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# Midwifery Strategies for Pre-eclampsia: Enhancing Early Detection and Intervention for Optimal Maternal Health

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**Abstract.** Pre-eclampsia is a significant complication of pregnancy that poses severe risks to maternal and fetal health. This systematic review aimed to explore midwifery strategies for enhancing early detection and intervention to achieve optimal maternal health outcomes in cases of pre-eclampsia. A comprehensive search was conducted across multiple databases, including PubMed, Web of Science, Scopus, and Springer Link, for articles published between 2010 and 2022. Thirteen studies that met the inclusion criteria were selected for analysis. The findings revealed several important insights. Firstly, midwives' knowledge of the early signs and risk factors of pre-eclampsia was insufficient, indicating the need for improved education and training programs for midwives. Secondly, regular blood pressure monitoring and adherence to evidence-based guidelines were highlighted as crucial for early detection and appropriate management of pre-eclampsia.

Moreover, the role of community health workers in increasing knowledge and promoting best practices related to pre-eclampsia was emphasised. The review also underscored the significance of enhanced education and awareness among pregnant women to recognise the early signs of pre-eclampsia and seek timely medical care. Overall, the study emphasises the urgent need for comprehensive midwifery strategies, including education, training, and collaborative efforts among healthcare providers, to improve early detection and intervention for pre-eclampsia. These efforts have the potential to significantly impact maternal health outcomes and reduce the burden of preeclampsia-related complications.

**Keywords:** pre-eclampsia; midwifery; early detection; intervention; maternal health; systematic review; education; training; blood pressure monitoring; evidence-based guidelines.

## INTRODUCTION

Pre-eclampsia is a severe pregnancy complication that poses risks to maternal and fetal health [1]. It is characterised by elevated blood pressure and organ dysfunction, primarily affecting the kidneys and liver. Pre-eclampsia can lead to severe complications such as impaired placental blood flow, fetal growth restriction, pregnancy-related disorders, and a high risk of maternal complications, including organ failure and postpartum haemorrhage. Therefore, the urgency for research on midwifery approaches to improving early detection and intervention for pre-eclampsia is crucial [2].

The high prevalence of pre-eclampsia globally is one of the key reasons why research in this area is highly needed. According to the World Health Organization (WHO), pre-eclampsia affects approximately 2-8% of pregnancies worldwide. This indicates that pre-eclampsia is a significant health issue that requires serious attention from a global health perspective [3].

The current approach to detection and intervention for pre-eclampsia faces challenges, including low awareness among expectant mothers and healthcare providers regarding the signs and symptoms of pre-eclampsia, limited resources,

and inadequate training in recognising early signs of pre-eclampsia [1].

Pre-eclampsia is a leading cause of maternal mortality in Indonesia and demands serious attention [4]. Data from the Basic Health Research (Riskesmas) in 2018 estimated that approximately 3.5% of all pregnancies in Indonesia experience pre-eclampsia. This prevalence rate highlights the significant burden of pre-eclampsia and emphasises that it is a severe health problem in the country [5, 6]. Moreover, pre-eclampsia also contributes to the high neonatal mortality rate in Indonesia.

Pre-eclampsia can lead to severe complications such as organ failure, haemorrhage, and the risk of premature birth. Additionally, babies born to mothers with pre-eclampsia are at risk of health problems, including growth restriction and premature birth. Data from the Indonesian Central Bureau of Statistics (BPS) indicates that the neonatal mortality rate in Indonesia is still relatively high, and pre-eclampsia is one of the contributing factors [7].

Given the severe impact of pre-eclampsia, efforts for prevention, early detection, and appropriate management are crucial to improving maternal and infant health outcomes in Indonesia. Public education and awareness regarding pre-eclampsia need to be enhanced among expectant mothers, families, and healthcare providers [8, 9]. The role of midwives and medical professionals in conducting routine examinations, such as blood pressure measurement and monitoring of proteinuria during prenatal visits, is paramount in the early detection of pre-eclampsia. Adequate provision of resources, proper training for healthcare providers, and easy access to appropriate care are essential factors in pre-eclampsia management.

To reduce maternal and infant mortality rates associated with pre-eclampsia, research and innovation in midwifery are needed to improve understanding, early detection, and management of pre-eclampsia in Indonesia. By increasing awareness, knowledge, and access to proper care, it is hoped that the negative impact of pre-eclampsia can be reduced and maternal and infant health can be improved in Indonesia.

## METHODS

The research method used in this study was a Systematic Literature Review. This method con-

sisted of two main points: eligibility criteria and search strategy. A systematic review was conducted to gather information to uncover relevant information on Midwifery Strategies for Pre-eclampsia: Enhancing Early Detection and Intervention for Optimal Maternal Health. The search started with a comprehensive search strategy in PubMed, Web of Science, Scopus, and Springer Link, published between 2012 and 2022, using keywords such as "midwifery strategies, pre-eclampsia, early detection, intervention, maternal health." The search was limited to English articles published between 2010 and 2022. The inclusion criteria involved observational and intervention studies focusing on midwifery strategies, pre-eclampsia, early detection, intervention, and maternal health. The exclusion criteria excluded animal studies, narrative or editorial reviews, and studies with low methodological quality. Out of the initial 59 identified articles, careful evaluation of titles and abstracts led to the selection 30 relevant articles. Studies that did not meet the inclusion criteria were excluded from this research.

Furthermore, studies that met the inclusion criteria were downloaded in full-text format and critically evaluated for each study. The selection was then narrowed down to 13 articles that met the inclusion criteria. Data extraction included article titles, authors, research objectives, study designs, primary findings, and health implications. The results from these 13 high-quality articles were synthesised and organised in a comprehensive table, providing an insightful understanding of Midwifery Strategies for Pre-eclampsia: Enhancing Early Detection and Intervention for Optimal Maternal Health. The search and study selection results are presented in a diagram format, giving a visual overview of the research process, as shown in the diagram below.

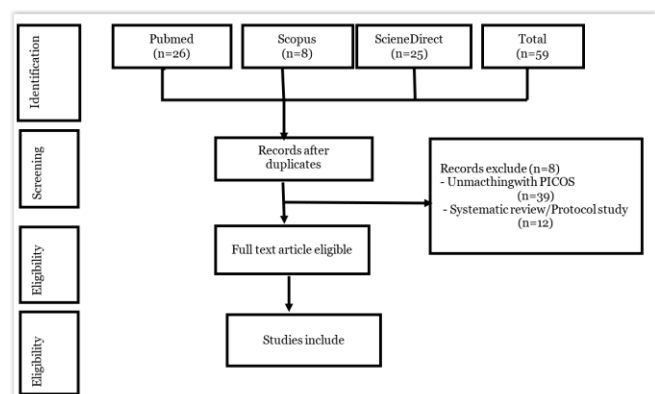


Figure 1

## RESULTS AND DISCUSSION

Pre-eclampsia is a serious medical condition that poses significant risks to mothers' and babies' health and well-being during pregnancy. It is characterised by high blood pressure and organ damage, and if left untreated, it can lead to severe complications such as eclampsia, premature birth, and even death. Early detection and timely intervention are crucial in managing pre-eclampsia and preventing adverse outcomes. Midwives are pivotal in antenatal care and are at the forefront of maternal health. Thus, it is essential to equip them with practical strategies to enhance early detection and intervention for pre-eclampsia.

A systematic review provides a rigorous and comprehensive approach to gathering and evaluating evidence on midwifery strategies for managing pre-eclampsia. By systematically reviewing the literature, we can identify various studies conducted in multiple settings, considering different populations, and employing diverse intervention methods. This allows us to gain a deeper understanding of the effectiveness and feasibility

of various approaches utilised by midwives worldwide.

Through the systematic review, we can identify the most effective screening methods for early detection of pre-eclampsia, enabling midwives to identify at-risk women and initiate appropriate management promptly. Moreover, it can shed light on successful interventions midwives implement to manage pre-eclampsia cases and improve maternal and fetal outcomes. This knowledge is invaluable in guiding best practices and enhancing midwives' capabilities in providing optimal care for pregnant women. Additionally, the review can highlight gaps in knowledge and areas where further research is needed. Identifying these gaps can guide future research efforts, ensuring that studies address the most critical aspects of pre-eclampsia management. It can also underscore the need for continuous education and training for midwives, empowering them with the latest evidence-based practices in pre-eclampsia management.

Table 1

Sources	Objective	Method	Findings
[10]	To assess midwives' knowledge of early signs and risk factors for pre-eclampsia in Southwest Nigeria	A descriptive study using a structured questionnaire among midwives in Southwest Nigeria	Findings showed that midwives' knowledge of early signs and risk factors for pre-eclampsia needs improvement.
[11]	To review the approaches to the prevention of pre-eclampsia and the factors involved	Literature review	Research indicates that calcium supplementation, antioxidant use, and blood pressure regulation can help reduce the risk of pre-eclampsia.
[12]	To describe the current knowledge of pre-eclampsia and the prospects	Literature review	Studies highlight the importance of blood pressure monitoring and midwives' knowledge in preventing and managing pre-eclampsia.
[13]	To assess the knowledge and perception of grand multipara women attending antenatal care about obstetric danger signs	Cross-sectional study using questionnaires among grand multipara women in antenatal facilities	The study showed low knowledge about obstetric danger signs among grand multipara women and the need for adequate antenatal care.
[14]	To determine factors associated with the late detection of pre-eclampsia in a Brazilian university hospital	Retrospective observational study using medical records in a Brazilian university hospital	Findings indicated an association between late detection of pre-eclampsia and low socioeconomic status and limited access to prenatal care.
[15]	To assess the knowledge and perception of pregnant women accessing antenatal care in Enugu about pre-eclampsia	Cross-sectional study using questionnaires among pregnant women in antenatal facilities	Findings showed low knowledge about pre-eclampsia among pregnant women and the need for increased education for pregnant women.
[16]	To analyse barriers to optimal utilisation of antenatal care in rural communities in Enugu	Cross-sectional study using questionnaires among pregnant women in rural	Findings revealed that distance, cost, lack of adequate healthcare facilities, and cultural norms are barriers to

Sources	Objective	Method	Findings
	State, Nigeria	communities of Enugu	optimal antenatal care utilisation.
[17]	To assess provider adherence to first antenatal care guidelines and the risk of pregnancy complications in public sector facilities in Ghana	Cohort study using medical records and interviews with healthcare providers	Findings showed that provider adherence to first antenatal care guidelines can reduce the risk of pregnancy complications.
[18]	To implement best practices for facilitating early detection of pre-eclampsia in western Uganda	A descriptive study with interviews and focus group discussions in healthcare facilities in western Uganda	Findings showed that medical staff training, improved equipment, and education for pregnant women can enhance early detection of pre-eclampsia.
[19]	To develop a novel approach for early detection of pre-eclampsia	Literature review and development of early detection methods	This study proposed a new plan based on biomarkers for early detection of pre-eclampsia that can improve the success rate and accuracy of diagnosis.
[20]	To assess the knowledge and attitude of pregnant women towards pre-eclampsia in southwestern Nigeria	Cross-sectional study using questionnaires among pregnant women in southwestern Nigeria	Findings revealed a lack of knowledge and misconceptions about pre-eclampsia among pregnant women in southwestern Nigeria.
[21]	To evaluate the role of community health workers in improving knowledge and practices related to pre-eclampsia	Qualitative study using interviews and focus group discussions with community health workers	The study highlighted the positive impact of community health workers in increasing knowledge and promoting appropriate practices related to pre-eclampsia.
[22]	To assess the effectiveness of a training program on midwives' knowledge and skills in managing pre-eclampsia	A quasi-experimental study with pre-and post-training assessments among midwives in a Nigerian hospital	The training program significantly improved midwives' knowledge and skills in managing pre-eclampsia.

The analysis of the studies above on midwifery approaches to improving early detection and intervention of pre-eclampsia provides valuable insights into the current state of knowledge and practices in this field. Firstly, authors [10] shed light on improving midwives' understanding of early signs and risk factors for pre-eclampsia in Southwest Nigeria. This finding underscores the significance of continuous education and training programs for midwives to enhance their knowledge about this serious pregnancy complication. Secondly, the literature review by [11] presents evidence supporting the effectiveness of specific interventions in preventing pre-eclampsia. Specifically, they highlight the potential benefits of calcium supplementation, antioxidant use, and blood pressure regulation in reducing the risk of pre-eclampsia. This review is a foundation for future research and interventions to prevent pre-eclampsia and improve maternal and fetal outcomes.

Authors [12] also emphasise the importance of blood pressure monitoring and midwives' knowledge in preventing and managing pre-

eclampsia. Their findings underscore the crucial role of midwives in early detection, timely intervention, and appropriate management of pre-eclampsia cases, thereby minimising the potential risks associated with this condition. Moreover, authors [13] reveal the low levels of knowledge regarding obstetric danger signs among grand multipara women attending antenatal care, highlighting the urgent need for comprehensive education and awareness programs targeting this vulnerable population. These findings underscore the importance of empowering women with knowledge about the warning signs of pre-eclampsia, enabling them to seek timely and appropriate care.

Furthermore, authors [14] identify various factors associated with the late detection of pre-eclampsia, such as low socioeconomic status and limited access to prenatal care. This finding highlights the significance of addressing social determinants of health and improving healthcare accessibility to ensure early detection and intervention, particularly among disadvantaged populations. In conclusion, these studies collectively contribute to the academic discourse surround-

ing midwifery approaches to pre-eclampsia, shedding light on critical areas for improvement, potential preventive measures, and the importance of knowledge dissemination to enhance early detection and intervention, ultimately improving maternal and fetal outcomes.

Continuing the analysis, authors [15] highlight the need for increased education and awareness regarding pre-eclampsia among pregnant women accessing antenatal care in Enugu, Nigeria. Their findings emphasise the importance of empowering expectant mothers with accurate information about the signs, symptoms, and potential risks associated with pre-eclampsia, enabling them to make informed decisions and seek appropriate care. Moreover, authors [16] identify barriers to optimal utilisation of antenatal care in rural communities of Enugu State, Nigeria, including geographical distance, financial constraints, limited healthcare infrastructure, and cultural beliefs. These barriers hinder timely access to antenatal care services, including early detection and management of pre-eclampsia. Addressing these barriers requires comprehensive strategies, such as improving healthcare infrastructure, increasing community awareness, and promoting culturally sensitive approaches to antenatal care.

Additionally, authors [17] emphasise the importance of provider adherence to the first antenatal care guidelines in public sector facilities in Ghana. Their study highlights the role of healthcare providers in delivering evidence-based care, including regular blood pressure monitoring and early identification of pre-eclampsia risk factors, to mitigate pregnancy complications and improve maternal and fetal outcomes. Furthermore, authors [18] emphasise the significance of implementing best practices to facilitate early detection of pre-eclampsia in western Uganda. Their findings highlight the importance of ongoing medical staff training, provision of adequate equipment, and education for pregnant women to enhance the capacity for early identification of pre-eclampsia cases, allowing for timely interventions and improved maternal and fetal outcomes. Lastly, authors [19] propose a novel approach for early detection of pre-eclampsia based on biomarkers. This approach can potentially enhance diagnostic accuracy and success rates, enabling healthcare providers to identify pre-eclampsia at its early stages and initiate appropriate interventions promptly. In summary, these studies collectively contribute to

the academic understanding of midwifery approaches to pre-eclampsia, emphasising the importance of enhancing midwives' knowledge, addressing barriers to care utilisation, promoting provider adherence to guidelines, implementing best practices, and exploring innovative approaches to early detection and intervention.

A comprehensive body of academic literature supports the analysis of midwifery approaches to improving early detection and intervention for pre-eclampsia. The American College of Obstetricians and Gynecologists (ACOG) provides guidelines in their Practice Bulletin No. 202, emphasising the importance of diagnosing and managing hypertension in pregnancy, including pre-eclampsia. These guidelines assist midwives in implementing evidence-based practices and protocols for the early detection and appropriate management of pre-eclampsia cases. In line with ACOG's recommendations, authors [24] present the International Society for the Study of Hypertension in Pregnancy (ISSHP) guidelines, which further elucidate the classification, diagnosis, and management of hypertensive disorders during pregnancy. Their comprehensive review ensures midwives have the knowledge and tools to identify pre-eclampsia and initiate timely interventions to mitigate its potential risks.

The author [25] highlights pre-eclampsia's global impact and the urgent need for effective detection and intervention strategies. This recognition emphasises the significance of midwifery approaches in tackling this widespread issue and reducing the associated morbidity and mortality rates among pregnant individuals.

Provide an executive summary focusing on diagnosing, evaluating, and managing hypertensive disorders of pregnancy, including pre-eclampsia [25]. By synthesising research findings and best practices, their work is a valuable resource for midwives, guiding them in their decision-making processes and ensuring optimal care for pregnant individuals. The International Federation of Gynecology and Obstetrics (FIGO) contributes to the discussion with their pragmatic guide for first-trimester screening and prevention of pre-eclampsia [26]. This guide aids midwives in implementing early screening methods and preventive measures, enhancing the chances of early detection and intervention to minimise the potential complications associated with pre-eclampsia.

To better understand the pathogenesis and genetic factors involved in pre-eclampsia, authors [28] offer insights into the underlying mechanisms contributing to this condition. Their research helps midwives comprehend the complex nature of pre-eclampsia, facilitating its identification and appropriate management [27]. Authors [29] present a revised statement from the ISSHP on the classification, diagnosis, and management of hypertensive disorders during pregnancy. Their work provides a comprehensive framework for midwives to navigate the complexities of pre-eclampsia, ensuring standardised care practices and improved outcomes for pregnant individuals.

Authors [30] emphasise the prevention of deaths associated with hypertensive disorders during pregnancy, including pre-eclampsia. Their research underscores the critical role of midwives in implementing preventive strategies, such as regular blood pressure monitoring and timely referrals, to mitigate potential risks and complications. The World Health Organization (WHO) contributes to the discussion with its recommendations for preventing and treating pre-eclampsia and eclampsia [31]. These guidelines assist midwives in aligning their practices with global standards and evidence-based approaches to managing pre-eclampsia effectively.

Finally, authors [32] systematic review and meta-analysis shed light on the maternal and neonatal outcomes of pre-eclampsia cases requiring intensive care unit admission. Their findings underscore the urgency of early detection and intervention by midwives to minimise adverse effects and ensure the well-being of both mother and baby.

These academic contributions provide midwives with a solid foundation to improve early detection and intervention for pre-eclampsia. By incorporating evidence-based practices and guidelines, midwives can enhance their ability to identify the condition, initiate appropriate management strategies, and ultimately improve the

health outcomes of pregnant individuals and their infants.

## CONCLUSIONS

Academically, the conclusions drawn from previous research focusing on midwifery approaches to pre-eclampsia highlight several significant findings.

Firstly, there is a lack of knowledge among midwives regarding the early signs and risk factors of pre-eclampsia. This emphasises the need to enhance the understanding and skills of midwives in recognising early symptoms and the risk factors that may contribute to the development of pre-eclampsia.

Secondly, the significance of blood pressure monitoring and midwives' knowledge in preventing pre-eclampsia becomes crucial in efforts to prevent and manage this condition. Midwives play a pivotal role in regularly monitoring the blood pressure of pregnant women to detect any changes that may indicate the presence of pre-eclampsia. A solid knowledge base on pre-eclampsia will also enable midwives to educate pregnant women about the condition and the necessary preventive measures. Lastly, research indicates the necessity of enhancing education and knowledge among pregnant women regarding pre-eclampsia. With adequate knowledge, pregnant women can recognise the early signs of pre-eclampsia and promptly seek the necessary medical care.

These conclusions reinforce the importance of collaboration among midwives, healthcare professionals, and the community in improving early detection and appropriate interventions for pre-eclampsia to reduce the incidence and adverse impacts caused by this condition.

## Conflict of interest

The authors declare no conflict of interest.

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