

Global Research Trends on Low Birth Weight in Midwifery: A Bibliometric Analysis from 2000-2025

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ARTICLE INFO	ABSTRACT
Keywords: Low Birth Weight; Maternal Health; Neonatal Outcomes; Bibliometric Study; Global Trends Article History: Received: 7/7/2026 Revised: 7/20/2026 Accepted: 8/13/2026	Background: Low birth weight (LBW) remains a major global health problem contributing to neonatal morbidity and mortality, with increasing research attention in maternal and midwifery care. However, a comprehensive mapping of global research trends on LBW in midwifery is still limited. Objective: This study aimed to analyze global research trends on LBW in midwifery from 2000 to 2025 using a bibliometric approach. Method: A bibliometric analysis was conducted using publications retrieved from the Dimensions database. The search strategy employed the query and was limited to publications from 2000–2025. After screening for relevance to LBW and midwifery, bibliometric analysis was performed using VOSviewer version. The analysis included annual publication trends, citation performance, leading authors, journals, countries, and keyword co-occurrence networks. Network visualization was generated using co-occurrence, co-authorship, overlay, and density analyses with a minimum occurrence threshold for keyword mapping. Results: The findings revealed a significant increase in publications and citations over time, particularly after 2015, indicating growing scientific interest. Key authors and journals were identified, along with dominant research themes such as maternal risk factors, neonatal outcomes, and psychosocial aspects. Network analysis demonstrated expanding international collaboration and evolving research hotspots in LBW-related midwifery research. Conclusion: This bibliometric study provides a comprehensive overview of global research trends on LBW in midwifery and highlights the increasing scientific attention to this field. The findings may serve as a reference for future research priorities and international collaboration. Limitations: This study was limited to publications indexed in the Dimensions database and relied on bibliometric indicators; therefore, it did not evaluate the methodological quality or risk of bias of the included studies.

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INTRODUCTION

Although bibliometric analysis has increasingly been used to examine the development and structure of research in maternal, neonatal, and midwifery health, its application to low birth weight (LBW) remains relatively limited. Bibliometric approaches provide an opportunity to move beyond conventional literature reviews by systematically examining publication growth, citation patterns, influential contributors, collaboration networks, and thematic structures within a specific research field. Recent bibliometric studies in midwifery have demonstrated the value of this approach in identifying influential publications, productive countries and institutions, patterns of scientific collaboration, and emerging research topics (Li et al., 2023; He et al., 2022). However, these studies have addressed midwifery research broadly rather than specifically examining the intellectual and thematic development of LBW research from a midwifery perspective. Consequently, the global evolution of LBW-related research within midwifery, including its major contributors, institutional and international collaboration patterns, and emerging research themes, remains insufficiently characterized.

This gap is particularly important because LBW remains a major indicator of newborn vulnerability and is associated with increased risks of neonatal morbidity and mortality as well as adverse health consequences across the life course. Global estimates have shown that LBW remains a substantial public health problem, with important differences in burden and data availability across regions and countries (Okwaraji et al., 2024). In addition, the quality and completeness of LBW data remain uneven globally, particularly in sub-Saharan Africa and Southern Asia, highlighting the need for stronger research capacity and evidence generation in settings with a high burden of LBW (Okwaraji et al., 2024). These challenges reinforce the importance of understanding not only the volume of LBW research but also how scientific knowledge has developed and whether research priorities adequately reflect the needs of vulnerable populations and resource-constrained settings.

From a midwifery perspective, this knowledge gap is particularly relevant because midwives have an important role in antenatal care, maternal health education, nutritional counseling, identification of pregnancy-related risk factors, continuity of care, and early referral of women and newborns at risk. Recent evidence syntheses have emphasized the importance of antenatal interventions addressing maternal undernutrition, environmental exposures, infections, harmful behaviors, and psychosocial risk factors in improving birth outcomes and preventing LBW (Hunter et al., 2023; Näsänen-Gilmore et al., 2023; Koivu et al., 2023). However, these studies primarily focus on the effectiveness of interventions or specific determinants of LBW rather than examining the broader evolution of the scientific knowledge base. Therefore, mapping the development of LBW research within midwifery may help identify whether current research adequately reflects the multidimensional nature of LBW and whether important maternal, psychosocial, social, and contextual issues remain underexplored.

Furthermore, previous bibliometric studies in midwifery have demonstrated that collaboration and thematic mapping can reveal important characteristics of a research field that cannot be identified through publication counts alone. For example, Li et al. (2023) examined citation patterns, authorship, countries, institutions, journals, keywords, and collaboration strength in global midwifery research, while He et al. (2022) examined institutional cooperation, co-authorship, research hotspots, and emerging frontiers in Chinese midwifery research. Similarly, bibliometric research in related maternal and neonatal topics, such as preterm birth, has used network-based approaches to identify research trends and thematic development (Vidal et al., 2022). Nevertheless, to the best of our knowledge, a comprehensive bibliometric investigation integrating publication performance, citation impact, authorship, institutional and country

collaboration, keyword co-occurrence, and thematic evolution specifically within global LBW research in midwifery has not yet been reported. This represents an important gap because collaboration structures and thematic relationships can provide insights into how knowledge is generated, disseminated, and potentially translated into evidence-based practice.

To address these gaps, the present study conducts a comprehensive bibliometric analysis of global LBW research in midwifery from 2000 to 2025. The study maps publication growth and citation impact and identifies influential authors, journals, institutions, and countries, while also examining international collaboration and the intellectual structure of the field through co-authorship and keyword co-occurrence analyses using VOSviewer. In addition, overlay and density visualizations are used to identify emerging topics, established research clusters, and areas that may require greater scholarly attention. By integrating productivity, impact, collaboration, and thematic analyses within a single framework, this study extends previous bibliometric research in midwifery by focusing specifically on LBW and provides a comprehensive picture of how this field has evolved over the past 25 years. The findings are expected to provide a scientific basis for identifying research priorities, strengthening international and multidisciplinary collaboration, and guiding the development of evidence-based midwifery strategies for the prevention and management of LBW.

METHOD

Data source and search strategy

This study employed a bibliometric approach to systematically analyze the global scientific landscape of low birth weight (LBW) research in the field of midwifery from 2000 to 2025. Bibliographic data were retrieved from the Dimensions database because of its broad multidisciplinary coverage and comprehensive indexing of international scholarly publications. The literature search was conducted on 1 April 2026 to minimize database updating bias. The search was performed in the Title and Abstract fields using the following query: TITLE-ABS ("low birth weight") AND TITLE-ABS (midwife OR midwifery OR midwif). The search was restricted to publications published between 2000 and 2025. Only original research articles indexed in the Dimensions database and focusing on low birth weight within the context of midwifery or maternal care were included in the analysis. Conference proceedings, editorials, letters, book chapters, technical reports, and publications unrelated to midwifery or maternal care were excluded to ensure the relevance and consistency of the dataset.

To improve the transparency of the literature identification and screening process, this study adopted the PRISMA 2020 flow diagram as a reporting framework. Although PRISMA was originally developed for systematic reviews, it has also been widely adopted in bibliometric studies to transparently document the processes of record identification, screening, eligibility assessment, and final inclusion. In this study, PRISMA was used solely to illustrate the publication selection process and was not intended to conduct a systematic review or evaluate the methodological quality of the included publications.

Bibliometric analysis

The retrieved records were exported in CSV format and analyzed using VOSviewer version 1.6.20 (Centre for Science and Technology Studies, Leiden University, The Netherlands). Descriptive bibliometric analysis was conducted to examine annual publication output, annual citation trends, leading authors, productive journals, and contributions by institutions and countries. Science mapping was subsequently performed through co-occurrence analysis of author keywords and co-authorship analysis to identify research themes and collaboration patterns. The bibliometric networks were visualized using network, overlay, and density visualization techniques to reveal the intellectual structure and thematic evolution of LBW research in midwifery.

The analyses were conducted using the full counting method, in which each occurrence of an author, keyword, or collaboration link was assigned equal weight. The relationships among nodes were normalized using the association strength normalization method recommended by VOSviewer. To improve the clarity and interpretability of the bibliometric maps, the minimum occurrence threshold for

author keywords was set at five occurrences, while the minimum publication threshold for authors was set at five documents. Only nodes meeting these predefined thresholds were included in the visualization. Network clusters were generated using the default VOSviewer modularity-based clustering algorithm, and all remaining visualization parameters were maintained at the software's default settings.

Data visualization

The bibliometric findings were presented using three complementary visualization techniques provided by VOSviewer, namely network visualization, overlay visualization, and density visualization. Network visualization was used to illustrate the relationships among authors and keywords, overlay visualization was employed to identify the temporal evolution of research topics, and density visualization highlighted areas with the greatest concentration of research activity. Together, these visualizations enabled the identification of major research clusters, collaboration networks, influential contributors, and emerging themes within the global literature on low birth weight in midwifery.

Study selection

The initial search of the Dimensions database using the term "low birth weight" in the Title and Abstract fields, with the publication period restricted to 2000–2025, identified 434,131 records. During the screening process, 409,885 records were excluded because they were not related to midwifery, while a further 2,137 records were excluded because they were not original research articles. Following the eligibility assessment, 22,109 records met the predefined inclusion criteria and were included in the final bibliometric analysis. The publication identification and screening process is presented in Figure 1.

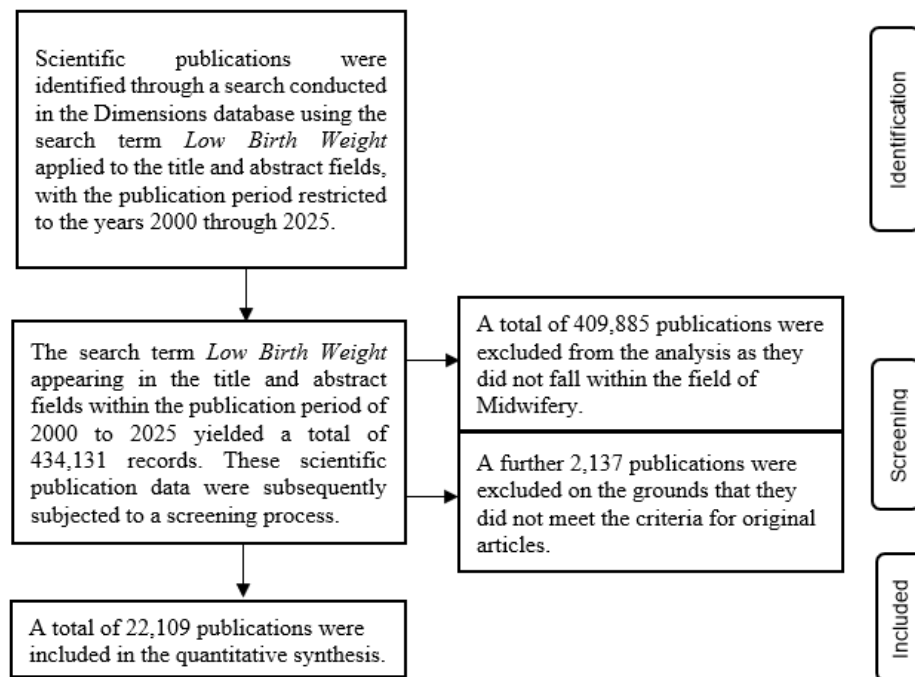


Figure 1 PRISMA Flowchart

RESULTS AND DISCUSSION

Results

Number of publications per year

A search spanning the years 2000 to 2025 yielded a total of 22,109 scientific articles. The distribution of the number of publications on low birth weight in the field of midwifery per year is presented in Figure 2.

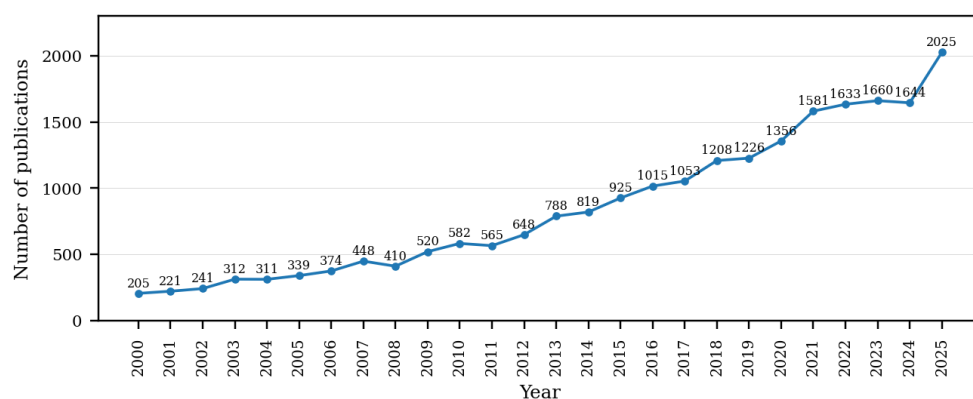


Figure 2 Number of publications on the topic of low birth weight in the field of midwifery per year

Figure 2 shows the trend in the number of publications on the topic of low birth weight in the field of midwifery from 2000 to 2025. Overall, a gradual upward trend is evident throughout this period. In 2000, the number of publications stood at 205 articles, then gradually increased to 221 in 2001 and 241 in 2002. A slight fluctuation occurred in 2003–2006, with publications recorded at 312, 311, 339, and 374 respectively, before reaching 448 in 2007. A temporary decline followed in 2008, dropping to 410 publications, after which growth resumed steadily, reaching 520 in 2009, 582 in 2010, and 565 in 2011. Publications continued to rise to 648 in 2012, 788 in 2013, 819 in 2014, 925 in 2015, 1,015 in 2016, and 1,053 in 2017. Growth accelerated further in the subsequent years, with 1,208 publications in 2018, 1,226 in 2019, and 1,356 in 2020.

The most rapid growth was observed during the 2021–2025 period, with publications reaching 1,581 in 2021, 1,633 in 2022, 1,660 in 2023, 1,644 in 2024, and peaking at 2,025 in 2025, indicating a tenfold increase over the entire 25-year observation period. There was a slight decline in 2007–2008 from 448 to 410 publications, likely reflecting the impact of the global economic crisis on the availability of research funding, as well as a minor dip in 2024 before rebounding sharply in 2025. The notable surge from 2020 onward is likely linked to the increased global attention on neonatal health amid the COVID-19 pandemic, alongside a strengthening global commitment to achieving the Sustainable Development Goals (SDGs) related to reducing neonatal mortality rates. The trend line shown in the graph further underscores this consistent linear growth pattern with accelerating momentum in the most recent period.

Number of citations

The total number of citations for the topic of low birth weight in the field of midwifery from 2000 to 2025 is 511,032. Furthermore, the number of citations per year is presented in Figure 3.

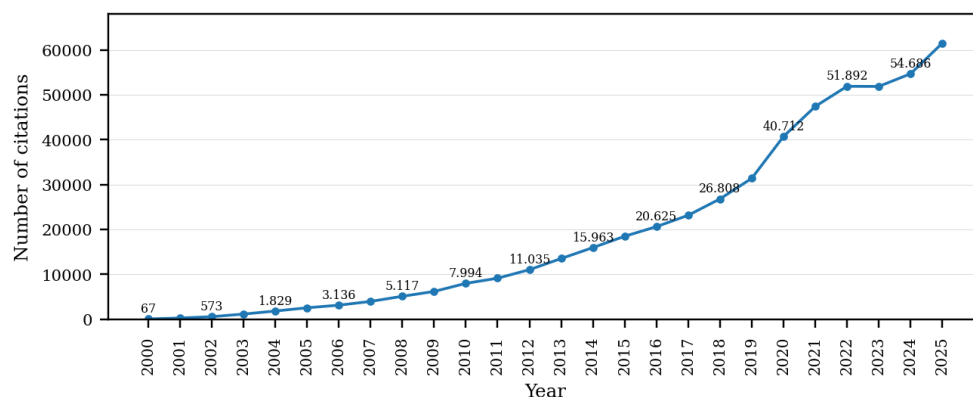


Figure 3 Number of citations on the topic of low birth weight in the field of midwifery per year

Figure 3 illustrates the trend in the number of citations on the topic of low birth weight in the field of midwifery from 2000 to 2025. Throughout this period, a consistent and substantial upward trend is evident. In 2000, the number of citations was still very low, at only 67, then gradually increased to 269 in 2001, 573 in 2002, 1,115 in 2003, and 1,829 in 2004. Growth continued steadily with 2,554 citations in 2005, 4,136 in 2006, 6,968 in 2007, 8,117 in 2008, and 6,188 in 2009. Citations then rose to 7,994 in 2010, 9,143 in 2011, 11,035 in 2012, 13,523 in 2013, 15,963 in 2014, 18,485 in 2015, 20,625 in 2016, and 23,159 in 2017.

A sharper acceleration is evident from 2018 onward, with citations reaching 26,808 in 2018, 31,386 in 2019, 40,712 in 2020, and 47,406 in 2021, reflecting the heightened global research attention during and following the COVID-19 pandemic. This upward momentum continued with 51,895 citations in 2022, 52,860 in 2023, and 54,686 in 2024, before reaching a peak of 61,503 in 2025, marking nearly a thousandfold increase compared to the year 2000. The exponential trend line shown in the graph further underscores the accelerating pace of citation growth, reflecting the increasing clinical and policy relevance of low birth weight research within the field of midwifery over the 25-year observation period.

Journal

Publications on the topic of low birth weight in the field of midwifery can be grouped by the journals in which they appear. The distribution of publications from the five largest journals is shown in Figure 4.

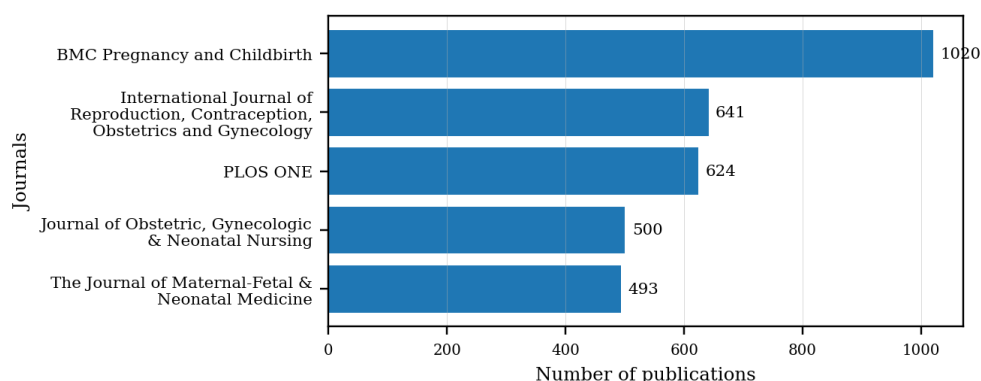


Figure 4 Number of publications on the topic of low birth weight in the field of midwifery, by journal

Figure 4 displays how publications about low birth weight in midwifery are spread across the five journals that have the most articles on this topic. Of the five journals identified, BMC Pregnancy and Childbirth is first with the most publications, having published 1,020 articles, which is much higher than the other journals. The International Journal of Reproduction, Contraception, Obstetrics and Gynecology is in second place with 641 publications, followed by PLOS ONE with 624 publications. At the same time, the Journal of Obstetric, Gynecologic & Neonatal Nursing and The Journal of Maternal-Fetal & Neonatal Medicine had fewer publications, with 500 and 493 articles each.

This pattern shows a clear focus on publications in open-access journals, either covering multiple subjects or specifically dealing with obstetrics and midwifery. The main reason BMC Pregnancy and Childbirth is so prominent is because it allows free access to its content. This open-access policy helps the journal reach more people and makes it easier for a wider variety of researchers from around the world to submit their work. Even though these specialized journals have fewer publications, their existence shows that research on low birth weight is still very important in the work of midwives and in the care of newborn babies.

Researcher

Publications on the topic of low birth weight in the field of midwifery can also be grouped by researcher. The distribution of publications by the next five most prolific researchers is presented in Figure 5.

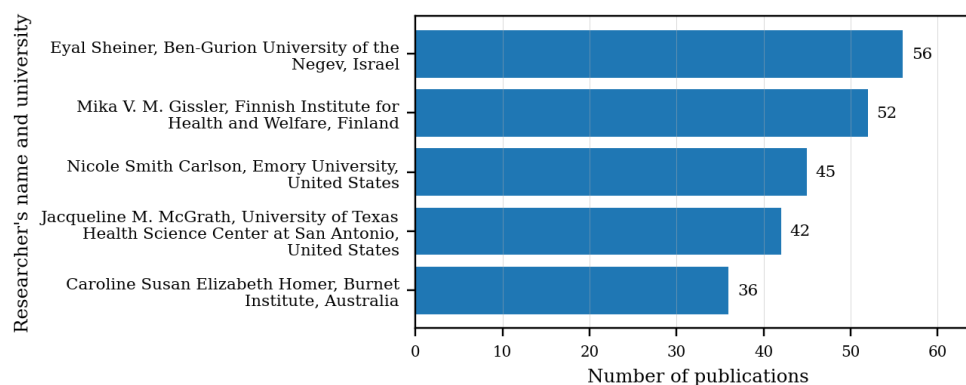


Figure 5 Number of publications on the topic of low birth weight in the field of midwifery, by researcher

Figure 5 shows the five researchers who have written the most papers about low birth weight in the area of midwifery. Eyal Sheiner from Ben-Gurion University of the Negev in Israel is first with 56 publications, and then comes Mika V. M. Gissler from the Finnish Institute for Health and Welfare in Finland and has 52 published works. Third place is taken by Nicole Smith Carlson from Emory University, United States, who has 45 publications, while Jacqueline M. McGrath from The University of Texas Health Science Center at San Antonio, United States, has recorded 42 publications. Completing the top five is Caroline Susan Elizabeth Homer from the Burnet Institute in Australia, who has published 36 papers.

This pattern shows that most studies about low birth weight in midwifery are done by researchers from universities in developed countries, such as Israel, Finland, the United States, and Australia. This situation shows that these countries have strong academic systems and plenty of research materials available. Interestingly, the different types of organizations these top five researchers are linked to, such as national health research institutes and universities focused on clinical practice, show that studying low birth weight in midwifery involves many different areas. This includes looking at health trends, treating patients, and creating policies to improve health outcomes.

Network visualization for co-occurrence

VOSviewer provides network mapping features in the form of network visualization. The network map for the analysis of keyword co-occurrence on the topic of low birth weight in the field of midwifery is presented in Figure 6.

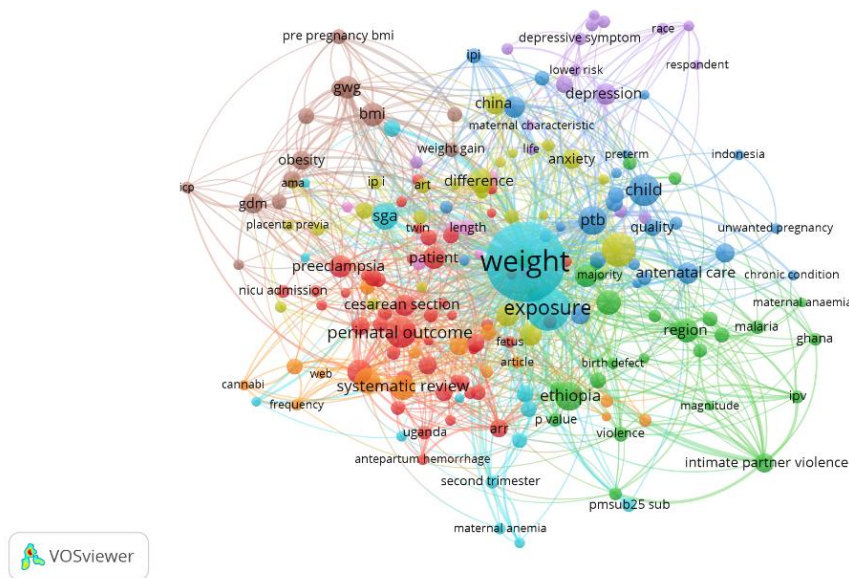


Figure 6 Network visualization on the topic of low birth weight in the field of midwifery

Figure 6 displays a keyword network map on the topic of low birth weight in the field of midwifery, generated using VOSviewer. The visualization shows an interconnected keyword network divided into several groups represented by different colors, each indicating a cluster of interrelated research themes. The largest nodes are occupied by the keywords "weight" and "exposure," indicating that these are the most central topics and the ones that most frequently appear together in the literature. Other prominent keywords that appear with relatively large node sizes include "perinatal outcome," "preeclampsia," "cesarean section," "systematic review," "antenatal care," "depression," "ethiopia," and "intimate partner violence," which collectively reflect the broad scope of subtopics in low birth weight research. Smaller but notable nodes include keywords such as "SGA," "twin," "PTB," "fetus," "birth defect," "second trimester," "unwanted pregnancy," "maternal anaemia," "malaria," "uganda," "cannabi," "ICP," "GDM," "obesity," "weight gain," "maternal characteristic," "life," "anxiety," "child," "quality," "region," "magnitude," "violence," "p value," "article," and "majority," all of which demonstrate the highly multidisciplinary and geographically diverse nature of low birth weight research within the field of midwifery.

From the clusters created, a number of main themes become clear. The red group includes problems that happen during pregnancy and childbirth, like preeclampsia, needing a cesarean section, bleeding before birth, being admitted to the NICU, and results for the baby and mother. It also includes using a systematic review as the main way to study these issues, and words related to certain places like Uganda and how often these problems happen. The light blue group looks at topics related to maternal and child health, such as prenatal care, child health, quality of care, preterm birth, chronic diseases, unwanted pregnancies, and Indonesia. This shows research that highlights the ongoing care process from pregnancy up to the health outcomes of children. The green cluster brings together topics connected to maternal health in Africa, especially in Ethiopia and Ghana. It covers issues like intimate partner violence, maternal anaemia, malaria, the extent of these problems, the regions affected, and birth defects. This shows how much research is focused on the situation in Sub-Saharan Africa. The yellow-orange group includes factors related to nutrition and metabolism, like weight gain during pregnancy, BMI before and during pregnancy, obesity, gestational diabetes, intrahepatic cholestasis of pregnancy, and advanced maternal age. This shows the increasing evidence that a mother's nutrition and metabolic health are connected to babies being born with low weight. The purple group includes topics related to mental health and personal background, such as depression, signs of sadness, worry, lower risk, race, the person being studied, and China. This shows that more attention is being given to factors that affect mental health and that both Asian and Western research are playing a bigger role in understanding the causes of low birth weight from a mental and social perspective.

Overlay visualization for co-occurrence

VOSviewer also offers an overlay visualization feature. The overlay map for analyzing keyword co-occurrence on the topic of low birth weight in the field of midwifery is shown in Figure 7.

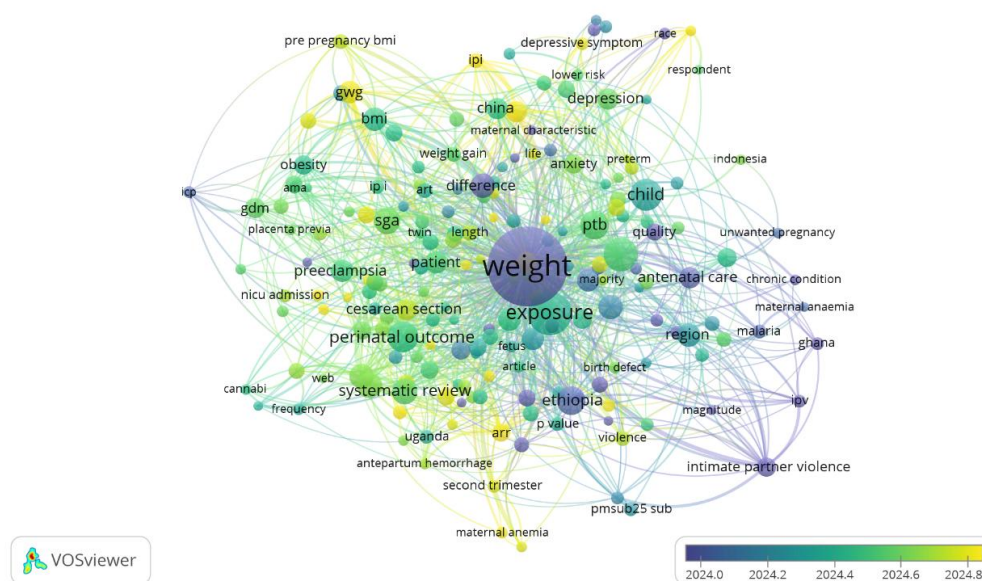


Figure 7 Overlay visualization on the topic of low birth weight in midwifery

Figure 7 shows a keyword visualization overlay on the topic of low birth weight in midwifery using VOSviewer, with color gradients representing the average year of publication for each keyword, ranging from dark purple-blue (representing older or more established publications around 2024.0) to greenish-yellow (representing newer and more recently emerging publications around 2024.8). The keywords with the largest nodes, namely "weight" and "exposure," are displayed in dark purple-blue, indicating that both have long been the most central and historically established focus of research in this field. Other keywords displayed in similar dark blue tones include "perinatal outcome," "preeclampsia," "cesarean section," "systematic review," "ethiopia," "intimate partner violence," "anteartum hemorrhage," "NICU admission," "antenatal care," "child," "quality," "region," "malaria," "ghana," "maternal anaemia," "birth defect," "magnitude," "IPV," "respondent," and "race," all of which reflect well-established and consistently studied themes in the low birth weight literature.

Keywords displayed in intermediate green tones, such as "depression," "anxiety," "PTB," "SGA," "fetus," "patient," "twin," "length," "difference," "art," "majority," "chronic condition," "unwanted pregnancy," "uganda," "violence," "p value," "article," "second trimester," "pmsub25 sub," and "maternal anemia," represent themes that have gained moderate research attention and occupy a transitional position between older and newer research trajectories. These keywords suggest that while they are not entirely new topics, they are experiencing growing scholarly interest and are increasingly incorporated into more recent low birth weight studies within the midwifery field.

The keywords displayed in the brightest yellow-green hues, including "china," "IPI," "GWG," "BMI," "pre-pregnancy BMI," "obesity," "GDM," "ICP," "AMA," "weight gain," "maternal characteristic," "life," "preterm," "indonesia," "arr," and "depressive symptom," represent the most recently emerging research topics in the field. The appearance of "indonesia" and "china" among the newest keywords indicates a growing contribution of research from the Asian region to the global low birth weight literature, while the prominence of nutritional and metabolic keywords such as GWG, BMI, pre-pregnancy BMI, obesity, and GDM reflects a recent paradigm shift toward investigating maternal nutritional and metabolic determinants of low birth weight. Similarly, the emergence of psychosocial keywords such as "depressive symptom" and

"life" underscores the increasingly holistic approach being adopted in midwifery research, extending beyond biomedical factors to encompass broader social and psychological dimensions of low birth weight.

Density visualization for co-occurrence

In addition, VOSviewer displays a density visualization map. The density visualization for the co-occurrence of the term "low birth weight" in midwifery is shown in Figure 8.

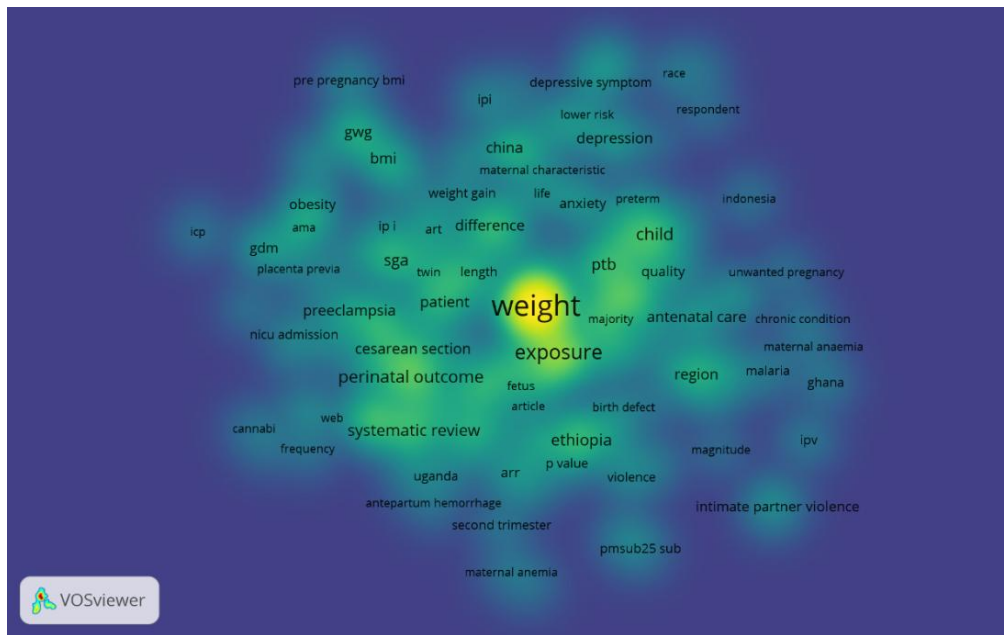


Figure 8 Density visualization of low birth weight in midwifery

Figure 8 displays a keyword density visualization on the topic of low birth weight in midwifery using VOSviewer, where color intensity reflects the frequency of keyword occurrence in the literature network. Bright yellow indicates the highest density, while shades ranging from green to dark blue reflect progressively lower densities, and keywords appearing against a very dark background represent the lowest frequency of occurrence. The keywords "weight" and "exposure" appear with the highest density, displayed in bright yellow at the center of the visualization, confirming their position as the most central and most frequently occurring topics in the entire literature corpus. Surrounding these two dominant keywords, a bright green zone encompasses terms such as "perinatal outcome," "cesarean section," "preeclampsia," "systematic review," "ethiopia," "child," "antenatal care," and "PTB," indicating that these topics occupy a medium-to-high density zone and represent well-established research themes that appear frequently across the analyzed publications.

Moving further outward from the center, a lighter green zone encompasses keywords such as "depression," "anxiety," "GWG," "BMI," "SGA," "twin," "patient," "fetus," "majority," "quality," "region," "NICU admission," "antepartum hemorrhage," "second trimester," "uganda," "violence," "birth defect," "chronic condition," "unwanted pregnancy," and "maternal anaemia," all of which occupy the medium density zone. These keywords reflect research themes that are gaining increasing scholarly attention but have not yet reached the same level of prominence as the core biomedical topics at the center of the network. The presence of psychosocial terms such as "depression," "anxiety," and "unwanted pregnancy" in this zone suggests that mental health and social determinants are becoming increasingly recognized as important contributors to low birth weight outcomes within the midwifery literature.

Keywords located at the outermost periphery of the visualization, displayed against the darkest background, include "pre-pregnancy BMI," "obesity," "GDM," "ICP," "AMA," "placenta previa," "IPI," "weight gain," "maternal characteristic," "life," "preterm," "difference," "art," "cannabi," "web," "frequency," "p value," "article," "pmsub25 sub," "maternal anemia," "magnitude," "IPV," "malaria," "ghana," "indonesia," "china," "depressive symptom," "lower risk," "race," and "respondent," all of which

occupy the low-density zone. These keywords reflect research areas that are still relatively underexplored within the midwifery literature, yet many of them are highly relevant to the burden of low birth weight, particularly in the context of developing countries. The appearance of country-specific terms such as "indonesia," "china," and "ghana" in the low-density zone further underscores the need to strengthen regional research capacity and expand the global midwifery research agenda to be more inclusive of diverse geographical and sociocultural contexts.

Network visualization for co-authorship

VOSviewer displays a network visualization of co-authorship. The network visualization of co-authorship among the 18 authors is shown in Figure 9.

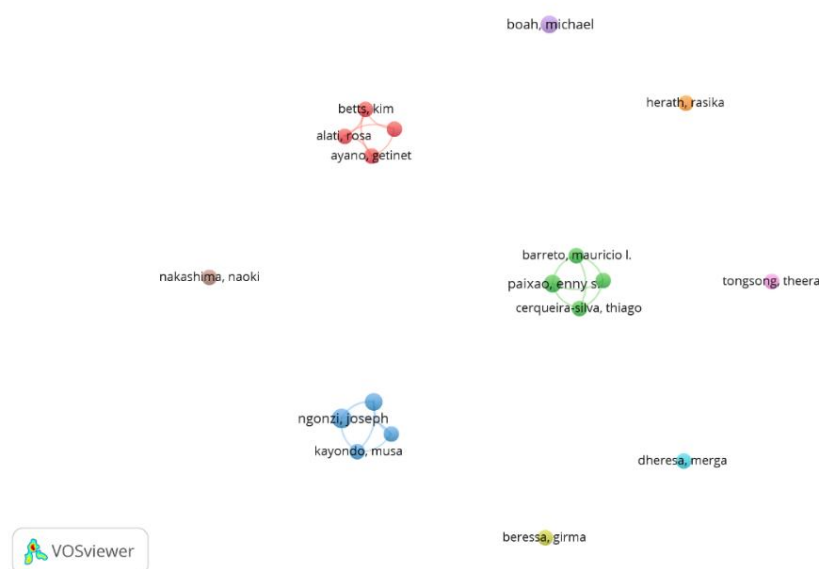


Figure 9 Network visualization of co-authorship on the topic of low birth weight in midwifery

Figure 9 displays a network visualization of how researchers collaborate on the topic of low birth weight in midwifery, created using VOSviewer. Each point in the network represents a researcher, and the lines connecting them show when authors worked together on the same research papers. The visualization shows a collaboration picture that's very broken up, with many small and separate groups that don't seem to be linked to each other at all. The red group links Betts Kim, Alati Rosa, and Ayano Getinet, showing a small team that works together. The green group has Barreto Mauricio L., Paixao Enny S., and Cerqueira-Silva Thiago, who make up another separate team working together. The blue group links Ngonzi Joseph and Kayondo Musa, showing they work together on both sides. Additionally, a small teal cluster links Dheresa Merga to another node that is nearby, indicating there is a limited but real connection showing some level of collaboration in this group.

Outside these small groups, some researchers are shown as single, separate points with no visible links to any other author in the network. These include Nakashima Naoki, Boah Michael, Herath Rasika, Tongsong Theera, Beressa Girma, and several others who are placed around the edges of the visualization. The different places where these isolated groups are located show a wide variety of regions, including researchers from Asia, Africa, and other areas, but none of them are connected to each other in the network shown. This pattern shows that most researchers in the midwifery field who study low birth weight work alone or in very small, local groups, and they don't often take part in bigger, international research teams.

The co-authorship network related to low birth weight in midwifery shows a split and spread-out structure, with 18 authors shown in several separate groups. The lack of a big, connected group of researchers working together, which is usually seen in more established areas of study, shows that international teamwork on this topic is still in its early and not fully developed phase. The small size of

current research groups, along with the many individual researchers who are not part of any group, shows that more money should be spent on creating research teams that work together between different organizations and regions. This will help the global midwifery research community work better together to deal with the problem of low birth weight.

Discussion

The steady increase in publications and citations from 2000 to 2025 shows that the scientific community is paying more attention to low birth weight as a major problem in newborn health that needs more research from different fields. This finding matches earlier research that shows a big increase in studies about maternal and neonatal health. This growth is because there's more illness happening and international health goals are focusing more on these issues (Sweileh et al., 2017). Also, there's more awareness of how low birth weight can affect a child's health over time, including problems like stunting, slower brain development, and a higher risk of diseases that aren't spread from person to person later in life (Lee et al., 2025). The increase in citations from 2020 to 2025, which went up by more than 21,000, is mainly because of more global focus on the risks faced by newborn babies during the COVID-19 pandemic (Allotey et al., 2020), along with stronger international efforts to reduce deaths of newborns as part of the SDG goals (Lawn et al., 2023). Even though there has been a lot of growth in the number of publications, this doesn't always mean the research is high quality or new. When there's a fast increase in published work, it often means the methods used vary a lot, which makes it harder to combine and analyze the findings properly (Zhao et al., 2022). Also, when citations go up quickly, it might not be because the research is really important—it could just be because studies with positive or exciting results are more likely to be cited than those with negative findings (Fanelli, 2012). This struggle between having enough and having good quality creates a big problem for midwives and people who make policies, making it hard for them to use new research to make better healthcare choices. Even though there are some limits, ongoing support from groups like WHO and UNICEF through the Every Newborn Action Plan has helped build more scientific knowledge in this area. This shows that the world is still committed to improving the health of newborns by keeping up research efforts (Lawn et al., 2023).

BMC Pregnancy and Childbirth is the top choice for publishing because it offers open access, which means more people can read and use the research from different parts of the world (Piwowar et al., 2018). This makes it the main place where reliable, evidence-based studies on pregnancy and midwifery are shared (Lawn et al., 2023). This open-access benefit is especially important in studies about low birth weight, because researchers from low- and middle-income countries, who usually have trouble paying to publish in paid journals, can share their results with people around the world. PLOS ONE's work helps show how open-access journals with many subjects can spread research about newborns (Björk & Solomon, 2012), but there are still worries about how carefully articles are chosen in big journals with lots of submissions (Beall, 2016). Meanwhile, the continued presence of specialized journals like the *Journal of Obstetric, Gynecologic & Neonatal Nursing* and *The Journal of Maternal-Fetal & Neonatal Medicine* shows that research on low birth weight remains important in clinical practice. He et al., 2024; Ejigu et al., 2025), showing how the topic covers a wide range of areas within midwifery and reproductive health, including both general and more specific fields, and highlighting its ongoing importance for healthcare professionals who work with high-risk pregnancies and newborns.

The way top researchers are spread out shows that high-income countries have big advantages in leading global research, which means the results from studies might not apply equally well in different health situations. Eyal Sheiner's productivity shows how strong Israeli perinatal research is, especially because it uses national registry data to do big analyses that work well in other situations (Rubin et al., 2022), while Mika V. M. Gissler's work helps Finland stay at the forefront of population-based research on mothers and newborns, thanks to the country's integrated health records that allow for long-term and comparative studies (Blencowe et al., 2019; Gissler et al., 2003). The work of Caroline Susan Elizabeth Homer and Nicole Smith Carlson shows how strong evidence-based midwifery practices are growing in Australia and the United States. In these countries, there is a lot of research support and good institutional backing, which

helps keep up a steady flow of academic work (Wallace et al., 2023). Even though many of the studies on this topic come from researchers in high-income countries, it's a big concern that voices from developing countries are not being heard enough in the global research discussions. This is especially important because the problem of low birth weight affects these regions the most, and local knowledge that fits the specific needs of those areas is crucial for creating solutions that work well and last over time (Lawn et al., 2023).

The analysis of keywords through co-occurrence, overlay, and density visuals shows both the past roots and new areas of research on low birth weight in midwifery, giving a full view of how scientific focus in this area has changed and spread over time. The main topics of "weight" and "exposure" appear in all three visualizations, showing that factors related to a mother's health, like her nutrition, weight before pregnancy, weight gain during pregnancy, and complications during pregnancy such as high blood pressure and C-sections, have been central in research for a long time. These factors continue to be the main way that scientists look at and understand low birth weight (Mohamed et al., 2022; Bartsch et al., 2016; Arabzadeh et al., 2024; Sun et al., 2020). However, the overlay and density maps show a big change in how we think about low birth weight. Words like "depression," "anxiety," and "intimate partner violence" are becoming more common, even though they don't appear very often. This shows that people are starting to understand that low birth weight isn't just a medical issue—it's also influenced by many social factors that affect individuals, their families, and their communities (Dadi et al., 2020; Staneva et al., 2015; Goldstein et al., 2017). Similarly, the recent use of "Indonesia" and "China" as new keywords shows that more research from Asia is being done. This is important because South and Southeast Asia have the most cases of low birth weight worldwide (Blencowe et al., 2019). Also, the group of African countries in the network shows that the region has a big health problem, and while there's more research being done from Sub-Saharan Africa, it's still mostly focused in certain areas (Lawn et al., 2023). These areas that are not well represented highlight the need to urgently change and focus midwifery research to include more social factors, different places, and the real-life experiences of groups that are most impacted by low birth weight.

The co-authorship network shows that collaboration is split up, with most researchers working in small, separate groups or alone. This matches studies showing that teamwork on neonatal health in developing countries is not common and usually happens within the same country or institution, not across bigger international groups (Vieira, 2025). This fragmentation is especially worrying because low birth weight is a complicated issue that involves many different factors. To get solid and useful information, experts from different fields and regions need to work together. The difference between individual researchers in the Asia-Pacific region, like Nakashima Naoki and Tongsong Theera, who work mostly on their own, and the teamwork common among European and North American scientists shows that there are still big challenges. These include language problems, not enough money for working together, and not many chances to build international partnerships. These issues especially hurt researchers from places with less resources (Sweileh et al., 2017; Lawn et al., 2023). A special case is the new group of researchers from Uganda and Ethiopia in Africa, showing that the region is building more research skills. This growth matches the recent efforts to support African research centers and encourage collaboration between African countries (Hajj et al., 2020). Building strong partnerships between researchers in different regions, especially between those in developing and developed countries, is still a top priority. This is because such collaborations are key to creating useful and high-quality knowledge that is relevant to specific situations. This knowledge can help guide both global and local actions to decrease the occurrence and impact of low birth weight (Blencowe et al. in 2019).

CONCLUSION

This study provides a comprehensive overview of the global research landscape on low birth weight (LBW) in midwifery from 2000 to 2025 and demonstrates increasing scientific attention to maternal determinants, neonatal outcomes, and psychosocial dimensions of LBW. Beyond describing publication trends, the study contributes by identifying persistent fragmentation in international and multidisciplinary research collaboration, which may limit the development of comprehensive and context-sensitive approaches to LBW prevention. These findings have important implications for midwifery practice, highlighting the need to translate evidence on maternal, neonatal, psychological, and social determinants into integrated interventions, including early identification of maternal risk factors, strengthened antenatal care, health education, psychosocial support, and appropriate referral and follow-up. Future research should prioritize longitudinal and intervention-based studies examining the interaction of biological, psychological, social, and contextual determinants of LBW, particularly in developing countries where the burden remains high, while strengthening international and multidisciplinary research networks. These efforts are essential to generate context-specific evidence, improve evidence-based midwifery practice, and support more effective strategies for reducing LBW and improving maternal and newborn health outcomes globally.

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