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RISK FACTORS OF ECLAMPSIA AND ITS MATERNAL AND PERINATAL EFFECTS AT TERTIARY HOSPITAL: A RETROSPECTIVE STUDY.

Dr Jaweria Humayun[1], Dr Wagma Viqar Afridi[2*], Dr Aneela Gul Shaikh[3], Madiha Afzal[4], Dr Sajida Hassan[5], Dr Uzma Aziz[6]

[1]MBBS FCPS, Obstetrics and Gynaecology, Consultant Gynaecologist, Khyber Teaching Hospital Peshawar, Pakistan
[2*]Trainee Registrar, Obstetrics and Gynaecology, Naseer Ullah Babar Memorial Hospital Peshawar, Pakistan
[3]Associate Professor, Obstetrics and Gynaecology, Department Unit 1, Lady Willingdon Hospital Khairpur Medical College Khairpur Mirs, Pakistan
[4,6]Associate Professor, Department of Obstetrics & Gynaecology, Rashid Latif Medical Complex Lahore, Pakistan
[5]Senior Gynaecologist, Muhtharma Shaheed Benazir Bhutto Hospital Gulistan Town, Quetta, Pakistan

[*]**Corresponding Author:** Dr Wagma Viqar Afridi,
Email: wagmaafridi@gmail.com

Abstract:
Introduction: In Pakistani tertiary care institutions, eclampsia accounts for 34 percent of maternal deaths among women hospitalized for childbirth. **Objective**: The study aims to assess risk factors for eclampsia, its consequences on the mother during pregnancy, and its perinatal effects. **Methods:** The study included 167 individuals with eclampsia. Data were acquired from patients' medical records. The medical records included details on the patient's pregnancy, features, medical background, obstetrics history, being hospitalized, maternal outcomes, perinatal outcomes , and hospital care. The statistical analysis was performed using SPSS version 21.0. **Results:** During the study, 4561 women gave birth in the hospital, and 167 (3.66%) had been diagnosed with eclampsia. Four women died, resulting in a 2.39% case fatality rate. The main risk variables included young age, pre-existing medical issues, poor education, low prenatal attendance, and Nulliparity. HELLP syndrome was by far the most prevalent outcome, accounting for 19.7% of cases. Magnesium sulfate was administered to all patients. However, there was no parenteral antihypertensive treatment. **Conclusions:** Our findings suggest that eclampsia remains a significant danger to mother survival and poor fetal outcomes. Out of 167 cases, 68 neonates experienced favorable outcomes, and 99 fetuses had unfavorable results. Poor socioeconomic level, lack of education, and insufficient antenatal care were identified as significant risk factors for eclampsia development.

Introduction:

Pakistan maintains the third-highest incidence of mother, fetal, and child death in the world, according to a recent systematic analysis of mortality worldwide. Among Pakistani tertiary care institutions, eclampsia accounts for 34 percent of maternal deaths among women hospitalized for delivery. Typically affecting 5% to 10% of the population, hypertensive disorders (HD) are the most

prevalent medical condition linked to complicated pregnancies. Additionally, they significantly contribute to global maternal and neonatal morbidity and mortality.[1, 2]

Eclampsia, defined as the development of convulsions in association with preeclampsia, is a significant and potentially fatal consequence of hypertensive diseases of pregnancy[3]**.** The incidence and mortality of eclampsia differ significantly between industrialized and developing nations. The average prevalence of eclampsia varies from 0 to 0.1% in Europe and up to 4% in other regions.[4, 5]

In industrialized countries, commonly referred to as high-income countries, eclampsia cases or fatalities vary from 0 to 17.7% [6]**.** These graphs demonstrate the relationship between the problem's severity and socioeconomic status as well as the availability of healthcare. In the community we live in, hypertensive diseases cause 14.9% of maternal deaths during pregnancy.[7]**.**

However, there are no precise records that provide an estimate of the fatalities, morbidities, and incidence associated with eclampsia. This study set out to evaluate the consequences of eclampsia on mothers and babies in a tertiary hospital.

Methodology

Every month, our hospital serves thousands of patients From 1st July, 2021 to 30 June, 2022 roughly forty thousand people received care from us. This hospital also accepts referred cases from other central hospitals. According to recent estimates, roughly 400 million people live under the government. Around 5,000 deliveries were made at this facility each year. The majority of instances were self-referred since this referral mechanism was poorly run.

From 1st July, 2021 to 30 June, 2022, a facility-based retrospective analysis was done at Khyber Teaching Hospital Peshawar Gynae department to investigate risk variables linked with Eclampsia and its maternal and perinatal effects.

The medical records of every patient were acquired for the study. The patient's medical history, demographics, obstetric history, medical history, information about hospital admission, results from examinations, perinatal and maternal consequences, and hospital care were all included in the medical records.

Data collecting sheets were filled out with anonymous data entry. The demographic information of the patients who gave birth throughout the study period was included in the data collecting sheets for comparison.

This study included eclampsia cases that were defined as a continuous history of seizures at residence, in conjunction with hypertension and proteinuria while in the hospital or while traveling there. This study excluded cases with brain damage, meningitis, epilepsy, diabetic ketoacidosis, a high temperature, hypoglycemia, and potentially dangerous medication intake.

The statistical analysis was conducted using SPSS version 21.0. The study employed descriptive analysis to examine the characteristics and outcomes of the patients. A single logistic regression framework was used to describe the association between the risk factors as independent variables with eclampsia as the result. A P-value of less than 0.05 was regarded as significant. The ethical review committee authorized this research. Because this study was retrospective, patient content was not included.

Results:

During the study period, 4561 women gave birth, and 167 (3.66%) were diagnosed with eclampsia; four of them died, having a case fatality rate of 2.39%. Table 1 displays the clinical symptoms and signs seen after admission. Out of 167 individuals with eclampsia, 85 experienced post-delivery seizures, 114 had prenatal seizures, and 3 had intrapartum convulsions.

At the hospitalization, 37% of patients had moderate hypertension (less than 110 mmHg), 62% exhibited severe hypertension (greater than 110 mmHg), and 2% maintained diastolic blood pressure.

Table 1: Signs and symptoms among cases

Signs and symptoms	Frequency (%)
Seizures	30(18%)
Headaches	49(29%)
Visual disturbances	19(11%)
Labor pain	13(8%)
Jaundice	2(1.1%)
Proteinuria	167(100%)
Edema	32(19%)
Vaginal bleeding	2(1.1%)

Table 2 displays the commencement and manner of delivery for the research population. In all, there were 15 cases of spontaneous onset of labor, 57 instances of induced labor, and primary c-section done in 111 patients.

Table 2: Modes of delivery

Mode of Deliveries	Frequency (%)
Onset of labor	
-Spontaneous	15(9%)
-Induced labor	57(34%)
-Primary C-section	111(66.46%)
Mode of Deliveries	
Vaginal delivery	39(23%)
Instrumental delivery	19(11%)

Table 3 depicts maternal mortality and morbidity. Four fatalities occurred, including two due to bleeding, one from postpartum hemorrhage, and one from HELLP syndrome. The mortality rate was recorded as 2.39%. HELLP syndrome was by far the most prevalent outcome, accounting for 19.7% of cases.

Table 3 depicts maternal mortality and morbidity.

Variable	(N,%) Total =167
Placental abruption	10(6%)
DIC	14(8.3%)
Postpartum hemorrhage	19(11%)
Intracranial hemorrhage	3(1.79%)
HELLP syndrome	33(19.7%)
Acute pulmonary edema	3(1.79%)
Renal dysfunction	17(10%)
Liver dysfunction	27(16%)
Complications of anesthesia	4(2.39%)
Massive blood transfusion	8(5%)
Complications of sepsis	3(1.79%)

Table 4: Risk factors for eclampsia

Factors	No. of deliveries N=4561	Eclampsia N=167	95% CI	p-value
Age (years)				
Below 20	1130	79	2.74	0.03
20 to 29	2260	33	1.25	0.87

30 to 34	772	23	2.14	1.25
Above 34	399	32	1.89	0.08
Parity				
Multipara	3214	64	2.32	0.001
Nulliparous	1347	103	3.25	-
Body mass index				
Below 20	770	30	1.87	0.59
20-25	1040	33	1.95	0.65
25-30	1394	45	2.58	0.189
30-35	850	15	2.87	0.874
Above 35	507	44	2.74	0.027
Pregnancies interval (years)				
Less than 5	1784	14	3.87	0.784
5 to 10	952	23	1.58	0.021
Above 10	478	27	1.65	0.014
Education				
None	2784	81	3.54	<0.001
Primary	870	59	4.25	0.01
Secondary	592	16	4.87	0.547
Tertiary	315	11	5.21	0.214
Marriage duration (months)				
Less than 6	1354	94	3.98	0.021
6 to 12	1457	27	4.25	0.41
More than 12	1148	17	4.47	0.24
Second marriage	602	29	3.21	<0.001
Preeclampsia family history				
Sister	101	69	4.54	0.03
Mother	89	51	4.28	0.012
Medical conditions (pre-existing)				
Hypertension	470	53	4.25	0.001
Diabetes mellitus	340	21	3.24	0.01
Renal disease	523	29	4.96	0.001
Cardiac disease	650	11	4.54	0.541
Anaemia	2822	87	3.21	0.02
Known thrombophilia	325	27	5.62	0.001
Preeclampsia	141	94	3.25	0.004
Care Visits				
Zero	982	69	4.21	0.01
One to three	2451	72	3.65	0.254
Four to eight	754	16	2.88	0.541
More than eight	374	10	4.78	0.214

Table 4 indicates that the majority of eclampsia cases occurred before the age of 20. Nulliparous women are more likely to develop eclampsia than multiparous women. Women with a BMI between 30-35 are more likely to have eclampsia, as are those who have been married for less than six months and had a pregnancy gap of less than five years. Pre-existing hypertension preceding pregnancy was linked to an increased risk of eclampsia in women.

Table 5: Perinatal effects of eclampsia

Fetal outcomes		
Favorable	68	
Un favorable	99	
Cause of unfavorable outcomes		
Variable	**Frequency**	**Percentage**
LBW	19	19.19
Low APGAR score	11	11.11
IMAGE	7	7.07
Stillbirth	24	24.24
Preterm birth	13	13.13
Birth asphyxia	17	17.17
Abortus	8	8.07

Among 167 cases, a total of 68 neonates had favorable outcomes, while 99 fetuses did not have good outcomes. Various causes of unfavorable effects are shown in table 5, with stillbirth leading the chart with 24.24% of total cases.

Discussion:

The percentage of patients with eclampsia in this study was 3.66%, which is higher than the rate reported in European countries[8-11]**.** However, the prevalence was lower than in Asian nations [12-15]**.** This discrepancy results from variations in prenatal care standards and socioeconomic position.

After 79 cases or 47.30% of the total, maternal age (<20 years) was determined to be a significant risk factor. In the study's area, young marriage is linked to low socioeconomic and schooling levels and, consequently, to low antenatal participation, which might be a significant confounder.

Nulliparity is another risk factor linked to eclampsia[16, 17]. In the current study, nulliparous patients comprised 61.67% of the total. Our results are in lie to the previous mentioned researches.[17]

61% of patients had a body mass index of more than 25, which translates to 62.27% of cases of eclampsia. This suggests that obesity contributes to the pathophysiology of preeclampsia, primarily via dysfunction of the endothelial system and placental vascular disease. It has been demonstrated that a preeclampsia genealogy triples the risk of preeclampsia.[16]**.**

Pre-existing hypertension was detected in fifty-three (31.73%) individuals, diabetes mellitus in 21(12.54%) cases, renal illness in 29 (17.36%) cases, and thrombophilia in 27 (16.16%) cases. This is probably due to the vasculopathy associated with these conditions, which is a significant factor in developing preeclampsia. Anemia was detected in 87 (52.09%) of the cases, indicating the need for more research to see whether there may be a connection and how anemic people's prenatal treatment may affect their chance of developing preeclampsia [17, 18]**.**

According to this research, 56.28% of patients who become pregnant within six months after marriage have an increased risk of developing eclampsia, which is correlated with a short marriage. There's still no good explanation found. Nonetheless, Youse et al. state that the length of sperm exposure influences the development of preeclampsia, which may be a reasonable explanation.[19]**.**

Preeclampsia risk rises with each year that goes by after the last pregnancy. A previous diagnosis of preeclampsia, as well as PIH, was present in 94 patients in total. These results align with previous research on regional distributions.[20]**.** 111 individuals underwent their initially scheduled C-sections.

Several variables could be responsible for this high proportion of C sections, such as inadequate facilities for monitoring during vaginal birth and a deficiency in antihypertensive medication, which worries doctors about seeing patients whose blood pressure, is uncontrolled during vaginal delivery. The low threshold for conducting C-sections on laboring women can be attributed to insufficient fetal monitoring technologies and the absence of fetal scalp sampling at the healthcare facility where

the study was conducted. Prior studies have connected C-sections to a higher risk of complications in preeclampsia patients.[21]

The study's findings indicated that the prevalence of adverse perinatal outcomes was 59.28%, less than the 66.4% found in a five-year cross-sectional study conducted in Addis Ababa town [22]. This disparity may result from a time gap, but as time passes, a better healthcare system is likely. One of the reasons for the poor results was stillbirth. 24 babies (24.24%) were stillbirths, which is less than studies conducted in Nigeria (34.2%) but higher than studies conducted in Addis Ababa (8.5%) [22], Ghana (6.8%) [23], and Haiti (17.8%) [24]. It demonstrates that the rate of stillbirths is still high, which may warn executives, policymakers, and healthcare professionals to improve the system for providing care. There needs to be more studies done in this field on the effects of delivery modality on perinatal and maternal outcomes.

Conclusions:

Our findings indicate that eclampsia remains a significant risk factor for maternal survival. It was discovered that insufficient prenatal care, low socioeconomic level, and lack of schooling were the main risk factors. To prevent consequences, health policies that enhance prenatal care and raise awareness of the need for early identification of cases of higher blood pressure during pregnancy must be put in place. Health personnel must be properly trained and knowledgeable to provide better care for essential cases. Reducing the amount of maternal issues can be achieved by enhancing anti-natal services and providing parental hypertension medication.

Conflict of Interests

The writers say they have no conflicts of interest.

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