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Optimizing the Role of Midwives in Early Pregnancy Risk Detection: Implications for Maternal Mortality Reduction

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ABSTRACT

Maternal mortality remains a major public health challenge in Indonesia, partly due to the delayed recognition and management of pregnancy complications. Midwives play a strategic role in early pregnancy risk detection through risk assessment, antenatal care, health education, and timely referral. This study aimed to synthesize evidence on the role of midwives in early pregnancy risk detection and its implications for maternal mortality reduction in Indonesia. A systematic literature review was conducted following the Preferred Reporting Items for Systematic Reviews. Literature was searched through Google Scholar from 24 to 31 May 2026 using keywords related to midwives, pregnancy risk detection, high-risk pregnancy, antenatal care, maternal mortality, continuity of care, community health workers, and the Poedji Rochjati Score Card. Studies published between 2022 and 2025 were screened using predefined criteria, and methodological quality was assessed using the Joanna Briggs Institute Critical Appraisal Checklist. Thirteen studies were included in the qualitative synthesis. The findings identified six interconnected roles: standardized pregnancy risk screening, early detection of obstetric complications, maternal health education, community empowerment, family involvement, and continuity of midwifery care. These strategies supported earlier identification of high-risk pregnancies, improved preparedness, strengthened antenatal care, and facilitated timely referral. Optimizing midwives' roles through integrated clinical competency, standardized screening, continuity of care, community and family engagement, and effective referral systems may strengthen maternal healthcare and contribute to reducing preventable maternal mortality in Indonesia.

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1. INTRODUCTION

Maternal mortality remains one of the most critical public health challenges worldwide because most maternal deaths are preventable through timely access to quality maternal healthcare. The Sustainable Development Goals (SDGs) target a reduction in the global maternal mortality ratio (MMR) to fewer than 70 maternal deaths per 100,000 live births by 2030, emphasizing the importance of strengthening maternal health systems and ensuring universal access to high-quality reproductive healthcare services.(1) According to the World Health Organization (WHO), approximately 287,000 women died from pregnancy- and childbirth-related

complications in 2020, with nearly 95% of these deaths occurring in low- and middle-income countries. The leading causes of maternal mortality include obstetric hemorrhage, hypertensive disorders of pregnancy, sepsis, obstructed labor, and complications resulting from delayed recognition and management of pregnancy-related risks. ((2). These findings indicate that early identification of high-risk pregnancies remains a cornerstone of effective maternal mortality prevention strategies.(3)

Indonesia continues to experience a maternal mortality ratio that exceeds the SDG target despite ongoing improvements in maternal healthcare services. The latest national estimate reported a maternal mortality ratio of 144 maternal deaths per 100,000 live births, indicating that maternal mortality remains a significant public health concern requiring comprehensive interventions across all levels of the healthcare system.(2) Although this figure represents substantial progress compared with previous decades, it is still considerably higher than the SDG target and reflects persistent disparities in access to quality antenatal care, timely referral systems, and management of obstetric emergencies. Previous evidence has demonstrated that hemorrhage, hypertensive disorders, infection, and delays in receiving appropriate obstetric care continue to be the predominant contributors to maternal mortality in Indonesia.(4) Therefore, strengthening preventive strategies through early pregnancy risk detection is essential to reduce preventable maternal deaths and improve maternal health outcomes.(5)

Midwives are recognized as frontline healthcare professionals responsible for delivering comprehensive maternal healthcare throughout pregnancy, childbirth, and the postpartum period. The WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience emphasize that antenatal care should not only monitor fetal growth and maternal well-being but also provide systematic risk assessment, early detection of pregnancy complications, preventive interventions, health education, and timely referral whenever abnormalities are identified.(6) Similarly, the International Confederation of Midwives (ICM) states that competent midwives should be able to perform comprehensive maternal assessments, identify deviations from normal pregnancy, recognize obstetric emergencies, provide evidence-based care, and coordinate referrals to ensure maternal and neonatal safety.(7) Consequently, the quality of pregnancy risk detection largely depends on the competency, clinical judgment, and continuity of care provided by midwives.

Evidence from recent studies consistently demonstrates that strengthening the role of midwives contributes to improved maternal health outcomes through multiple complementary strategies. Pregnancy risk screening tools facilitate earlier identification of high-risk pregnancies and improve decision-making regarding referral and monitoring.(8) Educational interventions and clinical training significantly enhance midwives' competency in detecting obstetric emergencies, including preeclampsia, thereby improving the quality of maternal healthcare services.(9,10) Community-based interventions involving maternal education, pregnancy assistance, and empowerment of community health workers have also been shown to increase awareness of pregnancy danger signs, improve antenatal care utilization, and strengthen community participation in maternal health programs.(11–13) Furthermore, husband involvement enhances family preparedness for obstetric emergencies and supports timely healthcare-seeking behavior.(14)

International evidence further indicates that midwifery-led continuity of care provides substantial benefits for maternal and neonatal health by improving continuity, coordination, and person-centered care throughout pregnancy. Continuous relationships between women and midwives facilitate earlier recognition of subtle clinical changes, strengthen communication, improve maternal satisfaction, and support timely intervention before complications become severe.(15) A recent realist review also concluded that successful implementation of midwife-led continuity of care requires supportive organizational structures, interdisciplinary collaboration, and health system commitment to maximize maternal health outcomes.(16) Likewise, qualitative evidence from Ethiopia demonstrated that both maternal health leaders and practicing midwives considered continuity of care to be an effective strategy for improving service quality, although adequate human resources and institutional support remain essential prerequisites for successful implementation.(17) These findings suggest that optimizing maternal health requires not only competent individual practitioners but also integrated healthcare systems capable of supporting continuous, coordinated, and woman-centered care.

Despite the growing body of evidence regarding maternal health interventions, previous studies have primarily focused on individual programs, such as pregnancy risk screening, maternal education, clinical training, or community empowerment, without comprehensively synthesizing the overall contribution of midwives to early pregnancy risk detection. To date, limited evidence has integrated these diverse approaches into a unified understanding of how midwives contribute to maternal mortality reduction within the Indonesian context. Therefore, this systematic literature review was conducted to synthesize current evidence regarding the role of midwives in the early detection of pregnancy risks and to identify key strategies that may strengthen maternal healthcare services and support national efforts to reduce maternal mortality. The findings are expected to provide evidence-based recommendations for healthcare professionals, policymakers, and researchers to optimize midwifery practice and accelerate progress toward achieving the Sustainable Development Goals related to maternal health.

2. METHOD

This study employed a Systematic Literature Review (SLR) to synthesize scientific evidence regarding the role of midwives in the early detection of pregnancy risks as a strategy for reducing maternal mortality in Indonesia. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to support a transparent and systematic review process. Although the review protocol was not registered in the International Prospective Register of Systematic Reviews (PROSPERO), the procedures for literature searching, study selection, quality appraisal, data extraction, and data synthesis were established before the review was conducted.

The literature search was conducted through Google Scholar from 24 to 31 May 2026. Google Scholar was selected because of its broad coverage of scientific publications relevant to maternal and midwifery research, particularly Indonesian literature. The search strategy combined keywords using Boolean operators (AND and OR). The primary search string was: ("midwife" OR "midwives" OR "bidan") AND ("early pregnancy risk detection" OR "pregnancy risk screening" OR "high-risk pregnancy") AND ("maternal mortality" OR "maternal mortality ratio") AND ("antenatal care" OR "ANC") AND ("continuity of care" OR "community health worker" OR "Poedji Rochjati Score Card" OR "KSPR"). Additional searches using Indonesian keywords were conducted to maximize the retrieval of relevant national publications.

Studies were eligible for inclusion if they were published between 2022 and 2025, written in Indonesian, available in full text, and examined the role of midwives, pregnancy risk screening, early pregnancy risk detection, high-risk pregnancy, antenatal care, or maternal mortality reduction. Studies published in peer-reviewed journals or scientific conference proceedings were considered. Articles were excluded if they were duplicates, unrelated to the review objective, editorials, commentaries, conference abstracts, or lacked sufficient methodological information and research findings for synthesis.

The study selection process followed the PRISMA 2020 framework. A total of 85 records were identified through database searching. After removal of 13 duplicate records, 72 records remained for title and abstract screening. Of these, 45 articles met the preliminary screening criteria and underwent full-text assessment. Following full-text evaluation against the predefined eligibility criteria, 13 studies were included in the qualitative synthesis. The remaining full-text articles were excluded because they did not sufficiently address the review objective and/or did not provide adequate methodological or outcome information required for synthesis. The selection process was conducted systematically according to the predefined criteria, and eligible articles were re-examined before final inclusion. The complete selection process is presented in Figure 1.

The methodological quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist, which is applicable to diverse research designs. Each study was assessed according to the clarity of its research objectives, appropriateness of study design, adequacy of data collection procedures, clarity of reported findings, and relevance to the review objectives. Studies meeting acceptable methodological quality were retained for the final synthesis, and the results of the appraisal are presented in Table 1.

Data were extracted using a standardized data extraction form developed before the review process. The extracted information included authors, publication year, study design, study setting, sample characteristics, research objectives, intervention or research focus, and principal findings related to the role of midwives in early pregnancy risk detection. Extracted information was cross-checked against the original publications before synthesis.

A descriptive-comparative approach was used to synthesize the findings because of substantial heterogeneity among the included studies in terms of research design, study populations, intervention characteristics, and outcome measures. The evidence was grouped into thematic domains comprising pregnancy risk screening, early detection of obstetric complications, maternal health education, community health worker empowerment, continuity of midwifery care, family involvement, and maternal healthcare strengthening. Findings across these domains were compared and integrated to identify consistent patterns, differences, and knowledge gaps regarding the contribution of midwives to early pregnancy risk detection and maternal mortality reduction in Indonesia.

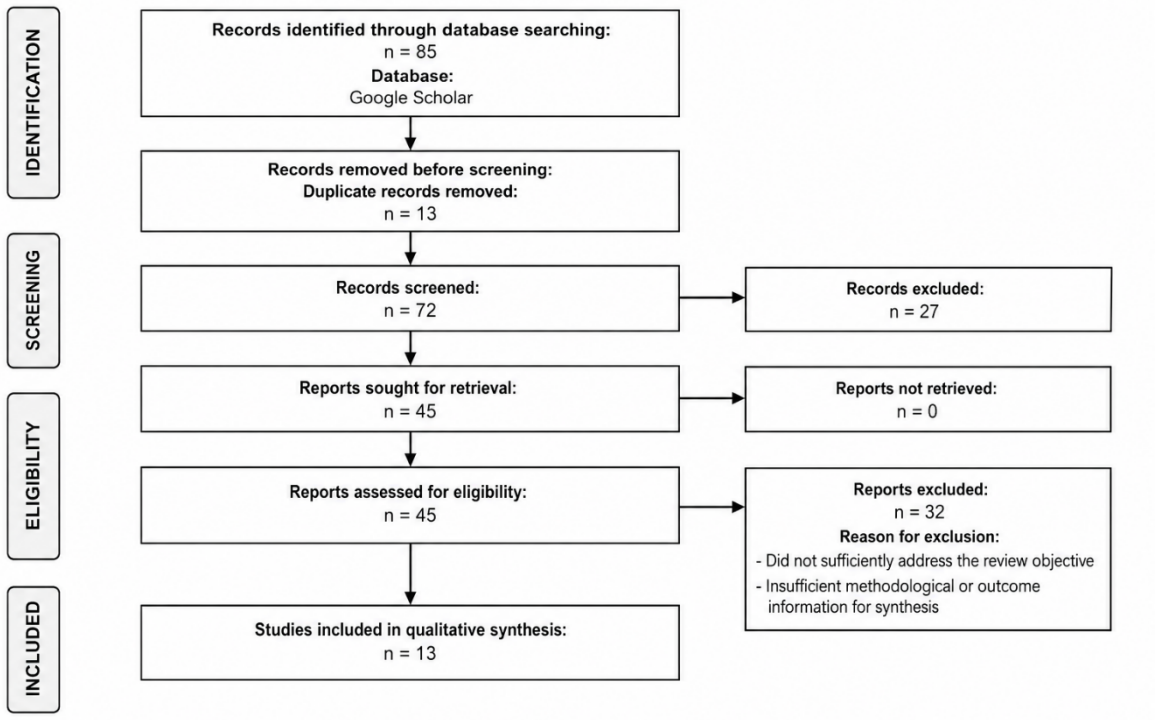

Figure 1. PRISMA 2020 Flow Diagram of the Study Selection Process

The methodological quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist, which is widely recommended for evaluating evidence derived from diverse research designs. Each study was evaluated according to the clarity of its research objectives, the appropriateness of the study design, the adequacy of the data collection procedures, the clarity of the reported findings, and the relevance of the study to the objectives of this review. Only studies demonstrating acceptable methodological quality were retained for the final synthesis. The results of the quality assessment are summarized in Table 1.

Data extraction was performed using a standardized data extraction form that had been developed before the review process. Information extracted from each study included the authors, publication year, study design, study setting, sample characteristics, research objectives, intervention or research focus, and the principal findings related to the role of midwives in early pregnancy risk detection. To ensure the accuracy of the extracted information, all extracted data were cross-checked against the original publications before being included in the synthesis.

A descriptive-comparative approach was employed to synthesize the findings because considerable heterogeneity existed among the included studies with respect to research design, study population, intervention characteristics, and outcome measures, making quantitative meta-

analysis inappropriate. The included studies were grouped into several thematic domains, including the role of midwives in early detection of pregnancy complications, pregnancy risk screening, maternal health education, community health worker empowerment, continuity of midwifery care, family involvement, and contributions to maternal mortality reduction. The findings from these themes were subsequently compared and integrated to identify recurring patterns, similarities, differences, and existing knowledge gaps, thereby providing a comprehensive understanding of the contribution of midwives to improving maternal healthcare services and reducing maternal mortality in Indonesia.

3. RESULTS AND DISCUSSION

3.1. Result

3.1.1. Characteristics of Included Studies

The characteristics of the thirteen studies included in this review are summarized in Table 1. The studies were published between 2022 and 2025, indicating increasing attention to maternal mortality reduction and early pregnancy risk detection in Indonesia. Various methodological approaches were identified, including quantitative studies, qualitative studies, literature reviews, systematic reviews, descriptive studies, and community-based intervention programs. The diversity of research designs provides comprehensive evidence regarding the multifaceted role of midwives in maternal healthcare.

Table 1. Characteristics of Included Studies

Author (Year)	Study Design	Participants/Sample	Research Focus	Key Findings
Amalia & Sayuti (2023)	Quantitative descriptive	9 pregnant women	Pregnancy risk screening	Pregnancy risk detection forms improved early identification of high-risk pregnancies.
Anisykurlillah & Supit (2023)	Qualitative (CIPP evaluation)	District Health Office	Maternal health services	Improved maternal health services contributed to reducing maternal mortality.
Gita & Widowati (2024)	Descriptive study	Not reported	Continuity of care	Continuity of midwifery care improved service quality and facilitated earlier complication detection.
Ibrahim & Ridwan (2022)	Literature review	Not applicable	Maternal mortality determinants	Hemorrhage, hypertension, infection, and delayed treatment were the major causes of maternal mortality.
Ningsih & Asbanu (2023)	Community service	Pregnant women	Pregnancy danger signs	Training increased maternal knowledge regarding pregnancy danger signs.
Prafitri et al. (2025)	Community service	32 pregnant women	Pregnancy assistance	Assistance improved ANC attendance and early detection of high-risk pregnancy.
Rahmadini et al. (2023)	Quantitative analytical	Provincial maternal mortality database	Maternal mortality modelling	Healthcare services significantly influenced maternal mortality.
Sari et al. (2023)	Systematic review	11 studies	Maternal mortality reduction	Early detection, healthcare improvement, and education were major strategies.
Setiyaningsih (2025)	Community service	Community health workers	Capacity building	Refresher training improved identification of high-risk pregnancies.
Setyoningsih (2023)	Community service	Posyandu volunteers	KSPR implementation	KSPR facilitated systematic pregnancy risk screening.
Sinulingga et al. (2025)	Qualitative	Six husbands	Family involvement	Husband participation improved preparedness for obstetric emergencies.
Wahyuni et al. (2022)	Pre–post training	Midwives and pregnant women	Emergency management	Training enhanced knowledge and skills in maternal emergency detection.
Wittiarika et al. (2024)	Midwife training	Primary healthcare midwives	Preeclampsia detection	Training improved competency in early preeclampsia detection.

3.1.2. Distribution of Study Designs and Participants

The reviewed studies demonstrated considerable methodological diversity. Community-based intervention studies constituted the largest proportion of the included evidence, followed by descriptive studies, qualitative research, quantitative studies, literature reviews, and

systematic reviews. Most studies focused on pregnant women and midwives, while several investigated community health workers, husbands of pregnant women, and secondary health databases. This variation illustrates that early pregnancy risk detection involves multiple stakeholders across different levels of maternal healthcare services.

Table 2. Distribution of Study Designs and Participants

Characteristic	Frequency (n=13)	Percentage (%)
Study Design		
Community service/intervention	4	30.8
Quantitative	2	15.4
Qualitative	2	15.4
Descriptive	1	7.7
Literature review	1	7.7
Systematic review	1	7.7
Midwife training	1	7.7
Pre–post training	1	7.7
Primary Participants		
Pregnant women	4	30.8
Midwives	2	15.4
Community health workers	2	15.4
Husbands	1	7.7
Health institutions/database	2	15.4
Literature	2	15.4

3.1.3. Thematic Synthesis of the Evidence

The findings from the thirteen studies were synthesized into six major themes according to the reported interventions and outcomes. Pregnancy risk screening emerged as the most frequently investigated topic, followed by competency development for midwives, maternal health education, community empowerment, family involvement, and continuity of midwifery care. Across all studies, these themes consistently demonstrated positive contributions to improving early pregnancy risk detection and maternal healthcare services.

Table 3. Thematic Synthesis of the Evidence

Theme	Supporting Studies	Number of Studies	Summary of Findings
Pregnancy risk screening	Amalia & Sayuti; Setyoningsih	2	Standardized screening tools improved early identification of high-risk pregnancies.
Early detection of obstetric complications	Wittiarika et al.; Wahyuni et al.	2	Professional training enhanced competency in detecting preeclampsia and maternal emergencies.
Maternal health education	Ningsih & Asbanu; Prafitri et al.	2	Education and assistance increased maternal knowledge and ANC adherence.
Community empowerment	Setiyaningsih	1	Capacity building improved community monitoring of pregnant women.
Family involvement	Sinulingga et al.	1	Husband participation strengthened emergency preparedness and timely referral.
Continuity of midwifery care	Gita & Widowati	1	Continuous care facilitated earlier identification of pregnancy complications.
Maternal healthcare strengthening	Anisykurlillah & Supit; Rahmadini et al.; Sari et al.; Ibrahim & Ridwan	4	Improved healthcare quality, early detection, and timely management were associated with maternal mortality reduction.

3.2. Discussion

The present systematic literature review demonstrates that midwives play a central and multidimensional role in reducing maternal mortality through the early detection of pregnancy risks. The synthesis of thirteen studies consistently indicates that effective pregnancy risk detection is not limited to clinical examination but encompasses systematic risk assessment, maternal health education, professional competency, community empowerment, family involvement, continuity of care, and timely referral. These findings reinforce the concept that maternal mortality is influenced by interconnected clinical, behavioral, and health system factors rather than by isolated obstetric complications alone.(18,19) According to the World Health Organization, nearly all maternal deaths are preventable when women receive high-quality antenatal care, skilled birth attendance, and timely management of pregnancy complications.(5)

Despite substantial progress, Indonesia continues to report a maternal mortality ratio of 144 deaths per 100,000 live births, which remains considerably higher than the Sustainable Development Goal target of fewer than 70 deaths per 100,000 live births by 2030.(1,2) This discrepancy highlights the need to strengthen preventive strategies during pregnancy, particularly through comprehensive risk detection performed by competent midwives. Therefore, the evidence synthesized in this review confirms that early pregnancy risk detection should be regarded as a core strategy for maternal mortality reduction and an essential component of quality maternal healthcare in Indonesia.(6,7)

One of the most consistent findings identified across the reviewed studies is the importance of standardized pregnancy risk screening in facilitating early identification of women at increased risk of obstetric complications. Studies by Amalia and Sayuti (2023) and Setyoningsih (2023) demonstrated that structured screening instruments, including pregnancy risk detection forms and the Poedji Rochjati Score Card (KSPR), improved the identification of high-risk pregnancies and supported more systematic clinical decision-making.(8) These findings are consistent with the WHO recommendation that every antenatal contact should include comprehensive maternal history taking, clinical examination, risk assessment, and individualized care planning to identify complications before they progress to life-threatening conditions.(6) Early recognition of pregnancy-related risks allows healthcare providers to initiate preventive interventions, intensify monitoring, and coordinate referral to higher-level healthcare facilities before severe maternal deterioration occurs.(3) This mechanism is particularly relevant because hemorrhage, hypertensive disorders, sepsis, and obstructed labor—the leading causes of maternal mortality in Indonesia—often develop progressively and may initially present with subtle clinical manifestations that can only be detected through systematic assessment.(4) Consequently, pregnancy risk screening should not be considered merely an administrative requirement but rather a clinical decision-support process that enables evidence-based maternal care and contributes directly to reducing preventable maternal mortality.(18,20)

Another important finding emerging from this review is that the effectiveness of pregnancy risk detection is closely associated with the professional competence of midwives. Several studies reported that educational interventions, refresher training, and competency-based learning significantly improved midwives' ability to recognize pregnancy danger signs, detect preeclampsia, and perform initial management of obstetric emergencies. (9,10) Similar improvements were also observed among community health workers after structured educational programs, suggesting that competency development enhances the overall capacity of maternal health services to identify high-risk pregnancies.(13) These findings support the International Confederation of Midwives Essential Competencies for Midwifery Practice, which identifies comprehensive maternal assessment, early recognition of pregnancy complications, evidence-based clinical decision-making, effective communication, and appropriate referral as fundamental competencies of professional midwives.(7) From a health systems perspective, competency development should be viewed as a continuous investment rather than a single educational intervention because maternal healthcare continuously evolves alongside emerging clinical evidence and changing population health needs. This interpretation is consistent with international evidence demonstrating that healthcare systems investing in competency-based midwifery education achieve higher quality maternal care and better maternal outcomes through earlier recognition and management of pregnancy complications.(15,21) Therefore, strengthening midwives' competencies should remain a strategic priority for maternal health policy and workforce development in Indonesia.

The present review further highlights that reducing maternal mortality requires an integrated model of care extending beyond individual clinical encounters. Community-based maternal education, pregnancy assistance programs, empowerment of community health workers, and active family participation consistently improved awareness of pregnancy danger signs, increased antenatal care attendance, and strengthened preparedness for obstetric emergencies.(11,12,14) These findings demonstrate that early pregnancy risk detection is a shared responsibility involving healthcare providers, pregnant women, families, and communities. This multidimensional approach aligns with the WHO framework for people-centred maternal healthcare, which emphasizes that quality antenatal care should empower women and their families to participate actively in health-related decision-making while strengthening collaboration between communities and healthcare providers.(5,6) Furthermore, evidence from Ethiopia indicates that successful implementation of midwifery-led continuity of care depends on

organizational readiness, supportive leadership, and collaboration among health professionals, illustrating that maternal health improvement requires both competent healthcare workers and responsive health systems.(17) Consequently, interventions aimed solely at improving clinical practice without addressing family engagement, community participation, and health system integration are unlikely to achieve sustainable reductions in maternal mortality.(19,21)

The findings of this review also underscore the importance of midwifery-led continuity of care as an effective strategy for strengthening early pregnancy risk detection and improving maternal health outcomes. Unlike fragmented models of care, continuity of care enables pregnant women to receive comprehensive services from the same healthcare provider throughout pregnancy, childbirth, and the postpartum period, thereby fostering mutual trust, improving communication, and facilitating individualized care planning.(15) A recent realist review by Simmelink et al. (2025) concluded that continuity of midwifery care improves early recognition of maternal complications because midwives who continuously follow women throughout pregnancy are more likely to identify subtle clinical changes that may indicate developing obstetric risks.(16) Likewise, Liebregts et al. (2025) reported that integrated maternal healthcare systems characterized by effective coordination, continuity, and multidisciplinary collaboration are associated with better maternal and neonatal outcomes.(21) Evidence from Ethiopia further demonstrated that maternal health leaders and practicing midwives perceive continuity of care as a feasible strategy for improving service quality when supported by adequate human resources, organizational commitment, and appropriate health policies.(17) Furthermore, women receiving continuous midwifery care reported significantly higher satisfaction with antenatal, intrapartum, and postnatal services because they experienced better communication, greater emotional support, and increased involvement in healthcare decision-making.(22) These findings suggest that continuity of care strengthens not only the technical aspects of pregnancy risk detection but also women's engagement with maternal healthcare services, thereby increasing adherence to antenatal care schedules and timely reporting of pregnancy danger signs.

Another important implication emerging from this review concerns the need to strengthen collaboration between healthcare providers, families, and communities as part of comprehensive maternal healthcare. Several studies included in this review demonstrated that educational interventions targeting pregnant women, husband involvement, pregnancy assistance programs, and community empowerment significantly improved maternal knowledge, preparedness for obstetric emergencies, and utilization of antenatal care services.(11–14) These findings support the WHO framework for quality maternal healthcare, which emphasizes that women and their families should actively participate in pregnancy-related decision-making while healthcare providers facilitate informed choices through effective communication and culturally appropriate education.(6) Community participation also contributes to reducing the first and second delays in seeking and accessing appropriate obstetric care by improving awareness of pregnancy danger signs and encouraging timely referral when complications occur.(3) From a public health healthcare systems investing in competency-based midwifery education achieve higher quality maternal care and better maternal outcomes through earlier recognition and management of pregnancy complications.(15,21) Therefore, strengthening midwives' competencies should remain a strategic priority for maternal health policy and workforce development in Indonesia.

The findings suggest that strengthening standardized pregnancy risk screening, expanding competency-based education for midwives, promoting continuity of care, and improving referral coordination should become strategic priorities within national maternal health programs. (7) Investment in midwifery education should emphasize not only technical competencies but also communication skills, clinical reasoning, shared decision-making, and interdisciplinary collaboration to ensure that pregnancy complications are recognized and managed promptly. In addition, digital innovations, electronic maternal health records, and standardized risk assessment tools may further improve the consistency and efficiency of pregnancy risk identification across different levels of healthcare facilities.(20) These integrated strategies are expected to strengthen primary maternal healthcare while simultaneously reducing preventable maternal morbidity and mortality through earlier intervention and more efficient referral systems.

This systematic literature review contributes to the existing body of knowledge by providing a comprehensive synthesis of the diverse roles of midwives in early pregnancy risk detection within the Indonesian maternal healthcare context. Previous studies have generally examined individual interventions, such as pregnancy risk screening, maternal education,

preeclampsia training, husband involvement, or community empowerment, as separate approaches to improving maternal health.(8,10,14) In contrast, the present review integrates these interventions into a single conceptual framework demonstrating that effective maternal mortality reduction requires coordinated implementation of clinical competency, standardized risk assessment, continuity of care, family participation, community engagement, and responsive health systems. This integrated perspective extends previous evidence by illustrating how these components interact synergistically rather than independently to strengthen maternal healthcare services.(15,16,21) Nevertheless, several limitations should be acknowledged. The review included only studies published between 2022 and 2025 and relied primarily on Indonesian literature, which may limit the generalizability of the findings to other settings. In addition, methodological heterogeneity among the included studies precluded quantitative synthesis through meta-analysis. Future systematic reviews should incorporate multiple international databases, include higher-level evidence such as randomized controlled trials where available, and explore the effectiveness of integrated midwifery-led models using quantitative evidence synthesis. Despite these limitations, the present review provides robust evidence supporting the strategic role of midwives in strengthening early pregnancy risk detection and offers important recommendations for clinical practice, maternal health policy, and future research aimed at accelerating progress toward achieving the Sustainable Development Goals for maternal health.

4. CONCLUSION

This systematic literature review indicates that midwives have a multidimensional role in early pregnancy risk detection in Indonesia. Across the 13 included studies, effective risk detection was supported by standardized pregnancy risk screening, competency development for midwives, early recognition of obstetric complications, maternal health education, community empowerment, family involvement, and continuity of midwifery care. These components complement one another by strengthening the identification of high-risk pregnancies, improving preparedness and antenatal care engagement, and supporting timely referral and management.

The findings suggest that optimizing the role of midwives should extend beyond individual clinical assessment toward an integrated model of maternal healthcare. Strengthening midwives' clinical competence, ensuring consistent use of risk assessment tools, maintaining continuity of care, involving families and communities, and improving coordination within referral systems are important strategies for strengthening early detection and preventing avoidable delays in maternal care. However, the evidence should be interpreted in light of the methodological heterogeneity and limited number of studies included in this review. Further research using broader databases and stronger quantitative designs is needed to evaluate the effectiveness of integrated midwife-led approaches and their direct contribution to maternal mortality reduction in Indonesia

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