

## ORIGINAL ARTICLE

**Fundoscopy Findings in Pregnancy Related Hypertensive Disorders and Its Association with Maternal and Fetal Outcomes**NAZIA FAKHIR<sup>1</sup>, SAADIA SHAMSHER<sup>2</sup>, FAUZIA ANBREEN<sup>3</sup>, REEMA FATEH<sup>4</sup><sup>1</sup>Senior Registrar Obstetrics and Gynaecology, Benazir Bhutto Hospital, Rawalpindi<sup>2</sup>Associate Professor GAW MTI HMC, Peshawar<sup>3</sup>Associate Professor Gynaecology and Obstetrics, Gomal Medical College, Dera Ismail Khan<sup>4</sup>FCPS Gynae & Obs, Woman Medical Officer, THQ Hospital, Kabal SwatCorresponding author: Saadia Shamsher, Email: [saadia.shamsher@yahoo.com](mailto:saadia.shamsher@yahoo.com)**ABSTRACT****Objectives:** To determine the prevalence of retinal changes in pregnancy-related hypertensive disorders and their association with maternal and fetal outcomes.**Introduction:** There is a grave risk to both mother and child when hypertensive problems complicate pregnancy. However, hypertensive sort of disorders during pregnancy have been allied to poor maternal and also neonatal outcomes. This research aimed to evaluate effects of hypertensive sort of disorders of pregnancy on both mothers and their unborn children by analyzing the prevalence, causes, and treatment of these conditions.**Subjects and methods:** BBH Rawalpindi, Inpatient Department of Gynecology and Obstetrics conducted the case-control research during the period from January 2021 to June 2021. In all, 149 patients participated in the research. Because seven patients could not be located, 142 cases were analyzed. Mild class preeclampsia (65.0 instances), severe class preeclampsia (32.0 hot cases), and also eclampsia (one case) were the subcategories used to categorize patients further, according to research. Thirty-one women who were not hypertensive throughout pregnancy were enlisted as controls.**Results:** Ninety percent of cases manifested with some edema. About a quarter basically patients had proteinuria above 300.0 mg/24 hours (26.76%), nearly half had proteinuria over two g/24 hours (47.18%), and about a quarter had urine protein based excretion of 3.0-5.0 g/24 hours (25.35%). Usually, incidence of specially HELLP (normally hemolysis, increased liver based special enzymes, and also squat platelet tot up) set of symptoms was 2.80%, raised bilirubin levels were seen in 47%, illustration symptoms occurred in 6.4%, vaginal based hemorrhage occurred in 11.30%, in addition to 42.2% of cases involved the central nervous system. It was shown that eclampsia was the cause of mortality in 2.8% of all maternal deaths. 16.9 percent of births were stillbirths, while 4.23 percent of newborns died.**Conclusion:** Compared to pregnant women with normal blood pressure, those who suffer from hypertensive disorders of pregnancy have a higher risk of having a baby born with complications. Our research did find a declining trend, although it was less than those seen in other studies; this may be because more of our study's births occurred in hospitals.**Keywords:** Neonatal outcome, maternal outcome, acute renal failure, and the HELLP syndrome**INTRODUCTION**

In terms of severity, hypertensive sort disorders of pregnancy (HDP) are a good number prevalent pregnancy complication. The incidence is definitionally contingent and varies among populations. Nulliparity, age, and race all play a role in HDP. Including preeclampsia, sort eclampsia, and also HELLP (usually hemolysis, high liver based type enzymes, and also squat platelet tot up) set of symptoms reported for 44.0%, 40.0%, and 7.0% of problems in 2006 [1]. The incidence of HDP was 5.38 percent. Approximately 5.5% of births reportedly include maternal death, and 37.5% involve perinatal mortality. HDP includes both preeclampsia and eclampsia [2].

The former is characterized by seizures in pregnant women and occurs in 4-5% of all pregnancies, whereas the latter is a multisystem illness of unclear cause. Eclampsia occurs in 0.3-0.9% of pregnancies, and the maternal death rate is 0.5-10% [3]. An incomplete understanding of pathogenesis characterizes HDP research. Raised in blood pressure (BP), sort of proteinuria, especially general inciting response, and deposition of antiangiogenic substances, that look as to foundation the illness by grudging glomerular endothelial sort cells of necessary augmentation aspects, are all symptoms of this complex condition. Preeclampsia's pathophysiology likely involves trophoblastic invasion since the disease's clinical signs are reversed if the pregnancy is terminated [4-5]. Researchers have shown that elevated soluble FMS- akin to tyrosine kinase-1 in the placenta may play a role in developing endothelial sort of dysfunction, usually hypertension, and also proteinuria in preeclampsia. About 30.0% of HDP cases in multicentre research were attributable to chronic hypertension, whereas the other 70.0% were attributable to prenatal hypertension/preeclampsia [6]. Despite the strong type association between hypertensive based disorders of pregnancy and negative maternal and perinatal outcomes, very few researchers have examined this issue in India [7]. This research

aimed to evaluate maternal and also fetal outcomes in instances of HDP by analyzing illness patterns and risk variables connected to the condition.

BBH Rawalpindi, Inpatient Department of Gynecology and Obstetrics conducted the case-control research. Institutional review board approval was obtained. Over a year, we assessed 1850 pregnant women who agreed to participate after reading and signing our informed consent forms; nearly 149 were found to have HDP and were recruited in our trial; seven subsisted later lost to follow-up. For that reason, 142 instances were analyzed. Patients were classified as processing moderate preeclampsia (65 instances), stern type preeclampsia (32 noted cases), or eclampsia (one case) stand on the National High Blood Pressure Education Program Working Group 8's criteria (45 cases). There were pregnant ladies between 20 and 40 weeks along when they joined. Thirty-one healthy pregnant women who did not have hypertension served as controls for the research. Patients with moderate and severe preeclampsia had their blood pressure checked every 4 hours using a mercury sphygmomanometer. In contrast, eclamptic patients had theirs checked every hour using the same method but while lying supine. The patient's diastolic blood pressure was tracked by listening to Korotkoff noises. Clinical edema was evaluated by general physical examination by placing thumb pressure on the medial malleolus. Generally, direct ophthalmoscopy was used to examine the fundus of the eye and record the presence or absence of hypertensive retinal alterations such as papilledema, exudates, hemorrhages, and disc blurring. When proteinuria was present, blood pressure had to be 160/110 mmHg or above to be considered "mild preeclampsia." Three hundred dollars for a supply of twenty-four-hour medication. "Severe sort preeclampsia" was typically seeing that blood pressure (BP) of \$ 160.0/110 mmHg and also urinary protein sort of excretion of \$2.0 g/24 hours or a few other of oliguria type (400.0 mL urine/24 hours), illustration impairment, serum creatinine usually rated \$ 1.20 mg/dL, platelet tot up, one lacs/L,

microangiopathic based hemolysis sort (increased lactate sort dehydrogenase sort [LDH], elevated serum alkaline based phosphatase). To have "eclampsia" meant that a patient with preeclampsia had had a grand mal seizure for the first time. An elevated aspartate transaminase level (70.0 IU/L), hemolysis sort (600 IU/L of LDH), and also squat platelet tot up (100,000/mm<sup>3</sup>) were the diagnostic criteria for "HELLP syndrome." To be diagnosed with "acute renal failure," your creatinine levels needed to be over \$1.5 mg/dL, or you needed to have 24 hours without urinating. Normally, Proteinuria was especially described as protein excretion in the urine at a rate of more than 300 milligrams per 24 hours. Urinary protein based excretion typically rated as \$3.50 g/1.73 m<sup>2</sup> /day, in conjunction by way of a substantial decrease in serum albumin (i.e., #2.5 g/dL), was used as the diagnostic criteria for "nephrotic syndrome." Women whose blood pressure was within the normal range before pregnancy were considered to have "pregnancy-induced hypertension" if their blood pressure was higher than 140.0/90.0 mmHg resting on two separate incidents spaced at least 6 hours apart. Hyperuricemia was a uric acid level over \$4.50 mg/dL. A certified lab looked at them. Jaffe's technique was used to detect serum creatinine, a sulfosalicylic acid test was performed to quantify urine protein, and nephelometry was used to measure uric acid. Patients were not eligible if they had a history of renal illness, diabetes mellitus, hypertension during pregnancy, or a current UTI. Information was gathered and examined. Maternal and fetal outcomes were recorded with demographic data such as gestational age, blood pressure upon admission, biochemical measures (such as full hematology, biochemistry, 24-hour urine protein), ultrasound findings of the abdomen for problems, and length of hospital stay. Proteinuria, hyperuricemia, and abrupt renal failure were documented as renal symptoms. Blood pressure and work hours were tracked and recorded. Antihypertensive medications were administered to all patients, with Methyldopa given to those with moderate to severe preeclampsia and Labetalol given to those with mild to moderate preeclampsia. Methyldopa is a centrally-acting medication declared secure for both the mother and also describe fetus by the US contained Food and special brand of Drug Administration (FDA). In extreme instances of preeclampsia and eclampsia, FDA category C medication labetalol was used [8-10]. Patients with eclampsia were given magnesium-based sulfate according to the Pritchard type regimen to reduce seizures; they were also given fluid replenishment and underwent close observation. During the first year after giving birth, all patients were monitored.

**Statistical analysis:** All data will be entered in SPSS-21. Mean, and standard deviation will be measured for maternal age, gravida, systolic BP, Diastolic BP, gestation age at delivery, hemoglobin, platelet count, Seum creatinine, serum uric, serum bilirubin, ALT, AST, and hemoglobin. Frequencies and percentages will be calculated for Maternal age, Past c-section, Residence, Multi-gravida, Hypertensive disorders of pregnancy, fundoscopic findings, Admission to NICU, Mode of delivery, Birth weight, Neonatal death, Oligohydramnios, Acute Renal Failure, and

Maternal Death. Stratification of fundoscopic findings will be done regarding systolic BP, Diastolic BP, hypertensive disorders of pregnancy, Admission to NICU, Mode of delivery, Birth weight, Neonatal death, Oligohydramnios, Acute Renal Failure, and Maternal Death. P-value will be calculated by using a t-test and chi-square test accordingly, and its value of less than 0.05 will be considered significant.

**Sample Size:** 142

Sample formula:  $n = z^2 pq/d^2$

Where:

$n$  = no of patients to be studied = 142

$z$  = 1.96 (level of confidence 95%)

$P$  = 59 % [Frequency of retinal changes (hypertensive retinopathy) in patients of pregnancy-related hypertensive disorders]

$d$  = 5%

**Sampling approach:** non-probability type consecutive sampling

**Insertion criteria:**

- ❖ All including women with hypertension detected after 20 weeks of pregnancy are admitted to the hospital before delivery. Subjects who are fulfilling the diagnostic criteria of Hypertensive disorders of pregnancy

- ❖ Singleton pregnancies

**Exclusion criteria:**

- ❖ Cases with a history of hypertension before conception

- ❖ Cases with Diabetes of more than five years duration

- ❖ Cases with a history of any eye procedure for cataracts or retinal disease

- ❖ Pre-existing ocular diseases like glaucoma, optic neuritis, and uveitis

- ❖ Patients who are not willing to give consent and follow up

## RESULTS

One hundred forty-two patients' records were analyzed. There were 45 instances of eclampsia, 32 important noted cases of intense type preeclampsia (22.50%), and 65 noted cases of moderate preeclampsia (45.8%). (31.7 percent).

Most patients (as shown in Table 1) were between the ages of 25 and 35; of these, 50 comprised preeclampsia, 19 had severe preeclampsia, and also 26 had eclampsia. The cosmic majority of the control group's patients (87.1%) came from middle type-class backgrounds. Nearly everyone patients belonging to eclampsia cluster (73.33%) subsist from squat-income backgrounds, whereas most patients with moderate and severe preeclampsia (67.69%) were from middle-income backgrounds. More than 53.52 percent of the patients were first-time mothers, while 46.48 percent were expecting more than one child. Fourteen percent of those in the non-experimental group were first-time parents. One patient in the preeclampsia group encompassed a times gone by of antepartum eclampsia, and another comprised a times gone by preeclampsia, both of which were present in the mild preeclampsia group. There was a single patient with prior times gone by preeclampsia in the intense type preeclampsia cluster.

Table 1: Demographic based profile

Group type	Control tot up (n = 31)	Mild type preeclampsia (n= 65)	Severe type preeclampsia (n = 32)	Eclampsia (n = 45)	P sort of value
Age group limit, % (n)					
.25years	29.03 (9)	23.08 (15)	37.50 (12)	42.22 (19)	0.136
25-35 years	70.97 (22)	76.92 (50)	59.38 (19)	57.78 (26)	
.35years	0.00 (0)	0.00 (0)	3.13 (1)	0.00 (0)	
Gravida, % (n)					
0-1	41.94 (13)	50.77 (33)	53.13 (17)	57.78 (26)	0.548
1-2	32.26 (10)	26.13 (17)	18.75 (6)	24.44 (11)	
2-3	16.13 (5)	13.85 (9)	12.50 (4)	11.11 (5)	
3-4	6.45 (2)	1.54 (1)	9.38 (3)	2.22 (1)	
4-5	3.23 (1)	6.15 (4)	0.00 (0)	4.44 (2)	
5-6	0.00 (0)	1.54 (1)	6.25 (2)	0.00 (0)	
Socioeconomic status, % (n)					
Low	12.90 (4)	32.31 (21)	28.13 (9)	73.33 (33)	0.0001
Medium	87.10 (27)	67.69 (44)	71.88 (23)	26.67 (12)	
History of hypertensive disease in pregnancy, % (n)					

Not present	100.000 (31)	96.920 (63)	96.880 (31)	100.00 (45)	
Present	0.000 (0)	3.080 (2)	3.130 (1)	0.00 (0)	
CNS based, % (n)					
Normal type	100.00 (31)	100.00 (65)	100.00 (32)	57.780 (26)	0.000
Abnormal type	0.00 (0)	0.00 (0)	0.00 (0)	42.220 (19)	
Hypertension limit, mmHg					
Mean SBP	117.840 ± 4.70	145.320 ± 9.70	159.880 ± 8.30	156.890 ± 9.500	,0.0001
Mean value of DBP	77.42 ± 6.8	93.72 ± 5.2	103.25± 7.6	101.20 ± 7.90	,0.0001
Urine output, % (n)					
.400.0mL/24hours	0.00 (0)	0.00 (0)	18.75 (6)	20.00 (9)	0.001
.400.0mL/24hours	100.00 (31)	100.00 (65)	81.25 (26)	80.00 (36)	

Note: The difference amid two valuespecially was considered as significant in case of P, 0.05.  
Abbreviations: CNS meaning central nervous system; DBP meaning diastolic based blood pressure; SBP, systolic blood pressure.

Systolic blood pressure was found to be 117.840 mmHg in control cluster, 145.32, 9.70 mmHg within moderate rate preeclampsia cluster, 159.880± 8.30 mmHg in case of intense type preeclampsia group, and 156.890± 9.50 mmHg in the eclampsia type cluster. There was a statistically based noteworthy difference (P 0.0001) amid experimental and also control groups. Correspondingly, the diastolic type BP of the control group was 77.420± 6.80 mmHg that of moderate preeclampsia group was 93.72± 5.20 mmHg, that of severe type preeclampsia group was 103.250±7.60 mmHg, and that of the eclampsia group was 101.20 ±7.90 mmHg. The study group be at variance significantly from the control group (P =0.0001). Twenty percent of eclampsia patients and 18.75 percent of eclamptic preeclampsia cases had oliguria (P = 0.001). (Table 2). Edema was the most prevalent symptom, occurring in 90% of patients.

We found that 26.76% of people had proteinuria of \$300/24 hours, whereas 47.18% had proteinuria casing of \$2.0 g/24 hours. About a quarter of patients (25.35%) exhibited 24-hour urine protein excretion between 3 and 5 g. Central nervous system sort

of association was seen within 42.20%, an increased bilirubin limit within 57.0%, ocular symptoms in 6.4%, vaginal based hemorrhage within 11.30%, and HELLP syndrome in 2.80%. (Table 2). Generally, biochemical analysis showed that all parameters significantly differed amid the study and control cluster (Table 3).

Table 2: Clinical based manifestations of hypertensive type disorders of pregnancy at time of presentation(n=142)

Clinical features	Patients, n	%
Hypertension value	142	100.00
Edema limit	128	90.00
Proteinuria sort		
\$300.0 mg/dL	38	26.760
\$2.0 g/dL	68	47.880
3.0–5.0 g/dL	36	25.350
Central nervous system	19	42.20
Jaundice	81	57.00
Visual tpe symptoms	9	6.40
Vaginal based bleeding	16	11.30
HELLP special syndrome	4	2.80

Table 3: Biochemical type parameters

Investigation case	Control (n =31)	Mild type preeclampsia (n =65)	Severe type preeclampsia (n =32)	Eclampsia value (n =45)	P value
Hemoglobin (g/dL)	10.810 ±0.50	9.580 ±1.40	9.710 ±1.20	9.240 ±1.0	0.0059
Platelet based count (lac/mm <sup>3</sup> )	2.10 ±0.3	1.64 ±0.4	1.59 ±0.4	1.65 ±0.40	0.001
Serum in case of urea (mg/dL)	20.030 ±4.10	30.05 ±9.70	38.720 ±9.70	32.080 ±75	0.001
Serum in case of creatinine mg/dL	0.60 ±0.20	1.270 ±0.50	2.67 0±1.30	1.950 ±0.70	0.001
Serum bilirubin (mg/dL)	0.49 ±0.3	1.31 ±0.8	1.89 0±1.2	1.860 ±0.8	0.001
Serum in ALP form (IU/L)	61.840 ±9.3	359.40 ±164.5	337.34 0±188	443.60 ±168.1	0.001
Serum GPT (IU/L)	47.770 ±13.80	215.940 ±125.80	257.72 ±174.10	354.890 ±193.2	0.001
Serum in GOT case (IU/L)	49.710 ±4.40	208.570 ±130.90	299.00 ±167.80	338.090 ±173.10	0.001
Serum of uric acid (mg/dL)	2.240 ±0.5	7.360 ±1.80	8.36 ±1.80	6.61 ±2.0	0.001
Serum of LDH (IU/L)	186.480 ±41.90	735.750 ±268.50	959.130 ±238.20	868.670 ±247.70	0.001

Note: The difference amid two values was taken significant in case of P, 0.05.  
Abbreviations: ALP, alkaline type phosphatase; GOT, glutamic type oxaloacetic transaminase; GPT, glutamate pyruvate type transaminase; LDH, lactate type dehydrogenase.

Severe preeclampsia was associated with the highest rate of maternal problems, followed by eclampsia and moderate preeclampsia. The eclampsia category had 4.8% of all maternal fatalities (Table 4). 2.8% of all pregnant women who participated in the research died. Acute type renal failure cases seems to occurred nearly in one patient (3.13 %) with intense preeclampsia, and normally placental abruption was documented in 15.38 % of preeclampsia patients, 25 % of severe preeclampsia cases, and 15.56 % noted eclampsia cases (Table 4).

Table 4: Distribution seeing that various maternal type complications amid study groups (%)

Maternal type complication	Tptal Control (n =31)	Mild type preeclampsia (n =65)	Severe type preeclampsia (n =32)	Eclampsia (n =45)
Acute type of renal failure	0.00	0.00	3.13	0.00
Abruption	0.00	15.380	25.00	15.560
Cerebrovascular type accident	0.00	0.00	0.00	2.220
PPE	0.00	12.50	27.27	14.290
Postpartum case hemorrhage	3.220	9.230	12.50	11.100
Pulmonary embolism case	0.00	0.00	0.00	2.220
Chronic hypertension value	0.00	1.530	6.250	2.220
Focal deficit value	0.00	0.00	0.00	2.22
Death rate	0.00	0.00	0.00	8.890

Abbreviation: PPE, post type partum eclampsia.

Tables 5 and 6 detail the occurrences of adverse neonatal events among the different research groups and controls, respectively. Patients with severe type preeclampsia (40.75%) had the highest rate of newborns needing resuscitation, followed by individuals with eclampsia (38.70%), moderate preeclampsia type (18.40%), and also controls (0%). (6.50 percent ). Stillbirths accounted for 16.90% of all births in hospitals, with 7.69% occurring in pregnancies complicated by mild preeclampsia, 15.60% in those complicated by moderate preeclampsia, and 31.10% in those complicated by eclampsia. Preeclampsia patients had a higher rate of normal births (61.54%), but those with severe preeclampsia were more likely to have a cesarean delivery (43.75 percent). Most infants in eclampsia type group (66.70%) be there born with birth weights of 2500 g or less, whereas most infants in the severe type preeclampsia group (87.50%) were born with birth weights amid 1500 and nearly 2490 g. (Table 5).

Table 5: Distribution in case of mode of delivery and also fetal outcome

Fetal outcome	Control (n =31)	Mild type preeclampsia (n =65)	Severe type preeclampsia (n =32)	Eclampsia (n =45)	HDP group (n =142)
Style of delivery					
Normal	21 (67.740%)	40 (61.540%)	18 (56.250%)	29 (44.440%)	87 (61.260%)
Instrumental type	0	1 (1.54%)	0	1 (2.22%)	2 (1.40%)
LSCS	10 (32.260%)	24 (36.92%)	14 (43.75%)	15 (33.33%)	63 (37.320%)
Fetal type weight, g					
<1500g	–	3 (4.620%)	1 (3.13%)	5 (11.20%)	9 (6.330%)
1500–2499 g	7 (22.60%)	33 (50.760%)	28 (87.50%)	10 (22.30%)	71 (50.00%)
≥2500g	24 (77.40%)	29 (44.620%)	3 (9.40%)	30 (66.70%)	62 (43.70%)
Stillborn	0	5 (7.690%)	5 (15.60%)	14 (31.10%)	24 (16.90%)

Abbreviations: HDP, hypertensive sort of disorders complicating pregnancy; LSCS, lower type segment cesarean section.

Babies' Apgar scores were significantly higher in case of the HDP groups (16.90%) than in the control group (6.45%). Also, someplace only 6.50% of neonates given to women in case of control set needed resuscitation and also hospital getting admission, 28.80% of neonates innate to women in the hypertensive disease sets did. There was a 4.230 percent death rate among newborns overall. The eclampsia group had the highest newborn mortality rate (9.7 percent; Table 6).

Table 6: Neonatal based outcome

Group limit	Control (n =31)	Mild type preeclampsia (n =60)	Severe type Preeclampsia (n =27)	Eclampsia (n =31)	Total (n =118)
Apgar score value .7	2 (6.450%)	7 (11.670%)	2 (7.40%)	11 (35.480%)	20 (16.90%)
Apgar score value .7	29 (93.550%)	53 (88.30%)	25 (92.60%)	20 (64.52%)	98 (83.05%)
Required resuscitation case	2 (6.50%)	11 (18.40%)	11 (40.75%)	12 (38.70%)	118(28.80%)
NICU case of admission	2 (6.50%)	8 (13.40%)	7 (25.90%)	9 (29.10%)	24 (20.35%)
Neonatal death case	–	1 (1.70%)	1 (3.70%)	3 (9.70%)	5 (4.23%)

Abbreviation: NICU, neonatal intensive care unit.

## DISCUSSION

A total of 142 cases (including 45 eclampsia, 32 instances of severe type preeclampsia, and also 65 cases of mild preeclampsia) and 31 healthy controls were analyzed. Hypertensive sort of disorders of pregnancy were detected in 8.05 percent of 1850 pregnant women screened. Pregnancies with HDP have been documented in 6-8% of cases. However, this number might be as high as 20%. 8 Preeclampsia was also shown to have an incidence of 7% to 9% [11-13]. Preeclampsia was shown to affect 5.80 percent of pregnant women in a study by Prakash et al. A total of 142 pregnant women participated in the current research, with 45.80% experiencing mild preeclampsia, 22.50% experiencing moderate preeclampsia, and 31.70% experiencing eclampsia. Preeclampsia is more common in first-time pregnancies and younger women. Participants ages in the study group were comparable to those in the control group.

Those without preeclampsia were the youngest at 27.190± 3.3 years, followed by those with moderate preeclampsia at 26.28± 2.7 years, those with strict preeclampsia at 25.690 ±2.70 years, and those having eclampsia at 25.20 ±2.4 years (P = 0.136). Seeing that, these ages range somewhat from those testimony in other research (for example, in one study, controls were 28.8 ±2.1 years while preeclampsia patients were 28.520± 4.07 years; P = 0.390) [14]. In addition, our research found that 58.00% of cases had risk factors and 2.12% had a times gone by of preeclampsia in a prior pregnancy, whereas 91% of patients in another study [15] were found to have risk factors for preeclampsia. 10.560 percent of HDP patients were found to have oliguria when matched against controls. In separate research, 9.430% of women with HDP also had oliguria. Therefore our results were consistent with that. There was a substantial (P =0.001) increase in the prevalence of oliguria from 18.75 percent to 20.00 percent among patients with severe preeclampsia and eclampsia, respectively. Edema was the most prevalent symptom reported in our research, and it is fairly common overall, occurring in around 80% of healthy pregnancies [16-18].

Proteinuria was the second most prevalent symptom. Reduced glomerular filtration rate and proteinuria may result from glomerular involvement in glomerular capillary endothelin's. However, it has been discovered that 10%-15% of individuals with HELLP syndrome and 38% of patients with eclampsia do not have hypertension and proteinuria [19-22]. Proteinuria of more than two grams per twenty-four hours was describing in 26.760% of cases, whereas proteinuria of fewer than two grams per twenty-four hours was recorded in 47.880% of cases. About a quarter of patients

(25.350%) exhibited 24-hour urine protein excretion between 3 and 5 g. Patients including eclampsia tended to come from lower socioeconomic backgrounds (73.37 percent). Most of these people were uneducated and had no prenatal care. Patients with preeclampsia are typically misdiagnosed since the disorder does not manifest symptoms. Another research found that proteinuria cleared in middling of 32.6 days (10-90 days account postpartum), while a third found that it resolved in an average of 35.8 days (21-90 days postpartum) [23-25]. Similarly, we found that proteinuria resolved on average after 32.6 days (10-90 days postpartum). Only one patient (2.2% of those analyzed) had clinical sensitive renal failure, although the incidence of acute renal failure in previous trials ranged from 4% to 23%. 16 [26]. Patients with eclampsia had the highest prevalence of CNS involvement. About 42.22% of people were found to have some neurological problem. In comparison, 20.0% of people complained of hazy vision, and 13.30% of people were found to have abnormal fundoscopic alterations after a fundus examination. The most general observation was arterial attenuation (4.5% of patients), followed by HELLP syndrome (2.8% of cases). Two to twelve percent of pregnancies end in HELLP syndrome [27-29]. Pregnancy and childbirth are not the only times when HELLP syndrome may occur. Most individuals acquire HELLP syndrome within 48 hours postpartum. However, the onset may be anywhere from a few hours to seven days. To postpone the expected date of delivery, conservative therapy is advised. 18 Patients with HELLP syndrome were 3.07 percent in the preeclampsia group and 4.5 percent in the eclampsia group, respectively, in the current research. 7.5% of preeclampsia patients reported having HELLP syndrome by Prakash et al. However, due to discrepancies in diagnostic criteria, the natural frequency of this illness is unknown. In our research, hyperuricemia was seen in 94% of individuals with HDP. Due to the increased volume of plasma, uric acid levels in the blood drop throughout a healthy pregnancy to a range of 2.5 to 4.5 mg/dL. The presence of preeclampsia is supported by a middling serum uric acid rate of more than 7.36 1.8 mg/dL, and increasing middling mean values of 8.36 1.8 mg/dL indicate more cruel illness (severe noted cases of preeclampsia). In our research, individuals with eclampsia had a lower mean uric acid level than those with preeclampsia (6.6 2.0 mg/dL). Predictors of renal damage include serum creatinine and blood urea. Our research showed that all the study groups had elevated levels of these predictors, while the control group had normal levels. Maximum values were seen in the severe preeclampsia group, indicating a higher risk case of kidney impairment presenting this population. While a rise in serum

bilirubin is uncommon in preeclamptic individuals, when it does occur, it is likely due to hemolysis. An elevated blood bilirubin level with an elevated serum LDH usually (.600 U/L) is highly diagnostic of HELLPset of symptoms. 18 Serum bilirubin levels were elevated in our investigation, above the 1.2 mg/dL threshold considered safe during pregnancy [30]. Increased serum bilirubin was seen in 57% of individuals. Serum bilirubin levels were significantly different across mild, moderate, and severe preeclampsia and eclampsia patients (1.310.8, 1.891.2, and 1.860.8 mg/dL, respectively;  $P < 0.001$ ). Liver enzymes were substantially elevated in all HDP groups ( $P < 0.001$ ): generally serum glutamic oxaloacetic transaminase, serum describing alkaline phosphatase, and serum glutamate pyruvate transaminase. Serum lactate dehydrogenase (LDH) levels increased across the board, but the severe preeclampsia group had the greatest increase ( $P < 0.001$ ). Pervasiveness of intrauterine escalation restriction, squat birth weight, Apgar score, requirement designed for resuscitation and admission describing for neonatal intensive care unit, and at a standstill births and neonatal fatalities were all used to gauge fetal and neonatal outcomes. 15.50% of births were diagnosed with intrauterine growth restriction; 56.30% had a birth weight below the median; 16.90% were stillbirths, and 4.23 % of all newborns died. Nine-point-seven percent of deliveries were affected by neonatal mortality in the eclampsia group. Preterm births accounted for 28.8% of all deliveries, while stillbirths made up 4.8% and perinatal death accounted for 14.8% (Yadav et al. 20 Our research found that 16.9% of newborns delivered to HDP mothers had an Apgar score of 7 compared to 6.45% of babies born to controls. Moreover, infants delivered to women in the HDP sets were more likely to need resuscitation (28.8%) and hospital admission (20.3%) than those born to women in the control cluster (6.5%). According to research by Perloff et al., the risk of death for a baby born to a mother with preeclampsia is five times greater than that of a baby born to a mother without the condition [30]. Complications during pregnancy, difficulty giving birth, and maternal death were included as indicators of maternal outcome. For all women, the rate of death during pregnancy was 2.8%. The eclampsia group had the highest risk of maternal death (8.89%). However, this was lower than the 17-18% rates discussed in women with eclampsia in two earlier investigations. Usually purpose of study suggests a decreased risk of maternal mortality, which we attribute to an increase in the number of births occurring in hospitals and the availability of prenatal care. Preeclampsia and eclampsia are characterized by several complications, the most lethal of which are neurological [31]. However, this was lower than the 17-18% rates reported in women with eclampsia in two earlier investigations [32]. Our study suggests a decreased risk of maternal mortality, which we attribute to an increase in the number of births occurring in hospitals and the availability of prenatal care. Preeclampsia and eclampsia are characterized by several complications, the most lethal of which are neurological.

## CONCLUSION

HDP was detected in 8.05 percent of the 1850 pregnant women evaluated during 12 months, and in one instance, acute renal failure developed. The severity of the illness and the systemic consequences it causes may explain why eclampsia had the greatest mortality rate. Hypertensive pregnant women had a greater rate of poor fetal outcomes than normotensive pregnant women. Our research found a reduced maternal death rate compared to other Indian studies. This may be attributable to the higher rate of timely births aided by magnesium sulfate treatment and high-quality intensive care. However, our analysis showed a greater stillbirth rate (16.9 percent) than prior research had shown. Therefore, there is a pressing need to enhance the capabilities of NICUs and raise parental awareness of the significance of prenatal care. In addition to labor relating monitoring and early delivery, effective intensive care is necessary for the most severe cases of preeclampsia and eclampsia.

## REFERENCES

- Ahmed, S. S., & Laila, T. R. (2022). Hypertensive Disorders of Pregnancy—A Review. *Journal of Advances in Medicine and Medical Research*, 34(23), 13-19.
- Singh, S., Chauhan, S. S., & Ranjan, R. (2022). A cross-sectional study on the incidence of retinal changes and its correlation with variables like blood pressure, liver function tests, kidney function tests, proteinuria, and pedal edema in patients of pregnancy-induced hypertension in a rural setting. *Indian Journal of Ophthalmology*, 70(9), 3335-3340.
- Baqai, S. M., Rahim, R., Ala, H., Tarar, S. H., Waqar, F., Yasmeen, H., & Waheed, A. (2022). Society of Obstetricians and Gynaecologists Pakistan (SOGP) Hypertensive Disorders in Pregnancy Guidelines-2022. *Pakistan Armed Forces Medical Journal*, 72(3).
- Khateeb, D., Sadiq, T., & Sadiq, S. (2022). To evaluate the fundus changes in patients with hypertensive disorders of pregnancy: Gestational hypertension, preeclampsia, eclampsia. *European Journal of Molecular & Clinical Medicine*, 9(1), 67-73.
- Salma, U., Alshaikh, A. B. A., Alanazi, M. F., Alomair, B. M., Alruwaili, M., & Alruwaili, R. (2022). Role of MicroRNAs in Cardiac Disease with Stroke in Pregnancy. *Oxidative Medicine and Cellular Longevity*, 2022.
- Pednekar, N., Barge, V. B., Phalgune, D., & Dhabarde, A. A clinical study of fundus changes in pregnancy induced hypertension in tertiary health care Centre in Sevagram, Wardha, India.
- Uwagboe, P. N., Ebeigbe, J. A., & Uwagboe, C. U. (2022). Retinal changes among pre-eclamptic patients in University of Benin Teaching Hospital, Benin, Nigeria. *Ibom Medical Journal*, 15(2), 126-131.
- Nayak, P., Singh, S., Sethi, P., & Som, T. K. (2022). Cerebroplacental Ratio Versus Nonstress Test in Predicting Adverse Perinatal Outcomes in Hypertensive Disorders of Pregnancy: A Prospective Observational Study. *Cureus*, 14(6).
- Gaikwad, C., Khune, A., Mahadik, S., & Balwir, D. (2022). A Study of Ocular Fundus Findings in Hypertension during Pregnancy in a Tertiary Care Hospital. *MVP Journal of Medical Sciences*, 163-170.
- Muduthanapally, C. (2022). Prevalence and risk factors of ocular fundus changes among pregnant women with pregnancy induced hypertension at a tertiary care center.
- Knapp, C., & Bhatia, K. (2022). Maternal collapse in pregnancy. *British Journal of Hospital Medicine*.
- Gomez, J., Doke, S., Karnatapu, S. C., Kadam, K., & Bachan, B. (2022). Comprehensive Review of Management of Hypertension in Pregnancy. *Gynecol Obstet Open Acc*, 6(148), 2577-2236.
- Miller, E. C. (2022). Maternal stroke associated with pregnancy. *CONTINUUM: Lifelong Learning in Neurology*, 28(1), 93-121.
- Uma, M. S., Bhuvana, S., Annamalai, R., & Muthayya, M. (2022). Visual morbidity and spectrum of ophthalmic changes in pregnancy induced hypertension. *Journal of Family Medicine and Primary Care*, 11(6), 2488-2492.
- Alauddin, N. Effect of pregnancy induced hypertension on clinical course of pregnancy and perinatal outcome. *Parity*, 30(3), 6.
- Van Minh, H., Van Huy, T., Long, D. P. P., & Tien, H. A. (2022). Highlights of the 2022 Vietnamese Society of Hypertension guidelines for the diagnosis and treatment of arterial hypertension: The collaboration of the Vietnamese Society of Hypertension (VSH) task force with the contribution of the Vietnam National Heart Association (VNHA). *The Journal of Clinical Hypertension*, 24(9), 1121-1138.
- Turi, V. R., Luca, C. T., Gaita, D., Iurciuc, S., Petre, I., Iurciuc, M., ... & Cozma, D. (2022). Diagnosing Arterial Stiffness in Pregnancy and Its Implications in the Cardio-Renal-Metabolic Chain. *Diagnostics*, 12(9), 2221.
- Upadhyay, D., Rizvi, Y., & Ojha, S. Study of prevalence of retinal changes in Pregnancy Induced Hypertension cases in population of Garhwal Region of Uttarakhand.
- Byth, L. A., Lust, K., Jeffree, R. L., Paine, M., Voldanova, L., & Craven, A. M. (2022). Management of idiopathic intracranial hypertension in pregnancy. *Obstetric Medicine*, 15(3), 160-167.
- de Pádua Borges, R., Avila, G. O., Ritter, A. C., Alessi, J., Reichelt, A. J., da Rocha Oppermann, M. L., ... & Schaan, B. D. (2022). Healthcare of pregnant women with diabetes during the COVID-19 pandemic: a Southern Brazilian cross-sectional panel data. *Journal of Perinatal Medicine*.
- Hosamani, G., Niranjana, C. S., Sagamkunti, A., Neelopant, S. A., & Rashmi, M. B. Correlation of Clinical, Hematological and Biochemical Parameters in Women with Severe Preeclampsia and Maternal Outcome: An Observational Study. *European Journal of Molecular & Clinical Medicine*, 9(03), 2022.

22. Murtaza, S. (2022). Preeclampsia: A Risk Factor For Dismal Neonatal Outcome. *Journal of Surgery Pakistan*, 27(1), 16-20.
23. de Alencar Ximenes, R. A., de Barros Miranda-Filho, D., Brickley, E. B., de Araújo, T. V. B., Montarroyos, U. R., Abtibol-Bernardino, M. R., ... & Zika Brazilian Cohorts Consortium. (2022). Risk of adverse outcomes in offspring with RT-PCR confirmed prenatal Zika virus exposure: An individual participant data meta-analysis of 13 cohorts in the Zika Brazilian Cohorts Consortium. *The Lancet Regional Health-Americas*, 100395.
24. Koga, S. A. (2022). Comparing Sociodemographic, Reproductive and Clinicopathological Characteristics Associated With Hormonal Contraceptive Use Among Women With Uncomplicated Diabetes Mellitus at Kenyatta National Hospital (Doctoral dissertation, University of Nairobi).
25. Moss, H. E. (2022). Neuro-ophthalmology and pregnancy. *CONTINUUM: Lifelong Learning in Neurology*, 28(1), 147-161.
26. Balahura, A. M., Moroi, Ş. I., Scafa-Udrişte, A., Weiss, E., Japie, C., Bartoş, D., & Bădilă, E. (2022). The Management of Hypertensive Emergencies—Is There a “Magical” Prescription for All?. *Journal of Clinical Medicine*, 11(11), 3138.
27. Costa, L. R. P., Costa, G. A. M., Valete, C. O. S., Machado, J. K. K., & Silva, M. H. D. (2022). In-hospital outcomes in preterm and small-for-gestational-age newborns: a cohort study. *einstein* (São Paulo), 20.
28. Naqvi, S. M. A. S., Mohammed, S., Ye, H., & Zhang, Y. (2022). Clinical Study on Pathogenic Factors and Screening Strategies of Retinopathy of Prematurity. *Yangtze Medicine*, 6(4), 95-113.
29. KALLU, N. R., KOLAR, G., REDISHETTY, S., & REDDY KISTAMPALLY, P. K. (2022). Adverse Outcomes in Pregnancy with Chronic Hypertension with and without Superimposed Preeclampsia in Urban South Indian Population: A Prospective Observational Study. *Journal of Clinical & Diagnostic Research*, 16(8).
30. Deshmukh, V., Gangurde, V. R., & Gadappa, S. (2022). Maternal and Perinatal Outcome of Posterior Reversible Encephalopathy Syndrome (PRES) in Patients with Eclampsia at Tertiary Health Care Centre. *The Journal of Obstetrics and Gynecology of India*, 1-6.
31. Verteramo, R., Santi, E., Ravennati, F., Scutiero, G., Greco, P., & Morano, D. (2022). Ultrasound Findings of Fetal Infections: Current Knowledge. *Reproductive Medicine*, 3(3), 201-221.
32. Zhu, I., Mieler, W. F., Kim, S. K., & Jakobiec, F. A. (2022). Hypertension and Its Ocular Manifestations. In Albert and Jakobiec's Principles and Practice of Ophthalmology (pp. 6991-7016). Cham: Springer International Publishing.