

Research Article	Pak-Euro Journal of Medical and Life Sciences
DOI: 10.31580/pjmls.v8iSp3.3107	Copyright © All rights are reserved by Corresponding Author
Vol. 8 No. Special 3, 2025-26: pp. S171-S176	
www.readersinsight.net/pjmls	Revised: March 12, 2026 Accepted: March 15, 2026
Submission: January 10, 2026	Published Online: March 31, 2026

STATUS OF PREECLAMPSIA AND ECLAMPSIA IN PREGNANT WOMEN AND THEIR ASSOCIATION WITH PERINATAL OUTCOME IN QUETTA: A CROSS-SECTIONAL SINGLE CENTER STUDY



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Abstract

Background: Preeclampsia and eclampsia are among the most severe complications of pregnancy and represent major contributors to maternal and perinatal morbidity and mortality worldwide. Preeclampsia is a multisystem disorder characterized by new-onset hypertension accompanied by proteinuria or end-organ damage after the 20th week of gestation. Without timely intervention, it can rapidly progress to life-threatening disease. Eclampsia, defined as the occurrence of generalized tonic-clonic seizures in women with preeclampsia, constitutes one of the most critical obstetric emergencies.

Objective: This study aimed to determine the prevalence and clinical status of preeclampsia and eclampsia among pregnant women attending the Department of Obstetrics and Gynaecology in Quetta, and to evaluate their association with perinatal outcomes.

Methodology: A cross-sectional observational study was conducted at Bolan Medical Complex Hospital, Quetta, from July 2025 to December 2025. The study population included both admitted patients and outpatients. Data were collected using a convenient sampling technique.

Results: A total of 60 pregnant women diagnosed with hypertensive disorders of pregnancy were enrolled. The majority of participants (45.0%) were aged 39–45 years, and 45.0% had a gestational age of 37–42 weeks. More than half (51.7%) had above-normal blood pressure, with 53.3% classified as eclamptic and 46.7% as preeclamptic. Spontaneous vaginal delivery was the most common mode of delivery (61.7%), followed by cesarean section (21.7%). Regarding fetal outcomes, live births accounted for 56.7%, while stillbirths, intrauterine deaths, and neonatal deaths accounted for 15.0%, 16.7%, and 11.7%, respectively. Male and female neonates were equally represented (50.0% each). Most newborns (35.0%) had a birth weight of 2.0–2.4 kg, and 58.3% had an Apgar score below 7.

Conclusion: Hypertensive disorders of pregnancy, particularly eclampsia, were associated with substantial adverse maternal and fetal outcomes. Although over half of the pregnancies resulted in live births, considerable rates of stillbirth, intrauterine death, and neonatal death were observed. Additionally, a large proportion of neonates had low birth weight and suboptimal Apgar scores. These findings underscore the critical need for early detection, regular antenatal monitoring, and prompt management of preeclampsia and eclampsia to improve both maternal and neonatal outcomes.

Keywords: Apgar score, Eclampsia, Hypertensive disorders of pregnancy, Maternal morbidity, Perinatal outcome, Preeclampsia, Pregnancy complications, Stillbirth

INTRODUCTION

Preeclampsia and eclampsia are among the most dangerous complications of pregnancy and significant causes of maternal and perinatal morbidity and mortality worldwide (1). Preeclampsia, defined as new-onset hypertension with proteinuria or end-organ damage after 20 weeks of gestation, is a multisystem disorder that can rapidly progress to severe disease if left uncontrolled. Eclampsia, characterized by generalized tonic-clonic seizures in women with preeclampsia, represents one of the most critical obstetric emergencies (2). Together, these disorders impose an enormous burden on healthcare systems, particularly in resource-limited settings (3). Hypertensive disorders of pregnancy are responsible

for approximately 14% of maternal deaths globally, according to the World Health Organization (WHO), underscoring the urgent need for improved prevention and management strategies (4).

The pathophysiology of preeclampsia remains incompletely understood; however, it is generally believed to involve abnormal placentation, endothelial dysfunction, oxidative stress, and an exaggerated maternal immune response (4). These processes lead to systemic vasoconstriction, reduced organ perfusion, and clinical manifestations including hypertension, proteinuria, cerebral edema, liver dysfunction, and thrombocytopenia (5). Unchecked progression results in cerebral involvement culminating in seizures the defining feature of eclampsia which significantly increases the risk of maternal mortality, stroke, stillbirth, prematurity, and intrauterine growth restriction. The unpredictable nature of this progression highlights the critical need for effective prophylactic and therapeutic interventions (6).

Globally, preeclampsia affects 2–8% of all pregnancies, with prevalence varying by region, healthcare access, and antenatal service availability. In developed nations, rates range from 3–5%, whereas in developing regions such as sub-Saharan Africa and South Asia, prevalence may reach 7–10% due to inadequate maternal healthcare and late diagnosis (7). Over 10 million women develop preeclampsia annually, and eclampsia accounts for 12% of maternal deaths in low- and middle-income countries (LMICs), remaining a leading cause of stillbirths and preterm births. In Asia, hypertensive disorders contribute substantially to maternal and neonatal morbidity, with rates influenced by socioeconomic factors, healthcare infrastructure, and antenatal care utilization (8).

In Pakistan, hypertensive disorders of pregnancy are major contributors to maternal and perinatal mortality, disproportionately affecting women in rural and underserved areas due to limited healthcare access, inadequate antenatal care, and delayed diagnosis and treatment (9). The overall prevalence of preeclampsia in Pakistan is estimated at approximately 5% of all pregnancies, with urban areas reporting rates of 4–6% in cities like Karachi, Lahore, and Islamabad, while rural regions in Balochistan, Khyber Pakhtunkhwa, and Sindh experience rates exceeding 7–8% (9, 10). Eclampsia, though less frequent, remains a major cause of maternal deaths, with an estimated rate of 2.4 per 1000 pregnancies—significantly higher than the <0.5 per 1000 reported in developed nations (11). In rural settings, eclampsia rates reach 3–5 per 1000 deliveries, often presenting with severe complications such as eclamptic convulsions, pulmonary edema, and liver rupture. According to WHO (2018), eclampsia accounts for 11% of maternal deaths in Pakistan.

In resource-limited settings like Balochistan, preeclampsia and eclampsia continue to drive substantial maternal and neonatal morbidity and mortality. Although magnesium sulphate is the standard treatment for preventing convulsions in eclampsia and severe preeclampsia, there is limited knowledge regarding its effectiveness, outcomes, and associated challenges in this region. Therefore, this study was conducted to estimate the prevalence of preeclampsia and eclampsia among pregnant women attending the Department of Obstetrics and Gynaecology in Quetta and to evaluate their association with perinatal outcomes.

METHODOLOGY

STUDY DESIGN

This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology, Unit-II, Postgraduate Medical Institute (PGMI), at Bolan Medical Complex Hospital, Quetta, from July 2025 to December 2025. The study population comprised pregnant women admitted to the hospital or presenting as outpatients, diagnosed with moderate to severe preeclampsia or eclampsia. A convenient sampling technique was employed, and all willing participants who met the inclusion criteria were enrolled. Upon admission, a comprehensive history was obtained from each patient or their attendant, followed by a detailed physical examination encompassing general, systemic, and obstetric assessments. All participants or their attendants were fully informed about the purpose, procedures, risks, and benefits of the study, and written informed consent was obtained prior to enrollment.

INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria included pregnant women with a gestational age above 20 weeks, including both primigravida and multigravida, diagnosed with moderate to severe preeclampsia, as well as patients experiencing antepartum, intrapartum, or postpartum eclampsia. Exclusion criteria included patients who had received Valium or other anticonvulsant therapy, women experiencing seizures unrelated to hypertensive disorders, patients with renal or cardiac disorders, and individuals diagnosed with myasthenia gravis.

DATA ANALYSIS

Data were entered and analyzed using IBM SPSS version 22. Descriptive statistics were computed for demographic and clinical variables. Results were presented as frequencies and percentages for categorical variables, while mean and standard deviation were used for continuous variables.

ETHICAL CONSIDERATION

Ethical approval was secured from the Institutional Ethical Review Committee of the Post Graduate Medical Institute Quetta, University of Balochistan, Quetta. Confidentiality of all data was strictly maintained, and the identity of participants was not disclosed at any stage.

RESULTS

A total of 60 pregnant women diagnosed with hypertensive disorders of pregnancy were enrolled in this study. The demographic and clinical characteristics of the study participants are presented in Table I. The majority of participants (45.0%) belonged to the age group 39–45 years, followed by 23.3% in the 25–31 years age group. Regarding gestational age, 45.0% of women were at 37–42 weeks of gestation, while 33.3% were at 31–36 weeks. More than half of the mothers (51.7%) had above-normal blood pressure. Among the study population, 53.3% were classified as eclamptic and 46.7% as preeclamptic.

Table I. Demographic and clinical characteristics of study participants (n=60)

Characteristic	Frequency	Percentage (%)
Age (years)		
18–24	10	16.7
25–31	14	23.3
32–38	9	15.0
39–45	27	45.0
Gestational Age		
25–30 Weeks	13	21.7
31–36 Weeks	20	33.3
37–42 Weeks	27	45.0
Maternal Blood Pressure		
Normal	29	48.3
Above Normal	31	51.7
Status		
Preeclamptic	28	46.7
Eclamptic	32	53.3

The age-wise and gestational age-wise distribution of preeclampsia and eclampsia is shown in Table II. Eclampsia was more prevalent in the younger age group (18–24 years), while preeclampsia was more common in the 32–38 years age bracket. The highest overall prevalence of hypertensive disorders was observed in the 39–45 years age group, where both conditions were highly prominent. In terms of gestational age, most cases occurred during the term period (37–42 weeks), with preeclampsia being more frequent. However, eclampsia was more likely to occur during the late preterm period (31–36 weeks), suggesting progressive disease severity prior to term.

The mode of delivery stratified by maternal age and gestational age is presented in Table III.

Spontaneous vaginal delivery was the most common mode across all age groups (61.7%), particularly in the 39–45 years age group. Caesarean section was the second most frequent mode (21.7%), with higher rates observed in older women. Assisted vaginal deliveries (forceps and vacuum) were infrequent. According to gestational age, spontaneous vaginal delivery remained the predominant mode at all gestational ages, with the highest frequency at term (37–42 weeks). However, caesarean section was more prevalent in the late preterm period (31–36 weeks), likely due to maternal and fetal complications associated with hypertensive disorders.

Table II. Age-wise and gestational age-wise distribution of preeclampsia and eclampsia

Characteristic	Preeclamptic (n=28)	Eclamptic (n=32)
Age (years)		
18–24	3	7
25–31	6	8
32–38	6	3
39–45	13	14
Gestational Age		
25–30 Weeks	6	7
31–36 Weeks	7	13
37–42 Weeks	15	12

Table III. Age-wise and gestational age-wise distribution of mode of delivery (n=60)

Characteristic	Spontaneous vaginal	Breech vaginal	Forceps	Vacuum	C-Section	Breech C-Section
Age (years)						
18–24	7	1	0	0	1	1
25–31	8	1	1	1	3	0
32–38	6	0	0	1	2	0
39–45	16	3	0	0	7	1
Gestational Age						
25–30 Weeks	9	1	0	0	2	1
31–36 Weeks	9	3	1	1	5	1
37–42 Weeks	19	1	0	1	6	0

Perinatal outcomes and neonatal characteristics are summarized in Table IV. Live births accounted for 56.7% of pregnancies. However, adverse outcomes were substantial, with intrauterine deaths (16.7%), stillbirths (15.0%), and neonatal deaths (11.7%). Fetal gender distribution was equal, with male and female neonates each comprising 50.0%. Regarding birth weight, 35.0% of newborns weighed 2.0–2.4 kg, while 38.3% had low birth weight (below 2.0 kg). Only 26.7% of neonates had a birth weight of 2.5 kg or above. The majority of newborns (58.3%) had an Apgar score below 7, indicating poor neonatal condition at birth.

Table 4: Perinatal outcomes and neonatal characteristics (n=60)

Characteristic	Frequency	Percentage (%)
Birth Outcome		
Live Birth	34	56.7
Still Birth	9	15.0
Neonatal Death	7	11.7
Intrauterine Death (IUD)	10	16.7
Fetal Gender		
Male	30	50.0
Female	30	50.0
Birth Weight		
1.0–1.4 kg	14	23.3
1.5–1.9 kg	9	15.0
2.0–2.4 kg	21	35.0
2.5 kg and above	16	26.7
Apgar Score		
≥ 7	25	41.7
< 7	35	58.3

DISCUSSION

In current study, we assessed the status of pre-eclampsia and eclampsia and the immediate birth outcome. It was found that women with pre-eclampsia were more likely to have a caesarean section delivery. Neonates born to these women were more likely to be born with low birth weight, premature and these were the most common reasons why these newborns were admitted to the neonatal intensive care unit. Maternal age below twenty-four was an important predictor of low newborn weight (12).

New-borns of the pre-eclamptic patients had higher levels of likely to be low birth weight, small for gestational age or premature. Such outcomes are likely to be denoted as premature and will admitted to the Neonatal Intensive Care Unit compared infants of normotensive women (13). Similarly study was done in

Mulago hospital Uganda (14). Results of this study demonstrated that almost all of these babies had an Apgar score at five minutes of 7 and above (14).

The difference in the distribution of pre-eclampsia and eclampsia related to age and gestational age, which is largely in line with the worldwide trend for the distribution of both pre-eclampsia and eclampsia. The current study revealed that the risk for eclampsia increased in the younger age group of 18 to 24 years, while that for pre-eclampsia increased in the 32 to 38 years age group. The total risk for hypertensive disorders in pregnancy remained higher in the older age group (39 to 45 years), where the risks for both pre-eclampsia and eclampsia remained higher in the current study population. In a similar pattern to previous observations found in South Asia, Sub-Saharan Africa, and Latin America, younger primigravidas have been found to be at higher risks for the severe disease process such as eclampsia, while the multiparae are at higher risks for pre-eclampsia in the older age groups due to the resultant vascular damage due to advanced age (15).

As far as gestational age was concerned, the prevailing cases in this study presented in the term gestation phase (37-42 weeks) with preeclampsia, whereas cases in the preterm phase (31-36 weeks) presented with eclampsia, which depended on the disease severity in the antenatal periods before reaching the term phase. According to international statistics, it has been established that early and late preterm cases are associated with severe hypertensive disorders, maternal complications, as well as adverse outcomes in cases where in early intervention is not done in preeclampsia, depending on the gestational age, which increases the rapid progression rate towards eclampsia in most cases worldwide (16).

CONCLUSION

The current study highlights the heavy burden of preeclampsia and eclampsia in different gestational age groups on perinatal and maternal complications. It is seen from the findings that women aged between 39-45 years suffered most from preeclampsia/eclampsia complications both in respect to maternal complications and poor foetal outcome; however, young women aged 18-24 years have suffered least but also represented a great number of cases as an example of both extremes of the reproductive age group suffering from preeclampsia and eclampsia complications. As concerns parity, it can be mentioned that increased gravidity was related to complicated cases, including repeated seizures, HELLP syndrome and placental abruption, which confirms the international evidence stating that multiparous women (especially older) are at risk of hypertensive disorders. The prevalence of preeclampsia and eclampsia cases has been characterized by the dominance of eclampsia, reflecting the problem of delayed diagnosis and insufficient antenatal care access in resource-poor environment, such as Pakistan.

Such results indicate the importance of preeclampsia and eclampsia being among the principal reasons behind negative maternal and foetal outcomes in Pakistan, which are consistent with the regional and global statistics. Such results underscore the utmost importance of early diagnosis, regular antenatal care, and timely application of the gold-standard therapy - magnesium sulphate (MgSO_4) to prevent eclampsia from developing and reduce seizures. Moreover, improvement of women's healthcare institutions, availability of emergency obstetric care, and education of clinicians about the proper management of preeclampsia are key to improving outcomes.

It is recommended that establishing a dedicated triage system for hypertensive pregnant women in the BMC emergency department" or "Regular refresher training on MgSO_4 administration for all nurses and junior doctors is urgently needed to address this issue.

Study limitations:

It is pertinent to mention that this study was conducted in one hospital convenient sampling was used for the study. Therefore, the results should be interpreted with caution as they could not be generalized for general population. It is also suggested that since this study did not measure the factors that caused delayed diagnosis therefore, it would be helpful if these factors should also be explored.

Conflict of interest:

The authors report no conflicts of interest

Author's contributions:

SU Data collection, design and concept of the study; NG Drafting of the manuscript, revisions and proof reading; MAQ Design and concept of the study, drafting, data analysis and proof reading; RJ Drafting of the manuscript.

Declaration of generative AI-Assisted Tools:

No AI-assisted tools were used.

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