

Maternal Complications and Foetal Outcome in Eclampsia**Asharani Kanaki¹, Soumya R Patil², Anita Goura³, Anuja Sagamkunti⁴**^{1,2,3,4}Assistant Professor, Dept. of OBG, Mahadevappa Rampure Medical College, Klb

Received: 06-08-2023 / Revised: 08-09-2023 / Accepted: 15-09-2023

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Conflict of interest: Nil

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 done between November 2013 to May 2015, 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. This study was conducted in Basaveshwar Teaching & General Hospital and Sangameshwar Hospital, Kalaburagi both attached to M.R. Medical College, Kalaburagi.

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.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**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 lightning”.

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 mortality worldwide. Maternal mortality 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 world³. Maternal mortality according to various Indian authors is 8-14%[3].

Following eclampsia, the risk of problems in future pregnancies have been estimated at around 2% for recurrent eclampsia[4].

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[5]. Unfortunately such changes have not

occurred in developing countries and eclampsia continues to be common.[6]

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.[7]

Materials and Methods

A total number of 100 cases of Eclampsia admitted in Department of Obstetrics &Gynaecology at Basveshwar and Sangameshwar Teaching & General Hospital, attached to M.R.Medical College, Kalaburagi during the period from November 2013 to May 2015.

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

Total number of deliveries in Basveshwar & Sangmeshwar Teaching & General Hospital from November 2013 to May 2015 = 5772.

Total number of eclampsia admitted from November 2013 to May 2015=148

- 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

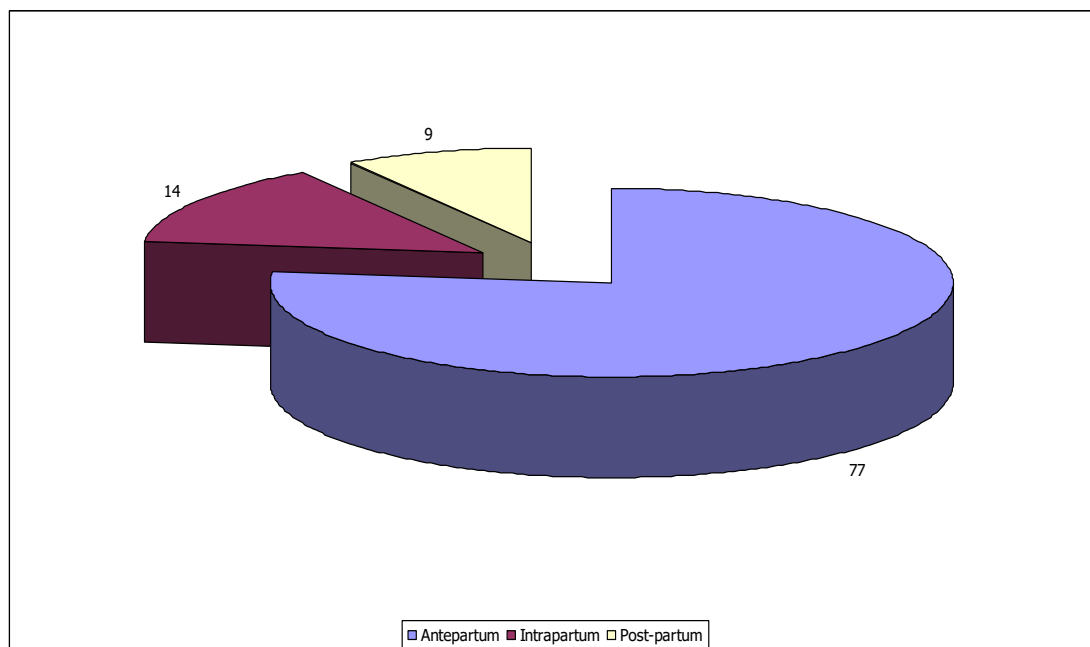


Figure 1: Distribution of cases according to type of eclampsia

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

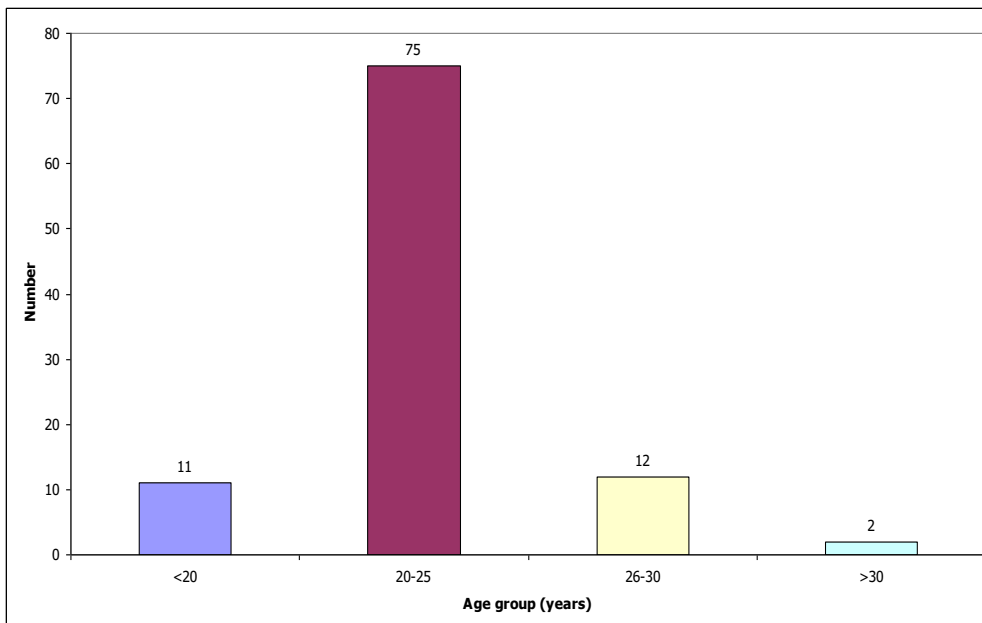


Figure 2: Age wise Distribution of cases

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
Unbooked	60	60.00
Total	100	100.00

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

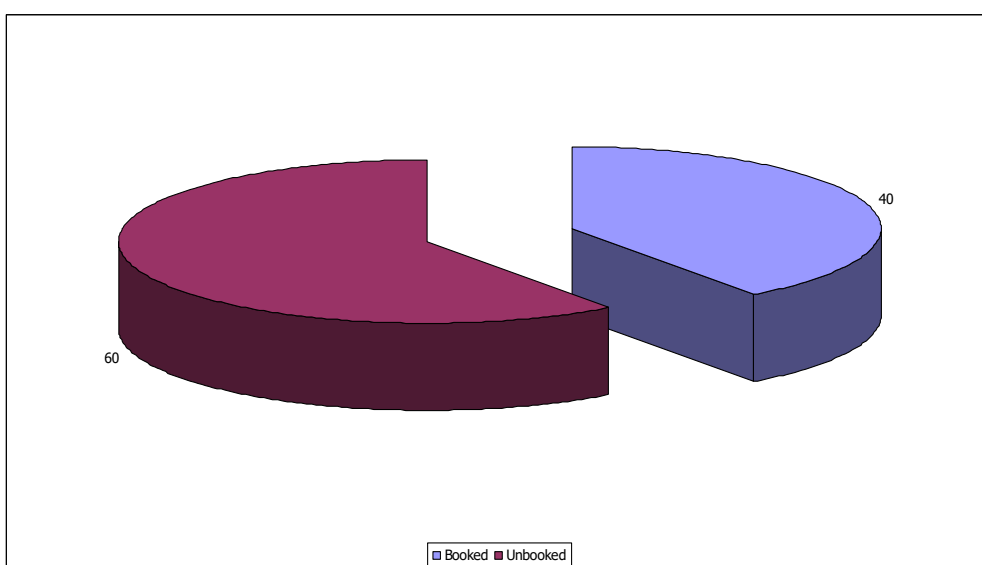


Figure 3: Distribution of cases according to antenatal care

Table 4: Demographic Distribution

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

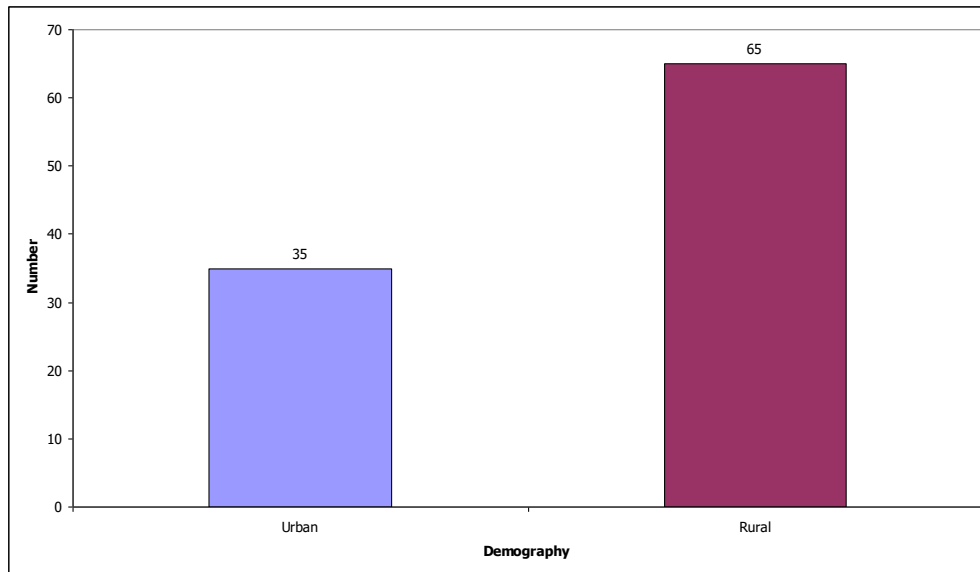


Figure 4: Demographic Distribution

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

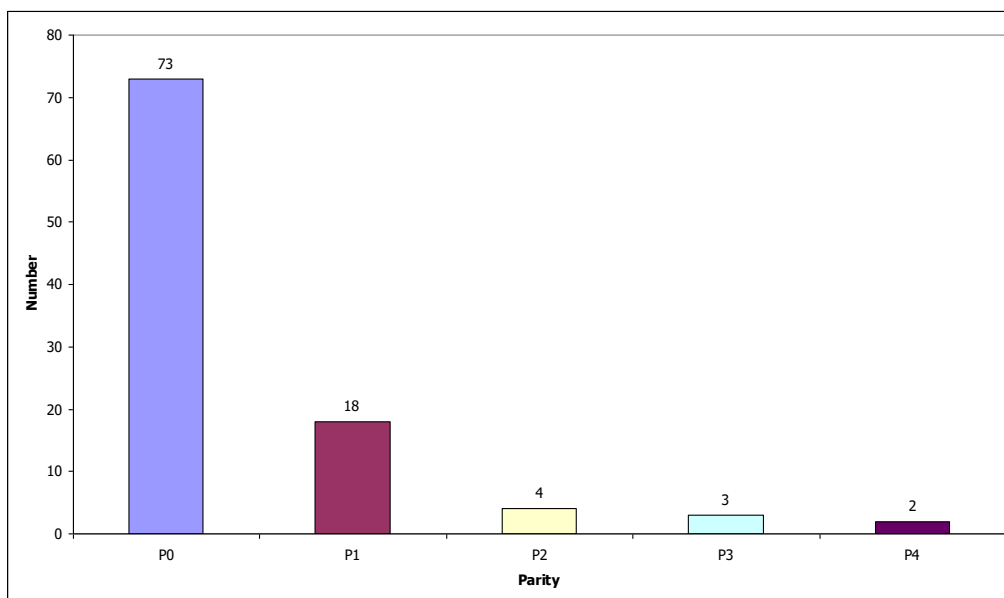


Figure 5: Distribution of cases according to parity

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

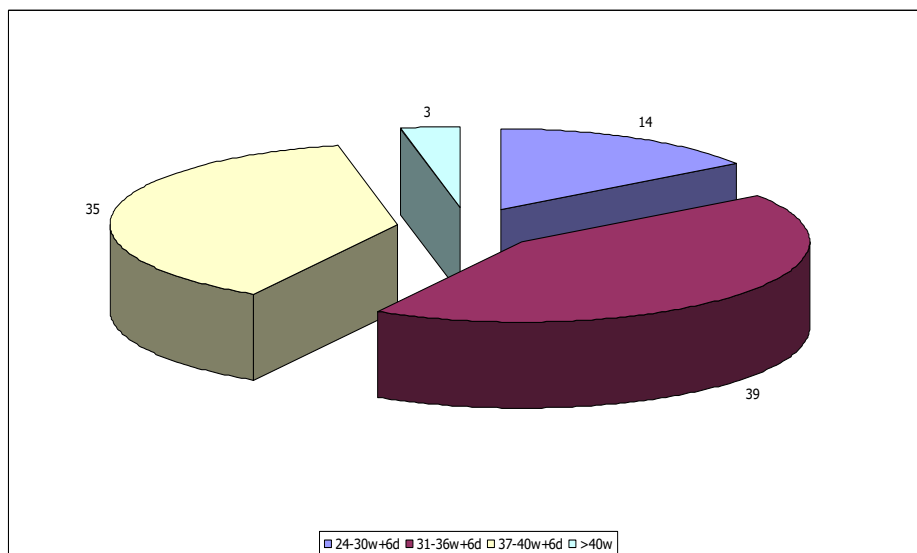


Figure 6: Gestational age wise distribution

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		

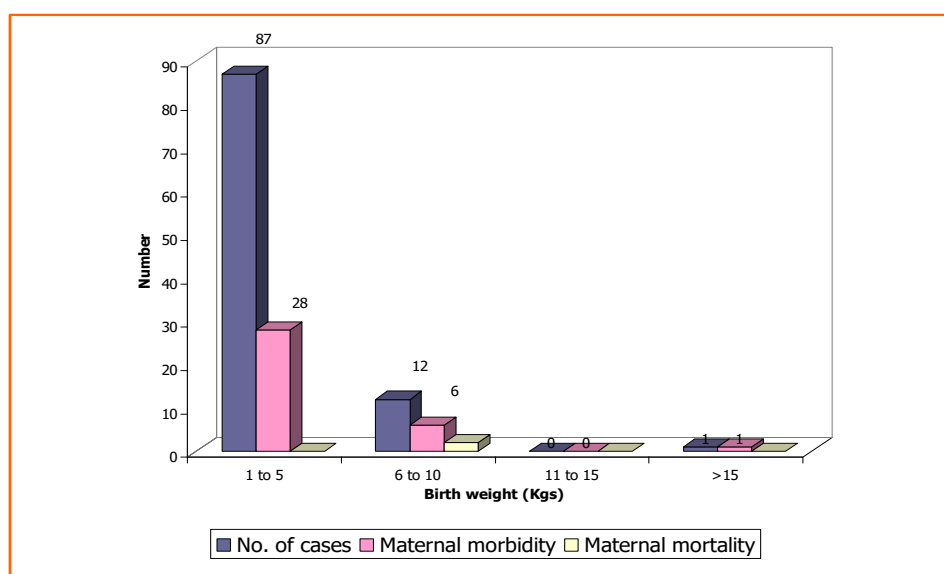


Figure 7: No. of convulsions

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

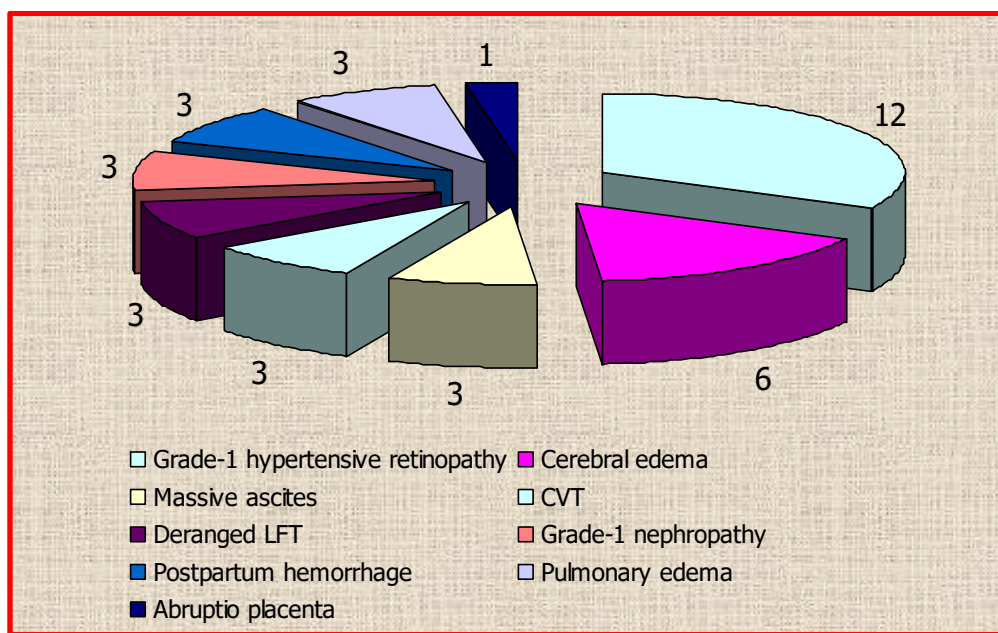


Figure 8: Maternal complications

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 8th 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 12th 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 haemorrhage was managed on medical line with oxytocin and PGF2 α , PGE1.
- Posterior reversible encephalopathy syndrome (PRES) were advised 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

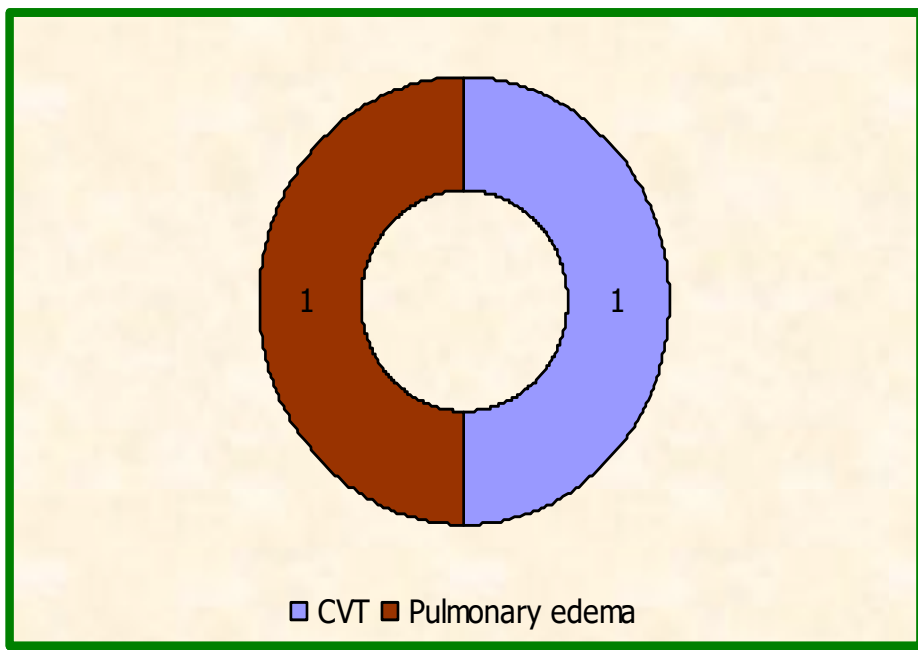


Figure 9: Cause of death

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

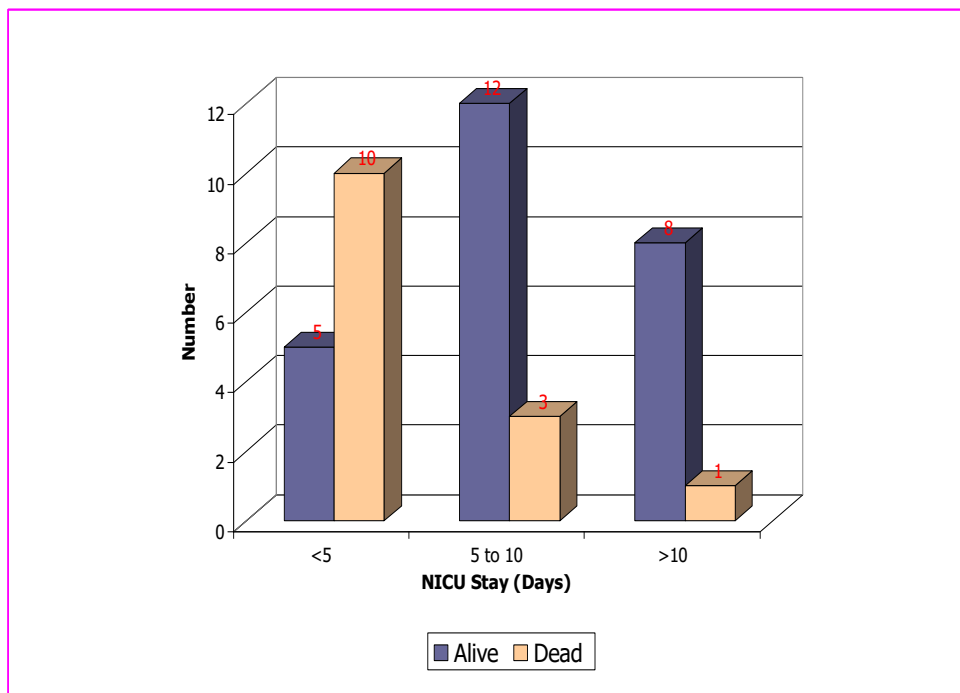


Figure 10: NICU Stay

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

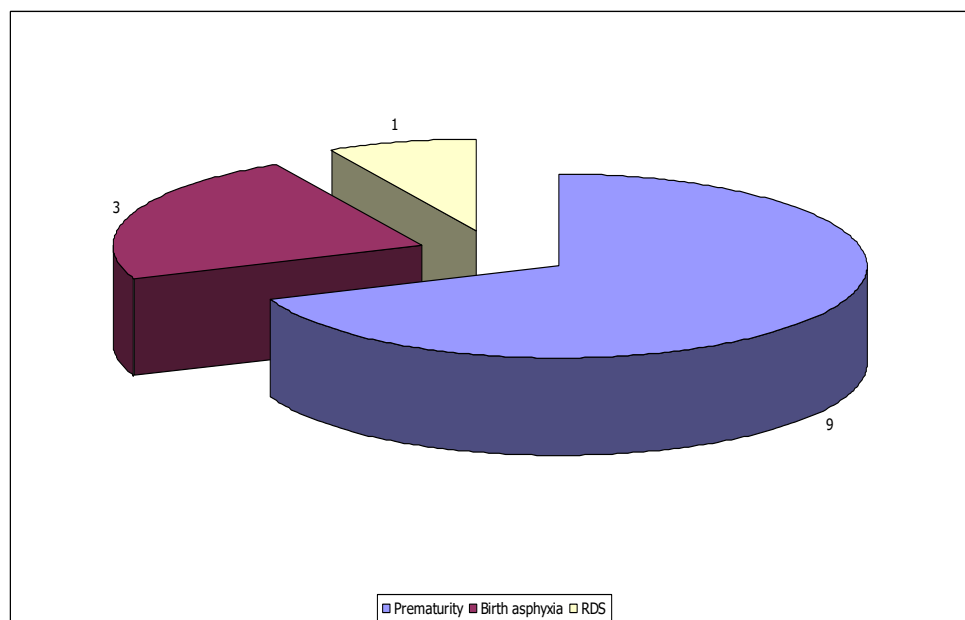


Figure 11: Cause of neonatal death

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 is 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.

	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	SavitaRani 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 distribution 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

Bloodpressure (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: shows comparison of various complications in present study with studies done by Savita Rani et al, Tabassum et al and Saima Gilani et al.

Complications	Savita Rani et al (2009) ⁷ (%)	Tabassum et al (2010) ⁸ (%)	Saima Gilani 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 funduscopy	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.

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.

References

1. Walfisch A, Mordechai H. Hypertension. In: James DK, Steer PJ, Weiner CP, Gonik B, eds. High risk pregnancy, management options. 3rd Ed. New Delhi: Elsevier. 2006; p: 772-97.
2. Chesley LC. Hypertensive disorders in pregnancy. New York: Appleton Century Crofts 1978; p2.
3. Anuja Bhalerao et al. Eclampsia: Maternal and Fetal Outcome. Journal of South Asian Federation of Obstetrics & Gynaecology. Jan-Apr 2013; 5(1): 19-21.
4. Arup Kumar Majhi, Partha Sarathi Chakraborty, Asima Mukhopadhyay. Eclampsia – present scenario in a referral medical college hospital. J Obstet Gynaecol India. 2001; 51(3): 143-47
5. Aisha Abdullah, Altaf Ahmed Shaikh, Bahawaldin Jamro. Maternal and perinatal outcome

- associated with eclampsia in a teaching hospital, Sukkur
6. Nadeem Shahzad, Uzma Yaqoob, Asif Hanif. Feto-maternal outcome in patients with eclampsia at a tertiary care hospital. J Med Assoc Thai. Aug 1998; 81(8) 579-85
 7. Savita Rani Singhal, Deepika, Anshu, Smiti Nanda. Maternal and Perinatal Outcome in Severe Pre-Eclampsia and Eclampsia. South Asian Federation of Obstetrics & Gynecology, Sept-Dec. 2009; 1(3): 25-28
 8. Tabassum N, Umber A, Khan S. Eclampsia: A Major Cause of Feto-maternal Mortality and Morbidity. Annals. Sept. 2010; 16 (3): 202-205.
 9. Saima Gilani and Lubna Hussan. Eclampsia a major cause of maternal mortality. JPMI. 16(1): 97-102.