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Research Article

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Hypertensive Disorders of Pregnancy and its Feto-Maternal Outcome: A Tertiary Care Experience

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ABSTRACT

Background: Hypertensive disorders of pregnancy (HDP) are significant contributors to maternal and perinatal morbidity and mortality globally, with a high impact in both developed and developing countries. These conditions include gestational hypertension, preeclampsia, eclampsia, and chronic hypertension, and contribute to obstetric complications such as placental abruption, intrauterine growth restriction, preterm birth, and stillbirth. Despite improvements in antenatal care, challenges in diagnosis, emergency care, and monitoring contribute to poor outcomes, particularly in resource-limited settings. Tertiary care centres play a crucial role in managing these high-risk pregnancies.

Methodology: This prospective observational study was conducted at the ESIC Medical College & Post Graduate Institute of Medical Sciences & Research, Bangalore, from January 2023 to January 2025 involving 250 pregnant women diagnosed with HDP, either booked or unbooked, who met the inclusion criteria. The study assessed various types of hypertensive disorders, including gestational hypertension, preeclampsia, eclampsia, and chronic hypertension, and the maternal and neonatal outcomes. Data was collected through clinical evaluations, laboratory tests, and fetal monitoring. Statistical analysis was performed using SPSS version 21.

Results: The study participants had a mean age of 24.62 years, with the majority being gestational hypertension (41.2%) followed by preeclampsia (31.2%). Most women were multigravida (61.2%), and 88% were booked at the hospital. The majority of women (66%) delivered at >37 weeks, while the remainder were preterm. Caesarean section was the most common mode of delivery (54.4%), with fetal distress being the leading indication. Maternal morbidities included postpartum eclampsia (7.6%), HELLP syndrome (7.2%), and postpartum haemorrhage (2.8%). Neonatal outcomes showed that 53 infants were admitted to the NICU, with the leading causes being respiratory distress (33.96%) and jaundice (32.07%).

Conclusion: HDP remains a leading cause of maternal and perinatal morbidity in India, especially in tertiary care settings. Early diagnosis, effective management, and prompt referral to specialized centres are critical for improving outcomes. The study highlights the importance of improving referral systems, clinical protocols, and prenatal care to reduce the burden of hypertensive disorders in pregnancy.

Keywords: Hypertensive Disorders of Pregnancy, Preeclampsia, Eclampsia, Gestational Hypertension, Caesarean Section

Hypertensive disorders of pregnancy (HDP) are amongst the most significant causes of maternal and perinatal morbidity and mortality in both developed as well as developing countries in the world. The Spectrum encompassed in HDP include Gestational hypertension, Preeclampsia, Eclampsia, Chronic hypertension, and Preeclampsia superimposed on chronic hypertension. Particularly in low- and middle-income nations like India, preeclampsia and eclampsia are significant causes of morbidity. Around 5–10% of pregnancies worldwide are affected by HDP, with some variation depending on geographic location, population characteristics, and access to healthcare. According to ACOG, gestational hypertension is on the rise [1]. In India, the reported prevalence of HDP ranges from 7% to 15%, with preeclampsia occurring in 5–8% of pregnancies and eclampsia complicating about 1–2% of all pregnancies [2]. These conditions are a leading cause of obstetric complications such as Placental abruption, Fetal growth restriction, preterm birth, stillbirth, HELLP syndrome and Acute kidney injury. Additionally, women with HDP are associated with increased

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risk for maternal Myocardial infarction, heart failure, chronic hypertension and stroke [3].

In India, maternal mortality remains a significant public health concern, and hypertensive disorders are consistently identified as one of the leading direct causes of maternal death, second only to haemorrhage [4]. Despite advances in antenatal care and institutional deliveries, challenges such as delayed diagnosis, limited access to emergency obstetric care, and inadequate monitoring contribute to poor outcomes in resource-limited settings. Tertiary care centers, equipped with specialized facilities and multidisciplinary departments, play a crucial role in managing high-risk pregnancies complicated by HDP.

Furthermore, localized data from tertiary hospitals in India can inform context-specific clinical guidelines, training programs, and public health interventions aimed at reducing HDP-related morbidity and mortality. As healthcare systems aim to meet Sustainable Development Goal (SDG) targets for maternal and child health, understanding the patterns and outcomes of HDP in these referral centres is both timely and essential [5].

Materials and Methods

This is a Prospective observational study conducted in Department of Obstetrics and Gynaecology, at ESIC medical college & post graduate institute of medical sciences & research, Bangalore between January 2023 to January 2025 involving 250 pregnant women with Hypertensive disorders of pregnancy, booked or unbooked fulfilling the inclusion and exclusion criteria were included in the study after Ethical committee clearance.

Inclusion criteria: Hypertensive disorders of pregnancy irrespective of gestational age and parity, willingness to participate in the study.

Exclusion criteria: Chronic medical disorders like cardiac, liver and renal diseases, Autoimmune conditions, Epilepsy.

Criteria defining different Hypertensive disorders of pregnancy

Gestational hypertension – BP >140/90 mm Hg after 20 weeks of gestation without other features of Preeclampsia.

Preeclampsia - Blood pressure of 140/90 mmHg or above on two occasions at least four hours apart after 20 weeks of gestation with or without proteinuria; or thrombocytopenia (less than 100,000/ml), impaired liver function (serum liver transaminases to twice the normal level), new-onset renal insufficiency (serum creatinine more than 1.1 mg/dl or doubling of serum creatinine without any other renal pathology), presence of pulmonary edema, or new-onset visual disturbances or cerebral symptoms. It was further classified at Preeclampsia with severe features if BP> 160/110 mmHg and if any of the above criteria are present or Preeclampsia without severe features.

Eclampsia was diagnosed when Preeclampsia was complicated by seizures within 14 days after delivery.

Chronic hypertension was diagnosed when hypertension was detected prior to pregnancy or 20 weeks of gestation.

Chronic hypertension with preeclampsia was when features of preeclampsia developed later in pregnancy in a previously hypertensive woman.

A detailed history with weight and height, Blood pressure, Systemic examination and per abdominal examination for presentation, Liquor and Fetal heart sound was done. Per vaginal examination was done when indicated. All relevant investigations like Blood group, Complete haemogram, Liver and Renal function tests, Coagulation profile, Serum electrolytes, Urine routine microscopy with albuminuria, Spot Urine Protein creatinine ratio, 24-hour urine protein if indicated, Fundoscopy, Baseline electrocardiogram was done for all patients. Non stress test was done for fetal wellbeing. Ultrasonography was done to see for presentation, liquor, fetal weight, cardiac activity and Doppler changes.

Treatment was initiated with antihypertensive therapy mostly Labetalol and Nifedipine when indicated with Strict BP monitoring. If there were features of Imminent Eclampsia or if patient had Eclampsia Magnesium sulphate according to Pritchard regimen was administered after stabilizing the patient and pregnancy was terminated if indicated after deciding the mode of delivery.

All mother and babies were followed till 7 days post-delivery and reviewed back for follow up at 2 weeks after discharge. Data was entered in Microsoft Excel and analyzed with the Statistical Package for the Social Sciences (SPSS) software version 21.

Results

Most of the women belonged to 21 to 30 years (73%). More than half of the study population were Nullipara (63%). 88% of the women were booked in our hospital, 3% booked elsewhere and referred, rest were unbooked. 73% of the women were <37 weeks and rest were Term.

Majority of the women in our study were Gestational Hypertension (41.2%) followed by Preeclampsia (31.2%). 23 women (22.33%) progressed from gestational hypertension to preeclampsia whereas 6 women with Chronic hypertension developed superimposed preeclampsia.

Table 1: Maternal Age Distribution

Age (y)	n	%
≤ 20	6	2.4
21–25	98	39.2
26–30	85	34
31–35	32	12.8
> 35	29	11.6

Table 2: Distribution According to Parity

PARITY	n	%
1	158	63.2
2	46	18.4
3	34	13.6
4	12	4.8

Table 3: Distribution According to Gestational Age

GESTATIONAL AGE	n	%
<28 WEEKS	8	3.2
28+1 TO 34 WEEKS	76	30.4
34+1 TO 36+6 WEEKS	97	38.8
>37 WEEKS	69	27.6

Table 4: Distribution of Women According to Hypertensive Disorders

HDP	n	%
GESTATIONAL HYPERTENSION	103	41.2
PRE-ECLAMPSIA	78	31.2
ECLAMPSIA	48	19.2
CHRONIC HYPERTENSION	15	6
CHRONIC HYPERTENSION superimposed with PRE-ECLAMPSIA	6	2.4

Table 5: Associated Conditions with Hypertensive Disorders

CONDITIONS	n	%
Hypothyroidism	68	27.2
Anaemia	41	16.4
Gestational Diabetes Mellitus	23	9.2

Most common associated comorbidity with Hypertensive disorders was Hypothyroidism in 68% of the women, Anaemia in 16% and Gestational Diabetes in 9%.

Table 6: Mode of delivery

Mode	n	%
Caesarean section	136	54.4
Vaginal delivery	101	40.4
Vacuum	9	3.6
Forceps	4	1.6

More than half of the patients delivered via LSCS (54.4%) with most common indication being fetal distress (31.6%) followed by Non progress of labour (22.7%) and Antepartum Eclampsia (16%).

Table 7: Indications of LSCS(n=136)

Indication	n	%
Fetal Distress	43	31.61
Non progress of labour	31	22.79
Abruptio placenta	14	10.29
Severe Uncontrolled preeclampsia	17	12.5
Eclampsia	22	16.17
CPD	9	6.61

19 patients had postpartum eclampsia, 18 had HELLP (Haemolysis, elevated liver enzymes, low platelet) ,7 patients had PPH requiring medical and surgical management. 2 patients developed ARDS post-delivery and required ICU admission and managed conservatively. 6 had Posterior reversible encephalopathy syndrome and one had Acute kidney injury and was referred to another tertiary care facility due to non-availability of beds for Dialysis.

Table 8: Maternal morbidity

Morbidity	n	%
Postpartum Eclampsia	19	7.6
HELLP	18	7.2
Postpartum haemorrhage	7	2.8
ARDS	2	0.8
PRES	6	2.4
AKI	1	0.4
Manual removal of placenta	1	0.4

Table 9: Neonatal outcomes

Outcome	n	%
Healthy mother side	158	63.2
NICU admission	53	21.2
IUD	3	1.2
Neonatal Death	5	2

21.2 % of the babies required NICU admission with most common reason being Respiratory distress (34%) and jaundice (32%).

Table 10: Indications for NICU admission

Indication	n	%
Respiratory distress	18	33.96
Jaundice	17	32.07
Prematurity	8	15.09
Low birth weight	10	18.86

Discussion

Our study included a diverse maternal age group, with the majority falling within the 20-30 years range, similar to findings reported by Sibai et al [2]. However, Ahmad et al found a slightly higher prevalence in women over 30, suggesting that advanced maternal age may further increase the risk of severe hypertensive complications with various associated conditions [3].

In our study, gestational hypertension (103 cases, 41.2%) was the most common, followed by pre-eclampsia (78 cases, 31.2%), eclampsia (48 cases, 19.2%), and chronic hypertension (21 cases, 8.4%) similar to findings of Khan et al whereas a study by Chappel et al and Patel et al reported equal number of pre-eclampsia and gestational hypertension cases 28% [3,6]. Mandal et al found incidence of Preeclampsia (48%) to be more than Gestational hypertension (15%) similar to Gavali et al (50%, 42%) in contrast to our findings [7,8]. The higher proportion of gestational hypertension in our study may reflect differences in screening and diagnostic criteria or population-specific risk factors which also confirms the rising trend of Gestational Hypertension.

Our data showed a high caesarean section rate (54.4%) closely matching findings of studies by Smith et al (60%), Poon, LC, et al (55%) and Gupta et al (54.4%) [9,10,11]. The high C-section rate in our study aligns with global trends, where HDP often

necessitates emergency delivery to prevent maternal and fetal complications.

The primary indications for Caesarean section in our study population were Fetal distress (31.6%), Eclampsia (16.2%), Severe pre-eclampsia (12.5%) whereas Patel et al reported abruptio placenta (20%) as a more frequent indication than in our study (10.3%), possibly due to differences in early detection and management [11].

Our study reported notable maternal complications like Postpartum eclampsia (7.6%) and HELLP syndrome (7.2%) similar to a study by Gavali et al suggesting strict adherence to protocols in postpartum monitoring and early management of complications [8].

A study by Mohanty et al and Siromani et al reported a higher NICU admission rate (34%) than our study (21%), mainly due to prematurity and low birth weight [12,13]. We found a lower IUD rate (01.2%), possibly due to better antenatal surveillance in contrast to a study by Goswami et al (25%) [14]. The relatively lower neonatal mortality in our study may reflect improved neonatal resuscitation and NICU care.

The leading causes for NICU admission in our study were Respiratory distress (34%), Jaundice (32%) similar to Chappell et al highlighting the need for neonatal respiratory support in HDP pregnancies [15,16].

Conclusion

Managing HDP requires an integrated approach - enhance antenatal care, early detection and prompt management along with timely referral and multidisciplinary management in a Tertiary care centre. Moreover, public health awareness campaigns to reduce the delays in seeking hospital care and timely referral from peripheral centres and emphasizing the importance of regular blood pressure monitoring during pregnancy is necessary.

In conclusion, managing and referring women with high blood pressure during pregnancy requires precise guidelines. India can only lower the number of HDP deaths and make pregnancies safer by strengthening the various levels of healthcare facilities.

References

1. Hypertension in Pregnancy: Executive Summary. American College of Obstetricians and Gynecologists. 2023. 141: 924-933.
2. Sibai BM. Hypertensive Disorders in Pregnancy. 2020.
3. Khan R. Eclampsia in Low-Resource Settings: A 5-Year Analysis. 2022.
4. Roberts JM, Rich-Edwards JW, McElrath TF, Garmire L, Myatt L. Global Pregnancy Collaboration. Subtypes of preeclampsia: recognition and determining clinical usefulness. Hypertension. 2021. 77: 1430-1441.
5. Wilson KL. Neonatal Outcomes in Hypertensive Pregnancies. 2021.
6. Panda PK, Dawman L, Panda P, Sharawat IK. Feasibility and effectiveness of teleconsultation in children with epilepsy amidst the ongoing COVID-19 pandemic in a resource-limited country. Cureus. 2021. 13: e13982.
7. Mandal J, Roy D. Feto-maternal outcome study in hypertensive disorders of pregnancy: primigravida vs multigravida. Int J Reprod Contracept Obstet Gynecol. 2021. 10: 920-924.
8. Sudhir Gavali, Anita Patil, Ujwalla Gavali. Study of fetomaternal outcome in patients with pregnancy induced hypertension at Sangli district. MedPulse International Journal of Gynaecology. 2021. 20: 65-69.
9. Smith S, Kim P, Wolff SF, Ramaswamy M, Collins T. Hypertension in Pregnancy and Preeclampsia: Variation in Clinical Management Strategies among Obstetric/Gynecologic Provider Type. Women's Health Reports. 2023. 4: 517-522.
10. Poon LC. Cesarean Delivery in Women with Hypertensive Disorders: A Meta-analysis. AJOG. 2021. 224: 277-289.
11. Gupta BK, Shrivastava AK, Shrestha L. Hypertensive Disorder of Pregnancy and Its Immediate Outcome on Neonates in a Tertiary Care Hospital of Western Nepal. International Journal of Basic & Clinical Pharmacology. 2019. 8: 1343-1348.
12. Mohanty S, Pradhan M, Champatiray JR, Ganguly S. Neonatal outcome in hypertensive disorders of pregnancy in tertiary care centre. Panacea J Med Sci. 2022. 12: 23-28.
13. Siromani SM. Neonatal Outcome In Pregnancy Induced Hypertensive Mothers- A Tertiary Care Centre Experience. IOSR-JDMS. 2015. 14: 23-27.
14. Goswami P, Lata H, Memon S, Khaskhelli LB. Excessive placental calcification observed in PIH patients and its relation to fetal outcome. JLUMHS. 2012. 11: 144-148.
15. Chappell LC. Adverse Neonatal Outcomes in Hypertensive Pregnancies: A Prospective Cohort Study. NEJM. 2022. 386: 1123-1135.
16. Patel, Ravikant, Hinal Baria, Hinaben R Patel, Sunil Nayak. A Study on Pregnancy Induced Hypertension and Foetal Outcome among Patient with PIH at Tertiary Care Hospital, Valsad. International Journal of Community Medicine and Public Health. 2017. 4: 4277-4281.