

Cultural Beliefs, Family Decision-Making, and Health Literacy in Preeclampsia Prevention Among High-Risk Pregnant Women in Rural Indonesia

Sitti Mukarramah^{1*}, Nurhaedar Jafar², Irfan Idris³, Anna Khuzaimah², Mardiana Ahmad⁴, and Indra Fajarwati Ibnu¹

¹ Doctoral Program of Public Health, Faculty of Public Health, Hasanuddin University, Indonesia

² Nutrition Science Study Program, Faculty of Public Health, Hasanuddin University, Indonesia

³ Physiology Department of Medical Faculty, Hasanuddin University, Indonesia

⁴ Department of Midwifery, Graduate School, Hasanuddin University, Indonesia

* Sitti Mukarramah, corresponding author. Email: sitti_mukarramah@poltekkes-mks.ac.id

Submitted: 2 April 2026. Accepted: 9 August 2026. Published: 10 September 2026

Volume 35, 2027. pp. 671–689. <http://doi.org/10.25133/JPSSv352027.035>

Abstract

Preeclampsia remains one of the leading causes of maternal morbidity and mortality worldwide, particularly in low-resource settings where social and cultural contexts beyond biomedical care strongly influence preventive behaviors. This study explored how health literacy, cultural beliefs and practices, including local food practices, and family decision-making influence preeclampsia prevention among high-risk pregnant women in rural Indonesia. A qualitative exploratory design was employed, using focus group discussions with 29 participants: high-risk pregnant women ($n = 10$), women with a history of preeclampsia ($n = 8$), health workers ($n = 5$), and government stakeholders from the health, agriculture, fisheries, and livestock sectors ($n = 6$). Data were analyzed thematically using NVivo 12. The findings revealed that maternal understanding of preeclampsia was generally limited and largely symptom-based rather than risk-oriented; traditional food taboos, cultural interpretations of pregnancy-related symptoms, and delayed healthcare seeking shaped preventive behaviors. Family members—particularly husbands and mothers or mothers-in-law—played a dominant role in decisions regarding antenatal care, dietary practices, and referral compliance. Although nutrient-rich local foods were available, their utilization was constrained by cultural norms. This study extends existing maternal health research by integrating health literacy, cultural beliefs and practices, including local food practices, and family decision-making into a unified sociocultural framework for understanding preeclampsia prevention. The findings support the development of culturally responsive, family-centered, and community-based maternal health interventions for rural populations.

Keywords

Cultural beliefs; family decision-making; health literacy; local food practices; maternal health; preeclampsia prevention

Introduction

Preeclampsia remains one of the leading causes of maternal morbidity and mortality worldwide, accounting for substantial maternal and neonatal deaths, particularly in low- and middle-income countries where access to timely diagnosis and quality obstetric care remains limited (Ngene & Moodley, 2024; Say et al., 2014; World Health Organization, 2025). Although considerable progress has been made in improving antenatal care and clinical management, the burden of preeclampsia continues to persist because preventive strategies frequently focus on biomedical risk factors while paying less attention to the broader sociocultural contexts that influence maternal health behaviors. Consequently, women often delay recognizing danger signs, postpone seeking professional care, and experience avoidable complications despite the availability of health services.

Recent evidence increasingly recognizes maternal health as shaped by the social determinants of health, whereby health literacy, educational attainment, social support, economic conditions, and access to health information collectively influence women's preventive behaviors (Crear-Perry et al., 2021; Shoaib, 2026; Souza et al., 2024). Health literacy, defined as an individual's ability to obtain, understand, evaluate, and apply health information, plays a particularly important role in recognizing pregnancy complications and making informed decisions regarding antenatal care (Murugesu et al., 2021; Vicente-Díaz & Alvariñas-Villaverde, 2025). Nevertheless, health literacy does not operate independently. Women's understanding and responses to pregnancy risks are simultaneously embedded within sociocultural environments that influence how health information is interpreted and translated into practice.

Cultural beliefs constitute another important determinant of maternal health behavior. Across many low-resource settings, pregnancy continues to be guided by traditional beliefs regarding food taboos, illness causation, spiritual influences, and acceptable healthcare practices. Such beliefs frequently coexist with biomedical recommendations and may either facilitate or hinder preventive behaviors (Belew et al., 2025; Felisian et al., 2023). In Southeast Asia, community-based maternal health programs have demonstrated that culturally tailored interventions that incorporate local traditions and community participation improve maternal service utilization and health outcomes, suggesting that sociocultural contexts should be incorporated into preventive strategies rather than merely viewed as barriers to care (Ariescha et al., 2025; Cox et al., 2025).

Family decision-making further shapes maternal healthcare utilization. In many Asian societies, including Indonesia, pregnancy-related decisions are rarely made by women alone. Husbands, parents, and mothers-in-law commonly influence decisions regarding antenatal attendance, dietary practices, financial expenditures, and referrals to higher-level facilities (Anfaara et al., 2024; Murugesu et al., 2021). Consequently, women's preventive behaviors emerge through collective household negotiations rather than solely individual knowledge or preferences. Understanding these household dynamics is therefore essential for explaining why evidence-based recommendations are not always translated into timely preventive action.

Within Indonesia, particularly among rural Bugis-Makassar communities in South Sulawesi, pregnancy is closely intertwined with longstanding cultural traditions governing dietary practices, family authority, and maternal care. Previous Indonesian studies have

predominantly investigated clinical determinants of preeclampsia or antenatal care utilization. In contrast, relatively few have examined how health literacy, cultural beliefs, and family decision-making interact to shape preventive behaviors. Moreover, limited attention has been paid to the role of local food practices, despite the abundance of culturally accepted, nutrient-rich foods that may support maternal nutrition and help prevent preeclampsia.

Therefore, an important knowledge gap remains. Existing studies generally examine health literacy, cultural beliefs, or family support as separate determinants. In contrast, little evidence has integrated these interconnected sociocultural dimensions into a single conceptual framework that explains how preventive behaviors toward preeclampsia are socially constructed in rural Indonesian communities. Addressing this gap is particularly important for population and social studies because maternal health behaviors are influenced not only by individual cognition but also by collective family processes, cultural norms, and community contexts.

Accordingly, this study explored how health literacy, cultural beliefs and practices, including local food practices, and family decision-making collectively influence preeclampsia prevention among high-risk pregnant women in rural Indonesia. Unlike previous studies that primarily emphasized biomedical or individual-level determinants, this research proposes an integrated sociocultural pathway linking health literacy, cultural beliefs, family authority, and community food practices to preventive maternal behaviors. By adopting this integrated perspective, the study contributes both theoretically and practically to population and social studies, while providing evidence to support culturally responsive, family-centered, and community-based interventions for improving maternal health in rural settings.

Materials and methods

Study design

This study employed an exploratory qualitative design to examine how (1) health literacy, (2) cultural beliefs and practices, including local food practices, and (3) family decision-making shape preeclampsia prevention among high-risk pregnant women in rural Indonesia. This study represents a distinct exploratory qualitative component of a broader approved research project on the development of a preeclampsia prevention model in Takalar Regency. The broader project also included the development of the CAMPE (*Cara Mencegah Preeklamsia*) module, which has been reported separately (Bundu et al., 2025). The qualitative data and analyses presented in the current study were not reported in that publication.

An exploratory qualitative approach was considered appropriate because the study sought to understand participants' lived experiences, perceptions, and sociocultural contexts that quantitative methods cannot adequately capture. Data were collected through focus group discussions (FGDs), which facilitated interaction among participants and explored shared beliefs, community norms, and collective experiences regarding pregnancy, preeclampsia prevention, and maternal health practices.

The study was conceptually informed by the Social Determinants of Health framework, recognizing that interactions among individual knowledge, family relationships, cultural norms, and community environments shape maternal health behaviors. The study also

followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007) to enhance methodological transparency and reporting quality.

Participants and sampling

Participants were recruited using purposive sampling based on their relevance to the study phenomenon and their potential to provide information-rich accounts. The study involved four participant groups: high-risk pregnant women, women with a history of preeclampsia, health workers, and representatives of related government sectors involved in food systems and maternal health support. In total, the study included 29 participants: 10 high-risk pregnant women, 8 women with a history of preeclampsia, 5 health workers, and 6 representatives from health, agriculture, fisheries, and livestock sectors. High-risk pregnant women were eligible if they had at least one risk factor for preeclampsia, including maternal age younger than 20 years or older than 35 years, history of hypertension, nulliparity, or obesity. All participants were required to be willing to participate and to share their views openly during the discussion.

Purposive sampling was employed to recruit information-rich participants representing multiple perspectives on preeclampsia prevention. One FGD was conducted for each of the four predefined participant groups. Data adequacy was assessed through continuous comparison of codes, categories, and emerging themes across the four FGDs. The research team considered the dataset sufficient to address the study objectives, given the recurrence and richness of information across participant groups. The characteristics of participants across the four study groups are summarized in Table 1.

Table 1: Participant Characteristics

Participant Group	Code Range	Number (n)	Age Range (years)	Education Level	Occupation	Role Description
High-risk pregnant women	R1M–R10M	10	20–40	Primary to Senior High School	Mostly housewives; some informal workers (e.g., small traders)	Pregnant women identified as having one or more risk factors for preeclampsia, including maternal age, parity, history of preeclampsia or hypertension, and body mass index (BMI)
Women with history of preeclampsia	I1R–I8R	8	18–40	Primary to Senior High School	Predominantly housewives; some engaged in informal work	Women with previous experience of preeclampsia
Health workers	TK1–TK5	5	30–50	Diploma/Profession Level	Midwives, doctor and nutritionists	Providers of antenatal care and maternal health education
Government stakeholders	DT1–DT6	6	35–55	Bachelor/Master	Government employees (health sector)	Representatives from health-related government sectors
Total	–	29	–	–	–	–

Data collection

Data were collected through four face-to-face focus group discussions (FGDs) conducted separately for each participant group to facilitate open discussion among individuals with similar backgrounds. One FGD involved high-risk pregnant women ($n = 10$); another involved women with a history of preeclampsia ($n = 8$); another involved health workers ($n = 5$); and another involved government stakeholders representing the health, agriculture, fisheries, and livestock sectors ($n = 6$).

Each discussion lasted approximately 90–120 minutes and was conducted in Bahasa Indonesia by the principal investigator, an experienced qualitative researcher, assisted by a trained research assistant responsible for field observations, note-taking, and audio recording. A semi-structured discussion guide was developed based on the study objectives and prior literature. Discussion topics included knowledge of preeclampsia, danger signs, preventive behaviors, cultural beliefs, food taboos, local food utilization, family decision-making, health service experiences, and educational needs. Additional probing questions were used throughout the discussions to clarify responses and encourage deeper exploration of participants' experiences.

All FGDs were digitally audio-recorded with participants' permission and transcribed verbatim immediately after data collection. Field notes documenting nonverbal communication, group interactions, and contextual observations were incorporated into the analysis. Selected quotations were translated from Bahasa Indonesia into English for reporting, with the original transcripts retained for reference. The principal investigator was an experienced qualitative researcher, and reflexive awareness was supported through ongoing discussion of emerging interpretations and potential researcher influence during peer debriefing.

Data analysis

Data were analyzed using thematic analysis supported by NVivo 12 software. Audio recordings were transcribed verbatim in Bahasa Indonesia before repeated reading to achieve data familiarization. Two members of the research team independently coded the transcripts to identify meaningful units related to preeclampsia prevention. Related codes were compared and grouped into categories, then reviewed and synthesized into overarching themes. Coding discrepancies were resolved through discussion until consensus was reached. NVivo 12 was used exclusively to organize data, facilitate coding, compare themes across participant groups, and support conceptual mapping.

Throughout analysis, an audit trail documenting coding decisions, analytical memos, and theme development was maintained to improve dependability and confirmability.

Trustworthiness

Trustworthiness was established according to Lincoln and Guba's (1985) criteria of credibility, dependability, confirmability, and transferability. Credibility was enhanced through source triangulation across four participant groups and by comparing discussion data with field notes documenting nonverbal communication, group interactions, and contextual observations. Member checking was conducted by presenting summaries of preliminary

findings to several participants representing each participant group, who confirmed that the interpretations accurately reflected their experiences.

Peer debriefing sessions were conducted throughout the analytical process to discuss emerging interpretations and minimize researcher bias. An audit trail documenting coding decisions and analytical development was maintained to strengthen dependability and confirmability. Finally, thick descriptions of participant characteristics and study context were provided to facilitate readers' assessment of the transferability of the findings to similar rural settings.

Results

The thematic analysis generated three interconnected themes describing how sociocultural contexts shape preeclampsia prevention among high-risk pregnant women. Rather than functioning independently, health literacy, cultural beliefs, and family decision-making interacted dynamically throughout participants' experiences. Limited health literacy influenced how women interpreted cultural beliefs, while family members mediated the translation of knowledge into preventive behaviors. Collectively, these themes illustrate a sociocultural pathway through which maternal health behavior is constructed in rural communities. The three main themes, their corresponding subthemes, and representative illustrative quotes are summarized in Table 2.

Table 2: Main Themes, Subthemes, and Illustrative Quotes

Main Theme	Subtheme	Description	Illustrative Quote
Theme 1: Limited Health Literacy About Preeclampsia	Limited familiarity with the term	Most participants were unfamiliar with the term <i>preeclampsia</i> and used more familiar expressions such as high blood pressure during pregnancy.	"I've never heard of preeclampsia. I'm more familiar with anemia or high blood pressure during pregnancy." (I6R)
	Symptom-based understanding	Women tended to recognize the condition through symptoms rather than through conceptual understanding of risks and complications.	"At first, I had frequent headaches, but I thought it was normal during pregnancy." (R1M)
	Partial understanding of causes and risk factors	Perceived causes were often based on everyday experience, such as salty foods, stress, or lack of rest.	"High blood pressure happens because we eat too much salty food." (R2M)
	Reliance on health workers for information	Information about preeclampsia was obtained mainly from midwives, antenatal visits, the maternal health handbook, or online searches after symptoms appeared.	"I found out from the midwife during a check-up. She said if my blood pressure goes up, I need to come more often." (R6M)
Theme 2: Cultural Beliefs and Practices in Pregnancy	Food taboos during pregnancy	Nutritious local foods were avoided because of cultural beliefs about pregnancy and childbirth.	"I don't eat moringa because people say it can make the baby too big and cause difficult delivery." (I4R)

Main Theme	Subtheme	Description	Illustrative Quote
Theme 3: Family Decision- Making and Maternal Health Behavior	Non-medical interpretation of illness	Some symptoms were interpreted through non-medical or supernatural explanations rather than biomedical understanding.	"Sometimes people say it's not a medical problem, but something else, like being disturbed." (R6M)
	Reliance on traditional care	Families sometimes sought traditional healers before formal health services.	"Usually, people go to traditional healers first before going to the health center." (DT2)
	Collective household decision-making	Health-related actions were often discussed within the family before a woman could seek care.	"If something happens, we usually talk with the family first before going to the health center." (R5M)
	Husband's role in health decisions	Husbands often had authority over care-seeking, referral, and financial decisions.	"Sometimes the family decides whether the mother can go for referral or not." (TK2)
	Influence of older female family members	Mothers or mothers-in-law influenced diet, symptom interpretation, and everyday pregnancy practices.	"I was told not to eat shrimp or squid because it could affect the baby." (R5M)

Theme 1: Limited health literacy about preeclampsia

The findings indicate that maternal health literacy regarding preeclampsia remains limited, particularly among high-risk pregnant women and women with a history of preeclampsia. Health literacy in this study refers to the ability to obtain, understand, and use information related to pregnancy complications. Overall, participants demonstrated low familiarity with the term "preeclampsia" and instead used more commonly understood terms such as "high blood pressure during pregnancy."

Most participants reported that they had never heard the term preeclampsia before. Their knowledge was largely limited to more familiar conditions such as anemia or hypertension. Several participants expressed this as follows:

"I've never heard of preeclampsia. I'm more familiar with anemia or high blood pressure during pregnancy."

(I6R)

"Yeah, I don't really hear much about preeclampsia."

(I2R)

"I think I've heard of preeclampsia before, but I don't really remember what it is."

(I3R)

These responses suggest a gap between medical terminology used by health professionals and community-level understanding.

In many cases, participants only became aware of high blood pressure during pregnancy after clinical examination, indicating a reactive rather than preventive understanding. One participant explained:

"After I went for a check-up, the midwife told me my blood pressure was high – around 140."

(R4M)

This indicates that knowledge about preeclampsia is often acquired through contact with health services rather than through prior awareness.

Participants also demonstrated a partial understanding of the causes of high blood pressure during pregnancy. Common explanations included dietary habits, stress, and lack of rest. For example:

"High blood pressure happens because we eat too much salty food."

(R2M)

"It can also be caused by stress or not getting enough rest."

(R4M)

Although some of these perceptions partially align with biomedical explanations, they reflect fragmented and experience-based knowledge rather than a comprehensive understanding of risk factors.

Misinterpretation of symptoms was also common. Some participants did not initially recognize their symptoms as signs of a serious condition:

"I often had neck tension and stomach pain. I thought it was just gastritis, but when I got checked, my blood pressure was actually high."

(R7M)

Similarly, many participants perceived symptoms such as headache, swelling, and dizziness as normal during pregnancy:

"At first, I had frequent headaches, but I thought it was normal during pregnancy."

(R1M)

"My legs were swollen when I was eight months pregnant, but I thought that was normal."

(I5R)

"I often felt dizzy and had tension in my neck. I only found out it was high blood pressure after I got checked."

(R3M)

These findings indicate that maternal understanding is largely symptom-based rather than conceptually grounded, which may delay recognition of complications.

Health workers confirmed that although danger signs are routinely explained during antenatal care, pregnant women do not always interpret them correctly. As one health worker noted:

"We always explain the danger signs in pregnancy, like severe headaches, swelling, and blurred vision. But sometimes mothers think these are just normal symptoms."

(TK1)

Another health worker highlighted the consequences of delayed recognition:

"There have been cases where women came in already in severe condition because they didn't think the symptoms were serious."

(TK3)

Regarding information sources, most participants relied on health workers, particularly midwives, as their primary source of knowledge. Some also accessed information from maternal health books or the internet:

"I found out from the midwife during a check-up. She said if my blood pressure goes up, I need to come more often."

(R6M)

"I also read in the maternal health book that swelling and headaches can be dangerous."

(I4R)

"I tried searching online after the midwife told me my blood pressure was high."

(R7M)

However, information-seeking behavior was generally passive, and understanding depended heavily on explanations provided during antenatal visits.

These findings demonstrate that maternal health literacy regarding preeclampsia remains limited, fragmented, and predominantly symptom-based. Knowledge is shaped by personal experience, social context, and interaction with health services rather than by a comprehensive understanding of the condition. This highlights the need for more effective, context-based, and culturally appropriate health communication strategies to improve early recognition and prevention of preeclampsia.

Overall, these findings demonstrate that maternal understanding of preeclampsia remains fragmented and largely symptom-oriented. Limited health literacy may contribute to delayed recognition of danger signs and increases dependence on health professionals for information, potentially influencing subsequent preventive behaviors.

Theme 2: Cultural beliefs and practices in pregnancy

The findings reveal that cultural beliefs and local practices play a significant role in shaping maternal behaviors related to preeclampsia prevention. These beliefs influence how pregnant women interpret health risks, make dietary choices, and respond to pregnancy-related symptoms. In many cases, cultural norms were deeply embedded in daily practices and reinforced by family and community members.

One of the most prominent expressions of cultural beliefs was the presence of food taboos during pregnancy. Participants reported avoiding certain nutrient-rich foods, such as moringa leaves, shrimp, and squid, due to concerns about potential negative effects on pregnancy and childbirth. These beliefs were often transmitted across generations and accepted without questioning.

Several participants explained:

"I don't eat moringa because people say it can make the baby too big and cause a difficult delivery."

(I4R)

"I was told not to eat shrimp or squid because it could affect the baby."

(R5M)

These practices indicate that food choices during pregnancy are not solely based on nutritional considerations but are strongly influenced by cultural perceptions of risk. As a result, pregnant women may unintentionally reduce their intake of essential nutrients needed for maternal and fetal health.

In addition to dietary restrictions, cultural beliefs also influenced how participants interpreted pregnancy complications. Some participants associated severe symptoms with non-medical or supernatural causes, which affected their initial response to health problems. For example:

"Sometimes people say it's not a medical problem, but something else, like being disturbed."

(R6M)

Such interpretations may delay seeking appropriate medical care, as individuals may prioritize traditional or spiritual approaches before accessing formal health services.

Cultural beliefs were also closely linked to trust in traditional healers or alternative care practices. In some cases, families preferred to consult local healers before seeking care in health facilities, especially when symptoms were not immediately recognized as dangerous. This reflects the coexistence of biomedical and traditional health systems within the community.

"Usually, people go to traditional healers first before going to the health center."

(TK2)

This pattern highlights how cultural frameworks shape help-seeking behavior and may contribute to delays in receiving timely and appropriate care.

Importantly, cultural beliefs were not held individually but were socially reinforced within family and community structures. Pregnant women often followed these practices due to advice or pressure from older family members, particularly mothers or mothers-in-law. This indicates that cultural practices are maintained collectively and may be difficult to change without broader social engagement.

These findings demonstrate that cultural beliefs significantly influence maternal health behaviors, particularly regarding diet, symptom interpretation, and care-seeking practices. While these beliefs provide a sense of cultural continuity and social support, they may also conflict with biomedical recommendations for preeclampsia prevention. Therefore, addressing cultural beliefs in maternal health interventions requires a culturally sensitive approach that acknowledges local knowledge while promoting evidence-based practices. Integrating cultural understanding into health education strategies may improve acceptance and effectiveness of preeclampsia prevention efforts in rural communities.

Collectively, these findings suggest that cultural beliefs shape maternal behavior not only through individual perceptions but also through socially shared norms governing food choices, illness interpretation, and healthcare utilization. Consequently, preventive behaviors are negotiated between biomedical recommendations and culturally embedded knowledge systems.

Theme 3: Family decision-making and maternal health behavior

Family decision-making emerged as a central factor influencing maternal health behavior, particularly in relation to preeclampsia prevention. The findings show that pregnant women were often not the primary decision-makers regarding their own health. Instead, decisions related to antenatal care, referral, and dietary practices were largely influenced by husbands and, to a lesser extent, mothers or mothers-in-law.

Participants described that health-related decisions were typically discussed within the family before any action was taken. This collective decision-making process often resulted in delays, particularly when symptoms were not immediately perceived as serious.

"If something happens, we usually talk with the family first before going to the health center."

(R5M)

This pattern indicates that maternal health behavior is embedded within household power dynamics, in which individual autonomy is limited, and decisions are negotiated collectively. Health workers also confirmed that family influence plays a critical role in determining whether pregnant women follow medical advice, particularly in cases requiring referral to higher-level health facilities.

"Sometimes the family decides whether the mother can go for referral or not."

(TK2)

In such situations, even when health workers recommend immediate care, implementation may depend on family approval, delaying timely intervention.

The role of husbands was particularly dominant in decision-making related to financial resources, access to healthcare, and permission to seek care. At the same time, older female family members often influenced dietary practices and interpretations of pregnancy-related symptoms. This dual influence reflects a gendered and hierarchical family structure, in which authority is distributed among household members.

In some cases, family members minimized symptoms or prioritized non-medical approaches, further contributing to delays in seeking appropriate care. These findings suggest that maternal health decisions are not based solely on medical knowledge but are shaped by social relationships, cultural expectations, and power structures within the family.

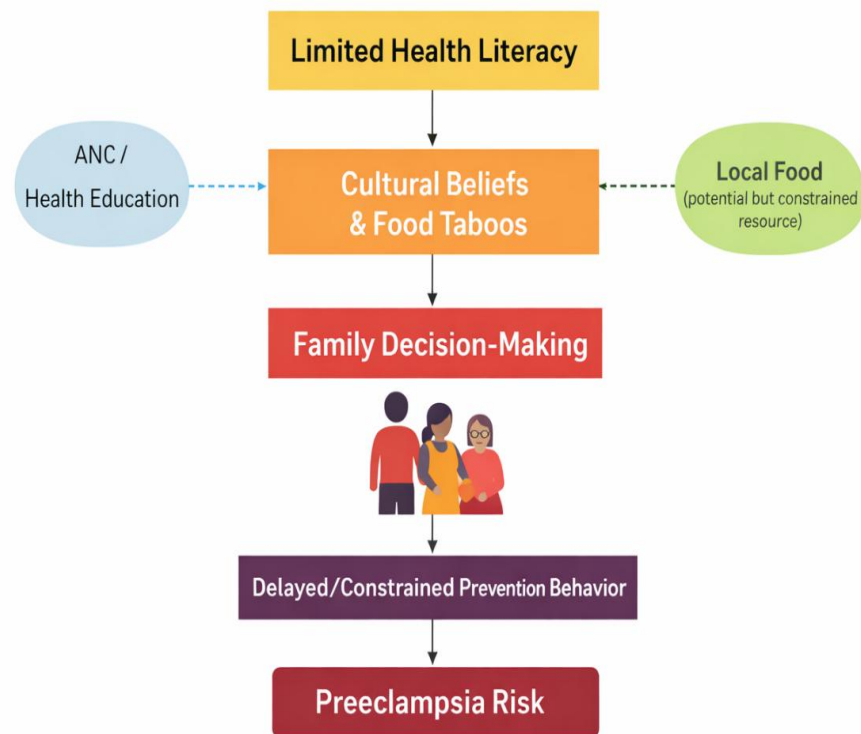
Importantly, the limited involvement of pregnant women in decision-making may reduce their ability to act promptly in response to danger signs. This is particularly critical in the context of preeclampsia, where delays in recognition and treatment can lead to severe complications.

The findings demonstrate that family decision-making is a key determinant of maternal health behavior. Therefore, interventions aimed at improving preeclampsia prevention should not focus solely on pregnant women but also actively involve family members, particularly husbands and influential household figures. Strengthening family-centered approaches while maintaining maternal autonomy is essential to ensure timely and appropriate health-seeking behavior.

Overall, family decision-making functions as an important mediator between maternal knowledge and actual health behavior. Even when pregnant women recognize potential danger signs, preventive actions frequently depend on household approval and family support.

Synthesis of findings

Across all participant groups, the three themes did not emerge as isolated phenomena but rather as interconnected components of maternal health behavior. Limited health literacy reduced women's ability to recognize pregnancy risks, while cultural beliefs influenced how those risks were interpreted and understood. Family decision-making subsequently determined whether biomedical recommendations were accepted, postponed, or rejected. Together, these findings support the proposed conceptual pathway, illustrating that preeclampsia prevention is socially negotiated through continuous interactions among individual knowledge, cultural norms, family authority, and community practices rather than determined solely by individual awareness. This interconnected sociocultural pathway is illustrated in Figure 1.

Figure 1: Conceptual Pathway of Preeclampsia Prevention in Sociocultural Context

Discussion

This study demonstrates that preeclampsia prevention among high-risk pregnant women is not determined solely by biomedical knowledge or access to healthcare services, but is shaped by the dynamic interaction among health literacy, cultural beliefs, family decision-making, and local food practices within a broader sociocultural environment. By integrating these interrelated factors into a single conceptual pathway, this study extends prior maternal health research, which has typically examined these determinants separately. The findings therefore contribute not only to maternal health research but also to the broader field of population and social studies by illustrating how preventive health behaviors are socially negotiated within families and communities rather than being solely individual decisions.

Health literacy

The findings indicate that maternal health literacy regarding preeclampsia remains limited and predominantly symptom-oriented. Most participants recognized pregnancy hypertension only after receiving clinical diagnoses and were unfamiliar with the concept of preeclampsia itself. Consequently, warning signs such as headache, edema, and visual disturbances were frequently interpreted as normal pregnancy experiences, delaying appropriate healthcare utilization. These findings are consistent with previous studies demonstrating that inadequate maternal health literacy contributes to delayed recognition of obstetric complications and suboptimal utilization of antenatal care services (Fauzi et al., 2021; Murugesu et al., 2021; Putri et al., 2023; Roberts et al., 2023).

However, our findings suggest that health literacy should not be viewed merely as an individual's capacity to understand health information. Rather, understanding is socially constructed through repeated interactions with health professionals, family members, and community beliefs. This interpretation supports the Social Determinants of Health framework, which emphasizes that health behaviors emerge from interactions between individual capabilities and the surrounding social environment (Crear-Perry et al., 2021; Short & Mollborn, 2015; Souza et al., 2024). Thus, improving maternal knowledge alone may have limited effectiveness unless communication strategies are culturally meaningful and socially embedded.

Cultural beliefs and local food practices

The second important finding concerns the strong influence of cultural beliefs on pregnancy-related behaviors. Participants reported avoiding several nutrient-rich local foods – including moringa leaves, shrimp, and squid – because of longstanding beliefs that these foods could complicate pregnancy or childbirth. Although these practices provide cultural continuity and social identity, they may unintentionally reduce dietary quality during pregnancy.

These findings are consistent with recent studies and reviews showing that food taboos remain common across many low- and middle-income countries and continue to influence maternal nutrition despite increasing access to biomedical care (Belew et al., 2025; Felisian et al., 2023; Perry et al., 2022). Importantly, similar cultural practices have also been documented in community-based maternal health programs across South Asia, where culturally tailored education that respects local traditions while correcting misconceptions has improved maternal engagement and preventive behaviors. Incorporating such approaches into Indonesian maternal health programs may therefore increase the acceptability and effectiveness of preeclampsia prevention.

Within the Bugis–Makassar sociocultural context, pregnancy is understood not only as a biological process but also as a family and cultural event governed by inherited norms regarding food consumption, bodily changes, and healthcare-seeking practices (Afdhal et al., 2026; Ansar, 2025). Ansar (2025) demonstrated that Bugis–Makassar women negotiate pregnancy-related decisions through pluralistic reproductive knowledge, integrating biomedical advice with spiritual beliefs, kinship expectations, and inherited cultural norms. Similarly, Afdhal et al. (2026) reported that culturally embedded food taboos, reinforced by elders and traditional beliefs, restrict the consumption of nutrient-rich foods during pregnancy.

Building upon these studies, our findings demonstrate that cultural beliefs and food taboos do not operate in isolation; rather, they interact dynamically with maternal health literacy and family decision-making to shape preventive behaviors toward preeclampsia. This integrated sociocultural pathway builds on previous research on Bugis–Makassar communities and constitutes the principal conceptual contribution of the present study. Consequently, preventive behaviors cannot be understood independently of these interconnected sociocultural systems.

Family decision-making

Family decision-making emerged as another central determinant of maternal health behavior. Decisions regarding antenatal care attendance, referral compliance, healthcare expenditures, and dietary practices were rarely made independently by pregnant women. Instead, husbands and senior female family members frequently influenced or determined these decisions. Similar findings have been reported in Indonesia and other Asian countries, where collective household decision-making strongly shapes maternal healthcare utilization (Anfaara et al., 2024; Murugesu et al., 2021; Yuill et al., 2020).

Importantly, family influence in this study functioned as both a potential facilitator and a barrier. Supportive family members encouraged antenatal attendance and referral compliance, whereas delayed family approval was associated with delayed healthcare-seeking despite recognition of warning signs. These findings reinforce the importance of family-centered maternal healthcare models that actively engage husbands and influential household members while preserving women's autonomy in healthcare decision-making (Glover et al., 2024).

Interaction among themes: The sociocultural pathway

A key contribution of this study lies in demonstrating that these three themes operate interdependently rather than independently. Limited health literacy influences how women interpret pregnancy symptoms; these interpretations are subsequently filtered through culturally embedded beliefs regarding illness and pregnancy; and the resulting decisions are negotiated within household power structures before preventive action is taken. Therefore, preeclampsia prevention should be understood as a dynamic sociocultural pathway rather than a linear sequence of individual knowledge leading directly to behavior.

This integrated pathway complements existing models of maternal health literacy and social determinants by explicitly incorporating family authority and culturally mediated decision-making into preventive maternal health behavior. From a population and social studies perspective, the findings suggest that maternal health behaviors are shaped by interactions among individuals, families, communities, and cultural systems rather than from isolated biomedical risk factors alone. This conceptual contribution represents the principal novelty of the present study.

Policy and practice implications

These findings have important implications for maternal health policy and community practice. First, antenatal education should be simplified through culturally appropriate language, visual materials, and locally relevant examples to improve understanding of the danger signs of preeclampsia. Second, maternal health education should actively involve husbands, mothers-in-law, community leaders, and traditional birth attendants because these individuals substantially influence household health decisions. Third, community-based maternal health programs should incorporate discussions regarding local food practices and culturally sensitive nutritional counseling rather than relying solely on standardized biomedical messages. Similar family-centered and culturally responsive strategies may also apply to other rural areas of Indonesia and comparable low- and middle-income countries that share collective family structures and strong cultural traditions.

Strengths and limitations

This study has several strengths. The inclusion of four participant groups—including high-risk pregnant women, women with previous preeclampsia, healthcare providers, and government stakeholders—provided multiple perspectives that enhanced the credibility and richness of the findings. Nevertheless, several limitations should be acknowledged.

As a qualitative study conducted in one rural district of South Sulawesi, the findings are not intended to be statistically generalizable. Only one FGD was conducted for each participant group, which may have limited the breadth of perspectives within each group. Group dynamics may also have influenced participants' willingness to express divergent or sensitive views, and social desirability bias may have affected responses, particularly when discussing culturally sensitive beliefs or family authority. As selected quotations were translated from Bahasa Indonesia into English, some linguistic nuances of the original expressions may not be fully retained despite efforts to preserve their meaning and context.

Although purposive sampling, triangulation, and peer debriefing enhanced trustworthiness, sociocultural practices may differ across other regions of Indonesia. Therefore, transferability should be interpreted within contexts sharing similar cultural characteristics. Future multicenter qualitative or mixed-methods studies across diverse Indonesian provinces would strengthen understanding of regional variations in sociocultural determinants of preeclampsia prevention.

Conclusion

This study demonstrates that preeclampsia prevention among high-risk pregnant women in rural Indonesia is shaped by the dynamic interaction of health literacy, cultural beliefs, family decision-making, and local food practices, rather than by biomedical knowledge alone. Limited maternal understanding of preeclampsia, culturally embedded beliefs regarding pregnancy and nutrition, and collective household decision-making jointly influence how women recognize pregnancy complications and engage in preventive health behaviors.

A key contribution of this study is the development of an integrated sociocultural pathway that explains how these interconnected determinants collectively shape preeclampsia prevention. By linking individual health literacy to family authority, cultural norms, and community food practices, this study extends existing approaches grounded in the Social Determinants of Health. It contributes to the broader field of Population and Social Studies by demonstrating that maternal health behaviors are socially negotiated within family and community contexts.

The findings have important implications for policy and practice. Maternal health interventions should move beyond conventional biomedical education by adopting culturally responsive, family-centered, and community-based approaches that actively engage husbands, mothers-in-law, community leaders, and primary healthcare providers. Health education should also incorporate locally available nutritious foods and address culturally rooted misconceptions through respectful dialogue rather than simple behavioral correction. Such strategies may strengthen early recognition of preeclampsia, improve timely healthcare utilization, and enhance preventive behaviors among high-risk pregnant women.

Although the findings are context-specific, the conceptual insights may be transferable to other rural communities in Indonesia and to low- and middle-income countries with comparable sociocultural structures where family influence and cultural beliefs substantially shape maternal healthcare decisions. Future studies involving multiple regions and mixed-methods designs are recommended to examine the applicability of the proposed sociocultural pathway across diverse cultural settings and to evaluate culturally tailored interventions for improving maternal health outcomes.

Ethical approval

All aspects of this research involving human participants were conducted in accordance with accepted ethical principles. Ethical approval was granted by the Research Ethics Committee, Faculty of Public Health, Hasanuddin University, Indonesia (Approval No. 728/UN4.14.1/TP.01.02/2025). The present study reports the exploratory qualitative component of the approved research project. Before participation, all participants received information about the purpose and procedures of the study and provided written informed consent. Participation was voluntary, and participants' confidentiality and anonymity were protected throughout data collection, analysis, and reporting.

Acknowledgments

The authors would like to express their sincere gratitude to all participants for their valuable time and willingness to share their experiences and perspectives. We also thank the health workers and local government authorities in Takalar Regency for their support, cooperation, and permission to conduct this study.

The authors also acknowledge the use of ChatGPT (OpenAI), Gemini (Google), and DeepSeek for language refinement, grammar checking, sentence restructuring, and figure editing. These tools were used solely as writing and visual support. All scientific content and interpretations were developed and verified by the authors.

References

- Afdhal, M. R., Wahyudin, & Rachman, D. A. (2026). Kepercayaan tradisional dan pantangan makanan yang memengaruhi risiko anemia kehamilan [Traditional beliefs and food taboos impacting gestational anemia risk]. *KORSA: Jurnal Kajian Ilmu Keolahragaan dan Kesehatan*, 5(1), 17–24. <https://journal.unm.ac.id/index.php/korsa/article/view/12942>
- Anfaara, F. W., Amoak, D., Kye, N. O., Sano, Y., & Antabe, R. (2024). Exploring the link between household structure and women's household decision-making autonomy in Mauritania. *Journal of Biosocial Science*, 56(5), 831–844. <https://doi.org/10.1017/S0021932024000221>
- Ansar, C. I. (2025). Negotiating reproductive agency: Social regulation and embodied knowledge in Bugis-Makassar women's responses to pregnancy risk. *Indonesian Journal of Social Science and Education (IJOSSE)*, 1(3), 97–110. <https://doi.org/10.62567/ijosse.v1i3.1191>
- Ariescha, P. A. Y., Machmud, R., Ocviyanti, D., Syah, N. A., Yusrawati, Bachtiar, A., Chatra, E., Yani, F. F., & Siahaan, J. M. (2025). Cultural factors as the strongest determinant of complete antenatal

- care utilization: A community-based cross-sectional study in Padang Lawas, Indonesia. *Journal of Applied Bioanalysis*, 11(3), 505–516. <https://doi.org/10.53555/jab.v11i3.266>
- Belew, A. K., Mengistu, B., Lakew, A. M., & Muhammad, E. A. (2025). Food taboo practices and associated factors among pregnant women in Sub-Sahara Africa: A systematic review and meta-analysis. *Journal of Health, Population and Nutrition*, 44, Article 24. <https://doi.org/10.1186/s41043-025-00770-0>
- Bundu, S. M., Amdadi, Z. A., Beddu, S., Manjilala, M., Lorica, J. D., & Sabilah, H. (2025). Effectiveness of the CAMPE module for preeclampsia prevention among high-risk pregnant women. *Jurnal Kebidanan dan Keperawatan Aisyiyah*, 21(2), 110–119. <https://doi.org/10.31101/jkk.4618>
- Cox, V., Sharma, P., Verma, G. S., Gill, N., Diamond-Smith, N. G., Duggal, M., Kumar, V., Bagga, R., Kaur, J., Singh, P., & El Ayadi, A. M. (2025). User acceptability and perceived impact of a mobile interactive education and support group intervention to improve postnatal health care in northern India: A qualitative study. *BMC Medical Informatics and Decision Making*, 25, Article 93. <https://doi.org/10.1186/s12911-025-02935-7>
- Crear-Perry, J., Correa-de-Araujo, R., Johnson, T. L., McLemore, M. R., Neilson, E., & Wallace, M. (2021). Social and structural determinants of health inequities in maternal health. *Journal of Women's Health*, 30(2), 230–235. <https://doi.org/10.1089/jwh.2020.8882>
- Fauzi, R., Kyi, Y. P., Mon, M. M., Munira, L., Herman, B., Hounnaklang, N., & Viwattanakulvanid, P. (2021). Factors affecting optimal antenatal care utilization in Indonesia: Implications for policies and practices. *Journal of Public Health Policy*, 42, 559–573. <https://doi.org/10.1057/s41271-021-00307-9>
- Felisian, S., Mushy, S. E., Tarimo, E. A. M., & Kibusi, S. M. (2023). Sociocultural practices and beliefs during pregnancy, childbirth, and postpartum among indigenous pastoralist women in Tanzania: A descriptive qualitative study. *BMC Women's Health*, 23, Article 123. <https://doi.org/10.1186/s12905-023-02277-4>
- Glover, A., Holman, C., & Boise, P. (2024). Patient-centered respectful maternity care: A factor analysis contextualizing marginalized identities, trust, and informed choice. *BMC Pregnancy and Childbirth*, 24, Article 267. <https://doi.org/10.1186/s12884-024-06491-2>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.
- Murugesu, L., Damman, O. C., Derksen, M. E., Timmermans, D. R. M., de Jonge, A., Smets, E. M. A., & Fransen, M. P. (2021). Women's participation in decision-making in maternity care: A qualitative exploration of clients' health literacy skills and needs for support. *International Journal of Environmental Research and Public Health*, 18(3), Article 1130. <https://doi.org/10.3390/ijerph18031130>
- Ngene, N. C., & Moodley, J. (2024). Preventing maternal morbidity and mortality from preeclampsia and eclampsia particularly in low- and middle-income countries. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 94, Article 102473. <https://doi.org/10.1016/j.bpobgyn.2024.102473>
- Perry, A., Stephanou, A., & Rayman, M. P. (2022). Dietary factors that affect the risk of pre-eclampsia. *BMJ Nutrition, Prevention & Health*, 5(1), 118–133. <https://doi.org/10.1136/bmjnp-2021-000399>
- Putri, A. P., Hanifah, L., & Lu, Y. Y. (2023). Maternal health literacy in pregnant women: A concept analysis. *Indonesian Journal of Nursing and Health Sciences*, 6(6), 354–364. <https://doi.org/10.35654/ijnhs.v6i6.763>
- Roberts, J. M., King, T. L., Barton, J. R., Beck, S., Bernstein, I. M., Buck, T. E., Forgues-Lackie, M. A., Facco, F. L., Gernand, A. D., Graves, C. R., Jeyabalan, A., Hauspurg, A., Manuck, T. A., Myers, J. E., Powell, T. M., Sutton, E. F., Tinker, E., Tsigas, E., & Myatt, L. (2023). Care plan for individuals at risk for preeclampsia: Shared approach to education, strategies for prevention, surveillance, and follow-up. *American Journal of Obstetrics & Gynecology*, 229(3), 193–213. <https://doi.org/10.1016/j.ajog.2023.04.023>
- Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A.-B., Daniels, J., Gülmezoglu, A. M., Temmerman, M., & Alkema, L. (2014). Global causes of maternal death: A WHO systematic analysis. *The Lancet Global Health*, 2(6), e323–e333. [https://doi.org/10.1016/S2214-109X\(14\)70227-X](https://doi.org/10.1016/S2214-109X(14)70227-X)
- Shoaib, A. (2026). Diversity and cultural differences in preeclampsia beliefs and management practices: A narrative review. *UCC Student Medical Journal*, 5, 22–27. <https://doi.org/10.33178/SMJ.2025.1.3>

- Short, S. E., & Mollborn, S. (2015). Social determinants and health behaviors: Conceptual frames and empirical advances. *Current Opinion in Psychology*, 5, 78–84. <https://doi.org/10.1016/j.copsyc.2015.05.002>
- Souza, J. P., Day, L. T., Rezende-Gomes, A. C., Zhang, J., Mori, R., Baguiya, A., Jayaratne, K., Osoti, A., Vogel, J. P., Campbell, O., Mugerwa, K. Y., Lumbiganon, P., Tunçalp, Ö., Cresswell, J., Say, L., Moran, A. C., & Oladapo, O. T. (2024). A global analysis of the determinants of maternal health and transitions in maternal mortality. *The Lancet Global Health*, 12(2), e306–e316. [https://doi.org/10.1016/S2214-109X\(23\)00468-0](https://doi.org/10.1016/S2214-109X(23)00468-0)
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357. <https://doi.org/10.1093/intqhc/mzm042>
- Vicente-Díaz, E. I., & Alvariñas-Villaverde, M. (2025). Health literacy in pregnant women and its associations with personal, socioeconomic, and health-related factors in primary care. *Nursing Reports*, 15(12), Article 436. <https://doi.org/10.3390/nursrep15120436>
- Yuill, C., McCourt, C., Cheyne, H., & Leister, N. (2020). Women's experiences of decision-making and informed choice about pregnancy and birth care: A systematic review and meta-synthesis of qualitative research. *BMC Pregnancy and Childbirth*, 20(1), Article 343. <https://doi.org/10.1186/s12884-020-03023-6>
- World Health Organization. (2025, December 10). *Pre-eclampsia*. <https://www.who.int/news-room/fact-sheets/detail/pre-eclampsia>