

A STUDY OF CLINICAL PROFILE OF HYPERTENSION IN PREGNANCY AND ITS MANAGEMENT: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Hypertension in pregnancy is a leading cause of maternal and perinatal morbidity and mortality. A detailed understanding of its clinical presentation and management outcomes is essential to improve maternal and fetal prognosis. **Objective:** To assess the clinical profile of pregnant women with hypertension and evaluate the effectiveness of various management strategies in improving pregnancy outcomes. **Methods:** A prospective observational study was conducted involving 44 pregnant women diagnosed with hypertension. Data on clinical features, risk factors, treatment modalities, and maternal-fetal outcomes were recorded and analysed. **Results:** Majority of patients were aged between 21–30 years, with a significant proportion being primigravida. Common risk factors included family history of hypertension, obesity, and low socioeconomic status. Methyldopa and labetalol were the most frequently used antihypertensive medications. Good outcomes were observed in cases with early diagnosis and consistent antenatal care. **Conclusion:** Hypertension in pregnancy requires early detection and individualized management. Risk stratification and standardized treatment protocols play a vital role in improving maternal and fetal outcomes.

KEYWORDS: Hypertension, Outcomes.

INTRODUCTION

Hypertensive disorders complicate approximately 5–10% of all pregnancies and are a major contributor to maternal and perinatal mortality, particularly in low-resource settings. These disorders encompass chronic hypertension, gestational hypertension, pre-eclampsia, and eclampsia[1]. Hypertension in pregnancy, also known as hypertensive disorders of pregnancy (HDP), affects roughly 5% to 10% of pregnancies. This includes conditions like gestational hypertension, preeclampsia, and chronic hypertension. HDP is a leading cause of maternal and fetal morbidity and mortality, with an estimated 30,000 maternal deaths annually at the global level[2].

Key points about hypertension in pregnancy: Prevalence is a common complication, affecting a significant portion of pregnancies[3]. Types: HDP encompasses several conditions: Gestational hypertension: High blood pressure developing after 20 weeks of pregnancy without other complications. Preeclampsia: High blood pressure with signs of damage to other organ systems, such as the kidneys or liver. Chronic hypertension: High

blood pressure that exists before pregnancy or is diagnosed before 20 weeks. Preeclampsia superimposed on chronic hypertension: When a woman with chronic hypertension develops preeclampsia during pregnancy[4-7]. Impact: HDP can lead to serious complications for both mother and baby, including preterm birth, low birth weight, and in severe cases, maternal death. Increasing Trend: The prevalence of hypertension during pregnancy is on the rise, possibly due to factors like increasing maternal age and the prevalence of other health conditions in women of childbearing age. Risk Factors: Risk factors for HDP include older maternal age, first pregnancy (primigravida), obesity, family history of hypertension in pregnancy, and pre-existing health conditions[8-11]. Early detection and management: Early diagnosis and appropriate management of HDP are crucial for minimizing adverse outcomes

Management involves timely diagnosis, close monitoring, and pharmacologic intervention. Understanding the clinical spectrum and outcomes under different treatment regimens can guide better protocols for care.

METHODOLOGY

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 44 patients in the department of Obstetrics & Gynaecology, at a tertiary care centre, from April / 2019 to October/2019

Total 44 participant were approached to project among them No one were excluded in this study and Total 44 Confirmed cases were included on the basis of fulfilling of the eligibility criteria.

The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination.

Study Design and Duration:

Prospective observational study conducted over 12 months at a tertiary hospital.

Sample Size:

44 pregnant women diagnosed with any form of hypertension during pregnancy.

Inclusion Criteria:

- Pregnant women with blood pressure $\geq 140/90$ mmHg
- Gestational age ≥ 20 weeks

Exclusion Criteria:

- Chronic renal or heart disease
- Multiple pregnancies
- Incomplete medical records

Data Collection:

- Clinical history and examination
- BP readings and lab tests (proteinuria, LFTs, uric acid)
- Type of hypertension categorized
- Antihypertensive medications recorded
- Maternal and fetal outcomes documented

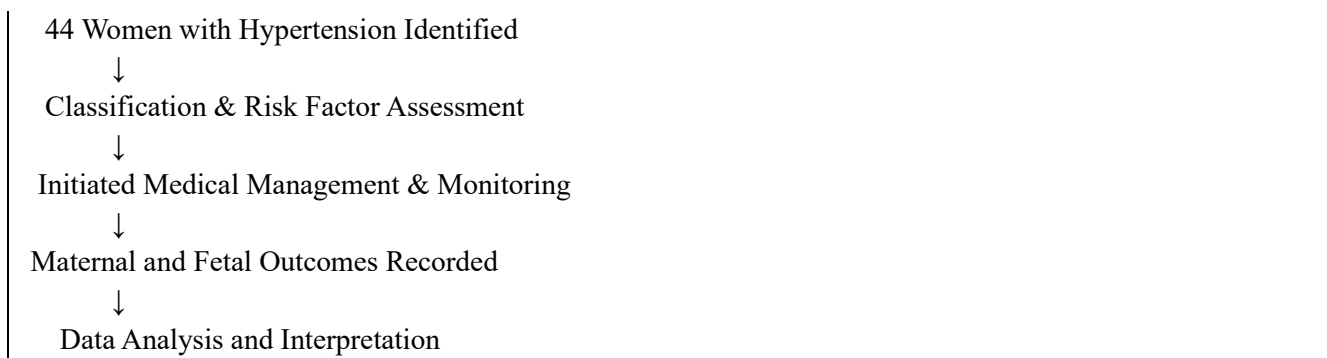
Flowchart: Study Methodology

Pregnant Women Attending ANC Clinic



Screened for Hypertension in Pregnancy





Statistics and analysis of data

Data is put in excel sheet then mean, median and association is analyzed by SPSS version 20. Chi-square test was used as test of significance for qualitative data. Continuous data was represented as mean and SD. MS Excel and MS word was used to obtain various types of graphs such as bar diagram. P value (Probability that the result is true) of Pvalue <0.05 was considered as statistically significant after assuming all the rules of statistical tests. Statistical software: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyse data. Sample size is calculated by N master statistical software.

RESULTS

In this study we found that Hypertensive Pregnant Women is associated with demographic profile of patient. 65.9% of Hypertensive Pregnant Women is due to Primigravida followed by 34.1 % Multigravida.

Hypertensive Pregnant Women were belong to 21–30 years age group (Table 1)

Age is also associated factors for Hypertensive Pregnant Women

63.6% Hypertensive Pregnant Women were associated with Urban Residence (Table 1)

Demographic Profile of Hypertensive Pregnant Women Table 1 (n=44)

Parameter	Frequency (n)	Percentage (%)
Age 18–20	6	13.6%
Age 21–30	26	59.1%
Age >30	12	27.3%
Primigravida	29	65.9%
Multigravida	15	34.1%
Rural Residence	16	36.4%
Urban Residence	28	63.6%
Booked (Regular ANC Visits)	30	68.2%
Unbooked	14	31.8%

Risk Factors of Hypertension in Pregnancy are Family History of Hypertension , Obesity, And Low Socioeconomic Status.

Risk Factors of Hypertension in Pregnancy Table 2 (n=44)

Risk Factor	Frequency (n)	Percentage (%)
Family History of Hypertension	18	40.9%
Obesity (BMI >25)	14	31.8%

Risk Factor	Frequency (n)	Percentage (%)
Previous History of Preeclampsia	6	13.6%
Low Socioeconomic Status	20	45.5%
Diabetes Mellitus	5	11.4%
Age >30 years	12	27.3%

Type of Hypertension Diagnosed (Table 3):

Type	Frequency (n)	Percentage (%)
Gestational Hypertension	18	40.9%
Pre-eclampsia	16	36.4%
Chronic Hypertension	5	11.4%
Eclampsia	5	11.4%

Management Strategies Used:

Medication Used	Patients (n)	Usage (%)
Methyldopa	28	63.6%
Labetalol	24	54.5%
Nifedipine	10	22.7%
Magnesium Sulfate (for eclampsia)	5	11.4%

Maternal Outcomes:

- Cesarean section: 22 cases (50%)
- Preterm labor: 14 cases (31.8%)
- Eclampsia: 5 cases (11.4%)
- HELLP syndrome: 2 cases (4.5%)

Fetal Outcomes:

- Low birth weight (<2.5 kg): 18 (40.9%)
- NICU admission: 12 (27.3%)
- Stillbirth: 2 (4.5%)
- IUGR: 10 (22.7%)

DISCUSSION

Hypertension in pregnancy, especially among primigravidas, remains a clinical challenge. The most common presentation was gestational hypertension, followed by pre-eclampsia. The frequent use of methyldopa and labetalol reflected safe pharmacological choices in pregnancy[12-14].

Hypertension in pregnancy, also known as hypertensive disorders of pregnancy (HDP), is significantly influenced by demographic factors. These include maternal age, parity, socioeconomic status, education level, and family history of hypertension[15-18].

Elaboration: Maternal Age: Older mothers (over 35 years old) are at a higher risk of developing HDP compared to younger mothers. Conversely, younger mothers (under 20 years old) may also have an increased risk. Parity: Nulliparous women (those who have never been pregnant before) are more likely to experience gestational hypertension than multiparous women (those who have had previous pregnancies)[19-21]. Socioeconomic

Status: Lower socioeconomic status, often associated with limited access to healthcare and poor nutrition, is linked to a higher prevalence of hypertension in pregnancy. Education Level:

Mothers with lower levels of education may have less awareness of the risk factors and preventative measures related to HDP, potentially contributing to higher incidence. Family History: A family history of hypertension, especially in a mother or sister, increases the likelihood of a woman developing HDP. Obesity: Obesity is a well-established risk factor for HDP, and its prevalence is increasing globally, contributing to the overall burden of hypertension in pregnancy. Ethnicity: Some studies suggest a higher prevalence of HDP in certain ethnic groups. Multiple Gestations: Pregnancies involving twins or higher-order multiples are associated with an increased risk of HDP[20].

Pregnancy-induced hypertension (PIH), also known as gestational hypertension, is a condition characterized by high blood pressure that develops after 20 weeks of pregnancy. Several factors can increase the risk of PIH, including a first pregnancy, a history of PIH in a previous pregnancy, chronic high blood pressure or kidney disease, obesity, and older maternal age[21-24].

Here's a more detailed look at the risk factors: Previous Pregnancy Complications: Preeclampsia in a previous pregnancy: Women who have had preeclampsia in a previous pregnancy are at higher risk of developing it again in subsequent pregnancies[25-27].

Other pregnancy complications: Having a baby with low birth weight, or other complications in a previous pregnancy can also increase the risk of PIH. Maternal Factors: First pregnancy (nulliparity): Being pregnant for the first time increases the risk. Maternal age: Women over 40 are at higher risk, as are very young mothers (under 20). Obesity: Women with a BMI over 30 (obesity) before pregnancy have an increased risk. Chronic conditions: Pre-existing conditions like high blood pressure, kidney disease, diabetes (including gestational diabetes), and lupus can elevate the risk. Race: Black women have a higher incidence of PIH[28-30]. Pregnancy-related Factors Multiple gestation: Pregnancies with twins, triplets, or other multiples are at higher risk. In vitro fertilization (IVF): Pregnancies conceived through IVF have a higher risk. Other Factors: Family history: A family history of preeclampsia (mother or sister) increases the risk. Lower socioeconomic status: Studies suggest that women with lower socioeconomic status may also be at increased risk. Interpregnancy interval: Short intervals (less than 2 years) or very long intervals (more than 10 years) between pregnancies may increase risk Understanding these demographic factors is crucial for identifying women at higher risk and implementing targeted interventions to improve maternal and perinatal outcomes Adverse maternal and fetal outcomes were more common among women with severe hypertension, eclampsia, and delayed ANC booking. Early initiation of treatment and regular monitoring were associated with better outcomes[31,32].

These findings are consistent with studies highlighting the importance of early intervention and individualized care.

CONCLUSION

Hypertensive disorders during pregnancy are prevalent and pose a significant risk to both mother and fetus. A well-structured approach involving early detection, appropriate pharmacological treatment, and routine antenatal surveillance can help minimize complications. Public health strategies should also focus on screening and education to improve early reporting and management.

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

REFERENCES

1. Miller EC, Espinoza MDZ, Huang Y, et al. Maternal race/ethnicity, hypertension, and risk for stroke during delivery admission. *J Am Heart Assoc* 2020; 9(3):e014775. [DOI] [PMC free article] [PubMed] [Google Scholar]
2. Mustafa R, Ahmed S, Gupta A, et al. A comprehensive review of hypertension in pregnancy. *J Pregnancy* 2012;2012:105918. [DOI] [PMC free article] [PubMed] [Google Scholar]
3. Fisher C, MacLean M, Morecroft I, et al. Is the pregnancy hormone relaxin also a vasodilator peptide secreted by the heart? *Circulation* 2002;106(3): 292–5. [DOI] [PubMed] [Google Scholar]
4. Lumbers ER, Pringle KG. Roles of the circulating renin-angiotensin-aldosterone system in human pregnancy. *Am J Physiol Regul Integr Comp Physiol* 2014;306(2):R91–101. [DOI] [PubMed] [Google Scholar]
5. Bello NA, Woolley JJ, Cleary KL, et al. Accuracy of blood pressure measurement devices in pregnancy: a systematic review of validation studies. *Hypertension* 2018;71(2):326–35. [DOI] [PMC free article] [PubMed] [Google Scholar]
6. ACOG practice Bulletin No. 203: chronic hypertension in pregnancy. *Obstet Gynecol* 2019;133(1): e26–50. [DOI] [PubMed] [Google Scholar]
7. 12.ACOG practice Bulletin No. 202: gestational hypertension and preeclampsia. *Obstet Gynecol* 2019; 133(1):e1–25. [DOI] [PubMed] [Google Scholar]
8. Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, Detection, evaluation, and management of high blood pressure in adults: executive summary: a report of the American College of Cardiology/American heart association Task Force on clinical practice guidelines. *Hypertension* 2018;71(6): 1269–324. [DOI] [PubMed] [Google Scholar]
9. Seely EW, Ecker J. Chronic hypertension in pregnancy. *Circulation* 2014;129(11):1254–61. [DOI] [PubMed] [Google Scholar]
10. Lecarpentier E, Tsatsaris V, Goffinet F, et al. Risk factors of superimposed preeclampsia in women with essential chronic hypertension treated before pregnancy. *PLoS One* 2013;8(5):e62140. [DOI] [PMC free article] [PubMed] [Google Scholar]
11. Chappell LC, Enye S, Seed P, et al. Adverse perinatal outcomes and risk factors for preeclampsia in women with chronic hypertension: a prospective study. *Hypertension* 2008;51(4):1002–9. [DOI] [PubMed] [Google Scholar]
12. Abalos E, Duley L, Steyn DW. Antihypertensive drug therapy for mild to moderate hypertension during pregnancy. *Cochrane Database Syst Rev* 2014; (2): Cd002252. [DOI] [PubMed] [Google Scholar]
13. Magee LA, von Dadelszen P, Rey E, et al. Less-tight versus tight control of hypertension in pregnancy. *N Engl J Med* 2015;372(5):407–17. [DOI] [PubMed] [Google Scholar]
14. Magee LA, von Dadelszen P, Singer J, et al. The CHIPS randomized controlled trial (control of hypertension in pregnancy study): is severe hypertension just an elevated blood pressure? *Hypertension* 2016;68(5):1153–9. [DOI] [PMC free article] [PubMed] [Google Scholar]
15. Rezk M, Ellakwa H, Gamal A, et al. Maternal and fetal morbidity following discontinuation of antihypertensive drugs in mild to moderate chronic hypertension: a 4-year observational study. *Pregnancy Hypertens* 2016;6(4):291–4. [DOI] [PubMed] [Google Scholar]
16. Nakhai-Pour HR, Rey E, Berard A. Discontinuation of antihypertensive drug use during the first trimester of pregnancy and the risk of preeclampsia and eclampsia among women with chronic hypertension. *Am J Obstet Gynecol* 2009;201(2): 180.e1–8. [DOI] [PubMed] [Google Scholar]
17. Meher S, Duley L, Hunter K, et al. Antiplatelet therapy before or after 16 weeks' gestation for preventing preeclampsia: an individual participant data meta-analysis. *Am J Obstet Gynecol* 2017;216(2): 121–8.e2. [DOI] [PubMed] [Google Scholar]

18. Roberge S, Nicolaides K, Demers S, et al. The role of aspirin dose on the prevention of preeclampsia and fetal growth restriction: systematic review and meta-analysis. *Am J Obstet Gynecol* 2017;216(2): 110–20.e6. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
19. ACOG committee opinion No. 743: low-dose aspirin use during pregnancy. *Obstet Gynecol* 2018;132(1): e44–52. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
20. LeFevre M Low-dose aspirin use for the prevention of morbidity and mortality from preeclampsia: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med* 2014;161:819–26. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
21. .Boesen EI. Consequences of in-utero exposure to antihypertensive medication: the search for definitive answers continues. *J Hypertens* 2017;35(11): 2161–4. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
22. Bateman BT, Heide-Jorgensen U, Einarsdottir K, et al. Beta-blocker use in pregnancy and the risk for congenital malformations: an international cohort study. *Ann Intern Med* 2018;169(10):665–73. [\[DOI\]](#) [\[PMC free article\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
23. Webster LM, Myers JE, Nelson-Piercy C, et al. Labetalol versus nifedipine as antihypertensive treatment for chronic hypertension in pregnancy: a randomized controlled trial. *Hypertension* 2017;70(5): 915–22. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
24. Ferrer RL, Sibai BM, Mulrow CD, et al. Management of mild chronic hypertension during pregnancy: a review. *Obstet Gynecol* 2000;96(5, Part 2):849–60. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
25. Easterling TR, Carr DB, Brateng D, et al. Treatment of hypertension in pregnancy: effect of atenolol on maternal disease, preterm delivery, and fetal growth. *Obstet Gynecol* 2001;98(3):427–33. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
26. Zulfeen M, Tatapudi R, Sowjanya R. IV labetalol and oral nifedipine in acute control of severe hypertension in pregnancy—A randomized controlled trial. *Eur J Obstet Gynecol Reprod Biol* 2019;236:46–52. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
27. Cockburn J, Moar VA, Ounsted M, et al. Final report of study on hypertension during pregnancy: the effects of specific treatment on the growth and development of the children. *Lancet* 1982;1(8273):647–9. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
28. Collins R, Yusuf S, Peto R. Overview of randomised trials of diuretics in pregnancy. *Br Med J (Clin Res Ed)* 1985;290(6461):17–23. [\[DOI\]](#) [\[PMC free article\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
29. Magee LA, Cham C, Waterman EJ, et al. Hydralazine for treatment of severe hypertension in pregnancy: meta-analysis. *BMJ* 2003;327(7421):955–60. [\[DOI\]](#) [\[PMC free article\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
30. Physical activity and exercise during pregnancy and the postpartum period: ACOG committee opinion, number 804. *Obstet Gynecol* 2020;135(4):e178–88. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
31. Courtney AU, O'Brien EC, Crowley RK, et al. DASH (Dietary Approaches to Stop Hypertension) dietary pattern and maternal blood pressure in pregnancy. *J Hum Nutr Diet* 2020;33(5):686–97. [\[DOI\]](#) [\[PubMed\]](#) [\[Google Scholar\]](#)
32. Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on hypertension in pregnancy. *Obstet Gynecol* 2013;122(5):1122–31