

# Modes of Death in Eclampsia in Malda Medical College - A Three Years Retrospective Study

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## ABSTRACT

### BACKGROUND

Eclampsia is a life-threatening emergency & requires proper treatment to decrease maternal morbidity & mortality. We wanted to determine the incidence of maternal mortality associated with eclampsia, modes of death in eclampsia & demographic profile of women influencing the maternal death.

### METHODS

This retrospective longitudinal study was done in the Department of Obstetrics & Gynaecology of Malda Medical College & Hospital for a period of three years from 1<sup>st</sup> January, 2017 to 31<sup>st</sup> December, 2019. Total maternal deaths during this period was 186 & total eclampsia deaths during this period was 62. Records of death & demographic profiles were retrieved from the Medical Record Library of aforementioned hospital.

### RESULTS

Eclampsia accounted for 33.33% of total maternal deaths (186) with a case fatality rate of 4.092%. Commonest mode of death in eclampsia is pulmonary oedema. Eclampsia death commonly occurs in younger age & in primigravida. Eclampsia death is also common in unbooked & lower socioeconomic status. Antepartum eclampsia contributes to most of the eclamptic deaths.

### CONCLUSIONS

Eclampsia still remains the major cause of maternal death in India in unbooked & unsupervised pregnancies & deliveries. Hence, regular antenatal check-up, strict vigilance & appropriate treatment during deliveries may reduce maternal deaths in eclampsia.

### KEYWORDS

Antepartum Eclampsia, Case Fatality, Mortality, Pulmonary Oedema

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**BACKGROUND**

Eclampsia is a life-threatening emergency & requires proper treatment to decrease maternal morbidity & mortality. Eclampsia which is considered a complication of severe preeclampsia is commonly defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum period in a woman with signs or symptoms of preeclampsia.<sup>1,2</sup> It typically occurs after 20 wks. of pregnancy or in the postpartum period. Eclampsia & preeclampsia account for approximately 63,000 maternal death annually worldwide.<sup>3</sup> In developed countries the maternal death rate in eclampsia 0-1.8%. The maternal mortality in eclampsia is as high as 14% in developing countries.<sup>4,5</sup> Eclampsia usually occurs after 36 weeks of pregnancy & there are several treatment regimens for convulsion in eclampsia but the Drug of Choice to treat & prevent eclampsia is Magnesium Sulphate.<sup>6,7</sup> Major complications of eclampsia include placental abruption, aspiration pneumonia, pulmonary edema, CVA, HELLP syndrome, Renal failure, DIC, Pulmonary embolism, Hepatic failure & PRES. In developed countries with effective antenatal screening program, improved diagnostic & therapeutic care and with extensive resources this disease has become a rare complication of pregnancy. Unfortunately, such changes have not occurred in developing countries like India & eclampsia still continues to be common.<sup>8</sup> Malda is a poor district of West Bengal & drainage areas of this medical college are Jharkhand, Bihar, some other districts of West Bengal like Murshidabad, North Dinajpur & South Dinajpur. Large number of eclampsia cases are admitted in our medical college in various shape. This study was conducted to assess the incidence of eclampsia related to maternal death, to assess mode of death in eclampsia & to determine demographic profile of women influencing the maternal death.

**METHODS**

This retrospective longitudinal study was done in the dept. of G & O of Malda Medical College & Hospital for a period of three years from 1<sup>st</sup> January, 2017 to 31<sup>st</sup> December, 2019. Total maternal death during this period was 186 & total eclamptic death was 62 during that period. Data were collected from Medical Records Library of Malda Medical College & Hospital. Information pertaining to their age, parity, booking status, gestational age at delivery & type of eclampsia were also obtained from the records for analysis. Total deliveries of aforesaid years were also collected from the record section. In this period all eclamptic cases were treated with Magnesium Sulphate.

**Exclusion Criteria**

1. The pregnant women with known seizure disorder e.g. Epilepsy, Cysticercosis, Encephalitis, Uremic convulsions, Ruptured Cerebral Aneurysm.

2. Eclampsia mother who have not got magnesium sulphate.

**Statistical Analysis**

Data was analysed by SPSS version 11. Frequency & percentage were calculated for qualitative variable e.g. Incidence, CFR, age, parity, Socio economic status.

**RESULTS**

We studied total 186 maternal death & total 62 eclamptic death in consecutive three years from 1<sup>st</sup> January, 2017 to 31<sup>st</sup> December, 2019. Table 1 shows eclampsia contributes to 33.33% of total maternal death. Delay in the referral leads to more no. of convulsions prior to admission & lead to increased no. of complications such as aspiration pneumonia, ARF, Pulmonary oedema, & cerebral haemorrhage which account for this high maternal mortality. In the current study, incidence of eclampsia was found to be 2.56% (Table 2). Our institute being a tertiary care centre resulting in higher referral rate would probably account for this high incidence of eclampsia. Majority of the patients belong to the age group 18-26 years (85.48%) & were primi gravida (70.96%) (Table 5, 6). This study supports the hypothesis that it is a disease of young mothers. The current study shows that pulmonary oedema is the commonest mode of death (Table 3). Incidence of pulmonary oedema is higher in eclampsia due to leaky pulmonary capillaries. In our set up due to lack of intensive care monitoring, poorly monitored fluid therapy due to lack of Central Venous Pressure (CVP) monitoring & Pulmonary Capillary Wedge Pressure (PCWP) monitoring. Other causes of pulmonary oedema are left ventricular failure (LVF) from increased after load that results from severe hypertension & aspiration pneumonitis from gastric contents inhalation during vomiting that frequently accompanies convulsions. Table 7 & 8 shows that eclampsia commonly occurs in unbooked cases & lower socio-economic status. In lower SE status, patient having poor awareness for antenatal care & economic constraint to visit antenatal clinic (ANC).

	2017	2018	2019	Total Deaths during Three Year Period
Maternal death	65	63	58	186
Eclampsia death	22	21	19	62
Contribution to maternal death due to eclampsia	33.84%	33.335	32.75%	33.33%

**Table 1. Incidence of Maternal Mortality Due to Eclampsia**

Year	Total No. of Deliveries (n)	Total No. of Eclamptic Patient (m)	Eclamptic Death (p)	Incidence of Eclampsia (I) (m/n)%	CFR (p/m%)
2017	18533	511	22	2.75	4.305
2018	18829	503	21	2.671	4.174
2019	19521	501	19	2.566	3.79
Total	56883	1515	62	2.663	4.092

**Table 2. Incidence Of Eclampsia & Case Fatality Rate (CFR) Among Eclamptic Mother**

Year	Pulmonary Oedema	CVA	HELLP Syndrome	AKI	MOF
2017	13	5	2	1	1
2018	12	6	0	2	1
2019	11	5	2	1	0

**Table 3. Mode of Death in Eclampsia**

Types	2017	2018	2019	Total During Study Period	%
Antepartum	16	14	13	43	69.35%
Intrapartum	2	1	2	5	8.06%
Postpartum	4	6	4	14	22.580%

**Table 4. Types of Eclampsia in Mother Who Died (Total 62 in Three Years)**

Parity	2017	2018	2019	Total during Study Period
Primi gravida	16	15	13	44
2 <sup>nd</sup> gravida	4	4	4	12
3 <sup>rd</sup> gravida	2	2	2	6

**Table 5. Parity Status in Eclamptic Mother Who Died (Total 62 in Three Years)**

Age in Years	2017	2018	2019	Total During Study Period
18-22	13	12	11	36
23-26	6	6	5	17
27-29	2	2	2	6
30-35	1	1	1	3

**Table 6. Age Distribution in Eclamptic Mothers Who Died (Total 62 in Three Years)**

Booking Status	2017	2018	2019	Total During Study Period
Booked	5	8		20
Un booked	17	14	11	42

**Table 7. Booking Status in Eclamptic Death (Total 62 in Three Years)**

SE Status	2017	2018	2019	Total During Study Period
High	2	2	1	5
Middle	4	3	3	10
Low	16	16	15	47

**Table 8. Socio-economic (SE) Status in Eclamptic Death (Total 62 in Three Years)**

## DISCUSSION

Eclampsia is multi organ disease which is unique to human pregnancy & associated with significant maternal morbidity & mortality throughout the world. Previously obstetric haemorrhage was the major cause of maternal mortality in India in primary, secondary & tertiary care set up, but recently paradigm shift in the pattern of maternal mortality has been observed in tertiary health care set up like medical colleges. In our study, it is observed that eclampsia contributes 33.33% (Table 1) of all maternal death whereas eclampsia causes 12% of all global maternal death.<sup>9</sup> Decreased incidence of maternal death from obstetric haemorrhage probably due to better facility to control bleeding in tertiary health care set up by availability of oxytocin, methyl ergometrine, prostaglandin & timely surgical interventions.

In our study, eclampsia incidence 2.56% with CFR 4.09% was observed. (Table 2). Eclampsia incidence is similar to other Indian studies.<sup>10,11,12</sup> CFR is of low figure than other studies.<sup>13,14</sup> This low CFR in our study is due to intensive care during delivery & routine use of magnesium sulphate. There is suggestion that prenatal care could have played a role in the reduction of eclampsia in the developed world but there is no convincing evidence to support this view especially considering the no of booked cases who

developed eclampsia under medical supervision. While reviewing the mode of death in eclampsia it was observed that Pulmonary oedema is the commonest cause of eclamptic death in our study (Table 3). Lack of ventilatory support is important cause of maternal death is pulmonary oedema in our study. Other causes are LVF & poor fluid monitoring. In UK, the commonest cause of death in eclampsia is CVA.<sup>15</sup> These are different from our study. The majority of death was in Antepartum Period in our study (Table 4) & this is comparable to other Indian study.<sup>10,16</sup> The antepartum eclampsia death is mainly due to late referral, poor antenatal check-up & transfer of moribund patients just before death to the tertiary hospital. In more recent years, the incidence of postpartum eclampsia has declined. This is presumably related to improved access related to prenatal care, earlier detection of antepartum preeclampsia & prophylactic use of magnesium sulfate.<sup>17</sup> In the present study, it is observed that eclampsia more commonly occurs in younger age group & in primi gravida compared to elderly & multigravida mothers (Table 5 & 6). This is comparable to other studies in India.<sup>12,16,18</sup>

## CONCLUSIONS

Eclampsia is an ongoing challenge for the whole medical community, the root of which is illiteracy, poverty & poorly implemented health system. Eclampsia is associated with significant maternal morbidity & mortality. The higher mortality is due to high percentage of patients being unbooked & majority receiving no therapeutic interventions until admission. To combat this major health problem, drastic changes are needed which require active participation of the community, government & non-governmental organizations, doctors & nurses for developing various strategies addressing health education of the community, provision of proper antenatal care to all pregnant women by implementation of mother & child health care system, and proper training of medical staff regarding emergency care of eclampsia. Most important is timely & early referral to the tertiary health care centre with use of magnesium sulphate protocol.

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