Original Research Article

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Clinical Profile and Maternal Outcomes of Severe Preeclampsia: A Tertiary Care Hospital-Based Study

Lailatunnessa[1,*], Munmun Nahid Iqbal[2], Moslema Parvin[3], Ashfi Laila Elora[4], Taslima Begum[5]

[1]Department of Obstetrics & Gynaecology, Khulna Medical College Hospital, Khulna, Bangladesh.
[2]Department of Obstetrics & Gynaecology, Sarkari Kormochari Hospital, Dhaka, Bangladesh.
[3]Department of Anaesthesiology, Khulna Medical College, Khulna, Bangladesh.
[4]Department of Obstetrics & Gynaecology, Dhaka Medical College Hospital, Dhaka, Bangladesh.
[5]Department of Obstetrics & Gynaecology, Chittagong Medical College, Chittagong, Bangladesh.

***Address for correspondence:** Dr. Lailatunnessa, Department of Obstetrics & Gynaecology, Khulna Medical College Hospital, Khulna, Bangladesh. **E-mail:** sklailacmc@gmail.com

Abstract

Background: Severe preeclampsia is a significant cause of maternal morbidity and mortality globally, especially in resource-poor tertiary care facilities where late presentation and poor antenatal care exacerbate the risks of complications. This study aimed to describe the maternal complications and outcomes of women admitted with severe preeclampsia in a tertiary care hospital.

Methods: A cross-sectional descriptive study was conducted at Khulna Medical College Hospital, Khulna, Bangladesh from January, 2025 to December, 2025, with 70 women with severe preeclampsia. Case records were used to obtain data on sociodemographic and obstetric characteristics, clinical presentation, laboratory parameters, management practices, and maternal outcomes, which were analyzed descriptively as frequencies and percentages using SPSS version 26.

Results: The majority of women (34.3%) were aged 25–29 years, 61.4% lived in rural areas, and 54.3% had irregular antenatal care. The most frequent presenting symptoms were headache (70.0%) and generalized edema (58.6%), and 45.7% of women had proteinuria of 3+ grade. 91.4% received magnesium sulfate, and 74.3% had a cesarean section. A total of 11.4% of women developed eclampsia, 10% developed HELLP syndrome, and 17.1% required admission to the ICU/HDU. The majority of participants (67.1%) recovered without significant complications, and one maternal death (1.4%) was reported.

Conclusion: Despite the fact that severe preeclampsia is associated with maternal morbidity, this is largely due to poor and irregular attendance at antenatal care. Improving antenatal surveillance, early referral, and implementation of standard management procedures could help to lower the incidence of severe maternal complications.

Keywords: Severe preeclampsia, maternal outcomes, eclampsia

Introduction

Preeclampsia is a multisystem disorder of pregnancy that is defined as new-onset high blood pressure after the twentieth week of pregnancy often with protein in the urine or damage to organs in the mother.[1] Preeclampsia occurs in two to eight percent of all pregnancies worldwide and is

a major cause of sickness and death in mothers and babies especially where early pregnancy check-ups are hard to get.[2] As the condition gets worse with high blood pressure, heavy proteinuria or problems in the liver kidneys, blood, brain or lungs the danger of severe complications for the mother rises quickly.[3] Severe preeclampsia can lead to seizures, HELLP syndrome, kidney failure, placental detachment, fluid in the lungs and heavy bleeding after birth all of which may need intensive care or can be fatal to the mother.[4] Hospital data from Ethiopia show that preeclampsia places a load on facilities is linked to unequal access to routine and emergency care and that women who develop eclampsia at referral hospitals have worse outcomes when they arrive late or have few check-ups.[5,6] Low-resource teaching hospitals have found that the way preeclampsia presents and the rate of complications differ depending on when it starts with early onset being more severe.[7] Population studies also show that the rate of preeclampsia HELLP syndrome and eclampsia depends on the week the baby is born showing that this disorder varies even in well-equipped settings.[8] Even when mothers are closely watched after a preeclampsia diagnosis without signs many still develop severe disease while waiting for delivery, which shows the need for ongoing monitoring.[9] Similar patterns appear in reports from Southeast Asia, where high rates of death and illness are seen among mothers with preeclampsia and in hospital studies in the region that show that severe preeclampsia with severe features and HELLP syndrome increase the risk of bad outcomes compared to milder disease underscoring the importance of early recognition of danger signs. Yet local data on the background clinical signs, lab abnormalities, treatment methods and mother outcomes for severe preeclampsia are scarce in many top hospitals where this information guides triage, resource use and reviews. Knowing how age, number of births week of pregnancy when the mother shows up and routine care status relate to severity can help doctors act sooner and understanding the use of blood pressure medicines, magnesium sulfate and delivery method can reveal how well protocols are followed. In this context this study was done to describe the obstetric details, clinical and lab profile, treatment practices and mother complications and outcomes of women admitted with severe preeclampsia at a top hospital to create evidence, for early detection and care of this life-threatening condition.

Methods

The study was a hospital-based, cross sectional and descriptive study carried out at Khulna Medical College Hospital, Khulna, Bangladesh from January, 2025 to December, 2025. All pregnant women admitted with a diagnosis of severe preeclampsia during this time period and who gave informed written consent were included in the study consecutively until the desired sample size was achieved. Severe preeclampsia was defined as having either a systolic blood pressure of 160 mmHg or greater or a diastolic blood pressure of 110 mmHg or greater after 20 weeks of gestation, with 2+ or greater proteinuria on dipstick testing, and/or evidence of end-organ involvement in the mother, including headache, visual disturbance, epigastric pain, oliguria, thrombocytopenia, or deranged hepatic or renal function. The following women were excluded: those with chronic hypertension without superimposed preeclampsia, multifetal gestation, pre-existing chronic renal or hepatic disease, incomplete case records, and women who refused consent. The final study sample consisted of 70 women who met the eligibility criteria. The variables studied were grouped under five broad domains and extracted from case records using a structured proforma: sociodemographic and obstetric variables (age, residence, socio-economic status, gravidity, parity, gestational age at presentation, and status of antenatal care); clinical variables at presentation (blood pressure, proteinuria grade, headache, visual disturbance, epigastric pain, generalized edema, and oliguria); laboratory parameters (hemoglobin, platelet count, serum creatinine, serum aspartate amino-transferase, serum alanine aminotransferase,

and serum lactate dehydrogenase); management variables (administration of magnesium sulfate, antihypertensive therapy, use of antenatal corticosteroid, mode and timing of delivery); and maternal outcome variables (eclampsia, HELLP syndrome, acute kidney injury, placental abruption, pulmonary edema, postpartum hemorrhage, intensive/high-dependency care unit admission, and outcome at discharge). All the collected data were entered and analyzed using SPSS version 26, and the results were presented descriptively in tabular form, while the categorical variables were summarized in the form of frequencies and percentages.

Results

The sociodemographic and obstetric data of the 70 participants in the study are shown in Table 1. The age group 25–29 years had the highest proportion (34.3%), and 61.4% of women lived in rural areas. Almost half (48.6%) were in the middle class of the socioeconomic spectrum. The multigravida women accounted for 54.3% of the sample, while 51.4% were multiparous. The most common gestational age at presentation was 34–36 weeks (40.0%). Irregular antenatal care was observed in 54.3% of women, and 15.7% of women had not received any antenatal care [Table 1].

Table 1: Sociodemographic and obstetric characteristics of the study participants, $N = 70$

Variables	Category	*n* (%)
Age, years	<20	7 (10.0)
	20–24	22 (31.4)
	25–29	24 (34.3)
	30–34	11 (15.7)
	≥35	6 (8.6)
Residence	Rural	43 (61.4)
	Urban	27 (38.6)
Socioeconomic status	Lower	30 (42.9)
	Middle	34 (48.6)
	Upper	6 (8.6)
Gravidity	Primigravida	32 (45.7)
	Multigravida	38 (54.3)
Parity	Nulliparous	34 (48.6)
	Multiparous	36 (51.4)
Gestational age at presentation	<34 weeks	19 (27.1)
	34–36	28 (40.0)
	≥37 weeks	23 (32.9)
Antenatal care status	Regular	21 (30.0)
	Irregular	38 (54.3)
	No antenatal care	11 (15.7)

The clinical profile at presentation of the 70 women with severe preeclampsia is described in Table 2. Sixty-seven percent of women had a systolic blood pressure of 160–179 mmHg, and 62.9% had a diastolic blood pressure of 110–119 mmHg. A total of 45.7% of participants had proteinuria of 3+ or greater. The most common symptom was headache (70.0%), followed by generalized edema (58.6%) and visual disturbance (35.7%). Twenty-four-point three percent of women had epigastric or right upper quadrant pain, while 12.9% had oliguria [Table 2].

The laboratory profile of the study participants is summarized in Table 3. The hemoglobin level was less than 10 g/dL in 35.7% of women, and the platelet count was less than 100,000/mm³ in 17.1%. 17.1% of participants had serum creatinine levels above 1.1 mg/dL. Elevated serum AST (>40 U/L) was found in 40.0%, and elevated serum ALT (>40 U/L) in 35.7% of women. 32.9% of participants had serum LDH levels of 600 U/L or more [Table 3].

The management and mode of delivery of the study participants are presented in Table 4. 91.4% of women received magnesium sulfate. The most common antihypertensive medications used were labetalol (42.9%) and nifedipine (35.7%). 78.7% of eligible women received antenatal corticosteroids. Caesarean section was the most common method of delivery (74.3%) versus vaginal delivery (25.7%). The delivery was at 37 weeks

Table 2: Clinical profile at presentation among women with severe preeclampsia, $N = 70$

Variables	Category	*n* (%)
Systolic blood pressure	160–179 mmHg	47 (67.1)
	≥180 mmHg	23 (32.9)
Diastolic blood pressure	110–119 mmHg	44 (62.9)
	≥120 mmHg	26 (37.1)
Proteinuria	2+	20 (28.6)
	3+	32 (45.7)
	4+	18 (25.7)
Headache	Present	49 (70.0)
	Absent	21 (30.0)
Visual disturbance	Present	25 (35.7)
	Absent	45 (64.3)
Epigastric/right upper quadrant pain	Present	17 (24.3)
	Absent	53 (75.7)
Generalized edema	Present	41 (58.6)
	Absent	29 (41.4)
Oliguria	Present	9 (12.9)
	Absent	61 (87.1)

Table 3: Laboratory profile of the study participants, $N = 70$

Variables	Category	*n* (%)
Hemoglobin	<10 g/dL	25 (35.7)
	≥10 g/dL	45 (64.3)
Platelet count	<100,000/mm³	12 (17.1)
	100,000–149,999/mm³	20 (28.6)
	≥150,000/mm³	38 (54.3)
Serum creatinine	≤1.1 mg/dL	58 (82.9)
	>1.1 mg/dL	12 (17.1)
Serum AST	≤40 U/L	42 (60.0)
	>40 U/L	28 (40.0)
Serum ALT	≤40 U/L	45 (64.3)
	>40 U/L	25 (35.7)
Serum LDH	<600 U/L	47 (67.1)
	≥600 U/L	23 (32.9)

Table 4: Management and mode of delivery among women with severe preeclampsia, $N = 70$

Variables	Category	*n* (%)
Magnesium sulfate administered	Yes	64 (91.4)
	No	6 (8.6)
Antihypertensive therapy	Labetalol	30 (42.9)
	Nifedipine	25 (35.7)
	Combination/ other	15 (21.4)
Antenatal corticosteroid administered*	Yes	37 (78.7)
	No	10 (21.3)
Mode of delivery	Vaginal delivery	18 (25.7)
	Caesarean section	52 (74.3)
Timing of delivery	<34 weeks	17 (24.3)
	34–36 weeks	27 (38.6)
	≥37 weeks	26 (37.1)

or more in 37.1% of women and at less than 34 weeks in 24.3% [Table 4].

The maternal complications and outcomes of the 70 women who had severe preeclampsia are shown in Table 5. Eleven percent of women developed eclampsia and 10 percent developed HELLP syndrome. Acute kidney injury and postpartum hemorrhage were each seen in 7.1% of women; placental abruption was seen in 8.6% and pulmonary edema was seen in 4.3%. Of those who participated, 17.1% required admission to the ICU/HDU. The majority of women (67.1%) recovered without significant complications, 31.4% recovered with at least one major complication, and one maternal death (1.4%) occurred [Table 5].

Discussion

The common age group in this study was 25–29 years and many women were from lower or middle socioeconomic status and rural areas. I see

Table 5: Maternal complications and outcomes among women with severe preeclampsia, $N = 70$

Variables	Category	*n* (%)
Eclampsia	Yes	8 (11.4)
	No	62 (88.6)
HELLP syndrome	Yes	7 (10.0)
	No	63 (90.0)
Acute kidney injury	Yes	5 (7.1)
	No	65 (92.9)
Placental abruption	Yes	6 (8.6)
	No	64 (91.4)
Pulmonary edema	Yes	3 (4.3)
	No	67 (95.7)
Postpartum hemorrhage	Yes	5 (7.1)
	No	65 (92.9)
ICU/HDU admission	Yes	12 (17.1)
	No	58 (82.9)
Maternal outcome at discharge	Recovered without major complication	47 (67.1)
	Recovered with ≥1 major complication	22 (31.4)
	Maternal death	1 (1.4)

that this is very similar to the findings of Kalambe et al. who reported that preeclampsia was mainly seen in women in their twenties from low-resource backgrounds who attended a tertiary care centre.[10] Over half of the study population had absent antenatal care and that matches the results of Vennela et al., who found that poor antenatal care was strongly linked with progression to severe disease and adverse maternal outcomes.[11] This predominance of multigravida and multiparous women differs slightly from some Asian cohorts, where primigravida was the most common risk profile. Mostafa et al. Reported a predominance of primigravida women, which may reflect parity distributions and referral patterns and thus the demographic profile of severe disease.[12] In the presentation, headache, generalized edema and heavy proteinuria were the most common symptoms, which are similar to the symptoms reported by Pillai SS (2017) who also reported headache and edema as the most common warning signs for eclamptic and HELLP complications.[13] Although present in a proportion of women laboratory derangement was not as extensive as in some comparable series; the presence of thrombocytopenia elevated transaminases and raised lactate dehydrogenase in a sizeable subset of this study is similar to the spectrum of hematological and hepatic abnormalities reported by Mousa et al. Among women with preeclampsia and eclampsia in Saudi Arabia.[14] In terms of management the high frequency of magnesium sulfate use and antihypertensive use in this study indicates adherence to the recommended management, similar to that reported by Kumar et al. In their study of hypertensive pregnancy management.[15] The high proportion of sections in this group is similar to the higher cesarean section rates reported by Peterson et al. In women with preterm preeclampsia, which were believed to be due to the urgency of delivery when maternal or fetal compromise was present.[16] In this study one-quarter of women gave birth before 34 weeks highlighting the high prevalence of preterm birth in severe disease, similar to the findings of Bhattacharya et al. In their study of outcomes of eclampsia at a semi-urban tertiary centre.[17] The maternal complication profile seen in this study is generally consistent with the findings of Dasari et al. From a hospital in India, where hypertensive emergencies made up a significant proportion of severe maternal morbidity (more than 10% of women had eclampsia and one-tenth had HELLP syndrome).[18] The high proportion of women admitted to the ICU or HDU in this group further emphasizes the resource burden of preeclampsia as also observed by Mahotra et al. In their tertiary centre cohort.[19] Providentially the majority of women in the study recovered without significant complications and only one maternal death was reported, indicating that although severe preeclampsia is a serious condition, prompt diagnosis and multidisciplinary care can significantly reduce the risk of catastrophic events. Together these findings confirm that severe preeclampsia remains a clinical and resource burden in tertiary care and

that strengthening antenatal surveillance early referral and protocol-driven management is key, to improving maternal outcomes.

Limitations of the Study

The study was limited by the small sample size of 70 women and the cross-sectional design, which may limit the generalizability of the results. Some clinical and laboratory variables may also have been subject to information bias due to reliance on data obtained from case records.

Conclusion

Severe preeclampsia is a major contributor to maternal morbidity in tertiary care centers and is more prevalent among young, rural, and socio-economically disadvantaged women who receive poor antenatal care. The most common clinical symptoms were headache, generalized edema, and heavy proteinuria, and thrombocytopenia and deranged liver function indicated the multisystem nature of the disease. Most cases were treated with magnesium sulfate prophylaxis and antihypertensive therapy, with caesarean section being the most common method of delivery. A significant number of women developed eclampsia, HELLP syndrome, and were admitted to the ICU/HDU, highlighting the severity of the disease. Even so, most women made a full recovery, and there was one maternal death. The results of this study underscore the importance of early detection, routine antenatal monitoring, and protocol-driven treatment of severe preeclampsia to optimize maternal outcomes.

Recommendations

These results should be confirmed in larger, multicenter, and prospective studies to determine predictors of severe maternal complications in preeclampsia. Community-level antenatal screening and referral systems should also be strengthened to allow for early detection and management.

References

1. Chappell LC, Cluver CA, Tong S. Pre-eclampsia. Lancet 2021;398(10297):341–354.
2. Magee LA, Nicolaides KH, Von Dadelszen P. Preeclampsia. N Engl J Med 2022;386(19):1817–1832.
3. Poon LC, Shennan A, Hyett JA, Kapur A, Hadar E, Divakar H, et al. The International Federation of Gynecology and Obstetrics (FIGO) initiative on preeclampsia (PE): a pragmatic guide for first trimester screening and prevention. Int J Gynaecol Obstet 2019;145(Suppl 1):1.
4. Rana S, Lemoine E, Granger JP, Karumanchi SA. Preeclampsia: pathophysiology, challenges, and perspectives. Circ Res 2019;124(7):1094–1112.
5. Meazaw MW, Chojenta C, Taddele T, Loxton D. Preeclampsia and eclampsia: its burden and distribution across facilities in Ethiopia. Pregnancy Hypertens 2022;29: 64–71.
6. Getaneh Y, Fekadu E, Jemere AT, Mengistu Z, Tarekegn GE, Oumer M. Incidence and determinants of adverse outcomes among women who were managed for eclampsia in the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. BMC Pregnancy Childbirth 2021;21(1):734.
7. Teka H, Yemane A, Abraha HE, Berhe E, Tadesse H, Gebru F, et al. Clinical presentation, maternal-fetal, and neonatal outcomes of early-onset versus late onset preeclampsia-eclampsia syndrome in a teaching hospital in a low-resource setting: a retrospective cohort study. PLoS One 2023;18(2):e0281952.
8. Lisonkova S, Bone JN, Muraca GM, Razaz N, Wang LQ, Sabr Y, et al. Incidence and risk factors for severe preeclampsia, hemolysis, elevated liver enzymes, and low platelet count syndrome, and eclampsia at preterm and term gestation: a population-based study. Am J Obstet Gynecol 2021;225(5):538.e1.
9. Belay Tolu L, Yigezu E, Urgie T, Feyissa GT. Maternal and perinatal outcome of preeclampsia without severe feature among pregnant women managed at a tertiary referral hospital in urban Ethiopia. PLoS One 2020;15(4):e0230638.
10. Kalambe MA, Soni NN, Ali S, Bankar NJ. An observational study of maternal and perinatal outcome in preeclampsia cases in a tertiary care center. Cureus. 2024;16(4).
11. Vennela M, Yeddala M, Lakshmipriya Y, Latha G. A study of maternal and perinatal outcome in severe

preeclampsia and eclampsia in a tertiary care hospital. Eur J Cardiovasc Med 2025;15:18–24.

12. Mostafa EL-Adl R, Eid M, Shalan H, Hussien M. Maternal, fetal and neonatal outcomes of severe preeclampsia in Mansoura University Hospitals: a prospective study. Mansoura Med J 2021;50(4):155–163.
13. Pillai SS. Fetomaternal outcome in severe preeclampsia and eclampsia: a retrospective study in a tertiary care centre. Int J Reprod Contracept Obstet Gynecol 2017;6(9):3937.
14. Mousa A, Mandili RL, Aljahdali M, Gari S, Khaimi S, Alahdal S, et al. Maternal and fetal outcomes of preeclampsia with and without severe features in King Abdulaziz University Hospital, Jeddah, Saudi Arabia: a retrospective study. Cureus 2022;14(11).
15. Kumar NR, Grobman WA, Barry O, Clement AC, Lancki N, Yee LM. Evaluating the maternal and perinatal sequelae of severe gestational hypertension. American J Obstet Gynecol MFM 2021;3(1):100280.
16. Peterson JA, Sandgren K, Levine LD. Severe preterm preeclampsia: an examination of outcomes by race. Am J Obstet Gynecol MFM 2020;2(4):100181.
17. Bhattacharya R, Chaudhary M, Bhattacharjee S, Shahu S, Shah D, Patel MR, et al. Clinical profile of patients presenting with eclampsia at a semi-urban tertiary care center. Cureus 2024;16(7).
18. Dasari A, Jacob PM, Jeyapaul S, Mathew AJ, Abraham VJ, Cherian AG. Description and outcomes of patients with eclampsia and severe pre-eclampsia in a rural hospital in North-Eastern Bihar: a retrospective study. J Fam Med Primary Care 2022;11(10):6096.
19. Mahotra N, Chaudhary S, Poudyal P. Pre-eclampsia among pregnant women admitted to the Department of Obstetrics and Gynaecology of a tertiary care centre. JNMA: J Nepal Med Assoc 2023;61(267):840.

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