

Neonatal Outcomes in Women with Pre-Eclampsia in a Tertiary Care Hospital

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ABSTRACT

Objective: To determine the frequency of adverse neonatal outcomes in women with pre-eclampsia.

Methods: This case series containing 100 patients with diagnosis of pre-eclampsia was conducted in Saidu teaching hospital Swat from April-2022 to January-2023. The women were followed till delivery of baby. The primary study endpoint was neonatal outcomes, which were labelled in-terms of pre-mature birth, birth status, APGAR score at 5 minutes, NICU admission, and in-hospital death.

Results: Mean age was 31.2±3.5 years, majority of patients; 44% were multiparous. Cesarean section was performed in 66% patients. Regarding neonatal outcomes, pre-term birth rate was 53%, still birth occurred in 12% patients. 46% neonates had normal birthweight, 35% were of low birthweight and 19% were of very low birthweight. NICU admission was needed in 58% neonates and 16% neonates died before discharge.

Conclusion: There is a high frequency of adverse neonatal outcomes in women with pre-eclampsia. Optimizing obstetric and neonatal care can help to reduce these adverse outcomes.

Keywords: pre-eclampsia, still birth, low birthweight, APGAR score, mortality.

INTRODUCTION

Pre-eclampsia is a significant problem that affects women all over the world and is connected to adverse outcomes for both the mother and the newborn baby.^{1, 2} Both preeclampsia and eclampsia are more prevalent in nations with low and middle incomes (LMIC), which also have a higher prevalence of associated morbidities.³ In Europe, the prevalence of eclampsia is estimated to be 0.1%, however in sub-Saharan Africa, it can reach as high as 4%. Mortality rates due to eclampsia also differ widely from country to country, ranging from 0% to 2% in high-income nations to 18% in low-income nations.⁴ Pakistan is the sixth most populous nation. And is the third most populous nation having highest burden of maternal and fetal mortality.⁵ Moreover, there were 34 percent of maternal deaths in Pakistan attributed to eclampsia.⁶

Pregnancies that are complicated by preeclampsia and eclampsia have an increased risk of having a premature delivery, compromised uteroplacental perfusion, and maternal-fetal hypoxia during seizures. These factors can lead to a less than ideal outcome for the newborn. In low- and middle-income countries (LMIC), the capacity for providing support to neonates is restricted, which increases the risk of morbidity and mortality for vulnerable neonates.⁷ Pregnancies that are complicated by preeclampsia and eclampsia have been shown to have higher than average rates of stillbirth, neonatal death, low birthweight, and admission to neonatal intensive care units (NICUs).^{8, 9} Despite significant global research efforts on this subject, there is a dearth of relevant data specifically from Pakistan. This study aimed to evaluate the newborn outcomes among females diagnosed with hypertensive condition during pregnancy. The findings of this paper will serve to emphasize the importance of implementing effective awareness campaigns pertaining to hypertensive disease in pregnancy.

METHODS

This case series containing 100 patients with diagnosis of pre-eclampsia was conducted in Saidu teaching hospital Swat from April-2022 to January-2023. The diagnosis of pre-eclampsia was established based on the following criteria: two separate instances of systolic blood pressure equal to or greater than 140 mm Hg and diastolic blood pressure equal to or greater than 90 mm Hg, with a time interval of at least 6 hours between measurements; and the presence of proteinuria, indicated by a protein excretion of 300 mg or more in a 24-hour urine collection, or a dipstick reading of 2+ or higher, occurring after 20 weeks of gestation. Patients with HELLP

syndrome, cardiac disease, or with neurological disorders were excluded.

The women were followed till delivery of baby. The primary study endpoint was neonatal outcomes, which were labelled in-terms of pre-mature birth, birth status, APGAR score at 5 minutes, NICU admission, and in-hospital death.

RESULTS

Mean age was 31.2±3.5 years, majority of patients; 44% were multiparous. Cesarean section was performed in 66% patients, mostly due to complications of pre-eclampsia. Only 5% women were carrying twin pregnancy (Table 1).

Regarding neonatal outcomes, pre-term birth rate was 53%, still birth occurred in 12% patients. 46% neonates had normal birthweight, 35% were of low birthweight and 19% were of very low birthweight. NICU admission was needed in 58% neonates and 16% neonates died before discharge (Table 2).

Table 1: Baseline Characteristics.

Age	31.2±3.5
Parity	
Nulliparous	32 (32%)
Primiparous	24 (24%)
Multiparous	44 (44%)
Delivery Mode	
Vaginal	34 (34%)
Cesarean Section	66 (66%)
Type of Pregnancy	
Singleton	95 (95%)
Twins	5 (5%)

Table 2: Neonatal Outcomes.

Outcomes	Frequency (%)
Pre-term Birth	53 (53%)
Still Birth	12 (12%)
Birthweight	
Normal Weight	46 (46%)
Low Birthweight	35 (35%)
Very Low Birthweight	19 (19%)
APGAR Score <7 at 5 minutes	14 (14%)
NICU Admission	58 (58%)
Status at Discharged	
Dead	16 (16%)
Alive	84 (84%)

DISCUSSION

According to recent findings, it has been shown that preeclampsia is responsible for roughly 15.9% of maternal fatalities in the United States. Moreover, it is a significant contributor to both perinatal morbidity and mortality.¹⁰ Hence, medical practitioners are required to meticulously assess the potential hazards to both the expectant mother and the developing foetus while making decisions regarding their treatment. In light of this objective, the establishment of effective treatment methods remains inadequately delineated, so presenting physicians with insufficient evidence to inform their patient care practises.^{11, 12} The elevated occurrence of perinatal morbidity and death observed in pregnancies complicated by preeclampsia can be attributed mostly to the necessity of preterm delivery and uteroplacental insufficiency, which leads to compromised blood flow to the foetus.^{13, 14}

In this study, cesarean delivery was needed in 58% patients. Previous research has shown that women who have preeclampsia had a higher rate of having their babies delivered surgically.^{8, 15} The findings from our study are remarkably similar to those of these earlier studies. This increased risk for operational delivery is not unexpected, particularly in the case of severe preeclampsia, in which either the health of the mother or the health of the child, or both, are at danger, and immediate abdominal delivery is often the route of delivery to buffer against unfavourable perinatal result.

Preterm birth commonly occurs in pregnancies afflicted by preeclampsia due to the potential risk posed to both the mother and baby if the pregnancy were allowed to progress to full premature. The prevalence of preterm births in our study was determined to be 53%. This finding aligns with previous scholarly investigations that have been documented in the literature.^{16, 17}

In our study, there were 54% low birthweight neonates, among those 35% were low birthweight and 19% were of very low birthweight. The observed decrease in birth weight is likely attributable to the impact of preeclampsia on both placental function and foetal growth.⁹

A significant proportion of newborns, around 58%, born to women diagnosed with preeclampsia in our research were required to be admitted to the neonatal unit. Among the individuals who were granted admission, a majority exhibited respiratory compromise. However, it was challenging to establish a conclusive underlying etiological diagnosis for a significant number of these infants. Nevertheless, it is plausible that lung immaturity and insufficient surfactant levels may have had a role in contributing to this condition, particularly in the case of premature infants. The prior literature has revealed an observed rise in the demand for newborn hospitalization and respiratory assistance.^{18, 19}

The neonatal result exhibited a higher degree of adversity among infants delivered by women diagnosed with preeclampsia in our research, as evidenced by a fatality rate of 16%. Ramsewak et al. reported a comparable death rate of 18%.¹⁷ Babies born to women with preeclampsia had an adjusted relative risk of newborn death of 18.41, according to research by Browne et al. in Ghana.¹⁵ Preeclamptic mothers have a higher risk of having a stillborn or premature baby, according to a study by Kim et al. in Korea.¹⁹

The observed pattern of increased mortality among newborns born to women with preeclampsia appears to be more prevalent in low- and middle-income countries (LMICs). Within our particular context, the consequences resulting from premature birth were significant factors contributing to the death of newborns. This correlation may be attributed to limitations in resources, which restrict the implementation of advanced technologies such as mechanical ventilation, surfactant replacement therapy, and total parenteral nutrition required for the optimal care of these infants. It will be crucial to reduce the occurrence of premature delivery as a result of maternal preeclampsia. In order to enhance the morbidity and mortality outcomes in neonates, interventions should be focused on the prompt and suitable obstetric care for women

diagnosed with preeclampsia, as well as ensuring sufficient resources are available for the management of premature neonates impacted by this condition.

CONCLUSION

There is a high frequency of adverse neonatal outcomes in women with pre-eclampsia. Optimizing obstetric and neonatal care can help to reduce these adverse outcomes.

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