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Improving maternal health literacy among low-income pregnant women: A systematic review

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Abstract

Previous studies on maternal health have highlighted the need to improve health literacy, particularly among women from lower socioeconomic backgrounds. Some crucial factors for improving maternal health literacy are midwife capacity and systems support that can help ensure women's ability and motivation to access timely health services. However, the extent of roles midwives need and the system that must be developed require further elaboration. The aim of this systematic review was to investigate approaches for enhancing maternal health literacy in low-income pregnant women. Using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, the systematic search was conducted on two databases: PubMed and ScienceDirect. All English articles published from 2011 to 2023 were searched using the keywords pregnant, antenatal, prenatal, perinatal, midwife, health literacy, midwife-led care, helpline, and photo novel. Of the 1,539 articles, 15 were included in the final assessment. The results suggested that improving maternal health literacy among low-income pregnant women was related to: (a) empowering low-income women; (b) empowering midwives as frontline care providers engaging with low-income pregnant women; and (c) empowering the health care system as a health literacy organization. In conclusion, improving the healthcare system and strengthening midwives' leadership as proximal caregivers is crucial for improving maternal health literacy among low-income pregnant mothers. These efforts could be realized with support from government roles, educational institutions, and professional associations.

Keywords: Maternal health literacy, pregnant women, low income, midwifery, healthcare system

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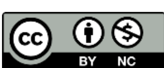

Introduction

Maternal health literacy is essential in low-income countries for improving health equity and reducing health disparities. Several publications have shown limited health literacy is more prevalent among low-income individuals, which the inadequate health literacy correlates with a lower chance of gaining positive pregnancy outcomes [1,2]. Low maternal health literacy could negatively impact both the mother and the fetus in several ways. Firstly, limited access to

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communication tools and mobile data restricts pregnant women from seeking online and digital health information sources [3]. Secondly, pregnant women with poor reading comprehension are less likely to be aware of the harmful effects on their health and their babies, making it difficult for them to adopt essential health behaviors during pregnancy [4]. Thirdly, the intersectionality for women with low health literacy and low-income categories resulted in a higher rate of hospitalization and emergency service use due to their poor utilization of healthcare services [5]. Pregnant women with comorbidities such as diabetes mellitus require good literacy skills to manage their pregnancy effectively, including reading nutrition and prescription labels, understanding recommended ingredient lists, and using written educational materials [6]. Finally, they struggle to navigate the insurance system and healthcare system.

Pregnant women with low literacy often face difficulty understanding complex language in reading materials. More than half of patient education brochures are written at a reading level of eight or above, using the Flesh Kincaid and Simple Measure of Gobbledygook (SMOG) methods, making them ineffective [7]. The inability to assess and apply the information received in healthcare facilities is another critical factor affecting the health behavior of low-income pregnant women [8]. Additionally, the health literacy of low-income pregnant women is also hindered by the limitations of midwives in providing counseling to this population. These limitations include inadequate language skills of healthcare providers [9], suboptimal patient-healthcare provider engagement [10], neglecting client questions, displaying harsh attitudes [11], inconsistent information delivery [12], lack of evaluation [12], limited knowledge and experience of midwives [13], and delays or failure to respond to patient inquiries [14]. Maternal health literacy is thus crucial in achieving safe pregnancies for low-income women, but it is currently constrained. This study aimed to determine strategies that could encourage efforts to improve maternal literacy among low-income pregnant women through a systematic review.

Methods

Information sources and search strategy

Two databases of PubMed and ScienceDirect were searched using the search terms “pregnant” AND “antenatal” OR “prenatal” OR “perinatal” AND “midwife” AND "health literacy" OR "midwife-led care" OR “helpline” OR “photo novel”. The keywords were selected using Medical Subject Headings (MeSH) terms. A systematic search was performed to identify eligible scientific papers published between January 1, 2011 and December 31, 2023. This review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Systematic Reviews (PRISMA-SR) guidelines and related previous article [15]. All curated studies were imported into an automated citation-checking service using a manager reference to identify and remove duplicate records.

Eligibility criteria

The main inclusion criteria were English texts published from 2011 to 2023 and examining the health literacy of pregnant women. Conference presentations, inappropriate content, case reports, letters to the editor, insufficient data, and unavailability of the full text were excluded from the review.

Study risk of bias assessment

The quality appraisal of the included studies was evaluated using the Cochrane risk-of-bias tool with RevMan software version 5.4.1 (Cochrane, London, UK). Two authors (EWN and LL) independently conducted the quality assessments. Any disagreements between the two reviewers were resolved through a discussion. If consensus could not be reached, the other authors (EH, TM, and MH) were consulted as additional reviewers.

Data extraction and collection process

The selection and data collection process involved multiple stages. Initially, two authors (EWN and LL) independently screened the titles and abstracts of the articles retrieved from PubMed and ScienceDirect. The same authors conducted a full-text review of potentially eligible articles to confirm their inclusion based on the specified criteria. Subsequently, they extracted relevant

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data from the included studies, such as study design, sample size, interventions, outcomes, and key findings related to maternal health literacy. Discrepancies during the selection and data collection process were resolved through discussion between the two reviewers. The other authors (EH, TM, and MH) were consulted when consensus could not be reached.

Synthesis method

Data from the included studies were synthesized using a systematic approach. The extracted data were organized thematically to identify the common patterns and results related to improving maternal health literacy among low-income pregnant women. Key findings included the role of midwives, health system support, and specific interventions such as midwife-led care, helplines, and educational materials. These findings were examined to evaluate the strategies and their effectiveness, highlighting the impact of different approaches on maternal health literacy outcomes.

Results

Study selection

In the preliminary search, a total of 1,597 articles were identified. After removing 58 duplicates, 1,539 studies remained for the title and abstract screening. A total of 1,337 irrelevant articles were excluded, leaving 202 studies for a thorough full-text review. Ultimately, 15 articles were included (**Figure 1**). Two reviewers (EW and LL) conducted the search process independently, and when disagreements occurred, a third person (MH) was consulted. The authors developed and used data extraction tools to analyze the results. All of the included study characteristics are presented in **Table 1**.

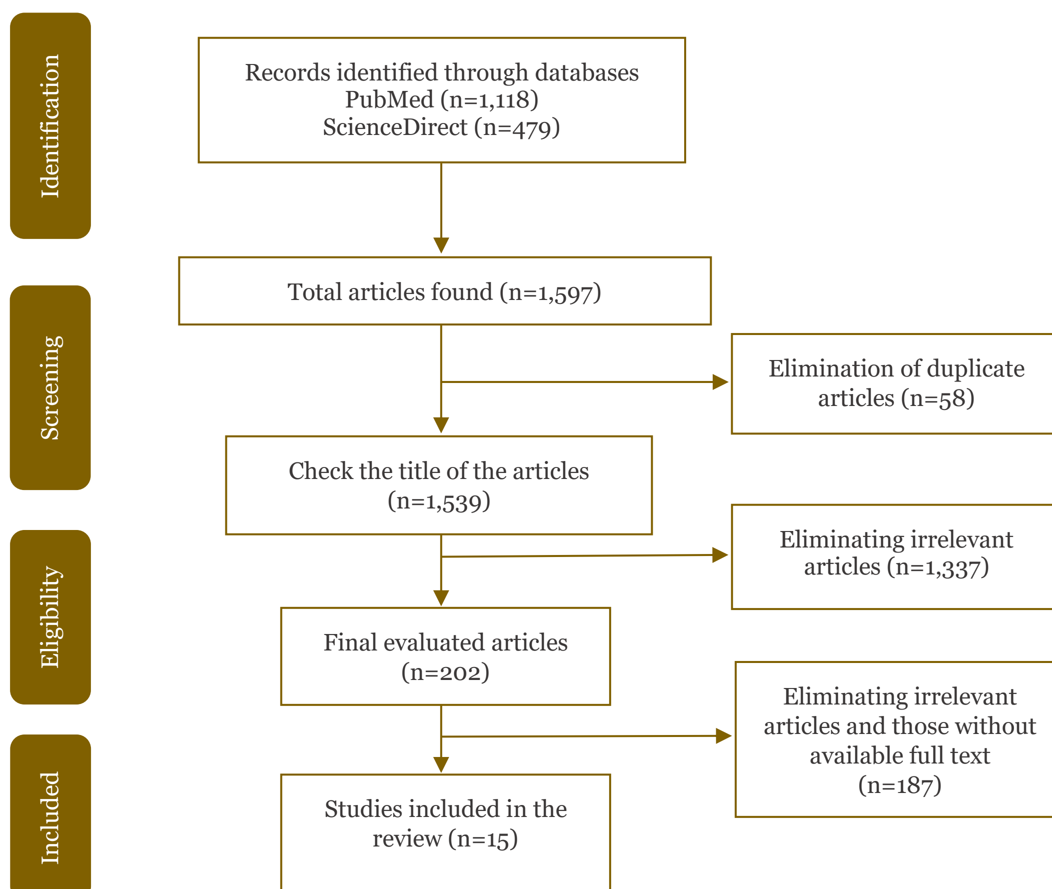

Figure 1. The flowchart for the selection process of the articles.

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Risk of bias assessment

The quality assessment of the included trials was conducted using RevMan software version 5.4.1, with the results presented in **Figure 2** and **Figure 3**. The figures illustrate the risk of bias percentages, with green, yellow, and red indicating low risk, unclear risk, and high risk, respectively. All included studies were determined to have a low risk of bias across all domains, which included random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), and selective reporting (reporting bias). Approximately 87% of the studies demonstrated a low risk of bias in random sequence generation, allocation concealment, and blinding of participants and personnel, while the remaining 13% exhibited a high risk in these areas. The "other bias" category was largely unclear (73.3%) across studies, with only a small proportion (26,6%) assessed as low risk.

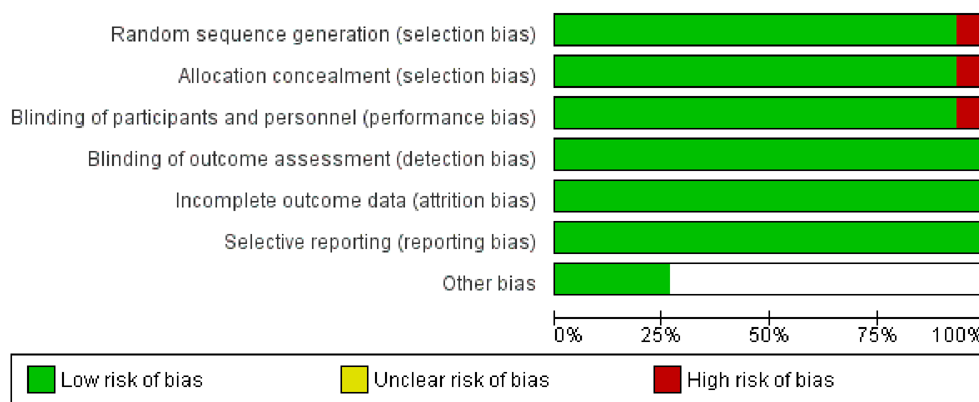

Figure 2. Risk of bias quality assessment graph.

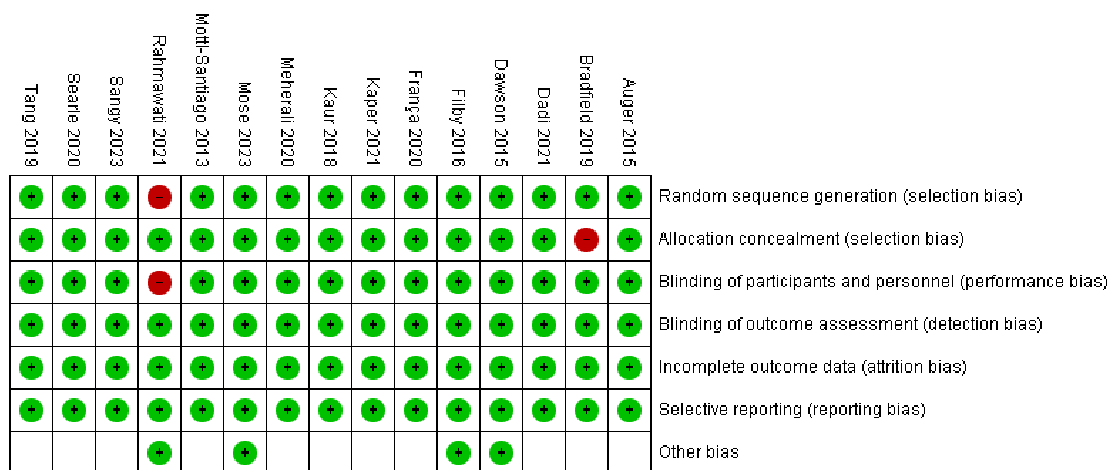

Figure 3. Risk of bias quality assessment summary.

Empowering low-income pregnant women

Initiatives to reach low-income pregnant mothers with multisectoral needs involve integrating maternal health services with other healthcare units [16]. These initiatives are essential to successfully implementing midwifery services in the community [17]. In developed countries, there are examples of books that initiate assistance service maps for pregnant mothers, allowing them to contact professionals within 24 hours. *Hey Mama!* book provides comprehensive information about pregnancy, childbirth, postpartum, and newborn care from various health professions. It includes contact numbers for each and checklist fields developed for electronic medical records to guide teaching at each visit [18].

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Table 1. Studies in maternal health literacy among low-income pregnant women

Author (year)	Type and location of study	Sample size and data collection tools	Results
Dadi *et al.* (2021) [16]	Qualitative study, Ethiopia	13 mental and maternal health service administrators Pre-tested semi-structured interview guide	Building the capacity of policymakers and planners, strengthening the mental healthcare system and governance
Dawson *et al.* (2015) [17]	Review, Australia	Sample size and data collection tools not specified	Collaboration between nurses, midwives, other health providers, and organizations across sectors with communities and individuals resulted in improved health care and outcomes
Mottl *et al.* (2013) [18]	Review, United State	Sample size and data collection tools not specified	Boston Medical Centre's midwifery service led a multidisciplinary initiative to develop a comprehensive plain-language prenatal education book
Mehereli *et al.* (2020) [19]	Review, Canada	Sample size and data collection tools not specified	Interactive learning health literacy interventions, such as group discussions and peer-support programs, encourage learners to actively take the initiative and ownership to improve their health outcomes
Searle *et al.* (2019) [20]	Qualitative study, Mali	29 semi-structured interviews and 3 FGD Open-ended questions	Significant barriers to adherence lie in the health system: insufficient patient-provider communication and inconsistent prescribing practices
Zoe Bradfield *et al.* (2020) [21]	Descriptive phenomenological approach, Australia	31 midwives Interview question list	The identified importance of clinical modeling for learning and teaching being "with woman" offers insight for clinical managers and education providers as they consider ways of enhancing student and midwife access to positive
Sangy *et al.* (2023) [22]	Review, United Kingdom	Sample size and data collection tools not specified	Women need adequate knowledge and confidence about midwife-led care to utilize services. Strengthening midwifery education and practice by employing experienced educators and supervisors is necessary. Increased collaboration between funders, professional organizations, practitioners, communities, and the government is necessary for successful implementation.
Mose *et al.* (2023) [23]	Qualitative study, Ethiopia	Three focus group discussion (FGD) and eight in-depth interviews Interview question list	Pregnant women had positive experiences and were willing to receive midwifery-led continuity care
Filby *et al.* (2016) [24]	Review, Australia	Sample size and data collection tools not specified	Significant social, cultural, economic, and professional barriers can prevent providing quality midwifery care in low- and middle-income countries (LMICs)
Kaper *et al.* (2021) [25]	Review, Netherland	Sample size and data collection tools not specified	Critical success factors for organization-wide implementation are leadership support, simultaneous top-down and bottom-up approaches, a change champion and project committee, and staff commitment
Rahmawati *et al.* (2021) [26]	A descriptive qualitative study, Indonesia	24 healthcare professionals (nutritionists, midwives, and obstetricians) The interviews guide	Healthcare professionals play a central role in the provision of antenatal nutrition education

Author (year)	Type and location of study	Sample size and data collection tools	Results
Tang *et al.* (2019) [27]	Cross-sectional study, Bangladesh	4494 mothers aged between 15 and 39 years Survey	Women who use mobile phones were more likely to use antenatal care and professional delivery services than those who did not
Auger *et al.* (2015) [28]	A community-based participatory research approach, North Carolina - United States	43 pregnant women with low-income Latinas Community-based participatory research approach with a mixed method evaluation	The study reported increased social support, a deeper understanding of information from medical providers, greater engagement, and behavior changes
Franca *et al.* (2020) [29]	Cross-sectional study, Brazil	41 pregnant adolescents (13–18 years) and 45 pregnant adults (23–28 years) SAHLPA questionnaire	Adolescent mothers had higher rates of inadequate health literacy in this population. Policies are needed to improve access to health information for young populations from rural low-income
Kaur *et al.* (2019) [30]	Rapid review, Canada	Sample size and data collection tools not specified	Photo-novel is an effective platform for communicating health-related information and promoting positive outcomes among people with low levels of health literacy

SAHLPA: short assessment of health literacy for Portuguese-speaking adults

Interventions based on interactive active learning, such as peer education groups, have proven more effective in empowering mothers to actively maintain their health and well-being, promoting equity among participants and between participants and providers, and encouraging shared decision-making principles [19,31]. In Ghana, Lori *et al.* undertook a prospective cohort study to assess the impact of group antenatal care on women's health literacy, focusing on their capacity to understand and apply health messages. The pregnant women who joined the intervention group were compared to women who received standard individual antenatal care. The intervention comprised storytelling, peer support, demonstrations, and the teach-back method [32]. The study found that women in intervention group care significantly improved their health literacy, better understanding of health messages, preventing problems before delivery, preparation for birth, and recognition of complications better than those in standard individual antenatal care. They also had a higher intent to use modern family planning methods and follow up postpartum [32].

Midwives as frontline care providers engage with low-income pregnant women

There are two strategies to enhance midwives' competence in service. First, it is crucial to strengthen midwives' communication skills, particularly in empowering low-income pregnant mothers. This strategy includes increasing their skills in understanding each other's perspectives, such as needs, preferences, culture, and individual experiences [20,29,33,34], creating an atmosphere that encourages mothers to ask questions and learn how to build literacy according to their literacy level with the help of teaching media materials, which evaluates whether mothers are genuinely empowered in a holistic sense [21].

Second, strengthening midwives' leadership involves gaining control over midwifery practices through increased autonomy, resilience, decision-making abilities, effective communication, and advocacy skills [22]. This role can be achieved through midwives' education based on the International Confederation of Midwives (ICM) requirements [35] and midwifery education tailored to the local context where midwives work. The strengthening of midwives' leadership in midwifery services is urgently needed in developing countries [23]. Research from high-income countries shows that midwife-led care can improve the health of mothers and newborns and is essential for achieving Sustainable Development Goals (SDGs) [36]. However, there is still resistance to implementing midwife-led care models in low- and middle-income countries (LMICs), which was influenced by various factors [37]. Social and cultural barriers, economic factors, and professional influences significantly impact midwives' ability to provide midwife-led care [24,38].

Health care system as a health literacy organization

The contextualization of health literacy within healthcare organizations involves designing accessible and user-friendly healthcare services, including health promotion and disease prevention, fostering equality and a responsive healthcare system, supporting individuals in navigating the system, and involving them in informed health-related decision-making [25]. Research on implementing health literacy within organizations is prevalent in developed countries and has yielded more positive changes [39].

The limited time and authority of midwives to provide treatment necessitate multidisciplinary integration in health promotion to improve the quality of care and health literacy [40]. Midwives serving as case managers lead and manage multidisciplinary teamwork within their regional settings, making it easier to guide pregnant mothers on where to access information related to mental health, health insurance, pregnancy-related health units, referrals to advanced healthcare services, and nutrition [41]. For example, in Indonesia, there is the KPLDH program (*Ketuk Pintu Layani dengan Hati*, "Knock the door serve with your heart"), where a multidisciplinary team of midwives, nurses, and doctors conducts home visits, home health promotion, home education, home care, health environment assessments, home surveillance, and referrals. The results showed that health promotion is crucial for community empowerment, and the head of the community health center's role greatly influenced the program's success [42].

Hotline service becomes a practical alternative when midwives cannot directly accompany pregnant mothers. This approach has proven effective in enhancing health literacy and access to

health information in various countries [43], and it is an integral part of case management to achieve the integrated information needs of low-income pregnant mothers [27]. Community health centers can create online help services to respond to local needs and establish policies on how community health workers, midwives, and various health networks collaborate to enhance maternal health literacy and the maternal and fetal health referral system [44]. Several developing countries have utilized e-learning for expectant mothers. The Zero Mother Die program provides small, cost-free mobile phones to African women, particularly in Zambia, Ghana, Gabon, Mali, and Nigeria. These phones use short message service (SMS) to deliver essential information about healthy pregnancy and childbirth to women living in remote areas, empower them to engage in healthcare while sharing information within their communities and allow them to contact local healthcare providers in emergencies [45].

The health promotion unit can ensure that the material is accurate and culturally appropriate for pregnant women, organize health information, eliminate misleading content, and hold public hearings to solicit input from pregnant women about their educational needs [46]. Besides, one of the most effective strategies was to use facilitators who can develop culturally appropriate educational materials and promote participatory education among pregnant women [47]. Skilled facilitators can customize the educational materials to meet the local community's unique needs and contexts, ensuring the information is comprehensible and actionable [48]. Moreover, the facilitators can work with the women to disseminate knowledge and encourage their active participation in tackling the health challenges pregnant women face [49]. In Mexico, facilitators were recruited from lay health educators who were respected and trusted community members [28].

Educational materials that effectively educate vulnerable pregnant women should be culturally sensitive, considering factors such as social, cultural, ethnic, racial, and linguistic experiences, as well as the status and history of the relevant group [30]. In addition, the appropriate design of educational media packaging is crucial in facilitating pregnant women with limited reading skills. Some key elements must be considered to achieve adequate learning media packaging. Firstly, the media packaging layout should contain local photos with dialogues in a 'bubble,' as in comics. Secondly, the content should be explicit, use plain language, and avoid professional jargon [28]. Lastly, the dialogues should be taken from people's common language, with a story plot, and adjusted to the literacy level of local women [30]. In Mexico, research involving the participation of low-income Latin pregnant women produced seven photo novels as educational media, covering various topics related to pregnancy and childbirth [28].

A multi-faceted approach is essential to improve maternal health literacy among low-income pregnant women comprehensively. There are three crucial strategies that could help improve maternal health literacy among low-income pregnant women: empowering women through educational programs and support networks, engaging midwives as frontline care providers to build trust and effectively communicate health information and transforming the health care system into a health literacy organization by training providers, simplifying information, and creating a supportive environment (**Table 2**).

Table 2. Three-level strategies to improve maternal health literacy among low-income pregnant women

Level	Strategies
Low-income pregnant women	Empower them to access an integrated service assistance map independently
	Empower them actively through interactive learning
Midwives as frontline care providers	Use empowering, engaged communication skills
	Strengthen midwifery-led maternity care services
Health service system	Health literacy organization in the healthcare system
	Case management by multidisciplinary teamwork in maternal health literacy
	Hotline service availability from care providers and health promotions in primary healthcare
	Empowering learning media by local health promotion unit and facilitator in local health authority
	Empowering learning material development

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Level	Strategies
	Local contents: Local photos and dialogue in the 'bubble' format have short conversation sentences Plain language: Transparent and communicative content using plain language Interactive learning: Dialogue is taken directly from the experience of people's speech, adapted to literacy needs, and structured in the form of an action story

Discussion

This review explored strategies to improve maternal health literacy among low-income pregnant women. The strategies include empowering low-income pregnant women, midwives as frontline care providers engaging with low-income women, and the health care system as a health literacy organization. Studies suggest that low-income pregnant mothers have multiple needs beyond just healthcare, including social, economic, educational, and psychological factors that can impact maternal health and well-being [50-52]. Barriers to meeting these various needs could be linked to poverty, rural isolation, limited transportation, low social status, traditional practices, culture, religion [53], low literacy levels [54], and limitations in interacting with the healthcare system. Furthermore, the perception of maternal healthcare providers as personal service providers rather than part of a more extensive system is still prevalent among low-income pregnant mothers. Empowerment during pregnancy can improve health literacy [55]. Stimulating mothers' interest and learning abilities through diverse and active participatory health education is key to their empowerment and well-being. Education enables women to develop their inner power, access necessary services, and become empowered. This empowerment is strongly linked to better pregnancy and childbirth outcomes, more effectively planned pregnancy care, and improved maternal nutritional status [56]. Additionally, empowering pregnant women includes providing them with the tools and knowledge to make informed decisions, enhancing their self-efficacy, and fostering a supportive community environment.

Midwives are the primary caregivers for expectant mothers, and they often struggle to engage impoverished families in discussions about maternal health [57,58]. Unfortunately, their limited knowledge of issues beyond midwifery can hinder their ability to provide comprehensive healthcare services, including counseling on non-midwifery concerns. Midwives may lack the necessary referral systems to provide counseling on mental health [59], pregnancy nutrition [60], as well as dental and oral health [61]. Another major obstacle is a lack of communication skills, leading to mistrust and concerns that the information provided is not tailored to patients' needs [62]. Midwives must also contend with high workloads and multiple responsibilities, which can result in poor-quality antenatal care [63,64]. To address this challenge, midwives need more advanced skills beyond just providing health information, focusing on effectively using e-health information.

This research highlights that even though the role of midwives is essential, relying on efforts to teach people with low incomes is impossible without the support of other professionals in improving the system for maternal care needs. In healthcare systems, midwives play a crucial role as case managers who oversee the allocation of resources to support midwifery practice and initiatives for public health literacy. This task includes managing essential supplies, coordinating care services, and facilitating educational programs to enhance health literacy among pregnant women and the community [65]. For example, midwives and obstetricians in Indonesia face barriers to providing nutrition education for women, such as a shortage of nutritionists, inconsistent guidelines, insufficient nutrition knowledge among healthcare professionals, and limited time during antenatal care. These barriers highlight the need to strengthen collaboration, develop consistent guidelines, and enhance capacity building to improve antenatal nutrition education [26]. Additionally, deficiencies in the health promotion system can make pregnant women confused and result in subpar care due to inconsistent information from various healthcare providers [66].

Contextualizing the healthcare system as a health literacy organization provides an organizational framework that reduces the demands and complexities of individuals interacting with healthcare providers and organizations [67]. This framework involves designing services

that are easily accessible and user-friendly, promoting health and disease prevention, ensuring equality and responsiveness of the healthcare system, supporting individual navigation within the system, and fostering participation in health decision-making [39]. Furthermore, critical factors for implementing health literacy within healthcare organizations include leadership support, simultaneous top-down and bottom-up approaches, change leadership, project committees, and staff commitment [25].

Reducing organizational demands for pregnant women with limited health literacy requires a combination of targeted approaches at the patient, professional, and organizational levels, epitomized as Organizational Health Literacy (OHL) interventions. These interventions enhance communication, service accessibility, physical navigation, and engage mothers more actively in improving health information and services. At the midwifery level, OHL interventions promote health literacy-friendly communication and capacity building. Enhancing OHL at the organizational level involves leadership, culture, policies, system processes, and structure. However, current interventions have primarily focused on assessing health literacy issues at the patient and professional levels, with limited attention to comprehensive organizational approaches [25].

This research highlights that improving maternal literacy requires a comprehensive approach that comprises empowering pregnant women, advanced midwifery training, and robust support from the broader healthcare system to address these multifaceted challenges. Besides that, this research underscores the necessity of a multidisciplinary effort with a midwife as a case manager to enhance maternal care and literacy, emphasizing the need for system-wide improvements to support midwifery and ensure consistent, tailored healthcare information for low-income pregnant women.

This review provides a comprehensive description of the strategies for improving maternal health literacy from the individual, midwife, and healthcare system levels. These strategies are critical and emphasize the unique challenges and needs of low-income pregnant women regarding health literacy. The main limitations of the current study are the lack of access to the full texts of some articles, the limited number of studies selected by the reviewers that do not cover gray literature, the restriction to only two databases (PubMed and ScienceDirect), and the focus solely on studies published in English.

Conclusion

Improving health literacy among low-income pregnant women is crucial for preventing adverse pregnancy outcomes. Healthcare system policies play an important role in creating multilevel health literacy. Health literacy organizations (HLOs), particularly at the district level, are crucial in meeting the information needs of low-literacy pregnant women. This approach enhances midwifery professionals' communication and leadership skills through training programs that ensure the development of culturally relevant learning materials that are essential for providing comprehensive care for low-income pregnant women.

Ethics approval

The study protocol was approved by the Ethics Committee of Universitas Gadjah Mada, Yogyakarta, Indonesia (ethical approval number: KE/FK/0756/EC/2021).

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Competing interests

All the authors declare that there are no conflicts of interest.

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Underlying data

Derived data supporting the findings of this study are available from the corresponding author on request.

How to cite

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References

1. Tripathi P, Singh N. A need for maternal health literacy to promote maternal and neonatal health: A review. IJHSR 2019;9(8):467-472.
2. Coughlin SS, Vernon M, Hatzigeorgiou C, *et al.* Health literacy, social determinants of health, and disease prevention and control. J Environ Health Sci 2020;6(1):2019-2022.
3. Turner T. Health literacy and medical education. In: Connelly R, Turner T, editors. Health literacy and child health outcomes. Cham: Springer; 2017.
4. Nawabi F, Krebs F, Vennedey V, *et al.* Health literacy in pregnant women: A systematic review. Int J Environ Res Public Health 2021;18(7):3847.
5. Vamos CA, Merrell L, Detman L, *et al.* Exploring women's experiences in accessing, understanding, appraising, and applying health information during pregnancy. J Midwifery Womens Health 2019;64(4):472-480.
6. Yee LM, Niznik CM, Simon MA. Examining the role of health literacy in optimizing the care of pregnant women with diabetes. Am J Perinatol 2016;33(13):1242-1249.
7. Dadipoor S, Ramezankhani A, Alavi A, *et al.* Pregnant women's health literacy in the South of Iran. J Family Reprod Health 2017;11(4):211-218.
8. Lori JR, Dahlem CHY, Ackah JV, *et al.* Examining antenatal health literacy in Ghana. J Nurs Scholarsh 2014;46(6):432-440.
9. Dayyani I, Terkildsen MH, Rowlands G, *et al.* A qualitative study about the experiences of ethnic minority pregnant women with gestational diabetes. Scand J Caring Sci 2019;33(3):621-631.
10. Blackwell TM, Dill LCJ, Hoepner LA, *et al.* Using text messaging to improve access to prenatal health information in urban African American and Afro-Caribbean immigrant pregnant women: Mixed methods analysis of Text4baby usage. JMIR MHealth UHealth 2020;8(2):e14737.
11. Akin-otiko BO, Student RNT, Bhengu BR, *et al.* Client education experiences and expectations of women at the first level of maternal and child care in Kaduna state, Nigeria. Midwifery 2012;28(6):e893-e899.
12. Wilmore M, Rodger D, Humphreys S, *et al.* How midwives tailor health information used in antenatal care. Midwifery 2015;31(1):74-79.
13. Viveiros CJ, Darling EK. Barriers and facilitators of accessing perinatal mental health services: The perspectives of women receiving continuity of care midwifery. Midwifery 2018;65:8-15.
14. Mwase I, Hutchins M, Cameron A, *et al.* Experiences of using the toll-free telephone line to access maternal and newborn health services in central Uganda: A qualitative study. Public Health 2020;179:1-8.
15. Page MJ, McKenzie JE, Bossuyt PM, *et al.* The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ 2021;372:n71.
16. Dadi AF, Miller ER, Azale T, *et al.* "We do not know how to screen and provide treatment": A qualitative study of barriers and enablers of implementing perinatal depression health services in Ethiopia. Int J Ment Health Syst 2021:1-16.
17. Dawson AJ, Nkowane AM, Whelan A. Approaches to improving the contribution of the nursing and midwifery workforce to increasing universal access to primary health care for vulnerable populations: A systematic review. Hum Resour Health 2015;13(1):97.
18. Mottl-Santiago J, Fox CS, Pecci CC, *et al.* Multidisciplinary collaborative development of a plain-language prenatal education book. J Midwifery Womens Health 2013;58(3):271-277.

19. Meherali S, Punjani NS, Mevawala A. Health literacy interventions to improve health outcomes in low- and middle-income countries. Health Lit Res Pract 2020;4(4):e250-e266.
20. Searle AR, Hurley EA, Doumbia SO, *et al.* “They merely prescribe and I merely swallow”: Perceptions of antenatal pharmaceuticals and nutritional supplements among pregnant women in Bamako, Mali. Matern Child Health J 2020;24(1):110-120.
21. Bradfield Z, Hauck Y, Duggan R, *et al.* Midwives’ experiences of learning and teaching being ‘with woman’: A descriptive phenomenological study. Nurse Educ Pract 2020;43:102699.
22. Sangy MT, Duaso M, Feeley C, *et al.* Barriers and facilitators to the implementation of midwife-led care for childbearing women in low- and middle-income countries: A mixed-methods systematic review. Midwifery 2023;122:103696.
23. Mose A, Fikadu Y, Zewdie A, *et al.* Pregnant women’s perception of midwifery-led continuity care model in Ethiopia: A qualitative study. BMC Womens Health 2023;23(1):1-8.
24. Filby A, McConville F, Portela A. What prevents quality midwifery care? A systematic mapping of barriers in low and middle income countries from the provider perspective. PLoS One 2016;11(5):e0153391.
25. Kaper MS, Sixsmith J, Reijneveld SA, *et al.* Outcomes and critical factors for successful implementation of organizational health literacy interventions: A scoping review. Int J Environ Res Public Health 2021;18(22):11906.
26. Rahmawati W, van der Pligt P, Worsley A, *et al.* Indonesian antenatal nutrition education: A qualitative study of healthcare professional views. Womens Health 2021;17:17455065211066077.
27. Tang S, Ghose B, Hoque R, *et al.* Women using mobile phones for health communication are more likely to use prenatal and postnatal services in Bangladesh: Cross-sectional study. JMIR Mhealth Uhealth 2019;7(2):e10645.
28. Auger SJ, Verbiest S, Spickard JV, *et al.* Participatory group prenatal education using photonovels: Evaluation of a lay health educator model with low-income Latinas. J Particip Med 2015;7:e13.
29. França AS, Pirkle CM, Sentell T, *et al.* Evaluating health literacy among adolescent and young adult pregnant women from a low-income area of Northeast Brazil. Int J Environ Res Public Health 2020;17(23):1-15.
30. Kaur N. Impact of photonovel interventions among people with low levels of health literacy: A literature review. Educ Inf 2019;35(1):21-34.
31. Musange SF, Butrick E, Lundeen T, *et al.* Group antenatal care versus standard antenatal care and effect on mean gestational age at birth in Rwanda: Protocol for a cluster randomized controlled trial. Gates Open Res 2019;3:1548.
32. Lori JR, Ofosu-Darkwah H, Boyd CJ, *et al.* Improving health literacy through group antenatal care: A prospective cohort study. BMC Pregnancy Childbirth 2017;17(1):228.
33. Takesan I, Musa M, Padmawati RS, *et al.* Compliance to traditional birth practices and poor perception of formal health facility: Exploring actions on social determinants of health and barriers to care access in the indigenous community of Suku Anak Dalam. Ber Kedokt Masy 2018;34(7):291-296.
34. Maulina F, Hasanbasri M, Scheele F, *et al.* Investigating physician leadership competencies in rural and remote areas of the province of Aceh, Indonesia. BMJ Lead 2023;7(2):122-127.
35. Nove A, Friberg IK, de Bernis L, *et al.* Potential impact of midwives in preventing and reducing maternal and neonatal mortality and stillbirths: A lives saved tool modelling study. Lancet Glob Health 2021;9(1):e24-e32.
36. Renfrew MJ, McFadden A, Bastos MH, *et al.* Midwifery and quality care: Findings from a new evidence-informed framework for maternal and newborn care. Lancet 2014;384(9948):1129-1145.
37. World Health Organization. Strengthening quality midwifery education for universal health coverage 2030: Framework for action. Geneva: World Health Organization; 2019.
38. Rusdianah E, Hasanbasri M, Hakimi M. Clinical learning experiences and professional development: Implementation of a district level undergraduate midwifery program in Indonesia. Ber Kedokt Masy 2016;32(2):73-76.
39. Nutbeam D, Lloyd JE. Understanding and responding to health literacy as a social determinant of health. Annu Rev Public Health 2020;42:159-173.
40. Flora K, Blandthorn J. A midwifery case management model for women with complex substance use in pregnancy. Women and Birth 2018;31 Suppl 1:8-9.
41. Murray-Davis B, Berger H, Melamed N, *et al.* A framework for understanding how midwives perceive and provide care management for pregnancies complicated by gestational diabetes or hypertensive disorders of pregnancy. Midwifery 2022;115:103498.
42. Umboh RO, Fawzi IL. Implementasi kegiatan home health promotion dalam program ketuk pintu layani dengan hati (KPLDH) pemerintah provinsi DKI Jakarta di Kecamatan Kebayoran Lama, Jakarta Selatan. J Pembang Mns 2020;1(1).
43. Baum SE, Ramirez AM, Larrea S, *et al.* “It’s not a seven-headed beast”: Abortion experience among women that received support from helplines for medication abortion in restrictive settings. Health Care Women Int 2020;41(10):1128-1146.

44. Afrizal SH, Hidayanto AN, Hakiem N, *et al.* Design of mHealth application for integrating antenatal care service in primary health care: A user-centered approach. Proc 2019 4th Int Conf Inform Comput ICIC 2019;2:0-5.
45. World Health Organization. Kazakhstan: Use of mobile technologies in primary health care as part of state-run reforms in the health sector. Geneva: World Health Organization; 2018.
46. Soucy NL, Terrell RM, Chedid RA, *et al.* Best practices in prenatal health promotion: Perceptions, experiences, and recommendations of Ottawa, Canada, prenatal key informants. Womens Health 2023;19:17455057231158223.
47. Tremblay M, Kingsley B, Gokiert R, *et al.* Using photovoice to explore teen parents' perspectives on raising healthy children. Journal of Adolescent Research 2021;38(2).
48. Kaur N, Kandelman D, Potvin L. Development and pilot testing of an oral hygiene self-care photonovel for punjabi immigrants: A qualitative study. Can J Dent Hyg 2021;55(1):30-38.
49. Aldoory L, Braun B, Maring EF, *et al.* Empowerment in the process of health messaging for rural low-income mothers: An exploratory message design project. Women Health 2015;55(3):297-313.
50. Leventhal DGP, Crochemore-Silva I, Vidaletti LP, *et al.* Delivery channels and socioeconomic inequalities in coverage of reproductive, maternal, newborn, and child health interventions: Analysis of 36 cross-sectional surveys in low-income and middle-income countries. Lancet Glob Health 2021;9(8):e1101-e1109.
51. Stenberg K, Hanssen O, Edejer TTT, *et al.* Financing transformative health systems towards achievement of the health sustainable development goals: A model for projected resource needs in 67 low-income and middle-income countries. Lancet Glob Health 2017;5(9):e875-e887.
52. Price SK. Women's use of multisector mental health services in a community-based perinatal depression program. Soc Work Res 2010;34(3):145-155.
53. McKerricher L, Petrucka P. Maternal nutritional supplement delivery in developing countries: A scoping review. BMC Nutr 2019;5(1):4-9.
54. Riggs E, Yelland J, Szwarc J, *et al.* Afghan families and health professionals' access to health information during and after pregnancy. Women Birth 2020;33(3):e209-e215.
55. Tavananezhad N, Bolbanabad AM, Ghelichkhani F, *et al.* The relationship between health literacy and empowerment in pregnant women: A cross-sectional study. BMC Pregnancy Childbirth 2022;22(1):1-9.
56. Merrell LK, Blackstone SR. Women's empowerment as a mitigating factor for improved antenatal care quality despite impact of 2014 ebola outbreak in Guinea. Int J Environ Res Public Health 2020;17(21):1-18.
57. Widyawati W, Jans S, Utomo S, *et al.* A qualitative study on barriers in the prevention of anaemia during pregnancy in public health centres: Perceptions of Indonesian nurse-midwives. BMC Pregnancy Childbirth 2015;15(1):47.
58. Turkmani S, Currie S, Mungia J, *et al.* 'Midwives are the backbone of our health system': Lessons from Afghanistan to guide expansion of midwifery in challenging settings. Midwifery 2013;29(10):1166-1172.
59. Noonan M, Jomeen J, Galvin R, *et al.* Survey of midwives' perinatal mental health knowledge, confidence, attitudes and learning needs. Women Birth. 2018;31(6):e358-e366.
60. Arrish J, Yeatman H, Birth MWW and, *et al.* Midwives and nutrition education during pregnancy: A literature review. Women Birth 2014;27(1):2-8.
61. Vamos CA, Merrell L, Livingston TA, *et al.* "I didn't know": Pregnant women's oral health literacy experiences and future intervention preferences. Womens Health Issues 2019;29(6):522-528.
62. Widyawati W, Jans S, Utomo S, *et al.* A qualitative study on barriers in the prevention of anaemia during pregnancy in public health centres: Perceptions of Indonesian nurse-midwives. BMC Pregnancy Childbirth 2015;15(1):1-8.
63. Probandari A, Arcita A, Kothijah K, *et al.* Barriers to utilization of postnatal care at village level in Klaten District, Central Java Province, Indonesia. BMC Health Serv Res. 2017;17(1):541
64. Rahmadani LN, Budihastuti UR, Poncorini E. Does health center have contextual effect on midwife performance? Multilevel analysis evidence from East Kalimantan, Indonesia. Journal of Health Policy and Management 2019;4(3):150-160.
65. Indriastuti D, Margawati A, Rachma N, *et al.* Experience of midwives in carrying out their role of assisting pregnant women. KLASICS Kendari J Marit Holist Nurs 2021;01(01):19-26.
66. Meldgaard M, Jensen AL, Johansen AD, *et al.* Health literacy and related behaviour among pregnant women with obesity: A qualitative interpretive description study. BMC Pregnancy Childbirth 2022;22(1):1-10.
67. Brach C, Keller D, Hernandez LM, *et al.* Ten attributes of health literate health care organizations. Participants in the workgroup on attributes of a health literate organization of the IOM roundtable on health literacy. NAM Perspect 2012(6).