

## Feto-Maternal Outcome in Preeclampsia in Tertiary Care Hospital

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### ABSTRACT

**Introduction:** Despite medical advances, eclampsia and pre-eclampsia remain the foremost reasons of maternal morbidity and mortality worldwide. It can lead to a host of life-threatening complications such as pre-eclampsia, cerebral haemorrhage, eclampsia, liver failure, cardiovascular complications, pulmonary edema, acute renal failure, retinal detachment, HELLP syndrome, hypoxic brain injury, cortical blindness and even maternal death.

**Objective:** To govern the incidence of adverse feto-maternal outcomes in females with preeclampsia.

**Study Design:** Descriptive Case Series.

**Setting:** Department of Obstetrics and Gynaecology, Civil Hospital, Karachi.

**Duration of Study:** This study was held from 10th March 2019 to 10th September 2019.

**Subjects and Methods:** 212 total patients with preeclampsia were involved in the analysis. All women were followed up until delivery and adverse feto-maternal outcomes (HELLP syndrome, Eclampsia, Abruption placentae, Cesarean Section, Post-partum Hemorrhage, Preterm birth, Birth asphyxia, Low birth weight and perinatal mortality) was noted as per operational definition.

**Results:** Age range in this analysis was from 18 to 35 years with 29.004±2.38 years mean age, 29.641±2.73 weeks was the mean gestational age, mean parity 1.448±1.28 and mean weight was 67.768±5.55 Kg. HELLP syndrome was seen in 30.2% patients, eclampsia 9.9%, abruption placentae 9.9%, cesarean section 56.6%, PPH 16.5%, preterm birth 28.8%, birth asphyxia 19.3%, low birth weight 21.2% and perinatal mortality was 5.7%.

**Conclusion:** Accessible health education and medical care, and awareness of prenatal control for all women will help in the primary recognition of severe pre-eclampsia.

**Keywords:** Pregnancy, Preeclampsia, Feto-maternal outcomes

### INTRODUCTION

Pre-eclampsia is the development of arterial hypertension (systolic blood pressure  $\geq 140$  mm HG or diastolic blood pressure  $\geq 90$  mm HG) and proteinuria in the last trimester of pregnancy<sup>1,2</sup>. It is predictable -that there are approximately 8. million pre-eclampsia cases internationally each year, and pre-eclampsia complicates around 2% to 4% of births. Pre-eclampsia / eclampsia is the foremost problem of health internationally and is the leading cause of perinatal and maternal mortality and morbidity<sup>3-4</sup>.

While the exact pathophysiology of preeclampsia is not yet fully understood, it is characterized by extensive maternal endothelial dysfunction, which may be caused by maternal infections. There is mounting evidence of an association between various maternal bacterial / viral infections and pre-eclampsia<sup>5-6</sup>.

Despite medical advances, eclampsia and pre-eclampsia remain the foremost reasons of maternal morbidity and mortality internationally<sup>7</sup>. It can result in many complications of life endanger such as eclampsia, pre-eclampsia, CVS problems, cerebral haemorrhage, acute renal failure, liver failure, ARDS, pulmonary edema, HELLP syndrome (haemolysis) and DIC, elevated liver enzymes, low platelets, cortical blindness, retinal detachment, maternal death and cerebral hypoxia<sup>8-9</sup>. Fetal complications are mainly associated with IUGR, low birth weight in infants, uteroplacental insufficiency leading to IUFD (Intrauterine Fetal Death) and difficulties related to prematurity<sup>10</sup>. Singh A et al. showed that 37.5% of patients had HELLP syndrome, 1.8% had eclampsia, 67.9% of patients had preterm labor, 21.4% of children had asphyxia at delivery and perinatal mortality in 12.5% of patients with pre-eclampsia<sup>11</sup>. In a study by Pillai SS, et al. has exhibited in the analysis that incidence of cesarean section was 64.54%, Eclampsia 11.81%, Abruption placentae 7.27%, HELLP syndrome 4.54%, Post partum Hemorrhage 23.63%, preterm birth 64.54%, Low birth weight babies 33.63% and Neonatal death was 9.09% in women with preeclampsia<sup>12</sup>. Communicating public awareness effectively and providing integrated antenatal care system can help greatly in prevention of this pregnancy related complication i.e., preeclampsia and these steps have already

shown effective results in most of the developed as well as developing countries. Moreover, results of studies on different populations have yield variable results as shown in above studies, therefore these results cannot be generalized on all populations<sup>11-12</sup>. There is very limited data in this subject in this part of world. And finally, I am studying 9 outcome variables in my study to get a broader picture of these morbidities. This prompt me to get further evidence on this subject by determining the frequency of adverse feto-maternal outcomes in women with preeclampsia in our local population. Result of my study will pave the way to pay special attention to the needs of these women by healthcare providers. By knowing the clinical properties of preeclampsia, they can easily perform their outpatient follow-up when providing them preventive health care.

### MATERIAL AND METHODS

This Descriptive Case Series held in the Department of Obstetrics and Gynaecology, Civil Hospital, Karachi from 10th March 2019 to 10th September 2019. Sample size was calculated by using 7.27% prevalence of Abruption placentae, 3.5% margin of error and 95% confidence interval under WHO formula for sample size calculation. A Non-probability consecutive sampling was used and sample calculated was 212. The inclusion criteria involved; Age 18-35 years, Gestational age > 20 weeks on LMP, Singleton pregnancy on ultrasound, Any parity and Preeclampsia as per operational definition. The Exclusion Criteria was as follows: chronic renal disease, chronic hypertension (before 20 weeks of gestation), diabetes, connective tissue disorders on medical record and thyroid disease on medical record

Informed consent was taken from patients after explanation of the benefits of the study. Demographic information of patients (age, gestational age, parity) was taken.

All women were followed up until delivery and adverse feto-maternal outcomes (HELLP syndrome, Eclampsia, Abruption placentae, Cesarean Section, Post partum Hemorrhage, Preterm birth, Birth asphyxia, Low birth weight and Perinatal mortality) was noted as per operational definition, all this data was recorded by

researcher herself on especially designed proforma under supervision of gynaecologist of 3 years post fellow ship experience.

Data Analysis

Data were analyzed with SPSS.V.22. Incidence and percentages were calculated for qualitative variables such as HELLP syndrome, eclampsia, placental abruption, cesarean section, postpartum haemorrhage, preterm delivery, asphyxia, low birth weight, and perinatal mortality. Mean ± SD for quantitative variables such as patient age, gestational age, birth rate, and body weight are shown. Modifiers such as patient age, gestational age, parturition and body weight were controlled for stratification. After the stratification was considered statistically significant at p ≤ 0.05, the chi-square test was used.

RESULTS

18 to 35 years was the age range with mean age of 29.004 ± 2.38 years, mean gestational age 29.641 ± 2.73 weeks, mean number of deliveries 1.448 ± 1.28, and mean weight 67.768 ± 5.55 kg. This is shown in table-I.

HELLP syndrome was seen in 30.2% patients, eclampsia 9.9%, abruptio placentae 9.9%, cesarean section 56.6%, PPH 16.5%, preterm birth 28.8%, birth asphyxia 19.3%, low birth weight 21.2% and perinatal mortality was 5.7% as shown in Table-II, III, IV, V, VI, VII respectively.

Stratification of adverse feto-maternal outcomes with respect to age of patient, gestational age, parity and weight, respectively.

Table 1: Mean ±SD of patients according to age, gestational age, parity and weight.

Demographics		Mean ±SD
1	Age (years)	29.004±2.38
2	Gestational Age (weeks)	29.641±2.73
3	Parity	1.448±1.28
4	Weight (Kg)	67.768±5.55

Table 2: Frequency and %age of patients according to HELLP syndrome.

HELLP syndrome	Frequency	%Age
Yes	64	30.2%
No	148	69.8%
Total	212	100%

Table 3: Frequency and %age of patients according to Eclampsia.

Eclampsia	Frequency	%Age
Yes	21	9.9%
No	191	90.1%
Total	212	100%

Table 4: Stratification of HELLP syndrome with respect to age and gestational age.

Age (years)	HELLP syndrome		p-value
	Yes	No	
18-30	46(28.2%)	117(71.8%)	0.255
>30	18(36.7%)	31(63.3%)	
Total	64(30.2%)	148(69.8%)	
Gestational Age (weeks)	HELLP syndrome		p-value
	Yes	No	
20-30	35(30.7%)	79(69.3%)	0.861
>30	29(29.6%)	69(70.4%)	
Total	64(30.2%)	148(69.8%)	

Table 5: Stratification of Eclampsia with respect to Gestational Age and parity.

Gestational Age (weeks)	Eclampsia		p-value
	Yes	No	
20-30	11(9.6%)	103(90.4%)	0.893
>30	10(10.2%)	88(89.8%)	
Total	21(9.9%)	191(90.1%)	
Parity	Eclampsia		p-value
	Yes	No	
0-3	19(9.7%)	176(90.3%)	0.789
>3	2(11.8%)	15(88.2%)	
Total	21(9.9%)	191(90.1%)	

Table 6: Stratification of PPH with respect to age, gestational age and parity.

Age (years)	PPH		p-value
	Yes	No	
18-30	29(17.8%)	134(82.2%)	0.359
>30	6(12.2%)	43(87.8%)	
Total	35(16.5%)	177(83.5%)	
Gestational Age (weeks)	PPH		p-value
	Yes	No	
20-30	22(19.3%)	92(80.7%)	0.238
>30	13(13.3%)	85(86.7%)	
Total	35(16.5%)	177(83.5%)	
Parity	PPH		p-value
	Yes	No	
0-3	34(17.4%)	161(82.6%)	0.218
>3	1(5.9%)	16(94.1%)	
Total	35(16.5%)	177(83.5%)	

Table 7: Stratification of Birth Asphyxia with respect to age, gestational age and parity.

Age (years)	Birth Asphyxia		p-value
	Yes	No	
18-30	32(19.6%)	131(80.4%)	0.844
>30	9(18.4%)	40(81.6%)	
Total	41(19.3%)	171(80.7%)	
Gestational Age (weeks)	Birth Asphyxia		p-value
	Yes	No	
20-30	20(17.5%)	94(82.5%)	0.475
>30	21(21.4%)	77(78.6%)	
Total	41(19.3%)	171(80.7%)	
Parity	Birth Asphyxia		p-value
	Yes	No	
0-3	36(18.5%)	159(81.5%)	0.273
>3	5(29.4%)	12(70.6%)	
Total	41(19.3%)	171(80.7%)	

Table 8: Stratification of Perinatal Mortality with respect to age gestational age and parity.

Age (years)	Perinatal Mortality		p-value
	Yes	No	
18-30	7(4.3%)	156(95.7%)	0.116
>30	5(10.2%)	44(89.8%)	
Total	12(5.7%)	200(94.3%)	
Gestational Age (weeks)	Perinatal Mortality		p-value
	Yes	No	
20-30	6(5.3%)	108(94.7%)	0.787
>30	6(6.1%)	92(93.9%)	
Total	12(5.7%)	200(94.3%)	
Parity	Perinatal Mortality		p-value
	Yes	No	
0-3	11(5.6%)	184(94.4%)	0.967
>3	1(5.9%)	16(94.1%)	
Total	12(5.7%)	200(94.3%)	

DISCUSSION

This study exhibited that low motherly socioeconomic status was communal in females with severe pre-eclampsia and eclampsia and was comparable to preceding studies in other centres. This is because of social deprivation of this category of females, which increases the ignorance risk and disease-seeking behaviour<sup>13-14</sup>. This unfortunate behaviour related to health may be accountable for 8.1% of unregistered patients. The high reserve levels of these women with severe pre-eclampsia with severe eclampsia in this study are comparable to previous reports in Ibadan, Enugu, Irrua and Nigeria<sup>15-16</sup>. In addition, pre-eclampsia with significant traits amongst youths in this analysis was comparable to that realized in Irrua.

In my study, 30.2% of patients had HELLP syndrome, 9.9% eclampsia, 9.9% placenta detachment, 56.6% caesarean section, 16.5% PPH, 28.8% Asphyxia at birth, 19.3 % at birth, low birth weight 21.2% and perinatal mortality 5.7%. Singh A et al. showed that 37.5% of patients had HELLP syndrome, 1.8% had eclampsia, 67.9% of patients had preterm labor, 21.4% of children had

asphyxia and perinatal mortality. in 12.5% of patients in women with pre-eclampsia<sup>17-18</sup>.

Pillai SS, et al. In his study, the frequency of caesarean section was 64.54%, eclampsia 11.81%, placental detachment 7.27%, HELLP syndrome 4.54%, postpartum haemorrhage 23.63%, preterm labor 64.54%, low weight birth rate of new-borns 33.63 and neonatal mortality was 9.09 % in women with pre-eclampsia<sup>19-20</sup>. However, this contradicts the report from developed countries, where severe pre-eclampsia with severe features and eclampsia are more common in women over the age of 40<sup>21-22</sup>. The reason for this may be the fact that in our environment the percentage of early marriages and pregnancies at an early age is higher than in developed countries. This may be further explained by the fact that blacks than Caucasians are more common in pre-eclampsia and eclampsia<sup>23</sup>. The parity, which in this study was strongly associated with pre-eclampsia and eclampsia with severe features, is supported by previous reports from other centers<sup>24</sup>. Though the ratio of females participating in polygamous marriages in this analysis was small, the lack of a durable connotation between pre-eclampsia with severe features and polygamy and eclampsia was parallel to that seen in northern Nigeria<sup>25</sup>. The strong connotation amid severe pre-eclampsia, low birth weight and eclampsia in this study may arise from perinatal and invasive delivery to prevent increased maternal morbidity and mortality, especially in eclampsia, regardless of gestational age. It is because of IUGD which is communal in women with pre-eclampsia and women with severe eclampsia.

12.1% was the maternal mortality rate in our study was higher than 8%, 9% and 7.9% respectively, in India, Ibadan, Tanzania, Nigeria. However, it is lower than the 15.6% and 23% recorded in Enugu and Irrua.

The perinatal mortality in this study was 5.7%, less than 10% reported in Ibadan and less than 29% and 40.9% reported in Ethiopia and Kaduna, Nigeria, respectively. The high perinatal mortality in this study can also be attributed to the high incidence of low birth weight among women with severe pre-eclampsia and women with eclampsia in this study. A positive association between low birth weight and perinatal death has previously been reported in Bangladesh.

## CONCLUSION

In this study, severe pre-eclampsia was common among adolescent unregistered rural women and low socioeconomic women. It has contributed to the high maternal and perinatal morbidity and mortality in our general population. Health centres should be equipped and equipped to deal with the complications of pre-eclampsia.

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