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Original Research Article

# Maternal Complications and Foetal Outcome in Eclampsia

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**Abstract:**

**Objective:** To evaluate maternal complications and fetal outcome in eclampsia and to formulate strategies to improve the maternal and perinatal outcome.

**Methods and Material:** It is a prospective study in which 100 patients with eclampsia antenatal or within 10 days after delivery were included, Patients with seizures due to epilepsy or other cerebral conditions were excluded. A thorough general physical examination, systemic and obstetric examinations were done. Immediate decision regarding mode of delivery was taken. Maternal complications and foetal outcome were noted. Patient followed through from admission till discharge.

**Results:** Out of 100 patients of eclampsia, 77 cases were antepartum, most of patients were nulliparous, with age between 20-30 years, unbooked, belonging to rural population. maternal complications were cerebral oedema 6%, CVT 3%, pulmonary oedema 2%, deranged LFT 3%, grade 1 nephropathy 3%, grade 1 hypertensive retinopathy 12%, massive ascites 3%, abruptio placentae 1%, PPH 3% and PRES 4%.maternal mortality is 2% and perinatal mortality is 22.22%.

**Conclusion:** This study is done in an area which is considered underdeveloped & backward in the state, therefore early diagnosis of hypertension and its prompt management will prevent eclampsia and thereby preventing complications of eclampsia, hence by increasing awareness, regular antenatal check-ups, improving medical and transport facilities, the incidence and associated morbidity & mortality can be further reduced.

**Keywords:** Eclampsia; Maternal mortality; Perinatal mortality.



## Introduction

Hypertensive disorders of pregnancy are major cause of maternal and fetal morbidity and mortality all over the world.

Eclampsia is a serious complication of hypertensive disorders of pregnancy.

Eclampsia is defined as "the occurrence of convulsions during pregnancy, delivery or 10 days of postpartum, not caused by any co incidental neurologic disease such as epilepsy, in a woman whose condition also meets the criteria of pre-eclampsia[1].

The term "eclampsia" is derived from a Greek word meaning "like a flash of lightening".

Alexder Hamilton (1781) described eclampsia as a disease which always attended with the utmost hazard and frequently kills the woman like a fit of apoplexy.

Eclampsia is a life threatening emergency that continues to be a major cause of maternal and perinatal morality world-wide. Maternal morality varies widely at different places with almost identical management indicating that there may be important differences in socio-economic condition of a nation and the quality of obstetric care. According to Doeley's estimation, globally about 50,000 women die of eclampsia annually. Majority of these deaths occur in developing countries and most of these are preventable. Incidence of eclampsia in developed countries is 0.4-0.5/ 1000 deliveries, while it is high in developing countries and in India it is 0.7%[2].

It accounts for 12% of maternal deaths throughout world[3]. Maternal mortality according to various Indian authors is 8-14%.

Following eclampsia, the risk of problems in future pregnancies have been estimated at around 2% for recur-rent eclampsia.

In developed countries with effective antenatal screening programme, improved diagnostic and therapeutic criteria and extensive research, the

disease has become a rare complication of pregnancy. Unfortunately, such changes have not occurred in developing countries and eclampsia continues to be common.

So, this is a prospective study to know the maternal complications and fetal outcome in eclampsia and to formulate strategies to improve maternal and foetal outcome.

**Materials and Methods**

A total number of 100 cases of Eclampsia admitted

**Inclusion Criteria:**

- All patients of Eclampsia antenatal or within 10 days after delivery admitted to above mentioned hospitals.

**Exclusion Criteria:**

- Patients with seizures due to epilepsy or other cerebral conditions.
- Patients presenting with convulsions after 10 days or more after delivery.

On admission, a detailed history was taken from attendants or from patients if conscious and well oriented to time, place and person.

Particular reference was given to the following points

- Age and address of the patients
- Detailed history regarding the antenatal checkup taken
- Duration of gestation
- Detailed history was taken regarding the convulsions i.e. total number of convulsions, time of onset of first convulsion, interval between the convulsions, history of loss of consciousness and the time gap between the onset of first convulsion and the admission to the hospital.

**Observations and Results**

- Incidence of eclampsia=2.56%.

**Table 1: Distribution of cases according to type of eclampsia**

| Type of eclampsia | No. of cases | Percentage |
|---|---|---|
| Antepartum | 77 | 77.00 |
| Intrapartum | 14 | 14.00 |
| Post-partum | 9 | 9.00 |
| Total | 100 | 100.00 |

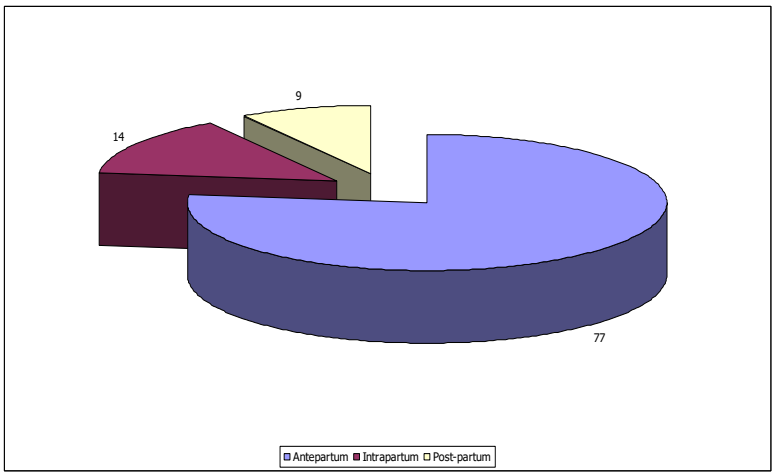


**Figure 1: Distribution of cases according to type of eclampsia**

- In the present population, 77% cases were antepartum eclampsia, 14% cases were intrapartum eclampsia, 9% cases were post-partum eclampsia.

**Table 2: Age wise Distribution of cases**

| Age group (years) | No. of cases | Percentage |
|---|---|---|
| <20 | 11 | 11.00 |
| 20-25 | 75 | 75.00 |
| 26-30 | 12 | 12.00 |
| >30 | 2 | 2.00 |
| Total | 100 | 100.00 |

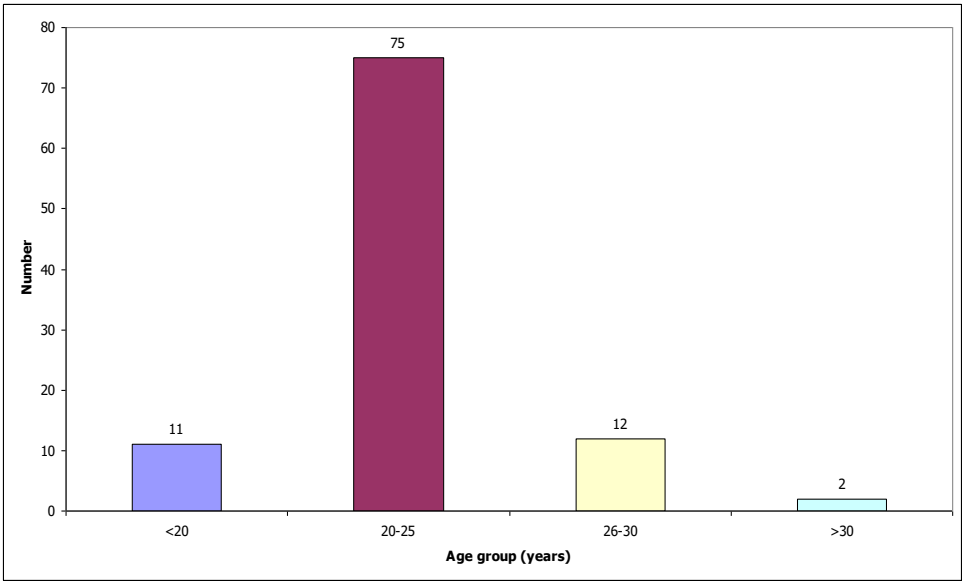


**Figure 2: Age wise Distribution of cases**

- Most of the women in the study population were between 20-25 years of age.

**Table 3: Distribution of cases according to antenatal care**

| Antenatal care | No. of cases | Percentage |
|---|---|---|
| Booked | 40 | 40.00 |
| Un-booked | 60 | 60.00 |
| Total | 100 | 100.00 |

- In the study population, 40% of the cases were booked,60% were unbooked cases.

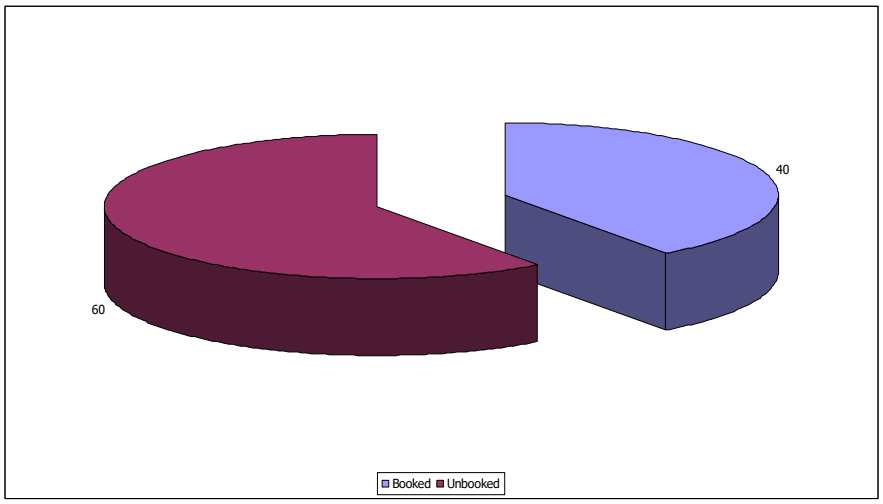


**Figure 3: Distribution of cases according to antenatal care**

**Table 4: Demographic Distribution**

| | No. of cases | Percentage |
|---|---|---|
| Urban | 35 | 35.00 |
| Rural | 65 | 65.00 |
| Total | 100 | 100.00 |

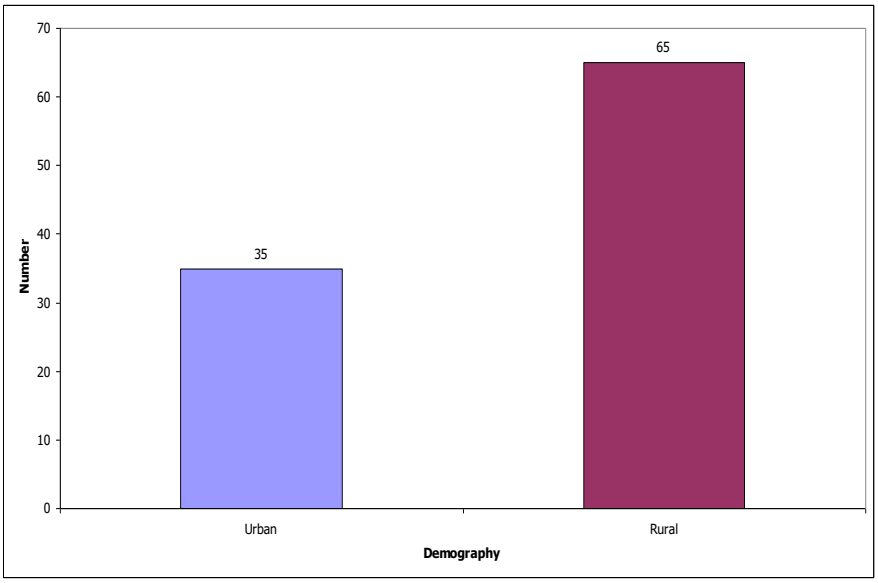


**Figure 4: Demographic Distribution**

- In the study population, 35% cases belong to urban population,65% were rural population.

**Table 5: Distribution of cases according to parity**

| Parity | No. of cases | Percentage |
|---|---|---|
| P0 | 73 | 73.00 |
| P1 | 18 | 18.00 |
| P2 | 4 | 4.00 |
| P3 | 3 | 3.00 |
| P4 | 2 | 2.00 |
| Total | 100 | 100.00 |

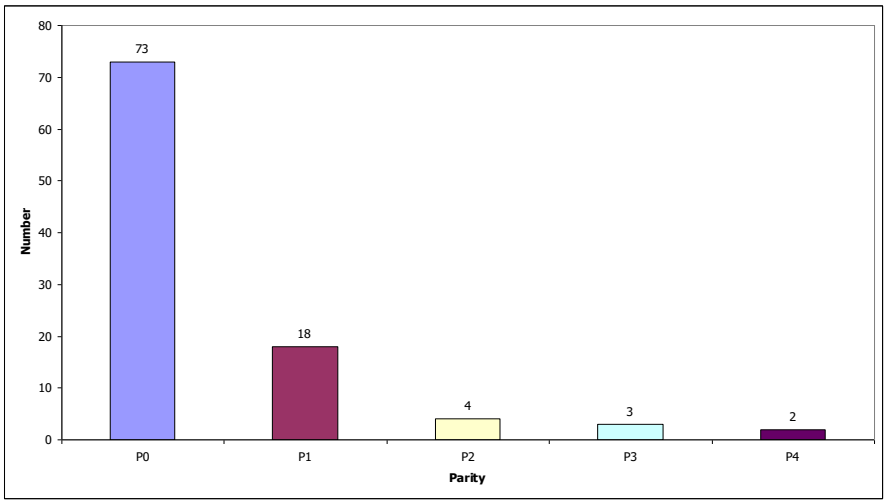


**Figure 5: Distribution of cases according to parity**

- Most of the women (73%) in the study population were nulliparous.

**Table 6: Gestational age wise distribution**

| Gestational age (weeks) | No. of cases | Percentage |
|---|---|---|
| 24-30w+6d | 14 | 15.40 |
| 31-36w+6d | 39 | 42.88 |
| 37-40w+6d | 35 | 38.54 |
| >40w | 3 | 3.39 |
| Total | 91 | 100 |

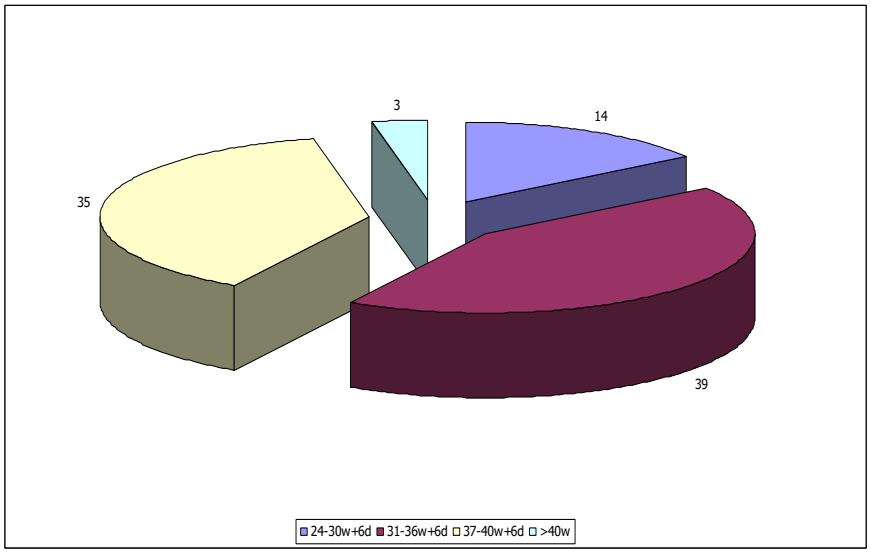


**Figure 6: Gestational age wise distribution**

- In the study population, 9 cases were postpartum, out of rest 91 cases, 15.4% were 24-30 weeks + 6 days GA, 42.8% cases were 31-36 weeks+6 GA and 38.5% were 37-40 weeks + 6 days GA and 3.3% in >40 weeks GA.

**Table 7: No. of convulsions**

| No. of convulsions | No. of cases | Maternal morbidity | Percentage | Maternal mortality |
|---|---|---|---|---|
| 1-5 | 87 | 28 | 32.18 | 0 |
| 6-10 | 12 | 6 | 50.00 | 2 |
| 11-15 | 00 | 0 | 0.00 | 0 |
| >15 | 1 | 1 | 100.00 | 0 |
| Total | 100 | 35 | | |

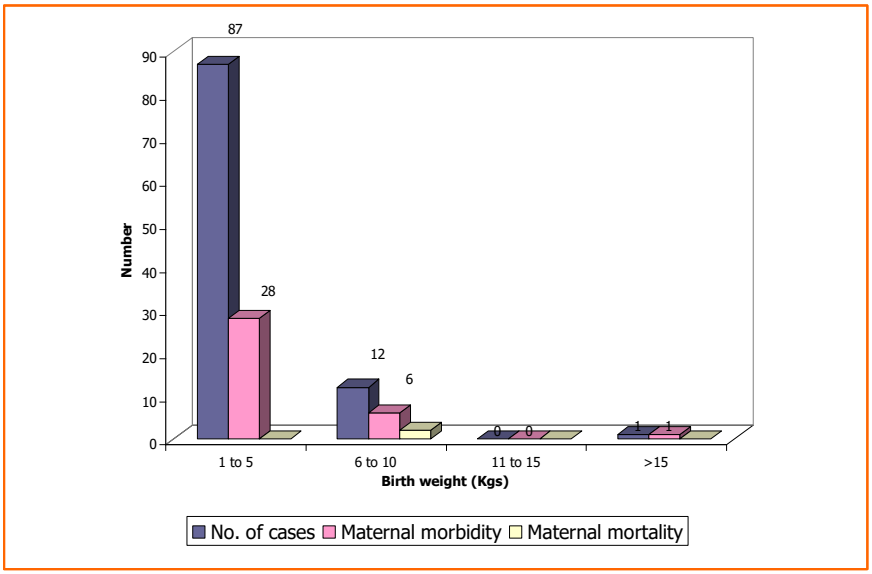


**Figure 7: No. of convulsions**

- In the study population, 87% cases had 1-5 convulsions, 12% had 6-10 convulsions, 1% cases with >15 convulsions. Maternal complications increased with increasing number of convulsions, and 2 cases of maternal mortality seen with 6-10 convulsions.
- Coefficient of correlation r=+0.76,p<0.01, there is positive significant correlation between number of convulsions and maternal morbidity.

**Table 8: Maternal complications**

| Complications | No. of cases | Percentage |
|---|---|---|
| Grade-1 hypertensive retinopathy | 12 | 12.00 |
| Cerebral edema | 6 | 6.00 |
| Massive ascites | 3 | 3.00 |
| CVT | 3 | 3.00 |
| Deranged LFT | 3 | 3.00 |
| Grade-1 nephropathy | 3 | 3.00 |
| Postpartum hemorrhage | 3 | 3.00 |
| PRES | 4 | 4.00 |
| Pulmonary edema | 2 | 2.00 |
| Abruptio placenta | 1 | 1.00 |

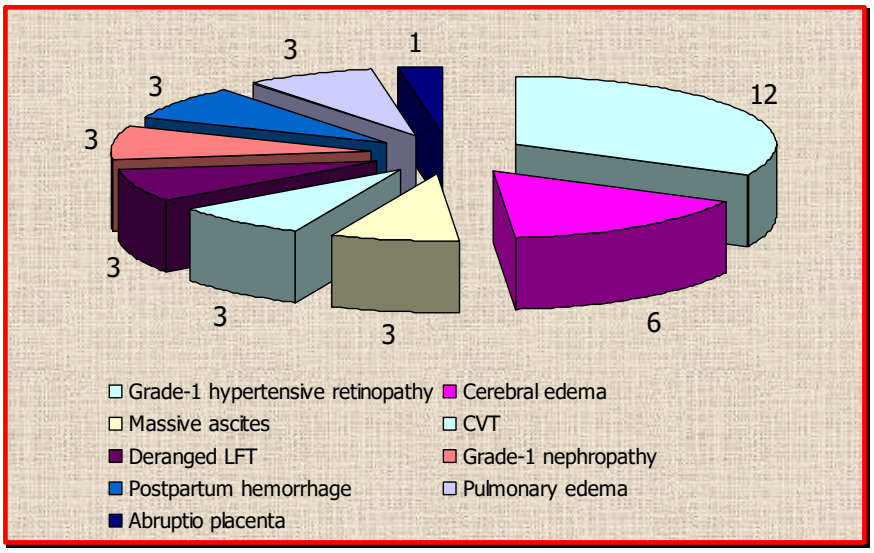


**Figure 8: Maternal complications**

In the study population, 37 cases had complications.

- Cases with grade 1 hypertensive retinopathy on fundoscopy were advised for repeat fundoscopy after 15 days.
- Cerebral oedema was treated with inj.mannitol 100ml 8$^{th}$ hourly until patient is conscious and oriented to time, place, person.
- Massive ascites was treated with potassium sparing diuretics(spironolactone)
- Cases of CVT are managed with low molecular weight heparin(inj enoxaparin 40mg) subcutaneously 12$^{th}$ hourly for 5 days followed by oral anticoagulants (acenocoumarol) for 6 months.
- Deranged LFT cases were followed with strict diet control (high calorie, high protein & low fat), inj vitamin K, FFP transfusion if needed.
- Grade 1 nephropathy cases were followed up with adequate fluid intake, strict fluid input output monitoring and RFT testing.
- Postpartum haemorhage was managed on medical line with oxytocin and PGF2α, PGE1.
- Posterior reversible encephalopathy syndrome(PRES)was adviced for followup CT Scan/ MRI.
- Pulmonary oedema was managed with propped up position, oxygen administration, restriction of intravenous fluids, diuretics (furesamide) 40-80 mg IV.
- In Case of abruptio placentae coagulation profile, fresh blood transfusion, termination of pregnancy was done.

**Table-9: Cause of death**

| Cause of death | No. of cases | Percentage |
|---|---|---|
| CVT | 1 | 50.00 |
| Pulmonary edema | 1 | 50.00 |
| Total | 2 | 100 |

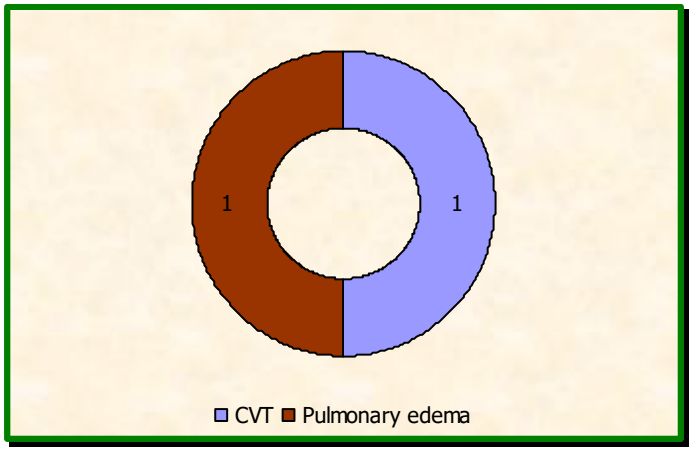


**Figure 9: Cause of death**

Out of 2 maternal deaths, 1 patient died of CVT and 1 patient of pulmonary edema.

Admission-death interval in patients died with CVT and pulmonary oedema was 49hrs and 18hrs respectively.

**Table 10: Perinatal Morbidity and Mortality**

| **Total number of cases** | **100** |
|---|---|
| Total number of babies | 108 |
| No. of live born | 92 |
| No. of cases with IUFD at admission | 5 |
| No. of fresh stillborn | 11 |
| No. of macerated stillborn | 0 |
| No. of early neonatal death | 13 |
| Total perinatal death | 5+11+13=24 |

Incidence of perinatal mortality =22.22%
Among 100 cases, there were 108 babies have been delivered,(there were 6 twins and 1 triplet).

**Table 11: NICU Stay**

| **Duration (days)** | **Alive** | **Dead** |
|---|---|---|
| <5 | 5 | 10 |
| 5-10 | 12 | 3 |
| >10 | 8 | 1 |
| Total | 28 | 13 |

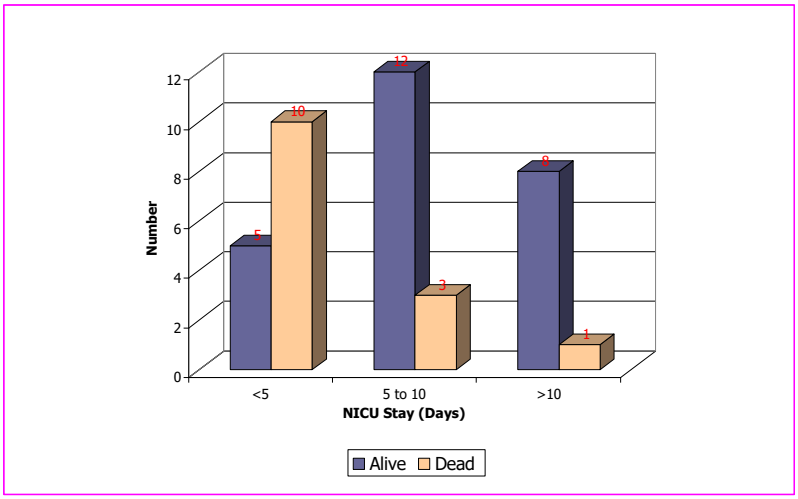


**Figure 10: NICU Stay**

In the study population, 41 live born had NICU admission.

**Table 12: Cause of early neonatal death**

| Causes of neonatal death | No. of cases | Percentage |
|---|---|---|
| Prematurity | 9 | 69.23 |
| Birth asphyxia | 3 | 23.07 |
| RDS | 1 | 7.67 |
| Total | 13 | 100.00 |

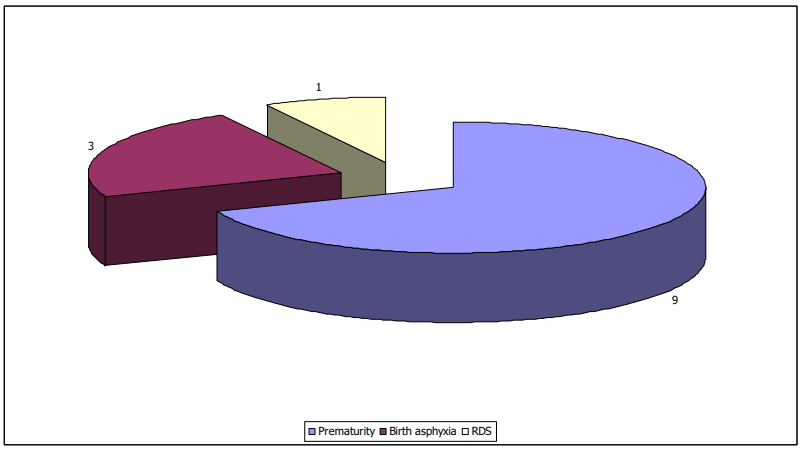


**Figure 11: Cause of neonatal death**

Out of 29 perinatal deaths, 13 were early neonatal deaths (44.8%), most common cause being prematurity (69.23%).

**Discussion**

The incidence of eclampsia and the total number of deaths from eclampsia have come down dramatically in developed countries. This has been achieved with improvements in prenatal care and management. The incidence and case fatality rate of eclampsia in developed countries is 0.4-0.5/1000 deliveries and 0-1.8% respectively. In India incidence is 0.18-4.6% and case fatality rate are 8-14%.

The purpose of this study is to know the maternal complications and fetal outcome in eclampsia and formulate strategies to improve outcome.

Below table-13 shows comparison of cases according to type of eclampsia of present study with other studies.

**Table 13: Comparison of cases according to type of eclampsia of present study with other studies.**

| | Anuja B et al (2010)[3] | K A Douglas et al (1994)[4] | Present study |
|---|---|---|---|
| Antepartum | 70.91% | 38% | 77% |
| Intrapartum | 18.81% | 18% | 14% |
| Postpartum | 10.91% | 44% | 9% |

In the present study 77% were antepartum, 9% were postpartum which is comparable to study conducted by Anuja B et al.

**Table 14: below shows comparison according to maternal age of the present study with other studies.**

| | Nadeem et al (2013)[5] | Aisha A et al (2010)[6] | Present study |
|---|---|---|---|
| 20-30 years | 84% | 47% | 87% |

Age distribution in the present study is comparable with that of study conducted by Nadeem et al.

**Table 15: Comparison according to ANC care of present study with other studies**

| | Nadeem et al (2013)[5] | Savita Rani et al (2009)[7] | Present study |
|---|---|---|---|
| Unbooked | 97% | 82% | 60% |

Unbooked cases in present study were 60% as compared to 97% & 82% in studies conducted by Nadeem et al and Savita Rani et al respectively.

**Table 16: Comparison according to demographic distribution of cases in present study with Savita Rani et al study**

| | Savita Rani et al (2009)[7] | Present study |
|---|---|---|
| Rural | 84% | 65% |
| Urban | 16% | 35% |

In present study 65% cases belonged to rural population compared to 84% in study by Savita Rani et al.

**Table 17: Comparison of parity distribution in present study with other studies**

| Parity | Savita Rani et al(2009)[7] | Nadeem et al(2013)[6] | Present study |
|---|---|---|---|
| P0 | 73% | 63% | 73% |
| P1 | 17% | 24% | 18% |

Parity in present study is comparable to studies by Savita Rani et al and Nadeem et al.

**Table 18: Comparison according to gestational age of present study with Nadeem et al study**

| Gestational age (weeks) | Nadeem et al (2013)[6] | Present study |
|---|---|---|
| 24-30 | 22% | 15.4% |
| 31-36 | 39% | 42.8% |
| 37-40 | 39% | 38.5% |
| >40 | -- | 3.3% |

Gestational age distributon in the present study is comparable with study by Nadeem et al. In present study 3.3% cases were more than 40 weeks as compared to 0 cases in Nadeem et al study.

**Table 19: Comparison of blood pressure at admission in the present study with KA Douglas et al study**

| Blood pressure (mmHg) | KA Douglas et al (1994)[4] | Present study |
|---|---|---|
| 110/80-138/88 | 47% | 27% |
| 140/90-160/100 | 34% | 51% |
| >160/100 | 19% | 22% |

In present study majority(51%) cases had blood pressure of 140/90-160/100 as compared to 34% in study conducted by K A Douglas et al.

**Table 20: Comparison of premonitory symptoms & signs in present study with other studies**

| | Nadeem et al (2013)[6] | KA Douglas et al (1994)[4] | Present study |
|---|---|---|---|
| Headache | 100% | 50% | 85% |
| Vomiting | 98% | -- | 71% |
| Blurring of vision | 100% | 19% | 8% |
| Antenatal diagnosed hypertension | -- | 22% | 23% |

Antenatal diagnosed hypertension in present study is comparable with that of KA Douglas et al study.

**Table 21: Comparison of various complications in present study with studies done by Savita Rani et al, Tabassum et al and Saima Gilani et al.**

| Complications | SavitaRani et al (2009)[7] (%) | Tabassum et al (2010)[8] (%) | SaimaGilani et al (2000)[9] (%) | Present study (%) |
|---|---|---|---|---|
| Abruptio-placentae | 11 | 11.7 | - | 1 |
| PPH | 31 | 23.5 | - | 3 |
| Renal complications | 9 | 29.4 | 6.66 | 3 |
| Pulmonary oedema | 8 | - | 20 | 2 |
| Cerebral oedema | - | 23.5 | - | 6 |
| CVT | - | 23.5 | - | 3 |
| Deranged LFT | - | - | 6.66 | 3 |
| HELLP | 2 | 11.7 | 3.33 | - |
| Hypertensive changes on fundoscopy | 3 | - | - | 12 |
| Mortality | 8 | 14.7 | 16.6 | 2 |

The complication and mortality rate in present study is much lower than other studies.

In the present study cause of maternal mortality is pulmonary oedema and CVT, it is comparable with other study where the major cause of mortality is pulmonary oedema and cerebrovascular accident in eclampsia.

Below table-22 compares the fetal complications in the present study with the Savita Rani et al study.

| | Savita Rani et al (2009)[7] | Present study |
|---|---|---|
| Preterm | 67.33% | 66.66% |
| IUD | 28.57% | 4.62% |
| NICU admission | 28.57% | 37.96% |
| Perinatal mortality | 36.73% | 22.22% |
| Birth weight <2.5 kg | 71.43% | 78.70% |

Perinatal mortality in present study is 22.22% and it is 36.73% in Savita Rani et al study. Prematurity was the leading cause for perinatal mortality in both the studies.

## Conclusion

Eclampsia is still a major threat to the pregnant woman. Maternal mortality is high in eclamptic mothers and accompanies increased risk of complications. Perinatal mortality is a commonly observed phenomenon in eclamptic patients.

In present study poor antenatal care, young nulliparous women, rural population with poor awareness and referral facilities, proteinuric hypertension are frequent. Prematurity is the main culprit for high fetal mortality and morbidity.

Eclampsia is a preventable condition provided regular antenatal checkup, awareness of disease, early diagnosis of imminent symptoms and signs with good peripheral referral facilities with first aid management at the periphery, proper transport facilities are available.

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