

Global Trends in Midwifery Education Research (2006–2025): A Systematic Bibliometric Review

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Abstract: Scholarship on Midwifery Learning Models (MLMs) has expanded over the last two decades, yet no bibliometric synthesis has covered the entire 2006–2025 period; thus, the field’s intellectual roots, thematic shifts, and geographic spread remain incompletely mapped. To chart the intellectual, thematic, and geographic development of MLM research from 2006–2025. Methods: We conducted a systematic bibliometric review of SCOPUS-indexed publications using a structured TITLE-ABS-KEY search, multi-stage screening, and CSV/RIS export. The final corpus (n=456) was analyzed in VOSviewer and Biblioshiny to assess publication growth, citation impact, leading journals and authors, institutional and country networks, and conceptual structures (keyword co-occurrence, thematic mapping, and longitudinal evolution). Output increased after 2012, peaked in 2024 (45 articles), and fell in 2025 (25). Midwifery, Nurse Education Today, and Women and Birth were the most productive journals. Australia and the United Kingdom led productivity and citation impact, alongside other high-income settings. Core thematic clusters centered on reflective practice, clinical competence, continuity of care, and simulation, while AI-supported learning and COVID-19-responsive pedagogy emerged recently. Over time, MLM studies shifted from curriculum and clinical training foundations toward technology-integrated, student-centered, and simulation-enhanced models. This first 20-year bibliometric synthesis integrates structural and conceptual mapping to clarify how MLM scholarship has grown and diversified. Findings highlight the importance of scalable simulation, structured reflective learning, and continuity-of-care approaches, and stress capacity-building, equitable collaboration, and contextual adaptation in underrepresented regions. Future studies should also track implementation outcomes and learner equity as digital tools and AI mature across diverse health systems.

Keywords: Bibliometric Analysis, Learning Models, Midwifery Education, Reflective Practice

A. Introduction

Midwifery education plays a vital role in ensuring safe maternal and neonatal outcomes globally. Over the past two decades, this field has undergone significant pedagogical transformations, influenced by broader developments in health education, technological advancements, and shifting sociocultural expectations surrounding childbirth. Central to these changes is the increasing emphasis on learning models that prioritize continuity of care, active student engagement, reflective practice, and competency-based outcomes. These models aim not only to enhance the clinical readiness of midwifery students but also to support the development of professional identity and the delivery of empathetic, woman-centered care (Arundell et al., 2024; Edgar et al., 2024).

Scholarly interest in the effectiveness of various pedagogical strategies in midwifery education has expanded considerably. These include simulation-based education, virtual and augmented reality, reflective journaling, continuity of care models, peer learning, and cooperative learning interventions (Apartsakun et al., 2025; Capper et al., 2023; Carvalho et al., 2024; McLeod et al., 2025; Rosa et al., 2023). This pedagogical evolution responds to rising demands for maternal healthcare and the global push for high-quality, culturally sensitive, and evidence-based midwifery practice (Beier et al., 2025; Giaxi et al., 2025). While primary studies and several systematic reviews have examined specific Midwifery Learning Models (MLMs) and their outcomes, a macro-level bibliometric synthesis that maps the field's intellectual structure, collaboration networks, and thematic evolution over the past two decades is still absent. Existing evidence therefore remains fragmented at the landscape level: trends in productivity, influential scholars and institutions, dominant journals, geographic contributions, and the rise or decline of key themes have not been comprehensively traced across time. This gap limits the ability of educators and researchers to understand how the field has developed, where innovation is concentrated, and which directions deserve strategic reinforcement.

Bibliometric analysis offers a systematic method to address this gap. By mapping research productivity, collaboration networks, influential sources, and thematic structures, bibliometric tools can provide a macro-level view of the intellectual development within the field. Software platforms like VOSviewer and Biblioshiny allow for visual representation of complex relationships in the literature and can inform pedagogical, curricular, and policy decisions (Aria & Cuccurullo, 2017; van Eck & Waltman, 2017).

Recent studies have emphasized the value of experiential and reflective learning in midwifery education. For example, Sidebotham et al. (2015) demonstrated that continuity of care models significantly improve students' clinical confidence and professional identity formation. Sweet, Bass, Sidebotham, et al. (2019) and Bass et al.

(2017) similarly highlighted the transformative potential of reflective writing and holistic reflection models. Collectively, these studies signal a shift toward student-centered, integrative approaches.

Technological innovations have further broadened the scope of midwifery education. Virtual reality and high-fidelity simulation have been shown to improve students' technical skills, communication, and critical thinking (Carvalho et al., 2024; Rosmaria & Heryani, 2024). These tools offer safe, scalable learning environments and present cost-effective alternatives for institutions with limited resources. Emerging themes such as machine learning, empathy training, and cultural safety further illustrate the pedagogical expansion of midwifery education (Capper et al., 2023; Huang et al., 2025; Tzimourta et al., 2025). The development of digital learning tools, thematic simulations, and reflective supervision strategies has enriched both the content and delivery of midwifery training, signaling the field's responsiveness to evolving societal needs and educational possibilities. Nevertheless, several critical gaps persist. First, many studies focus narrowly on evaluating specific interventions without situating their findings within broader research trajectories. For example, while the benefits of cooperative learning (Rosa et al., 2023) and reflective practices (Bass et al., 2017; Fleming et al., 2017) are well-documented, few studies have synthesized their evolution across time and geography. Second, limited efforts have been made to identify the most productive scholars, journals, and collaborative networks, which are essential for academic alignment and strategic research planning. Moreover, although simulation and digital learning tools are increasingly documented, their adoption patterns across institutions and countries remain unclear. For instance, while the UK and Australia have shown strong output in simulation-based education (Bradfield et al., 2020; L. Kuliukas, Bayes, et al., 2021), comparative global data are lacking. Importantly, no study to date has conducted a comprehensive bibliometric review covering the full 2006–2025 period an era marked by major technological and curricular shifts in midwifery education.

This study aims to conduct a bibliometric analysis of research on Midwifery Learning Models published between 2006 and 2025, utilizing data extracted from the SCOPUS database. The primary objective is to systematically map the intellectual structure, thematic evolution, and key contributors to the field. The novelty of this study lies in its broad scope and methodological integration of multiple bibliometric tools to uncover latent trends and research clusters. By offering a 20-year longitudinal perspective, the study provides essential insights for educators, researchers, and policymakers aiming to advance midwifery education through informed, evidence-based strategies. The study specifically addresses five research questions: (1) How has research output on Midwifery Learning Models evolved over the past two decades? (2) Which journals and authors have made the most significant contributions to the field? (3) Which countries and institutions have exerted the most influence? (4) What are the dominant and emerging research themes? (5) What is the

current structure and longitudinal evolution of the research landscape?

B. Methods

Materials

This study adopted a bibliometric mapping approach to investigate global research trends on the Midwifery Learning Model (MLM) from 2006 to 2025. The primary data source was the SCOPUS database (<https://www.scopus.com>), selected for its comprehensive coverage of peer-reviewed literature, rigorous indexing standards, and robust bibliographic metadata. SCOPUS is widely recognized in bibliometric research for providing high-quality information on author affiliations, citation counts, keywords, abstracts, and full publication records (Visser et al., 2021). Three analytical tools were employed to support data processing and visualization. Microsoft Excel was used for initial data screening and tabulation of descriptive statistics. VOSviewer facilitated the construction and visualization of bibliometric networks, including co-authorship, keyword co-occurrence, and citation mapping (van Eck & Waltman, 2017). Additionally, Biblioshiny a web-based application within the Bibliometrix R-package was utilized for advanced bibliometric computations and conceptual structure analysis (Aria et al., 2024; Aria & Cuccurullo, 2017). Together, these tools enabled the transformation of raw metadata into interpretable visual and quantitative outputs.

Sample Preparation

The dataset was compiled through a structured search query conducted on July 23, 2025. A targeted keyword search was performed using the TITLE-ABS-KEY field in SCOPUS with the term "Midwifery Learning Model." The initial query yielded 486 records. To ensure relevance and consistency, a multi-phase screening process was implemented. First, the publication year range was restricted to 2006–2025. Second, document types were filtered to include only articles, conference papers, book chapters, and reviews. This step reduced the dataset to 464 records. Third, only documents published in English were retained, resulting in a final dataset of 456 documents. The selected documents were exported in both comma-separated value (CSV) and research information system (RIS) formats to facilitate compatibility with the analytical software. All metadata were manually reviewed for completeness and accuracy before being imported into the analysis platforms. The selection process was documented using a PRISMA flow diagram (Figure 1) to ensure transparency and methodological rigor.

Experimental Set-Up

The analytical workflow was structured into three phases: data preparation,

bibliometric analysis, and visualization. Initially, the metadata were examined in Microsoft Excel for deduplication, basic descriptive statistics (e.g., publication counts, document types), and citation analysis. Subsequently, the curated dataset was uploaded into VOSviewer for network-based analysis. VOSviewer's clustering algorithm was employed to generate visual maps of keyword co-occurrence, co-authorship networks, institutional collaborations, and country-level contributions, providing insights into dominant themes and scholarly interconnections (van Eck & Waltman, 2017).

In parallel, Biblioshiny was used to conduct in-depth conceptual mapping. Key analyses included thematic evolution via Sankey diagrams, factorial analysis through Multiple Correspondence Analysis (MCA), and dendrogram clustering for topic taxonomy. These analyses offered multidimensional views of both structural and dynamic features of the MLM research landscape (Aria et al., 2024; Aria & Cuccurullo, 2017).

Parameters

To capture the scientific, conceptual, and collaborative aspects of MLM research, a broad set of bibliometric parameters was examined:

1. Publication productivity: Annual publication output from 2006 to 2025.
2. Citation impact: Total citations, average citations per document, and identification of highly cited works (e.g., Sidebotham, 2015, with 297 citations).
3. Authorship and institutional productivity: Contributions of leading authors and institutions, including Griffith University and Monash University, which produced 29 and 28 publications, respectively.
4. Journal analysis: Identification of dominant journals, including *Midwifery*, *Nurse Education Today*, and *Women and Birth*, based on frequency and citation impact.
5. Geographic distribution: Analysis of both single-country (SCP) and multi-country (MCP) publications, with a focus on countries such as the United Kingdom and Australia.

Conceptual mapping was conducted to reveal foundational and emerging themes, such as "education," "reflection," "clinical competence," "simulation," "critical thinking," and "machine learning."

Statistical Analysis

The study employed both descriptive and inferential bibliometric techniques. Descriptive statistics including frequencies, growth rates, and citation averages were calculated using the Biblioshiny interface, with bibliometric laws such as Lotka's Law (author productivity) and Bradford's Law (journal concentration) applied where appropriate. VOSviewer was used for network-based statistical modeling, enabling clustering and normalization for visual representation. Analyses included co-

authorship, co-citation, and bibliographic coupling to uncover collaboration patterns and intellectual linkages (Nurfadilah, et al., 2025). Conceptual structure analysis was conducted using MCA in Biblioshiny, which allowed the projection of keywords and documents into low-dimensional spaces, revealing latent thematic structures. Thematic maps were generated to classify themes into four quadrants motor, niche, emerging, and basic based on centrality and density (Aria et al., 2024). Thematic progression over time was tracked using evolution diagrams and time-sliced topic mapping. This comprehensive analytical framework enabled a robust and reproducible exploration of midwifery education literature, aligned with emerging standards in bibliometric science (Bancong, 2024; Nanda et al., 2025).

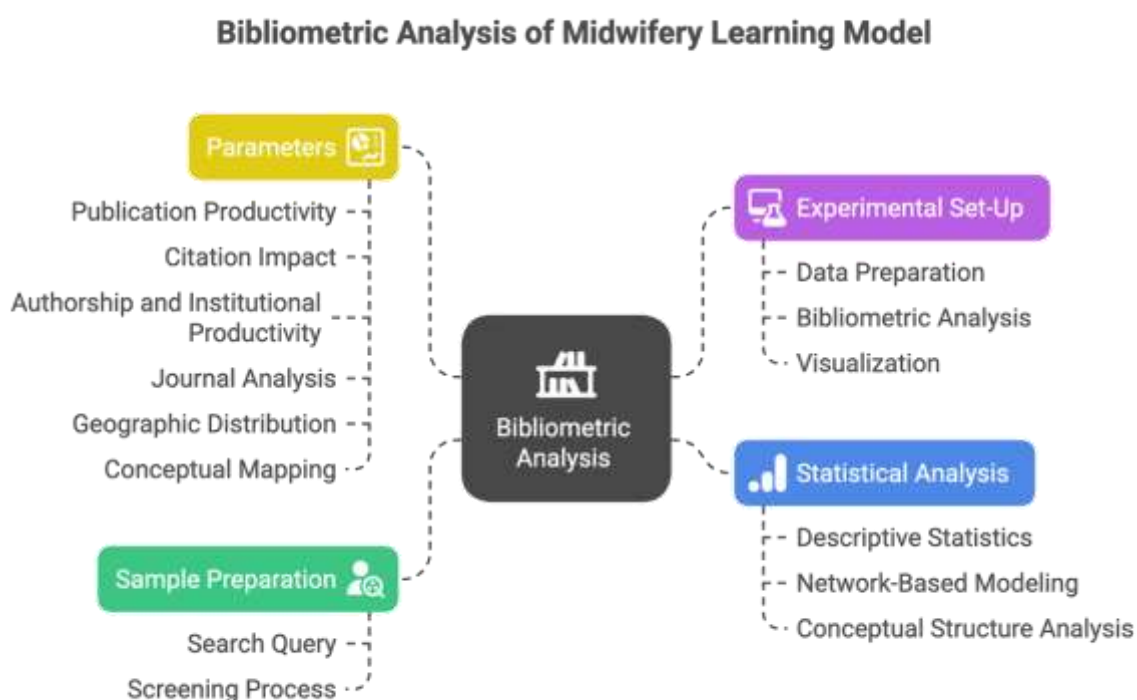


Figure 1. Bibliometric Analysis of Midwifery Learning Model Made with Napkin

C. Results and Discussion

Results

Trends in Annual Publications and Citations

Figure 2 displays the yearly distribution of publications related to the Midwifery Learning Model (MLM) from 2006 to 2025, as retrieved from the SCOPUS database. The data reveal a steadily increasing trend in research output over the two-decade period, albeit with some fluctuations. From just five articles in 2006, publication volume rose moderately until 2007, followed by a plateau between 2008 and 2011. A notable increase occurred from 2012 onwards, reflecting heightened scholarly attention. The peak was reached in 2024 with 45 articles published. However, a

significant drop occurred in 2025, with only 25 articles documented, suggesting potential influences such as research funding cycles or publication delays.

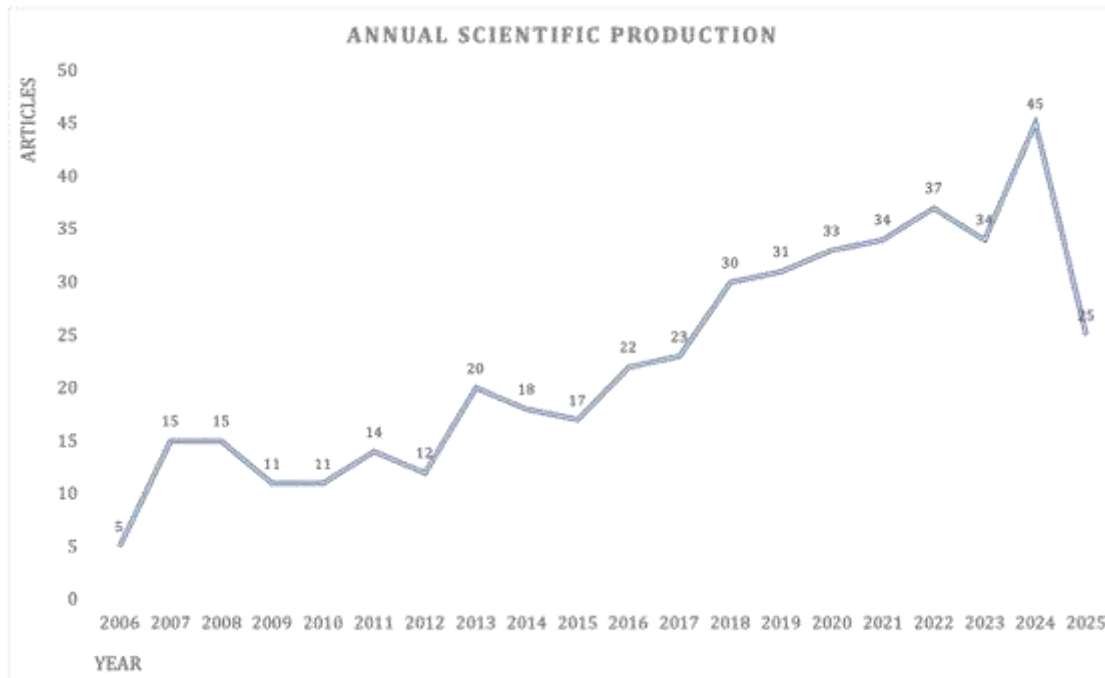


Figure 2. Number of Articles Published Each Year from 2006 to 2025

Most Cited Articles

Table 1. Highly Cited Research of Midwifery Learning Model

Rank	Title	Year	Source title	Cited by	Authors
1	Midwifery Students' Experiences of An Innovative Clinical Placement Model Embedded Within Midwifery Continuity of Care in Australia	2015	Midwifery	297	Sidebotham M
2	Developing Reflective Capacities in Midwifery Students: Enhancing Learning Through Reflective Writing	2019	Women and Birth	137	Sweet L
3	Development of A Model of Holistic Reflection to Facilitate Transformative Learning in Student Midwives	2017	Women and Birth	127	Bass J

4	Critical Thinking Evaluation In Reflective Writing: Development And Testing Of Carter Assessment Of Critical Thinking In Midwifery (Reflection)	2017	Midwifery	122	Creedy DK
5	Using The Five Senses of Success Framework To Understand The Experiences of Midwifery Students Enroled In An Undergraduate Degree Program	2015	Midwifery	119	Gamble J
6	Access, Boundaries And Confidence: The Abc of Facilitating Continuity of Care Experience in Midwifery Education	2014	Women and Birth	78	Mckellar L
7	Midwifery Students': Developing An Understanding of Being 'With Woman'--A Qualitative Study	2020	Midwifery	40	Bradfield Z
8	Student Midwives' Perception of Peer Learning During Their Clinical Practice In An Obstetric Unit: A Qualitative Study	2021	Nurse Education Today	38	Barimani M
9	Graduating Midwifery Students' Preferred Model Of Practice And First Job Decisions: A Qualitative Study	2021	Women and Birth	35	Kuliukas L
10	Advocacy, Accountability And Autonomy; The Learning Intention Of The Midwifery Student Continuity Of Care Experience	2023	Nurse Education In Practice	31	Kinsman L

Table 1 summarizes the ten most highly cited articles on MLM, highlighting influential contributions in the field. (Sidebotham et al., 2015) leads with 297 citations for work on clinical placement models embedded in continuity of care. (Sweet, Bass, & Graham, 2019), focusing on reflective writing, follows with 137 citations. (Bass et

al., 2017) ranks third with 127 citations for research on holistic reflection in transformative learning. Additional impactful studies include those by (Fleming et al., 2017), (Wilkes et al., 2015), and (McKellar et al., 2014), collectively reinforcing the thematic prominence of reflective practice, continuity of care, and student-centered learning within MLM scholarship.

These citation trends underline a strong interest in experiential and reflective learning methodologies, particularly from 2014 onwards. Recent studies by (Zwedberg et al., 2021), (L. Kuliukas, Bayes, et al., 2021), and (Tierney et al., 2023) further emphasize emerging pedagogical orientations that prioritize student experience and emotional intelligence in midwifery education.

Top Journals in MLM Research

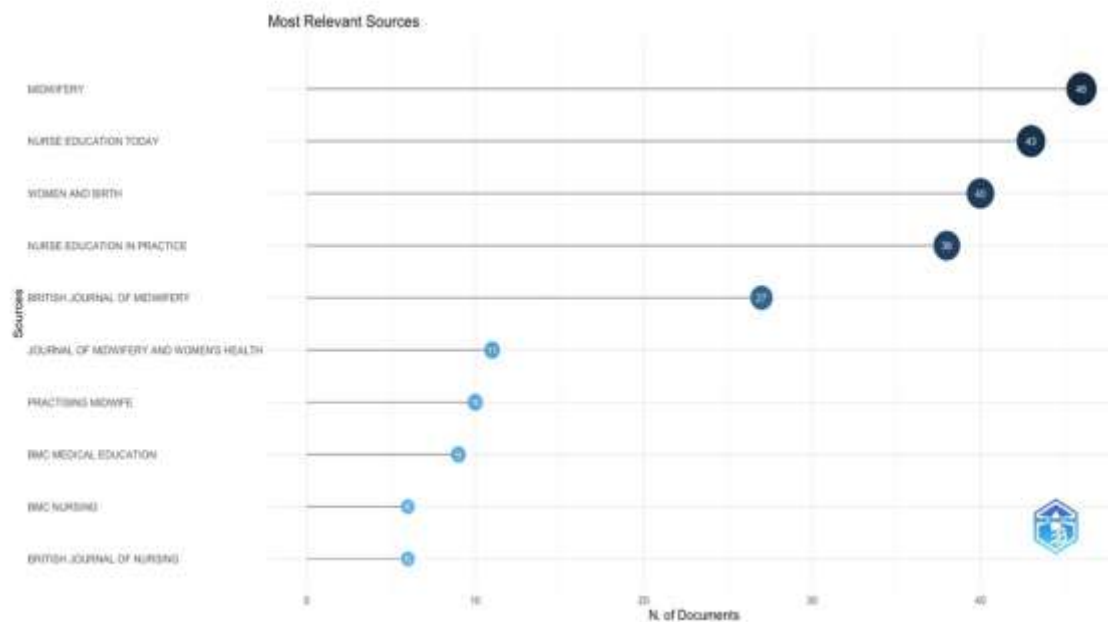


Figure 3. Most Relevant Sources

Figure 3 presents the most relevant publication sources in the MLM domain. *Midwifery* is the most prolific and cited journal, contributing 46 documents and receiving 1,096 citations. *Nurse Education Today* follows with 43 publications and 929 citations, while *Women and Birth* and *Nurse Education in Practice* contributed 40 and 38 documents, respectively. These journals serve as key platforms for disseminating research aligned with pedagogical advancements in midwifery education.

Table 2. 10 Most Source Titles that Contribute to the Publication on Midwifery Learning Model

Rank	Relevant Sources	Documents	Citations	Total link strength
1	Midwifery	46	1096	61
2	Nurse Education Today	43	929	7
3	Women and Birth	40	485	49
4	Nurse Education In Practice	38	552	32
5	British Journal Of Midwifery	27	178	22
6	Journal of Midwifery and Women's Health	11	149	1
7	Practising Midwife	10	28	5
8	BMC Medical Education	9	107	2
9	BMC Nursing	6	71	2
10	British Journal of Nursing	6	49	3

Table 2 lists the top ten contributing journals, including *British Journal of Midwifery* (27 documents), *Journal of Midwifery and Women's Health* (11), and others such as *BMC Medical Education* and *Practising Midwife*, indicating a diversity of publication outlets with varying degrees of specialization and reach.

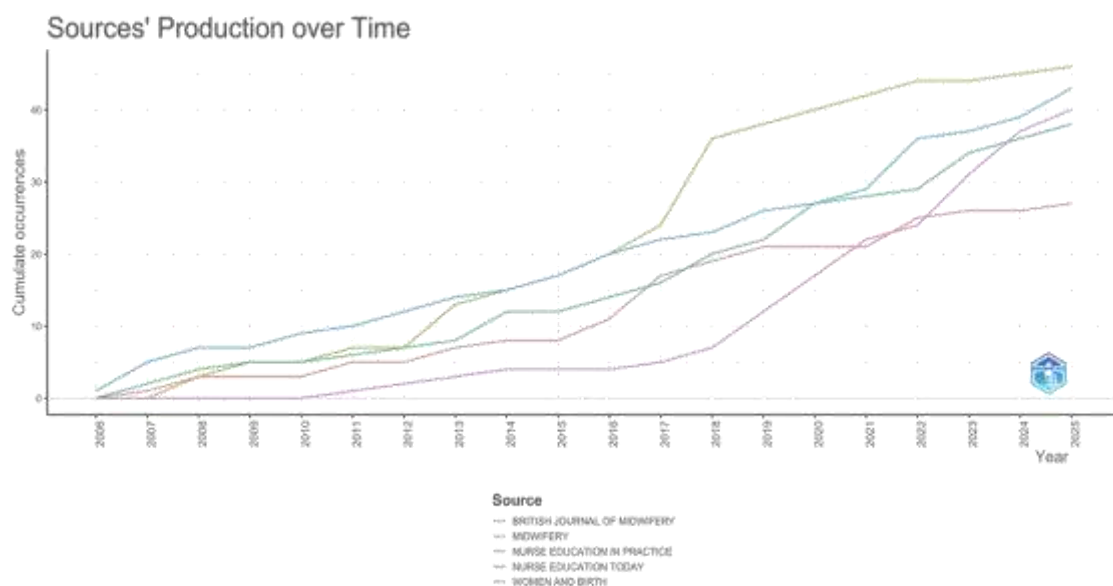


Figure 4. Sources' Production Over Time

Figure 4 illustrates longitudinal production patterns among the top five journals. *Midwifery* demonstrates a consistent upward trajectory, with pronounced growth after 2014. Similar trends are observed for *Nurse Education Today* and *Women and Birth*, whereas *Nurse Education in Practice* exhibits significant expansion from 2015 onward.

These patterns affirm the journals' sustained relevance in the evolving midwifery education discourse.

Leading Authors in the MLM Domain

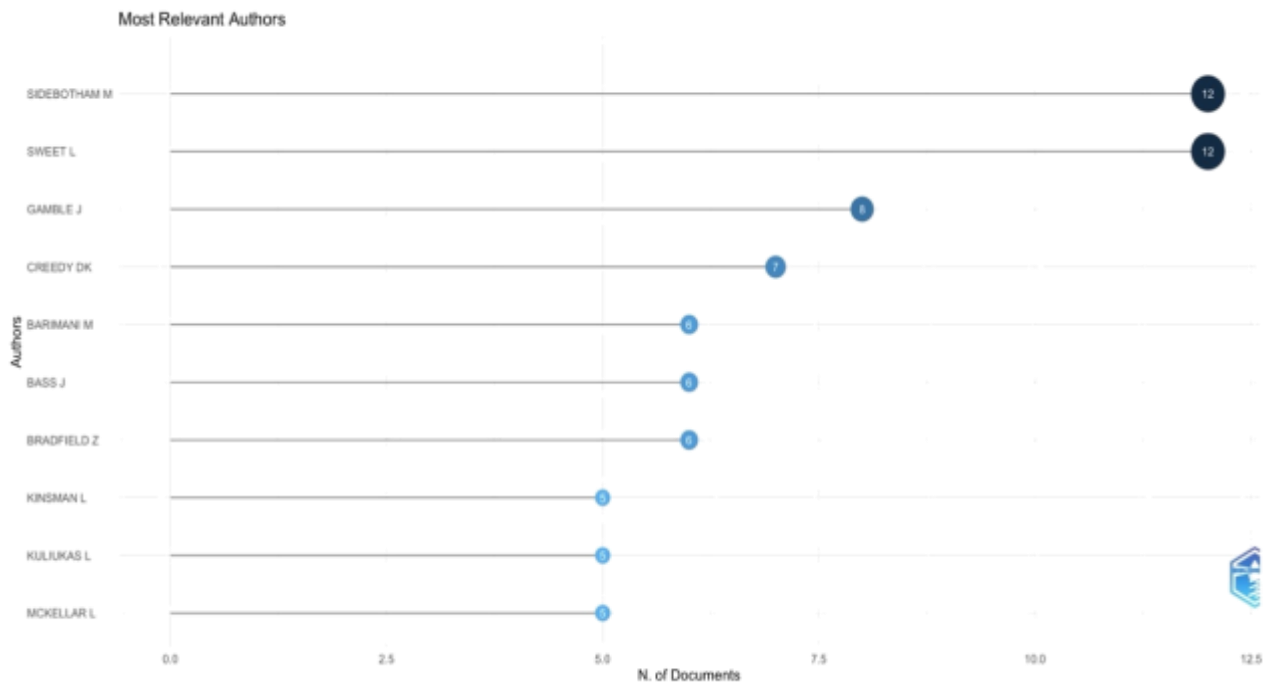


Figure 5. Most Relevant Authors

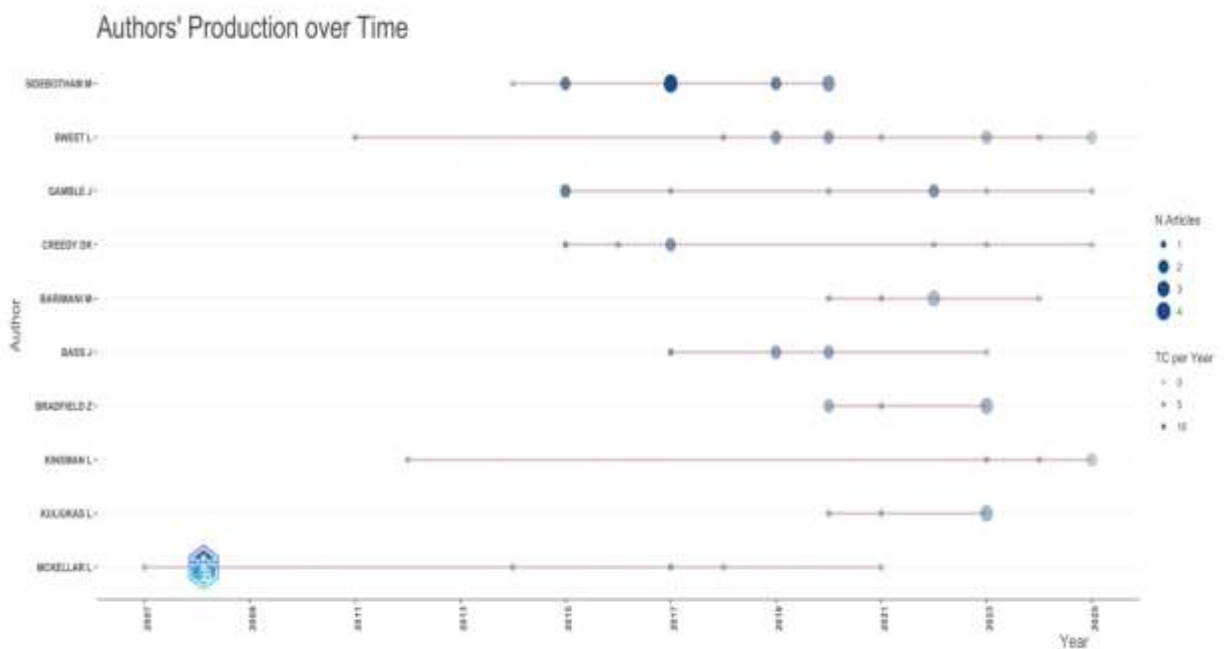


Figure 6. Authors' Production Over Time

Figures 5 and 6 highlight the most productive and influential authors. (Sweet, Bass, Sidebotham, et al., 2019) are the top contributors, each authoring 12 publications. (Gamble et al., 2022; Gamble & Creedy, 2009) follows with eight publications, while (Barimani et al., 2018, 2022; Bass et al., 2017, 2020; Bradfield et al., 2020; Bradfield, 2021; Bradfield et al., 2022; Tickle et al., 2023) contributed six documents each. (L. Kuliukas et al., 2015, 2020, 2023; L. Kuliukas, Bayes, et al., 2021; L. Kuliukas, Hauck, et al., 2021; L. J. Kuliukas et al., 2016; McKellar et al., 2024, 2014, 2018, 2021; McKellar & Graham, 2017; Tierney et al., 2023, 2024, 2025) each authored five publications.

Temporal analysis shows that (Bass et al., 2020; Sweet, Bass, Sidebotham, et al., 2019) maintained steady productivity over time, reinforcing their positions as thought leaders in the field. Other contributors, such as (Bass et al., 2017), exhibit more concentrated publication activity from 2017 onwards, correlating with increased attention to reflective learning and experiential methodologies.

Institutional and Geographical Distribution

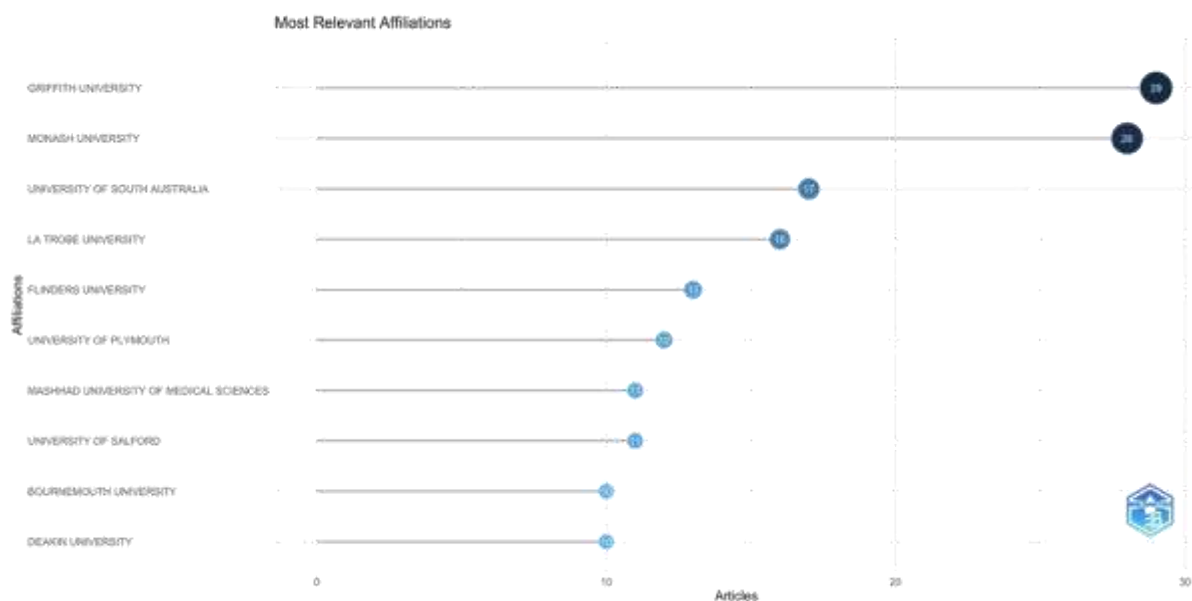


Figure 7. Most Relevant Affiliations

Figure 7 presents the most active institutions in MLM research. Griffith University and Monash University lead with 29 and 28 publications, respectively. Other top contributors include the University of South Australia (17), La Trobe University (16), and Flinders University (13), underscoring the dominance of Australian institutions in the field. Additional institutions from the UK, Iran, and Sweden also demonstrate consistent scholarly output.

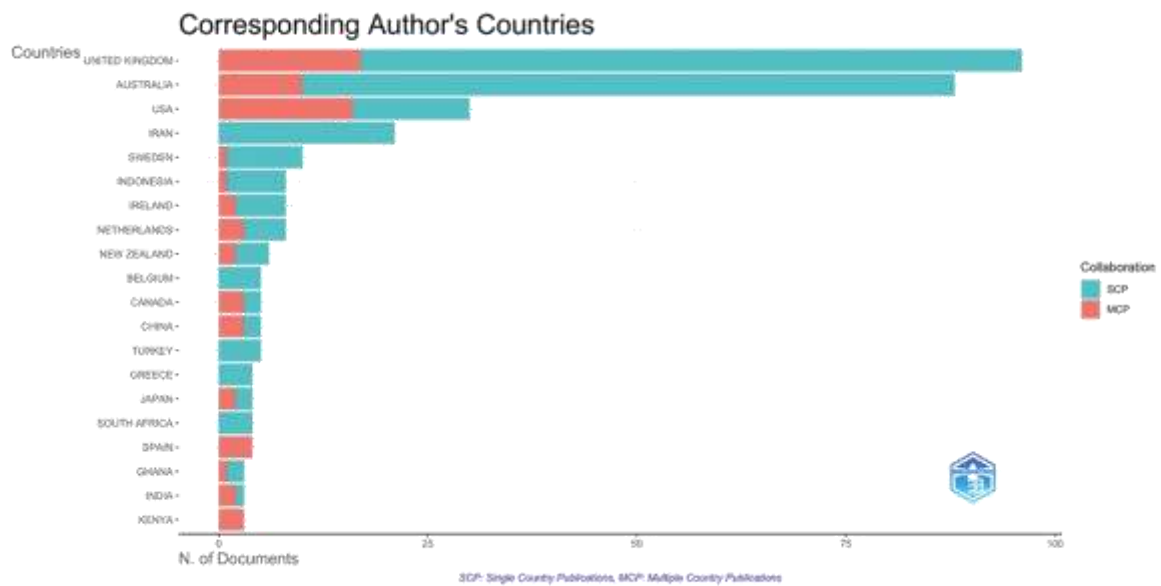


Figure 8. Corresponding Author's Counties: Geographical Collaboration: Single-Country and Multiple-Country Publications

Figure 8 maps the geographical distribution of corresponding authors. The United Kingdom ranks highest in total publications, followed by Australia and the United States. While a large share of the publications are single-country (SCP), there is also evidence of robust multi-country collaborations (MCP), particularly involving Australia, the UK, and the USA. Countries such as Iran, Sweden, Indonesia, and Ireland also exhibit meaningful contributions, signaling the increasing global engagement in MLM research.

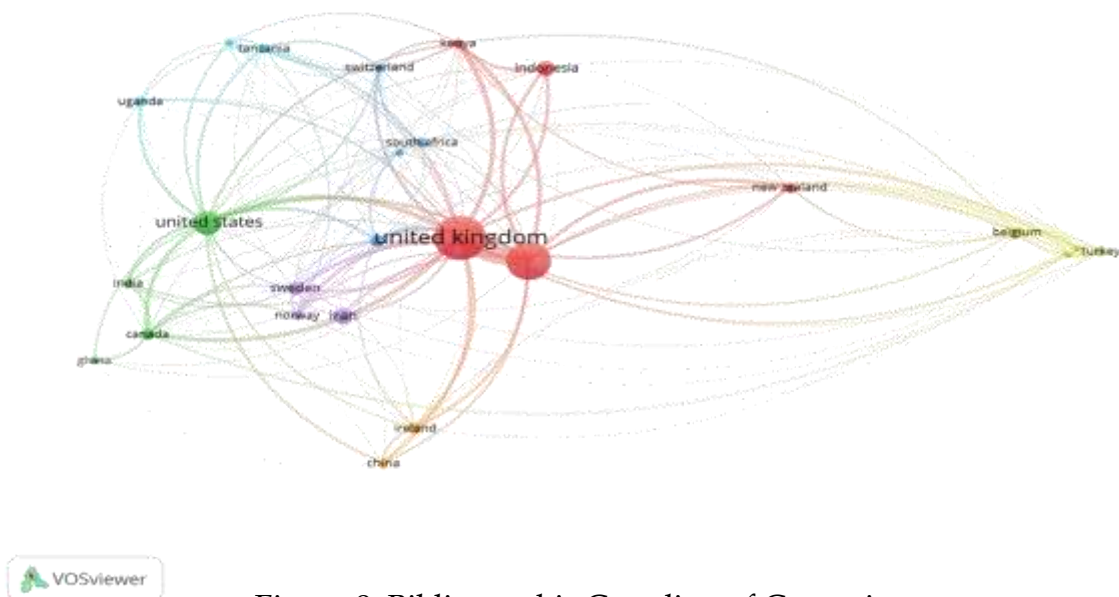


Figure 9. Bibliographic Coupling of Countries

Figure 9 displays bibliographic coupling networks among countries, with the UK serving as a central hub connected to Australia, the USA, Canada, New Zealand, and several European nations. This indicates strong international collaboration patterns centered on English-speaking and high-income countries.

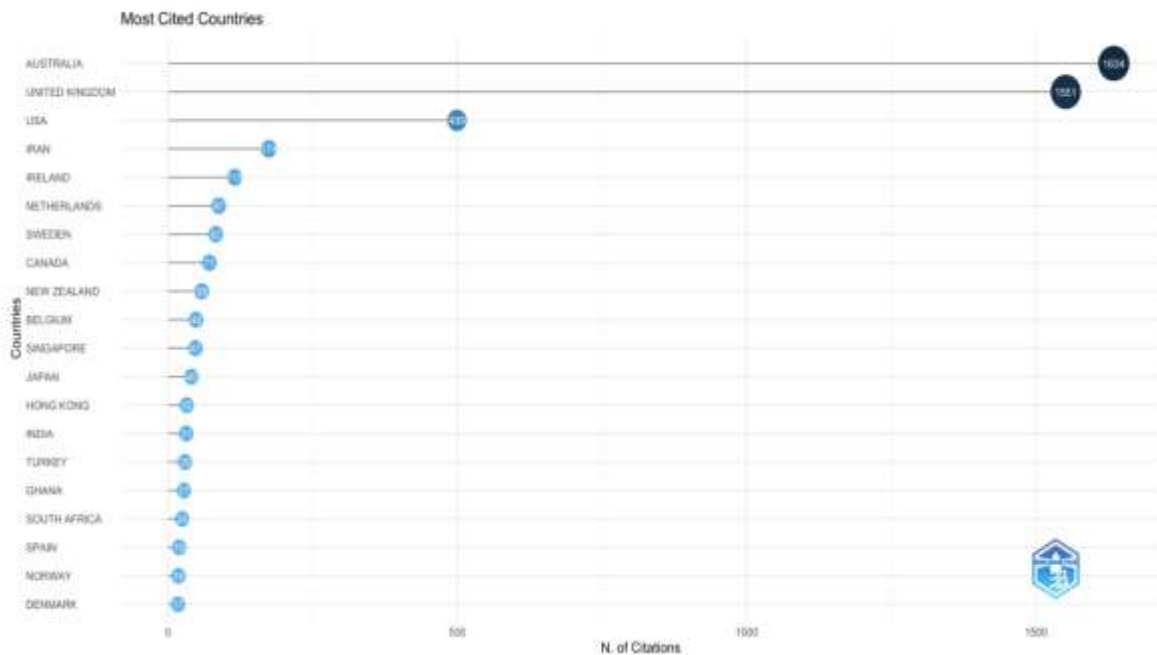


Figure 10. Most Cited Countries

Figure 10 identifies the most cited countries in MLM literature. Australia leads with 1,634 citations, followed by the United Kingdom with 1,551 citations. The USA, Iran, Ireland, and the Netherlands also demonstrate moderate citation impacts, pointing to their growing scholarly visibility and influence.

Author-Country-Affiliation Relationships

Figure 11 illustrates a three-field plot depicting the interrelationships between authors, their countries, and affiliations. Prominent authors such as (Bass et al., 2020; Sweet, Bass, Sidebotham, et al., 2019), and (Barimani et al., 2018, 2022; Barimani & Vikström, 2018) are prominently affiliated with institutions in Australia and Sweden, emphasizing focused research clusters within specific geographical and institutional contexts. Notably, topics such as midwifery education, continuity of care, reflective practices, and qualitative research are recurrent, highlighting key areas of scholarly interest within the international midwifery education research community.

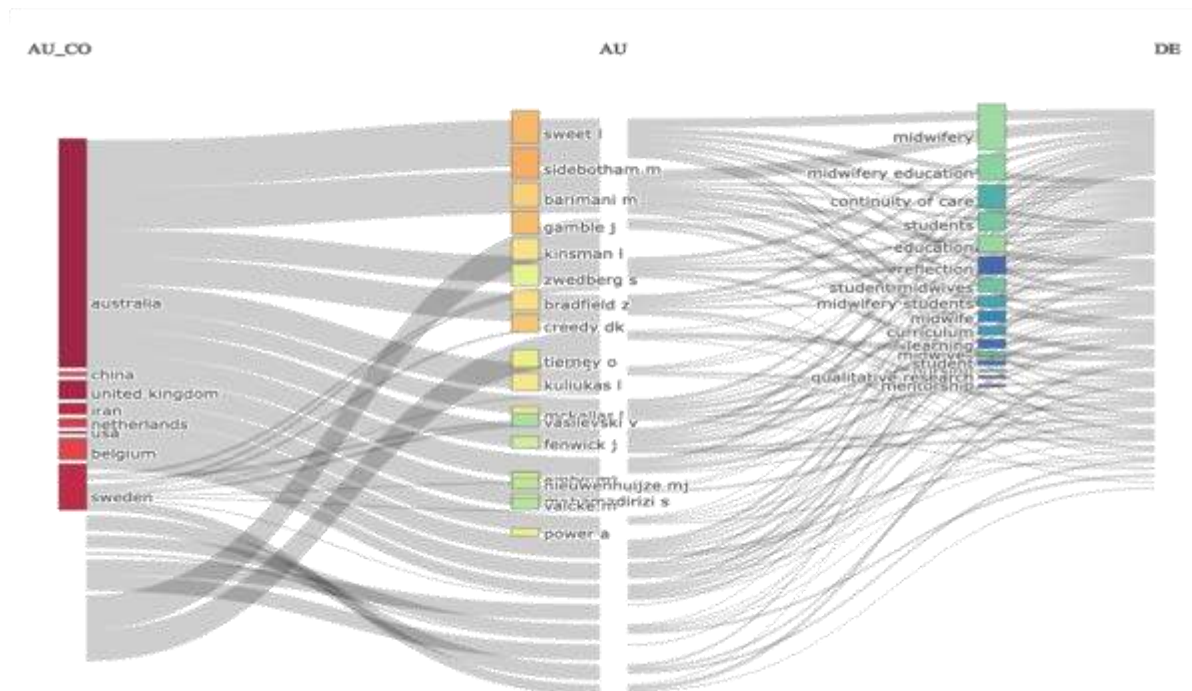


Figure 11. Three Field Plot of Authors, Author Country, and Affiliation

Figure 11 offers a three-field plot illustrating the connections between authors, countries, and affiliations. Authors such as (Bass et al., 2020; Sweet, Bass, Sidebotham, et al., 2019), and (Barimani et al., 2018, 2022; Barimani & Vikström, 2018) are linked to prominent institutions in Australia and Sweden. These connections highlight the formation of regional research clusters focused on midwifery education, with a recurring emphasis on reflective practice, qualitative methodologies, and continuity of care.

Keyword Analysis and Thematic Trends

Figure 12 depicts a keyword co-occurrence network, revealing dominant themes such as “education,” “nursing education,” “learning,” “midwifery student,” and “human experiment.” Keywords like “simulation,” “critical thinking,” “continuity of care,” and “maternal care” also appear prominently, signaling a balanced focus on technical proficiency and holistic care approaches. Emerging terms such as “COVID-19” and “machine learning” reflect adaptive responses to global health disruptions and digital innovation.

Figure 13 presents a treemap of author keywords, showing high frequencies for “human” (362), “humans” (305), “midwife” (280), and “education” (275). These keywords underline the consistent core themes of the MLM literature, including gender, health professions education, and pedagogical design. Additional keywords such as “qualitative research,” “curriculum,” and “psychology” illustrate thematic breadth and interdisciplinary engagement.

Evolving Research Topics and Themes

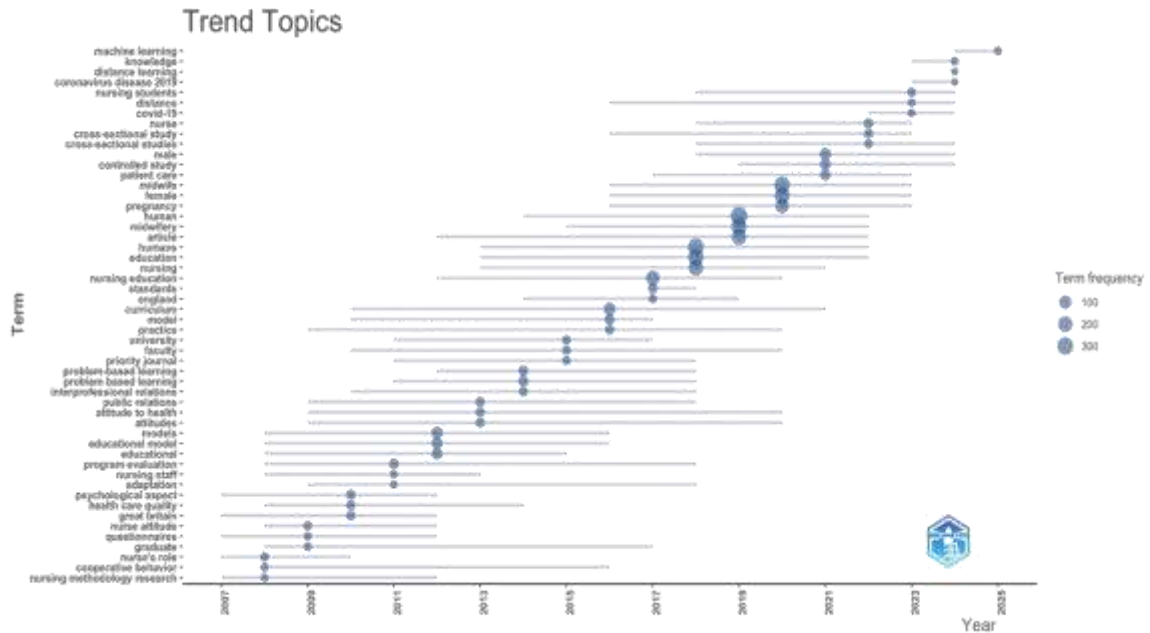


Figure 14. Trend Topics of Midwifery Learning Model

Figure 14 identifies trending topics from 2007 to 2025. While earlier years emphasized “curriculum” and “nursing methodology research,” recent topics include “simulation,” “continuity of care,” “interprofessional relations,” “critical thinking,” and technologically relevant terms such as “machine learning” and “COVID-19.”

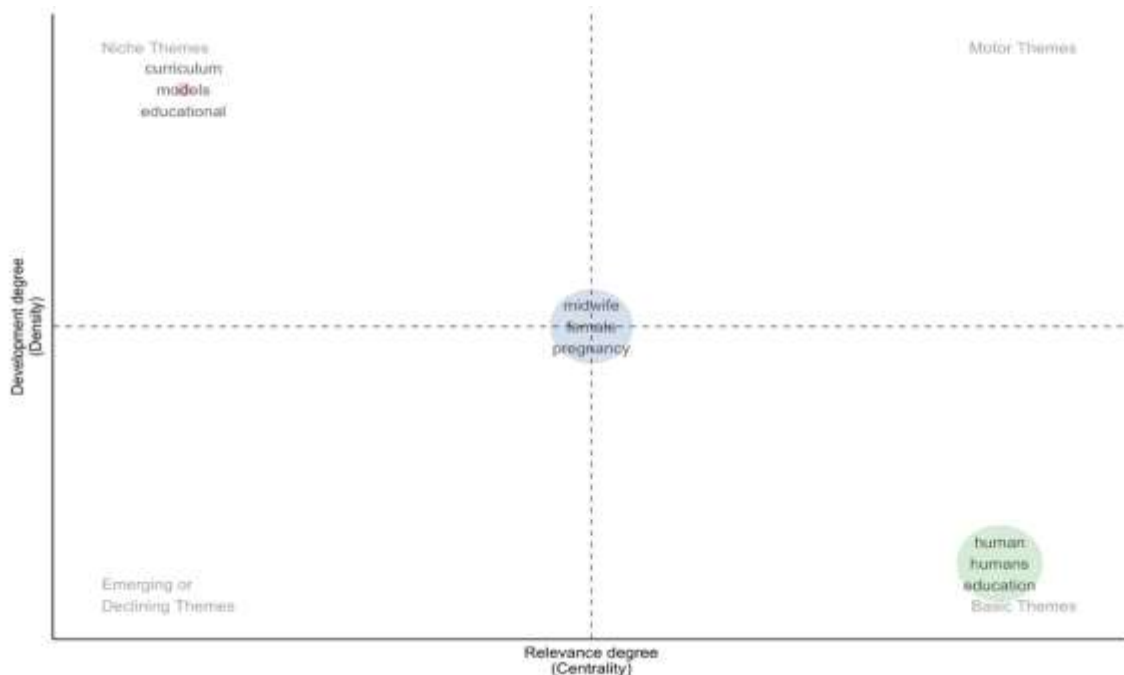


Figure 15. Thematic Map of Midwifery Learning Model

Figure 15 provides a thematic map classifying concepts by centrality and density. Core themes such as “education,” “female,” and “midwife” are identified as central and well-developed, while “educational models” and “curriculum” are marked as niche – indicating specialized but less broadly integrated research areas.

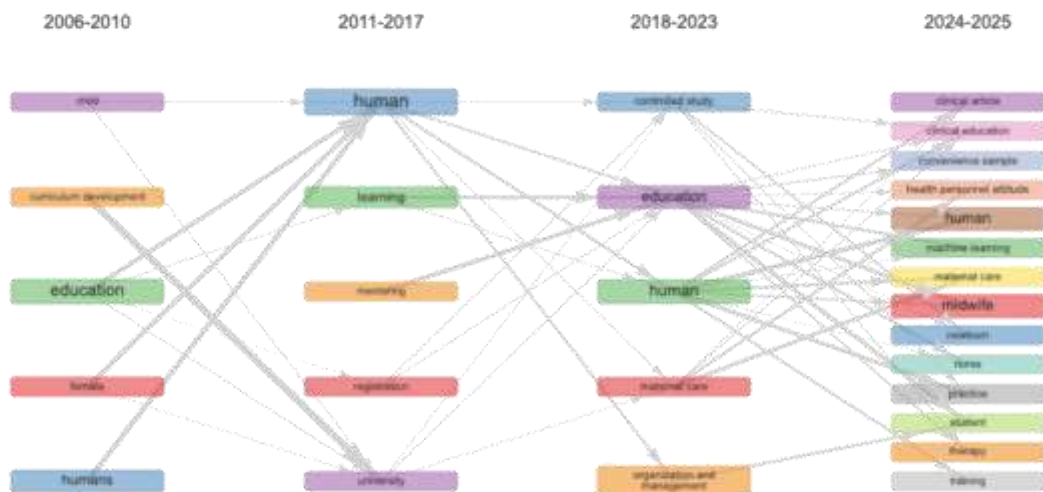


Figure 16. Thematic Evolution of Midwifery Learning Model

Figure 16 presents a timeline of thematic evolution, illustrating a shift from foundational concepts like “curriculum development” toward emerging focuses on “clinical education,” “maternal care,” and digital methodologies such as “machine learning.” This progression underscores the increasing complexity and interdisciplinarity of MLM scholarship.

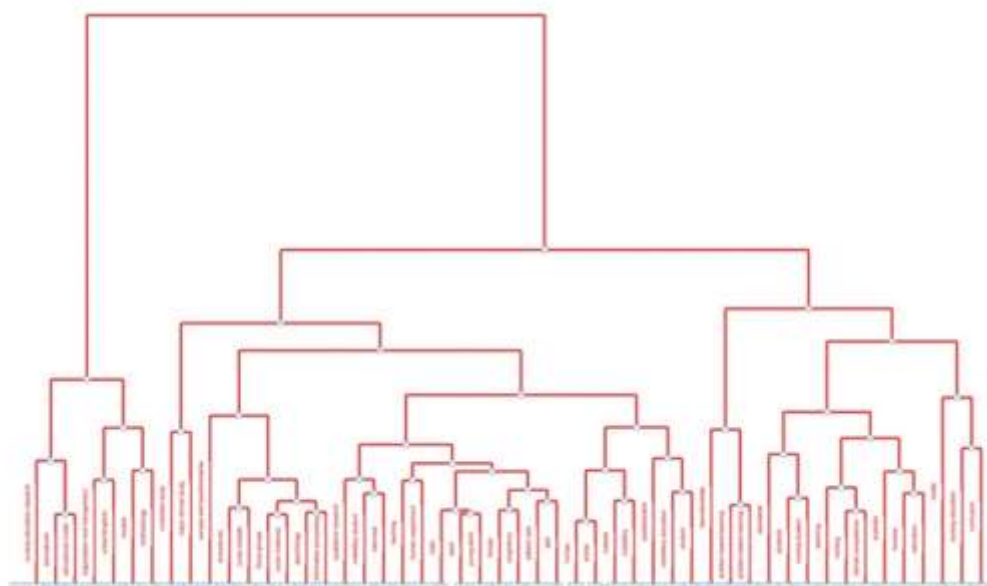


Figure 17. Topic Dendrogram

Figure 17 shows a dendrogram that clusters topics into interconnected groups. Central clusters include “human,” “education,” “clinical competence,” and “simulation,” reflecting the integration of pedagogical and clinical domains. Other clusters, such as “problem-based learning,” “psychology,” and “questionnaires,” suggest a focus on assessment strategies and learning psychology.

Discussion

This bibliometric analysis of Midwifery Learning Model (MLM) research from 2006 to 2025 reveals a dynamic and maturing academic field characterized by increasing publication volume, evolving thematic priorities, and expanding international collaboration. The marked growth in research output, particularly peaking in 2024, reflects a sustained global interest in advancing pedagogical frameworks that underpin midwifery education. These developments align with broader transformations in healthcare education that emphasize competency-based learning, reflective practice, technological integration, and culturally responsive care (Arundell et al., 2024; Beier et al., 2025; McLeod et al., 2025).

Temporal trends suggest a triphasic pattern in the development of MLM literature: an initial phase of low productivity (2006–2011), a growth phase (2012–2019), and a maturity phase (2020–2024). This progression corresponds to global policy shifts, such as the World Health Organization’s advocacy for midwifery education as a strategy to reduce maternal mortality, as well as increasing awareness of the need for structured, evidence-based educational models (Giaxi et al., 2025). The high citation impact of key studies, such as (Sidebotham et al., 2015) and (Sweet, Bass, Sidebotham, et al., 2019), underscores the foundational role of continuity of care and reflective learning in shaping educational discourse.

The dominance of specialized journals *Midwifery*, *Nurse Education Today*, and *Women and Birth* underscores the establishment of targeted scholarly platforms that support MLM discourse. These journals not only host a high volume of publications but also exert strong citation influence, indicating their central role in shaping pedagogical research trajectories (see Table 2 and Figure 3). The thematic emphasis on student-centered learning, reflective practice, and simulation echoes the priorities highlighted across highly cited works (Apartsakun et al., 2025; Bass et al., 2017; Bradfield et al., 2020). Authorship patterns indicate the presence of sustained intellectual leadership within the field. (Sweet, Bass, Sidebotham, et al., 2019) stand out as key contributors with consistent scholarly output over nearly a decade, particularly in the domains of reflective pedagogy and clinical placement (Figures 5–6). Institutional data further highlight the pivotal role of Australian universities Griffith and Monash suggesting the formation of research hubs that have shaped both national and international discourse (Figure 7). Geographical analysis affirms the preeminence of high-income countries, particularly the United Kingdom and Australia, in MLM research productivity and citation impact (Figures 8 and 10). These regions benefit from well-

established midwifery education infrastructures and funding ecosystems that facilitate high-quality research. Nevertheless, increasing contributions from countries such as Iran, Sweden, Indonesia, and Ireland reflect a broader global engagement and the potential democratization of midwifery education scholarship.

Thematic mapping and keyword analyses reveal the conceptual architecture of the MLM field. Central and enduring themes include “education,” “clinical competence,” “continuity of care,” and “midwifery students,” which form the intellectual foundation of the literature (Figures 12–13). Meanwhile, emerging themes such as “machine learning,” “simulation,” and “COVID-19” reflect a field responsive to technological innovation and global health challenges. These findings align with earlier bibliometric insights emphasizing the duality of traditional and future-facing pedagogical themes (Huang et al., 2025; Tzimourta et al., 2025). Longitudinal mapping (Figure 16) indicates a thematic evolution from curriculum-focused research in the early years to increasingly applied and technologically enriched topics. This progression is mirrored in the identification of simulation as both a motor and emergent theme (Figures 15 and 17), reflecting its growing pedagogical centrality. Simulation-based education has demonstrated its utility in enhancing not only technical competence but also communication, confidence, and ethical reasoning among students (Carvalho et al., 2024; Rosmaria & Heryani, 2024). Future research could expand this area by investigating simulation typologies, cost-effectiveness, and institutional adoption in diverse global settings.

The structure of co-authorship and citation networks reveals an increasingly cohesive and interconnected research community. The recurrence of themes such as reflective practice and continuity of care, along with frequent co-citation among key authors and institutions, suggests a consolidating epistemological framework. This coherence supports opportunities for meta-analyses, theory building, and policy translation. However, the underrepresentation of low- and middle-income countries (LMICs) in leading author, institutional, and journal rankings highlights the need for more inclusive research agendas and international partnerships. Importantly, this study also contributes methodologically by demonstrating the utility of integrating VOSviewer and Biblioshiny in visualizing structural and conceptual dimensions of the literature. The dual-platform approach allowed for both high-resolution network analysis and longitudinal thematic exploration, reflecting best practices in modern bibliometric science (Bancong, 2024; Nanda et al., 2025). In summary, MLM research from 2006 to 2025 presents a rich, evolving, and increasingly interconnected field. Foundational themes such as reflective learning and clinical competence remain central, while emerging topics reflect a diversification in tools, perspectives, and global participation. The findings provide a clear roadmap for future scholarship aimed at strengthening midwifery education through scalable, context-sensitive, and evidence-informed models.

D. Conclusions

This bibliometric review offers the first integrated 20-year mapping of Midwifery Learning Model (MLM) scholarship (2006–2025) from 456 Scopus-indexed documents. The field expanded steadily after 2012 and peaked in 2024 before declining in 2025, indicating maturation and recent stabilization of research output. The main dissemination hubs are Midwifery, Nurse Education Today, and Women and Birth, while highly cited scholars such as Sidebotham and Sweet have strongly shaped the evidence base, particularly on continuity-of-care learning and reflective practice. Productivity and influence are concentrated in Australia and the United Kingdom, with institutional networks led by Griffith University and Monash University, confirming a geographically uneven knowledge landscape. Conceptual and thematic analyses show that clinical competence, simulation-enhanced education, structured reflection, and continuity of care form the core pillars of MLM research. Over time, the field has shifted from foundational curriculum and clinical training studies toward more integrative, technology-enabled, student-centred models, with newer fronts emerging around AI/machine-learning applications and pandemic-responsive pedagogy. These patterns clarify both the current structure of MLM scholarship and its longitudinal evolution across two decades. Practically, the synthesis implies that educators should prioritize scalable simulation paired with structured debriefing, embed assessed reflective writing and supervision across placements, and formalize continuity-of-care experiences that remain feasible, safe, and woman-centred. For policymakers, findings highlight the need to align curricular mandates with service capacity – especially supervision ratios, workload protections, and placement quality – and to invest in simulation and digital learning infrastructure. For researchers, the persistent dominance of high-income, Anglophone settings underscores the urgency of comparative effectiveness and cost-effectiveness studies across diverse contexts, implementation-science work on fidelity and scalability, equity-focused co-creation with underrepresented regions, and careful evaluation of digital/AI tools that improves learning without widening access gaps. Overall, this review provides a decision-ready roadmap for strengthening the rigor, relevance, and global reach of midwifery education.

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