

# Effect of Eclampsia on Neonatal Outcomes in Tertiary Care Centre

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**Abstract:** ***Background:** Perinatal mortality in babies born to eclamptic mothers is reported to be 5% to 11% in developed countries where as it is as high as 40% in developing countries. In present study we aim to analyse neonatal outcomes of eclamptic mothers in a tertiary care hospital. **Aim:** In present study we aim to analyse neonatal outcomes of eclamptic mothers in a tertiary care hospital. **Material and Method:** Present study is a retrospective, descriptive study done in antepartum and intrapartum eclampsia mothers and their babies with > 28 weeks gestational age delivered at our hospital during study period. **Results:** Out of 96 eclampsia patients with > 28 weeks GA delivered at our hospital, most patients were from 34-36 weeks GA (48%). Most common type of eclampsia was antepartum (69%). NVD and LSCS were done in 58% and 38% respectively. Duration from first convulsion to delivery was 6-12 hours in 56% patients. Most common birthweight was 1501-2500 gms. The stillbirths were 6.2% while early neonatal death were 10.4%. Among live births APGAR score at 5 minutes was  $\geq 7$  in 73%. 27% neonates required resuscitation while NICU admission was in 47% neonates. Complications were noted in 46 neonates. Complications were Respiratory distress (30%), Clinical Sepsis (26%), MSL (17%), Severe birth asphyxia (9%). **Conclusion:** Eclampsia requires early delivery; to be done at a tertiary institute. Prematurity, growth restriction and low birth weight are neonatal complications associated with eclampsia.*

**Keywords:** neonatal outcome, eclampsia, prematurity, LBW

## 1. Introduction

Hypertensive disorders are one of the most important causes of perinatal and maternal mortality and morbidity in both developing and developed countries. Perinatal mortality in babies born to eclamptic mothers is reported to be 5% to 11% in developed countries were as it is as high as 40% in developing countries.

The neonatal complications associated with eclampsia include:

- Intrauterine growth retardation
- Intrauterine deaths
- Complications associated with preterm deliveries
- Intracranial haemorrhage
- Respiratory distress
- Surfactant deficiency induced hyaline membrane disease
- Neonatal sepsis
- Bronchopulmonary dysplasia

As the only definitive management of severe eclampsia is delivery it becomes of utmost importance to keep in mind the effect such a preterm delivery might have on newborn. The neonates delivered early to control severe eclampsia may require intensive neonatal care.

Babies with low APGAR scores are prone for developing various complications like periventricular leukomalacia leading to germinal matrix haemorrhage, respiratory distress, hypoglycaemia and hypocalcaemia. These babies may need

long term follow up to detect long term sequel of prematurity and birth asphyxia like cerebral palsy. Many studies have concluded that eclampsia in the mother is associated with increased risk of cerebral palsy in preterm and low birth weight infants.

In present study we have aimed to analyse neonatal outcomes of eclamptic mothers in a tertiary care hospital.

## 2. Materials and Methods

Present study is a retrospective, descriptive study done at department of paediatrics, DrUlhas Patil medical college and hospital, Jalgaon. Case records of all eclampsia mother and babies were analysed for period of 1 year (January 2022 to December 2022).

Case records of all antepartum and intrapartum eclampsia mothers and their babies with > 28 weeks gestational age delivered at our hospital during this period were studied. If mother was a known case of seizure disorder, then she was excluded from study.

Demographic and clinical details were collected from case sheet, delivery register and discharge cards. Information in detail of maternal profile and neonatal outcome were noted. Study variable of eclamptic patients like age, parity, booking status, gestational age at the time of admission, type of eclampsia, mode of delivery; various perinatal and maternal outcomes e.g. Still births, maternal complications during the delivery were recorded. Neonatal weight, gestation, mode of delivery, APGAR, growth category, and complications like

respiratory distress, meconium aspiration, hypoglycaemia, hypocalcaemia, mortality etc. were recorded. Data were collected till the time of discharge/death of babies. Data was collected and entered in Microsoft excel sheet. Statistical analysis was done using descriptive statistics.

### 3. Result

During study period total 96 eclampsia patients with > 28 weeks gestational age delivered at our hospital. Most common maternal age group in present study was 21-25 years (48%) followed by ≤20 years (27%) and 26-30 years (17%).

Maternal Age	No. of Patients	Percentage
< 20yrs	26	27
21- 25 yrs	46	48
26- 30 yrs	16	17
31- 35 yrs	6	6
> 35 yrs	2	2

Most patients were from 34-36 weeks (48%) gestational age while 31% and 21% were from <34 weeks and ≥37 weeks gestational age respectively.

Gestational Age	No. of Patients	Percentage
<34 wk	30	31
34 – 36 wk	46	48
≥37 wk	20	21

55% were nulliparous. 54% patients had 2-4 antenatal visits.

Parity	No of patients	Percentage
0	53	55
1-2	18	19
3 or more	25	26

ANC visits	No of patients	Percentage
0-1	16	17
2-4	52	54
>4	28	29

Most common type of eclampsia was antepartum (69%) while intrapartum eclampsia was 31%. Vaginal delivery was done in 58%, while 38% underwent LSCS.

Mode of Delivery	No of Patients	Percentage
Vaginal	56	58
Instrumental	4	4
Caesarean section	36	38

Duration from first convulsion to delivery was < 6 hours in 29%, 6–12 hours in 56% and > 12 hours in 15% patients.

Duration from 1st convulsion to delivery (in hrs)	No of Patients	Percentage
<6	28	29
6-12	54	56
>12	14	15

1501-2500 gms (60%) birth weight group was most common followed by >2500 gms (19%) and 1001-1500 grams (13%).

Birth Weight (in gms)	No of Patients	Percentage
≤ 1000	8	8
1001- 1500	12	13
1501- 2500	58	60
>2500	18	19

In present study stillbirths were 6.2% while early neonatal death was noted in 10.4%. Out of 90 live births APGAR score at 5 minutes was ≥7 in 73%, 3-6 in 16% and 1-2 in 11%. 27% neonates (24) required resuscitation while NICU admission was required in 47% neonates (42).

APGAR at 5 mins	No of neonates	Percentage
1- 2	10	11
3- 6	14	16
≥7	66	73

Complications were noted in 46 neonates. Respiratory distress (30%), Clinical Sepsis (26%), Meconium-stained liquor (17%) were common complications.

Complications	No of Neonates	Percentage
Respiratory distress	14	30
Clinical sepsis	12	26
Meconium-stained liquor	8	17
Severe birth asphyxia	4	9
Hypocalcaemia	3	7
Hypoxic ischemic encephalopathy	2	4
Hypoglycaemia	2	4
Bronchopulmonary dysplasia	1	3

### 4. Discussion

Antenatal magnesium sulphate is commonly used in obstetric practice. Systematic reviews and clinical practice guidelines support its use when given for maternal neuroprotection in preeclampsia or eclampsia and for neuroprotection of the fetus in women at risk of preterm birth (for cerebral palsy prevention). Neonatal outcome in eclamptic mothers is dependent upon multiple factors such as birth weight of the baby, gestational age, birth asphyxia, presence or absence of meconium aspiration and Apgar score at birth.

Maternal Eclampsia is one of the prominent etiological factors for neonatal morbidity and mortality. Prematurity, growth restriction and low birth weight are the common neonatal complications seen in babies born to mothers with eclampsia.

In study by Jagjit S, there were 113 cases of eclampsia mothers. Majority of newborn were born to unbooked mother (95.57%). 57% babies were born by Caesarean section. 80.5% babies were live born and 19.5% were still born. Perinatal deaths due to eclampsia was 23%. Out of 91 live births, 45 (49.4%) babies admitted to NICU. The common reasons for admission were small for gestational age (43.9%) and low birth weight, hypoglycaemia (5.4%), respiratory distress (15.3%), severe birth asphyxia (7.6%) and 4 (4.3%) babies had neonatal death. 87/91 (95.6%) newborns were discharged.

In present study >80% of eclamptic patients had babies with birth weight less than 2500 g. Similar results were observed in other studies conducted by Dhananjaya et al and Rajesri et al with 89% and 78% of babies respectively with birth weight less than 2500g. This may be because of higher number of preterm deliveries (spontaneous and induced) as well as intrauterine growth restriction which is known complication of preeclampsia.

Eclampsia in the rural population is an important cause of significant neonatal morbidity in terms of prematurity, LBW, IUGR, and birth asphyxia. It is a significant risk factor for late preterm births as well. Tejaswi Nandan conducted a comparative study of new-born babies born to 100 consecutive mothers admitted with eclampsia with those born to 100 consecutive non-eclamptic mothers (considered as control) with normal BP. The majority of eclamptic mothers were primigravida (88%), <20 years of age (65%), having body weight of mean 41.22±5.12 kg, height of mean 147.28±6.27cm, and socioeconomic status of Class IV (90%). There was no significant difference observed in respect of age, weight, height, religion, caste, parity, and socioeconomic status between eclamptic and control mothers and thus, the two groups were statistically matched. Outcome in new-borns of eclamptic mothers was significantly more adverse (p<0.001) than in non-eclamptic mothers. In this study, four significant neonatal outcomes of eclamptic mothers were observed as preterm, LBW, IUGR, and birth asphyxia while other outcomes as hypoxic-ischemic encephalopathy (HIE), early-onset sepsis (EOS), early neonatal death (END), and stillbirth were not significant. They concluded that eclampsia is an important cause of significant neonatal morbidity in terms of prematurity, LBW, IUGR, and birth asphyxia. It is a significant risk factor for late preterm births as well.

Madhu Sinha studied 298 cases of eclampsia, (3 died undelivered) 104 fetus died. Perinatal mortality rate was 39.5%. Intrauterine deaths were 56 (53.8%). Stillbirth accounted for 19.2% of perinatal mortality and 26.9% of neonatal death. 124 newborn got admitted in the nursery, of which 28 (26.9%) died, 96 (60%) were live. 63 (39.6%) babies were shifted to mother side after observation. Reasons for admission were preterm (21.1%), Intrauterine growth restriction (IUGR) (15.1%), low birth weight (69.4%), meconium aspiration, low Apgar score. Most common causes of perinatal death were birth asphyxia, prematurity, meconium aspiration and neonatal sepsis.

In the study conducted by Kamat DJ and Edgar et al. the stillbirth rate was found to be 11.5% and 12.2% respectively. Also, the neonatal death rate in studies by Kamat DJ and Anuja et al. was 5.3% and 5.4% respectively. Perinatal mortality was 68.2% and 40% when the convulsion to delivery interval was more than 12 hours noted in the studies by Anuja et al. and Rajesri et al., respectively. But due to more liberal use of caesarean sections and better NICU facilities available, reduction in perinatal mortality is expected. Although all cases of eclampsia are not preventable but we can improve maternal and fetal outcome by good antenatal care, early detection of sign and symptoms of preeclampsia, prompt treatment and timely termination of pregnancy.

## 5. Conclusion

Eclampsia requires early delivery, high risk of neonatal morbidity and mortality, should be delivered at a tertiary institute. Prematurity, growth restriction and low birth weight are neonatal complications noted in mothers with eclampsia. A good neonatal intensive care unit will help improve neonatal outcomes.

## Acknowledgment

We express our heartfelt gratitude toward our colleagues and all those subject and their Parents/Guardians who participated in this study for their kind Cooperation and goodwill.

## Financial Support and Sponsorship

Nil

## Conflicts of interest

There are no conflicts of interest

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