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Improving midwifery curriculum in Indonesia through evidence-based practice integration: Scoping review

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ABSTRACT

Midwifery education in Indonesia plays a crucial role in enhancing maternal and neonatal health outcomes. However, several structural challenges hinder its effectiveness. Integrating Evidence-Based Practice (EBP) into midwifery curricula is crucial for addressing these challenges, as it ensures that clinical decisions are grounded in the best available evidence, ultimately enhancing the quality of care provided to mothers and newborns. The study aims to identify challenges and opportunities in incorporating EBP into midwifery education, with a focus on clinical education gaps, institutional support, and resource limitations. This study used a systematic review methodology, conducting a comprehensive search through Google Scholar, PubMed, and ScienceDirect, and analyzing 11 relevant studies. The Findings emphasize the need for enhanced training of teachers and mentors in EBP, addressing competency gaps between theoretical knowledge and clinical practice, and incorporating digital technologies and simulation-based learning to improve EBP competencies among students. The review concludes that a more systematic integration of EBP into midwifery curricula is crucial for enhancing professional practice and achieving Indonesia's Sustainable Development Goals (SDGs) for maternal health.

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ABSTRAK

Pendidikan kebidanan di Indonesia memegang peranan penting dalam meningkatkan hasil kesehatan ibu dan neonatus, namun efektivitasnya terbatas oleh berbagai tantangan struktural. Integrasi Evidence-Based Practice (EBP) ke dalam kurikulum kebidanan sangat penting untuk mengatasi tantangan ini, karena memastikan bahwa keputusan klinis didasarkan pada bukti terbaik yang tersedia, yang pada akhirnya akan meningkatkan kualitas perawatan yang diberikan kepada ibu dan bayi baru lahir. Penelitian ini bertujuan untuk mengidentifikasi tantangan dan peluang dalam mengintegrasikan EBP ke dalam pendidikan kebidanan, dengan fokus pada kesenjangan pendidikan klinis, dukungan institusional, dan keterbatasan sumber daya. Penelitian ini menggunakan metodologi tinjauan sistematik, melakukan pencarian komprehensif melalui Google Scholar, PubMed, dan ScienceDirect, serta menganalisis 11 studi yang relevan. Temuan penelitian menekankan perlunya pelatihan yang lebih baik bagi pengajar dan mentor dalam EBP, mengatasi kesenjangan kompetensi antara pengetahuan teoretis dan praktik klinis, serta mengintegrasikan teknologi digital dan pembelajaran berbasis simulasi untuk meningkatkan kompetensi EBP di kalangan mahasiswa. Tinjauan ini menyimpulkan bahwa integrasi EBP yang lebih sistematis ke dalam kurikulum kebidanan sangat penting untuk meningkatkan praktik profesional dan mencapai SDGs Indonesia dalam kesehatan maternal.

Kata Kunci: *kebidanan; kurikulum; praktik berbasis bukti*

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INTRODUCTION

Midwifery education in Indonesia plays a crucial role in reducing maternal and neonatal mortality; however, several structural challenges still hinder its effectiveness. According to recent data, the Maternal Mortality Ratio (MMR) in Indonesia was 189 per 100,000 live births in 2020. The Profil Kesehatan Indonesia 2024, published by the Central Bureau of Statistics, indicates that although the RPJMN 2024 target of reducing MMR to 183 per 100,000 is promising, achieving the SDG Target 3.1 by 2030—aiming for an MMR under 70 per 100,000—will require significantly more focused efforts (Adnani, 2021). Contrary to these findings, other research suggests that while the Indonesian government has set ambitious targets, achieving these goals will require a comprehensive, multi-faceted approach, particularly in improving the quality of midwifery education and healthcare services (Adnani, 2021).

One globally recognized approach to improving the quality of obstetric care is the implementation of Evidence-Based Practice (EBP), which ensures that clinical decisions are based on the best available evidence. EBP can help prevent unnecessary actions, improve service efficiency, and reduce maternal and newborn mortality, as highlighted by the World Health Organization (See: www.who.int/publications/i/item/9789241515849). According to Yulizawati in *"Buku Teks dengan Evidence-Based Midwifery: Implementasi dalam Masa Kehamilan"*, EBP serves as a critical strategy to refine healthcare delivery, providing a foundation for midwives to apply scientifically supported interventions in clinical settings. This ultimately leads to better outcomes for both mothers and newborns. This perspective is reinforced by the International Confederation of Midwives (2023), which emphasizes the importance of integrating evidence-based practices into midwifery education and practice. (See: www.internationalmidwives.org/wp-content/uploads/ICM-Global-Standards-for-Midwifery-Education---Companion-Guidelines.pdf). Similarly, the United Nations Population Fund highlights the significance of integrating EBP into midwifery education.

The integration of EBP into the midwifery curriculum is critical. Globally, EBP has been shown to reduce delivery complications by 24% through evidence-based interventions such as active management of stage III and continuous fetal monitoring (See: https://eeca.unfpa.org/en/publications/midwifery-education-eastern-europe-and-central-asia). These practices have been recognized internationally for their ability to reduce maternal and neonatal complications, suggesting that adopting similar strategies in Indonesia could yield similar improvements. However, a 2021 study revealed that only 38% of midwifery institutions in Indonesia consistently adopt World Health Organization (WHO) and International Confederation of Midwives (ICM) guidelines in their curricula, with clinical practice allocations below 50% in 62% of private institutions. The study's findings reveal a significant gap in the adoption of internationally recognized standards, particularly in private institutions, which undermines the overall quality of midwifery education (Adnani, 2021).

This condition has an impact on the results of the 2023 national competency test, where public institutions achieved a 89% pass rate compared to 63% for private institutions (Adnani, 2021). These discrepancies reflect broader systemic issues within the educational system, with public institutions generally offering more comprehensive curricula and better resources. The International Confederation of Midwives emphasized that at least 50% of the

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time allocation in midwifery education should be dedicated to clinical practice, along with the use of advanced simulation-based learning methods (see: www.internationalmidwives.org/wp-content/uploads/ICM-Global-Standards-for-Midwifery-Education---Companion-Guidelines.pdf). This is in line with global best practices, where hands-on clinical experience is crucial to developing the practical skills needed to manage obstetric emergencies. Reform efforts, as outlined in the Midwifery Act 2019 and the Pomegranate Midwife programs, have not fully addressed this disparity. A 2024 United Nations Population Fund (UNFPA) evaluation revealed that 45% of private institutions experienced difficulty accessing digital EBP training platforms, such as iPosyandu, compared to only 12% in public institutions (Adnani et al., 2022b). This highlights a significant digital divide that limits access to essential resources for private institutions, further contributing to the educational disparities (Adnani, 2021).

Meanwhile, the integration of technology in the curriculum, such as virtual reality for simulating postpartum hemorrhage, was shown to improve student clinical skills by 40% in a Randomized Controlled Trial (RCT) study in West Java. The study suggests that limited access to advanced technologies in many institutions, particularly private institutions, contributes to the uneven development of clinical skills among students. These technological tools have the potential to drastically improve clinical training by offering realistic, risk-free scenarios for students to practice managing obstetric emergencies (Adnani, 2021). Recent findings also identified cultural resistance in the adoption of EBP 57% of midwifery educators in rural areas still rely on empirical experience rather than standardized clinical guidelines, mainly due to limited access to international journals—only 29% of institutions have a Cochrane Library subscription (See: https://eeca.unfpa.org/en/publications/midwifery-education-eastern-europe-and-central-asia). Research highlights that this reliance on traditional, experience-based knowledge can create barriers to the broader adoption of evidence-based practices, particularly in rural regions where access to information is limited.

Implementing an EBP-based curriculum requires not only content updates but also a transformation of the learning paradigm, such as the problem-based learning approach that has been shown to improve clinical evidence analysis skills by 65% (Nielsen et al., 2024). This transformation is crucial for equipping future midwives with the skills to critically assess and apply the latest research in real-world clinical settings. Based on the Standards for pre-registration midwifery programmes by the Nursing and Midwifery Council, the quality gap between midwifery education in public and private institutions is a significant issue. The Nursing and Midwifery Council (NMC) in 2023 stipulated that midwifery education programs must meet accreditation standards with a balanced composition of theory learning and clinical practice (50:50). However, the implementation of this standard in Indonesia still faces various barriers, such as inconsistencies in the accreditation process, limited clinical simulation infrastructure, and lack of real cases in training facilities. Only a small number of private institutions have access to simulation-based learning technologies, such as virtual reality, which is effective in improving students' competence in managing obstetric complications, including eclampsia.

The Nursing and Midwifery Council emphasizes the importance of simulation technologies; however, their limited availability in Indonesian midwifery programs contributes to the gap in educational quality. In addition, many educational programs have been unable to meet the standards for student clinical practice experiences, including direct involvement in 100

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antenatal examinations, 40 deliveries, and postpartum care for 100 mothers and newborns, as required in the NMC midwifery pre-registration program. These requirements ensure that students receive sufficient hands-on experience, which is critical for building competence and confidence in real-world settings (See: https://www.nmc.org.uk/globalassets/sitedocuments/standards/standards-for-pre-registration-midwifery-programmes.pdf). Adapting to WHO recommendations on digital competency frameworks and hybrid learning models, along with strengthening cross-sector collaboration and curriculum standardization, will help improve midwives' professional competence and support the achievement of Sustainable Development Goals (SDGs) in maternal and neonatal health. It is recommended that a more integrated approach, combining digital education tools with in-person training, can support the development of midwives' skills and contribute to more consistent care across Indonesia (See: www.who.int/publications/i/item/9789241515849).

Referencing international standards, such as the NMC and ICM, while considering Indonesia's geographical and cultural context, this review is a crucial step in bridging the gap between theory and practice (Nielsen et al., 2024). This study aims to examine the key strategies for integrating EBP into the midwifery education curriculum in Indonesia. The research focuses on the integration of EBP in clinical education, identifying competency gaps, enhancing training for educators and mentors in EBP, recognizing barriers to EBP implementation, and exploring the role of technology in supporting EBP education. Consequently, this study provides a comprehensive framework to improve the quality of midwifery education and professional practice, ultimately aiming to enhance maternal and neonatal healthcare services in Indonesia.

LITERATURE REVIEW

Definition and Concept of Evidence-Based Practice (EBP)

Evidence-Based Practice (EBP) is an approach to healthcare that integrates the best available evidence, healthcare professionals' expertise, and patient preferences to guide clinical decision-making. First introduced in the medical field in 1996, EBP was defined as the use of the most reliable clinical evidence to enhance patient care (Sackett et al., 1996). According to "*The Evidence-Based Midwifery"* book by Yulizawati and the book by Amelia and Rosyidah, the concept was later extended to various health fields, including midwifery, to improve care standards and clinical outcomes by integrating scientific evidence into daily practice. EBP can be understood as an approach to obtaining up-to-date knowledge based on valid data, which is crucial for making the most effective clinical decisions. Research findings emphasize that EBP not only benefits patients but also enhances the expertise of healthcare professionals and strengthens healthcare organizations. This is particularly significant in nursing and midwifery, where an understanding of evidence and its application in practice is essential (Cleary-Holdforth et al., 2021).

In alignment with the "*Fundamentals of Nursing and Midwifery Research: A Practical Guide for Evidence-based Practice*" by Lisa McKenna and Beverley Copnell, the connection between evidence and research is vital in ensuring that practice is guided by solid, current evidence, which is integral to effective nursing and midwifery practice, as noted in recent studies.

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Integrating EBP into the health education curriculum is highlighted as a crucial step in preparing future health professionals to make informed, evidence-based decisions in their practice, as discussed in the book by Vitania in 2024. In midwifery, EBP leads to the use of evidence-based guidelines and protocols to address maternal and infant health issues. Evidence-based practice is a key requirement in the work of nurses and midwives, and understanding how evidence informs practice is fundamental to enhancing the quality of care, as highlighted in recent findings (Cleary-Holdforth et al., 2021). Furthermore, the Fundamentals of Nursing and Midwifery Research emphasized that the connection between evidence and research is crucial for ensuring that clinical practice is continuously informed by solid, current research, which ultimately improves healthcare outcomes.

Application of EBP in Midwifery Education

Midwifery education in Indonesia has begun to integrate EBP to improve midwives' competence in clinical decision-making (Ningsih & Amra, 2023; Nurhayati et al., 2025). Educational programs centred around EBP are essential to enhance midwives' proficiency and understanding. Furthermore, it is essential to develop strategies that address the challenges of accessing EBP resources, including clinical guidelines and scientific literature. These actions are crucial for fostering a stronger EBP culture in midwifery and ultimately enhancing the quality of care provided to women. A 2022 study found that 80.1% of midwives used evidence-based clinical guidelines, but 55.8% experienced barriers, including a lack of time and institutional support (Lanssens et al., 2022). Most midwifery education programs in Indonesia still rely on traditional approaches, which emphasise theory over the application of evidence-based practice (Adnani et al., 2022a).

The integration of EBP into midwifery education is crucial for improving the quality of care. This can be achieved through various methods, such as providing Continuous Professional Development (CPD) training, ensuring access to the internet and learning resources, and organizing conferences and seminars for midwives. Research has shown that midwives who engage in CPD, have access to internet resources, and participate in professional activities such as conferences and seminars tend to implement EBP more effectively. Furthermore, incorporating these strategies into the curriculum would better prepare future midwives to make informed, evidence-based clinical decisions, ultimately enhancing patient care and safety. However, in Indonesia, EBP is primarily integrated as sub-materials within specific courses, rather than as a dedicated course focusing on its application. This limited integration hampers the full understanding and application of EBP by students. Therefore, a more thorough and comprehensive integration of EBP into the education curriculum is essential to adequately prepare students for its implementation in practice upon graduation and entry into the workforce (Alotabi et al., 2024; Taye et al., 2024).

Another study examines the impact of an EBP educational intervention, assessing its effects on participants' attitudes, knowledge, self-efficacy, skills, and behavior. A randomized controlled trial was conducted, comparing an experimental group that received structured EBP training with a control group that engaged in self-directed learning. The results showed that, although there were no immediate significant differences, the experimental group experienced notable improvements in EBP attitudes, knowledge, skills, and self-efficacy at the six-month follow-up. However, these gains started to diminish by the twelve-month

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point, suggesting the necessity for continuous reinforcement in EBP education. Participants in the experimental group reported higher satisfaction with the educational experience, especially regarding the encouragement of clinical questioning. These findings underscore the importance of employing a range of teaching methods to sustain engagement with evidence-based practices and recommend that future EBP interventions incorporate both structured and self-directed learning to facilitate more effective long-term implementation in practice (Koota et al., 2021).

Similarly, a quasi-experimental study examined the integration of EBP into the research curriculum for undergraduate students, aiming to assess its impact on students' competence, attitudes, skills, knowledge, and overall research abilities. Two groups of third-year students were compared: one received traditional research education, while the other was taught through an EBP-infused curriculum. Results showed that the EBP-integrated teaching approach significantly improved students' EBP competence, particularly in attitudes and skills, compared to conventional teaching methods. Both groups reported similar learning experiences and satisfaction, indicating that the EBP-focused teaching did not increase perceived learning burden. Furthermore, students in the EBP group performed better in the final team-based research protocol assignments, suggesting that integrating EBP into research education can enhance students' overall research abilities. This study emphasizes the importance of integrating EBP into education to better prepare students for applying evidence-based practices in their future careers (Du et al., 2023).

Theories and Models that Support EBP Implementation

To understand the implementation of EBP in midwifery education, it is necessary to discuss some relevant theories and models. According to the book "*Evidence-Based Midwifery*" by Amelia and Rosyidah, various EBP models have their advantages, allowing institutions to choose a model based on their specific conditions. Some commonly used models include the Iowa Model, Stetler Model, ACE STAR Model, John Hopkins Model, and the Rosswurm and Larrabee Model. As outlined in Johns Hopkins Nursing Evidence-Based Practice: Model and Guidelines, Second Edition by Dang et al., several models of EBP offer structured frameworks for integrating research findings into clinical practice, each with its unique approach to improving patient care. The Johns Hopkins Evidence-Based Practice (JHEBP) Model emphasizes a structured approach that integrates three key components—Inquiry, Practice, and Learning. It encourages healthcare professionals to ask critical questions (Inquiry), apply the best available evidence to decision-making (Practice), and engage in continuous reflection and learning to enhance care outcomes (Learning).

Through its PET (Practice Question, Evidence, and Translation) process, the JHEBP Model fosters a culture of evidence-based healthcare that standardizes practices, improves quality, and promotes interprofessional collaboration. In a similar vein, the Iowa Model of EBP provides a systematic process for integrating research into clinical practice, starting with identifying a clinical problem and gathering relevant evidence. This model then guides practitioners through synthesizing, appraising, and testing practice changes, emphasizing the importance of interdisciplinary teams and leadership support to achieve better patient outcomes (Cullen et al., 2022). The ACE Star Model, on the other hand, takes a cyclical approach to knowledge, incorporating five stages: discovery research, evidence synthesis,

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translation into guidelines, practice integration, and process and outcome evaluation. This model provides a comprehensive framework for understanding how evidence evolves from research to clinical application, ensuring meaningful improvements in patient care (Sun & Wu, 2025).

In conclusion, the Stetler Model, initially designed for research utilization, was later adapted to support EBP implementation. It operates in five phases: preparation, validation, decision-making, translation, and evaluation. This model focuses on critical thinking and is particularly effective for both individual and group use, especially for those with substantial EBP experience. It integrates evidence into practice through a structured process of identifying priorities, evaluating research outcomes, and assessing the impact of changes on clinical outcomes. These models collectively provide a broad range of strategies for integrating evidence into clinical practice, offering healthcare professionals various tools to enhance patient care, promote continuous learning, and ensure the long-term application of evidence-based practices (Chays-Amania et al., 2024). Building on this framework, the integration of EBP into educational curricula is essential for enhancing healthcare students' problem-solving abilities and lifelong learning skills. By combining theoretical lessons with practical applications, students are taught how to formulate clinical questions, find and critically evaluate evidence, and apply this evidence in decision-making processes.

In addition to educational integration, research on EBP models has revealed that they generally follow the five basic steps outlined in Sackett's model: asking questions, seeking evidence, assessing evidence, applying findings, and evaluating outcomes (Sackett et al., 1996). These steps provide a structured, systematic approach to incorporating research into practice. The first step, asking clear and focused clinical questions, leads to seeking the best available evidence through systematic searches. In assessing evidence, the quality and relevance of the evidence are critically evaluated. Applying findings involves integrating the evidence into clinical practice to make informed decisions and evaluating outcome measures to assess the impact of the changes on patient care. This method, demonstrated in various settings, ensures continuous improvement in healthcare delivery by promoting better clinical decision-making and improved patient outcomes (Dusin et al., 2023). While there was variation in the level of guidance, some models provided detailed instructions, while others were more general. Most emphasise the importance of EBP expertise in assessing evidence, but only a few incorporate patient values. Additionally, some models recommend pilot programs to test the implementation of evidence-based changes (Dusin et al., 2023).

Challenges and Opportunities for EBP Implementation in Midwifery Education in Indonesia

The implementation of EBP in midwifery education in Indonesia faces several challenges, primarily due to limited access to scientific journals, inadequate training of lecturers in teaching EBP, and cultural resistance to changes in practice (Alqahtani et al., 2020; Rahmayanti et al., 2020). According to a 2022 study, many midwifery educators in Indonesia have limited exposure to the concept of EBP, which affects their ability to effectively teach evidence-based practices to students (Adnani et al., 2022b). Additionally, research indicates that although EBP has been introduced in many midwifery education institutions, students often struggle to find and apply scientific literature in clinical practice (Nielsen et al., 2024).

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Another study highlighted that the implementation of EBP in midwifery education is further hindered by challenges such as limited technological infrastructure, low digital literacy, and restricted access to resources in remote areas. However, opportunities exist through the use of digital technologies such as mobile applications and e-learning, which can improve access to educational materials, facilitate collaboration among professionals, and enhance clinical decision-making. These technologies also offer the potential for self-directed learning and the development of practical skills, thereby improving the quality of midwifery education, particularly in resource-limited regions (Nurhayati et al., 2025).

However, despite the potential benefits, several barriers to the successful implementation of EBP remain. These include insufficient knowledge, time limitations, and nurses' attitudes towards EBP. On the other hand, enablers such as strong administrative support, stakeholder engagement, and greater autonomy are crucial for overcoming these challenges. According to the book *"Evidence-Based Practice (EBP) in Midwifery"* by Afrilia et al., despite the significant challenges faced by EBP, technological advances and greater access to information offer promising prospects for its future in midwifery. The need to improve midwifery education to address these barriers is evident, and collaboration between educational institutions and field practice will play a crucial role in optimizing EBP implementation and improving the quality of maternal and child health services. Opportunities for EBP implementation are expanding with technological advancements and government policy support. Digitalisation enables midwifery students to access scientific evidence sources through online platforms, such as electronic journals and research databases, thereby strengthening their competence in evidence-based decision-making (Ningsih & Amra, 2023; Prastyoningsih et al., 2022). Intensive training and mentoring programs organized by educational institutions have been proven to improve students' understanding of EBP, as demonstrated by a study that found specialized training can significantly enhance the implementation of EBP (Pranata et al., 2023).

METHODS

This study employs a scoping review approach to map the literature on the integration of Evidence-Based Practice (EBP) into midwifery curricula. A scoping review was chosen because it is an effective method for mapping emerging topics and identifying research gaps. It allows the research team to approach each stage flexibly, involving the appropriate team members at each step, and offers the opportunity to revisit earlier stages as the review progresses (Mak & Thomas, 2022). This method is suitable for addressing broad research questions, such as exploring concepts, definitions, or characteristics of a field, as well as identifying knowledge gaps (Peters et al., 2022). Unlike systematic reviews, which focus on the effectiveness of interventions, scoping reviews are exploratory and do not involve risk-of-bias assessments or statistical synthesis (Pollock et al., 2024).

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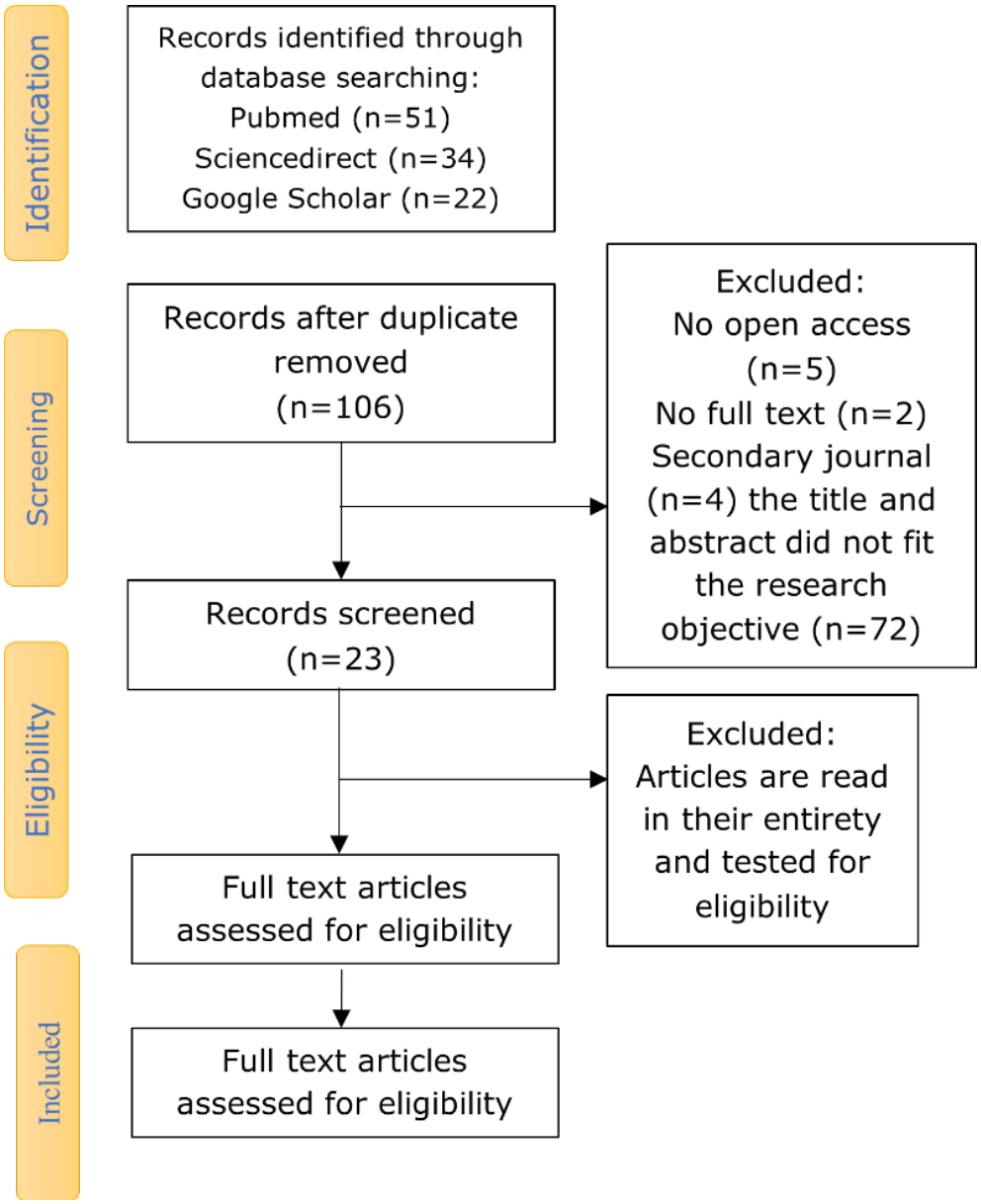

Figure 1. Data Collection Stages Flowchart
Source: (Page et al., 2021)

The article search was conducted through three primary databases: Google Scholar, PubMed, and ScienceDirect, using the advanced search feature on PubMed with the keywords "evidence-based practice" AND "midwifery" AND "education" OR "Curriculum". The inclusion criteria included primary journals published between 2021 and 2025, in either English or Indonesian, and available as open-access resources. **Figure 1** shows the article selection process was carried out in three stages: first, articles were selected based on titles and abstracts; second, relevant articles were further evaluated; and third, data from the selected articles were analyzed using a qualitative descriptive approach to identify key themes related to the implementation of EBP in the midwifery curriculum. Emphasis is placed on transparency and transparent reporting, utilizing content analysis, to ensure findings are comprehensible, replicable, and optimally applicable.

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RESULTS AND DISCUSSION

The scoping review adapted in this study collected 10 articles that met the criteria, with the following analysis shown in **Table 1**.

Table 1. Charting of Articles

Author, Year	Title	Methods	Results
Moller et al., 2022	Are midwives ready to provide quality evidence-based care after pre-service training? Curricula assessment in four countries	A descriptive qualitative study using in-depth, face-to-face interviews	The review identified gaps in the curriculum, particularly in women-centered care and evidence-based practices, with none fully meeting ICM competencies.
Zhao et al., 2024	Effect of the case-based learning method combined with virtual reality simulation technology on midwifery laboratory courses: A quasi-experimental study	A quasi-experimental design	Students in the intervention group showed higher scores in operational ability, team operation, and case analysis ($P < 0.01$), as well as improved SDL skills in self-management, information processing, and collaboration ($P < 0.05$). Over 94% reported high satisfaction with the CBL-VR method, noting improvements in independent thinking, communication, and collaboration.
Pranata & Wulandari, 2024	Gambaran Pengetahuan, Sikap Dan Kesiapan Mahasiswa Ilmu Kesehatan Dalam Penerapan Evidence Based Practice (EBP)	A descriptive cross-sectional survey	The study found that most students possessed good knowledge (87.3%), a supportive attitude (92.9%), and readiness (69.1%) towards applying EBP. However, challenges such as limited literature search skills and a lack of critical thinking in research highlight the need for curriculum improvement.
Susanti et al., 2022	Midwifery Continuity of Care in Indonesia: Initiation of Mobile Health Development Integrating Midwives' Competency and Service Needs	An explanatory sequential mixed-methods design	The study found that midwives required further competency in detecting and managing complications during pregnancy, childbirth, newborn care, and the postpartum period. They also expressed interest in using mHealth applications for communication, reporting, and continuous care management.
Adnani et al., 2022	Strengthening Midwifery Education through Clinical Experience: Findings from a Qualitative Study in Indonesia	An explanatory sequential mixed-methods design	The study highlighted that midwives require additional training in detecting and managing complications during pregnancy, childbirth, and postpartum care. Additionally, they expressed interest in utilizing mHealth applications for enhanced communication, reporting, and ongoing care management.

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Author, Year	Title	Methods	Results
Nielsen et al., 2024	Teaching Evidence-Based Practice to Undergraduate Healthcare Students: Educators' Knowledge, Skills, Attitudes, Current Practice, Perceived Barriers, and Facilitators	A cross-sectional survey using an online questionnaire	The study found that educators had positive attitudes and a good self-perception regarding their EBP knowledge and skills. However, the frequency of teaching EBP was low. Barriers identified included time constraints, limited access to relevant literature, and insufficient research skills. Facilitators included collaboration with clinical practice and student engagement. Educators also expressed a need for more structured training in teaching EBP and updated resources.
Aktaş Reyhan et al., 2025	The Place of Evidence-Based Practices in Theoretical and Clinical Practice From the Perspective of Midwifery Students: A Qualitative Study	A descriptive qualitative study using in-depth, face-to-face interviews	Four themes emerged from the study: belief in EBP, differences between education and practice, barriers to EBP implementation, and the implementation of EBP. Students acknowledged the importance of EBP but noted the gap between theoretical knowledge and clinical practice. Barriers, such as system deficiencies and resistance to change, were identified, while the integration of EBP into both education and practice was viewed as crucial for enhancing midwifery care.
Cardoso et al., 2021	The Effectiveness of an Evidence-Based Practice (EBP) Educational Program on Undergraduate Nursing Students' EBP Knowledge and Skills: A Cluster Randomized Control Trial	A cluster randomized controlled trial (RCT)	The intervention group demonstrated a statistically significant improvement in EBP knowledge and skills compared to the control group ($p = 0.011$). They excelled in tasks such as formulating clinical questions, developing search strategies, and identifying suitable study designs. Additionally, students in the intervention group produced monographs with clearer research methodologies and better study synthesis.
Nugraheny et al., 2022	Why We Have to Reform Midwifery Education?	A qualitative approach	The study identified key gaps, including the lack of continuity of care, insufficient feedback, and the absence of integrated teaching approaches. It suggests adopting Continuity of Care (CoC) in clinical learning and implementing continuous feedback to address these issues and improve maternal health outcomes.
Foster et al., 2021	Midwifery students' experience of continuity of care: A mixed-methods study	A mixed-methods approach	The analysis revealed four themes: perception of CoCE, personal safety, impact on self and family, and professional relationships. The average

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Author, Year	Title	Methods	Results
			financial cost per completed CoCE was $367.19, with travel being the largest expense. While students valued CoCE for strengthening professional relationships, they faced challenges related to time, money, and family pressures. Additionally, students expressed concerns about safety and the emotional strain of the experience.

Source: Research, 2025

Based on the analysis in **Table 1**, several key themes emerged regarding the integration of EBP into midwifery curricula in Indonesia. These themes include clinical education, competency gaps, barriers to EBP adoption, the role of technology, and teacher and mentor training.

Integration of EBP into Clinical Education

Integrating EBP into clinical education is crucial for improving midwifery outcomes. The Continuity of Care (CoC) model, in which students engage with patients from pregnancy through postpartum care, has been identified as an effective method for implementing EBP in real-world clinical settings (Susanti et al., 2022). However, a significant gap exists between theoretical knowledge and its practical application, primarily due to limited clinical exposure (Cardoso et al., 2021). This is further compounded by a lack of adequate clinical placements and mentorship (Zhao et al., 2024). A shift in midwifery education to better align with modern clinical practice, particularly through approaches such as the Continuity of Care (CoC) model, has also been emphasized in recent studies (Nugraheny et al., 2022). Another mixed-methods study investigates midwifery students' experiences with the Continuity of Care Experiences (CoCE) component of their education. While students recognized the value of this learning opportunity, they encountered challenges such as time management, financial strain, personal safety concerns, and the difficulty of balancing family responsibilities.

Positive relationships with mentors and patients were essential for a successful CoCE experience, while negative interactions, especially related to misunderstandings of their role, hindered their learning. The study suggests that midwifery programs should provide better preparation and support for students, including clearer expectations for CoCE and structured systems to address these challenges, thereby enhancing the overall learning experience. Additionally, fostering greater engagement with real-world care and strengthening mentor-student relationships could facilitate the integration of EBP into clinical settings by enhancing students' skills in evidence-based decision-making, ultimately boosting their confidence in applying EBP once they enter the workforce (Foster et al., 2021). Another study suggests that while EBP concepts are not fully integrated into the curriculum, students have developed a basic competence in EBP through indirect exposure, such as case-based learning and clinical competency tests like OSCE (Pranata & Wulandari, 2024).

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Competency Gaps in Midwifery Education

The theory-practice gap remains a significant concern in midwifery education. Despite receiving instruction on EBP in their coursework, many students report challenges in applying this knowledge in clinical settings (Aktaş Reyhan et al., 2025). This competency gap primarily arises from limited hands-on experience and the absence of structured assessments during clinical placements. Without sufficient practical exposure and standardized evaluations, nursing students often struggle to apply EBP in clinical settings effectively. The lack of structured competency assessments further exacerbates this issue, preventing the accurate measurement of students' proficiency in EBP and their ability to deliver quality care (Alotabi et al., 2024). However, another study challenges this perspective, arguing that addressing this gap requires midwifery programs to increase clinical exposure and improve mentorship practices (Adnani et al., 2022b).

Teacher and Mentor Training in EBP

Teacher and mentor training in EBP is essential for the successful implementation of EBP in midwifery education. Educators' competence in teaching EBP is closely tied to their own knowledge and skills in EBP. Studies show that many midwifery educators report challenges in teaching EBP effectively due to a lack of formal training and limited exposure to EBP in their practice (Aktaş Reyhan et al., 2025; Moller et al., 2022). As highlighted by recent research, professional development programs for educators are crucial for enhancing their ability to teach EBP and model it in clinical practice (Nielsen et al., 2024). This is especially true in midwifery education, where the gap in EBP teaching has been noted as a significant barrier (Nielsen et al., 2024).

Barriers to EBP Implementation

Despite the recognition of EBP as essential in midwifery education, several barriers exist to its implementation, including institutional resistance, limited resources, and inadequate digital learning infrastructure (Adnani et al., 2022b; Nielsen et al., 2024). Many midwifery programs in Indonesia still lack the necessary resources to provide students with consistent access to EBP-related materials, including research databases and digital tools. This limited access hinders the full integration of EBP in the curriculum and reduces students' ability to apply it in clinical settings.

Role of Technology in Enhancing EBP Education

Digital technologies, such as Virtual Reality (VR) simulations and mobile health (mHealth) applications, offer promising solutions for enhancing midwifery education and EBP implementation. According to a book by Tiago and Mitchell, VR-based simulations allow students to practice evidence-based interventions in a safe and controlled environment, significantly boosting their clinical skills and confidence (Zhao et al., 2024). Additionally, mHealth applications, such as iPosyandu, have been shown to support EBP by enabling midwives to track maternal and neonatal health remotely, thereby facilitating evidence-based care, particularly in rural settings (Susanti et al., 2022).

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Discussion

The findings from this review highlight the importance of integrating EBP into midwifery education in Indonesia. The key themes identified in the results—clinical education, competency gaps, barriers to EBP adoption, and the role of technology — reflect the challenges and opportunities in improving EBP education. The theme of Empowering Educators and Mentors is critical to the successful implementation of EBP in midwifery education. Studies have shown that educators' knowledge, skills, and attitudes toward EBP are pivotal in determining how well EBP is taught and modeled for students (Moller et al., 2022). However, other research suggests that faculty development programs alone may not be sufficient to equip educators with the necessary skills to teach EBP effectively, and that mentorship is equally critical in applying EBP during clinical placements. However, another study emphasizes the importance of clinical mentors in guiding students through evidence-based decision-making (Adnani et al., 2022b). Researchers also suggest that clinical mentorship, which includes continuous feedback, can help bridge the gap between theory and practice in midwifery education (Nugraheny et al., 2022).

Comparing the midwifery education curricula in Indonesia, New Zealand, and Australia reveals distinct approaches to education. In Indonesia, the curriculum follows national standards, emphasizing practical skills and EBP through the SPICES approach. In contrast, New Zealand's curriculum balances theoretical learning (40%) and clinical practice (60%), with a strong focus on student autonomy and critical thinking. Meanwhile, Australia's curriculum, governed by ANMAC, places significant emphasis on clinical assessments and ensures graduates provide woman-centered care. Despite these structural differences, all three countries share the common goal of producing competent midwives capable of delivering high-quality, evidence-based maternal and newborn care (Susanti, 2021). The gap between theory and practice remains a significant challenge in midwifery education, particularly in the implementation of EBP. While students are taught EBP concepts theoretically, they often face difficulties applying this knowledge in real-world clinical settings (Aktaş Reyhan et al., 2025; Zhao et al., 2024).

A significant obstacle is the lack of clinical placements that provide structured opportunities for EBP application during training. Incorporating more practical, hands-on learning experiences, alongside digital simulations, can bridge this gap by allowing students to practice EBP principles in controlled environments before engaging with actual patients (Moller et al., 2022). The review confirms that several barriers hinder the full adoption of EBP in midwifery education. These barriers include insufficient institutional support, lack of resources, and limited access to digital tools. Educational institutions need to invest in EBP resources, such as research journals, online databases, and digital platforms, to ensure that students can access current evidence and incorporate it into their clinical practice (Adnani et al., 2022b). Additionally, institutional leadership is crucial in fostering a culture of EBP by supporting faculty development and curriculum reform (Nielsen et al., 2024). Digital technologies, such as VR simulations and mobile health (mHealth) tools, are powerful tools for enhancing EBP education. As two research outcomes point out, according to a book by Tiago and Mitchell, VR-based simulations provide students with safe, immersive environments to practice clinical scenarios, helping them build their skills and confidence in applying EBP (Zhao et al., 2024).

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A mixed-methods study explored the effectiveness of Virtual Reality Learning Environments (VRLEs) in enhancing midwifery education. By using VRLEs, midwifery students were exposed to 3D visualizations, which helped improve their understanding of anatomical concepts. The findings revealed that while there was no significant change in knowledge scores after using the VRLE, students reported high satisfaction and increased self-confidence in their learning. The immersive nature of VR provided a dynamic and engaging way to visualize and interact with clinical concepts, fostering a deeper understanding of fetal anatomy. This application of VR demonstrates its potential to enhance student engagement, improve visual learning, and create more interactive and impactful educational experiences in the field of midwifery. However, further studies are necessary to evaluate its long-term effectiveness and integration into clinical practice (Ryan et al., 2022). Moreover, mHealth applications can help midwives in remote areas implement EBP by providing tools for monitoring maternal and neonatal health and sharing data with healthcare professionals (Susanti et al., 2022). The integration of digital tools in midwifery education is advocated to ensure that students are adequately prepared for modern healthcare challenges, as highlighted by studies on the subject (Cardoso et al., 2021; Nugraheny et al., 2022). Despite these barriers, the study emphasized the importance of mentorship and organizational support in overcoming these challenges and improving EBP adoption. The research suggests that addressing these barriers through education and training programs for midwives and healthcare professionals is crucial for enhancing the effectiveness of EBP in midwifery practice.

CONCLUSION

In conclusion, integrating Evidence-Based Practice (EBP) into midwifery education in Indonesia is crucial for enhancing maternal and neonatal healthcare. The findings from this scoping review suggest that while progress has been made in integrating EBP into midwifery curricula, significant gaps remain. Key strategies to enhance EBP education include improving clinical education through Continuity of Care (CoC) models, addressing the theory-practice gap, overcoming institutional barriers, and leveraging digital technologies. Moreover, empowering educators and mentors through EBP-focused professional development is essential for ensuring the effective delivery of EBP education. By implementing these strategies, midwifery education in Indonesia can become more aligned with international standards for evidence-based practice, ultimately contributing to improved maternal health outcomes and supporting the achievement of Sustainable Development Goal (SDGs) 3 on maternal health.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors also affirm that the data and content of the article are free from plagiarism.

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