seriousness of these complications and the importance of timely medical intervention and care. (Table-IV)

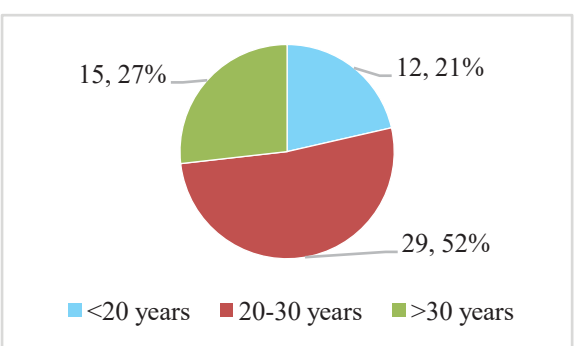

Figure-1: Age distribution of participants (n=56)

be attributed to differences in their levels of social and economic development.[15] Seventy-five percent of our participants had a gestational age of 29-36 weeks, 18% had a gestational age of more than 37 weeks, and 7% had a gestational age of less than 28 weeks. This is indeed indicative that pregnancy beyond the age of 35 is associated with a higher risk. It could also be attributed to inadequate pregnancy planning, as it is generally accepted that the ideal age range for pregnancy is between 20 and 35 years.[16] Beyond the age of 35, various metabolic conditions are more likely to manifest, especially when combined with obesity. The Poeji Rochjati scorecard designates the age of 35 as a high-risk factor with a score of 4, but obesity is not included.[17] In this study, in terms of perinatal outcomes, among all cases, 80% resulted in live births, with a survival rate of 57%. Within the live birth group, 4% experienced post-birth mortality, and 11% faced early neonatal death. Among cases without live births, 5% were stillbirths, and 4% were macerated. Overall, the perinatal death rate, which encompasses early neonatal deaths and stillbirths, stood at 16%. Among the live births (n=45), complications included jaundice in 36% of infants, septicemia in 11%, respiratory distress in 20%, and neonatal convulsions in 9%. These results align with another study conducted by Nahid et al.,[18] which found that out of a total of 178 mothers, there were 148 live births, accounting for 83.15% of the total study population.In this study, among the live births (n=45), various complications emerged. Jaundice affected 36% of infants, septicemia impacted 11%, respiratory distress was observed in 20%, and neonatal convulsions affected 9%. An overwhelming 69% of newborns experienced intrauterine growth restriction (IUGR), indicating a range of health challenges. Among mothers, complications included abruptio placenta (32%), HELLP syndrome (5%), acute renal failure (ARF), and cerebral hemorrhages (both 4%), and disseminated intravascular coagulation (DIC) (2%). In another retrospective cohort study,[19] an increased risk of perinatal complications and poor neonatal outcomes related to Assisted Reproductive Technology (ART) was observed. These complications included Gestational Diabetes Mellitus (GDM), hypertension during pregnancy, Intrahepatic Cholestasis of Pregnancy (ICP), placental abruption, premature rupture of membranes, postpartum hemorrhage, polyhydramnios, premature delivery, and low birth weight.

Limitation:

This study has two primary limitations. Firstly, it was a single-center study with a relatively small sample size. Secondly, the study had a short duration. As a result, the findings, while valuable within their specific context, may not fully represent the entire country's situation. Generalizing these results to the broader national landscape should be done cautiously. A more extensive, multi-center study with a longer timeframe may be needed for a more comprehensive perspective.

Conclusion:

The evaluation of morbidity and mortality in eclampsia reveals a complex landscape of perinatal and maternal outcomes. A significant proportion of cases result in live births, but with a notable survival rate challenge. Post-birth mortality and early neonatal death are observed among live births, underlining the vulnerability of newborns in these situations. Intrauterine growth restriction (IUGR) is a prevalent issue among live births, indicating multifaceted health concerns for newborns. Maternal complications, including abruptio placenta, HELLP syndrome, and maternal death, add further layers of complexity to the clinical picture. These findings underscore the critical need for comprehensive and timely interventions to improve both perinatal and maternal outcomes in cases of eclampsia.

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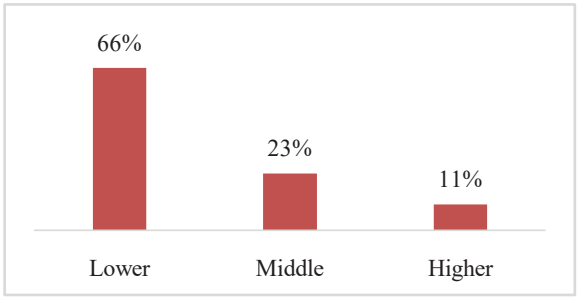

Figure-2: Socio-economic status of participants

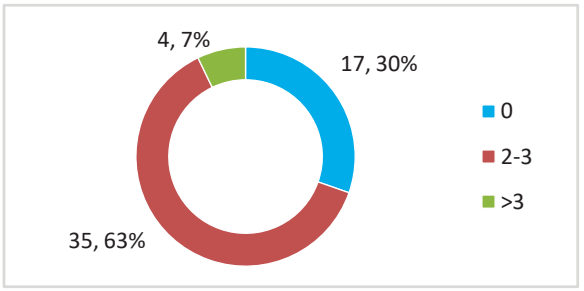

Figure-3: Parity distribution

Table-I: Status of antenatal care

Antenatal care	no.	%
None	16	29
Irregular	35	63
Regular	5	9

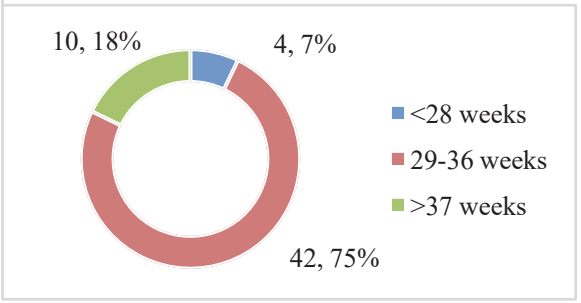

Figure-4: Gestational age distribution

Table-II: Perinatal outcomes

Parameters	no.	%
Live birth	45	80
Survived	32	57
Death after birth	2	4
Early neonatal Death (END)	6	11
Stillbirth (SB)	3	5
Macerated	2	4
Perinatal death (END+SB)	9	16

Table-III: Complications among live birth (n=45)

Complications	no.	%
Jaundice	16	36
Septicemia	5	11
Respiratory distress	9	20
Neonatal convulsion	4	9
Intrauterine growth restriction (IUGR)	31	69

Table-IV: Maternal complications (n=56)

Complications	no.	%
Abruptio placenta	18	32
HELLP syndrome	3	5
Acute renal failure (ARF	2	4
Disseminated intravascular coagulation	1	2
Cerebral Hemorrhages	2	4
Maternal death	3	5

Discussion:

This study aimed toevaluate the morbidity and mortality of eclampsia at Brahmanbaria Medical College and Hospital. The majority of our participants (52%) were in the 20-30 years age group, with 27% in the >30 years group and 21% in the <20 years group. Regarding socio-economic status, approximately two-thirds (66%) were from lower-class families.These findings align to some extent with the study conducted by Arup Kumar Majhi in 2001[13] where they observed that most patients (82%) also came from a low socio-economic status background. This association between socio-economic status and health-related factors underscores the importance of socio-economic factors in healthcare outcomes. Regarding parity, the majority of our participants (63%) had 2-3 parities, while 30% had no previous pregnancies, and 7% had more than 3 parities. The incidence of eclampsia followed a pattern of decline with increasing age and parity, reaching its lowest point among those aged 25-29 (0.9%) and those with a parity of 3 or 4 (0.5%). Subsequently, there was a slight increase in eclampsia cases with higher age and parity. This modest increase corresponds to the elevated occurrence of conditions like essential hypertension, renal disease, and other medical ailments that tend to become more prevalent with advancing age and greater parity.[14] The variation in eclampsia rates between developing and developed countries can

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