

# Outcome of Eclamptic Mothers Attending Tertiary Care Centre from Home and those Referred from Primary Health Care Site: A Comparative study

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## ABSTRACT:

**Introduction:** Magnesium sulphate ( $MgSO_4$ ) is an effective and safe drug which stabilizes the patient within few hours of eclampsia and terminates subsequent seizures if it is given on time. The aim of this study was to compare maternal and fetal outcome between a group of eclamptic mothers who came to the tertiary care hospital directly without receiving  $MgSO_4$  (Group 1) and those referred from primary care centers after receiving loading dose of  $MgSO_4$  (Group 2). **Methods:** This is a retrospective cohort study of eclamptic mothers who were admitted and managed from the period of 1<sup>st</sup> January 2012 to 31<sup>st</sup> March 2016 at Nepalgunj Medical College Teaching Hospital, Nepal. Sociodemographic characters and maternal and fetal outcome was compared between the two groups. **Results:** Among 92 cases, 57 (62%) were from Group 1 and 35 (38%) were from Group 2. Most of the mothers attended from Banke district ( $n=52$ , 56.5%) followed by Bardia district ( $n=17$ , 18.5%). Brahmin and Chhetri were 20 (35%) and 10 (29%); Muslim 16 (28%) and four (11%); Janajati from Terai 16 (28%) and eight (23%); Janajati from hilly region four (7%) and five (14%); and Chaudhari one (2%) and eight (23%) in Group 1 and Group 2 respectively. More ( $n=26$ , 74%) mothers had baby with good APGAR score in Group 2 than in Group 1 ( $n=33$ , 58%). There were 14 (15.2%) still births; nine (16%) in Group 1 and five (14%) in Group 2. Complication rate was observed more in Group 1 ( $n=16$ , 28%) than in Group 2 ( $n=7$ , 20%) and the most common complication in both groups was wound infection. The mean days of hospital stay was 5.96 ( $SD=3.32$ ) and 5.91 ( $SD=3.38$ ) in Group 1 and Group 2 respectively. **Conclusion:** The group receiving magnesium sulphate in primary care centre have good fetal outcome and less maternal complications compared to those who were admitted directly in tertiary care centre and receive the treatment there.

**Keywords:** eclampsia • magnesium sulphate • seizure • treatment outcome

## INTRODUCTION:

Eclampsia alone accounts for 30% of maternal deaths in Nepal.<sup>1</sup> The challenge behind it is

the prevention and early detection of pre-eclamptic state in an antenatal mother. The management depends on the maternal conditions, gestational age, fetal wellbeing, cervical status and previous obstetric history. Foremost management approach is stabilization of an eclamptic mother and termination of the seizures and pregnancy. Magnesium sulphate ( $MgSO_4$ ) is an effective and safe drug which stabilizes the patient within few hours of eclampsia and controls subsequent seizures if given on time.<sup>2</sup>

It is of utmost help if it can be given as soon as seizure develops. The number of seizures is one of the strongest determinants of poor fetomaternal outcomes.<sup>3</sup> A hospital study found that the majority of women had the first fit at home (70.21%), whereas

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approximately one fourth of them had it while already in the hospital (25.53%).<sup>4</sup>

Ministry of Health, Nepal, has made the provision of availability of MgSO<sub>4</sub> in primary health care centre. Although there are different barriers in health care systems for the availability and utilization of magnesium sulfate for eclampsia,<sup>5</sup> we have assumed that the eclamptic patients who are referred from primary care centre after receiving loading dose of MgSO<sub>4</sub> on time i.e. immediately after first fit have better maternal and fetal outcomes than those patients who are brought directly to the referral centre without MgSO<sub>4</sub> treatment. So the objective of this study was to compare the fetomaternal outcomes between these two groups.

**METHODS:**

This is a retrospective cohort study of eclamptic mothers who were admitted and managed at Nepalgunj Medical College Teaching Hospital (NGMCTH) which is a tertiary care hospital situated in Nepalgunj City in western Nepal. Patients from the districts of mid and far western region of the country are referred to this hospital for tertiary care. This hospital has well equipped intensive care facility for the management of obstetric emergencies.

Ethical approval and clearance were taken from hospital administration of NGMCTH and secondary data of all patients with eclampsia were collected from the period of 1<sup>st</sup> January 2012 to 31<sup>st</sup> March 2016. The eclamptic mothers who delivered in the hospital were included in this study. Cases of postpartum eclampsia were excluded from the study. These cases were divided into two groups. Group 1 was a group of eclamptic mothers who came to the tertiary care hospital without receiving MgSO<sub>4</sub>. Group 2 consisted of referred cases from primary care centers after receiving a loading dose of MgSO<sub>4</sub>.

Sociodemographic characters and maternal and fetal outcomes were compared between the two groups. The following variables were recorded: age, date and time of admission, referral card and details, address, gestational age, date, time and place of administration of loading dose of MgSO<sub>4</sub> and the completion of its maintenance dose. Mode and time of delivery, APGAR score, birth weight and maternal and fetal morbidity and mortality were also recorded.

Data were tabulated and analyzed using IBM SPSS 20. Correlations of the variables were observed. A 95% confidence interval and *p* value of

<0.05 were considered as statistically significant. A chi-square test, Fisher exact test, and t-test were used to compare proportions and mean.

**RESULTS:**

Patient’s characteristics: Among 92 cases, 57 (62%) were brought directly in the tertiary care hospital (Group 1) and 35 (38%) were brought from a primary care center (Group 2). Group 1 received MgSO<sub>4</sub> only after they reached the hospital. Thirty five (38%) patients were referred with a referral note from the primary care centre after receiving loading dose of MgSO<sub>4</sub>. The mean age of all patients was 20.79 yr (*SD*=3.3). The most common age group was 20-24 yr (*n*=32, 56% and *n*=21, 60%) followed by the age group 15-19 yr (*n*=19, 33% and *n*=8, 23%) in group 1 and group 2 respectively. There were no significant differences between the two cohorts regarding age, gestational age, and mode of delivery (Table 1). The mean gestational age was 37.2 yr (*SD*=2.2) and 37.2 yr (*SD*=2.1) in Group 1 and Group 2 respectively.

Table 2 shows the frequency distribution of cases in each group according to the district from where they were brought. Most patients were from Banke district followed by Bardia district.

By ethnic group, Brahmin and Chhetri together were 20 (35%) and 10 (29%); Muslim were 16 (28%) and four (11%); Janajati from Terai were 16 (28%) and eight (23%); Janajati from hilly region were four (7%) and five (14%); and Chaudhari were one (2%) and eight (23%) in Group 1 and Group 2 respectively.

The most common gravidity of

Table 1. Distribution of characteristics of eclamptic mothers

| Variables             | Group One    | Group Two    |  |
|-----------------------|--------------|--------------|--|
| Maternal Age (years)  | <i>n</i> (%) | <i>n</i> (%) |  |
| 15-25                 | 19(33)       | 8(23)        | <i>X</i> <sup>2</sup> =1.6<br>df=2<br><i>p</i> =0.46 |
| 20-24                 | 32(56)       | 21(60)       |  |
| 25-Above              | 6(11)        | 6(17)        |  |
| Gestational Age       |              |              |  |
| <37                   | 25(44)       | 10(29)       | <i>X</i> <sup>2</sup> =2.2<br>df=1<br><i>p</i> =0.19 |
| ≥37                   | 32(56)       | 25(71)       |  |
| Mode of Delivery      |              |              |  |
| Vaginal delivery      | 9(16)        | 5(14)        | <i>p</i> =1<br>FET                                   |
| Instrumental delivery | 4(7)         | 2(6)         |  |
| CS                    | 44(77)       | 28(80)       |  |

Table 2: Distribution of Eclamptic patients according to address.

| Districts    | Group 1<br>n (%) | Group 2<br>n (%) |
|--------------|------------------|------------------|
| Banke        | 45 (79)          | 7 (20)           |
| Bardiya      | 3 (5.3)          | 14 (40)          |
| Kailali      | 3 (5.3)          | 5 (14)           |
| Dang         | 3 (5.3)          | 5 (14)           |
| Salyan       | 0                | 2 (6)            |
| Others       | 3 (5.3)          | 2 (6)            |
| <b>Total</b> | <b>57(100)</b>   | <b>35 (100)</b>  |

eclamptic mothers was primary gravida ( $n=44$ , 77.1% and  $n=26$ , 74.2% in Group 1 and two respectively). The other mothers in each group were multi gravida and the difference was statistically not significant ( $X^2=0.1$ ,  $df=1$ ,  $p=0.8$ ).

The most common ( $n=72$ , 78.3%) mode of delivery in eclamptic mothers was caesarean section (CS). Among them, 44 (61.1%) mothers underwent CS in Group 1 and 28 (38.8%) in Group 2. There was no significant difference in mode of delivery between the two groups ( $X^2=0.1$ ,  $df=1$ ,  $p=0.8$ ).

There were 13 (14.1%) still births. Most of them ( $n=8$ , 61.5%) belonged to Group 1. The live birth rate in the two groups was 49 (86%) and 30 (86%) respectively and the difference was not statistically significant.

Table 3 shows that approximately 74% of mothers had a baby with good APGAR score in Group 2 compared to one (58%) in Group 1. Maternal outcome, as live, was observed in 56 (98.3%) and 34 (97%) in Group 1 and Group 2 respectively. There was one maternal death in each group. No significant difference was observed maternal mortality in both the groups.

Table 4 shows that the maternal complication rate was observed more in Group 1 ( $n=16$ , 28%) than in Group 2 ( $n=7$ , 20%). though not statistically significant ( $X^2=0.75$ ,  $df=1$ ,  $p=0.46$ ). The most common complication was wound infection in both groups.

The mean days of hospital stay were 5.96 days ( $SD=3.32$ ) and 5.91 days ( $SD=3.38$ ) in Group 1 and Group 2 respectively. No significant difference was observed in terms of hospital stay in the two groups ( $t=.07$ ,  $df=90$ ,  $p=0.94$ ).

## DISCUSSION:

Eclamptic mothers attending tertiary care centre directly from home (Group 1) were higher

in number ( $n=57$ , 62%) than referral group ( $n=35$ , 38%). Amongst them, most cases attended from Banke district. Banke and Bardia are home and neighboring districts respectively from tertiary care centre. It shows that high prevalence of eclampsia diseases occurs in Banke district. Preventive as well as early detection campaign is needed in those districts as an outreach antenatal care program.

Most of the mother with eclampsia from Muslim and Janajati community in Bake and Bardia districts were admitted directly in tertiary care centre. It may be due to unavailability of the primary care centre or simply the ignorance and unawareness of primary facilities available in the community.

Table 3: APGAR score according to the admission status

| Variables        | Group I<br>n (%) | Group II<br>n (%) | P       |
|------------------|------------------|-------------------|---------|
| APGAR score      |                  |                   |         |
| 0                | 9(16)            | 5(14)             |         |
| 1-3              | 0(0)             | 1(3)              |         |
| 4-6              | 15(26)           | 3(9)              |         |
| >7               | 33(58)           | 26(74)            |         |
| Maternal outcome |                  |                   |         |
| Live             | 56(98.3)         | 34(97)            | $p = 1$ |
| Death            | 1(1.7)           | 1(3)              | FET     |

Table 4: Maternal complications according to the admission status

| Maternal Complications                | Group I<br>n (%) | Group 2<br>n (%) |
|---------------------------------------|------------------|------------------|
| Present                               | 16(28)           | 7(20)            |
| Postpartum Hemorrhage                 | 6(10)            | 2(6)             |
| Wound infection                       | 8(14)            | 3(8)             |
| Pulmonary Edema / Respiratory failure | 1(2)             | 2(6)             |
| Acute renal failure                   | 1(2)             | 0                |
| Absent                                | 41(72)           | 28(80)           |

The rate of still birth was observed more in Group 1 than in Group 2. The still birth rate is slightly higher compared to the findings in Ethiopia by Eshetu S. et al.<sup>6</sup> Out of 14 still births, 7 (53.8%) were from Banke district from where majority of mother attended hospital directly from home for the treatment of eclampsia.

CS was the commonest mode of delivery in both the groups, 44 (77.1%) mothers underwent CS in Group 1 and 28 (80%) in Group 2 respectively.

The CS rate was slightly higher in Group 2 and the overall CS rate is high compared to the CS rate of 45.8% among eclampsia patients in one of the retrospective study done by Abate M. et al.<sup>7</sup> There was no significant difference in the mode of delivery in both groups ( $p=0.79$ ). The mode of delivery did not differ in patients who received  $MgSO_4$ . If immediate caesarean delivery is conducted, the maternal and fetal outcome is good in eclampsia.<sup>8</sup>

Approximately 74.2% of mothers had a baby with good APGAR score in group 2 compared to that in group 1 (57.8%). There were 14 (15.2%) still births in total and majority of them ( $n=9$ , 61.5%) were from Group 1. This suggests that the mothers who attended the hospital directly were probably unable to receive  $MgSO_4$  in time, so the better fetal outcome was observed in referred mothers.

Complication rate was observed more in Group 1 (28%) than in Group 2 (20%). The case fatality rate collectively in both groups was observed at 17.3% which is higher compared to the tertiary

care hospitals in Tanzania (7.7%).<sup>9,10</sup>

We recommend encouragement and promotion of the use of  $MgSO_4$  in a primary care centre, especially in Banke and Bardia districts, to mothers with eclampsia immediately after fits.

## CONCLUSION:

Mothers with eclampsia who received  $MgSO_4$  in primary care centre have good fetal outcome and less maternal complications compared to those that attend tertiary care centre directly and receive the treatment there. Loading dose of  $MgSO_4$  if given immediately after initial convulsion at a primary health facility before referral, is beneficial to improve the maternal and fetal outcome.

## DISCLOSURE:

No conflict of interest declared.

No violation of human rights and safety.

No fund available for this study.

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