

## Original Article



# Study of Fetal Outcome in Preeclampsia and Eclampsia Syndrome

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### Abstract

**Background:** Preeclampsia and eclampsia syndrome is one of the commonest medical disorders of females. The neonatal outcome is different from the normal pregnancy due to this disorder. It includes- stillbirth, low birth weight, asphyxia, and prematurity.

**Objective:** The objective of the study was to determine the fetal outcomes in different groups of preeclampsia and eclampsia syndrome.

**Materials and Methods:** This cross-sectional observational study was conducted in the Department of Pathology, (BIRDEM) General Hospital, Dhaka, from July 2019 to June 2021. The study comprised 138 clinically diagnosed preeclampsia and eclampsia syndrome cases from the Department of Gynecology & Obstetric of BIRDEM and DMCH. Out of 138 cases, there were 42 cases of mild preeclampsia (mild PE), 62 were of severe preeclampsia (severe PE), and 33 were eclampsia. Relevant data and pregnancy outcome (neonatal birth weight, maturity, Apgar score, and stillbirth), were observed and recorded in a predesigned data collection sheet and statistical analyses were carried out. Ethical practice was ensured in every step of the study.

**Results:** Among 138 cases, the mean birth weight was (2.12±0.57) kg, which was observed in the mild preeclamptic group, and the mean birth weight was (1.52±0.47) kg found in the eclamptic group. A low Apgar score (score<7) was mainly observed in the severe PE (77.8%) followed by (84.8%) in eclampsia group. More than half of the cases were revealed stillbirth (54.4%) as the neonatal outcome in eclampsia group. A statistically significant difference was found among three groups regarding pregnancy outcome (neonatal birth weight, maturity, stillbirth, etc.).

**Conclusion:** Majority of the fetal complications were related to the severity and duration of the preeclampsia and eclampsia syndrome. Low birth weight, low Apgar score, prematurity and stillbirth are remarkable findings in this syndrome regarding fetal outcome.

**Key words:** Preeclampsia and eclampsia syndrome, Fetal outcome.

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### Introduction

Pregnancy is a healthy & welcoming process. Although pregnancy is a normal physiological event, pregnancy itself can cause certain pathological conditions too. Hypertensive disorder in pregnancy is one of the leading conditions among them.<sup>1</sup> According to the American College of Obstetricians and Gynecologists (2013), it includes gestational hypertension, preeclampsia and eclampsia syndrome, chronic hypertension of any etiology & preeclampsia superimposed on chronic hypertension.<sup>2</sup> Pregnancy related hypertensive emergencies may present as HELLP (hemolysis, elevated liver enzymes, low platelet) syndrome or eclampsia (preeclampsia with seizures).<sup>3</sup> Preeclampsia and eclampsia syndrome are late-pregnancy

symptoms that include both nonconvulsive and convulsive periods.<sup>2</sup> Preeclampsia is a multisystem disorder of unknown etiology characterized by the development of hypertension to the extent of 140/90 mm of Hg or more with proteinuria (more than 300 mg protein in 24 hours urine) after the 20<sup>th</sup> week in a previously normotensive and non-proteinuric woman. When complications with generalized tonic-clonic convulsions and/or coma present than preeclampsia is called eclampsia.<sup>1</sup>

Pregnancy induced hypertension affects about 10% of pregnant women. In our subcontinent, preeclampsia and eclampsia syndrome are reported among 8-10% among pregnant women. All over the world, preeclampsia is the 3<sup>rd</sup> leading cause of

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maternal mortality and the 7<sup>th</sup> leading cause for perinatal mortality.<sup>4</sup>

In Bangladesh, the prevalence of preeclampsia and eclampsia syndrome is alarmingly high & associated with 20% of maternal death.<sup>5</sup> This syndrome is also responsible for 18% of fetal and infant mortality as well 46% of infants are low birth weight.<sup>6</sup>

Pregnancies complicated with hypertension are associated with adverse fetal outcomes in terms of prevalence of low birth weight, prematurity, low Apgar score at birth and stillbirth.<sup>7</sup> Early screening may allow vigilant antenatal surveillance and appropriate timing of fetal delivery to avoid serious sequel.<sup>6</sup> The most critical factors determining the neonatal outcome is gestational age—survival rate increases when delivery occurred after 35 weeks of gestation. The management in our country still poses a major challenge.<sup>4</sup> The present study was carried out to evaluate the fetal outcomes in different groups of preeclampsia and eclampsia syndrome.

### Materials and Methods

This cross-sectional observational study was performed over a period of 2 years from July 2019 to June 2021 in the Department of Pathology, BIRDEM General Hospital, Shahbagh, Dhaka. The study comprised 138 clinically diagnosed cases of pregnant women with preeclampsia and eclampsia syndrome by the inclusion and exclusion criteria from the department of Gynecology & Obstetric of BIRDEM and DMCH. The pregnant women who had blood pressure at or above 140/90 mmHg on at least two occasions 6 hours apart after 20 weeks of gestation, with or without edema, proteinuria and convulsion were included in this study. These cases were further divided as mild preeclampsia when blood pressure were at least 140/90 mm of Hg on two occasions at 6 hours apart associated with proteinuria. Severe cases were defined as one or more criteria of the following: blood pressure of at 160/110 mm of Hg at least on two occasions at 6 hours apart with proteinuria, with oliguria (<500ml/24hours) or cerebral/visual disturbances or pulmonary edema or any other features of end-organ damage. When complications with convulsion and/or coma present then preeclampsia was called eclampsia.

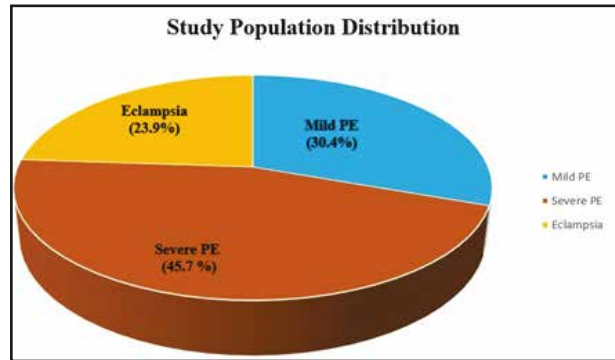
Among all the cases, relevant history were taken. Immediately after delivery, neonatal birth weight, prematurity, stillbirth, presence of fetal distress (assessed by Apgar score) was recorded as parameters of the outcome of pregnancy. All information were recorded systematically in a prepared proforma.

This study was approved by ethical committee and informed written consent was obtained from the patient or patient's attendant in each case.

The statistical analysis was carried out by using the Statistical Package for Social Sciences version 20.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics were presented in tables, pie charts and bar diagram. The frequencies of different entities were expressed as percentage. The ANOVA was used to compare quantitative variables among various groups of the cases.

### Results

A total number of 138 cases were selected for the study. Out of 138 cases, there were 42 cases (30.4%) of mild preeclampsia (mild PE), 63 (45.7%) were of severe preeclampsia (severe PE), and 33 (23.9%) were of eclampsia (Figure 1).



**Figure 1:** Distribution of the study population according to the severity of preeclampsia and eclampsia syndrome (n=138).

Among 138 cases, the mean birth weight was (2.12±0.57) kg, observed in mild preeclamptic group, followed by (1.52±0.47) kg in the eclamptic group. This difference has been found as statistically significant among the three groups (Table I).

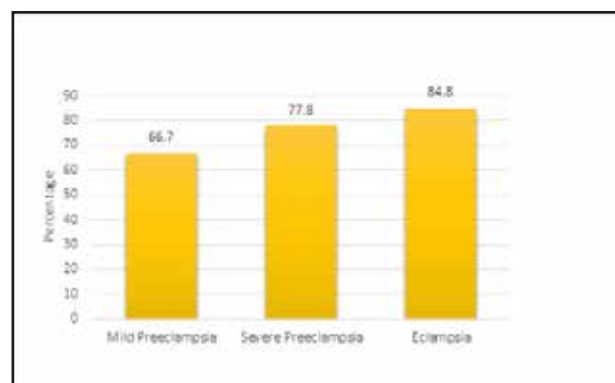
**Table I:** The baby weight in different groups of preeclampsia and eclampsia syndrome (n=138)

Outcome of pregnancy	Mild PE (n=42)	Severe PE (n=63)	Eclampsia (n=33)	p-value*
	mean± SD	mean± SD	mean± SD	
Baby weight (kg)	2.12±0.57	1.82±0.57	1.52±0.47	<0.001 <sup>S</sup>

Data were expressed as Mean±SD

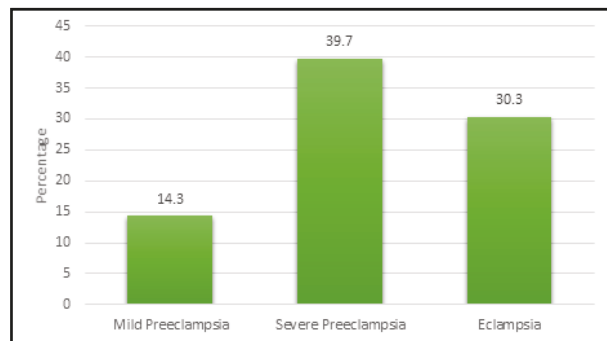
\*ANOVA was carried out to measure the level of significance.

A low Apgar score (score<7) was mainly observed (77.8%) in the severe PE and (84.8%) in eclampsia. The data found statistically not significant (Figure 2).



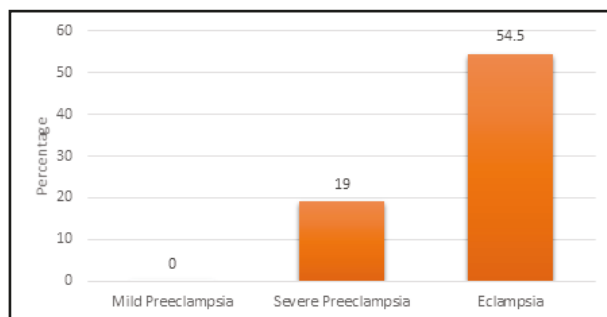
**Figure 2:** Distribution of Apgar score (<7) in different groups of preeclampsia and eclampsia syndrome (n=138).

Prematurity was mainly observed (39.7%) in severe PE and (30.3%) in eclampsia. Data were statistically significant (Figure 3).



**Figure 3:** Distribution of prematurity in different groups of preeclampsia and eclampsia syndrome (n=138).

Stillbirth was mainly found (54.4%) in eclampsia and (19%) in severe preeclampsia. Data regarding stillbirth were found statistically significant (Figure 4).



**Figure 4:** Distribution of stillbirth in different groups of preeclampsia and eclampsia syndrome (n=138).

## Discussion

This study exhibited mean birth weight of the newborn was  $2.12 \pm 0.57$  kg in mild PE followed by  $1.82 \pm 0.57$  kg in severe PE, and  $1.52 \pm 0.47$  kg in eclampsia. The birth weight of the newborn was significantly reduced according to the severity of the disease. Mousa and Joborae (2019) performed a study in Iraq and found  $3.2 \pm 0.49$  kg in mild PE,  $2.6 \pm 0.50$  kg in severe PE, and  $1.8 \pm 0.64$  kg in cases of eclampsia.<sup>8</sup> Ezeigwe CO et al concluded that the mean birth weight of newborns was  $2.66 \pm 1.63$  kg in mild PE,  $2.58 \pm 1.61$  kg in severe PE, and  $2.45 \pm 1.57$  kg in eclampsia in their study.<sup>9</sup> Concerning these values, it was inferred that a newborn baby's weight was significantly low in PIH due to placental insufficiency.

This study mild PE, severe PE, and eclampsia, Apgar scores <7 were reported in 66.7%, 77.8%, and 84.8%, respectively. This alteration was not found statistically significant. In 2016, Kambale T et al. documented a low Apgar score was 26.9% in mild PE, 46.6% in severe PE and 75% in eclampsia.<sup>13</sup> A similar finding was also observed in Yucesoy et al. (2005) in Turkey. Maternal vasospasm leads to fetal hypoxia, which is responsi-

ble for fetal jeopardy.<sup>10</sup> In this study, the prevalence is much higher than other studies. This may be linked to resource constraints that limit technological advances such as mechanical ventilators and surfactant replacement therapy needed for the care of these newborns.

This study showed that the incidence of prematurity in mild PE, severe PE, and eclampsia was 14.3%, 39.7%, and 30.3%, respectively. This variation was found statistically significant. A secondary analysis done by Abalos E et al on behalf of the WHO Multicountry Survey on Maternal and Newborn Health was held in 29 countries from Africa, Asia, Latin America, and the Middle East. They found 30.89% and 39.84% of preterm birth in PE and eclampsia cases, respectively.<sup>11</sup> Bangal VB et al in 2012 in India (Maharashtra) also reported similar findings of prematurity.<sup>12</sup>

Regarding stillbirth, 19.0% of cases of severe PE and 54.5% cases of eclampsia exhibited stillbirth. In the case of mild PE, no stillbirth case was found in this study. These findings were also statistically significant. Results from the current study match with the study done by Kambale T et al in 2016, who concluded that stillbirth in their study was 0% in mild PE, 20% in severe PE, and 50% in eclampsia.<sup>13</sup> A similar finding was also noted by Raghavendra et al. study in India (Karnataka).<sup>14</sup>

## Conclusion

Preeclampsia and eclampsia syndrome is the leading cause of premature termination of pregnancy, intrauterine growth retardation, perinatal mortality, and morbidity. This disorder can be preventable if it is detected and treated at an early stage. The findings of this study could aid our understanding of preeclampsia and eclampsia-related pregnancy outcomes. This study will help us to take necessary steps and appropriate management protocol for better fetal outcomes in these studies.

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## References

1. Konar H. (ed.) DC Dutta's Textbook of Obstetrics including Perinatology and Contraception. 9th edition, New Delhi: Jaypee Brothers Medical Publishers; 2018; 219-240.
2. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Spong CY, Hoffman BL et al. (ed.) Williams Obstetrics, 25th edition, New York: McGraw-Hill Education; 2018; 728-737.
3. Soomro S, Shaikh AA, Kumar R. Maternal and Fetal Outcomes of Pregnancy-Related Hypertensive Disorders in a Tertiary Care Hospital in Sukkur, Pakistan. Cureus. 2019; 11(8): 1-7.
4. Tahmina HZ, Shahid AR, Hosna AU, Alam, A. Study on Outcome of Eclampsia Patients in District Hospital in Bangladesh. J Dhaka Med Coll. 2014; 23(2): 223-226.

5. Yeasmin S, Uddin MA. Determination of Risk Factors for Pre-eclampsia in a Tertiary Hospital of Bangladesh. *Chattagram Maa-O-Shishu Hospital Medical College Journal*. 2017; 16(1): 29-32.
6. Mahjabeen N, Nasreen SZ, Begum F, Mustary F. Effects of Hyperuricemia on Fetal Outcome in Preeclamptic Patients. *BIRDEM Med J*. 2019; 9(2): 117-120.
7. Vats K, Paul M. Study of fetal outcome in hypertensive disorders of pregnancy in a tertiary care maternity hospital of Delhi. *Int J Reprod Contracept Obstet Gynecol*. 2016; 5: 3773-3777.
8. Mousa BA, Joborae SFFMA. Study of Placental Shape and Histopathological Changes in Pregnant Ladies with Pre-eclampsia. *Iraq Med J*. 2019; 3(2): 41-46.
9. Ezeigwe CO, Okafor CI, Eleje GU, Udigwe GO, Anyiam DC. Placental Peripartum Pathologies in Women with Preeclampsia and Eclampsia. *Obstetrics and Gynecology International*. 2018; 4: 1-8.
10. Yucesoy G, Ozkan S, Tan HB, Caliskan E, Corakci BV. Maternal and perinatal outcome in pregnancies complicated with hypertensive disorder of pregnancy: A seven-year experience of a tertiary care center. *Arch Gynecol Obstet*. 2005; 273: 43-49.
11. Abalos E, Cuesta C, Carroli G, Quershi Z, Widmer M, Vogel JP et al. on behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network. Pre-eclampsia, Eclampsia and Adverse Maternal and Perinatal Outcomes: A Secondary Analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG*. 2014; 121(1): 14-24.
12. Bangal VB, Giri PA, Mahajan AS. Maternal and Foetal Outcome in Pregnancy Induced Hypertension: A Study from Rural Tertiary Care Teaching Hospital in India. *IntJour of Biomed Res*. 2012; 22(12): 595-599.
13. Kambale T, Iqbal B, Ranraje S, Swaimul K, Salver S. Placental Morphology & Fetal Implications in Pregnancies Complicated by Pregnancy-Induced Hypertention. *Medical Journal Of Dr. D.Y. Patil University*. 2016; 9(3): 341-347.
14. Raghavendra AY, Vinay KV, Veena P. A Study of Placental Weight and Fetal Outcome in Different Grades of Pregnancy Induced Hypertension. *Int J Anat Res*. 2014; 2(4): 625-662.