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# Culture, pregnancy, and health information behavior: A bibliometric review and science-mapping analysis 2001-2026

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**ABSTRACT**

Pregnancy is a period of intensive health information need, yet women's information seeking, interpretation, trust and use are shaped by cultural beliefs, language, migration experiences and access to care. Research on this topic remains dispersed across maternal health, public health, digital health and communication studies. This review contributes to map the knowledge structure and thematic evolution of the field and foregrounds culture as a communicative and structural context for pregnancy-related health information behavior. Bibliographic records were retrieved from the Web of Science Core Collection. After title and abstract screening, 221 publications from 2001 to 2026 were analyzed using Bibliometrix/Biblioshiny and VOSviewer. The field expanded rapidly after 2021 and was organized around five themes: maternity care communication, digital health and mHealth, migration and information-access barriers, cultural context with health literacy and equity, and culturally responsive perinatal mental health. Culture-related terms connected information access, language, trust, service responsiveness and health equity across the thematic structure. Future research should move beyond documenting barriers towards designing culturally safe, digitally accessible, linguistically inclusive and trust-oriented maternal health information systems.

## I. INTRODUCTION

Pregnancy is one of the life stages in which women encounter particularly intensive and consequential health information needs. Across the antenatal, birth and early postnatal

periods, information can shape how women recognize risk, use antenatal services, consider vaccination, manage nutrition, prepare for birth, respond to mental health concerns and care for newborns (Criss et al., 2015; DeStephano et al., 2010; Downe et al., 2019; Lori et al., 2014). These processes are not limited to the passive receipt ofs advice from health professionals. They involve a broader set of health information behaviors, including the recognition of information needs, information seeking, source selection, credibility assessment, interpretation, interpersonal communication and the use of information in everyday decisions. Understanding pregnancy-related health information behavior is therefore important for maternal and child health because information practices can influence both engagement with services and the quality of decisions made within and beyond clinical encounters.

However, pregnancy-related information behavior does not occur in a social or cultural vacuum. What women need to know, where they seek information, which sources they trust and how they interpret health advice are shaped by cultural beliefs, family norms, language proficiency, migration experiences, religious practices, health literacy, patient-provider trust and the accessibility of health systems (Binder et al., 2012; Hughson et al., 2018; Lang et al., 2020; Mohale et al., 2017; Reitmanova & Gustafson, 2008). For culturally and linguistically diverse women, these factors may affect whether information is understandable, acceptable, actionable and aligned with lived experience. From a health communication perspective, information is not a neutral object that simply moves from expert to patient. It is produced, interpreted and negotiated within social relationships, care institutions and cultural systems of meaning. Culture therefore needs to be understood not as a peripheral demographic characteristic, but as a communicative context that structures pregnancy-related communication, decision-making and information use.

At the same time, the information environment surrounding pregnancy has changed substantially. Digital health resources, mHealth interventions, social media, online forums and pregnancy-related mobile applications have expanded the channels through which women seek, exchange and evaluate health information (Asadollahi et al., 2025; Blackwell et al., 2020; Criss et al., 2015; L. Garnweidner-Holme et al., 2018). The COVID-19 pandemic further increased reliance on online information, remote communication and digital risk messaging, particularly when face-to-face care was disrupted or perceived as uncertain (Benski et al., 2020; Cagayan et al., 2022). These changes create new opportunities for timely, flexible and personalized maternal health communication, but they also raise important concerns. Online resources may vary in accuracy, readability, cultural relevance and source credibility, and digital access does not necessarily ensure meaningful understanding or equitable use (Li et al., 2025; Nagesh et al., 2026). For culturally diverse pregnant women, digital information must therefore be evaluated not only in terms of availability, but also in terms of trustworthiness, linguistic accessibility, cultural adaptation and connection to professional care (Asadollahi et al., 2025; Nagesh et al., 2026; Subasinghe et al., 2026).

Several related bodies of literature have examined parts of this problem, but they remain fragmented across disciplinary and methodological boundaries. Reviews of maternity care access have clarified barriers to antenatal service use and care uptake, but they often treat information practices as one component of service access rather than as a distinct field of inquiry (Downe et al., 2019). Studies of migrant maternal health and culturally competent care have shown how language, migration status and cultural expectations shape maternity experiences, yet they do not systematically map how these factors connect with information seeking, trust, digital health and health literacy (Ahmadinia et al., 2022; Hughson et al., 2018). Research on mHealth and digital maternal health has examined technologies, applications and information quality, but often gives less attention to culture as a communicative and structural condition of use (Asadollahi et al., 2025; Barnes et al., 2018). Health literacy studies have also highlighted comprehension and access, but the broader knowledge structure linking health literacy with culture, migration, communication and equity remains insufficiently mapped.

This fragmentation creates a clear research gap. Existing reviews tend to focus on a specific population, intervention type, clinical topic or care setting. As a result, they provide limited insight into how research on culture and pregnancy-related health information behavior has developed as an integrated knowledge domain. In particular, there is limited bibliometric evidence on the field's publication growth, country collaboration, source distribution, influential documents, keyword structures and thematic evolution. A science-mapping approach is useful for addressing this gap because it can identify not only what has been studied, but also how topics, countries, journals and intellectual traditions are connected (Cobo et al., 2011; Donthu et al., 2021). Such an analysis is needed to clarify how culture, language, migration, digital health, health literacy and equity are jointly organized within pregnancy-related health information research.

To address this gap, the present study uses Bibliometrix and VOSviewer to conduct a bibliometric and science-mapping analysis of 221 publications on pregnancy-related health information behavior in cultural contexts, covering the period from 2001 to 2026. The novelty of this review lies not only in mapping publication patterns, but also in conceptualizing culture as a communicative and structural context that links health information behavior, migration, digital health, health literacy and health equity into a coherent knowledge structure. Specifically, the study addresses three research questions:

(1) What are the publication trends, leading countries, major sources and influential documents in this field?

(2) What core themes and knowledge clusters structure research on culture, pregnancy and health information behavior?

(3) how have these themes evolved over time, and which areas appear to represent current or emerging research frontiers?

By answering these questions, this review provides a structured overview of the field and clarifies how an otherwise dispersed literature can be understood as a culture-centered domain of maternal health communication research. In doing so, the study contributes to bibliometric scholarship, health communication research and cultural studies by showing how pregnancy-related information behavior is shaped by cultural meaning, language, migration, digital mediation and unequal access to health systems.

## II. METHOD

### Study design

We conducted a bibliometric review and science-mapping analysis to characterize the development, intellectual structure and thematic evolution of research on pregnancy-related health information behavior in cultural contexts. This design was selected because the aim was not to estimate pooled effects or appraise intervention efficacy, but to map how knowledge in this interdisciplinary field has been produced, connected and transformed over time (Cobo et al., 2011; Donthu et al., 2021; Zupic & Čater, 2015). The analysis combined descriptive bibliometric indicators, citation-based measures and network-based visualization to examine publication growth, source distribution, influential documents, country collaboration, keyword co-occurrence, thematic positioning and temporal topic evolution. In doing so, the study provides a quantitative and visual synthesis of the field while preserving an interpretive focus on culture, communication, digital health, migration, health literacy and equity in pregnancy-related information practices (Aria & Cuccurullo, 2017; Van Eck & Waltman, 2010).

### Data source and search strategy

Bibliographic records were retrieved from the Web of Science Core Collection, which was selected because it provides standardized citation metadata and broad coverage of interdisciplinary research across health sciences, public health, communication and social science (Mongeon & Paul-Hus, 2016; Zupic & Čater, 2015). The final search and data export were conducted on 11 June 2026, with the publication window restricted to 2000-2026. The search strategy was developed around three conceptual blocks: pregnancy and maternal health, culture and cultural context, and health information behavior and communication.

The following topic search query was used in Web of Science: TS=((pregnan* OR "pregnant women" OR "maternal health" OR "antenatal care" OR "prenatal care" OR "maternity care" OR "perinatal care") AND (culture OR cultural OR "cultural context" OR "cultural competence" OR "cultural safety" OR migration OR migrant* OR immigrant* OR ethnicity OR ethnic* OR language OR linguistic* OR "culturally and linguistically diverse" OR CALD) AND ("health

information" OR "information seeking" OR "information behavior" OR "information behavior" OR "health communication" OR "health literacy" OR "digital health" OR eHealth OR mHealth OR "mobile health" OR "decision making" OR "shared decision making" OR "information access")). The search was conducted in topic fields to identify records in which pregnancy-related contexts were substantively connected with culture, language, migration, communication, information behavior or digital health. Although the search window began in 2000, the final eligible dataset contained records published between 2001 and 2026.

## Eligibility screening

The initial search yielded 498 records. All records were screened at the title and abstract level to ensure thematic relevance to the review question. Records were retained when they met three inclusion criteria. First, they had to focus on pregnant women, pregnancy, antenatal care, maternity care or closely related perinatal contexts. Second, they had to address cultural contexts, including culture, language, migration, ethnicity, cultural safety, cultural competence, culturally and linguistically diverse populations, or culturally shaped beliefs and practices. Third, they had to examine health information-related processes, including information seeking, information access, health communication, health literacy, digital health, decision-making, shared decision-making or access to care.

Records were excluded when they were primarily concerned with general biomedical or clinical outcomes without substantive engagement with culture, communication or information behavior; reproductive health topics outside pregnancy; neonatal or child health without a maternal information component; or borderline topics that did not show a clear link among pregnancy, cultural context and information-related behavior. Titles and abstracts were first reviewed for obvious irrelevance. Borderline records were retained for a second check and were excluded only when the title and abstract did not demonstrate a clear relationship among the three conceptual blocks. After screening, 221 records were retained for bibliometric analysis. A PRISMA-style flow diagram was used to document the identification and screening process (Figure 1), while recognizing that this study was a bibliometric review rather than a conventional intervention-effectiveness review (Donthu et al., 2021; Page et al., 2021; Zupic & Čater, 2015).

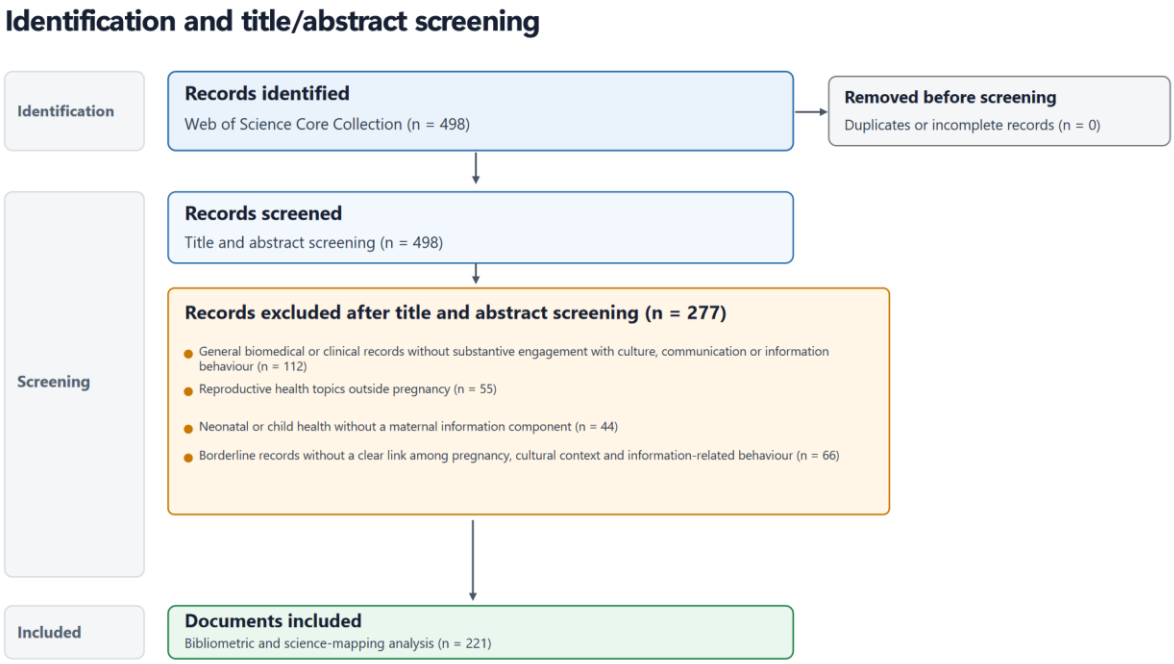



Figure 1. PRISMA-style identification and title/abstract screening process for the bibliometric review.
Note. Records were retrieved from the Web of Science Core Collection. After title and abstract screening, 221 of the initial 498 records were retained for bibliometric and science-mapping analysis.

## Data cleaning

Author keywords and Keywords Plus were standardized before network and thematic analyses to reduce fragmentation caused by spelling variants, singular and plural forms, synonymous terms and overly generic descriptors. The cleaning process was conducted in three steps. First, spelling and terminology variants were harmonized, including British and American spelling differences such as information behavior and information behavior. Second, equivalent or closely related terms were merged into unified labels. For example, digital health, mHealth, mobile health and eHealth were grouped under digital health and mHealth; migrants, immigrants, migration and acculturation were grouped under migration and acculturation; antenatal care, prenatal care and maternity care were grouped under antenatal and maternity care; and terms related to barriers, access and service navigation were grouped under information access barriers. Third, broad and non-specific terms, such as pregnancy, women, health, care and other descriptors that did not distinguish the cultural or informational focus of the review, were removed or down-weighted in the thematic analyses.

The purpose of keyword cleaning was not to alter the substantive meaning of the dataset, but to improve map interpretability and reduce artificial fragmentation. The cleaned keyword field was used for keyword co-occurrence analysis, thematic mapping and trend-topic analysis. This process helped foreground concepts related to cultural context, health information behavior, health communication, health literacy, digital health, migration, language and equity (Aria & Cuccurullo, 2017; Donthu et al., 2021; Van Eck & Waltman, 2010)

### Bibliometric and network analysis

Bibliometric analyses were conducted using Bibliometrix/Biblioshiny and VOSviewer 1.6.20. Bibliometrix/Biblioshiny was used to generate descriptive and thematic indicators, including annual scientific production, main information on the dataset, most relevant sources, authors and countries, most cited documents, thematic maps, trend topics and the three-field plot linking countries, keywords and sources (Aria & Cuccurullo, 2017). Unless otherwise specified, Bibliometrix/Biblioshiny analyses were conducted using the software's default settings. VOSviewer was used to visualize country co-authorship and keyword co-occurrence networks (Van Eck & Waltman, 2010). For the country collaboration network, the unit of analysis was country, the type of analysis was co-authorship, and countries with at least five documents were included. Fractional counting was used to reduce the influence of publications with large multi-country author teams (Perianes-Rodriguez et al., 2016). For the keyword co-occurrence network, the unit of analysis was the cleaned keyword field, and keywords with a minimum occurrence threshold of ten were included. Network visualizations were interpreted according to node size, link strength, cluster membership and relative position. In VOSviewer maps, larger nodes represented higher publication or keyword frequency, thicker links represented stronger relationships, and clusters represented groups of items that co-occurred more frequently with each other than with items outside the cluster.

Thematic maps in Bibliometrix were interpreted according to centrality and density. Centrality was used to assess the relevance of a theme to the broader field, while density was used to assess internal development. Themes were therefore classified as motor themes, basic themes, niche themes, or emerging or declining themes (Cobo et al., 2011). Trend-topic analysis was used to examine temporal shifts in the terminology of the field, and the three-field plot was used to summaries relationships among countries, cleaned keywords and publication sources.

## III. RESULTS AND DISCUSSION

### Dataset profile

The final dataset comprised 221 publications published between 2001 and 2026 across 143 sources (Table 1). The corpus involved 376 authors and showed an average citation rate of 12.35 citations per document, with an annual growth rate of 15.54%, indicating a rapidly expanding but still relatively specialized research area. Publication activity was unevenly distributed over time: only 25 records were published between 2001 and 2015, followed by 46 records between 2016 and 2020 and 150 records between 2021 and 2026. Thus, more than two-thirds of the included literature appeared after 2020, suggesting that culture-related pregnancy health information research has gained substantial momentum in recent years. The source distribution also indicates a multidisciplinary knowledge base, with publications

dispersed across journals in midwifery, maternal and child health, public health, digital health, health services research and social medicine.

Table 1. Dataset and productivity profile

| Section | Indicator | Value |
|---|---|---|
| Dataset profile | Timespan | 2001-2026 |
| Dataset profile | Documents | 221 |
| Dataset profile | Sources / journals | 143 |
| Dataset profile | Document types | Article; Review |
| Dataset profile | Average citations per document | 12.35 |
| Dataset profile | Annual growth rate (%) | 15.54 |
| Dataset profile | Authors | 376 |
| Publication periods | 2001-2015 | 25 |
| Publication periods | 2016-2020 | 46 |
| Publication periods | 2021-2026 | 150 |
| Top sources | Midwifery | 10 |
| Top sources | BMC Pregnancy and Childbirth | 9 |
| Top sources | PLOS ONE | 7 |

## Annual publication trend

Annual scientific production showed a long initial period of low and intermittent activity, followed by a marked acceleration in recent years (Figure 2). From 2001 to 2015, publications appeared sporadically, with most years producing fewer than five records. Output began to rise after 2016, reaching 10 publications in both 2017 and 2018 and 15 publications in 2019. After a temporary decrease in 2020 and 2021, the field expanded rapidly, with 13 publications in 2022, 23 in 2023, 21 in 2024, 49 in 2025 and 37 in 2026. Because the 2026 data represent a partial publication year, the apparent decline after 2025 should be interpreted cautiously. Overall, the post-2021 acceleration may reflect the convergence of several developments, including increased attention to digital health and mHealth, the expansion of online health information use after the COVID-19 pandemic, renewed concern about migrant and minority maternal health inequities, and the growing prominence of culturally safe maternity care (Asadollahi et al., 2025; Benski et al., 2020; Blackwell et al., 2020; Coe et al., 2024; Nagesh et al., 2026).

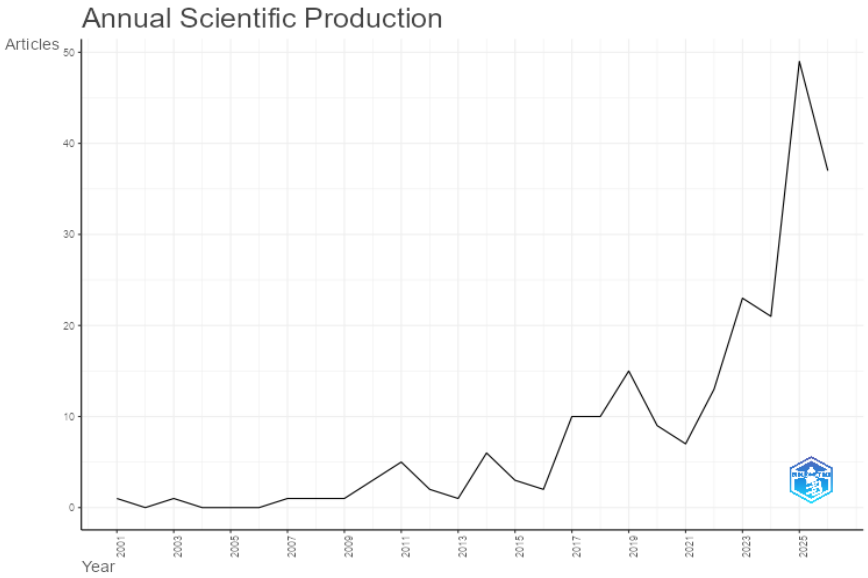



Figure 2. Annual scientific production of publications on pregnancy-related health information behavior in cultural contexts, 2001-2026

## Source distribution

The included publications were distributed across a wide range of journals, indicating that the field is not confined to a single disciplinary domain (Table 2). The most productive source was Midwifery (10 publications), followed by BMC Pregnancy and Childbirth (9), PLOS ONE (7), Maternal and Child Health Journal (6) and Reproductive Health (5). Other recurrent outlets included BMC Health Services Research, Frontiers in Global Women's Health, JMIR mHealth and uHealth, Social Science & Medicine and Women and Birth, each contributing four publications. This distribution shows that research on culture-related pregnancy health information behavior is anchored in maternity and midwifery scholarship, but extends beyond clinical obstetrics into public health, health services research, digital health, health communication and social medicine. The Bradford analysis further suggested a dispersed publication structure, with a relatively small core of sources accounting for approximately one-third of the corpus and a long tail of journals contributing one or two publications. Together, these patterns indicate that the topic has developed as an interdisciplinary research area rather than as a narrowly defined subfield within obstetrics or maternal medicine.

Table 2. Top journals/sources

| Sources | Articles |
|---|---|
| MIDWIFERY | 10 |
| BMC PREGNANCY AND CHILDBIRTH | 9 |
| PLOS ONE | 7 |
| MATERNAL AND CHILD HEALTH JOURNAL | 6 |
| REPRODUCTIVE HEALTH | 5 |
| BMC HEALTH SERVICES RESEARCH | 4 |
| FRONTIERS IN GLOBAL WOMENS HEALTH | 4 |
| JMIR MHEALTH AND UHEALTH | 4 |
| SOCIAL SCIENCE & MEDICINE | 4 |
| WOMEN AND BIRTH | 4 |

## Country collaboration network

The country co-authorship network revealed a geographically uneven but internationally connected research field (Figure 3). The USA and England occupied the most prominent positions in the network, functioning as major hubs of knowledge production and collaboration. Canada also appeared as an important connecting node, while Australia was prominent in the broader country-level profile of the dataset. Beyond these high-income English-speaking settings, countries such as South Africa, India, Ghana, Thailand, China, Nigeria, Malaysia, Indonesia, Brazil and Saudi Arabia were also represented, indicating that the field draws on a wide range of cultural and health-system contexts. However, the network structure suggests that international collaboration remains largely organized around high-income countries, particularly the USA, England, Canada and Australia. Low- and middle-income countries and countries with substantial migrant, ethnic minority or culturally diverse populations appear in the network, but often as smaller or more peripheral nodes. This pattern suggests that, while culturally diverse and lower-resource settings are central to the empirical scope of the literature, the main centers of authorship and collaboration remain concentrated in English-speaking high-income research systems.

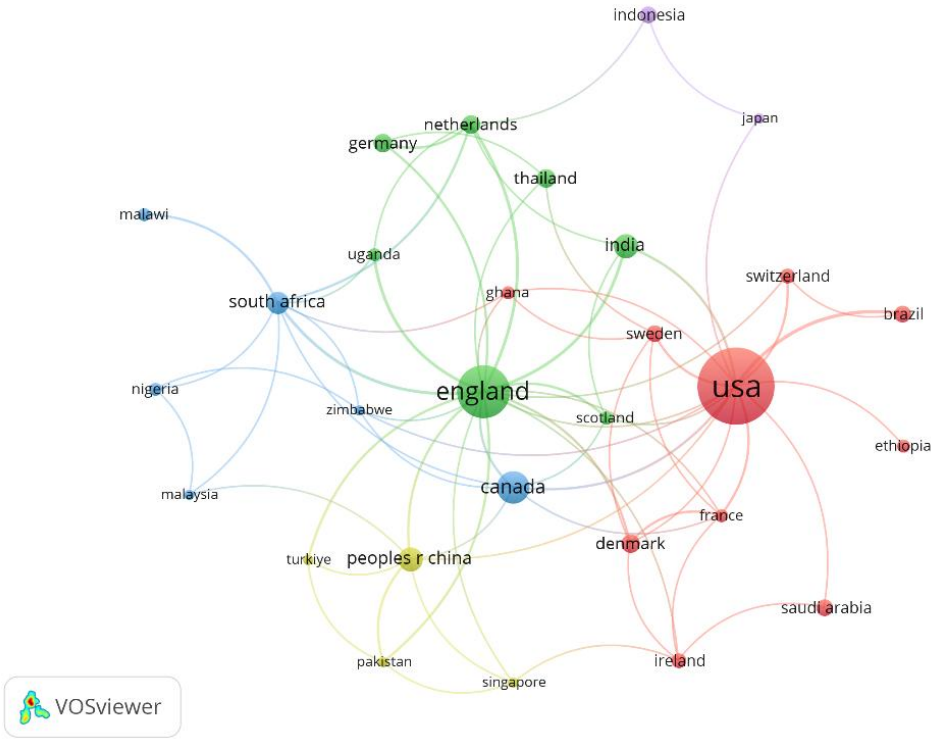



Figure 3. Country co-authorship network generated in VOSviewer

Note**.** Node size indicates publication volume and links indicate co-authorship relationships between countries.

## Highly cited documents

The citation analysis indicated that the intellectual foundation of the field is thematically diverse rather than centered on a single canonical document (Table 3). Highly cited publications clustered around several knowledge bases. First, studies on migration and cultural-linguistic barriers formed an important foundation, with influential work examining immigrant Muslim women's maternity care needs, Somali women's obstetric communication experiences and migrant women's access to pregnancy-related care (Ameresekere et al., 2011; Reitmanova & Gustafson, 2008; Sami et al., 2019). Second, patient-provider communication and shared decision-making emerged as a major citation domain, represented by studies on communication in multiethnic obstetric settings, shared decision-making in maternity care and the provision and uptake of routine antenatal services (Begley et al., 2019; Binder et al., 2012; Downe et al., 2019). Third, health information sources and digital health contributed to the field's communication-oriented foundation, particularly through research on Hispanic mothers' information sources, culturally sensitive digital tools, text messaging and mHealth use in pregnancy care (Asadollahi et al., 2025; Blackwell et al., 2020; Criss et al., 2015; L. Garnweidner-Holme et al., 2018). Fourth, health literacy and culturally safe care appeared as a growing knowledge base, linking information access to equity, service responsiveness and culturally appropriate maternity support (Brorsen et al., 2022; Coe et al., 2024; Hughson et al.,

2018; Rasmussen et al., 2023). Finally, more recent cited work extended the field toward perinatal mental health, trauma, risk communication and culturally adapted interventions (Hicks et al., 2022; Markin & Coleman, 2023; Wang et al., 2026). Notably, local citation counts were modest, with no document overwhelmingly dominating the internal citation network. This suggests that the field remains dispersed and interdisciplinary, drawing on multiple adjacent literatures rather than a single consolidated theoretical tradition.

Table 3. Key citation domains and representative highly cited documents in culture-related pregnancy health information research

| Citation domain | Representative highly cited documents | Contribution to the field |
|---|---|---|
| Migration and cultural-linguistic barriers | Reitmanova and Gustafson (2008; GC = 155; LC = 2); Ameresekere et al. (2011; GC = 43); Sami et al. (2019; GC = 32) | Established migration, language, religion and cultural norms as key conditions shaping maternity care access, communication and trust. |
| Patient-provider communication and shared decision-making | Downe et al. (2019; GC = 119; LC = 2); Binder et al. (2012; GC = 101; LC = 2); Begley et al. (2019; GC = 76; LC = 2) | Positioned pregnancy-related information behavior within antenatal service use, clinical communication and decision-making processes. |
| Health information sources and digital health | Criss et al. (2015; GC = 72; LC = 2); Garnweidner-Holme et al. (2018; GC = 27); Blackwell et al. (2020; GC = 14; LC = 1); Asadollahi et al. (2025; GC = 9; LC = 2) | Linked maternal information practices to source selection, digital tools, culturally sensitive applications, text messaging and mHealth use. |
| Health literacy and culturally safe care | Hughson et al. (2018; GC = 37; LC = 1); Brorsen et al. (2022; GC = 15; LC = 3); Rasmussen et al. (2023; GC = 7; LC = 2); Coe et al. (2024; GC = 4; LC = 2) | Connected information access with health literacy responsiveness, ethnic equity, cultural safety and service-level responsibility. |
| Perinatal mental health and culturally adapted intervention | Hicks et al. (2022; GC = 28); Markin and Coleman (2023; GC = 23); Wang et al. (2026; recent emerging citation) | Extended the field towards psychosocial care, childbirth trauma, culturally adapted intervention and perinatal mental health communication. |

Note**.** GC = global citations; LC = local citations within the analyzed dataset. Citation counts were generated using Bibliometrix outputs for Most Global Cited Documents and Most Local Cited Documents.

## Keyword co-occurrence network

The keyword co-occurrence network provided the clearest representation of the thematic architecture of the field (Figure 4). Five major clusters were identified, together forming the conceptual backbone of this review. The first and most central cluster concerned antenatal and maternity care communication, linking antenatal and maternity care with health communication, shared decision-making, risk communication, safety and health literacy education. This indicates that pregnancy-related information behavior is primarily studied within care encounters and decision-making processes (Begley et al., 2019; Binder et al., 2012;

Downe et al., 2019). The second cluster focused on digital health, mHealth and health information sources, connecting digital health, mHealth, eHealth, health information, advice and language. This cluster suggests that information practices increasingly extend beyond clinical settings into digital and hybrid information environments (Blackwell et al., 2020; Criss et al., 2015; L. Garnweidner-Holme et al., 2018). The third cluster centered on migration, acculturation and information-access barriers, highlighting the importance of cultural and linguistic diversity, migrant status, language barriers and navigation of unfamiliar health systems (Lang et al., 2020; Reitmanova & Gustafson, 2008; Sami et al., 2019). The fourth cluster linked cultural context, health literacy and health equity, suggesting that culture operates as a social and communicative context shaping information understanding, trust, service responsiveness and inequitable maternal health outcomes (Brorsen et al., 2022; Hughson et al., 2018; Rasmussen et al., 2023). The fifth cluster concerned perinatal mental health and culturally responsive intervention, connecting perinatal depression, health inequities, implementation and intervention (Hicks et al., 2022; Markin & Coleman, 2023; Wang et al., 2026). Overall, Figure 4 shows that the field is structured around culturally embedded maternity communication, digital information practices, migration-related access barriers, health literacy and equity, and culturally responsive psychosocial care.

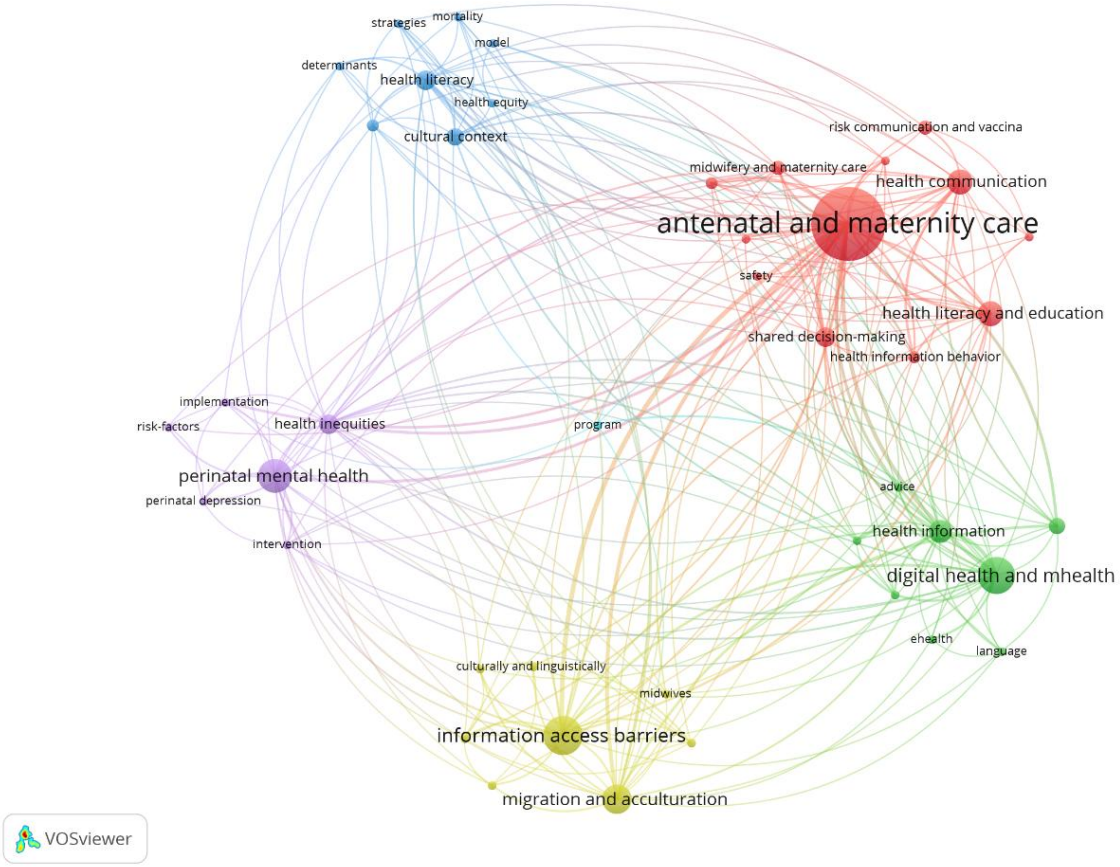



Figure 4. Keyword co-occurrence network generated in VOSviewer using the cleaned keyword field

## Thematic map

The thematic map clarified the strategic position and maturity of the main topics (Figure 5). Digital health and mHealth, together with health information and design, appeared in the motor-theme quadrant, indicating topics that are both well-developed internally and strongly connected to the wider field. Migration and acculturation, cultural competence and safety, and eHealth also occupied a motor-theme position, suggesting that culturally diverse maternity care and digitally mediated information systems are now central drivers of the field's development. By contrast, antenatal and maternity care, shared decision-making, cultural beliefs and practices, health literacy and health inequities were located among the basic themes. These topics are highly relevant to the field but less internally dense, indicating that they provide the common conceptual ground on which more specialized research streams are built. Gestational diabetes mellitus, nutrition, obesity and risk factors appeared as niche themes, suggesting more specialized clinical or behavioral subfields that are developed internally but less central to the overall cultural-information agenda. Information access barriers, migrant and immigrant populations, health communication, cultural context and perinatal mental health were positioned close to the lower central area, implying topics that are important but still consolidating. Together, these patterns suggest that the field is moving from broad service-access concerns towards more strategic questions about culturally safe digital information environments, migrant health equity and the design of responsive maternity communication systems.

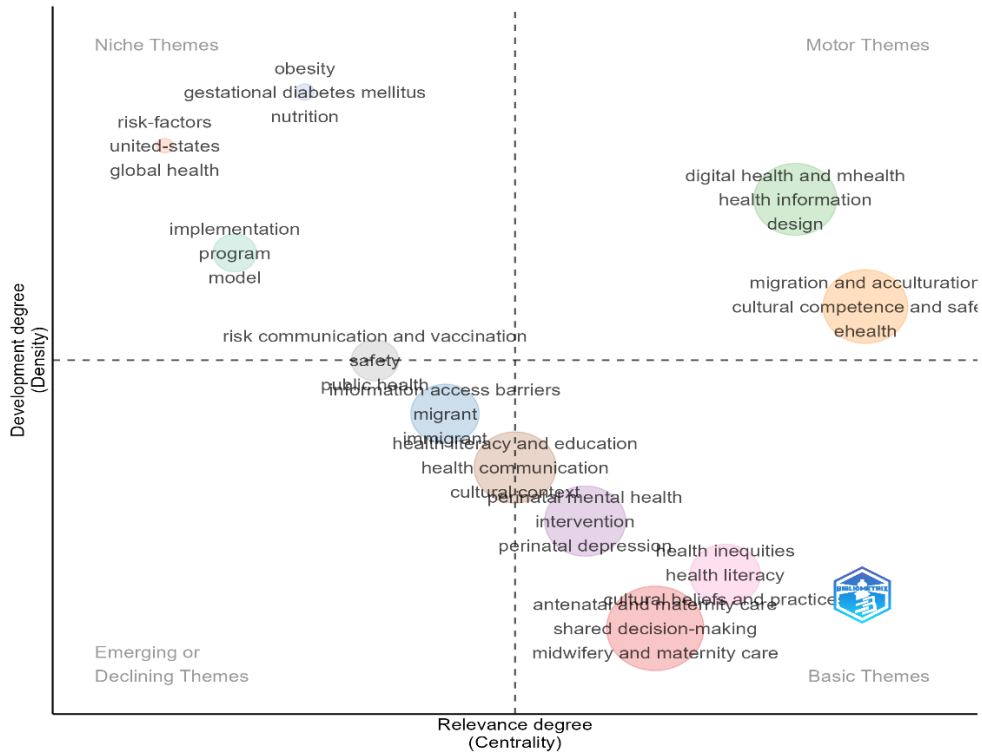



Figure 5. Thematic map generated in Bibliometrix

## Thematic evolution

The trend-topic and thematic-evolution analyses showed a clear shift in the temporal organization of the field (Figure 6). Earlier work was characterized by themes such as cultural sensitivity, language barriers, program implementation, obesity and health inequities, suggesting an initial focus on culturally sensitive service delivery and practical barriers within maternal health contexts (Belizan et al., 2007; Reitmanova & Gustafson, 2008). From approximately 2018 onwards, the vocabulary of the field became more explicitly communication- and information-oriented, with the emergence of health information behavior, health information needs, health communication, eHealth, shared decision-making, health literacy and cultural competence and safety (Begley et al., 2019; Criss et al., 2015; Hughson et al., 2018). This indicates that culture was increasingly framed not only as a background characteristic, but as a factor shaping information needs, trust, interpretation and care interactions. In the most recent period, particularly after 2021, the field shifted further towards digital health and mHealth, culturally and linguistically diverse populations, information access barriers, migration and acculturation, risk communication and vaccination, perinatal mental health, health equity and public health (Asadollahi et al., 2025; Cagayan et al., 2022; Coe et al., 2024; Nagesh et al., 2026). The thematic-evolution plot similarly showed that earlier streams centred on antenatal and maternity care, digital health, health communication, cultural context and midwifery evolved into more focused recent themes, including public health, culturally and linguistically diverse populations and information access barriers. These patterns suggest that the field has moved from describing cultural and service barriers towards examining culturally safe, digitally mediated and equity-oriented maternal health information systems.

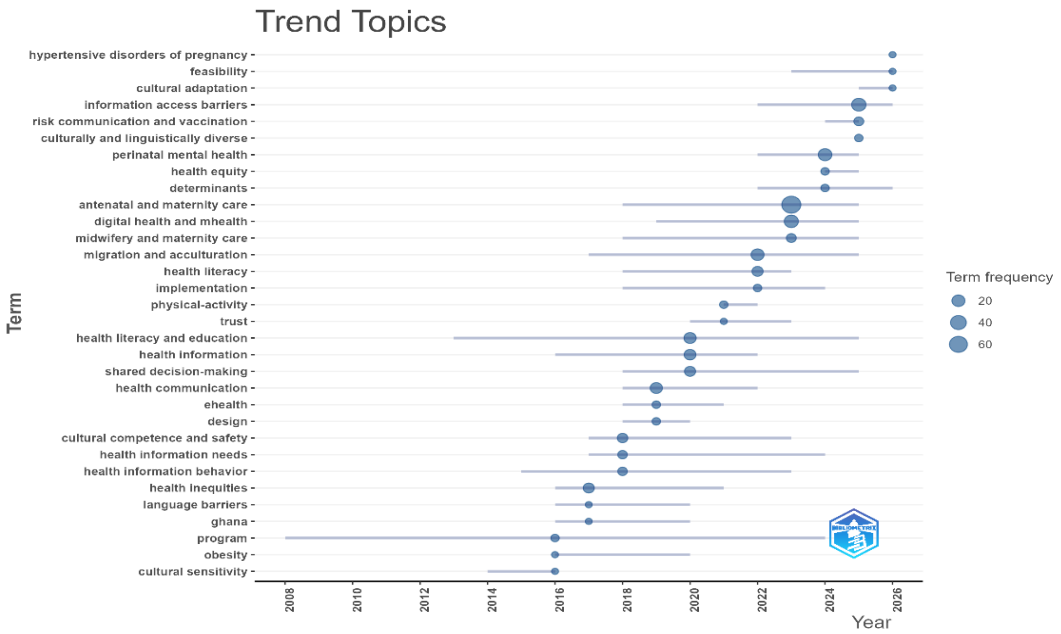



Figure 6. Trend topics and thematic evolution showing temporal shifts in the vocabulary and major themes of the field

## Three-field plot

The three-field plot provided an integrated view of how countries, themes and publication sources jointly structure the field (Figure 7). The left side of the plot showed that the main country contributors were concentrated in the USA, Australia, the United Kingdom and Canada, with additional contributions from Denmark, India, China, Ghana, Thailand, Nigeria, Saudi Arabia, Germany, Brazil and other countries. The central keyword field was dominated by antenatal and maternity care, information access barriers, perinatal mental health, digital health and mHealth, migration and acculturation, health communication, health literacy and education, health inequities, cultural beliefs and practices, cultural context and shared decision-making. These themes were linked to a broad set of journals on the right side of the plot, including Midwifery, BMC Pregnancy and Childbirth, Maternal and Child Health Journal, Reproductive Health, JMIR mHealth and uHealth, Women and Birth, BMC Public Health, Patient Education and Counseling, Social Science & Medicine and Frontiers in Communication. This configuration shows that the field is jointly constituted by high-output countries, a thematic core centered on maternity care, digital health, migration and information barriers, and an interdisciplinary publication space spanning midwifery, public health, health communication, digital health and social medicine. As a summary visualization, the plot reinforces the finding that culture-related pregnancy health information behavior has developed as a cross-disciplinary field rather than as a narrowly clinical research topic.

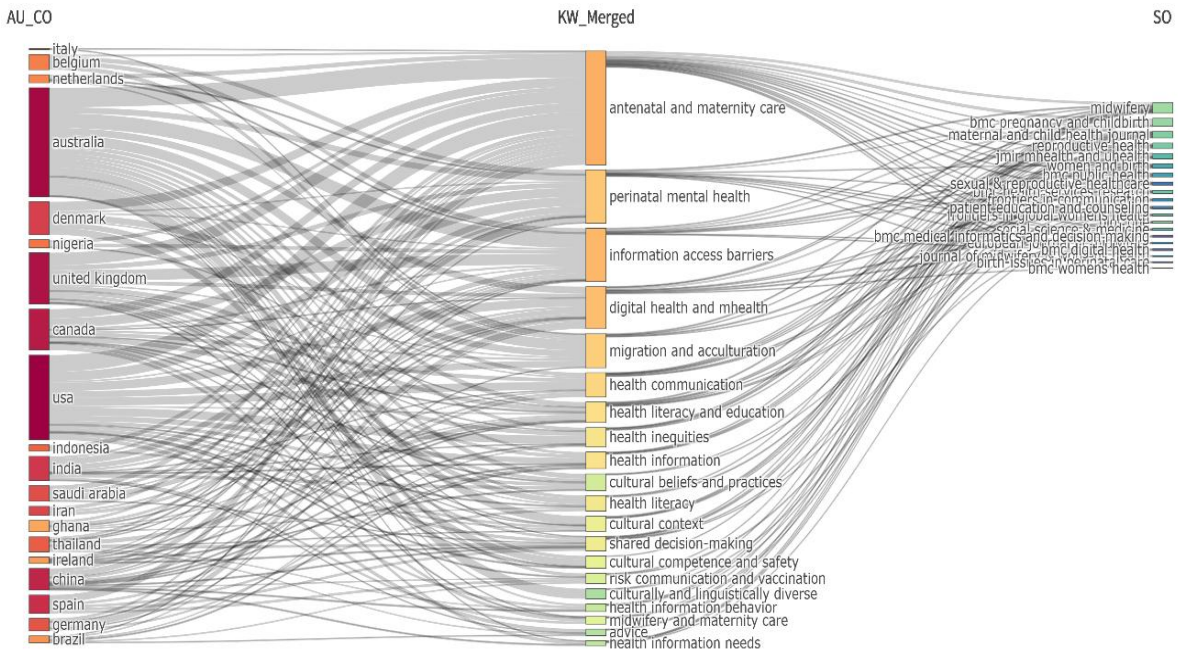



Figure 7. Three-field plot linking author countries, merged keywords and publication sources.

## Culture-related thematic findings

Across the keyword co-occurrence network, thematic map and trend-topic analysis, culture emerged not as a marginal descriptor but as a central interpretive framework linking

pregnancy-related information behavior to health literacy, migration, language, service access and health equity. This interpretation is consistent with cultural scholarship that understands culture as lived practice, communicative transmission and shared systems of meaning embedded in everyday social relations (Az-Zahra et al., 2025; Daar & Gunas, 2025). In the keyword network, culture-related terms were distributed across several thematic areas rather than confined to a single isolated cluster, indicating that cultural context shaped multiple dimensions of maternal health information practices. Terms related to migration and acculturation were closely connected with information access barriers and culturally and linguistically diverse populations, suggesting that cultural difference was frequently studied through problems of language, navigation and trust in maternity care systems. This emphasis on language and interpretation also aligns with cross-cultural pragmatic research showing that communicative meanings and expectations vary across cultural settings (Hendar et al., 2025). At the same time, cultural context, health literacy and health equity formed an important conceptual bridge between individual information practices and broader structural conditions. The thematic map further reinforced this pattern by positioning cultural competence and safety, migration and acculturation, eHealth and information access as strategically important themes. Temporal analyses also showed that the field has moved from earlier concerns with cultural sensitivity and language barriers towards more integrated discussions of cultural safety, digital health, risk communication and public health, a shift that resonates with recent work on language choice, digital media and culturally situated public communication (Fatmasari & Setiadi, 2025; Putri et al., 2025). These findings suggest that culture functions as a connective framework through which pregnancy-related information seeking, interpretation, communication and use are organized, while also reflecting broader processes of cultural adaptation and hybridity in contemporary communication environments (Akinsola & Osundiran, 2025).

## Integrative interpretation of the results

Taken together, the bibliometric results show that the field has developed through the convergence of three previously separate research streams: maternity care communication, culturally and linguistically diverse maternal health, and digital health information practices. The rapid growth after 2021 may reflect the combined influence of increased digital health use, post-pandemic reliance on online health information, renewed attention to migrant and minority maternal health inequities, and the growing visibility of cultural safety in maternity care. The country collaboration network further suggests that knowledge production remains concentrated in high-income English-speaking research systems, even though many of the empirical concerns of the field involve culturally diverse, migrant, minority and lower-resource populations. This pattern is important because it shows that culture operates not only as a topic of study, but also as a condition shaping whose knowledge is produced, circulated and made visible in international databases.

The keyword and thematic analyses also clarify why culture functions as the organizing concept of this review. Culture-related terms were not confined to a single cluster. Instead, they connected information access, language, migration, health literacy, trust, digital health and equity across multiple thematic areas. This indicates that pregnancy-related health information behavior is best understood as a culturally situated communication process rather than as an individual act of information seeking alone. Compared with previous reviews that focused on maternity care access, migrant maternal health, mHealth interventions or health literacy as separate topics, the present bibliometric analysis demonstrates how these areas are structurally connected. The contribution of this review therefore lies in mapping a fragmented literature as a coherent knowledge domain centered on culture, communication and maternal health information behavior.

## Culture as a communicative context for pregnancy-related information behavior

This review shows that research on culture, pregnancy and health information behavior has moved beyond a narrow concern with maternity care access and has developed into a broader field of culturally embedded maternal health information research. The central finding is not simply that the field has grown, but that culture has become a connective framework through which information access, interpretation, trust, migration, language, digital health and equity are increasingly studied together (Binder et al., 2012; McKinn et al., 2017; Reitmanova & Gustafson, 2008). This finding fills an important gap in existing scholarship by showing how previously separate domains, including maternity care access, migrant maternal health, digital maternal health and health literacy, form an integrated knowledge structure.

The observed thematic convergence may be explained by the changing nature of pregnancy-related communication. Pregnant women now encounter health information through clinical consultations, family networks, community norms, online platforms, mobile applications and public health messaging (Criss et al., 2015; L. Garnweidner-Holme et al., 2018; Woodley et al., 2023). In this environment, information is not a neutral object that simply moves from professional to patient. It is interpreted through language, cultural beliefs, religious practices, family expectations, migration experiences and trust in institutions (Ameresekere et al., 2011; DeStephano et al., 2010; Mohale et al., 2017). The clustering of health communication, shared decision-making, health literacy, cultural context and information access barriers therefore suggests that pregnancy-related information behavior is a communicative and cultural process, not merely a cognitive or behavioral one.

This interpretation advances existing scholarship by repositioning culture from a background variable to an analytical framework. Studies of migrant maternity care and culturally competent care have shown that language and cultural expectations influence women's experiences of care (Johnson-Agbakwu et al., 2014; Reitmanova & Gustafson, 2008; Sami et al., 2019). Studies of digital health and mHealth have shown that pregnant women

increasingly use online and mobile information sources (Blackwell et al., 2020; Brusniak et al., 2020; L. Garnweidner-Holme et al., 2018). Health literacy research has shown that comprehension and access matter for maternal health decisions (Brorsen et al., 2022; Hughson et al., 2018). By mapping these connections bibliometrically, this review shows that these concerns are structurally linked rather than separate. They are connected through a shared problem: how pregnant women access, evaluate, trust and use health information within culturally structured communication environments.

These findings extend the analysis of pregnancy-related health information behavior into language, cultural communication and health discourse studies. The results suggest that language is not only a practical issue of translation, but also a medium through which trust, authority, risk, identity and care relationships are negotiated (Binder et al., 2012; DeStephano et al., 2010; McKinn et al., 2017). In maternity care, the meaning of information depends on who communicates it, in what language, through which channel and within which cultural or institutional relationship. The study therefore shows how bibliometric patterns can reveal the communicative structure of a health-related knowledge field.

## Cultural diversity, migration and health equity in maternal information access

The findings also show that cultural diversity, migration and health equity are central to the field rather than peripheral concerns. Migration, acculturation, culturally and linguistically diverse populations, language barriers, information access barriers and health inequities appeared across the keyword network, thematic map and trend-topic analysis. This pattern suggests that the field has increasingly recognized that information access is shaped by social position and institutional responsiveness (Coe et al., 2024; McKinn et al., 2017; Vang et al., 2018). Women's ability to use pregnancy-related information depends not only on individual motivation or literacy, but also on whether health systems provide linguistically accessible, culturally meaningful and trustworthy communication.

The prominence of high-income English-speaking countries in the collaboration network also requires interpretation. On one hand, it reflects strong research infrastructure and the indexing patterns of Web of Science. On the other hand, it indicates a possible imbalance between where knowledge is produced and where cultural and linguistic diversity is often studied. Migrant, refugee, minority and CALD pregnant women frequently appear as important empirical populations, but the major centers of authorship and collaboration remain concentrated in the USA, England, Canada and Australia (Agbemenu et al., 2018; Johnson-Agbakwu et al., 2014; Reitmanova & Gustafson, 2008). This suggests that future research should pay closer attention to knowledge production from low- and middle-income countries, non-English-speaking contexts and locally grounded cultural systems.

Compared with existing systematic reviews on migrant maternal health or culturally competent maternity care, this study adds a broader structural perspective. Previous reviews

have often identified barriers such as language, unfamiliarity with health systems, lack of culturally appropriate care and limited health literacy (Downe et al., 2019; Sami et al., 2019). The present bibliometric analysis shows how those barriers are connected to wider research themes, including digital health, risk communication, shared decision-making and health equity. This matters because it shifts the discussion from listing barriers to understanding how information environments are organized.

A stronger equity-oriented interpretation is therefore needed. If research describes migrant or culturally diverse women only as "hard to reach" or "low literacy" groups, it risks turning structural communication problems into individual deficits. The findings of this review support a different reading. Information barriers should be understood as indicators of how well maternity systems communicate across cultural and linguistic difference (Brorsen et al., 2022; Coe et al., 2024; Hughson et al., 2018). Health equity in this field therefore requires more than translated leaflets. It requires culturally safe communication, interpreter access, community participation, trustworthy digital resources and shared decision-making practices that recognize women's cultural knowledge and lived experience.

## Towards culturally responsive maternal health information systems

The position of digital health and mHealth as motor themes indicates that digital information environments have become a major frontier of the field. This pattern may reflect the rapid expansion of online maternal health information, pregnancy apps, text messaging, social media and remote communication, especially after COVID-19 disrupted face-to-face care and increased reliance on digital health information (Blackwell et al., 2020; Brusniak et al., 2020; Woodley et al., 2023). However, the thematic map also shows that digital health is closely connected with culture, language, migration and information access barriers. This means that digitalization should not be interpreted as a simple solution to maternal information inequality.

Compared with previous reviews that evaluate mHealth interventions or digital maternal health tools, the present study highlights the cultural conditions under which digital information becomes useful, trusted and actionable. Digital resources may improve flexibility and access, but they may also reproduce exclusion if they are available only in dominant languages, assume high digital literacy, ignore cultural beliefs, or remain disconnected from trusted health professionals (L. Garnweidner-Holme et al., 2018; Mburu & Oboko, 2018; Pagalday-Olivares et al., 2017). The findings therefore support a culturally responsive model of digital maternal health communication. Such a model should consider not only accuracy and availability, but also language, readability, visual design, cultural adaptation, source credibility and links to professional care.

The review also extends previous work by connecting digital health with discourse and cultural communication. Digital platforms are not neutral channels. They shape how risks are framed, how authority is recognized, how uncertainty is communicated and how women

compare professional advice with family or community knowledge (Benski et al., 2020; Binder et al., 2012; DeStephano et al., 2010). This is particularly important for topics such as vaccination, gestational diabetes, antenatal screening, birth planning and perinatal mental health, where information often intersects with cultural beliefs, fear, trust and moral decision-making (L. M. Garnweidner-Holme et al., 2016; Hicks et al., 2022; Markin & Coleman, 2023).

Several practical implications follow from this interpretation. Maternity care organizations, midwives, public health agencies and health communication practitioners should move from information delivery to information system design. Resources should be multilingual, culturally adapted, visually clear and connected to trusted care pathways. Health professionals should be supported to act as information navigators who help women interpret conflicting online advice and connect digital information to shared decisions (Begley et al., 2019; Mohale et al., 2017). Community participation is also essential. Information resources should be co-designed with migrant, minority and CALD women rather than only translated for them (Brammall et al., 2025; Lindsay et al., 2021).

Future research should extend this agenda in several directions. Comparative cross-cultural studies are needed to examine how pregnancy-related information behavior differs across languages, health systems and cultural settings. Empirical studies should test whether culturally adapted digital tools improve knowledge, confidence, service navigation and maternal outcomes (Asadollahi et al., 2025; Blackwell et al., 2020). Future bibliometric work could integrate Scopus, PubMed, CINAHL and regional databases to reduce the bias of relying only on Web of Science. Emerging technologies such as AI-supported maternal health communication, chatbots and algorithmically personalized pregnancy information also require critical examination, especially in relation to misinformation, language accessibility, cultural adaptation and trust.

Several limitations should be acknowledged. The analysis was based on the Web of Science Core Collection only, which may have excluded relevant studies indexed elsewhere or published in non-English-language journals. Keyword standardization was necessary to improve map interpretability, but the merging and removal of terms involved judgement and may have influenced the final cluster structure. The 2026 data represent an incomplete publication year and should not be interpreted as a full annual trend. Finally, bibliometric analysis can map knowledge structures and thematic trajectories, but it cannot replace systematic quality appraisal or evaluation of intervention effectiveness.

Overall, this review contributes to the literature by showing that culture, pregnancy and health information behavior now form an identifiable interdisciplinary knowledge domain. Its main contribution is not only descriptive mapping, but conceptual integration. By connecting culture, language, migration, digital health, health literacy and equity, the review clarifies how pregnancy-related information behavior is organized as a culturally situated communication field. Future research and practice should therefore move beyond identifying barriers towards

designing maternal health information systems that are culturally safe, linguistically inclusive, digitally accessible and oriented towards trust and equity.

## IV. CONCLUSION

This bibliometric review mapped the knowledge structure and thematic evolution of research on pregnancy-related health information behavior in cultural contexts from 2001 to 2026. The findings show that the field is grounded in antenatal and maternity care, health communication and shared decision-making, but has increasingly expanded towards digital health, cultural safety, migration and culturally and linguistically diverse populations, health literacy and health equity. More importantly, culture emerged not as a peripheral background variable, but as a communicative and structural context that shapes how pregnant women access, trust, interpret and use health information across clinical, interpersonal and digital settings. This review therefore reframes pregnancy-related health information behavior as a culturally situated communication field. Future research should extend this agenda through comparative cross-cultural studies, empirical validation of culturally adapted information interventions, broader database integration beyond Web of Science, and closer examination of AI-supported, social-media-based and platform-mediated maternal health communication. Such work would help move the field beyond documenting cultural and informational barriers towards designing maternal health information systems that are culturally safe, linguistically inclusive, digitally accessible and oriented towards trust and equity.

## DECLARATION

**Author contribution:** FD contributed to data collection, data organization, analysis and manuscript writing. EMWM and AAA provided writing guidance and manuscript supervision. DF provided writing guidance and support in the use of bibliometric software tools. LB contributed to manuscript checking and writing guidance. All authors reviewed and approved the final manuscript.

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