

# A Study of Maternal and Perinatal Outcome in Preeclampsia

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## Research Article

**Abstract:** **Aim:** To study the maternal and fetal outcome in preeclampsia. **Background:** In Modern Obstetric, the prevalence of preeclampsia and its complication is high so we decided to study the maternal and fetal outcome in patients of preeclampsia. **Methodology:** A prospective study carried out in Bharati vidyapeeth medical college and hospital, sangli in department of obgy from 1st Jan 2012 to 31<sup>st</sup> December 2012 done regarding age, parity, gestational age at time of delivery, levels of uric acid, mode of delivery, fetal outcome, and postpartum complications. **Results:** 48 % of patients were primigravida and 50 % fall in age group 21 to 25 years. 51% patient had uric acid > 6.5mg/dl. A large number that is 78 % delivered preterm and 54% underwent C-sections. 15 landed in pph while 3 patients suffered from HELLP syndrome. **Conclusion:** In spite of good health care system preeclampsia still stands as a leading cause for maternal mortality and morbidity in rural parts of India.

**Keywords:** Preeclampsia, preterm, HELLP.

## Introduction

In 1916, Zweifel first called the toxemia “the disease of theories”. This was recognized as a clinically entity since time of Hippocrates. Preeclampsia has remained a significant public health threat in both developed and developing countries, contributing to maternal and perinatal morbidity and mortality globally<sup>2,3,4,5</sup>. In India, the incidence of preeclampsia among hospital patients is about 7-10% of antenatal admissions<sup>6</sup>. The dangers of eclampsia, intra-uterine growth restriction and intra uterine fetal death, etc. are dependent on the degree of preexisting preeclampsia, and they can be mitigated by good obstetric care. In this study, an attempt has been made to study the effect of preeclampsia and its severity on pregnancy and on maternal and fetal outcome.

## Aim and Objectives

1. to study the prevalence of preeclampsia in relation to
  - a. unregistered or registered
  - b. age
  - c. parity

2. To study the incidence of various maternal complications of preeclampsia
3. To study fetal outcome in pregnancies complicated by pregnancy induced hypertension.

## Materials and Methods

This observational study was conducted on patients of preeclampsia coming during the period from 1<sup>st</sup> January 2012 to 31<sup>st</sup> December 2012 at Bharati Vidyapeeth Deemed University Medical College and Hospital, Sangli. Pregnant women with more than 20 weeks of pregnancy with systolic B.P. > 140 mmHg and diastolic > 90 mmHg in two separate readings taken 6 hours apart. **Inclusion criteria** – B.P. > 140 mmHg systolic and or 90 mmHg of diastolic, urine albumin > 1+ on dipstick single test, Edema may or may not be present. **Exclusion criteria** – patients suffering from chronic hypertension bp > 140/90 mmHg before pregnancy or diagnosed before 20 weeks of gestation; the patients suffering from hepatitis or cardiac disease; patients suffering from any of the following conditions – essential familial hypertension, Renal vascular hypertension, coarctation of aorta, diabetes mellitus, Cushing syndrome, primary aldosteronism, pheochromocytoma, thyrotoxicosis, glomerulonephritis, connective tissue disorders (SLE, PAN, Scleroderma). Any patient fulfilling the inclusion criteria was explained the type of study and after taking her written consent and after taking a precise consent a thorough general, systemic and obstetric examination was done and the treatment was initiated and managed accordingly.

## Results

100 cases of preeclampsia were studied in the form of registered and unregistered, age, parity, mode of delivery, etc and fetal outcome in different parameters like preterm babies, IUGR, LBW, and Apgar score etc. Following were the observations noted during the study period.

**Table 1:** Distribution of registered and unregistered cases

Total no. of cases	Unregistered	Registered
100	74	26

74% patients were unregistered and 26% were registered.

**Table 2:** Type of preeclampsia

Type of preeclampsia	N=100
Mild	31
Severe	69
Total	100

69% patients presented with severe preeclampsia, which is due to large number of referrals from rural areas.

**Table 3:** Age group wise distribution of cases

Age group in years	n=31(Mild)	Severe(n=69)	Total(n=100)
<20	6(19.3%)	12(17.3%)	18
21-25	<b>16(51.6%)</b>	<b>34(49.2%)</b>	50
26-30	7(22.5%)	22(31.8%)	29
31-35	2(6.4%)	01(1.4%)	3
Total	31	69	100

**Table 4:** Case distribution according to parity

Parity	Mild(n=31)	Severe (n=69)	Total (n=100)
Gravida 1	13(41.9%)	<b>35(50.7%)</b>	48
Gravida 2	13(41.9%)	24(34.7%)	37
Gravida 3	03(9.6%)	08(11.5%)	11
Gravida 4	02(6.4%)	02(2.8)	04
Total	31	69	100

As the parity increases the risk decreases.

**Table 5:** Relation of urinary protein with severity of disease

Urinary protein by dipstick method	Mild(n=31)	Severe(n=69)	Total(n=100)
+1	12(38.7%)	0	12
+2	<b>18(58%)</b>	06(8.6%)	24
+3	1(3.2%)	41(59.4%)	42
+4	0	<b>22(31.8%)</b>	22
Total	31	69	100

More the severity of disease, more the urinary protein

**Table 6:** Severity of preeclampsia in relation to serum uric acid

levels of uric acid	Mild (n=31)	Severe(n=69)	Total(n=100)
<6.5mg/dl	25(80.6%)	24(34.7%)	49
>6.5mg/dl	06(19.3%)	<b>45(65.2%)</b>	51
Total	31	69	100

**Table 7:** Gestational age wise distribution of cases and time of delivery

Gestational age at time of delivery	Mild n=31	Severe n=69	Total n=100
<37 weeks	10(32.2%)	<b>61(88.4%)</b>	78
>37 weeks	21(67.7%)	08(11.5%)	22
Total	31	69	100

Maximum patients of severe preeclampsia land up in preterm delivery.

**Table 8:** Relation of mode of delivery with preeclampsia

Mode of delivery	Mild n=31	Severe n=69	Total n=100
Elective LSCS	<b>11(35.4%)</b>	19(27.5%)	30
Emergency LSCS	03(9.6%)	21(30.4%)	24
Induced Vag. Delivery	07(22.5%)	<b>24(34.7%)</b>	31
Spontaneous vag. Delivery	<b>10(32.2%)</b>	05(7.2%)	15
Total	31	69	100

In mild preeclampsia the mode of delivery is usually elective lscs in view of better prognosis of mother and baby; whereas in severe cases the mode of delivery is induced vaginal delivery.

**Table 9:** Relation of preeclampsia with Apgar Score

Apgar Score at 1 min	Mild n=31	Severe n=69	total n=100
10-7	28(90.3%)	29(42%)	57
6-4	02(6.4%)	33(47.8%)	35
3-0	1(3.2%)	7(10.1%)	08
Total	31	69	100

In mild cases, apgar score at 1 min is better than in severe preeclampsia.

**Table 10:** Baby weight wise distribution of cases

Weight of baby at birth	Mild n=31	Severe n=69	Total n=100
<2.5 kgs	05(16.1%)	20(28.9%)	25
>2.5 kgs	26(83.8%)	49(71%)	75
Total	31	69	100

**Table11:** Relation of IUGR with preeclampsia Presence of IUGR n=20

Mild	02(10%)
Severe	18(90%)
Total	20

**Table 12:** Maternal complication associate in preeclampsia

Complications	Mild n=31	Severe n=69
Pph	3(9.6%)	12(17.3%)
HELLP syndrome	-	03(4.3%)
Abruptio placentae	1(3.2%)	04(5.7%)
Pulmonary edema	-	08(11.5%)
Cerebrovascular accidents	-	2(2.8%)
Acute renal failure	-	3(4.3%)
Maternal death	-	1(1%)

**Table 13:** Fetal complications related to preeclampsia

Complications	Mild n=31	Severe n=69
Prematurity	10(32.2%)	61(88.4%)
IUGR	02(6.4%)	18(26.0%)
LBW	5(16.1%)	20(28.9%)
IUD	-	03(4.3%)
Stillbirth	1(3.2%)	03(4.3%)

## Discussion

Preeclampsia is more prevalent in both developed and developing countries contributing to maternal and perinatal morbidity and mortality globally. The clinical findings of preeclampsia can manifest as either a maternal syndrome (hypertension, proteinuria with or without edema and other multisystem abnormalities) or as a fetal syndrome (fetal growth restriction, reduced amniotic fluid and abnormal placentation). Out of all 69% cases were of preeclampsia and 31% were mild preeclampsia, and this large difference shows lack of antenatal care and irregular antenatal visits. This is the reason that incidence of preeclampsia is seven times higher in developing countries. In the study 50% patients were found in age group of 21-25 years out of which 49.2% were of severe preeclampsia and 51.6% were mild cases. Similar incidence was found in Sibai BH in 1997.<sup>7</sup> Least incidence was found in age group between 31-35 years only 1.4% fall into category of severe preeclampsia, which positively correlates with Vitthal Kuchake study in 2010<sup>8</sup>. Both mild and severe preeclampsia cases are

common in primigravida patients. So out of total 100 cases 48% cases were primigravidae. The study shows that with increasing parity incidence of preeclampsia reduces. This study correlates with studies done by Conde-Agudelo A(2000) and Noreen Akmal and Gul-E-Raanain(2006). Urinary protein levels are directly related to severity of preeclampsia, in turn increases morbidity and mortality. In our study, severe preeclampsia cases were having urinary protein by dipstick method +3 and +4 in 59.4% and 31.8% respectively. All severe preeclampsia had urine protein +2 to +4 on dipstick test. This is correlated with Williams's obstetrics and High risk pregnancy by Fernando Arias. In present study 65.2% were having uric acid levels more than 6.5mg/dl, high risk for mortality and morbidity.<sup>9,10</sup> Same results were found in study of Shannon A. Bainbridge and James M. Roberts. There is statistically significant association between severity and level of uric acid. On comparing, gestational age at the time with severity of preeclampsia, 88.4% cases delivered before 37 weeks suggesting that in severe preeclampsia, preterm births are more common. On the other hand 67.7% of mild preeclampsia delivered after

37 weeks. This is statistically significant association between severity and gestation of delivery. Similarly the mode of delivery depends on the severity of the disease, induced vaginal delivery rate is high in severe preeclampsia that is 34.7% whereas spontaneous vaginal delivery is mostly seen with mild preeclampsia that is 32.2%, but the overall rate of caesarean section compared to vaginal delivery was high. 54% underwent emergency or elective LSCS due to obstetric indication. There is significant association between severity and type of delivery. This relates positively with the study done by Vitthal Kuchake in which rate of caesarean section in preeclampsia observed to be 61%. Comparing the Apgar score at 1 min and severity of the disease, again there was statistically significant correlation. Hence low birth babies were more common in severe preeclampsia cases. Odegard et al. showed pregnancies complicated by severe preeclampsia had infant birth weight 12% lower than expected, while pregnancies with mild preeclampsia showed no difference in weight gain from expected norm.<sup>11</sup> IUGR babies are more commonly seen in severe preeclampsia due to severe uteroplacental insufficiency. Various complications due to preeclampsia seen in both mothers and babies, like 17.3% presented with PPH in severe cases 4.3% landed up in HELLP syndrome and 5.7% had abruption placentae, 11.5% suffered from pulmonary edema, 2.8% had cerebrovascular accidents and lastly 4.3% patients landed up in Acute renal failure. Rate of maternal mortality with severe preeclampsia is 1%. Similar results shown by WHO in 2002.<sup>12</sup> Similarly IUGR and IUD babies and still births were seen more with severe preeclampsia. In case of mild preeclampsia, the risk of fetal demise is over 50% less than in pregnancy with severe preeclampsia.<sup>13</sup>

## Conclusion

1. Incidence of mild and severe preeclampsia is more in primigravida.
2. Rate of preterm delivery is more common in severe preeclampsia compared to mild preeclampsia

3. Mode of delivery is influenced by severity of preeclampsia
4. Birth weight and incidence of IUGR is influenced by degree of pre eclampsia
5. Skilled monitoring during ANC period, early detection and prompt interventions as per standard of antenatal care, can prevent maternal complications of preeclampsia and improve maternal and perinatal outcome.
6. Improvement in rural ANC care in health care facilities and emergency obstetric care services especially in rural areas will improve outcome of pregnancy for safe motherhood.

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