

## PREGNANCY INDUCED HYPERTENSION AND ITS ASSOCIATED RISK FACTORS AMONG WOMEN ATTENDING DELIVERY SERVICE AT TERTIARY CARE HOSPITAL NAWABSHAH

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### Keywords

Pregnancy Induced Hypertension, Risk Factors, Pregnant Women, Maternal Health, Antenatal Care. Pregnancy Induced Hypertension and Its Associated Risk Factors Among Women Attending Delivery Service at Tertiary Care Hospital Nawabshah

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### Abstract

#### **Background:**

Pregnancy Induced Hypertension (PIH) is one of the most common medical disorders complicating pregnancy and is a major cause of maternal and perinatal morbidity and mortality worldwide. It usually develops after 20 weeks of gestation and poses serious health risks to both the mother and fetus, particularly in developing countries where access to quality maternal healthcare is limited.

#### **Objective:**

To identify the significant risk factors associated with pregnancy induced hypertension (PIH) among pregnant women.

#### **Material and Methods:**

A descriptive retrospective cohort study was conducted among 277 pregnant women diagnosed with pregnancy induced hypertension (PIH) at tertiary care hospitals in Nawabshah. The study was carried out over a period of three months after approval from the Institutional Review Board (IRB). All pregnant women diagnosed with PIH who consented to participate were included, while those with other chronic illnesses unrelated to pregnancy were excluded. Data were collected using a structured questionnaire and analyzed using SPSS version 25. Frequencies, percentages, and Chi-square tests were applied to determine associations between sociodemographic factors, clinical characteristics, and PIH outcomes.

#### **Results:**

The mean age of participants was  $27.3 \pm 5.54$  years. Most participants were Muslim (92.4%) and from rural areas (61.4%). More than half belonged to the poor socioeconomic class (52.7%), and 41.9% were illiterate. The majority were housewives (55.6%) and lived in joint family systems (63.2%). Most pregnancies

were wanted (92.1%), and deliveries commonly occurred at 38 weeks (44.8%). Participants mostly reported sleeping 8 hours per night (57.4%), while 68.2% experienced psychological stress during pregnancy. Regarding medical history, 74.4% had no previous history of pregnancy induced hypertension, 63.9% reported a family history of chronic hypertension, and 45.8% had a family history of diabetes. Most participants had no history of diabetes (85.2%), kidney disease (92.1%), or asthma (65.7%).

**Conclusion:**

The study identified several sociodemographic and clinical factors associated with pregnancy induced hypertension among pregnant women. Factors such as rural residence, low socioeconomic status, illiteracy, psychological stress, and family history of hypertension may contribute to the development of PIH. Early screening, proper antenatal care, and health education are essential to reduce the risk and complications associated with pregnancy induced hypertension.

**Introduction:**

Globally, pregnancy-induced hypertension (PIH) is one of the most common medical. Disorders complicating pregnancy and is a major cause of maternal and perinatal morbidity. And mortality worldwide. Hospital-based studies conducted in Ethiopia have reported a high Burden of PIH among women attending delivery services, highlighting its public health. Importance in low-resource settings. Pregnancy-induced hypertension is defined as the Development of hypertension after 20 weeks of gestation in a previously normotensive Woman and includes gestational hypertension, pre-eclampsia, and eclampsia, these Conditions require timely diagnosis and appropriate management to prevent severe maternal And fetal complications. Hypertensive disorders of pregnancy remain a significant challenge For obstetric care due to their association with severe maternal outcomes such as placental Abruption, renal failure, stroke, and progression to eclampsia. Appropriate clinical Management and monitoring are essential to reduce disease severity and improve outcomes. Several studies have identified pregnancy-induced hypertension as a major contributor to Adverse maternal health outcomes. Complications such as postpartum hemorrhage, preterm Labor, and increased risk of operative delivery are frequently reported among women affected By PIH. Hypertensive disorders during pregnancy also pose serious risks to fetal and Neonatal health. These disorders are associated with intrauterine

growth restriction, preterm Birth, low birth weight, and increased perinatal mortality. Maternal hypertension has been Shown to adversely affect neonatal hematological parameters, indicating that the impact of PIH extends beyond pregnancy and delivery. Alterations in neonatal hemoglobin levels and Platelet counts have been reported among neonates born to hypertensive mothers. Sociodemographic and maternal characteristics play an important role in the development of Pregnancy-induced hypertension. Factors such as advanced maternal age, primigravidity, low Educational status, and poor socioeconomic conditions have been identified as significant Determinants of PIH. Studies assessing fetal outcomes among women with pregnancy-induced hypertension have reported higher rates of low birth weight, preterm delivery, and Neonatal intensive care unit admissions, emphasizing the burden of PIH on perinatal health. At the global level, maternal hypertensive disorders continue to show increasing trends, With significant regional disparities. Recent global burden analyses have emphasized the Growing contribution of hypertensive disorders to maternal morbidity and mortality Worldwide. Pregnancy-induced hypertension has a well-documented impact on fetal growth. Evidence suggests that impaired placental perfusion in hypertensive pregnancies leads to Restricted fetal growth and poor birth outcomes. Identifying predictors of pregnancy induced hypertensive disorders is essential for

early detection and prevention. Multicenter Studies have highlighted the importance of recognizing population-specific predictors among .Pregnant and delivering women .Effective blood pressure control and timely clinical .Management are key components in reducing complications associated with pregnancy-induced hypertension. Integrated management strategies have been shown to improve Maternal and fetal outcomes. In addition to physical complications, pregnancy-induced Hypertension negatively affects the health-related quality of life of pregnant women. Psychological stress, reduced physical functioning, and increased healthcare utilization have Been reported among women with gestational hypertension.. Women attending delivery Services at tertiary care hospitals often represent high-risk pregnancies with diverse obstetric And clinical characteristics. Studying pregnancy-induced hypertension and its associated risk factors in this setting provides valuable evidence for improving maternal and neonatal care .Therefore, the present study aims to assess pregnancy-induced hypertension and its Associated risk factors among women attending delivery services at a tertiary care hospital .Pregnancy-induced hypertension (PIH) is a common hypertensive disorder of pregnancy and Remains a major cause of maternal and fetal morbidity and mortality worldwide, particularly In developing countries. Despite improvements in maternal healthcare services, PIH Continues to be a significant public health problem due to its unpredictable onset and Association with serious maternal and perinatal complications. These complications includd Pre-eclampsia, eclampsia, placental abruption, preterm birth, low birth weight, and increased .Risk of maternal and fetal death. Identification of the risk factors associated with pregnancy-induced hypertension is essential for early detection, timely management, and prevention of Adverse outcomes. Several maternal, obstetric, and socioeconomic factors have been reported To contribute to the development of PIH; however, the pattern and impact of these risk factors May vary among different populations and healthcare settings.

Women attending delivery Services at a tertiary care hospital represent a diverse population with varying levels of Risk. Understanding the associated risk factors of PIH among women presenting for delivery Can help in identifying high-risk pregnancies at an early stage and enable appropriate clinical Interventions. Furthermore, evidence generated from local population-based data can support The development of effective preventive and management strategies, reduce maternal Complications, and improve fetal outcomes.

#### **Methodology:**

#### **MATERIAL AND METHODS**

A descriptive retrospective cohort study was conducted among 277 pregnant women diagnosed with Pregnancy-Induced Hypertension (PIH) who attended delivery services at tertiary care hospitals in Nawabshah. The study was carried out over a period of three months after approval from the Institutional Review Board (IRB). The sample size was consisted of 277 calculated by open epi info calculator participant with margin of 0.05 and significance level of 95%. All pregnant women diagnosed with PIH who consented to participate were included in the study, while women with other chronic illnesses unrelated to pregnancy were excluded. A structured questionnaire was used for data collection. The questionnaire included sociodemographic information, pregnancy-related questions, and potential risk factors associated with PIH. Information regarding age, religion, residence, socioeconomic status, educational status, occupation, family status, pregnancy status, gestational age, sleep pattern, family size, smoking, psychological stress, previous history of PIH, family history of hypertension and diabetes, and history of diabetes, kidney disease, and asthma was collected. Data were entered and analyzed using SPSS version 25. Frequencies and percentages were used to summarize the demographic, pregnancy-related, and clinical characteristics of the participants. A p-value < 0.05 was considered statistically significant.

## Results:

### Section A: Demographic Information

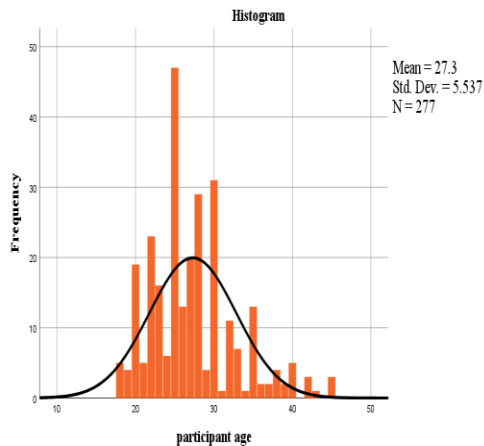


Fig1: Age of participants

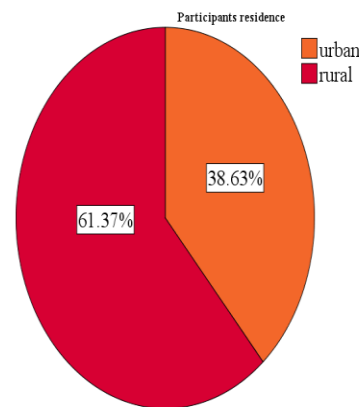
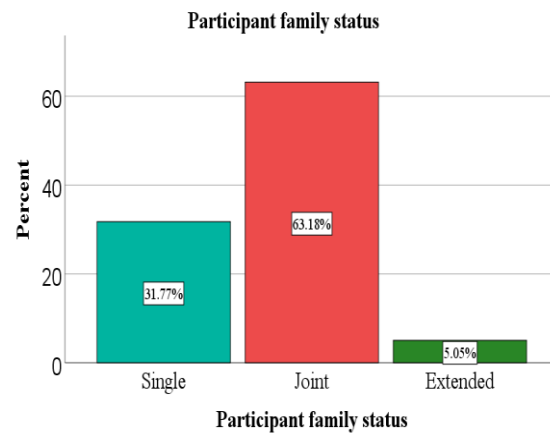
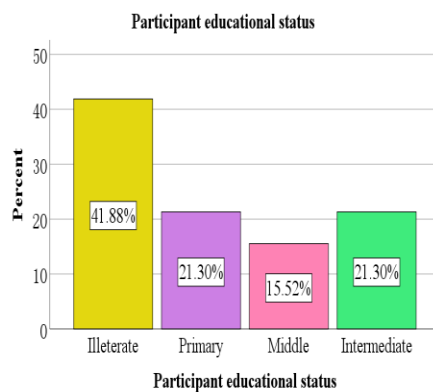


Fig No: 2: Residence of participants



| Variable                | Frequency | Percent% |
|-------------------------|-----------|----------|
| <b>Religion</b>         |           |          |
| Muslim                  | 256       | 92.4%    |
| Hindu                   | 20        | 7.2%     |
| Christian               | 1         | 0.4%     |
| <b>Eeconomic status</b> |           |          |
| Poor class              | 146       | 52.7%    |
| Middle class            | 125       | 45.1%    |

|                                |     |       |
|--------------------------------|-----|-------|
| High class                     | 6   | 2.2%  |
| <b>Participants occupation</b> |     |       |
| House wife                     | 154 | 55.6% |
| Employee                       | 87  | 31.4% |
| Unemployed                     | 8   | 2.9%  |
| Other                          | 28  | 10.1% |

**Section B: Pregnancy related Questions:**

| What is your pregnancy status              | Frequency | Percentage |
|--------------------------------------------|-----------|------------|
| Wanted                                     | 255       | 92.1       |
| Unwanted                                   | 22        | 7.9        |
| What was your gestational age at delivery? |           |            |
| 37 w                                       | 68        | 24.5       |
| 38 w                                       | 124       | 44.8       |
| Others                                     | 85        | 30.7       |
| What is your sleep pattern hour per night  |           |            |
| 8                                          | 159       | 57.4       |
| 9                                          | 25        | 9.0        |
| Other                                      | 93        | 33.6       |
| What is your family size?                  |           |            |
| 2                                          | 93        | 33.6       |
| 3                                          | 72        | 26.0       |
| Other                                      | 112       | 40.4       |

Section C: Choose YES if you have think following is the risk Factor for (PIH) Choose NO if you think following is not the risk Factor for (PIH)

| Are you smoker?                             | Frequency | Percentage |
|---------------------------------------------|-----------|------------|
| Yes                                         | 8         | 2.9        |
| No                                          | 269       | 97.1       |
| Any family member who smoke's?              |           |            |
| Yes                                         | 134       | 48.38      |
| No                                          | 143       | 51.62      |
| Psychological stress                        |           |            |
| Yes                                         | 189       | 68.2       |
| No                                          | 88        | 31.8       |
| Do you have history of previous PIH?        |           |            |
| Yes                                         | 71        | 25.63      |
| No                                          | 206       | 74.37      |
| Any family history of chronic hypertension? |           |            |
| Yes                                         | 177       | 73.9       |
| No                                          | 100       | 36.1       |

|                                               |     |      |
|-----------------------------------------------|-----|------|
| Previous family history of diabetes mellitus? |     |      |
| Yes                                           | 127 | 45.8 |
| No                                            | 150 | 54.2 |
| Previous history of diabetic mellitus?        |     |      |
| Yes                                           | 41  | 14.8 |
| No                                            | 236 | 85.2 |
| History of kidney disease                     |     |      |
| Yes                                           | 22  | 7.9  |
| No                                            | 255 | 92.1 |
| History of Asthma                             |     |      |
| Yes                                           | 95  | 34.3 |
| No                                            | 182 | 65.7 |

### Discussion

Pregnancy Induced Hypertension (PIH) remains one of the most significant complications of pregnancy and is a major contributor to maternal and perinatal morbidity and mortality, particularly in developing countries . The present study aims to identify the risk factors and outcomes associated with PIH among women attending delivery services at a tertiary care hospital in Nawabshah . The findings of this study are expected to highlight that PIH commonly occurs after 20 weeks of gestation. and is more prevalent among primigravida women which is consistent with previous studies conducted in similar settings. Several socio-demographic and obstetric factors such as maternal age, parity, educational status, socioeconomic condition, and lack of antenatal care have been reported as significant contributors to PIH . Lifestyle-related factors including stress, poor nutrition, and food insecurity may also play an important role in the development of pregnancy induced hypertension. . These findings align with earlier studies that emphasized the role of psychosocial stress and limited healthcare access in increasing the risk of hypertensive disorders during pregnancy . Maternal complications such as preeclampsia, eclampsia, preterm labor, and placental abruption are commonly associated with PIH . Similarly, adverse fetal outcomes including low birth weight, preterm birth, and increased perinatal mortality have been widely documented in the literature. early detection, regular antenatal

checkups, and timely management of PIH can significantly reduce these complications . The results of this study are expected to provide valuable evidence for healthcare providers and policymakers to improve screening strategies . strengthen antenatal care services, and promote early identification of high-risk pregnancies at tertiary care hospitals .

### Conclusion:

Pregnancy Induced Hypertension is a serious obstetric condition that poses significant risks to both maternal and fetal health. The study concludes that PIH is strongly associated with various socio-demographic, obstetric, and lifestyle-related risk factors. If left untreated, PIH can lead to severe maternal complications and adverse neonatal outcomes. Early diagnosis, proper antenatal monitoring, and effective management play a crucial role in improving maternal and fetal outcomes. Strengthening maternal healthcare services at tertiary care hospitals can significantly reduce the burden of pregnancy induced hypertension and its associated complications.

## REFERENCES:

- Gudeta TA, Regassa TM. Pregnancy induced hypertension and associated factors among women attending delivery service at mizan-tepi university teaching hospital, tepi general hospital and gebretsadik shawo hospital, southwest, Ethiopia. *Ethiopian journal of health sciences*. 2019;29.
- Moussa HN, Arian SE, Sibai BM. Management of hypertensive disorders in pregnancy. *Women's health*. 2014;10(4):385-404.
- Kumar C, Roy S, Aishwarya T, Setty CS, Afreen O, Maheshwari A, et al. Pregnancy-induced hypertension: risk factors and current treatment strategies. *Cellular, Molecular and Biomedical Reports*. 2023;3(4):197-204
- Preet A, Palve T. A study on complications of pregnancy induced hypertension. *Global Journal of Medical Research: E Gynecology and Obstetrics*. 2020;20(2):21-6.
- Sutton AL, Harper LM, Tita AT. Hypertensive disorders in pregnancy. *Obstetrics and Gynecology Clinics*. 2018;45(2):333-47.
- Okoye HC, Eweputanna LI, Korubo KI, Ejele OA. Effects of maternal hypertension on the neonatal haemogram in southern Nigeria: A case-control study. *Malawi Medical Journal*. 2016;28(4):174-8.
- Naseer S, Wani MA, Altaf T, Uzma S, Mubashir S. Socio-demographic determinants of pregnancy-induced hypertension. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2022;11(7):1939-46.
- Andya K, Prajapati A, Gajjar T, Rawat R. A study to assess the impact of pregnancy induced hypertension on fetal outcomes among PIH patients delivered at Tertiary Care Hospital, Dadra & Nagar Haveli. *Int J Health Sci Res*. 2021;11(1):268-72.
- Ain SN, Gull S, Qulsum R, Khan ZA, Qureshi UA. Prevalence of pregnancy induced hypertension and associated factors in Kashmiri women attending a tertiary care hospital at Srinagar: a cross-sectional study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2023;12(2):387-91.
- Xiong J, Chen S, Wang H, Yang X, Chen X, You B, et al. Global burden of maternal hypertensive disorders (1990–2045): trends, regional disparities, and causal links to occupational exposures. *BMC Pregnancy and Childbirth*. 2025;25(1):641.
- Xiong J, Chen S, Wang H, Yang X, Chen X, You B, et al. Global burden of maternal hypertensive disorders (1990–2045): trends, regional disparities, and causal links to occupational exposures. *BMC Pregnancy and Childbirth*. 2025;25(1):641.
- Xiong X, Mayes D, Demianczuk N, Olson DM, Davidge ST, Newburn-Cook C, et al. Impact of pregnancy-induced hypertension on fetal growth. *American journal of obstetrics and gynecology*. 1999;180(1):207-13.
- Bune GT. Pregnancy-Induced Hypertensive Disorders predictors among pregnant and delivery mothers receiving care in public health institutions in Sidama, Ethiopia: a multicenter case control study. *BMC Pregnancy and Childbirth*. 2024;24(1):683.
- English FA, Kenny LC, McCarthy FP. Risk factors and effective management of preeclampsia. *Integrated blood pressure control*. 2015:7-12.
- Khadari MZ, Zainal H, Daud NAA, Sha'aban A. Health-related quality of life in pregnant women with gestational hypertension: a systematic review. *Cureus*. 2024;16(5).
- World Health Organization. (2011). WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia. Geneva

- American College of Obstetricians and Gynecologists. (2020). Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin No. 222. Obstetrics & Gynecology, 135(6), e237–e260.
- National Institute for Health and Care Excellence. (2019). Hypertension in pregnancy: diagnosis and management (NICE Guideline NG133). London: NICE.
- Steegers Eric A. P., Von Dadelszen Peter, Duvekot Johannes J., & Pijnenborg Robert. (2010). Pre-eclampsia. The Lancet, 376(9741), 631–644.
- Duley Lelia. (2009). The global impact of pre-eclampsia and eclampsia. Seminars in Perinatology, 33(3), 130–137.
- Roberts James M., & Hubel Carla A.. (2009). The two stage model of preeclampsia. Placenta, 30(Suppl A), S32–S37.
- Mol Ben W. J., Roberts Claire T., Thangaratinam Shakila, Magee Laura A., De Groot Christianne J. M., & Hofmeyr G. Justus. (2016). Pre-eclampsia. The Lancet, 387(10022), 999–1011.
- Brown Mark A., Magee Laura A., Kenny Louise C., et al. (2018). Hypertensive disorders of pregnancy: ISSHP classification, diagnosis, and management recommendations. Pregnancy Hypertension, 13, 291–310.
- Abalos Edgardo, Cuesta Carolina, Grosso Ana Laura, Chou Doris, & Say Lale. (2013). Global and regional estimates of preeclampsia and eclampsia. European Journal of Obstetrics & Gynecology and Reproductive Biology, 170(1), 1–7.
- Bilano Ver, Ota Erika, Ganchimeg Tsegaye, et al. (2014). Risk factors of pre-eclampsia/eclampsia and its adverse outcomes in low- and middle-income countries. PLOS ONE, 9(3), e91198
- Say Lale, Chou Doris, Gemmill Alison, et al. (2014). Global causes of maternal death: a WHO systematic analysis. The Lancet Global Health, 2(6), e323–e333.
- Uzan Jacques, Carbonnel Michel, Piconne Olivier, Asmar Roland, & Ayoubi Jean-Marc. (2011). Pre-eclampsia: pathophysiology, diagnosis, and management. Vascular Health and Risk Management, 7, 467–474.