

**EFFECT OF MAGNESIUM SULFATE IN ECLAMPSIA  
AT  
MATERNITY HOSPITAL  
KATHMANDU.**

**SUBMITTED TO:**

**RESEARCH COMMITTEE OF MATERNITY HOSPITAL  
THAPATHALI, KATHMANDU  
NEPAL.**

**SUBMITTED BY:**

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**Dr. Sheela Verma**  
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## ABSTRACT

Eclampsia is the third commonest cause of maternal mortality in Nepal. It is a prospective study and was done from 1.1.2059 to 30.9.2059. to see effectiveness of Magnesium Sulphate in controlling convulsion and to prevents its recurrence.

During the study period ,total obstetrics admission were 13771 and total deliveries were 11936. Among which 30 patients had Eclapmtic fits (0.25%) in which antipartum 26.27% , intrapartum 33.33% and postpartum 40%.

Majority of the patients were young (70%) aged 20-24 yrs, Primigravida 73.33% and illiterate group 53.33% belonging to low socioeconomic group. The caesarean section rate was 43.33%.

All Eclamptic patients were treated with Magnesium Sulphate. There was no recurrent fits or maternal mortality. One patient was referred to Bir Hospital for acute renal failure.

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## ABBREVIATION

A	Ankle
Ab	Absent
ANC	Antenatal case
C	Conscious
D	Day
DBP	Diastolic Blood Pressure
E.D.D.	Expected date of delivery
F.T.P.	Full Term Pregnancy
L.M.P.	Last Menstrual Period
L/S/C/S	Lower segment cesarean section
K	Knee
M	Month
M.I.C.U.	Maternal Intensive care unit
P	Planter
S	semiconscious
SBP	Systolic Blood Pressure
T	Time
U	Unconscious
Y	year

Knee Jerk	0	Flaccid
	1,2	Normal
	3	Brisk
	4	Exhaggerated
Ankle Jerk		Normal
		Absent
		Exhaggerated
Planter		Up going
		Down going
		Equivocal



# 1. INTRODUCTION:

## 1.1 The Background of the study:

Hypertensive disorder of pregnancy is responsible for the significant amount of maternal and perinatal morbidity and mortality.<sup>1</sup>

Hypertensive disorder of pregnancy complicate about 7-10% of all pregnancies.<sup>2</sup> PIH which includes preeclampsia – eclampsia is responsible for 70% where as chronic hypertension represents 30% of hypertensive disorder in pregnancy.<sup>3</sup>

Eclampsia is one of the life threatening complication encountered in our day to day practice. It may occur before, during and after labour.

Eclampsia is a rare disease , but still occupying one of the most important cause of maternal mortality and morbidity in United Kingdom.<sup>4</sup> Incidence of eclampsia in the U.K is 4.9 / 10,000 maternities whereas seizure occurs in postpartum 44%, antepartum 38% and intrapartum 18% phases.

The maternal fatality is 1.8% and 35% of women will have at least one major complication.<sup>5</sup>

Few studies have been done till date regarding maternal death due to eclampsia in Nepal. In one of the study there were 24 maternal death ,5 were from eclampsia.<sup>6</sup> In another study eclampsia was found the second most important cause of maternal death in various hospital accounting for about 13% of death.<sup>7</sup>

G. Achayara and S. Schoitz reported an Incidence of 0.24% of eclampsia in Patan Hospital.<sup>8</sup>

Another Study reported (FHD 1998) , the eclampsia is the common cause of maternal death, which accounts 14.0%.<sup>9</sup>

Eclampsia was the leading cause of maternal death in maternity hospital .The total obstetrical admission in a year ( 17<sup>th</sup> Sep 2000 to 16<sup>th</sup> Sep 2001) was 19540, out of which 50 cases were eclampsia.

Use of Magnesium Sulphate has markedly reduced the rate of convulsion and improved the maternal outcome. Magnesium Sulphate is the anticonvulsant of the choice based on its great effectiveness in preventing recurrent fits in eclamptic patients.

In USA, magnesium sulphate has long been the drugs of choice for the treatment of eclampsia. First it was used in 1906 in Germany as an intrathecal injection.

A large multicentre trial recruiting 1650 women and demonstrating a 52% lower risk of recurrent seizure with magnesium sulphate than diazepam and 67% lower than phenytoin.<sup>10</sup>

The study which was done in maternity hospital used magnesium sulphate as the drugs of choice. There was no recurrence of convulsion in 60% of the patients receiving magnesium sulphate.

Though the magnesium sulfate has been used in different hospital for treatment of eclampsia, its efficacy is yet to be documented. It provides the ground for the present study.

## **1.2 OBJECTIVE :**

**General:** To determine effectiveness of magnesium sulphate in the control of convulsion among the patients admitted at maternity hospital during study period.

### **Specific Objectives:**

- a. To identify the demographic (age, ethnicity, socioeconomic) profile of the eclamptic patients.
- b. To find out the prevalence of eclampsia among the patient attending the ANC and without ANC.
- c. To determine maternal outcome (fit 24 hours) of those patients who received magnesium sulphate.

## **1.3 JUSTIFICATION:**

In United Kingdom , Magnesium Sulfate has long been the drug of choice for the treatment of eclampsia. In Nepal, study on efficacy of magnesium sulphate has yet to be done. However, it is cheaper, effective , has less side effect, and widely used in different hospitals.

## **1.4 Operational Definition:-**

- a. Fit or convulsion:- An involuntary contraction or series of contraction of the voluntary muscles.
- b. Consciousness:- is a state of normal cerebral activity in which the patient is aware of himself.
- c. Unconscious:- is a state of unawareness or loss of consciousness.

## **1.5 Limitation: -**

- a. Patient who have received a single dose of Diazepam ( up to 10 mmHg) will be included in this study.
- b. Fetal outcome will not be analyzed in this study.

## 2. METHODOLOGY:

- a. It is a hospital based study .
- b. General information about the patients will be collected from the Patient's party.
- c. If patient had fits at home or on the way , magnesium sulfate will be given after transferring the patient to M.I.C.U.

**2.1 Research Design:** Intervention ( before and after study)

**2.2 Research Area:** Maternity Hospital, Thapathali ( at admission, M.I.C.U. & eclampsia room).

**2.3 Target Population:** All the obstetric cases admitted at and after 28 wks of pregnancy.

**2.4 Sample:** All eclamptic patients admitted to Maternity Hospital from 2059.1.1 to 2059.9.30 will be taken as the sample for the study. Approximately 30 cases of the eclampsia will be included for the study.

### 2.5 Inclusion criteria:

- a. All age group of Patients having eclamptic fits.
- b. All the patients with 28th or more than 28th wks pregnancy.

### 2.6 Exclusion criteria:

- a. Less than 28th wks pregnancy.
- b. Patients who are receiving more than one inj. Diazepam.

### 2.7 Tools and Techniques:

 Data collection.

A set of interview schedule was prepared and pretest in 5 cases was done before using for the data collection. A medical record form was prepared and used to record different markers for the study.

### 2.8 Method of data collection:

First we will examine the patient's pulse, BP, Oedema, chest and any feature of pulmonary oedema. Catherization to be done and the urine sample sent for protein and RE. Blood sent for Hb%, grouping and renal function test.

After confirmation of diagnosis magnesium sulphate is given parentally in doses 4gm.( 1 amp contain 50% of magnesium sulphate ) diluted in 12 cc of distilled water and given IV slowly(within 5-10 mins) at the same time 4 gm. is given in both the buttock without dilution.

The respiratory rate is examined every ½ hourly, a rate less than 12/min is a cutoff line to stop the injection . The assisted ventilation is started until spontaneous respiration is established.

The pulse and BP is examined every 15 mins. The E.C.G and the oxygen saturation were monitored. The evaluation of coagulation profile is to be done.

We will give the magnesium sulphate I.M. every 4 hourly after proper assessment of patellar reflexes. The urinary output should be equal or more than 30ml/hr. Respiratory depression may lead to arrest. The side effect will be managed by giving parental injection Calcium Gluconate 10ml I.V. and next dose will be withheld . If the findings are within normal limits then magnesium sulphate is continued upto 24 hours of last fit.

### **2.9 Ethical consideration:-**

As soon as diagnosis is confirmed as eclampsia then we should ask the patient's party for informed consent. Before taking informed consent brief information about the complication of disease and about the research project should be given to the patient's party. Confidentiality of the patients will be maintained.

They can withdraw the treatment if any serious complication occurs. We will give alternative drug and therapy. We will manage the side effect properly . Written informed consent will be taken from the patient's party. Data will be collected by medical officer of the Maternity Hospital.

### **2.10 Data management :**

Whatever data will be collected that will be kept in secured and safe place. Collected data will be immediately entered in the computer . One person will take the responsibility for data management and under supervision of principal investigator.

### **2.11 Data Processing and analysis:**

The data will be coded , verified and cleaned before entering into the computer . Data will be categorized into different headings and sub-headings. Frequency counts and averages will be made where possible. Finally a brief report will be prepared based on the analysis of data .Collected data will be immediately entered into computer.

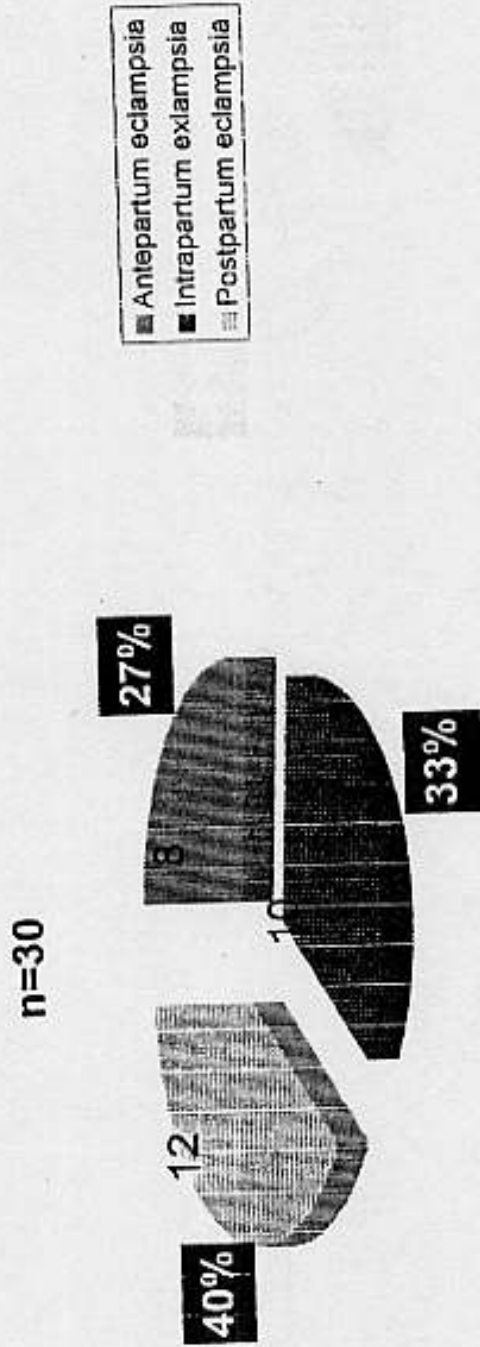
## Literature Review

1. Begum R et al used low dose of Magnesium Sulphate to treat Eclamptic Patients and found reduction of mortality rates from 16% to 8% with this drug.
2. Sawhney H et al in their randomized controlled trial allocated eclamptic patients to Magnesium Sulphate and Phenyton for the control of convulsions. The women treated with phenytoin had Higher incidence of recurrent seizures (10/25-40%) than those treated with magnesium Sulphate (2/25-8%).
3. Comparative study of different anticonvulsants in eclampsia was conducted by chatterjee A & Mukherjee J in Calcutta Medical College was best in group receiving magnesium sulphate and it was followed by phenytoin sodium. The magnesium sulphate produced significant better results in every respect than lytic cocktail & diazepam.
4. Raman & Rao treated 736 patient of eclampsia with magnesium sulphate. The convulsion was controlled in 95% of patients with the initial dose of the drug and subseuntly in another 2% within ½ hour of the drug administration. Depression of Knee Jerks was found to be the first sign of impending magnesium toxicity. However with Meticulous observation the toxicity was negligible in their cases, a maternal mortality was 2.4% and perinatal mortality was 36%. They concluded that the Magnesium sulphate is a very effective anticonvulsant in the management of eclampsia.
5. The Nigerian experience of magnesium sulphate in control of eclampsia is very enthusiastic. The seizure was controlled satisfactorily in all the twenty-one patients recruited so far. The mean number of convulsion was four and the observed side effect like nausea, vomiting & dizziness in three patients. There was three perinatal mortality.

# RESULTS

**1. Incidence:**

There were 11936 deliveries during study period among which 30 cases were Eclampsies. It constitutes 0.25%.



Delivery: Hospital- 2  
Home-10

Diagram : 1

Among thirty eclamptic patients 40% were postpartum eclampsia among which 33% had home delivery. Antepartum eclampsia were 27% and Intrapartum eclampsia were 33%.

## 2. Age Distribution:

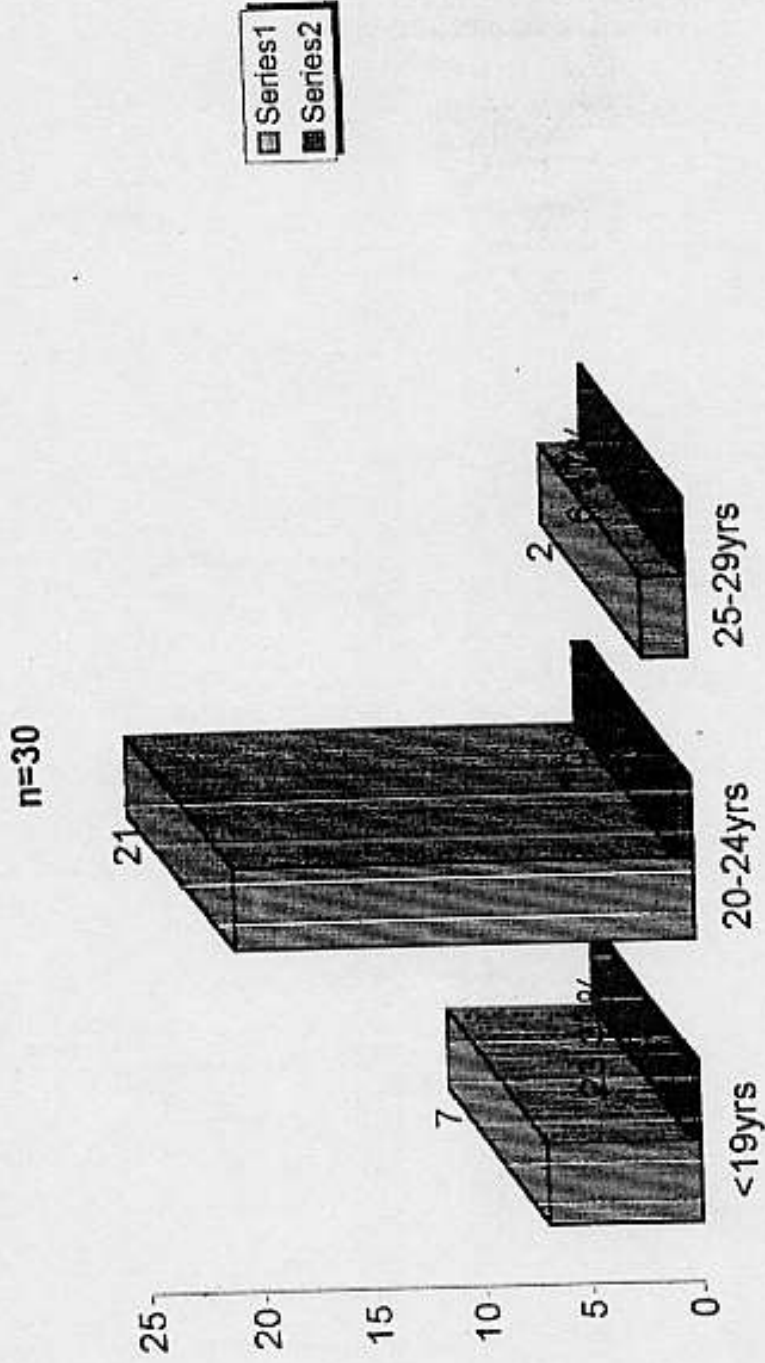


Diagram:2

More than nearly two third of the patients were aged 20-24 yrs. It is due to early marriage. Majority (93.33%) of the patients were less than 25yrs of age.



3. Eclampsia in relation to parity:

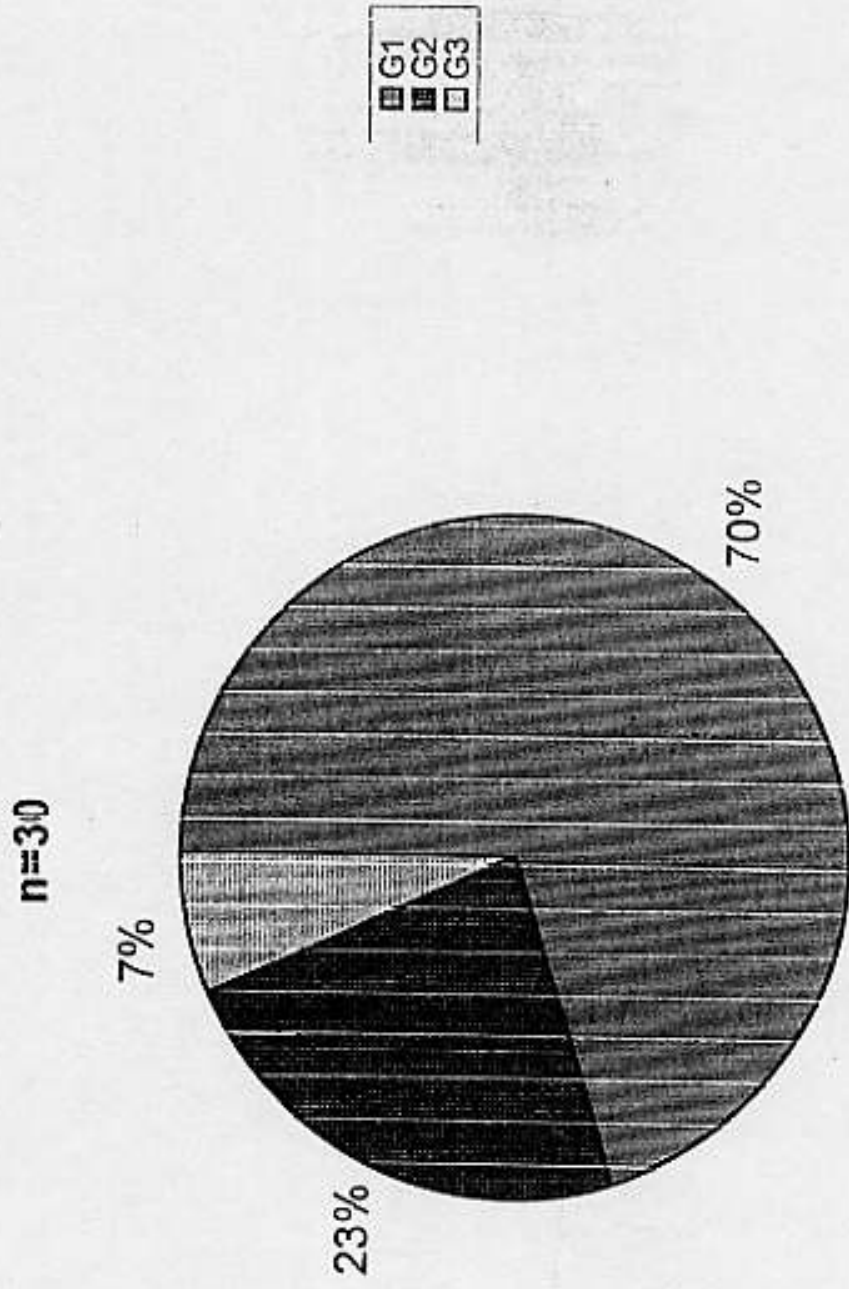


Diagram 3

Eclampsia was more common in primigravida (70%) than multigravida 30%.

#### 4. Eclampsia in relation to ANC visit :

ANC visit  
(n=30)

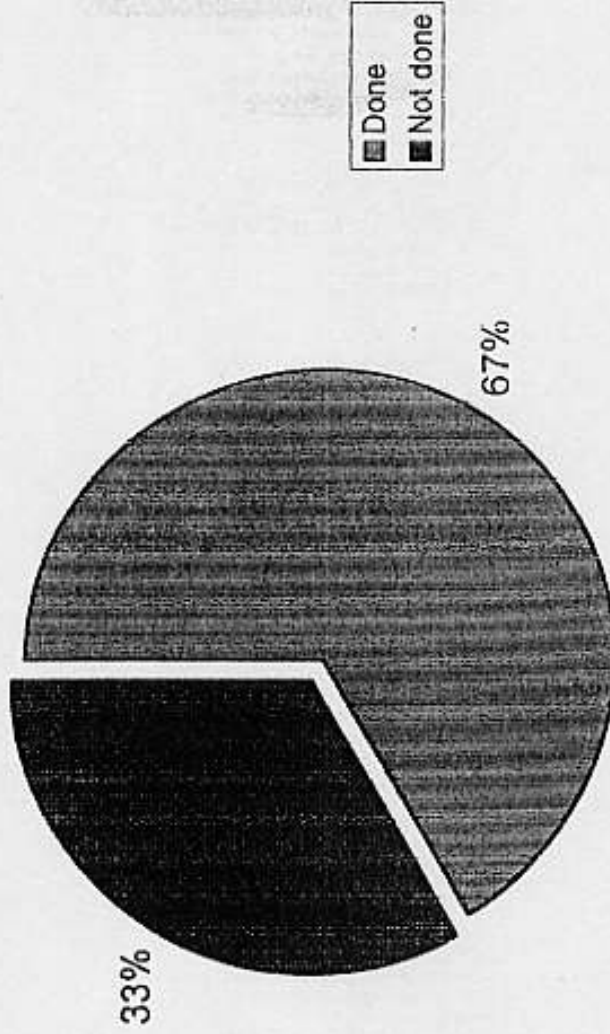
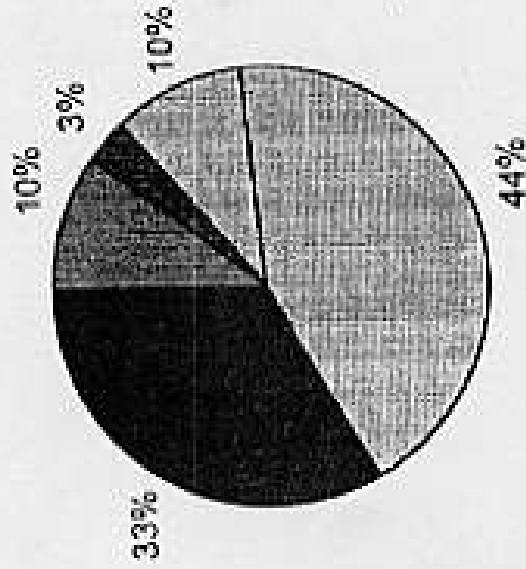


Diagram 4

Antenatal cheekup didnot play significant role in prevention of eclampsia because fit occurred in those twenty (67%) patients who had visited ANC clinic.

### 5. Obstetric Intervention in Eclamptic patients :

**MODE OF DELIVERY (n=30)**



- Normal delivery
- Forceps Delivery
- vaginal delivery with stillbirth
- DLSCS
- Home delivery

Diagram : 5

Majority of the patients 13(44%) had lower segment cesarean section and one patient had instrumental delivery.

## 6. Perinatal outcome :

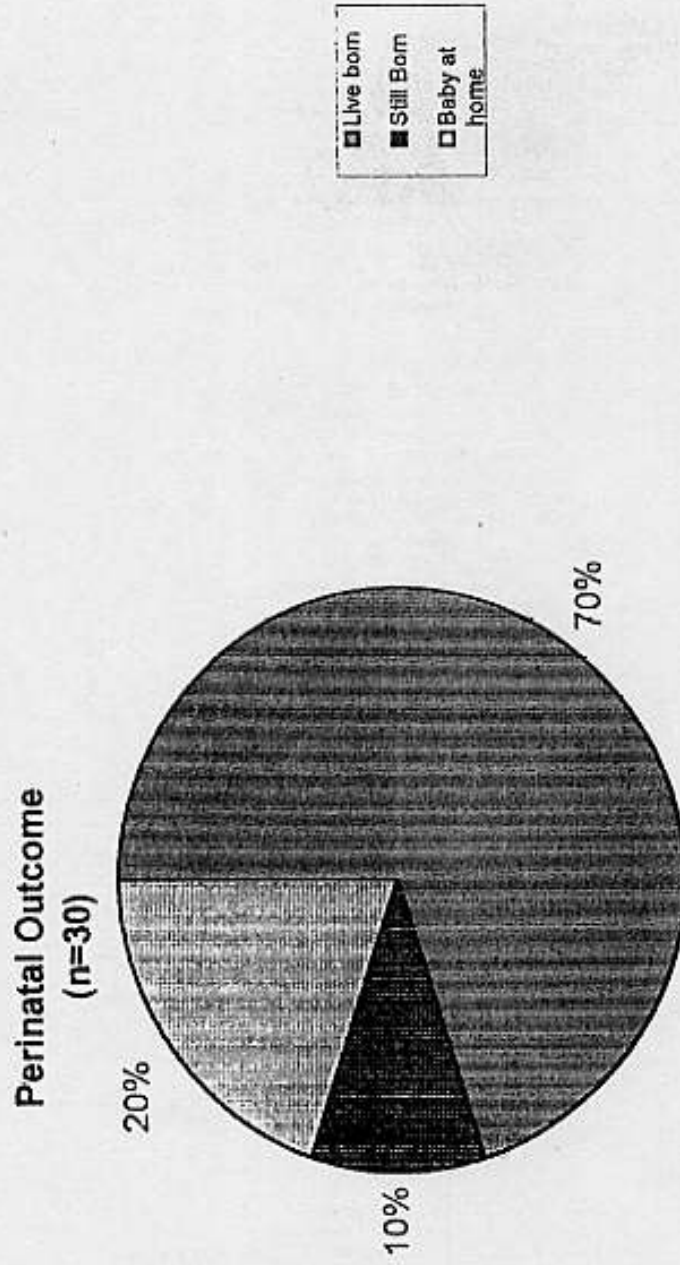


Diagram 6

Among thirty (30) eclamptic patients, twenty seven (90%) had a live baby and three patients (10%) had Intrauterine fetal death.

7. Degree of Proteinuria at the time of admission :

Albuminuria at Admission  
(n=30)

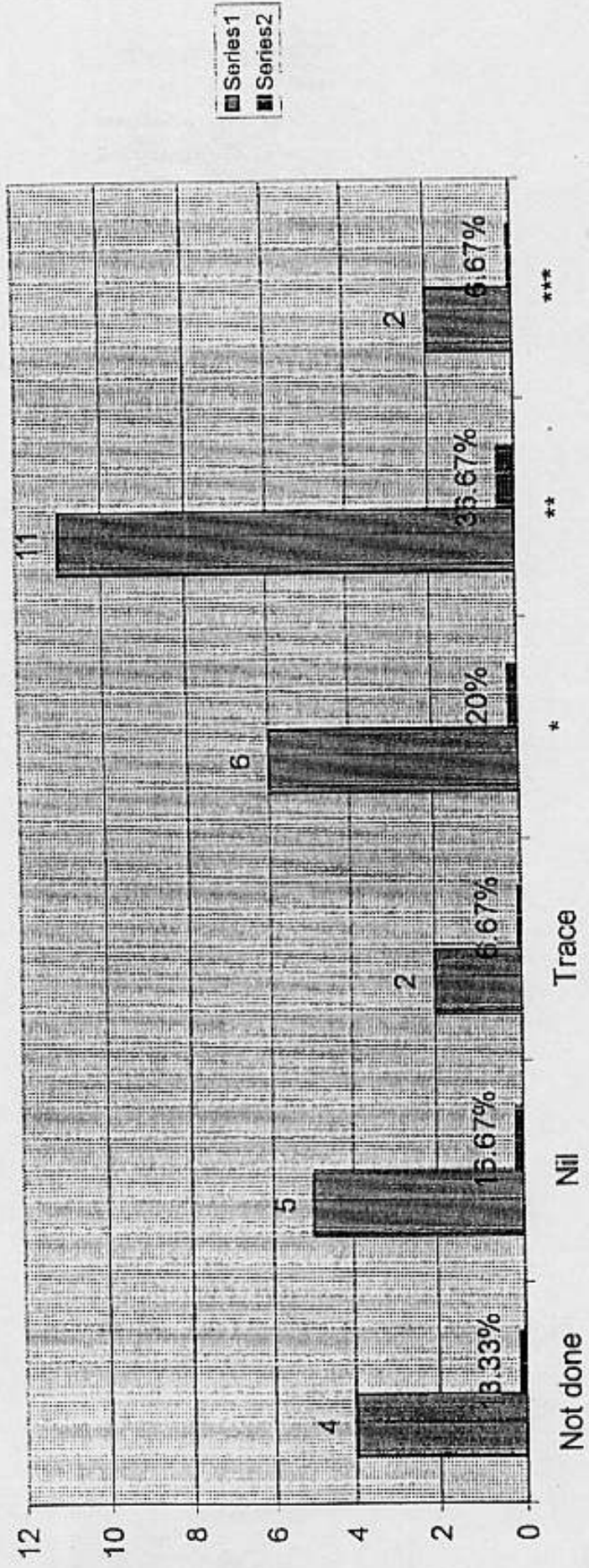


Diagram : 7

In nineteen cases ,albuminuria was ranging 1+ to 3+. In five (16.67%) albumin was nil and in four cases (13.33%) it was not done.

1. Duration of gestation at the time of admission, among the Eclamptic patients.

TABLE 1

Duration of gestation	Number	Percentage(%)
<37wks	8	26.67
≥37wks	22	73.33

The above table shows 22 patients had fits at term and 8 patients had fits less than 37 wks of gestation.

2. Diastolic Blood Pressure (mmHg) at the time of admission.

TABLE 2

Diastolic BP at admission	Number	Percentage(%)
<90	10	33.33
91-100	5	16.67
101-110	9	30
>110	6	20

Diastolic Blood Pressure was 101-110 in nine patients and more than 110mmHg in six patients. Ten patients had less than 90mmHg.

### 3. Systolic Blood Pressure(mmHg) at the time of admission

TABLE 3

Systolic BP at admission	Number	Percentage(%)
<140	9	30
141-150	12	40
151-160	7	23.33
>160	2	6.67

Systolic Blood pressure in twelve patients was in between 141-150 mmHg, nine each had >151 and <140mmHg.

### 4. Distribution of Eclamptic Patients by Ethnic group.

TABLE 4

Ethnicity	Number	Percentage(%)
Bhraman	4	13.33
Chhetri	12	40
Newars	4	13.33
Others	10	33.33

Among the thirty (30) Eclamptic patients, 40% were Chhetri and 13% were Bhraman and Newar.

## 5. Showing level of Education among Eclamptic Patients

TABLE 5

Educational Status	Number	Percentage(%)
illiterate	16	53.33
literate	9	30
Secondary	5	16.67

Regarding the Educational status among eclamptic patients, sixteen (53%) were illiterate, nine (30%) were literate and secondary education was (16.67%) patients.

## 6. showing the Socio-economic status.

TABLE 6

Socioeconomic status	Number	Percentage(%)
low class	22	73.33
middle class	8	26.67

Majority of Patients who had fits , they belong to low socioeconomic status.



7. The table shows treating of Eclampsia by MgSo4.

TABLE 7

MgSo4 Regimen	Number	Percentage(%)
for Eclamptic fit	30	100
Severe PET	7	

All women with eclamptic fit and seven with severe PET received MgSo4 regimen. PET cases were not statistically analysed in present study.

**Maternal outcome:-**

Among total deliveries 11936, thirty (0.25%) patients had eclamptic fits. Ten (33%) patients had home deliveries and Twenty (66.6%) patients had hospital deliveries. In both groups of Patients there were no maternal mortality and recurrent fits.

## **DISCUSSION:**

Eclampsia is the obstetrical emergency & needs immediate emergency care. Severe preeclampsia & eclampsia is still responsible for considerable maternal mortality and morbidity.<sup>11</sup>

Maternal mortality remains 2-4% among patients with HELLP syndrome and 10% with pulmonary oedema.<sup>12</sup>

Maternal mortality from eclampsia is still 0.4 -5.8% even in the institutions with a vast degree of experience.<sup>13</sup>

In our study incidence of eclampsia 0.25%. In Patan hospital the incidence was 0.24%. The family health division had reported (1998) 14% of Maternal death due to eclampsia. In UK maternal fatality is 1.8% and 35% women will have at least one major complication.

According to different study the eclampsia is one of the most complicated disease and needs special care to reduce maternal mortality & morbidity.

In present study the most affected women were young aged 20-24yrs (70%) and primigravida 70%, belonging to low socioeconomic status 53.33%. During the study period thirty cases of eclampsia were treated with magnesium sulphate. There was no maternal mortality & recurrent fits.

Sharma M & Collegues (BPKIMS) had done a prospective comparative study of 30 eclamptic patients . In Phenytoin group 68.75% patients had recurrence of fit where as in the magnesium sulphate group 21.43%. There was no maternal death in magnesium sulphate group but one death in the phenytoin group.<sup>14</sup>

## **CONCLUSION:**

From this study, we can derive the following conclusion:

1. Magnesium Sulfate is the effective drugs to control eclamptic fit.
2. There are no recurrence fits.
3. Side effects of this drugs are also minimal.
4. According to demographic profile, the eclampsia is more common in primigravida and low socioeconomic status.

## Parameters for Magnesium Sulphate

Admission: Year Month Day

Discharge: Year Month Day

### Before MgSo4

1. Pupil reactive to light  Yes  
 No

2. DBP T

90	100	110	>

3. SBP T

140	150	160	>

4. Urine Albumin

T

Trace	+	++	+++ >

5. Reflexes T

K	A	P	Ab

6. Oedema T

+	++	+++	>

### During MgSo4

Pupil reactive to light  Yes  
 No

<	90	100	110 >

<	140	150	160 >

Trace	+	++	+++ >

K	A	P	Ab

Nil	+	++	+++ >

7. Urine output / hr in ml

T

< 30	> 30

< 30	> 30

8. Respiration / mint:

T

< 12	>12

< 12	>12

9. Consciousness:

T

S	U	C

S	U	C

## Interview Questions

S.N.

1. Name:  2. Age  3. Occupation  Husband   
 Wife

4. Eclampsia Room  M.I.C.U.

5. Education a. Illiterate  6. Address  Permanent   
 b. Literate  Temporary   
 c. Secondary   
 d. Higher

7. Ethnicity a. Bhrahamn  c. Newar   
 b. Chhetry  d. Mangolian

8. Age of Menarche  9. Age of Marriage

10. L.M.P. 

Y.	M.	D.
<input type="text"/>	<input type="text"/>	<input type="text"/>

 .. E.D.D. 

Y.	M.	D.
<input type="text"/>	<input type="text"/>	<input type="text"/>

11. Gravida  Para

12. A.N.C. a. Done   
 (How many Times) ‡ b. Not Done

13. Premature Pregnancy  F.T.P.   
 <37 weeks ≥ 37 weeks

14. History of medical disease

<input type="text"/>	Eclamptic fit	
<input type="text"/>	Hypertension	<input type="text"/> Diabeties
<input type="text"/>	Others	<input type="text"/> Jaundice

15. Enquiry about present fits

1.
  - a. Before admission
  - b. After admission
2. Duration of last
3. Referred from

No. of fits

<input type="text"/>	
<input type="text"/>	
<input type="text"/>	
<input type="text"/>	Valley
<input type="text"/>	Outside

16. Previous History of Eclampsia

- a.  Yes      b.  No

17. Management

- a.  Conservative
- b.  Surgical (L.S.C.S.)

Screening Form

1. Name       Date

If ≥ 28th wks	<input type="text"/>	Yes
< 28th wks	<input type="text"/>	No
Post Partum ( within 6 wks)	<input type="text"/>	Yes
	<input type="text"/>	No
Inj. Diazepam	<input type="text"/>	Yes, If yes <input type="text"/> dose.
	<input type="text"/>	No
Tab. Phenytoim	<input type="text"/>	Yes
	<input type="text"/>	No
Referred for Study	<input type="text"/>	Yes
	<input type="text"/>	No

## **Informed Consent**

I hereby agree to participate in this research study. I am providing correct information to my knowledge. I have been explained fully about the study and treatment to be given to the patient.

Signature of Patient's party

.....

Date:

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