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Maternal & Foetal Outcome of Eclampsia Patients in Dinajpur Medical College Hospital

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Abstract

Background: Eclampsia remains a significant contributor to maternal and perinatal morbidity and mortality in developing countries. This study aimed to evaluate the maternal and fetal outcomes of eclampsia patients admitted to Dinajpur Medical College Hospital. ***Methods:*** This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at Dinajpur Medical College Hospital, Dinajpur, Bangladesh, from July 2008 to December 2008. In this study, we included 52 patients who were admitted with eclampsia at Dinajpur Medical College Hospital during the specified study period. ***Results:*** Most patients were aged 21–25 years (48.1%), primigravida (65.4%). Nearly half (48.1%) delivered between 33–37 weeks of gestation. Most of the patients had the antepartum eclampsia (55.8%), followed by postpartum (25.0%) and intrapartum (19.2%) eclampsia. Regarding morbidity, 44.2% experienced complications, most commonly wound infection (15.4%) and raised blood pressure (15.4%). Maternal mortality was 5.8%, with stroke (66.7%) and pulmonary edema (33.3%) as the leading causes. Among 54 neonates, 88.9% were live births and 11.1% stillbirths. Of the 26 neonates referred for pediatric evaluation, prematurity (46.2%) and birth asphyxia (34.6%) were the predominant causes. Early neonatal death occurred in 23.1% of referred cases, mainly due to birth asphyxia (50%) and prematurity (33.3%). Overall, 77.8% of neonates were discharged healthy, while perinatal death accounted for 22.2%. ***Conclusion:*** Eclampsia remains a significant cause of maternal and perinatal complications. Maternal morbidity was common, though mortality was relatively low, while perinatal death and neonatal morbidity were substantial, largely due to birth asphyxia and prematurity.

Keywords: Eclampsia, Maternal Outcome, Perinatal Morbidity, Perinatal Mortality, Foetal Outcome.

INTRODUCTION

Eclampsia is a serious obstetric complication unique to pregnancy that may occur before, during, or after labor. It is characterized by hypertension, proteinuria, edema, and generalized tonic-clonic convulsions, with or without loss of consciousness [1]. The term *eclampsia*, derived from the Greek word meaning "like a flash of lightning," refers to pre-eclampsia complicated by seizures and/or coma [2]. This acute, life-threatening condition is associated with substantial maternal and fetal morbidity and mortality.

Globally, the incidence of eclampsia varies widely. In developed countries, it complicates approximately 0.05–0.71% of pregnancies, or about 1 in 2000 deliveries, whereas in developing countries the incidence ranges from 1 in 100 to 1 in 1700 deliveries [2-4]. Despite improvements in maternal healthcare, complication rates remain high, with maternal morbidity reported in up to 35% of cases [3]. Perinatal mortality has been documented between 59 and 214 per 1000 live births, with morbidity rates as high as 56% [5-8].

Eclampsia is among the leading contributors to adverse outcomes in underprivileged populations. It accounts for nearly 12% of maternal deaths worldwide, making it the fourth most common cause of maternal mortality, while perinatal mortality rates range from 30% to 60% [9]. Most cases occur in young primigravidas and women with inadequate or no antenatal care [10].

Reducing maternal and perinatal mortality remains the benchmark of successful management. Strengthening healthcare facilities, improving socioeconomic and educational conditions, increasing awareness of the severity of the condition, and ensuring adequate antenatal supervision with timely intervention are essential strategies for minimizing the burden of eclampsia.

In the present study, we aimed to evaluate the maternal and fetal outcomes of eclampsia patients admitted to Dinajpur Medical College Hospital.

METHODOLOGY & MATERIALS

This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at Dinajpur Medical College Hospital, Dinajpur, Bangladesh, from July 2008 to December 2008. In this study, we included 52 patients who were admitted with eclampsia at Dinajpur Medical College Hospital during the specified study period.

These were the following criteria for eligibility as study participants:

Inclusion Criteria

- All patients admitted with eclampsia at Dinajpur Medical College Hospital during the study period
- Women aged 15–45 years.
- Patients who gave written informed consent.

Exclusion Criteria

- Patients with pre-existing epilepsy or seizure disorders not related to pregnancy.
- Cases of chronic hypertension with superimposed convulsions but not fulfilling diagnostic criteria for eclampsia.
- Patients referred after delivery with inadequate records of maternal and neonatal outcomes.

Data Collection Procedure:

Informative written consent was taken after an explanation of the study procedure. Data were collected prospectively from eclampsia patients admitted to the Department of Obstetrics and Gynecology, Dinajpur Medical College Hospital during the study period using a structured data sheet. Sociodemographic information was obtained by direct interview, while obstetric history and antenatal records were reviewed where available. Clinical findings, complications, and investigation results were documented through examination and hospital records. Maternal outcomes were recorded during hospitalization, and neonatal outcomes, including birth status, birth weight, morbidity, pediatric referral, and survival, were noted at delivery and during hospital stay. All data were cross-verified with medical records for accuracy before compilation and analysis.

Statistical Analysis:

All data were recorded systematically in a pre-formatted data collection form. Categorical variables, such as maternal morbidity, mortality, neonatal status, and perinatal outcomes, were expressed as frequencies and percentages. Continuous variables, such as birth weight were presented as mean ± standard deviation (SD). Data were tabulated and presented using tables and charts for clear visualization. The data were analyzed using SPSS 16 (Statistical Package for Social Sciences) for Windows version 10. This study was ethically approved by the Institutional Review Committee of Dinajpur Medical College Hospital.

RESULTS

In the present study, a total of 2,146 obstetrics cases were recorded in the Department of Obstetrics and Gynecology at Dinajpur Medical College Hospital during July 2008 to December 2008. Among these, 52 women were diagnosed with eclampsia, yielding an incidence rate of 2.42% (24.24 per 1,000 deliveries).

Table 1: Sociodemographic and Obstetric Characteristics of the Study Population (n=52)

Parameter	Number	Percentage (%)
Age Distribution (years)		
15-20	19	36.54
21-25	25	48.07
26-30	5	9.62
>30	3	5.77
Parity		
0 (Primigravida)	34	65.38
1-2	13	25.00
3-4	5	9.62
>4	0	0.00
Education level		
Illiterate	15	28.85
Primary	23	44.23
Secondary	12	23.08
Higher Secondary	2	3.84

Parameter	Number	Percentage (%)
Socioeconomic Status		
Lower Class	32	61.54
Middle Class	18	34.62
Upper Middle Class	2	3.84
Residence		
Rural	34	65.39
Suburban	10	19.23
Urban	5	9.61
Slum	3	5.77
Gestational Age at Delivery (weeks)		
<28	2	3.85
28-32	8	15.38
33-37	25	48.08
>37	17	32.69
Mode of Delivery		
Vaginal	31	59.62
Caesarean section	21	40.38

Table 1 presents the sociodemographic profile, parity, and gestational age at delivery of the study participants. The majority of women were aged 21–25 years (48.1%), followed by 36.5% in the 15–20 years age group, while only 5.8% were above 30 years. Most were primigravida (65.4%), with 25% having 1–2 previous deliveries and none with more than 4. In terms of education, 44.2% had primary education, 28.9% were illiterate, and 23.1% attained secondary education. The socioeconomic distribution showed that 61.5% belonged to the lower class, and 34.6% to the middle class. Regarding residence, the majority came from rural areas (65.4%), followed by suburban (19.2%), urban (9.6%), and slum dwellers (5.8%). At the time of delivery, nearly half (48.1%) delivered between 33–37 weeks of gestation, while 32.7% were beyond 37 weeks. Majority of patients delivered vaginally (59.6%), while 40.4% underwent caesarean section.

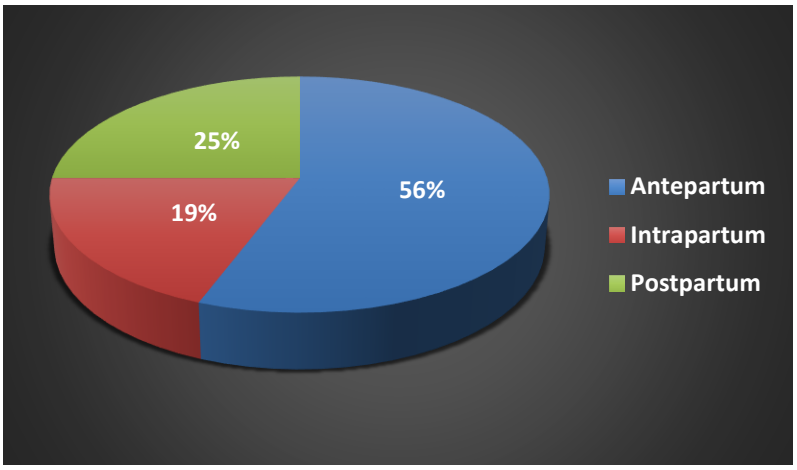

Figure 1: Types of Eclampsia in Study Participants

The pie chart shows the distribution of study subjects by the types of eclampsia. The majority of patients had the antepartum eclampsia (55.8%), followed by the postpartum eclampsia (25.0%), while 19.2% had intrapartum eclampsia.

Table 2: Birth Condition, Causes for Pediatric Referral, and Morbidity Patterns in Neonates

Parameter	Number	Percentage (%)
Condition at Birth		
Alive	48	88.89
Stillborn	6	11.11
Birth Weight (kg)		
<1.0	3	5.56
1.0 - 1.5	8	14.81
1.6 - 2.5	31	57.41

Parameter	Number	Percentage (%)
>2.5	12	22.22
Cause for Pediatric Referral (n=26)		
Prematurity	12	46.15
Birth Asphyxia	9	34.62
Jaundice	2	7.69
Feeding Problem	2	7.69
Others	1	3.85
Perinatal Morbidity (n=26)		
None	8	30.77
Jaundice	5	19.23
Septicaemia	5	19.23
Respiratory Distress	4	15.38
Convulsion	2	7.64
Umbilical Cord Sepsis	1	3.85
Others	1	3.85

Table 2 shows that among the 54 neonates, 88.9% were alive at birth while 11.1% were stillborn. In terms of birth weight, the majority (57.4%) weighed between 1.6–2.5 kg, followed by 22.2% weighing >2.5 kg, and 14.8% between 1.0–1.5 kg. Out of 26 neonates referred for pediatric evaluation, the leading cause was prematurity (46.2%), followed by birth asphyxia (34.6%), while jaundice and feeding problems accounted for 7.7% each, and 3.9% were referred for other causes. Regarding morbidity among referred neonates, 30.8% had no morbidity, while jaundice (19.2%) and septicaemia (19.2%) were the most common conditions.

Table 3: Maternal Morbidities and Outcomes in Eclampsia Patients (n=52)

Parameters	Number	Percentage (%)
Overall Morbidity		
No Morbidity	29	55.77
Any Morbidity	23	44.23
Type of Morbidity		
Wound Infection	8	15.38
Raised Blood Pressure	8	15.38
High Temperature (Infection)	5	9.62
Unconscious (CVA - Stroke)	2	3.85
Final Outcome		
Recovered	49	94.23
Expired	3	5.77
Cause of Death		
CVA (Stroke)	2	66.67
Pulmonary Edema	1	33.33

Table 3 summarizes maternal morbidity and final outcomes. Among the participants, 55.8% had no morbidity, while 44.2% experienced at least one complication. The most common morbidities were wound infection (15.4%) and raised blood pressure (15.4%), followed by postoperative fever due to infection (9.6%). Less frequent complications included stroke with unconsciousness (3.9%). Regarding final outcomes, the majority of mothers recovered (94.2%), while 3 (5.8%) died. The main causes of death were stroke (66.7%) and pulmonary edema (33.3%).

Table 4: Foetal Outcomes of the Study Population

Parameters	Number	Percentage (%)
Pregnancy Outcome (n=54)		
Live birth	48	88.89
Stillbirth (SB)	6	11.11
Neonatal outcome (n=48)		
None	22	45.83
Referral to Pediatrics	26	54.17
Perinatal Morbidity	26	54.17
Early neonatal death	6	23.08

Parameters	Number	Percentage (%)
Causes of neonatal death (n=6)		
Birth asphyxia	3	50
Replacement	1	16.67
Prematurity	2	33.33
Weight in relation to END		
<1.5 kg	2	33.33
1.6-2.5 kg	3	50
≥2.5 kg	1	16.67
Final Outcome (n=54)		
Discharged healthy	42	77.78
Perinatal death (SB+END)	6+6 = 12	22.22

Stillbirth (SB) = 6, Early Neonatal Death (END) =6

Table 4 shows that 48 (88.9%) resulted in live births and 6 (11.1%) were stillbirths. Of the 48 live-born neonates, 22 (45.8%) had no complications, while 26 (54.2%) required pediatric referral, reflecting a perinatal morbidity rate of 54.2%. Among the referred neonates, 6 (23.1%) experienced early neonatal death (END). The main causes of neonatal death were birth asphyxia (50%), prematurity (33.3%), and complications related to replacement transfusion (16.7%). With respect to birth weight, END occurred most commonly in infants weighing 1.6–2.5 kg (50%). In terms of final outcome, 42 neonates (77.8%) were discharged healthy, while 12 (22.2%) experienced perinatal death (6 stillbirths and 6 early neonatal deaths).

Table 5: Maternal Characteristics Associated with Perinatal Deaths

Parameter	No. of Perinatal death (n=12)	Percentage (%)
Age (Year)		
15-20	5	41.67
21-25	4	33.33
26-30	2	16.67
>30	1	08.33
Parity		
0	08	66.67
1-2	3	25.00
3-4	1	8.33
Antenatal Care		
No visit	3	25.00
Irregular	7	58.33
Regular	2	16.67
Duration of Gestation (Weeks)		
<28	2	16.67
29-32	5	41.67
33-37	4	33.33
>37	1	8.33

Table 5 shows that the majority of prenatal deaths occurred in younger mothers, with 41.7% aged 15–20 years and 33.3% aged 21–25 years, while only 8.3% were above 30 years. Most deaths were associated with primigravida mothers (66.7%), followed by those with parity 1–2 (25%). In relation to antenatal care, the majority had irregular visits (58.3%), while 25% had no antenatal check-ups and only 16.7% had regular care. Considering gestational age, perinatal deaths were most frequent between 29–32 weeks (41.7%), followed by 33–37 weeks (33.3%), with 16.7% occurring before 28 weeks and 8.3% beyond 37 weeks.

DISCUSSION

In this study, out of 2,145 deliveries, 52 patients (2.42%) were diagnosed with eclampsia, resulting in an incidence of 24.24 per 1,000 deliveries. This is higher than the incidence reported by Haque *et al.,* (7.59/1,000 deliveries) and studies from Nepal by Chaudhary P (2.9/1,000) and Ghimire S (13.8/1,000) [11–13]. Similarly, Sunita TH *et al.,* and Shamshad Begum Shaikh *et al.,* reported incidences of 10/1,000 and 5.8/1,000 deliveries, respectively [14,15].

The majority of women with eclampsia in our study were aged 21–25 years (48.1%), followed by 36.5% in the 15–20 years age group, and most were primigravida (65.4%). Nearly half of the deliveries occurred between 33–37 weeks of gestation (48.1%), while 32.7% were beyond 37 weeks. These findings are consistent with Shakya *et al.,* who reported that

eclampsia occurred most frequently in women aged 20–24 years (42.2%), predominantly in primiparas (71.1%), and mainly at 36–40 weeks of gestation (46.6%) [16]. Haque *et al.,* also observed the highest incidence among younger women, with 58.7% in the 21–30 years age group and 36.9% under 20 years, the majority being primigravida (73.9%) [11]. Similar results were reported by Shaikh S B *et al.,* [15]. Swain S *et al.,* found eclampsia more common in young pregnant women (66.5%) and primigravidas (83.5%), which aligns with the findings of Sunita TH *et al.,* (85% and 79%) [1,14]. With respect to gestational age, Swain S *et al.,* reported 49% of cases at term, which is comparable to Khanum M *et al.,* who observed 53% at term and 43% near term [1,17].

In terms of type, antepartum eclampsia was most common (55.8%), followed by postpartum (25.0%) and intrapartum (19.2%). Swain S *et al.,* reported a higher proportion of antepartum cases (74.3%), while Haque *et al.,* found 91.3% were antepartum [1,11]. Similar patterns were observed in other studies, with Ghimire S reporting 83% and Chaudhary P reporting 70% antepartum cases [12,13]. In developed countries, postpartum eclampsia accounts for a higher proportion (44%), likely due to better antenatal surveillance [18]. In our study, the majority of patients delivered vaginally (59.6%), while 40.4% underwent caesarean section, comparable to findings by Chaudhary P (55.3%) and Sunita TH *et al.,* (45%) [12,14].

Regarding maternal morbidity, the most common complications were wound infection (15.4%), persistent hypertension (15.4%), and postoperative fever due to infection (9.6%). Haque *et al.,* reported that one-third of patients developed complications, including postpartum hemorrhage (15.2%), psychosis (8.7%), and acute renal failure (4.3%) [11]. Das Ghosh *et al.,* reported pulmonary edema (2.96%), pneumonia (1.48%), respiratory depression (1.48%), renal failure requiring dialysis (2.22%), coagulopathy (1.48%), and cerebrovascular accident (0.74%) [19].

The maternal mortality rate in our study was 5.8%, primarily due to stroke and pulmonary edema, which is similar to Duhan *et al.,* who reported 6% mortality, and comparable to findings by Sunita TH, Ghimire S, and Shakya *et al.,* [13,14,16,20]. Haque *et al.,* reported two maternal deaths (4.35%), one due to aspiration pneumonia and another due to cerebrovascular accident [11].

Regarding perinatal outcomes, 42 neonates (77.8%) were discharged healthy, while 12 (22.2%) experienced perinatal death (6 stillbirths and 6 early neonatal deaths). Das Ghosh *et al.,* reported 21 perinatal deaths (15 intrauterine deaths and 6 early neonatal deaths), while studies from Nigeria showed that up to 50% of perinatal deaths were stillbirths [19,21]. Sultana Afroj reported a perinatal mortality rate of 23.9%, and Haque *et al.,* observed 10.9% fetal deaths (6.5% stillbirths and 4.3% macerated babies) [11,22]. Low birth weight was an important factor, as early neonatal deaths in our study occurred most frequently in infants weighing 1.6–2.5 kg (50%). Multiple studies have also highlighted increased risks of preterm delivery, low birth weight, and higher fetal mortality in eclampsia [12,13,20,23].

Limitations of the study

The study was conducted at a single tertiary care center with a relatively small sample size, which may limit the generalizability of the findings to broader populations. Data on long-term maternal and neonatal outcomes after discharge were not collected, which restricts the ability to assess ongoing morbidity. Finally, some information relied on patient recall or incomplete medical records, which may introduce reporting bias.

CONCLUSION AND RECOMMENDATIONS

Eclampsia continues to be a major contributor to maternal and perinatal morbidity and mortality, particularly among young, primigravida women with limited antenatal care. Maternal morbidity was common, though mortality was relatively low (5.8%) primarily due to stroke and pulmonary edema. Perinatal outcomes were more concerning, with 22.2% of neonates experiencing perinatal death, mainly due to birth asphyxia, prematurity, and complications associated with low birth weight. Neonatal morbidity was significant among those requiring pediatric referral, highlighting the need for timely neonatal support. These findings emphasize the importance of early recognition, adequate antenatal monitoring, and prompt management of eclampsia to improve both maternal and foetal outcomes.

Further multicenter cross-sectional studies with larger sample sizes are needed to validate the findings of this study.

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