

Health-Promotion Approaches to Postpartum Hypertension: Systematic Review of Causes and Management in Maternal Health

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ARTICLE INFO	ABSTRACT
<p>Manuscript Received: 07 Jul, 2025 Revised: 19 Oct, 2025 Accepted: 26 Nov, 2025 Date of Publication: 03 Dec, 2025 Volume: 8 Issue: 12 DOI: 10.56338/mppki.v9i1.9120</p>	<p>Introduction: Postpartum hypertension remains one of the leading causes of maternal morbidity and mortality worldwide. This condition may persist from gestational hypertension, preeclampsia, or chronic hypertension, and can also develop de novo postpartum. Understanding its etiology, risk factors, and management strategies is essential to improving maternal health outcomes and preventing long-term cardiovascular complications.</p> <p>Methods: This study applied a systematic review design based on the Arksey and O'Malley framework, guided by the PEOS (Population, Exposure, Outcome, Study Design) model. A comprehensive literature search was conducted across PubMed, ScienceDirect, EBSCO, and Google Scholar databases for studies published between 2009 and 2023 using the keywords “postpartum hypertension,” “causes,” and “management.” Out of 120 identified studies, 20 met the inclusion criteria and were critically appraised using the Hawker Quality Assessment tool.</p> <p>Results: Postpartum hypertension is most frequently associated with preeclampsia, chronic hypertension, and gestational hypertension; however, iatrogenic causes such as bromocriptine therapy and excessive sodium intake were also identified. Most women experience a transient rise in blood pressure within the first 5 days postpartum, attributed to increased intravascular volume. The majority of studies emphasized inadequate screening and follow-up during the first week after delivery, with up to one-third of patients remaining untreated. Recent interventions, including digital monitoring systems and eHealth-based self-management, demonstrated improved outcomes in detection and patient adherence.</p> <p>Conclusion: Effective management of postpartum hypertension requires timely diagnosis, structured follow-up, and coordinated transition to primary care for long-term cardiovascular risk reduction. Health-care providers must enhance awareness and clinical competence, as complications from misdiagnosis or undertreatment remain common yet preventable through integrated postpartum surveillance and health-promotion strategies.</p>
KEYWORDS	
<p>Causes; Management; Postpartum Hypertension</p>	

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INTRODUCTION

Hypertension in postpartum mothers is persistent gestational hypertension, preeclampsia, or chronic hypertension that has been present and can also develop de novo postpartum secondary to other causes. Hypertensive disorders in pregnancy remain a major cause of maternal morbidity and mortality (1,2). Existing postpartum management guidelines are expected to make optimal use of them. Screening for hypertension in postpartum mothers is essential, and structured follow-up using postpartum clinics, both remotely and face-to-face, will allow for blood pressure monitoring, improve postpartum detection and treatment, and improve its management and treatment (3,4).

Hypertensive disorders of pregnancy complicate approximately 10% of pregnancies and contribute substantially to maternal and perinatal morbidity and mortality. Management of resistant or severe hypertension during pregnancy and postpartum must consider underlying etiology, maternal risk, and fetal well-being to prevent adverse outcomes (5–7).

Clinical management of postpartum hypertension remains focused on blood pressure control and transition to primary care for cardiovascular risk reduction. Large-scale trials are needed to provide us with evidence that will allow for timely diagnosis and management. Providers should improve their knowledge of postpartum hypertension as complications following misdiagnosed or undertreated postpartum hypertension are often underestimated (8–12).

Cardiovascular disease in pregnancy is increased and is a major contributor to maternal mortality due to pregnancy. Cardiovascular disease in pregnancy is an important topic because it is associated with several complications for the mother and newborn, such as postpartum readmission and maternal death. Women with a history of hypertensive disorders in pregnancy have a higher long-term risk of cardiovascular disease. However, there is increasing evidence of a high risk and there is increasing evidence of a high risk (13–16).

Nevertheless, current evidence reveals significant gaps in postpartum surveillance, inconsistent follow-up practices, and limited integration of health-promotion strategies for early detection and long-term prevention. A clearly defined research objective is therefore needed to guide the scope and coherence of this review. This study aims to systematically review the causes and management strategies of postpartum hypertension, synthesize patterns of risk and disease trajectory, and evaluate emerging clinical and digital approaches that support improved postpartum monitoring and health-promotion efforts.

METHOD

This study employed a systematic review design, following a structured and transparent process that included formulation of the review question, systematic identification of relevant studies, screening, quality appraisal, data extraction, and synthesis. The Population, Exposure, Outcome, Study Design (PEOS) framework was used solely to refine the research question and guide the selection of keywords, without altering the overall methodological paradigm. By applying a single, clearly defined systematic review methodology, conceptual consistency across all stages of the review was ensured.

Identifying Research Question

Question development is an important step that forms the basis of the entire review protocol in determining the search strategy, inclusion and exclusion criteria and data extraction. This review uses the Population, Exposure, Outcome, Study Design (PEOS) framework to help identify key concepts in the focus of the review. The PEOS framework can be seen in the table below.

Table 1. PEOS Framework

P (Population)	E (Exposure)	O (Outcome)	S (Study Design)
Postpartum Hypertension	Postpartum	Causes	All research studies/study
Causes Of Postpartum Hypertension	Hypertension	Management	designs related to Postpartum Hypertension
Management of Postpartum Hypertension			

Identifying Relevant Articles

There are three steps in identifying relevant articles. The first step is to determine the database. The databases used are PubMed, Sciences Direct, EBSCO and Google Scholar. The second step is to determine the inclusion and exclusion criteria. Articles are filtered according to the inclusion criteria published in 2009-2023, articles published in English, primary research articles (original research), and no specific country criteria, cross-sectional and descriptive research methods, retrospective, case analysis, and meta-analysis that describe data on postpartum hypertension, and describe the causes and procedures for its implementation. The exclusion criteria are opinion articles, peer reviews, thesis manuscripts and theses. The third step is to determine the keywords that are focused on based on the framework, expanded by determining the Thesaurus and Boolean synonyms (can be seen in table 2).

Table 2. Article search keywords

Database	Keywords Search
PubMed	(postpartum hypertension) OR (“causes of postpartum hypertension”) AND (“management of postpartum hypertension”)
Science Direct	(postpartum hypertension) OR (“causes of postpartum hypertension”) AND (“management of postpartum hypertension”)
EBSCO	(postpartum hypertension) OR (“causes of postpartum hypertension”) AND (“management of postpartum hypertension”)
Google Scholar	(postpartum hypertension) OR (“causes of postpartum hypertension”) AND (“management of postpartum hypertension”)

Selection/Choice of Articles

The screening process is used to assess the relevance of research identified in the search according to the desired literature characteristics. From the search using 4 databases as many as 120 articles. Then the articles are filtered based on duplication, abstract and title and full text reading. So that 20 articles were found to be reviewed. Furthermore, a critical appraisal was carried out using the Quality Assessment tool from Hawker and the classification of the total quality of the article and the article screening process are stated in PRISMA. The flowchart in Figure 1.

Data Charting

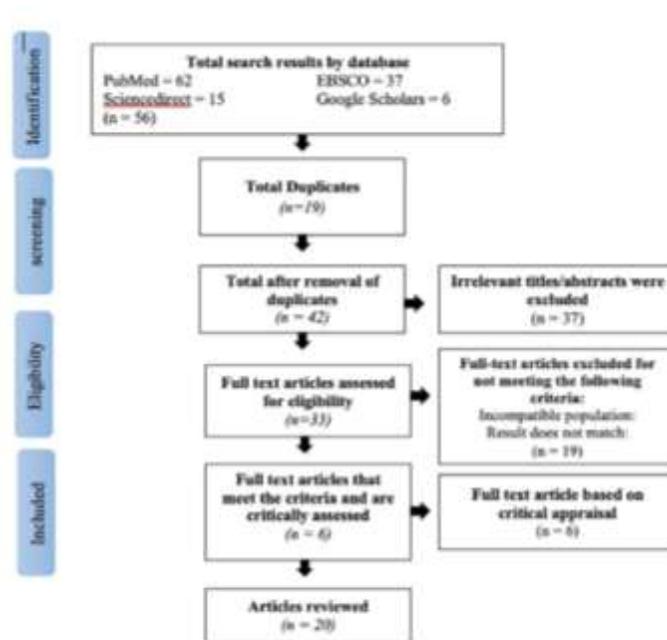


Figure 1. PRISMA

Ethical Approval

All review processes were conducted in accordance with research ethical principles, including maintaining the authenticity of sources, avoiding plagiarism, and providing appropriate citations to the original authors. Data and information obtained from previous publications were used responsibly and solely for scientific purposes. Furthermore, the results of the analysis were presented objectively without data manipulation to ensure the scientific integrity of the study.

RESULTS

Respondent Characteristics

Table 3. Summary Article

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
1	Baha M. Sibai, MD (2012)	Etiology and management of postpartum hypertension-preeclampsia	to raise awareness and provide a stepwise approach to the diagnosis and management of women with persistent and/or new-onset hypertension-preeclampsia in the postpartum period.	Case study	Postpartum mothers who are hospitalized for 2-6 days.	Hypertension in postpartum mothers may be associated with persistent gestational hypertension, preeclampsia, or preexisting chronic hypertension, or it may develop de novo postpartum secondary to other causes.
2	Lawal Oyenyin et.al (2021)	Adherence to Guidelines in Postpartum Management of Hypertensive Disorders in Pregnancy Tertiary Health Facilities in Nigeria: A Multi-centre Study	This study aimed to determine compliance with guidelines in selected tertiary hospitals in Nigeria.	Descriptive analysis	Group of women with HDP who gave birth in eight health facilities between October 2017 and June 2018	Of the 366 participants, 33 (9%), 75 (20%), 200 (55%), and 58 (16%) had chronic hypertension, gestational hypertension, preeclampsia, and eclampsia, respectively. Only about one-third had their blood pressure measured between the third and fifth days postpartum. Similarly, one-third of those with persistent hypertension ($\geq 140/90$ mmHg) were not on antihypertensive medication in the first week postpartum. In addition, 37% and 42% of participants, respectively, were not counseled regarding contraception and subsequent early antenatal visits. Among those with preeclampsia/eclampsia,

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						93% were not offered postpartum thromboprophylaxis. Although all women with preeclampsia/eclampsia continued to have hypertension two weeks after discharge from the hospital, only 24% received medical examination.
3	Nimrta Ghuman, MD; et al (2009)	Hypertension in the postpartum woman: Clinical update for the hypertension specialist	Provides an opportunity for providers to assess and educate women about other modifiable cardiovascular risk factors with the goal of reducing their overall cardiovascular risk profile and likelihood of future cardiac events.	Cross-sectional study	Postpartum mothers who were hospitalized for 3 days, aged 18-35 years.	Hypertension screening in postpartum mothers is essential. Establishment of structured follow-up that combines postpartum clinics, both remote and face-to-face, will enable blood pressure monitoring, improve detection and treatment of hypertension in postpartum mothers, and improve their management and treatment.
4	Santos Martins J. M, Mascarenhas M. I, Bento VA (2011)	Multifactorial origins of postpartum hypertension	To find out the causes of postpartum hypertension	Case study	12-year-old pregnant girl	Blood pressure increases between 4 and 6 mmHg in the first 5 days postpartum, reaching a peak between the third and sixth days. This is thought to be due to the entry of 6 to 8 liters of water and sodium into the intravascular space. However, there are other causes of maternal hypertension in the postpartum period, some of which are iatrogenic, such as the use of drugs such as bromocriptine or excessive salt intake. At present, it is thought that this is secondary to postpartum hypervolemia associated with bromocriptine

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
						therapy (inhibition of lactation).
5	Chulkov VS, Martynov AI, Kokorin VA (2020)	Arterial hypertension in pregnant women: controversial issues of national and international recommendations	Presents a modern position reflecting the definition, classification, therapeutic goals, and treatment principles used for hypertensive disorders during pregnancy and the puerperium, in a comparative aspect of national and international recommendations.	Meta-analysis study	Postpartum mothers aged 18-44 years with hypertension, blood pressure > 140/90 mmHg.	Hypertensive disorders of pregnancy, including pre-existing hypertension and gestational hypertension, preeclampsia, and eclampsia, complicate 10% of pregnancies and are a significant cause of maternal and perinatal morbidity and mortality.
6	Kasiye Shiferaw Gemechu, Nega Assefa, and Bizatu Mengistie (2020)	Prevalence of hypertensive disorders of pregnancy and pregnancy outcomes in Sub-Saharan Africa: A systematic review and meta-analysis.	To identify the prevalence of hypertensive disorders of pregnancy and related pregnancy outcomes in Sub-Saharan Africa	Meta-analytical review and observational studies	Pregnant or postpartum women	Pregnant or postpartum women with hypertensive disorders of pregnancy have an increased risk of maternal death, cesarean section, preterm birth, perinatal death, and low birth weight newborns.
						[[[
7	Bortolotto MRFrancisco RP V,Zugaib M.(2018)	Resistant Hypertension in Pregnancy: How to Manage?	Management of pregnant patients with pre-existing resistant hypertension, and also patients who experience severe hypertension during pregnancy and the postpartum period.	Cross-sectional study	There were 117 pregnant women with resistant hypertension.	The main cause of severe hypertension in pregnancy is preeclampsia, and differential diagnosis should be made with secondary or primary hypertension. Women with pre-existing resistant hypertension may require adjustment of pharmacologic therapy.
8	Harrington CM Soror N. Kovell LC (2021)	Postpartum Hypertension and the Role of Postpartum Clinics and Digital Health	Provides an opportunity for providers to assess and educate women about other modifiable cardiovascular risk factors with the goal of reducing their overall cardiovascular risk profile and	Case study	Postpartum mothers with hypertension	Hypertension screening in postpartum mothers is essential. Establishment of structured follow-up that combines postpartum clinics, both remote and face-to-face, will enable blood pressure monitoring, improve detection and treatment of hypertension in

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
			likelihood of future cardiac events.			postpartum mothers, and improve their management and treatment.
9	Natasha Raj Kumar, Adi Hirshberg, Sindhu K Srinivas (2022)	Best Practices for Managing Postpartum Hypertension	Patients remain at risk for persistent and new postpartum maternal hypertension associated with pregnancy.	Observational study	Mothers with postpartum hypertension	Clinical management of hypertension in the postpartum mother remains focused on blood pressure control and transitioning primary care to reduce cardiovascular risk. In recent years, systemic innovations have improved access through the implementation of new care delivery models. However, the implications of changing the definition of hypertension outside of pregnancy, increasing data assessing blood pressure trajectories in the postpartum period, and creating new risk prediction models utilizing machine learning remain areas of ongoing research.
10	V. Katsi, G. Skalis, G. Vamvakao, D. Tousoulis and T. Makris (2020)	Postpartum Hypertension	To find out the correct diagnosis and treatment for hypertension in postpartum mothers	Cross-sectional study	156 mothers with hypertension in the postpartum mothers	Large-scale randomized trials are needed to provide us with evidence that will allow for timely diagnosis and management. Until then, health care providers must improve their knowledge of postpartum hypertension, as complications that can occur after misdiagnosed or undertreated postpartum maternal hypertension are often underestimated.
11	Qinqin Xue, Guang Li, Yanyun Gao, Yunjing Deng, Bianju Xu, Yu Chen,	Analysis of postpartum hypertension in women with preeclampsia	To investigate the details of women who experience persistent postpartum maternal	Retrospective cohort study	188 women who experienced hypertension in postpartum mothers	Overall, 30% of women with preeclampsia developed RecPPH on day 1, 13% on day 3, and 12% on day 5 after delivery. Women with

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
	Yu Gao, and Qi Chen (2023)		hypertension (PerPPH) or develop recurrent postpartum maternal hypertension (RecPPH) after delivery, and whether treatment with antihypertensive drugs can shorten hospital stay.			severe or early-onset preeclampsia were more likely to develop RecPPH, compared with women with mild or late-onset preeclampsia. The overall time in days to hospital discharge did not differ between women with normal and abnormal blood pressure 1 hour after delivery, regardless of the severity or gestational age at the time of preeclampsia. However, women with severe or early preeclampsia had a longer hospital stay, compared with women with mild or late preeclampsia. In addition, women with severe or early preeclampsia or early delivery were at increased risk of developing RecPPH.
12	Magee L Von Dadelszen P (2013)	Prevention and treatment of postpartum hypertension (Review)	To assess the relative benefits and risks of interventions to prevent maternal postpartum hypertension, by assessing whether 'routine' postpartum medical therapy is better than placebo/no treatment; and treat maternal postpartum hypertension.	Literature study	120 women with postpartum maternal hypertension	For women with preeclampsia, postnatal furosemide may decrease the need for postnatal antihypertensive therapy in the hospital, but more substantive outcome data are needed before this practice can be recommended. There are no reliable data to guide the management of women with postpartum maternal hypertension. Any antihypertensive agent used should be based on the physician's knowledge of the drug. Future studies should include data on postpartum analgesia, severe maternal hypertension, breastfeeding, length of hospital stay, and

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
						maternal satisfaction with care.
13	Kristina Powles MD, Shital Gandhi MD MPH (2017)	Postpartum Hypertension	Provides an overview of the current state of knowledge and summarizes treatment strategies and therapeutic options.	Cross sectional study	291 Mothers with postpartum hypertension	Preeclampsia and HELLP syndrome are serious complications and are associated with wide-ranging consequences for both mother and child, such as stillbirth, peripartum cardiomyopathy, diastolic heart failure, eclampsia, and increased long-term risk for cardiovascular disease. While risk factors such as obesity, smoking, diabetes mellitus, multiple pregnancy, multiparity, advanced maternal age, in-vitro fertilization (IVF) are well known.
14	Samantha E. Parker, Ayodele Ajayi, Christina D Yarrington (2022)	De Novo Postpartum Hypertension: Incidence and Risk Factors at a Safety-Net Hospital	To estimate the incidence and identify risk factors for de novo postpartum hypertension (dn-PPHTN) among a safety-net hospital population.	Retrospective cohort study	3925 childbirth	Among 2465 patients without a history of hypertension, 12.1% (n=298) had dn-PPHTN; 17.1% of them had severe dn-PPHTN (n=51). Compared with those without dn-PPHTN; cases were more likely to be ≥ 35 years of age, have delivered by cesarean section, or be current or former smokers.
15	Asako Mito (2023)	Postpartum hypertension-The need for definition and classification	To clarify the definition and classification of PPHTN, including short-term and long-term prognosis.	Descriptive study	277 mothers with PPHTN	Risk factors overlap with those for HDP. Goel et al. reported that elevated antepartum serum sFlt-1 levels were observed in women with de novo PPHTN, suggesting that women with PPHTN may represent a group with subclinical or unresolved preeclampsia. However, external factors such as excessive fluid replacement during labor or postpartum pain and

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
						vasoconstrictive medications may also be triggers for new-onset PPHTN.
16	E. Christine Brousseau, Valery Danilack, Fei Cai and Kristen Matteson (2017)	Emergency department visits for postpartum hypertension	To describe the characteristics of women diagnosed with postpartum maternal hypertension in the emergency department (ED) to provide better information regarding postpartum care.	Observational study	252 postpartum women	Among 252 postpartum women presenting for ED care, 52 were diagnosed with hypertension. Women with hypertension had multiple identifiable risk factors and presented on average within one week of delivery.
17	V Giorgine, A Ridde, E Kalafat, A Khalil, B Thilaganathan (2020)	Incidence of postpartum hypertension within 2 years of a pregnancy complicated by pre-eclampsia: a systematic review and meta-analysis.	To estimate the incidence of hypertension in the first 2 years after HDP	Observational study	Mothers with hypertension in pregnancy	This systematic review defines the risk of developing hypertension in the first 2 years after a hypertensive pregnancy and highlights opportunities for cardiovascular prevention in women with a diagnosis of hypertension after delivery.
18	Jenny Y. Mei, MD, Kate Corry-Saavedra, BA, Tina A. Nguyen, MD, and Aisling Murphy, MD (2023)	Standardized Clinical Assessment and Management Plan to Reduce Readmissions for Postpartum Hypertension	To evaluate the effect of a standardized clinical assessment and management plan for postpartum hypertension on postpartum readmissions and emergency department (ED) visits.	Prospective cohort study	390 patients in the post-intervention group	Chronic hypertension also demonstrated a significant reduction in the incidence of the primary outcome. Of 255 patients (65.4%) who were adherent to ambulatory remote blood pressure monitoring, 53 (20.8%) underwent protocol-based medication adjustments within a median of 6 days (interquartile range 5–8 days) of delivery. Non-Hispanic black race (aOR 3.42, 95% CI 1.68–6.97), chronic hypertension (aOR 2.09, 95% CI 1.13–3.89), having private insurance (aOR 3.04, 95% CI 1.06–8.72), and being discharged on antihypertensive

No	Author/Year	Article Name	Research Purposes	Research Methods	Sample	Research Result
						medication (aOR 2.39, 95% CI 1.33–4.30) were associated with the need for outpatient adjustments.
19	Sharma, Kathryn J. MD, Kilpatrick, Sarah, J MD, PhD (2017)	Postpartum hypertension: Etiology, diagnosis, and management	To improve the knowledge and skills of women's health care providers in understanding, diagnosing, and managing hypertension in the postpartum period.	Observational study	Postpartum mothers with a history of hypertension	Investigations for secondary causes of hypertension should be performed, especially in patients with severe or resistant hypertension, hypokalemia, abnormal creatinine, or a strong family history of renal disease. Because severe hypertension is known to cause maternal stroke, women with severe hypertension lasting more than 15 minutes during pregnancy or in the postpartum period, and their healthcare providers should be aware of the risks associated with postpartum maternal hypertension and educate women about the symptoms of postpartum preeclampsia. Severe acute hypertension should be treated promptly to avoid morbidity and mortality. Women with persistent postpartum maternal hypertension should be given long-acting antihypertensive agents.
20	Chung-Wei Chang, Yi-Jing Tsai, Yu-Yun Hsu and Ting-Wei Hou (2023)	Self-management system for postpartum women with hypertension disorders: an eHealth application intervention study	To develop a self-management eHealth system for women with postpartum maternal hypertension during the postpartum period.	Multi-platform study	39 postnatal women with hypertension	Thirty-nine postnatal women with postpartum maternal hypertension were recruited for this study. A survey to evaluate the usability and satisfaction of the proposed e-health application system was completed by these women. The usability level of the system reached 92.4% (46.2%

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						satisfied and 46.2% very satisfied), indicating that the system was helpful to users. The satisfaction level of the system reached 94.9% (43.6% satisfied and 51.3% very satisfied), indicating that the system was acceptable to users.

DISCUSSION

Definition of Hypertension in Postpartum Mothers

Postpartum hypertension is a condition of high blood pressure that occurs after delivery. Hypertension in postpartum mothers is persistent gestational hypertension, preeclampsia, or pre-existing chronic hypertension and can develop de novo postpartum secondary to other causes (17–20). However, 33 (9%), 75 (20%), 200 (55%), and 58 (16%) suffered from gestational hypertension, preeclampsia, and eclampsia, respectively. Only about one-third had their blood pressure measured between the third and fifth days postpartum. Similarly, one-third of those with persistent hypertension ($\geq 140/90$ mmHg) did not receive antihypertensive treatment in the first week postpartum (1,2,7).

Postpartum Maternal Hypertension Conditions Include:

Persistent Gestational Hypertension is hypertension that first appears during pregnancy and continues after delivery (21–23).

Preeclampsia or Eclampsia is a condition of high blood pressure accompanied by signs of damage to organs such as the kidneys, liver, or central nervous system, which can develop before or after delivery (24).

Chronic Hypertension is hypertension that existed before pregnancy or was diagnosed at less than 20 weeks of gestation and persists after delivery (25).

Postpartum De Novo Hypertension is a Hypertension that only appears after childbirth and is usually caused by secondary factors such as hormonal disorders, stress, or other physiological changes (1,5)

Postpartum Maternal Hypertension Screening

Structured screening is essential to improve early detection of hypertension, optimize management and treatment of hypertension, and prevent serious complications that can occur after delivery. Blood pressure tends to increase by about 4–6 mmHg in the first five days postpartum, peaking between the third and sixth days. This is likely due to increased intravascular fluid volume due to fluid shifts. Postpartum maternal hypertension screening is an important structured method that uses blood pressure, improve the detection and treatment of hypertension in postpartum mothers and their management and treatment. Blood pressure increases by between 4 and 6 mmHg in the first 5 days postpartum, peaking between the third and sixth days. This is thought to be due to the entry of 6 to 8 liters of water and sodium into the intravascular space (7,10,11,26).

Complications of Hypertension in Postpartum Mothers

Women with hypertensive disorders during pregnancy or postpartum are at higher risk of experiencing:

Complications for the mother: Maternal death, heart failure, stroke, and the need for caesarean section.

Complications for the baby: Premature birth, perinatal death, low birth weight, and the need for neonatal intensive care.

Hypertensive disorders of pregnancy, including pre-existing hypertension and gestational hypertension, preeclampsia, and eclampsia, complicate 10% of pregnancies and are a significant cause of maternal and perinatal

morbidity and mortality. Pregnant or postpartum women with hypertensive disorders of pregnancy have an increased risk of maternal death, cesarean section, preterm birth, perinatal death, and low birth weight newborns (27–29).

Clinical Management

Clinical management of hypertension in postpartum women remains focused on blood pressure control and transition to primary care for cardiovascular disease risk reduction. Systemic innovations have improved access through the implementation of new care delivery models (27,30).

Management of postpartum hypertension focuses on:

Blood pressure control: Through antihypertensive drugs that are adjusted to the mother's condition, especially during breastfeeding.

Close monitoring: Measure blood pressure regularly during the first week postpartum and thereafter.

Primary care transition: Involving a general practitioner or specialist to reduce the long-term risk of cardiovascular disease.

Large-scale randomized trials are needed to provide us with evidence that will allow for timely diagnosis and management. Providers should improve their knowledge of postpartum hypertension, as complications following maternal hypertension are often underestimated and misdiagnosed or undertreated (5,12,28).

For women with preeclampsia, postnatal furosemide may reduce the need for postnatal antihypertensive therapy in the hospital, but more substantive outcome data are needed before this practice can be implemented (31). Future studies should include data on postpartum analgesia, severe maternal hypertension, breastfeeding, length of hospital stay, and maternal satisfaction with care (16,32–34).

Postpartum hypertension can result from persistent gestational hypertension, preeclampsia, chronic hypertension, or develop de novo from other factors. Of the 366 study participants, 9% had chronic hypertension, 20% gestational hypertension, 55% preeclampsia, and 16% eclampsia. Only one-third of women had their blood pressure measured within the first 5 days postpartum, and many did not receive adequate treatment or counseling regarding hypertension, contraception, or medical follow-up (1,7).

Preeclampsia is a major cause of severe hypertension during pregnancy and postpartum, increasing the risk of serious complications such as eclampsia, heart failure, and long-term cardiovascular disease. Risk factors include advancing age, obesity, IVF pregnancy, or a history of hypertension. In severe or early-onset preeclampsia, the risk of postpartum hypertension (PPHTN) is higher, often requiring special management, including antihypertensive therapy (5,32).

Structured follow-up combining face-to-face and remote methods has been shown to improve detection and management of postpartum hypertension. Innovations such as e-health applications have shown high levels of user satisfaction (>90%) and are effective in assisting blood pressure monitoring. However, further research is needed to validate optimal risk models and management protocols (16,32,34).

Investigation of secondary causes of hypertension, especially for severe or resistant cases, is essential to prevent complications such as stroke. Health care providers need to raise awareness of postpartum hypertension to prevent maternal morbidity and mortality (33–37).

CONCLUSION

Postpartum maternal hypertension was defined as persistent gestational hypertension, preeclampsia, or pre-existing chronic hypertension that developed de novo postpartum secondary to other causes. These were 366 participants each with gestational hypertension, preeclampsia, and eclampsia, and 37% and 42%, respectively, were not counseled on contraception and antenatal visits. Other causes of postpartum maternal hypertension, some of which are iatrogenic, such as the use of medications such as bromocriptine or excessive salt intake.

Hypertensive disorders of pregnancy, including pre-existing hypertension and gestational hypertension, preeclampsia, and eclampsia, complicate 10% of pregnancies and are a significant cause of maternal and perinatal morbidity and mortality. Pregnant or postpartum women with hypertensive disorders of pregnancy have an increased risk of maternal death, cesarean section, preterm birth, perinatal death, and low birth weight newborns.

Clinical management of postpartum hypertension remains focused on blood pressure control and transition to primary care for cardiovascular risk reduction. Large-scale randomized trials are needed to provide us with

evidence that will allow for timely diagnosis and management. Providers should improve their knowledge of postpartum hypertension, as complications following misdiagnosed or undertreated postpartum hypertension are often underestimated.

AUTHOR'S CONTRIBUTION STATEMENT

Efri Leny Rauf, St.Maisuri T.Chalid, Irfan Idris, Suryani As'ad, Ira Jayanti was responsible for the research design, data collection, analysis, and drafting of the manuscript. St.Maisuri T.Chalid, Irfan Idris, Suryani As'ad supervised the research process, contributed to the theoretical framework and literature review, and revised the manuscript critically for intellectual content.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

Artificial intelligence tools were used to assist with language editing and grammar checking. No content generation, data analysis, or critical interpretation was performed by AI. All intellectual contributions are the sole responsibility of the authors. All research design, data collection, analysis, and interpretation were performed by the authors without AI assistance.

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