Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v6i12.2121
*Biol. Clin. Sci. Res. J., Volume 6(12), **2025**: 2121*
Original Research Article

Assessment of Knowledge Regarding Pregnancy-Induced Hypertension Among Women

Hoodo Abdirahman Omar *, Sahra Abdirahman Omar, Kousar Parveen, Rubina Jabeen

Department of Nursing, Faculty of Nursing, Superior University, Lahore, Pakistan
**Corresponding author`s email address:* Hoodoabdiraxmaan17@gmail.com

(Received, 24th July 2025, Accepted 8th August 2025, Published 31st December 2025)

Abstract: *Pregnancy-induced hypertension (PIH) is a major contributor to maternal and perinatal morbidity. In Pakistan, limited awareness and delayed care seeking may worsen outcomes; assessing maternal knowledge is essential for targeted antenatal education. Objective: To assess the level of knowledge regarding pregnancy-induced hypertension among pregnant women attending antenatal care at a tertiary care hospital in Lahore, Pakistan.* ***Methods:*** *A descriptive cross-sectional study was conducted in the gynecology outpatient department of a tertiary care hospital in Lahore. Pregnant women at or beyond 20 weeks of gestation with documented blood pressure ≥140/90 mmHg on at least two occasions (4 hours apart) and no prior history of chronic hypertension were included; women with pre-existing hypertension and selected chronic illnesses (eg, diabetes, renal disease) were excluded. Sample size (n = 187) was calculated using Slovin's formula (estimated population 350; margin of error 5%), and participants were recruited through convenience sampling. Data were collected via a structured, adapted questionnaire (translated into Urdu) administered through face-to-face interviews. Data were analyzed in SPSS version 21 using descriptive statistics (frequencies and percentages).* ***Results:*** *Among 187 women, most were aged 23 to 27 years (40.1%); 89.8% were from urban areas, 52.4% were illiterate, 91.4% were homemakers, and 60.4% were multigravida. A physician's diagnosis of hypertension in the current pregnancy was reported by 77.0%. Complications related to hypertensive disorders (preeclampsia/eclampsia/toxemia) were reported by 65.8%, and 54.5% reported proteinuria or severe PIH. At assessment, 46.0% were currently hypertensive, while 48.7% reported taking antihypertensive medication. Knowledge assessment showed that 60.4% had no awareness of high blood pressure and its implications in pregnancy; 49.7% reported a family history of hypertension.* ***Conclusion:*** *A substantial knowledge gap regarding PIH was observed among pregnant women receiving antenatal care, alongside a high burden of reported complications. Strengthening focused health education and counseling during antenatal visits may improve early recognition and timely care seeking for hypertensive disorders of pregnancy.*

Keywords: Pregnancy induced hypertension; hypertensive disorders of pregnancy; knowledge; pregnant women; antenatal care

[***How to Cite:*** Omar HA, Omar SA, Parveen K, Jabeen R. Assessment of knowledge regarding pregnancy-induced hypertension among women. *Biol. Clin. Sci. Res. J.*, **2025;** 6(12): 11-14. doi: https://doi.org/10.54112/bcsrj.v6i12.2121

Introduction

Pregnancy-induced hypertension (PIH) is new hypertension that appears at 20 weeks or more of gestational age with or without proteinuria. Hypertension during pregnancy is a sustained systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg (1). Pregnancy-induced hypertension develops after 20 weeks of pregnancy in women who had previously had normal blood pressure. Gestational hypertension, pre-eclampsia, and eclampsia are the three main types of pregnancy-induced hypertension (2).

Globally, pregnancy-induced hypertension is a significant public health threat both in developed and developing countries contributing to high maternal and perinatal morbidity and mortality (3), WHO review identified hypertensive disorders of pregnancy were annually responsible for about 25,000 maternal deaths in Africa, 22,000 maternal deaths in Asia, 3,800 maternal deaths in Latin America and the Caribbean and 150 maternal deaths in industrialized countries (2), the hypertensive disorder among pregnant mother become the second highest adverse outcome among healthcare workers and most occurring to those who working shift and on call (4).

In Nepal, maternal mortality is strongly associated with the degree of hypertension, with eclampsia accounting for 22% of all maternal deaths (5). In Pakistan, the frequency of pregnancy-induced hypertension was found to be 78 (15.6%), representing 56 (71.79%), 13 (16.6%), and 7 (8.97%) as gestational hypertension, preeclampsia & eclampsia, respectively (6). The average age of the patients with pregnancy-induced hypertension was found to be 28.39±4.58. Most of the patients belong to the 22-32-year-old group. Family history of hypertension was present in 21(37.5%) females in the GTN group, 4(30.7%) were in the preeclampsia group, and 2(22.2%) were in the Eclampsia group. Of patients with PIH, 23 (29.4%) experienced headache, followed by dizziness in 14 (17.9%) during the prenatal period. Still, very few (8, 10.25%) had epigastric pain, and only 1 (1.28%) symptom was chest pain (6).

Women with hypertension during pregnancy should be informed of their disease to reduce the increasing mortality rate among them (7). Even though PIH itself cannot be prevented, it is pertinent to make the mothers aware that effective early prevention methods aim to avoid the possibly fatal complications of the disease. If the mothers participate in care, this ensures the prompt reporting of possible problems (8). This shows that health education during antenatal clinics will help increase pregnant women's knowledge of how to prevent PIH. Health education focuses on understanding nutrition, antenatal exercises, and recognizing and reporting dangerous signs during pregnancy. Women with a good understanding of PIH would immediately go to the hospital for prompt attention (8).

Usually, women who have edema (swelling), either have or do not have protein in the urine (proteinuria) and have high blood pressure, are diagnosed with PIH (9). PIH occurs most frequently during the 20th week of gestation or late in pregnancy, and it regresses after delivery in previously normotensive women. However, women with PIH are expected to return to normal after puerperium (10). The incidence of PIH varies across hospitals and within states and countries. It contributes to nearly seven to 10% of all antenatal admissions and about 14% of maternal deaths in India, estimated 9.1% of maternal deaths in Africa because of hypertensive disorders of pregnancy (11), It was revealed by The Zimbabwe Maternal and Perinatal mortality study in 2007, that the five leading causes of maternal mortality and the third most common reason for referral in labor was PIH (12).

In Pakistan, pregnant women often do not receive guidance from healthcare providers, such as trained doctors and nurses, regarding hypertension during pregnancy. Health education generally focuses on topics like nutrition, antenatal exercises, and recognizing and reporting dangerous pregnancy signs. Without adequate knowledge of pregnancy-induced hypertension (PIH), women may delay seeking medical care, leading to more severe outcomes. Similarly, a lack of awareness about dangerous pregnancy signs can result in delays in seeking timely care. There is a significant lack of studies on knowledge about PIH in Pakistan. This study aims to address this gap and raise awareness among pregnant women.

In Pakistan, although exact prevalence data are sparse, studies suggest a substantial burden, with PIH contributing to increased hospital admissions. Pregnant women often visit hospitals for monitoring, early detection, and management of hypertensive disorders to prevent adverse outcomes for both the mother and the baby. Timely hospital care can significantly reduce complications and improve maternal and neonatal outcomes. The aim is to reduce maternal and neonatal mortality from pregnancy-induced hypertension through early detection, effective management, and increased awareness. Strengthening access to healthcare and education is crucial to achieving this goal.

Methodology

This descriptive cross-sectional study was conducted to assess the level of knowledge regarding pregnancy-induced hypertension among pregnant women. The study was carried out at a tertiary care hospital in Lahore, Pakistan, targeting women attending the gynecology outpatient department for routine antenatal care from January to June 2025. The cross-sectional design was considered appropriate to estimate the prevalence of hypertension, associated complications, and knowledge status at a single point in time.

The study population comprised pregnant women who were at or beyond 20 weeks of gestation, as pregnancy-induced hypertension is clinically diagnosed after this gestational age. Eligible participants included women who had documented blood pressure readings of 140/90 mmHg or higher on at least two occasions, measured four hours apart, during the current pregnancy, and who did not have a history of chronic hypertension prior to pregnancy. Women with pre-existing hypertension, diabetes mellitus, renal disease, or other chronic medical conditions that could confound blood pressure measurements were excluded from the study.

The sample size was calculated using Slovin's formula, based on an estimated population of 350 pregnant women attending the outpatient department during the study period, with a margin of error set at 5%. This calculation yielded a required sample size of 187 participants. A non-probability convenience sampling technique was employed to recruit eligible participants who met the inclusion criteria and provided informed consent.

Data were collected using a structured, adapted questionnaire originally developed and validated in previous research on pregnancy-induced hypertension. The questionnaire was designed to capture socio-demographic characteristics, obstetric history, clinical features related to hypertension, and knowledge regarding pregnancy-induced hypertension, including awareness of high blood pressure, associated complications such as preeclampsia and eclampsia, family history of hypertension, and treatment practices. To ensure comprehension, the questionnaire was translated into Urdu and administered through face-to-face interviews by trained data collectors, particularly for participants with limited literacy.

Ethical approval for the study was obtained from the Ethical Review Committee of the Department of Nursing, Superior University, Lahore. Formal permission was also secured from the hospital administration prior to data collection. All participants were informed of the purpose of the study, assured of confidentiality and anonymity, and told that participation was voluntary, with the right to withdraw at any stage without any consequences for their care.

Collected data were coded, entered, and analyzed using Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics were applied to summarize demographic variables, clinical characteristics, and knowledge-related responses. Categorical variables were presented as frequencies and percentages to facilitate interpretation and comparison with existing literature.

Results

A total of 187 pregnant women were included in the final analysis. The majority of participants were aged 23–27 years (40.1%), followed by 18–22 years (28.3%) and 28–32 years (26.2%). Only 5.3% of participants were aged 33–37 years. Most respondents resided in urban areas (89.8%), while 10.2% belonged to rural settings. Educational status revealed substantial disparities, with 52.4% of women being illiterate. Primary and secondary education were reported by 24.1% and 18.7% of participants, respectively, while only 4.8% had attained graduate-level education. Regarding occupation, 91.4% were homemakers, whereas 6.4% were employed in government jobs and 2.1% worked in the private sector. Multigravidas constituted 60.4% of the sample, while 39.6% were primigravidas. (Table 1)

Table 1. Socio-demographic characteristics of study participants (n = 187)

Variable	Category	Frequency	Percentage
Age (years)	18–22	53	28.3
	23–27	75	40.1
	28–32	49	26.2
	33–37	10	5.3
Residence	Urban	168	89.8
	Rural	19	10.2
Education	Illiterate	98	52.4
	Primary	45	24.1
	Secondary	35	18.7
	Graduate or above	9	4.8
Occupation	Housewife	171	91.4
	Government	12	6.4
	Private	4	2.1
Gravida	Primigravida	74	39.6
	Multigravida	113	60.4

During the index pregnancy, 77.0% (n = 144) of participants reported that they were diagnosed with hypertension by a physician. Complications related to pregnancy-induced hypertension, including preeclampsia, eclampsia, or toxemia, were reported by 65.8% of

women. Additionally, 54.5% of respondents had evidence of proteinuria or severe hypertensive complications. A history of hypertension in previous pregnancies was reported by 38.5% of women. Regarding pregnancy outcomes, 41.7% experienced deliveries outside the expected due date. Hospital admission during the current pregnancy was required by 35.8% of participants. At the time of assessment, 46.0% of women were currently hypertensive. Despite this, only 48.7% were receiving antihypertensive medication. (Table 2)

Table 2. Pregnancy-induced hypertension and clinical outcomes (n = 187)

Variable	Response	Frequency	Percentage
Diagnosed with hypertension in the current pregnancy	Yes	144	77.0
	No	43	23.0
Preeclampsia/eclampsia/toxemia	Yes	123	65.8
	No	64	34.2
Proteinuria or severe PIH	Yes	102	54.5
	No	85	45.5
Previous pregnancy with hypertension	Yes	72	38.5
	No	115	61.5
Delivery not on the due date	Yes	78	41.7
	No	109	58.3
Hospital admission during pregnancy	Yes	67	35.8
	No	120	64.2
Currently hypertensive	Yes	86	46.0
	No	101	54.0
Taking antihypertensive medication	Yes	91	48.7
	No	96	51.3

Assessment of knowledge revealed that 60.4% (n = 113) of participants had no awareness of high blood pressure and its implications during pregnancy. Only 39.6% reported having any prior knowledge of hypertension. Furthermore, 49.7% of respondents reported a family history of hypertension, indicating the presence of genetic or familial risk factors. (Table 3)

Table 3. Knowledge and family history of hypertension (n = 187)

Variable	Response	Frequency	Percentage
Knowledge about high blood pressure	Yes	74	39.6
	No	113	60.4
Family history of hypertension	Yes	93	49.7
	No	94	50.3

Discussion

The present study involved 187 pregnant women, with most participants aged between 23 and 27 years (40.1%). This demographic alignment with other studies underscores a typical trend in maternal age observed in maternal health research. Research by Naz et al. reveals similar age distributions in pregnant populations, indicating that young adults frequently constitute the majority of pregnant women and may be more vulnerable to various pregnancy complications, including hypertension (13). The predominance of urban dwellers (89.8%) in the present analysis aligns with findings from other studies reporting higher rates of pregnancy complications among urban populations than in rural areas, primarily due to differences in healthcare access and environmental factors (14).

Educational attainment is another significant socioeconomic characteristic, with 52.4% of women in our study illiterate. This finding is concurrent with research by Naz et al., which highlights a concerning level of knowledge deficit regarding hypertension among pregnant women, correlating low educational status with inadequate health literacy regarding pregnancy-related conditions (13). Furthermore, the high prevalence of homemakers (91.4%) suggests limited economic independence, which has been associated with worse maternal health outcomes in various populations (14).

In our cohort, 77.0% reported a physician's diagnosis of hypertension during their current pregnancy, with significant adverse outcomes related to pregnancy-induced hypertension observed. The relationship between pregnancy-induced hypertension and adverse pregnancy outcomes is well documented. For instance, Ferrara et al. emphasize that hypertension considerably increases risks for both maternal and fetal health, potentially leading to complications such as preeclampsia and increased rates of preterm delivery (15). They further note that hypertension prevalence can result from environmental, lifestyle, and health-seeking behaviors of pregnant women, resonating with our findings of high hospital admission rates (35.8%) among hypertensive women.

Moreover, a large percentage (65.8%) of participants in our study reported complications associated with hypertensive disorders. This corroborates findings by Xavier et al., who identified a direct correlation between hypertensive disorders and adverse maternal–fetal outcomes, further supporting the need for vigilant prenatal care and targeted management strategies (14). Interestingly, our study found that nearly half of the hypertensive women (48.7%) were receiving antihypertensive treatment, which remains suboptimal compared to recommended guidelines for active management during pregnancy (16).

Assessment of knowledge levels regarding high blood pressure during pregnancy revealed that 60.4% of participants were unaware of its implications. This significant gap in awareness is mirrored in the work of Alhumaidan et al., who highlighted similar deficiencies in maternal awareness, demonstrating that many pregnant women lack essential knowledge regarding potential health risks (17). This lack of understanding is particularly concerning given that 49.7% of women in

our study reported a family history of hypertension, emphasizing the importance of targeted education and preventive strategies.

Furthermore, the implications of low health literacy regarding hypertension during pregnancy are substantial. Identifying actionable pathways for structured health education could mitigate risks and improve maternal and neonatal outcomes, as emphasized by the systematic review conducted by Allotey et al., which advocates for comprehensive educational interventions among pregnant populations (18).

Overall, the findings of this study reflect concerning trends consistent with existing literature, demonstrating a high burden of hypertension among pregnant women alongside significant gaps in awareness and health education. The socio-demographic characteristics further highlight vulnerabilities related to educational disparities and healthcare access. Addressing these gaps should be prioritized to enhance early detection, management, and outcomes of hypertensive disorders during pregnancy.

Conclusion

This study found that most participants lacked awareness of hypertension in pregnancy (60.4%), despite many reporting physician-diagnosed hypertension (77.0%) and PIH-related complications (65.8%). Integrating structured, easy-to-understand counseling in antenatal clinics, with an emphasis on warning signs, complications, and the importance of follow-up and treatment adherence, is essential to reduce avoidable maternal and neonatal risks.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-SGN-97-24)

Consent for publication
Approved

Funding
Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

HAO (Student)
Manuscript drafting, Study Design,
SAO (Student)
Review of Literature, Data entry, Data analysis, and drafting articles.
KP (Supervisor)
Conception of Study, Development of Research Methodology Design,
RJ (Principal)
Study Design, manuscript review, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

References

1. Porcelli BA, Diveley E, Meyenburg K, Woolfolk C, Rosenbloom JI, Raghuraman N, et al. A new definition of gestational hypertension? New-onset blood pressures of 130 to 139/80 to 89 mm Hg after 20 weeks of gestation. Am J Obstet Gynecol. 2020;223(3):442.e1–442.e7. https://doi.org/10.1016/j.ajog.2020.06.019
2. Hasan MM, Rahman M, Rahman N, Rahman S, Mohsin FM. Pregnancy-induced hypertension among pregnant women in Dhaka City, Bangladesh. Indian J Public Health Res Dev. 2021;12(3):396–404. https://doi.org/10.37506/ijphrd.v12i3.16091
3. Wang W, Xie X, Yuan T, Wang Y, Zhao F, Zhou Z, et al. Epidemiological trends of maternal hypertensive disorders of pregnancy at the global, regional, and national levels: a population-based study. BMC Pregnancy Childbirth. 2021;21(1):364. https://doi.org/10.1186/s12884-021-03809-2
4. Mohanty A, Kabi A, Mohanty AP. Health problems in healthcare workers: a review. J Fam Med Prim Care. 2019;8(8):2568–2572. https://doi.org/10.4103/jfmpc.jfmpc_431_19
5. Panda S, Das R, Sharma N, Das A, Deb P, Singh K, et al. Maternal and perinatal outcomes in hypertensive disorders of pregnancy and factors influencing them: a prospective hospital-based study in Northeast India. Cureus. 2021;13(3):e13982. https://doi.org/10.7759/cureus.13982
6. Fakharunissa WM, Naqvi R, Jabbar S, Zaidi SA, Fatima ST. Pregnancy-induced hypertension among pregnant women delivering in a tertiary care centre. Pak J Med Health Sci. 2022;16(5):709. https://doi.org/10.53350/pjmhs22165709
7. Bello NA, Zhou H, Cheetham TC, Miller E, Getahun D, Fassett MJ, et al. Prevalence of hypertension among pregnant women when using the 2017 American College of Cardiology/American Heart Association blood pressure guidelines and association with maternal and fetal outcomes. JAMA Netw Open. 2021;4(3):e213808. https://doi.org/10.1001/jamanetworkopen.2021.3808
8. Griffiths LJ, Johnson RD, Broadhurst K, Bedston S, Cusworth L, Alrouh B, et al. Maternal health, pregnancy and birth outcomes for women involved in care proceedings in Wales: a linked data study. BMC Pregnancy Childbirth. 2020;20(1):697. https://doi.org/10.1186/s12884-020-03370-4
9. Zhang D, Wang X, Qu J, Li Y, Shi T, Zhang W. Hypertensive diseases in females and pregnancy. In: Li N, editor. Secondary Hypertension: Screening, Diagnosis and Treatment. Singapore: Springer; 2020. p. 569–638. https://doi.org/10.1007/978-981-15-0591-1_17
10. 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. Ethiop J Health Sci. 2019;29(1):831–840. https://doi.org/10.4314/ejhs.v29i1.4
11. Hlengani R. A descriptive study of maternal near misses and maternal deaths at the Chris Hani Baragwanath Academic Hospital, South Africa: a retrospective study [thesis]. Johannesburg (South Africa): University of the Witwatersrand, Faculty of Health Sciences; 2018.
12. Sageer R, Kongnyuy E, Adebimpe WO, Omosehin O, Ogunsola EA, Sanni B. Causes and contributory factors of maternal mortality: evidence from maternal and perinatal death surveillance and response in Ogun State, Southwest Nigeria. BMC Pregnancy Childbirth. 2019;19(1):63. https://doi.org/10.1186/s12884-019-2202-1
13. Naz R., Habib B., Ahmed S., Kazi A., Nisar S., & Bashir F. Assessment of Pregnant Women for Information About Hypertension in Pregnancy: A Cross-Sectional Study from a Teaching Hospital Outdoor. PJMHS 2022;16(12):600-602. https://doi.org/10.53350/pjmhs20221612600
14. Xavier I., Simões A., Oliveira R., Barros Y., Sarmento A., Medeiros K., et al. Maternal-fetal outcomes of women with hypertensive disorders of pregnancy. Revista Da Associação Médica Brasileira, 2023;69(6). https://doi.org/10.1590/1806-9282.20230060
15. Ferrara A., Hedderson M., Zhu Y., Avalos L., Kuzniewicz M., Myers L.et al.. Perinatal Complications in Individuals in California With or Without SARS-CoV-2 Infection During Pregnancy. Jama Internal Medicine 2022;182(5):503. https://doi.org/10.1001/jamainternmed.2022.0330
16. Hernández-Pacheco J., Torres-Torres J., Martínez-Portilla R., Solís-Paredes J., Estrada-Gutiérrez G., Mateu-Rogell P., et al. sFlt-1 Is an Independent Predictor of Adverse Maternal Outcomes in Women With SARS-CoV-2 Infection and Hypertensive Disorders of Pregnancy. Frontiers in Medicine 2022;9. https://doi.org/10.3389/fmed.2022.894633
17. Alhumaidan L., Alhabardi N., Aldharman S., Alfuhaid A., AlRasheed M., Almotairi R.et al.. The Impact of COVID-19 on Preterm Birth Among Pregnant Women in Al-Qassim, Saudi Arabia. Cureus 2023. https://doi.org/10.7759/cureus.40682
18. Allotey J., Fernández-García S., Bonet M., Stallings E., Yap M., Kew T., et al Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: a living systematic review and meta-analysis. BMJ 2020:m3320. https://doi.org/10.1136/bmj.m3320