Contents lists available at IOCS

**Science Midwifery**

journal homepage: www.midwifery.iocspublisher.org

# Experiences of pregnant women in maintaining their health and preventing anemia following the floods in South Tapanuli Regency

**Dewi Aminasty Siregar[1], Herawati Harahap[2], Rahmat Rizki Siregar[3], Wiwi Wardani Tanjung[4], Rosmainun[5], Dewi Arjuna Putri Pan Harahap[6]**

[1,2,4,5,6]Program Studi Kebidanan, Sekolah Tinggi Ilmu Kesehatan Sentral, Padangsidimpuan, Indonesia

[3]Program Studi Keselamatan dan Kesehatan Kerja, Sekolah Tinggi Ilmu Kesehatan Sentral, Padangsidimpuan, Indonesia

**ARTICLE INFO**

***Article history:***

Received Oct 10, 2026
Revised Oct 23, 2026
Accepted Oct 30, 2026

***Keywords:***

Anemia
Experiences
Flooding
Iron Supplements
Pregnant Women

**ABSTRACT**

Floods can disrupt the conditions required to maintain maternal health, including access to antenatal care, nutritious food, and routine iron supplementation. These disruptions may complicate anemia-prevention practices among pregnant women, particularly during displacement and the post-flood recovery period. This study aimed to explore the experiences of pregnant women in maintaining their health and preventing anemia following the floods in South Tapanuli Regency, Indonesia. A qualitative phenomenological study specifically a descriptive phenomenological approach was conducted at the Batang Toru Temporary Shelter in South Tapanuli Regency in June 2026. Ten women who had been pregnant during the flood participated. Data were collected through face-to-face, semi-structured in-depth interviews and analyzed thematically. Six themes were identified: (1) the impact of flooding on the well-being of pregnant women; (2) efforts to maintain maternal health after the flood; (3) experiences of anemia prevention after the flood; (4) support for anemia prevention; (5) barriers to anemia prevention after the flood; and (6) pregnant women's expectations for anemia prevention during disasters. Participants described physical and psychological distress, disrupted access to food and health services, efforts to continue antenatal care and iron supplementation, and support from health workers, families, government, and volunteers. They also described the need for continuous iron supplementation, practical nutrition and anemia education, and food assistance appropriate for pregnancy. The findings indicate that anemia-prevention practices after floods are shaped not only by individual behavior but also by food availability, continuity of maternal health services, and support systems. Midwifery services in disaster settings should integrate maternal risk assessment, continuity of antenatal care, iron-supplement provision and counseling, psychosocial support, and pregnancy-appropriate food assistance. Hemoglobin levels were not measured; therefore, the study does not establish the clinical effectiveness of the reported practices in preventing anemia.

*This is an open access article under the CC BY-NC license.*

***Corresponding Author:***

Dewi Aminasty Siregar,

Midwifery Program,
Sekolah Tinggi Ilmu Kesehatan Sentral,
Jl. Tandang Mulia, No.1 Komp. Sidimpuan Baru, Kel. Silandit, Kota Padangsidimpuan, Sumatera Utara, 22730, Indonesia
Email: dewiaminasty65@gmail.com

# INTRODUCTION

Floods are one of the most frequent natural disasters in Indonesia and have a widespread impact on public health (Agoeng Noe, 2025; DetikNews, 2025). Vulnerable groups, particularly pregnant women, are especially affected by such disasters (Markolinda et al., 2025). South Tapanuli Regency is geographically prone to flooding due to high rainfall, topographical conditions, and inadequate drainage systems in some areas (Badan Nasional Penanggulangan Bencana, 2025). Displacement, damaged transport routes, overcrowded shelters, interruptions to routine services, and reduced access to diverse foods may make it difficult to continue antenatal care and recommended iron supplementation. These challenges are particularly relevant to anemia prevention because it depends on more than the availability of iron tablets: women also need clear counseling, an adequate diet, follow-up by health workers, and practical support to take supplements consistently. Recurring floods not only cause material losses but also have long-term effects on the health of pregnant women, particularly in the post-flood period (Fonda et al., 2024).

During the post-flood phase, pregnant women face various challenges in maintaining their health (Partash et al., 2022). Disrupted access to health care facilities, limited antenatal care (ANC) services, poor sanitation, and limited availability of nutritious food are major issues. This situation increases the risk of anemia in pregnant women, which remains a public health problem with a high prevalence in Indonesia (Oskorouchi et al., 2018). Anemia during pregnancy can lead to various complications (Ramadhan, 2023), such as fatigue, weakened immunity, risk of bleeding during childbirth, preterm birth, and low birth weight (Akib & Limbong, 2024).

Pregnancy increases iron requirements, while inadequate dietary intake and interrupted supplementation can make it more difficult to meet those requirements. In a post-flood setting, food assistance may prioritize immediate energy needs and shelf-stable foods rather than a varied diet that includes iron-rich foods. At the same time, damaged roads, limited transportation, crowded health facilities, and competing family responsibilities may delay antenatal visits or access to iron-folic acid tablets. Stress and uncertainty following a disaster may further affect women's ability to prioritize self-care and follow health advice. These pathways provide a rationale for examining anemia prevention as an everyday practice shaped by the disaster environment, rather than solely as an individual health behavior. Efforts to prevent anemia in pregnant women generally focus on the administration of iron supplements, ensuring adequate nutritional intake, and routine prenatal care (Ariandini et al., 2023; Septi Indah Permata Sari Dewi Septiana, 2025; Yamamoto, K., Takita, M., Kami, 2022).

However, in the context of post-flood conditions, these efforts often do not proceed optimally. The distribution of iron-folic acid tablets may be disrupted, antenatal care (ANC) visits may decline, and pregnant women may face psychosocial barriers such as stress, anxiety, and fatigue due to environmental conditions that have not yet fully recovered (Oskorouchi et al., 2018). Therefore, the prevention of anemia among pregnant women in post-flood areas is not only related to medical aspects but is also influenced by life experiences, risk perceptions, and coping strategies employed by pregnant women (Daerah & Palang, 2022).

Previous research has examined the health consequences of floods and other disasters for pregnant women, as well as anemia prevalence, dietary risk factors, and adherence to iron supplementation. However, these strands of evidence do not fully explain how pregnant women themselves navigate anemia-prevention practices after a flood: how they obtain and take iron

supplements, how they make food choices when supplies are constrained, how they access antenatal care when transport or facilities are disrupted, and how family and community support influence these decisions. Understanding these experiences is important for designing midwifery services that remain feasible and responsive during displacement and recovery. Most studies on anemia in pregnant women still focus on quantitative aspects, such as prevalence, risk factors, and the relationship between anemia and pregnancy outcomes. Meanwhile, research exploring the experiences of pregnant women in maintaining their health and preventing anemia—particularly in post-flood situations—remains limited. Yet the experiences of pregnant women are crucial for understanding how they cope with limitations, make health-related decisions, and utilize available resources amid disaster conditions. A comprehensive understanding of anemia and the experiences of pregnant women in the aftermath of the floods in South Tapanuli Regency is expected to provide a more complete picture of maternal health issues in disaster-prone areas. This information is crucial as a basis for developing anemia prevention interventions that are more context-specific, responsive to disaster conditions, and aligned with the needs and realities faced by pregnant women at the local level.

This study addresses this gap by exploring the experiences of pregnant women who were pregnant during the floods in South Tapanuli Regency. It focuses on their experiences of maintaining maternal health, preventing anemia, accessing food and health services, receiving support, and identifying unmet needs. The study asks: (1) How do pregnant women describe the effects of flooding on their health and health-care needs? (2) What practices do they use to maintain their health and prevent anemia after the flood? (3) What forms of support and barriers shape these practices? and (4) What services and resources do they consider necessary for anemia prevention during future disasters?

The study contributes context-specific qualitative evidence to midwifery and disaster-health practice by showing how anemia prevention is negotiated within the realities of temporary shelter, disrupted services, food assistance, and community support. The findings may inform the planning of continuity-of-care arrangements for pregnant women in evacuation settings and during post-disaster recovery.

# RESEARCH METHOD

This study employed a qualitative method using a phenomenological approach specifically a descriptive phenomenological approach. The phenomenological approach was chosen to explore and understand the experiences of pregnant women in maintaining their health and preventing anemia following the floods in South Tapanuli Regency.

This study was conducted at a flood-affected site in South Tapanuli Regency, North Sumatra Province, namely the Batang Toru Temporary Shelter (Huntara). The shelter accommodated residents displaced by flooding, including women who had been pregnant during the disaster.

Ten women who had been pregnant during the flood participated. articipants were recruited using purposive sampling to ensure that they had direct experience relevant to the research phenomenon. The recruitment process involved identifying eligible women with the assistance of local healthcare workers or midwives in flood-affected areas. Women who met the inclusion criteria were approached, informed about the study objectives and procedures, and invited to participate voluntarily. The inclusion criteria were: (1) women who had experienced pregnancy during the flooding in South Tapanuli Regency; (2) women who lived in flood-affected areas during the disaster; (3) women who had experienced or undertaken efforts to maintain their health and prevent anemia during pregnancy following the floods; (4) women who were able to communicate their experiences clearly; and (5) women who were willing to participate and provide informed consent.

Data were collected through face-to-face, semi-structured in-depth interviews using a semi-structured interview guide developed based on the research objectives. The interviews were conducted in person at a location mutually agreed upon with the participants and lasted approximately 30–60 minutes. All interviews were recorded using a voice recorder after obtaining the participants' consent and were supplemented with field notes to document the participants' conditions and nonverbal responses. The interview guide covered the impact of flooding, maternal health practices, antenatal care, iron supplementation, food access, support, barriers, and expectations.

Data were analyzed using thematic analysis to identify, organize, and interpret patterns of meaning emerging from participants' experiences. The analysis followed a systematic process. First, all interview recordings were transcribed verbatim. The researchers repeatedly read the transcripts to become familiar with the data and gain an overall understanding of participants' experiences. Second, initial codes were generated by identifying meaningful statements, phrases, and descriptions related to pregnant women's experiences in maintaining their health and preventing anemia during and following the floods. Third, similar codes were compared, grouped, and organized into categories based on their conceptual similarities and relationships. Fourth, potential themes were developed by examining patterns across categories and identifying recurring meanings relevant to the research objectives. Fifth, the themes were reviewed and refined by comparing them with the original transcripts to ensure that they accurately represented participants' accounts and were sufficiently distinct from one another. Finally, representative excerpts from participants' interviews were selected to illustrate each theme and support the interpretation of the findings.

The trustworthiness of the findings was considered in terms of credibility, dependability, confirmability, and transferability. The researchers sought to maintain credibility by ensuring that the analysis remained closely grounded in participants' interview accounts. The transcripts were reviewed repeatedly, and the interpretation of themes was compared with the original interview data. The researchers maintained reflexivity throughout the research process by being aware that their professional backgrounds and prior knowledge of maternal health, pregnancy, and anemia prevention could influence data interpretation. The researchers therefore made efforts to distinguish participants' actual experiences from their own assumptions and expectations.

This study received ethical approval from the Research Ethics Committee (Komite Etik Penelitian/KEP), Institut Kesehatan Deli Husada Deli Tua, Indonesia, under approval number 2461/KEP-IKDH.DT/IV/2026, dated April 2026.

# RESULTS AND DISCUSSIONS

**Table 1.** Characteristics of participants

| Participant | Age (years) | Gestational age (weeks) | Parity |
|---|---|---|---|
| P1 | 18 | 38 | 1 |
| P2 | 27 | 22 | 3 |
| P3 | 29 | 28 | 2 |
| P4 | 21 | 25 | 1 |
| P5 | 31 | 29 | 2 |
| P6 | 26 | 35 | 1 |
| P7 | 26 | 19 | 3 |
| P8 | 33 | 11 | 5 |
| P9 | 23 | 16 | 2 |
| P10 | 20 | 20 | 1 |

A total of ten pregnant women who experienced the floods in South Tapanuli Regency participated in this study. The participants' ages ranged from 18 to 33 years, with gestational ages ranging from 11 to 38 weeks at the time of the study. In terms of parity, participants had a parity

range of 1 to 5. These characteristics reflect variations in maternal age, stage of pregnancy, and reproductive experience among the participants.

**Table 2.** Thematic matrix experiences of pregnant women in maintaining their health and preventing anemia following the floods in South Tapanuli Regency

| Theme | Category | Subcategories / Findings |
|---|---|---|
| Theme 1: The Impact of Flooding on the Condition of Pregnant Women | 1. Physical Conditions After the Flood | 1. Fatigue |
| | | 2. Cough |
| | | 3. Runny nose |
| | | 4. Limited activities |
| | 2. Psychological Impacts | 1. Fear |
| | | 2. Anxiety |
| | | 3. Stress |
| | | 4. Concern about the fetus |
| | 3. Disruption in Meeting Health Needs | 1. Difficulty accessing health services |
| | | 2. Difficulty obtaining nutritious food |
| Theme 2: Efforts Made by Pregnant Women to Maintain Their Health After the Flood | 1. Meeting Nutritional Needs | 1. Consuming available food |
| | | 2. Seeking additional food |
| | 2. Antenatal Care | 1. Antenatal check-ups at evacuation posts |
| | | 2. Antenatal check-ups at community health centers |
| | | 3. Ultrasound examinations at community health centers |
| | 3. Maintaining the Safety of Mother and Fetus | 1. Avoiding risks |
| | | 2. Seeking a safe place |
| Theme 3: Experiences of Anemia Prevention After the Flood | 1. Consumption of Iron Supplement Tablets | 1. Receiving iron supplement tablets from midwives |
| | | 2. Receiving iron supplement tablets from community health centers |
| | | 3. Adherence to iron supplement intake |
| | 2. Consumption of Iron-Rich Foods | 1. Eggs |
| | | 2. Fish |
| | | 3. Meat |
| Theme 4: Support for Anemia Prevention | 1. Support from Health Workers | 1. Antenatal care |
| | | 2. Provision of iron supplement tablets |
| | | 3. Health education |
| | 2. Family Support | 1. Accompanying pregnant women to seek medical care |
| | | 2. Meeting food needs |
| | 3. Government Support | 1. Food assistance |
| | | 2. Provision of milk for pregnant women |
| | | 3. Health services |
| | 4. Support from Volunteers | 1. Food assistance |
| | | 2. Transportation assistance to access health services |
| Theme 5: Barriers to Anemia Prevention After the Flood | 1. Limited Access to Nutritious Food | 1. Predominance of instant foods |
| | | 2. Limited availability of nutritious side dishes |
| | 2. Access to Health Services | 1. Limited transportation |
| | | 2. Flood-affected health facilities |
| | 3. Lack of Specific Education on Anemia | 1. Lack of specific information on anemia prevention during disasters |
| Theme 6: Pregnant Women's Expectations for Anemia Prevention During Disasters | 1. Health Education for Pregnant Women | 1. Education on anemia |
| | | 2. Nutrition education |
| | 2. Availability of Supplements | 1. Iron supplement tablets |
| | | 2. Continuous provision of vitamins |
| | 3. Nutritional Food Support | 1. Provision of nutritious food specifically for pregnant women |

**Theme 1: The Impact of Flooding on the Well-Being of Pregnant Women**

Research findings indicate that flooding affects the physical and psychological well-being of pregnant women and their ability to meet their health needs. Participants reported experiencing fatigue, coughs, colds, and limited mobility, as well as feelings of fear, anxiety, stress, and worry about the condition of their fetuses. In addition, pregnant women also faced difficulties in accessing the health care and nutritious food needed to maintain their health and In addition, pregnant women also face difficulties in accessing the health care and nutritious food they need to maintain their health and prevent anemia in the aftermath of the flood.

**Physical Condition After the Flood**

"After the flood, I was exhausted because we had to walk a long way up into the mountains to avoid the floodwaters, and my body just felt weak all the time." "I have a cough and a cold because the evacuation center is dusty and crowded, so it's hard to move around. What can you do? It's crowded because everyone's gathered at the shelter."

**Psychological Impact**

"I was so scared, sis. When I looked, the water had already risen, and I saw people being swept away." "We kept running to get to safety, but we were swept away for a moment. I kept holding my child. I had given up hope, but thank God someone saved us because my foot got caught on an electrical wire." "My stomach hit a piece of wood four times while we were being swept away. 'Where is my child?' I thought. Thank God, he was born healthy, but his umbilical cord was severed at birth." "After the flood, I was so stressed thinking about how my unborn baby was doing, you know?" "I was worried about the baby in my womb, so I got stressed. Then I was admitted to the hospital because my blood pressure spiked, and my baby was born prematurely."

**Difficulties in Meeting Health Needs**

"I eat whatever's available at the relief center—Indomie, eggs, canned fish—that's what I usually eat. Better that than going hungry, especially since I'm pregnant." "Indomie, eggs, and sardines are what we usually eat, but I don't want to eat Indomie too often because I'm pregnant." "After the flood, it was really hard to get through, so when I started bleeding a little, I asked for help from the mining trucks that were always passing by the command post, and they were the ones who took me to the community health center to check my pregnancy." "Everyone's busy, and the community health center is full of patients, so if you want a pregnancy checkup, just come to the community health center yourself.

**Theme 2: Efforts by Pregnant Women to Maintain Their Health After a Flood**

Research findings show that pregnant women take various steps to maintain their own health and that of their fetuses after experiencing a flood. These efforts include meeting their nutritional needs by consuming available food and seeking additional food sources, undergoing prenatal checkups at relief centers or community health centers—including ultrasound examinations—and ensuring their own safety and that of their fetuses by avoiding risks and seeking safer locations.

**Meeting Nutritional Needs**

"We eat whatever's available at the command post—Indomie, eggs, sometimes sardines—but when officials visit, we get meat and chicken; it's pretty good." "Yeah, we also get food from relatives, and sometimes volunteers bring food donations like bread and other items."

**Prenatal Checkups**

"There's also a midwife staying at the relief post because she's a flood victim too, so she checked on our pregnancies." "We pregnant women were also told to go to the community health center for an ultrasound. The midwife said, 'You should get checked—you never know if there's

something wrong with your baby, so you'll know how things are.'" "Go to the community health center for the checkup—they have all the equipment there, and there are doctors too."

**Staying Safe and Protecting the Fetus**

"Since there was a flood, we quickly ran up the mountain to stay safe—especially since I was in the late stages of pregnancy—so that the baby in my womb would be safe." "We ran up the mountain with our family to stay safe and avoid being caught in another flood. It's so sad to think back on that incident."

**Theme 3: Experiences with Anemia Prevention After Floods**

Research findings show that pregnant women take various measures to prevent anemia after experiencing floods. These measures include taking iron supplements obtained from midwives or community health centers and adhering to health workers' recommendations for taking them. In addition, pregnant women also try to meet their iron needs by consuming iron-rich foods such as eggs, fish, and meat, depending on food availability following the flood.

**Consumption of Iron Supplements**

"The midwife gave us iron supplements, which were distributed to pregnant women at the health post." "We're also given iron supplements when we go for checkups at the community health center, so we have plenty of them—we never run out of iron supplements."
"I'll take the medicine so that both I and my unborn child will be healthy".

**Availability of Iron-Rich Foods**

"We have eggs and fish, and sometimes we're even given meat when officials or people from the mine come to visit—the food is really good, you know." "There are plenty of vegetables at the shelter, too. Basically, we never run short of food while we're staying here, though it's mostly Indomie, eggs, and sardines, you know."

**Theme 4: Support for Anemia Prevention**

Research findings indicate that anemia prevention among pregnant women in the aftermath of a flood is supported by various parties, including health workers, families, the government, and volunteers. This support takes the form of prenatal checkups, the provision of iron supplements and health education, assistance in meeting the nutritional and milk needs of pregnant women, health services, and transportation assistance to access health care facilities.

**Theme 5: Barriers to Post-Flood Anemia Prevention**

Research findings indicate that pregnant women face various barriers in their efforts to prevent anemia following a flood. These barriers include limited access to nutritious food due to the prevalence of processed foods and a scarcity of iron-rich side dishes; difficulty accessing health care due to limited transportation and health facilities affected by the flood; and a lack of specific education on anemia prevention for pregnant women in disaster situations.

**Theme 6: Expectant Mothers' Hopes for Anemia Prevention in Disaster Situations**

Pregnant women have various expectations regarding efforts to prevent anemia during disasters. These expectations include access to health education on anemia and nutrition, a consistent supply of iron supplements and vitamins, and access to nutritious food that meets the specific needs of pregnant women. This highlights the importance of addressing the specific needs of pregnant women in disaster response.

**Discussion**

The findings suggest that anemia prevention after flooding is shaped by interacting individual, household, community, and health-system conditions (Febriyanti et al., 2025). The six themes describe a sequence in which flood exposure affects physical and psychological well-being; displacement and service disruption alter access to food and antenatal care; women attempt to maintain health and continue anemia-prevention practices; and the availability of support or the

persistence of barriers influences what they can realistically do. Women's expectations point to resources they consider necessary for more reliable care during future disasters (Berk et al., 2026).

Food access is a central pathway (Yalniz Dilcen H, Çakır Koçak Y, Ada G, Demir Bozkurt F, 2024). The accounts describe reliance on foods available in the shelter and occasional assistance from relatives, officials, or volunteers (Ünsel-bolat et al., 2024). Although such food may prevent immediate hunger, limited dietary diversity can constrain opportunities to obtain iron and other nutrients needed during pregnancy. Food assistance for pregnant women should therefore consider nutritional quality and acceptability, not only quantity or shelf stability (Rahayu & Yulastini, 2026). Midwives and nutrition personnel can contribute by identifying pregnant women's dietary needs and coordinating with shelter managers and relief agencies (R. Dewi & Dewi, 2024).

Family, government, health-worker, and volunteer support formed another important part of participants' accounts (Khobibah et al., 2023). Practical assistance—such as accompanying women to care, providing food, distributing supplements, and arranging transport—can reduce barriers that women cannot overcome individually (Keleş & Toker, 2025). Disaster preparedness plans should explicitly identify pregnant women, map referral and transport options, and coordinate responsibilities among health facilities, local government, shelter managers, families, and humanitarian volunteers (Rachman & Andayani, 2021).

Psychological distress was also present in participants' accounts (Rachman & Andayani, 2021). Fear for personal safety and concern for the fetus may compete with daily self-care needs and complicate recovery (Ramadhan et al., 2023). Midwifery services in evacuation settings should therefore include respectful communication, basic psychosocial support, identification of urgent mental-health concerns, and referral when needed. These services should be integrated with—not substituted for—clinical assessment and routine maternal care (Meilani et al., 2023).

Conceptual synthesis: flood exposure and displacement → disruption of food systems, transport, living conditions (Safajou et al., 2024) , and health services, (Cynthia et al., 2022). alongside psychological stress → changes in dietary options, antenatal-care access, iron-supplement availability/adherence, and self-care capacity → outcomes that participants perceive as improved or constrained by family, health-worker, government, and volunteer support.(A. Dewi et al., 2024). This is a framework derived from the themes and should be presented as an interpretive model, not as a tested causal pathway (Goel et al., 2026).

This study contributes to midwifery practice by highlighting anemia prevention as a context-dependent care process during disaster recovery (Yanti et al., 2022). Practical implications include maintaining mobile or shelter-based antenatal services, ensuring uninterrupted iron-folic acid supplies, providing tailored nutrition and anemia education, arranging transport/referral systems, and coordinating pregnancy-appropriate food assistance (Akib & Limbong, 2024). Because hemoglobin levels were not measured, the findings cannot establish whether participants were anemic or whether the practices described prevented or reduced anemia (Suzuki et al., 2024).

# CONCLUSION

This study explored how pregnant women in South Tapanuli Regency experienced maintaining their health and preventing anemia following floods. Across six themes, participants described the physical and psychological effects of flooding, efforts to maintain maternal health, continued use of iron supplements and available iron-containing foods, support from health workers and other parties, barriers to food and health-service access, and expectations for more responsive services. Together, the themes show that anemia-prevention practices in post-disaster settings depend on the interaction of women's efforts with the availability of nutritious food, continuity of antenatal care and supplementation, and practical support from families, health workers, government, and volunteers.

For midwives and health facilities, the findings support planning shelter-based or mobile antenatalcare, uninterrupted iron-supplement supplies, focused counseling on anemia and nutrition, psychosocial support, and clear referral and transport arrangements. Local governments and evacuation-site managers should coordinate pregnancy-appropriate food assistance and ensure that pregnant women are identified and included in disaster-response planning. The study is limited by its small sample of ten participants and its single setting, which may limit transferability to other disaster contexts. Further research involving multiple locations and prospective assessment—including hemoglobin measurement where appropriate—is needed. Since hemoglobin was not measured in this study, no claim can be made that the reported practices were clinically effective in preventing anemia.

## ACKNOWLEDGEMENTS

The researchers would like to express their sincere appreciation to all participants who voluntarily shared their experiences and insights in this study. Special thanks are extended to the Ministry of Higher Education, Science, and Technology of the Republic of Indonesia, the Regional Higher Education Service Agency I of North Sumatra, and the Central College of Health Sciences.

## References

Agoeng Noe. (2025). Bencana Banjir Bandang Sumatra, Pakar UGM Sebut Akibat Kerusakan Ekosistem Hutan di Hulu DAS. In *Universitas Gajah Mada*. https://ugm.ac.id/id/berita/bencana-banjir-bandang-sumatra-pakar-ugm-sebut-akibat-kerusakan-ekosistem-hutan-di-hulu-das/

Akib, A., & Limbong, T. (2024). Effect of anemia in pregnant women on the incidence of premature labor and low birth weight. *Jurnal Ilmiah Kesehatan Sandi Husada*, *13*(2), 427–433. https://doi.org/10.35816/jiskh.v13i2.1241

Ariandini, S., Ramadani, F. N., Khairunnissa, D., & Putri, F. A. (2023). Edukasi Pencegahan Anemia Pada Ibu Hamil Dengan Pemberian Tablet Fe. *Jurnal Abdi Mahosada*, *1*(1), 24–27. https://doi.org/https://doi.org/10.54107/abdimahosada.v1i1.150.

Badan Nasional Penanggulangan Bencana. (2025). *Empat Kabupaten di Sumatera Utara Dilanda Bencana Banjir dan Longsor Secara Bersamaan*. https://www.bnpb.go.id/berita/empat-kabupaten-di-sumatera-utara-dilanda-bencana-banjir-dan-longsor-secara-bersamaan

Berk, S. S., Hansu, K., & Akman, O. (2026). *Evaluation of anxiety levels and stress coping methods of pregnant women after the Kahramanmaras¸ earthquake*. 1–12. https://doi.org/10.3389/fpsyt.2026.1778774

Cynthia, M., Wijayanti, B., Widjanarko, B., & Indraswari, R. (2022). Perilaku Kepatuhan Konsumsi Tablet Tambah Darah pada Ibu Hamil yang Mengalami Anemia di Wilayah Kerja Puskesmas Bener Kabupaten Purworejo. *MEDIA KESEHATAN MASYARAKAT INDONESIA*, *21*(5), 321–328. https://doi.org/10.14710/mkmi.21.5.321-328

Daerah, D. I., & Palang, P. (2022). Kualitas makanan ibu hamil dengan kejadian anemia di daerah pesisir (palang). *Jurnal Ilmu Kesehatan Mandira Cendikia*, *4*(8), 216–223. https://doi.org/https://doi.org/10.70570/jikmc.v4i8.1857.

DetikNews. (2025). *5 Lokasi Pembalakan Liar yang Diduga Picu Banjir Sumatera Disegel !* https://news.detik.com/berita/d-8247287/5-lokasi-pembalakan-liar-yang-diduga-picu-banjir-sumatera-disegel

Dewi, A., Wirasto, A., & Dewi, T. S. (2024). Unnes Journal of Public Health Pregnant Women ' s Experiences Using a Mobile Application for Iron Supplementation Adherence : A Phenomenological Approach. *Unnes Journal of Public Health*, *13*(2). https://doi.org/https://doi.org/10.15294/ ujph.v13i2.2758

Dewi, R., & Dewi, M. K. M. S. M. (2024). Hubungan Dukungan Keluarga, Pola Makan Dan Budaya Dengan Kejadian Anemia Pada Ibu Hamil. *Juenal Penelitian Perawat Profesional*, *6*, 2197–2206. https://doi.org/https://doi.org/10.37287/jppp.v6i5.3337

Febriyanti, H., Ifayanti, H., Sari, F. Y., Susanti, R., Dewi, M. P., Sari, E. Y., & Caroline, S. V. (2025). Edukasi Tentang Anemia Pada Ibu Hamil. *Jurnal Pengabdian Sosial*, *2*(10), 4568–4574. https://doi.org/10.59837/y9tqnd07

Fonda, Y., Suryantara, B., & Hanifa, F. N. (2024). Dampak Bencana Banjir Terhadap Kesehatan Ibu Hamil dan Anak- Anak Di Desa Kemang Kelurahan Pangkalan Kuras Kabupaten. *Jurnal Pengabdian Sosial*, *1*(7),

644–647. https://doi.org/https://doi.org/10.59837/9p041a49

Goel, R., Tarpenning, M. S., Ansar, J., Ansariadi, A., Puteri, Z., Syahrani, A., Anggraeni, N., Coombe, K. D., Weber, W., Blythe, E., Ansariadi, A., & Rosser, J. I. (2026). Maternal and child health challenges during and after flooding : a qualitative study in Makassar , Indonesia. *BMC Public Health*, 2–18. https://doi.org/https://doi.org/10.1186/s12889-026-28076-8

Keleş, M., & Toker, E. (2025). Experience of pregnant women living in temporary shelters post-earthquake: a phenomenological study. *BMC Pregnancy and Childbirth*. https://doi.org/10.1186/s12884-025-07994-2

Khobibah, Ana, M. R. ; T. S. ; H. R. ; B. A., & Isharyanti, S. ; S. S. ; S. (2023). Pelayanan Kesehatan Pada Korban Banjir Sebagai Upaya Rehabilitasi Pasca Bencana. *Jurnal LINK*, *19*(2), 69–74. https://doi.org/10.31983/link.v19i2.9137

Markolinda, Y., Ramadani, M., Augia, T., Novirsa, R., & Elda, F. (2025). Pemberdayaan Kelompok Rentan Pasca Banjir Bandang Melalui Edukasi Kesehatan Dan Pengelolaan Lingkungan Di Nagari Pandai Sikek Empowerment Of Vulnerable Groups After Flash Flood Through Health Education and Environmental Management in Pandai Sikek Village. *Buletin Ilmiah Nagari Membangun*, *8*(3), 436–446. https://doi.org/https://doi.org/10.25077/bina.v8i3.669.

Meilani, E., Rachmannur, A. D., Firani, D., Kusumawardhaeny, P. R., & Nita Pujianti, S. Farm., Apt., M. P. . (2023). *Pencegahan dan Penaganan Penyakit Hipertensi* (A. D. Fauzi (ed.); Cetakan Pe). CV Cakrawala Satria Mandiri.

Oskorouchi, H. R., Nie, P., & Sousa-poza, A. (2018). The effect of floods on anemia among reproductive age women in Afghanistan. *PLOS ONE*, *13*(2), 1–15. https://doi.org/https://doi.org/10.1371/journal.pone.0191726

Partash, N., Naghipour, B., Hesam, S., Pashaei, Y., Arjmand, A., Ashegvatan, A., & Faridaalaee, G. (2022). The impact of flood on pregnancy outcomes : A review article. *Taiwanese Journal of Obstetrics & Gynecology*, *61*(1), 10–14. https://doi.org/10.1016/j.tjog.2021.11.005

Rachman, N. ., & Andayani, D. . (2021). Pengelolaan Gizi Bencana Pada Ibu Hamil Dan Ibu Menyusui. *Ijcnp (Indonesian Journal Of Clinical Nutrition Physician)*.

Rahayu, B. Z., & Yulastini, F. (2026). Dampak Bencana Alam terhadap Kesehatan Reproduksi dan Perinatal. *Jurnal Ilmu Kedokteran dan Kesehatan Indonesia*, *6*(1), 236–244. https://doi.org/https://doi.org/10.55606/jikki.v6i1.9136

Ramadhan, A. K., Danianto, A., & Cholidah, R. (2023). Jurnal Biologi Tropis Anemia in Pregnancy : Cause and Effect. *Jurnal Biologi Tropis*, *23*(1). https://doi.org/http://dx.doi.org/10.29303/jbt.v23i1.6074 Anemia

Safajou, F., Nahidi, F., & Ahmadi, F. (2024). Reproductive health challenges during a flood : A qualitative study. *Empirical Research Qualitative*, 1–11. https://doi.org/10.1002/nop2.2044

Seidu, H., Gaa, P. K., & Mogre, V. (2024). Adherence to Iron and Folic Acid Supplementation Among Pregnant Women From Northern Ghana. *Nutrition and Metabolic Insights Volume*, *17*, 1–11. https://doi.org/10.1177/11786388231218664

Septi Indah Permata Sari Dewi Septiana. (2025). UPAYA PENCEGAHAN ANEMIA PADA IBU HAMIL DI PMB DINCE SYAFRINA RUMBAI PEKANBARU. *Jurnal Ebima*, *6*(1), 8–10.

Suzuki, S., Sato, N., & Miyazak, M. (2024). Maternal experiences of pregnant women affected by natural disasters: A modified grounded theory approach. *Nursing & Healt Sciencess*. https://doi.org/https://doi.org/10.1111/nhs.13135

Ünsel-bolat, G., Yıldırım, S., & Kılıçaslan, F. (2024). Natural Disasters as a Maternal Prenatal Stressor and Children ' s Neurodevelopment : A Systematic Review. *Behavioral Sciences*, 1–24. https://doi.org/https://doi.org/10.3390/bs14111054.

Yalniz Dilcen H, Çakır Koçak Y, Ada G, Demir Bozkurt F, D. H. (2024). Determinants of psychosocial health sta-tus in pregnant and postpartum women experiencing earthquake in Turkey. *Disaster Med Public Health Prep*, *18*(6). https://doi.org/10.1017/dmp.2024.11

Yamamoto, K., Takita, M., Kami, M. et al. (2022). Changes in the proportion of anemia among young women after the Great East Japan Earthquake: the Fukushima health management survey. *Sci Rep*. https://doi.org/https://doi.org/10.1038/s41598-022-14992-3.

Yanti, R., Yusuf, K., & Wahyuni, F. (2022). FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KEPATUHAN KONSUMSI TABLET FE PADA IBU HAMIL DI KOTA MAK. *JURNAL Promotif Preventif*, *4*(2), 133–140.