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Original Article

Frequency of Fetomaternal Outcomes in Severe Preeclampsia

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ABSTRACT

Preeclampsia, severe preeclampsia, and eclampsia are hypertension illnesses that occur during pregnancy. The severe spectrum that includes organ failure, unconsciousness, and, sadly, maternal, and fetal deaths, is known as preeclampsia and eclampsia. **Objective:** To investigate the prevalence of fetomaternal outcomes in severe preeclampsia. **Methods:** This descriptive cross-sectional study was conducted from February 1st to August 1st, 2021, a descriptive case series was carried out at the Obstetrics and Gynecology Department at Lady Reading Hospital (LRH), Peshawar. A total of 232 pregnant women with severe preeclampsia were included in the research. Several unfavorable fetomaternal outcomes, such as caesarean section, mortality, low birth weight, fetal death, poor Apgar score, preterm birth, and birth asphyxia, were recorded along their course till delivery. **Results:** The study encompassed women aged 18 to 40, with mean values of 28.14 ± 2.72 years for age, 1.24 ± 1.23 for parity, 36.37 ± 2.17 weeks for gestational age, and 25.86 ± 1.39 kg/m2 for BMI. Among the observed outcomes, cesarean section was noted in 56% of patients, mortality occurred in 8.6% cases, low birth weight in 17.2%, fetal death in 11.2%, low Apgar score in 19%, preterm birth in 8.6%, and birth asphyxia in 7.8%. **Conclusions:** The results highlight a significant rate of morbidity and death among mothers and perinatals linked to severe preeclampsia. Better prenatal care may be able to delay the onset of severe preeclampsia and eclampsia, which might significantly reduce the risk of negative outcomes.

INTRODUCTION

Preeclampsia, severe preeclampsia, and eclampsia are hypertension illnesses that occur during pregnancy and are major causes of maternal and neonatal death worldwide [1]. Clinical indicators of preeclampsia, such as high blood pressure and the presence of albumin in the urine, indicate the possibility of eclampsia and its development to severe forms, necessitating close observation and prompt action [2]. Severe preeclampsia is very difficult to treat, especially in low and middle income nations where there are often limited resources, medical staff, and systemic barriers that delay necessary therapies [3]. To lower the number of deaths linked to eclampsia, recent international programs have placed a strong emphasis on task shifting, which empowers frontline healthcare staff to recognize these situations and begin managing them [4]. The severe spectrum that includes organ failure, unconsciousness, and, sadly, maternal, and fetal deaths, is known as preeclampsia and eclampsia [5]. The substantial impact that pregnancy-induced hypertension has on maternal and perinatal morbidity and death has been shown by several research conducted worldwide [6]. Research undertaken in many places, including the Mettu Karl Referral Hospital, has revealed alarming rates of perinatal death associated with severe cases of preeclampsia and eclampsia [7, 8]. Studies like Ajah LO et al., and Melese MF et al., which explain rates of cesarean sections, low birth weights, mortality, fetal deaths, and various neonatal complications associated with severe preeclampsia, demonstrate how important it is to investigate the frequency and seriousness of adverse outcomes in severe preeclampsia [9-11]. Although prior research has endeavored to examine the patterns and contributing variables associated with severe preeclampsia and eclampsia, dependence on secondary data necessitates the necessity of thorough

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primary investigations [12]. The best treatment for severe preeclampsia and eclampsia is delivery due to the deterioration of the condition of the mother and fetus. One of the main pillars of management is proper obstetric care; premature fetal and placental delivery can hurt both mother and fetal outcomes. Preeclampsia related maternal and neonatal death and morbidity may only be avoided with access to high quality prenatal care early risk factor identification and diagnosis vigilant observation and prompt management. Healthcare professionals should provide these women needs extra consideration. When giving them preventative healthcare they may complete their outpatient follow up because they are aware of the incidence and clinical characteristics of preeclampsia.

This study used a large sample size of 232 individuals to investigate the prevalence of unfavorable fetomaternal outcomes in severe preeclampsia. The knowledge gained from this study will contribute to the body of knowledge and be used as a practical manual for healthcare professionals, providing high-risk preeclampsia patients in the general population with counseling options.

METHODS

The cross-sectional study was carried out from February 1st, 2021 to August 1st, 2021, at the Department of Obstetrics and Gynecology at LRH, Peshawar. Using the WHO sample size program, the sample size of 232 was calculated with a 95% confidence interval, a 4% margin of error, and a reported prevalence rate of Low Apgar score of 10.8%. Non-probability sequential sampling was the method used for sampling. Women between the ages of 18 and 40 who met the operational definition of severe preeclampsia and had ultrasound confirmation of a singleton pregnancy, a gestational age more than 30 weeks based on the Last Menstrual Period (LMP), and any parity. A history of anemia, diabetes, or hypertension before pregnancy was one of the exclusion criteria. After receiving approval from the Institutional Review Board (IRB) with Reference Number: 10/LR/MTI on dated 14-09-2021. The first stage was to collect basic demographic information such age, parity, gestational age, and BMI. Following this, until delivery, all adverse fetomaternal outcomes were recorded, as detailed in the specially created proforma. These outcomes included but were not limited to caesarean section, mortality, low birth weight, fetal death, low Apgar score, preterm birth, and birth asphyxia. Adverse result management followed departmental procedures. SPSS version 23.0 was used for statistical analysis. While categorical data like caesarean section, mortality, low birth weight, fetal death, poor Apgar score, preterm delivery, and birth asphyxia were computed for frequency and percentage, quantitative factors like age, parity, gestational age, and BMI were provided as Mean ± SD. Age, parity, gestational age, and BMI were used to stratify fetomaternal outcomes. Chi-square tests were used for post-stratification analysis, with $p < 0.05$ being regarded as statistically significant.

RESULTS

The research examining fetomaternal outcomes in severe preeclampsia has enrolled individuals. The individuals' mean age was 28.1 ± 2.72 years, and their parity was 1.2 ± 1.2, meaning they had one or two prior pregnancies. The enrolment occurred approximately during the 36th week of pregnancy, based on the mean gestational age of 36.37 ± 2.17 weeks. The individuals' average BMI was 25.86 ± 1.39kg/m^2, which indicates that they are overweight. The average age, prior pregnancies, stage of pregnancy upon enrolment, and body mass index of the enrolled population are all highlighted in these figures, which offer a glimpse into their profile (Table 1).

Table 1: Demographic Characteristics of Study Participants

S.No	Demographics	Mean ± SD
1	Age (Years)	28.14 ± 2.72
2	Parity	1.24 ± 1.23
3	Gestational Age	36.37 ± 2.17
4	BMI (Kg/m^2)	25.86 ± 1.39

The frequency of fetomaternal outcomes in patients with severe preeclampsia is shown in the table 2. Among the subjects, 130 (56%), required a cesarean section, whereas 102 (44%) cases, did not. 20 (8.6%) cases had mortality, 40 (17.2%) cases had low birth weight, 20 (11.2%) cases had fetal death, 40 (19%) cases had low Apgar scores, 20 (8.4%) cases had preterm births, and 18 (7.8%) cases had birth asphyxia. During the research period, the remaining subjects did not display any of these issues. This study provide insight into the incidence rates of various fetomaternal problems by summarizing the frequency of distinct unfavorable outcomes suffered by individuals with severe preeclampsia (Table 2).

Table 2: Fetomaternal Outcome Frequencies in Severe Preeclampsia Participants

Variables	Detail	N (%)
Cesarean Section	Yes	130 (56%)
	No	102 (44%)
Mortality	Yes	20 (8.6%)
	No	212 (91.4%)
Low Birth Weight	Yes	40 (17.2%)
	No	192 (82.8%)
Fetal Death	Yes	26 (11.2%)
	No	206 (88.8%)
Low Apgar Score	Yes	44 (19%)
	No	188 (81%)
Preterm Birth	Yes	20 (8.4%)
	No	212 (91.4%)
Birth Asphyxia	Yes	18 (7.8%)
	No	214 (92.2%)

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The relationship between fetomaternal outcomes in instances of severe preeclampsia and demographic characteristics (age, parity, gestational age, and BMI) is displayed in the table. The demographic variables, as well as the incidence of Cesarean Section, Mortality, Low Birth Weight, Fetal Death, Low Apgar Score, Preterm Birth, and Birth Asphyxia, are used to split the table. Non-significant p-values (>0.05) in the statistical study show that there are no significant relationships between the demographic parameters (age, parity, gestational age, and BMI) and the majority of fetomaternal outcomes. A few exceptions exist, though: low birth weight has a significant link with BMI (p=0.013) and low Apgar score has a substantial correlation with age (p=0.046). Except for significant correlations between Low Birth Weight and BMI and Low Apgar Score and age, these data point to a limited relationship between demographic characteristics and the majority of fetomaternal outcomes in severe preeclampsia (Table 3).

Table 3: Correlation Between Demographic Factors and Fetomaternal Outcomes in Severe Preeclampsia

Variables	Detail	Age (Years)			Parity			Gestational Age (Weeks)			BMI		
		18-30 N (%)	>30 N (%)	p-Value	0-2 N (%)	>2 N (%)	p-Value	30-39 N (%)	>39 N (%)	p-Value	≤25 N (%)	>25 N (%)	p-Value
Cesarean Section	Yes	105 (55.6)	25 (58.1)	0.758	101 (55.8)	29 (56.9)	0.893	112 (54.6)	18 (66.7)	0.236	58 (52.3)	72 (59.5)	0.266
	No	84 (44.4)	18 (41.9)		80 (44.2)	22 (43.1)		93 (45.4)	9 (33.3)		53 (47.7)	49 (40.5)	
Mortality	Yes	15 (7.9)	5 (11.6)	0.436	14 (7.7)	6 (11.8)	0.365	17 (8.3)	3 (11.1)	0.624	7 (6.3)	13 (10.7)	0.229
	No	174 (92.1)	38 (88.4)		167 (92.3)	45 (88.2)		188 (91.7)	24 (88.9)		104 (93.7)	108 (89.3)	
Low Birth Weight	Yes	35 (18.5)	5 (11.6)	0.280	35 (19.3)	5 (9.8)	0.111	36 (17.6)	4 (14.8)	0.723	12 (10.8)	28 (23.1)	0.013
	No	154 (81.5)	38 (88.4)		146 (80.7)	46 (90.2)		169 (82.4)	23 (85.2)		99 (89.2)	93 (76.9)	
Fetal Death	Yes	22 (11.6)	4 (9.3)	0.661	20 (11)	6 (11.8)	0.886	23 (11.2)	3 (11.1)	0.987	11 (9.9)	100 (90.1)	0.549
	No	167 (88.4)	39 (90.7)		161 (89)	45 (88.2)		182 (88.8)	24 (88.9)		15 (12.4)	106 (87.6)	
Low Apgar Score	Yes	35 (18.5)	9 (20.9)	0.716	34 (18.8)	10 (19.6)	0.895	42 (20.5)	2 (7.4)	0.103	27 (24.3)	17 (14)	0.046
	No	154 (81.5)	34 (79.1)		147 (81.2)	41(80.4)		163 (79.5)	25 (92.6)		84 (75.7)	104 (86)	
Preterm Birth	Yes	17 (9)	3 (7)	0.670	16 (8.8)	4 (7.8)	0.823	20 (9.8)	0 (0)	0.090	10 (9)	10 (8.3)	0.840
	No	172 (91)	40 (93)		165 (91.2)	47 (92.2)		185 (90.2)	27 (100)		101 (91)	111 (91.7)	
Birth Asphyxia	Yes	14 (7.4)	4 (9.3)	0.675	14 (7.7)	4 (7.8)	0.980	14 (6.8)	4 (14.8)	0.145	11 (9.9)	7 (5.8)	0.241
	No	175 (92.6)	39 (90.7)		167 (92.3)	47 (92.2)		191 (93.2)	23 (85.2)		100 (90.1)	114 (94.2)	

DISCUSSION

Consistent with other studies conducted in other contexts, this investigation demonstrated a relationship between the incidence of severe preeclampsia and eclampsia and poor maternal socioeconomic position. The social disadvantages that this group experiences may be the cause of this relationship, which may lead to a decrease in awareness and less-than-ideal health-seeking behaviour [13]. Remarkably, 83.1% of patients had no reservations, a sign of subpar prenatal care. This study found a substantial correlation between adolescent pregnancy and severe preeclampsia and eclampsia, which deviates from patterns seen in industrialized nations where older mothers are more prevalent [14]. This discrepancy might be attributed to greater rates of adolescent pregnancy and early marriage in this setting, which is consistent with Black communities experiencing higher rates of preeclampsia and eclampsia than Caucasians [15]. Furthermore, a robust correlation was seen between nulliparity and severe preeclampsia and eclampsia, particularly in line with previous studies [16]. These patients may have a higher risk of premature birth because of the hospital's intervention efforts, which frequently call for an early delivery following patient stabilization [17]. The greater incidence of cesarean sections among instances of severe preeclampsia and eclampsia may be related to the need for an immediate response to prevent additional difficulties for the mother and fetus, particularly in cases with unfavourable cervical circumstances [18]. The frequency of cesarean births also matched those from other areas. Despite being lower than other studies conducted in Tanzania and India, the 17.2% reported low birth weight in this study showed a strong correlation with severe preeclampsia and eclampsia [19]. This correlation may have been caused by intervention-driven deliveries regardless of gestational age and a higher incidence of intrauterine growth restriction [20]. The incidence of antepartum eclampsia in this research was consistent with rates from Ethiopia, Enugu, and Ibadan, albeit being higher than in Lagos [21]. While it was lower than those from Enugu and Irrua, the maternal mortality rate was equivalent to figures from Tanzania, India, and Ibadan, Nigeria [21-23]. The reasons for maternal death were like those found in Sokoto, Lagos, and Ibadan. The greater number of cesarean sections and the related hazards may possibly be contributing factors to the high maternal death rate, in addition to preeclampsia and its sequelae [24]. The study's fetal mortality rates were greater than those reported in Ibadan but comparatively lower than those in Ethiopia and Kaduna [25, 26]. As previously seen in Bangladesh, there

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may be an association between the high frequency of low birth weight among cases of severe preeclampsia and eclampsia and the prevalence of perinatal death [27, 28]. Compared to the control group, severe preeclampsia and eclampsia had a substantial correlation with maternal and perinatal death rates, which may be attributed to the complexities of the condition and the hospital's ability to handle them [29].

CONCLUSIONS

Adolescent, rural, and poor socioeconomic group women in this research were more likely to have preeclampsia with severe characteristics and eclampsia.

Authors Contribution

Conceptualization: AUK
Methodology: AUK, SK
Formal analysis: AUK, SK
Writing, review and editing: SK

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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