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Enhancing Cognitive, Performance Skills, and Affective Competencies through Case-Based Learning among Midwifery Students: A Scoping Review

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Abstract

Midwifery students are expected to develop good clinical competencies to ensure the delivery of safe, effective, and holistic maternal care. However, conventional learning methods often fall short in cultivating critical thinking, clinical reasoning, and decision-making skills. Case-Based Learning (CBL) has emerged as a student-centered pedagogical strategy that bridges the gap between theory and clinical practice. This study aims to map the forms of CBL implementation in midwifery education, particularly in enhancing students' competencies in cognitive, performance skills, motivational, and collaborative domains, while also highlighting contextual limitations in its application. This scoping review adopted the PRISMA-ScR framework and conducted searches across PubMed, ScienceDirect, and Google Scholar. Eligible articles were published between 2020 and 2025, written in English, and presented original full-text research. Out of 655 initially retrieved records, 12 studies met the inclusion criteria after title, abstract, and full-text screening. Findings show that CBL positively contributes to the development of midwifery students' cognitive competencies, including critical thinking, knowledge retention, and clinical reasoning, as reported in the majority of studies. Improvements in performance skills, such as decision-making and practical readiness, were also noted, particularly when CBL was supported with technology like video-based scenarios and virtual reality. Additionally, CBL fostered student engagement, motivation, and collaboration, although one study reported limited enthusiasm due to contextual factors such as passive delivery. In conclusion, CBL is an effective pedagogical approach for developing cognitive, performance skills, and affective competencies in midwifery students. To optimize its impact, educators should integrate CBL with interactive digital tools such as simulation and virtual reality. These innovations enhance engagement and provide immersive learning experiences that align with the demands of reflective, hands-on maternal care. The findings of this review have important implications for midwifery education, particularly in supporting the adoption of more student-centered and clinically oriented teaching strategies to strengthen students' competence and readiness for professional practice. Further research is needed to standardize CBL implementation and explore its long-term outcomes across diverse learning environments.

Keywords: *Case-Based Learning (CBL), Midwifery Education, Clinical Competence, Critical Thinking, Student Motivation*

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INTRODUCTION

Midwifery services have experienced significant advancements in recent years, driven by the integration of innovative theories and improved clinical practices in healthcare institutions (Beecher et al., 2019). Despite these developments, skilled midwives remain essential in safeguarding the health and well-being of mothers and newborns (Nove et al., 2021; World Health Organization, 2019). Midwifery students need good clinical decision-making skills from the early stages of their training. However, traditional midwifery education, although foundational, often lacks emphasis on developing higher-order thinking skills required for clinical reasoning (Westerdahl et al., 2022). Studies have indicated that such traditional approaches may weaken students' motivation, limit their capacity for independent learning, and provide insufficient support for cultivating critical thinking skills (Chigerwe et al., 2017; Zhao et al., 2020).

In recent years, healthcare education has evolved from passive lecture-driven models to more student-centered approaches like case-based learning (CBL) (Varma et al., 2025). Although PBL and CBL are often grouped together because both use clinical cases and collaborative group work, but they differ in important ways. In CBL, students come to class having reviewed materials in advance, cases are tied to clear objectives, and the facilitator plays a more active role in guiding discussion and correcting misunderstandings. Meanwhile in PBL, students begin with problems they have not prepared for and must decide what they need to learn, with the facilitator providing minimal direction over several sessions (Hopper, 2018).

In health professional education, particularly in midwifery education, case-based activities may take the form of text-based cases, simulated encounters, actual patient care, or virtual scenarios. By explicitly linking knowledge to real-world contexts, CBL increases the relevance of subject matter, integrates fundamental, social, and clinical sciences, and helps students apply information directly to clinical practice (Thistlethwaite et al., 2012). This approach is particularly valuable for midwifery students, as it enables them to strengthen their communication and critical thinking skills. Through engaging in discussions and receiving feedback, students can enhance their clinical reasoning (Donkin et al., 2023).

Previous studies in health professional education indicate that Case-Based Learning (CBL) plays an important role in strengthening student competence. Case-Based Learning (CBL) has been shown to support the development of cognitive, affective, and performance skills in health education. In the context of nursing education, CBL has been reported to enhance learners motivation, sharpen their clinical reasoning, and promote effective communication (Yoo and Park, 2015). Similar results are seen in medical and pharmacy education, where CBL improves understanding, teamwork, and critical thinking, although there are still some difficulties in designing good cases and using them effectively in teaching (Jacob et al., 2019; Liu et al., 2018). However, most of these studies focus on nursing or medical education, while research in midwifery education remains limited. In addition, the existing studies are dispersed across different contexts and designs, and no comprehensive review has mapped how CBL contributes to student competence in this field. Therefore, a scoping review is needed to provide an overview of current evidence and identify directions for future research.

METHOD

A scoping review method was applied in this study, with reference to the PRISMA-ScR guidelines (Tricco et al., 2018). Articles were included if they met the following criteria: original research, published between 2020 and 2025, written in English, available in full text, and explicitly focused on the use of Case-Based Learning (CBL) to student competence. Studies were also required to present a clear research design and methodological rigor. Review papers, theses, editorials, duplicates, and articles not directly relevant to midwifery education were excluded. The JBI Critical Appraisal Tool was used to assess the listed studies' methodological quality. This checklist allowed for a consistent and systematic evaluation of each article's quality and reliability (Kolaski et al., 2023) .Only studies with adequate methodological quality were retained for synthesis.

The literature search was conducted from February to March 2025 through PubMed, ScienceDirect, and Google Scholar, using Boolean operators and keyword combinations based on the PCC (Population, Concept, Context) framework. The specific search strings were; PubMed: ("Case-Based Learning" OR CBL) AND ("Midwifery" AND "Education" AND "Competency"); ScienceDirect: "Case-Base Learning AND Midwifery AND Education AND Competency"; Google Scholar: (Case-Based Learning OR CBL) AND Midwifery AND Education AND Competency." The screening of titles and abstracts, as well as the full-text review, was conducted manually by a single reviewer (first author) to determine eligibility for inclusion. Consistency was maintained by applying the predefined inclusion and exclusion criteria throughout the process. Furthermore, the article selection process is illustrated in Figure 1, which outlines the flow of record identification, screening,

and final inclusion based on PRISMA-ScR. Data from eligible studies were synthesized descriptively in a matrix format summarizing author, year, location, study design, research methods, and main findings.

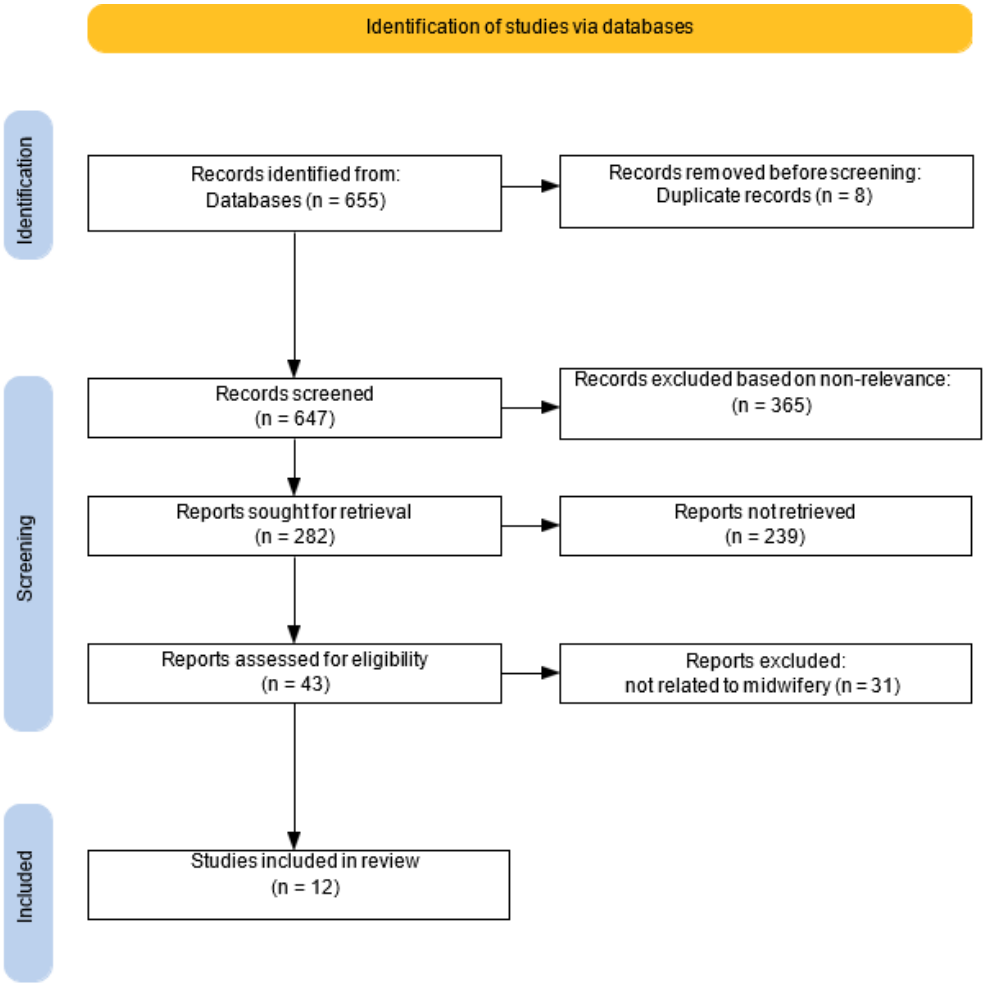

Figure 1. Article Selection Process

According to Figure 1, a total of 655 records were identified through database searching. After removing 8 duplicates, 647 articles remained for screening. During the title and abstract screening, 365 articles were excluded because they were not relevant to Case-Based Learning. Of the 282 records sought for retrieval, 239 were excluded for several reasons: they were review papers, non-English publications, published before 2020, not available in full-text and did not address student competence. A total of 43 full-text articles were assessed for eligibility, and 31 were excluded because they were not specifically related to midwifery education. Finally, 12 studies met all inclusion criteria and were included in the final synthesis. The figure also reflects the relatively limited number of studies focusing specifically on CBL within midwifery education, highlighting a gap in the current body of literature.

RESULTS AND DISCUSSION

The distribution of the included studies based on country of origin and study design is presented in Figure 2. This figure offers a visual overview of how research on Case-Based Learning (CBL) in midwifery education has been conducted across different countries and methodological approaches. By mapping this distribution, the figure helps illustrate the scope and diversity of existing studies.

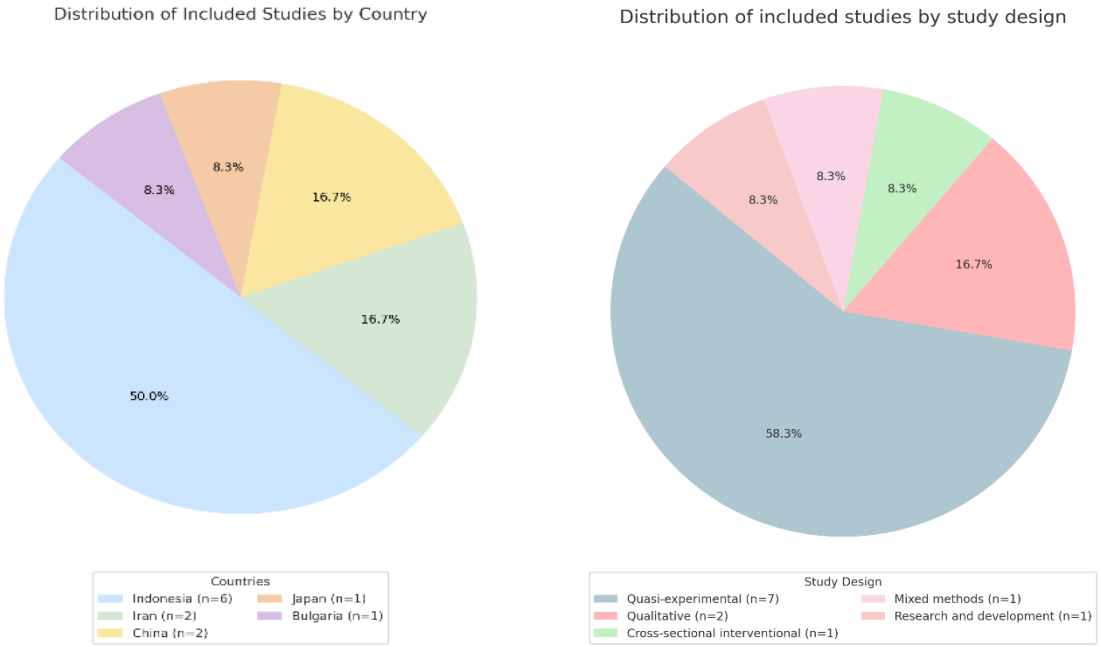

Figure 2. Characteristics of Articles based on Country and Study Design

According to Figure 2, most studies adopted quasi-experimental designs, indicating a preference for structured evaluation of CBL effectiveness. A smaller number used qualitative, or mixed-method approaches, reflecting efforts to explore CBL from broader or contextual perspectives. In terms of origin, Indonesia contributed the largest portion of studies, suggesting national-level interest in pedagogical innovation in midwifery. The presence of studies from China, Iran, Japan, and Bulgaria, although fewer, indicates growing global attention toward CBL. Overall, the figure highlights both the dominance of experimental approaches and the uneven global distribution of research on CBL in midwifery education

A synthesis of the 12 included studies was carried out using a matrix to facilitate comparison of research characteristics and findings. Table 1 presents an overview of each study, including the author, year, country, objectives, participant details, research methods, and key results. This structured summary enables a clearer understanding of the variations and commonalities in how Case-Based Learning (CBL) has been applied within midwifery education.

Table 1. The Characteristics of Selected Studies (n=12)

Author(s)/ Year	Country	Objectives	Participation	Methods	Findings
Katebi et al (2020)	Iran	to create a midwifery emergency curriculum by assessing midwifery students' learning and utilizing clinical Case-Based Crossword Games simulation.	40 midwifery students	a quasi-experimental	Compared to the control group, the intervention group's level of knowledge improved greater. Given that it strengthens their sense of control and learning effectiveness, the students were glad with the usage of educational games and saw them as a joyful, meaningful, and successful method of education.
Halida, E. M., and Oktova, R. (2022)	Indonesia	to determine how using case-based learning techniques affects the learning results of students	88 midwifery students	Quasi-Experimental	When students use case-based learning strategies, their learning results improve.

Author(s)/ Year	Country	Objectives	Participation	Methods	Findings
Iffah, U., and Hudzaifah, H. M. (2022)	Indonesia	To figure out how using the Case-Based Learning (CBL) approach affects midwifery students' critical thinking abilities	46 midwifery students	quasi-experimental	Students' critical thinking abilities before and after the Case-Based Learning (CBL) intervention differ significantly. Following the switch to a case-based learning approach, midwifery students' critical thinking skills improved.
Miranie, S., and Fitrayeni, F. (2022)	Indonesia	to observe the impact of the Case Based Method's use on the Midwifery Care in Pregnancy lecture block 3A.	33 midwifery students	Research and Development (RandD)	The case-based method applied has a significant influence on the level of knowledge of third semester students of class 2020. In comparison with the previous batch, it has a significant effect, which can be seen Class 2020 third semester students' level of knowledge is significantly impacted by the case-based approach used. The rise in student results on the block test indicates that it has a substantial impact when compared to the prior batch. Comparing the degree of knowledge prior to and during the intervention also revealed a noteworthy rise.
Bahrami-Vazir et al (2023)	Iran	to look into how midwifery students' academic zeal is affected by case study-based instruction.	20 midwifery students	cross-sectional interventional controlled study	There was no discernible difference between the intervention and control groups in either phase one or phase two of the trial when comparing the mean academic enthusiasm scores between and within groups.
Lestari et al (2023)	Indonesia	to assess the efficacy of online interprofessional case-based learning (CBL) activities by analyzing students' joint knowledge development.	476 students; consisted of 204 medical students, 39 midwifery students and 233 nursing students	quantitative and qualitative	Through the use of online interprofessional CBL, this study demonstrated that students may participate in collaborative knowledge production in interprofessional education. According to MPARS, students' scores for motivating, cooperative, and constructive activities ranged from ordinary to high. On every MPARS item, nursing students performed the worst when compared to their counterparts in the medical and midwifery fields. The

Author(s)/ Year	Country	Objectives	Participation	Methods	Findings
					MPARS scores of medical students were the highest.
Nunohara et al (2020)	Japan	to investigate how midwifery students' clinical decision-making during CBL is impacted by video and paper case formats.	45 midwifery students	qualitative content analysis	The students in the video groups spoke about customized treatment for the woman and her family members and focused more on psychosocial than biological factors. They did not do electronic fetal heart monitoring or vaginal checks. On the other hand, the students in the paper groups talked about when to conduct vaginal exams and electronic fetal heart monitoring and focused more on biological than psychological factors.
Zhao et al (2024)	China	to assess how the case-based learning (CBL) approach combined with virtual reality (VR) simulation technology (CBL-VR) affects laboratory courses for midwives.	135 midwifery students	quasi-experimental	Following the intervention, the students in the intervention group outperformed the control group in the areas of midwifery case analysis, team operation, and individual operation skill. There was no change in the SDL ability scores of the two student groups before the course was implemented (P ..05. However, the intervention group's SDL ability scores were greater than the control group's after the course intervention, and the intervention group's scores were higher across the board (P < 0.05). Furthermore, over 94% of the students said that the CBL-VR approach fostered the development of all-encompassing skills, such as excitement for autonomous study, independent thought, teamwork, and communication.
Virahaju, M. V., and Ekawat, D. (2023)	Indonesia	to explain the use and advantages of teaching anatomy and physiology to first-year midwifery students using the Case-Based Learning (CBL) approach.	13 midwifery students	Descriptive qualitative	The CBL technique encourages self-confidence and students' interest in dealing with and investigating health phenomena observed by clients while also helping them comprehend anatomy and physiology content in an enjoyable way.

Author(s)/ Year	Country	Objectives	Participation	Methods	Findings
Hristova et al (2021)	Bulgaria	to investigate how clinical thought develops in midwifery and nursing students using the case study technique	296 students from nursing and midwifery bachelor's degrees.	quasi-experimental	The experiment's higher EG (experiment group) rank (EG Mean rank 186,49 vs. CG Mean rank 109,47) indicates that the case study technique is successful in helping nurses and midwives develop clinical thinking.
Farrah Lisa, U., and Wijayanti, F. A. (2021)	Indonesia	to assess the impact of case-based learning videos on midwifery students' motivation to learn	49 midwifery students	quasi-experimental	Age and the MSLQ value components did not significantly differ, according to this study. However, there were notable correlations between parental income and self-efficacy (p=0.02), task value (p=0.044), and intrinsic motivation (p=0.012). Moreover, among the other value components, there was a significant difference between residency and intrinsic motivation (p=0.012). Following the case-based learning video intervention, the average scores for each of the value components of motivation rose. task value and effectiveness, two value components, differed significantly (p-values of 0.026 and 0.000).
Zhang et al (2024)	China	to look at how a group of Chinese midwifery students' critical thinking and ability for self-directed learning were affected by bedside case-based learning.	67 midwifery students	quasi-experimental	Although there were no statistically significant differences (P > 0.05), the overall ratings for critical thinking and self-directed learning ability rose after bedside case-based learning.

According to Table 1, the included studies explored a wide range of objectives, with most focusing on cognitive competence such as knowledge improvement, critical thinking, and clinical reasoning. Several studies applied innovative methods like gamification, virtual reality, or video-based scenarios to enhance student engagement. While the majority of studies reported positive outcomes, including improved learning performance, reasoning, and motivation, one study found no significant difference in academic enthusiasm, indicating that affective impacts may vary by context. The diversity of research focus and outcomes suggests that Case-Based Learning (CBL) can be flexibly adapted to support different learning goals, although its effectiveness still depends on instructional design and implementation. Following data extraction, a quality assessment using the JBI Critical Appraisal Tools was conducted, as shown in Tables 2–4.

Table 2. JBI Critical Appraisal Results for Qualitative Study

Study	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	Score	Judgement
Nunohara et al (2020)	Y	Y	Y	Y	Y	U	N	Y	Y	N	8/10	High Quality
Virahaju, M. V., and Ekawat, D. (2023)	Y	Y	Y	Y	Y	N	N	Y	U	Y	7/10	Moderate Quality
Lestari et al (2023)	Y	Y	Y	Y	Y	U	N	Y	Y	Y	8/10	High Quality
Miranie, S., and Fitrayeni, F. (2022)	Y	Y	Y	Y	Y	N	N	Y	U	Y	7/10	Moderate Quality

Table 3. JBI Critical Appraisal Results for Cross-Sectional Analytic Studies

Study	I1	I2	I3	I4	I5	I6	I7	I8	Score	Judgement
Lestari et al (2023)	Y	Y	Y	Y	U	N	Y	Y	6/8	Moderate Quality
Bahrami-Vazir et al (2023)	Y	Y	Y	Y	Y	Y	Y	Y	8/8	High Quality

Table 4. JBI Critical Appraisal Results for Quasi-Experimental Study

Study	I1	I2	I3	I4	I5	I6	I7	I8	I9	Score	Judgement
Katebi et al. (2020)	Y	Y	Y	Y	Y	Y	Y	U	Y	8/9	High Quality
Halida, E. M., and Oktova, R. (2022)	Y	Y	Y	Y	N	Y	Y	Y	Y	8/9	High Quality
Iffah, U., and Hudzaifah, H. M. (2022)	Y	N	Y	Y	Y	Y	Y	Y	Y	8/9	High Quality
Zhao et al. (2024)	Y	Y	Y	Y	Y	Y	Y	Y	Y	9/9	High Quality
Hristova et al. (2021)	Y	Y	Y	Y	Y	Y	Y	Y	Y	9/9	High Quality
Farrah Lisa, U., and Wijayanti, F. A. (2021)	Y	N	Y	Y	Y	Y	Y	Y	Y	8/9	High Quality
Zhang et al. (2024)	Y	N	Y	Y	Y	Y	Y	Y	Y	8/9	High Quality
Miranie, S., and Fitrayen, F. (2022)	Y	Y	Y	Y	Y	Y	Y	Y	Y	9/9	High Quality

Cognitive Competencies Enhancement

The included studies reveal a consistent trend in reporting cognitive gains among students engaged in Case-Based Learning (CBL). A total of nine studies highlighted improvements in areas such as knowledge acquisition, critical thinking, and clinical reasoning following the implementation of CBL methods. For

instance, (Katebi et al., 2020) utilized case-based crossword games and found increased learning satisfaction and knowledge retention among students. Likewise (Halida and Oktova, 2022), reported higher test scores and comprehension levels after students were taught using structured case discussions.

Other studies echoed similar outcomes, (Safaringga and Fitrayeni, 2022) noted improved understanding of pregnancy care material among third-semester students exposed to CBL, while (Iffah and Hudzaifah, 2022) recorded significant pre- and post-intervention gains in critical thinking scores. In addition to cognitive gains, (Hristova et al., 2021) observed enhanced clinical reasoning in students using a structured case study format. Further, (L. Zhao et al., 2024), integrated virtual reality into CBL and found strengthened independent analysis and problem-solving skills. Similarly, (Virahaju and Ekawati, 2023) noted that CBL supported students in linking physiological concepts with observed clinical phenomena.

Improvement of Performance Skills

Improvements in students' performance and practical skills were reported in two studies. In a study by (Zhao et al., 2024) found that students who engaged in Case-Based Learning combined with virtual reality (CBL-VR) performed significantly better in individual procedures, teamwork, and clinical case analysis. Meanwhile, (Nunohara et al., 2020) observed that the format of case presentation influenced students' decision-making approaches. Students who learned through video-based cases tended to adopt more psychosocial and patient-centered strategies, whereas those using paper-based cases focused more on biomedical procedures. These findings indicate that both the structure and delivery mode of CBL can shape the way students apply practical skills in clinical learning contexts.

Engagement, Motivation, and Collaborative Behavior

The included studies reported that Case-Based Learning (CBL) had a generally positive effect on students' engagement, motivation, and collaborative behavior. For example, (Zhang et al., 2024) found that bedside CBL encouraged students to participate more actively and interact with real-world clinical cases. Similarly, (Zhao et al., 2024) showed that integrating CBL with virtual reality fostered independence and enhanced communication skills among learners. Additional findings highlighted that case presentation formats also shaped engagement; (Nunohara et al., 2020) noted that video-based cases improved concentration, while (Lisa and Wijayanti, 2023) observed increased motivation when students used case-based video learning. In another approach, (Katebi et al., 2020) demonstrated that gamified CBL through crossword puzzles enhanced enjoyment and gave students a sense of accomplishment.

Beyond specific delivery modes, CBL was also shown to strengthen collaboration and active knowledge sharing. Study by (Lestari et al., 2023) reported that online interprofessional CBL allowed students from medicine, nursing, and midwifery to jointly construct knowledge through active participation. Similarly, (Virahaju and Ekawati, 2023) found that CBL activities increased self-confidence and curiosity, particularly in anatomy and physiology classes. Although (Bahrami-Vazir et al., 2023) discovered that academic enthusiasm was not substantially impacted, other studies highlight increased motivation when CBL activities are interactive, varied, and relevant to students' future professional roles. Together, these findings suggest that CBL not only improves individual motivation but also fosters teamwork and a supportive learning environment. The included studies were categorized into three domains based on the reported learning outcomes: cognitive competencies, performance skills, and affective aspects such as motivation and collaboration. Table 5. summarizes the number of studies and key references under each domain.

The findings of this review largely support the premise of CBL as a student-centered approach, though its effectiveness appears shaped by how theory and practice are integrated. CBL places students at the center of the learning process and links theoretical knowledge with practical application, fostering critical thinking and clinical reasoning skills essential for healthcare settings (Cen et al., 2021). This scoping review reveals that CBL significantly contributes to the development of various competencies among midwifery students, encompassing cognitive skills, performance skills, and affective domains such as motivation, engagement, and collaborative behavior. Although the majority of studies support these benefits, an exception was noted, suggesting that CBL's effectiveness may vary depending on context and implementation.

Tabel 5. Summary of Findings

Learning Domain	Findings			
	Significance		Insignificance	
	Articles (n)	References	Articles (n)	References
Cognitive	7	Katebi et al (2020); Halida and Oktova (2022); Safaringga and Fitrayeni (2022); Iffah and Hudzaifah (2022); Hristova et al (2021); L. Zhao et al (2024); Virahaju and Ekawati (2023)	-	
Performance Skills	2	L. Zhao et al (2024); Nunohara et al (2020)	-	
Affective	7	Zhang et al (2024); L. Zhao et al (2024); Nunohara et al (2020); Lisa and Wijayanti (2023); Katebi et al (2020); Lestari et al (2023); Virahaju and Ekawati (2023)	1	Bahrami-Vazir et al (2023)

Evidence across disciplines confirms that CBL strengthens students' cognitive competencies by promoting deeper knowledge and problem-solving skills (Shafique et al., 2024; Wu et al., 2023). In midwifery, this review identified improved retention and clinical reasoning (Halida and Oktova, 2022; Hristova et al., 2021), which align with similar outcomes in nursing and medical education. However, variations across studies suggest that results depend on pedagogical design: flipped or blended CBL tends to yield stronger effects on critical thinking and teamwork than conventional formats (Khattak et al., 2024; Yang et al., 2024; Yao et al., 2023). Qualitative findings also show that while CBL can be stressful, it ultimately empowers learners by enhancing diagnostic reasoning and professional competence in culturally specific contexts (Gholami et al., 2017). Importantly, the facilitator's role remains central, as effective scaffolding keeps discussions focused and helps early learners integrate complex material (Burgess et al., 2021; Muthukrishnan et al., 2019). In line with (Pinto, 2022), the strength of CBL in building cognitive skills lies in its structured format and scaffolded guidance, which help students progress toward independent reasoning

Beyond cognitive development, CBL has also been shown consistently enhances students' performance skills, though the extent of improvement depends on modality and learning context. Technology-supported designs, such as VR or video-based cases, tend to encourage more collaborative and patient-centered decision-making compared with paper-based formats that emphasize biomedical procedures (Nunohara et al., 2020; L. Zhao et al., 2024). In Iran, nursing students described CBL as stressful yet ultimately empowering for developing independence and responding effectively in emergency situations, showing its impact on clinical readiness (Gholami et al., 2017). Evidence from Western contexts highlights that CBL enhances performance by translating problem-solving and creativity into applied clinical tasks, such as completing SOAP notes, where students demonstrate both practical judgment and skill application (Ha and Lopez, 2014; Ridley and Byrom, 2018). Meta-analyses from China further confirm this pattern, showing that CBL significantly improves technical and practical competencies compared with traditional lectures (Dong et al., 2022; Wu et al., 2023). These findings point to the need for educators to adapt CBL formats to local contexts and resources, ensuring that students not only gain technical proficiency but also develop confidence and adaptability for clinical practice.

While these studies underscore the impact of CBL on performance skills, an equally important dimension lies in its ability to foster motivation, engagement, and teamwork. Studies consistently show that interactive and immersive designs, whether through VR, gamification, or video-based cases, capture students' attention and foster more active participation compared to traditional delivery formats (Katebi et al., 2020; Lisa and Wijayanti, 2023; Nunohara et al., 2020; Zhao et al., 2024). Importantly, engagement extends beyond individual motivation: interprofessional and small-group CBL sessions encourage peer-assisted learning, shared responsibility, and collaborative knowledge building (Lestari et al., 2023; Yang et al., 2024). This is also supported by (Al-bedaery et al., 2024), who found that students viewed CBL as the most engaging part of their weekly learning, even online. Structured group discussions also helped them mentally rehearse clinical roles and improve teamwork readiness. In addition, (Thistlethwaite et al., 2012) emphasized that CBL serves as an

effective approach to fostering interprofessional learning among health professional students, allowing students from diverse disciplines to collaborate effectively on complex cases.

However, not all findings are uniformly positive, as (Bahrami-Vazir et al., 2023) reported no significant gains in academic enthusiasm. This outcome may be linked to the use of rare and less relevant case reports, the relatively passive format of article-based discussions, and the stressful clinical environment, all of which limited students' intrinsic motivation. By contrast, (Gholami et al., 2017) found that even though students also described CBL as stressful, the interactive and role-playing design of emergency nursing cases created a positive atmosphere that transformed stress into empowerment, enhancing diagnostic reasoning, stress management, and collaborative learning. These differences suggest that stress in CBL can either undermine or foster engagement depending on whether the learning design is passive and distant, or interactive and contextually relevant. Consistent with this, other studies show that enthusiasm and motivation are strongest when CBL activities are tied to real scenarios and delivered through varied, interactive formats (McLean, 2016; Wu et al., 2023). Similar effects appeared in physiology education, where students reported greater alertness, curiosity, and participation during interactive case-based sessions, with small-group discussions and team-based tasks (Muthukrishnan et al., 2019)

This review indicates that Case-Based Learning (CBL) has great potential to enhance midwifery students' cognitive competence and performance skills. However, these outcomes are most effectively achieved when students are actively motivated and engaged in the learning process. Implementation of CBL may fail to generate meaningful cognitive improvements. Therefore, midwifery educators should adopt interactive CBL strategies, such as video-based cases, virtual reality simulations, or gamified scenarios, to stimulate student interest and deeper learning.

These findings provide important educational implications by highlighting the need for more interactive and student-centered learning approaches in midwifery education to support the development of comprehensive student competencies. Institutional policies should support the use of digital tools and provide structured training for educators, ensuring that CBL is not only applied, but applied in a way that sustains student engagement. National education stakeholders may also consider including interactive CBL as a recommended pedagogical standard to better align midwifery training with the demands of reflective, skill-based maternal care.

Furthermore, this review is subject to several limitations. First, the scope of the literature search was limited to three main databases, which may have excluded relevant studies not indexed in these sources. The exclusion of grey literature may also have led to missed insights. Additionally, the number of included studies was small, particularly those focused specifically on midwifery education. The use of varied assessment instruments across studies made it difficult to compare outcomes consistently. These limitations restrict the generalizability of the findings.

CONCLUSION

This scoping review highlights the benefits of Case-Based Learning (CBL) in midwifery education, particularly its impact on students' cognitive development, performance skills, and affective engagement. When implemented interactively, CBL supports deeper understanding, practical skill development, and collaborative learning, making it highly relevant for preparing midwifery students for real-world clinical environments. To maximize its effectiveness, educators are encouraged to integrate Case-Based Learning (CBL) with digital innovations such as simulation centers, virtual reality, and multimedia case formats. These approaches can enrich learning experiences by strengthening clinical reasoning, increasing motivation, and fostering deeper engagement within safe and immersive environments. When supported by innovative teaching strategies and adequate institutional infrastructure, CBL represents a promising framework for developing competent, confident, and practice-ready midwives. Nevertheless, strengthening the evidence base remains essential. Future research should employ more rigorous designs, including randomized controlled trials and longitudinal approaches, to examine the sustained impact of CBL on students' professional competence and readiness. The development and validation of standardized assessment instruments are also needed to ensure consistency and comparability across educational contexts. Furthermore, examining the influence of contextual factors such as institutional support and educator preparedness, will be critical to optimizing implementation and expanding the potential of digitally integrated CBL in midwifery education.

AUTHOR CONTRIBUTIONS

Jelsita Nova: Conceptualization, Methodology, Data Curation, Validation, Visualization, Project Administration, and Writing - Original Draft; and **Ari Indra Susanti**: Supervision, and Writing - Review and Editing. All authors have read and approved the final version of this manuscript.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are available from the authors upon reasonable request, subject to ethical approval and institutional regulations.

DECLARATION OF COMPETING INTEREST

The authors declare no known financial conflicts of interest or personal relationships that could have influenced the work reported in this manuscript.

DECLARATION OF ETHICS

The authors declare that the research and writing of this manuscript adhere to ethical standards of research and publication, in accordance with scientific principles, and are free from plagiarism.

DECLARATION OF ASSISTIVE TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that generative artificial intelligence (Gen AI) and other AI-assisted tools were used prudently, not excessively, during the research and preparation of this manuscript. Specifically, ChatGPT was utilized for idea brainstorming and Quillbot for refine grammar and writing style. All AI-generated material was reviewed and edited for accuracy, completeness, and compliance with ethical and scholarly standards. The authors accept full responsibility for the final content of the manuscript.

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