Journal of Public Health Indonesian
Volume.3 Issue.1, (May, 2026) Pages 58-71
E-ISSN: 3048-1139
DOI : https://doi.org/10.62872/cbnnjw63
https://ejournal- nawalaedu.com/index.php/JHH/index

Anemia Prevention Behavior in Pregnant Women: A Qualitative Study Based on the Health Belief Model at Lere Community Health Center

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Received: April 03, 2026
Revised: May 05, 2026
Accepted: May 20, 2026
Published: May 30, 2026

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Abstrack**:** *Anemia in pregnancy remains a significant public health problem that increases the risk of complications for mothers and neonates. The high incidence of anemia in Lere Community Health Center (Puskesmas Lere) working area, 109 cases in 2024, the highest in Palu City, indicates that existing prevention efforts have not been optimal. This qualitative case study aimed to identify and explore behavioral factors in anemia prevention among pregnant women based on the Health Belief Model (HBM). Fifteen informants were selected through purposive sampling, comprising 12 pregnant women in trimesters I–III, one midwife, one posyandu cadre, and one husband. Data were collected through in-depth interviews, observation, and document review, then analyzed using thematic analysis. Results showed that perceived susceptibility and severity toward anemia were generally low because most informants did not fully understand the risks and consequences. Perceived benefits toward Iron Supplementation Tablet (IST/TTD) consumption, nutritious diet, and routine Antenatal Care (ANC) visits were fairly good. Key barriers included IST side effects (nausea, vomiting), habitual tea or coffee consumption, and cultural food taboos. The most influential cues to action stemmed from self-awareness, husband support, midwives, posyandu cadres, and reminder media. Self-efficacy was relatively good but influenced by forgetfulness, physical condition, and family support. It is concluded that anemia prevention behavior is shaped by individual perception, social support, and sociocultural factors. Health education, family involvement, and culturally sensitive approaches are essential to strengthen anemia prevention behavior in pregnant women.*
Keywords : *anemia; pregnant women; Health Belief Model; health behavior; anemia prevention; qualitative study..*

How to cite:
Yulfiana Y, Salha, M & Tasya Z. (2026). Anemia Prevention Behavior in Pregnant Women: A Qualitative Study Based on the Health Belief Model at Lere Community Health Center. *Journal of Public Health Indonesian,* 3(1), 58-71 DOI: https://doi.org/10.62872/cbnnjw63

INTRODUCTION

Anemia during pregnancy remains one of the most widespread nutritional deficiencies worldwide, with the World Health Organization estimating that about 35.5% of pregnant women are anemic globally and that prevalence rises above 40% in low- and middle-income countries. In Indonesia the 2023 Indonesian Health Survey (SKI) reported a national prevalence of 27.7% among pregnant women, indicating that

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nearly one in three expectant mothers is affected and highlighting a substantial public-health burden. At the regional level this burden is reflected in program coverage gaps: Central Sulawesi Province achieved only 61.1% coverage for iron supplementation tablets (IST) in 2024, well below the national target of 90%. This shortfall points to persistent challenges in translating policy goals into effective delivery and uptake of preventive measures, and it underscores the need for strengthened maternal nutrition programs, improved access to supplements, and strategies to address barriers to adherence at the community level.

Palu City's anemia prevalence has shown notable year-to-year variation, 11.21% in 2022, a decline to 9.98% in 2023, and then an increase to 13.09% in 2024, indicating that existing interventions have not yet achieved stable, long-term reductions in maternal anemia. Within the city, Puskesmas Lere reported a particularly high burden in 2024, recording 109 anemia cases among pregnant women, concentrated across Kelurahan Lere (50 cases), Kabonena (41 cases), and Silae (18 cases). This localized clustering of cases is especially striking because the area is a coastal zone with relatively abundant marine food sources that are typically rich in bioavailable iron, which would ordinarily help protect against deficiency. The apparent paradox suggests gaps in nutrition education, barriers to supplement uptake, issues with food access or dietary diversity, or other social and health system factors that prevent available resources from translating into adequate maternal iron status. These patterns underscore the need for targeted investigations and context-specific interventions in these kelurahans to identify and address the behavioral, service-delivery, and environmental obstacles driving persistent anemia.

A preliminary investigation indicates that the high anemia burden in the area cannot be explained by biological factors alone; rather, it reflects a complex interaction of social, behavioral, and health-system determinants. Early marriage means many women begin childbearing while still physiologically immature and with limited iron stores, increasing susceptibility to anemia during pregnancy. Educational levels that are largely restricted to junior and senior secondary schooling contribute to low health literacy, making it harder for women to understand the importance of iron-rich diets and correct supplement use. Economic constraints further limit regular access to animal-source foods that provide bioavailable iron, so dietary intake alone is often inadequate. Practical barriers also affect adherence to supplementation: side effects commonly reported with iron supplementation tablets (IST) and multiple micronutrient supplements (MMS), especially nausea, discourage continued use. Cultural food taboos and local dietary beliefs can further narrow food choices and reduce dietary diversity. Although Puskesmas Lere has implemented a range of maternal health activities, monthly classes for pregnant women, hemoglobin screening, distribution of IST, promotion of moringa leaf use, and prenatal exercise programs, these measures have not yet overcome the combined social, economic, and behavioral obstacles that sustain elevated anemia rates.

Local studies consistently point to behavior as a decisive factor in maternal anemia outcomes. For example, Pont and Lisnawati (2020) at Puskesmas Talise found a stark contrast in anemia prevalence between women who adhered to supplementation and those who did not: only 7.7% of adherent women were anemic compared with 62.5% among non-adherent peers, highlighting adherence as a powerful protective factor. Research at Puskesmas Mamboro by Adhyanti et al. (2022) identified the primary practical barriers to adherence as everyday behavioral issues, forgetfulness (40.7%), dislike of supplements (29.6%), and concerns about taking multiple medications simultaneously (polypharmacy, 18.5%), which suggests the problem often lies in routine habits rather than in a lack of information alone. Supporting this behavioral emphasis, Parumpu et al. (2024) showed that knowing about iron supplementation (IST) did not significantly predict anemia status ($p = 0.103$), whereas actual adherence level was highly and significantly associated with outcomes ($p = 0.000$). Together, these studies indicate that interventions aimed at improving adherence behaviors, through reminders, palatable formulations, counseling about side-effects, and

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simplifying regimens, may be more effective at reducing anemia than measures that focus solely on increasing knowledge.

These findings collectively point to the relevance of a perceptual and motivational framework. The Health Belief Model (HBM), originally developed by Rosenstock (1974) and subsequently expanded to include self-efficacy, offers a rigorous lens through which to understand why women who possess basic knowledge still fail to sustain preventive behavior. HBM posits that health action is driven by perceived susceptibility to a condition, perceived severity of its consequences, perceived benefits of proposed action, perceived barriers to that action, cues to action (triggers), and self-efficacy. Prior quantitative studies in Indonesia have employed HBM constructs but have rarely probed the phenomenological depth of how these perceptions are formed and negotiated within particular sociocultural contexts. This study therefore aimed to explore, through qualitative in-depth inquiry, the behavioral factors shaping anemia prevention among pregnant women at Puskesmas Lere, with the goal of generating context-sensitive evidence to inform more effective interventions.

METHODOLOGY

This study used a qualitative case-study design, an approach recommended for in-depth empirical inquiry into real-life phenomena where the boundaries between the phenomenon and its context are blurred and where multiple evidence sources strengthen understanding (Yin, in Bungin, 2019). Fieldwork took place from January to April 2026 at Puskesmas Lere in Palu Barat District, Palu City, Central Sulawesi Province. Using purposive sampling, fifteen informants were selected to provide diverse perspectives: twelve pregnant women (the primary informants) representing all trimesters and varying anemia status (anemic: Hb < 10 g/dL; non-anemic: Hb ≥ 10 g/dL) and adherence behavior (adherent and non-adherent to IST), one midwife who facilitated the pregnant-women class (key informant), one posyandu cadre, and one husband of a pregnant woman (supporting informants). All participants ranged in age from 20 to 41 years, most were housewives, and each provided voluntary written consent to participate and be photographed; one informant was a civil-service midwife and another worked in the private sector.

Data collection combined three complementary methods to capture both reported experience and observed practice: (1) in-depth interviews guided by a structured instrument organized around eight Health Belief Model constructs, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy, practical knowledge and skills, and social norms/food beliefs/cultural context; (2) direct observation of ANC service flow, IST distribution, educational media use, and pregnant women's behavior during clinic visits; and (3) document review of Puskesmas health profiles and ANC records. Instruments included the interview guide, field notes, an audio recorder, and a camera. To enhance validity, the study applied source triangulation (cross-checking accounts among pregnant women, the midwife, the cadre, and the husband) and method triangulation (comparing interview narratives with observational data and documentary evidence). Thematic analysis followed the Miles and Huberman sequence of data reduction, data display, and conclusion drawing. Institutional consent from Puskesmas Lere management and written informed consent from all informants provided the ethical basis for the research.

RESULTS AND DISCUSSION

Before presenting detailed findings, we first describe the study setting to contextualize the results and highlight local conditions that may influence maternal anemia patterns. The following section provides a general overview of Puskesmas Lere's catchment area, population structure, and relevant environmental features that frame subsequent analyses.

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1. *General Overview of the Research Setting*

Puskesmas Lere provides primary health services to three urban kelurahan, Lere, Kabonena, and Silae, covering an area of approximately 9.56 km² within Palu Barat District. In 2024 the facility's catchment population totaled 25,753 residents (12,840 male and 12,913 female), and the demographic profile is dominated by productive-age groups. Notably, about 5,671 women fall within the 20–34 age range, which represents the core reproductive cohort and a key target for maternal health interventions. Although the locality is coastal and has relatively easy physical access to marine protein sources, anemia prevalence in these kelurahan remains the highest in Palu City. This mismatch between apparent food availability and persistent high anemia rates highlights the likely importance of behavioral, cultural, and service-delivery factors, such as dietary practices, supplement adherence, health literacy, and care accessibility, over simple physical access to iron-rich foods, and it frames the need for interventions that address these non-nutritional determinants.

Table 1. Population Composition by Age Group, Puskesmas Lere Working Area, 2024

No	Age Group	Male	Female	Total	Sex Ratio
1	0–4	1,170	1,104	2,274	105.98
2	5–9	1,246	1,239	2,485	100.56
3	10–14	1,197	1,167	2,364	102.57
4	15–19	923	902	1,825	102.33
5	20–24	1,146	1,112	2,258	103.06
6	25–29	1,084	1,126	2,210	96.27
7	30–34	1,090	1,113	2,203	97.93
8	35–39	1,111	1,106	2,217	100.45
9	40–44	1,029	973	2,002	105.76
10	45–49	773	752	1,525	102.79
11	50–54	678	746	1,424	90.88
12	55–59	504	601	1,105	83.86
13	60–64	374	395	769	94.68
No	**Age Group**	**Male**	**Female**	**Total**	**Sex Ratio**

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14	65–69	269	274	543	98.18
15	70–74	156	150	306	104.00
16	75+	90	153	243	58.82
	Total	**12,840**	**12,913**	**25,753**	**99.43**

Source: BPS Palu City, 2024 (processed)

2. *Characteristics of Informants*

The study recruited fifteen informants grouped into three categories to capture a range of perspectives on maternal health and anemia. The primary group comprised twelve main informants, all pregnant women identified by initials (AZ, EL, NR, SY, NS, AT, DS, NT, AR, WD, RS, and NA). These women were aged between 20 and 39 years and were uniformly employed as housewives, which situates them within similar daily routines, household responsibilities, and potential constraints on health-seeking behavior. Their inclusion across different trimesters and varying anemia and adherence statuses provided rich variation in pregnancy experience and exposure to antenatal services, enabling in-depth comparison of beliefs, practices, and barriers to iron supplementation within a relatively homogenous occupational and social role.

Complementing the primary informants were three key and supporting informants chosen to provide professional, community, and familial perspectives. The key informant (No. 13, NPD), a 29-year-old civil-service midwife who also served as the pregnant-women class facilitator, offered clinical and programmatic insights into ANC service delivery, supplement distribution, and health education efforts. The two supporting informants included a 26-year-old private-sector employee acting as a husband figure (No. 14, AH) and a 41-year-old woman who served both as a posyandu cadre and a housewife (No. 15, IN), bringing community mobilization and family-level viewpoints. Overall, the age range across informants, from 20 to 41 years, reflects a productive adult cohort that is directly relevant to the study's focus on maternal health, while the combination of pregnant women, a healthcare provider, a family member, and a community volunteer ensured triangulation of lived experience, service provision, and social support dynamics.

Table 2. Characteristics of Main Informants (Pregnant Women)

No	Initial	Age (years)	Occupation	Informant Category
1	AZ	33	Housewife	Main informant (pregnant woman)
2	EL	25	Housewife	Main informant (pregnant woman)
No	**Initial**	**Age (years)**	**Occupation**	**Informant Category**
3	NR	39	Housewife	Main informant (pregnant woman)

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4	SY	33	Housewife	Main informant (pregnant woman)
5	NS	25	Housewife	Main informant (pregnant woman)
6	AT	20	Housewife	Main informant (pregnant woman)
7	DS	38	Housewife	Main informant (pregnant woman)
8	NT	30	Housewife	Main informant (pregnant woman)
9	AR	23	Housewife	Main informant (pregnant woman)
10	WD	23	Housewife	Main informant (pregnant woman)
11	RS	26	Housewife	Main informant (pregnant woman)
12	NA	26	Housewife	Main informant (pregnant woman)
13	NPD	29	Midwife / Civil Servant	Key informant (midwife/class facilitator)
14	AH	26	Husband / Private sector	Supporting informant (husband)
15	IN	41	Cadre / Housewife	Supporting informant (posyandu cadre)

Source: Primary data, 2026

To understand how pregnant women form and enact anemia prevention behaviors, this study applied the Health Belief Model (HBM) as its analytical framework. Figure 1 illustrates the theoretical pathways through which individual perceptions, shaped by supporting factors, translate into preventive behavior. The framework identifies six supporting factors operating at the contextual level: health knowledge, spousal or family support, quality of antenatal care (ANC) counseling, availability of iron supplementation tablets (TTD), access to health services, and local dietary norms. These factors interact with six core HBM constructs to explain the behavioral outcome of anemia prevention among pregnant women.

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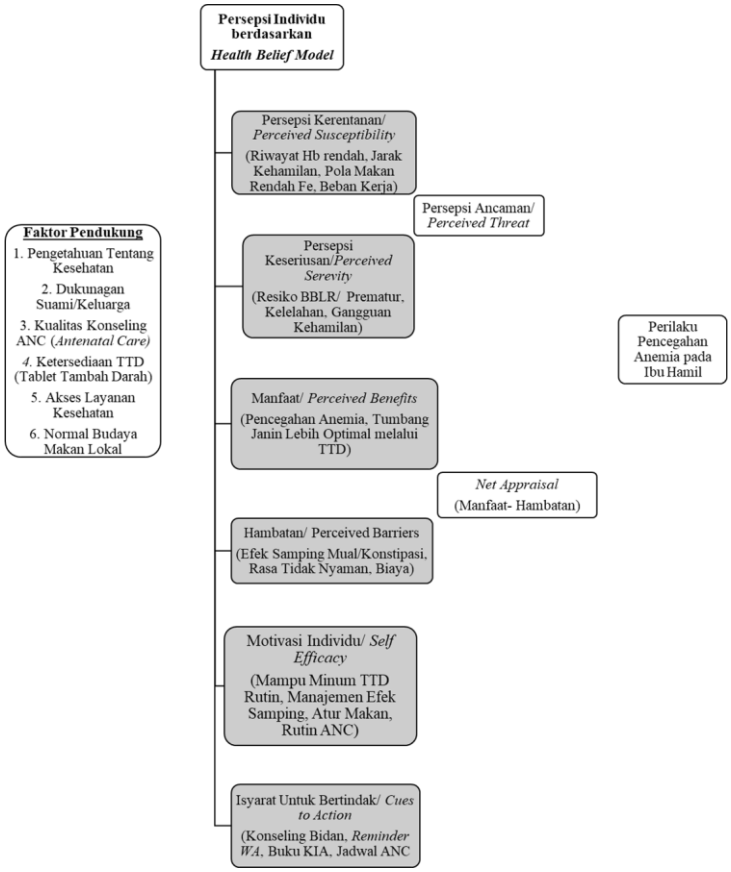

Figure 1. Health Belief Model Framework for Anemia Prevention Behavior in Pregnant Women

Figure 1 depicts the Health Belief Model framework as applied to anemia prevention behavior in pregnant women. The model begins with individual perception structured across six dimensions. Perceived susceptibility captures the factors that place pregnant women at risk, including low hemoglobin history, gestational distance, low-iron dietary patterns, and workload. Perceived severity reflects the women's appraisal of potential consequences, such as low birth weight (BBLR), preterm delivery, fatigue, and pregnancy complications. Together, these two constructs form perceived threat, which motivates consideration of preventive action. Perceived benefits, including anemia prevention and optimized fetal growth through TTD consumption are weighed against perceived barriers such as side effects like nausea and constipation, physical discomfort, and financial constraints, producing a net appraisal that influences behavioral intention. Self-efficacy, operationalized as the individual's confidence in routinely consuming TTD, managing side effects, regulating diet, and adhering to ANC schedules, further mediates the translation of intention into action. Finally, cues to action — including midwife counseling, reminder messages (WA), maternal health handbooks (Buku KIA), and ANC appointment schedules, serve as external triggers that activate the behavioral response. The combined interaction of these constructs, modulated by the six supporting factors, determines the ultimate outcome: anemia prevention behavior in pregnant women.

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3. Perceived Susceptibility

The majority of pregnant women (9 of 12 main informants) reported not perceiving themselves as at risk of anemia during pregnancy. Several attributed their low susceptibility to consuming adequate vegetables and fish: "Not [at risk]. Because I like to eat vegetables. I like vegetables, I like fish" (Ny. AZ, 07 February 2026). Others stated uncertainty without elaboration (Ny. NR, Ny. AT, Ny. DS). Notably, several informants (Ny. SY, Ny. NS, Ny. NT, Ny. WD), reported experiencing dizziness but attributed it to sleep deprivation rather than anemia, representing symptomatic misattribution: "Sometimes I get dizzy, but maybe because it's hard to sleep. I stay up late. I don't think it's anemia" (Ny. SY, 12 February 2026). Only informants Ny. AR, Ny. RS, and Ny. NA demonstrated adequate perceived susceptibility; Ny. RS articulated the clearest understanding: "[I am] at risk, because the baby needs blood too. So I have to take the blood-boosting tablet" (Ny. RS, 04 March 2026). Informant Ny. NA held a false belief, equating large body size with non-susceptibility.

When probed about factors increasing anemia risk, most responses centered on fatigue and insufficient sleep rather than dietary iron deficit or physiological demands of pregnancy. The husband (Tn. AZ) held a notably higher perceived susceptibility shaped by a direct family experience with severe anemia (Hb = 6 g/dL) requiring blood transfusion. These findings align with HBM theory: low perceived susceptibility undermines motivation for preventive action (Wicaksono et al., 2025; Irawati et al., 2024).

4. Perceived Severity

Perceived severity was similarly inadequate. Five informants (Ny. EL, NR, SY, NS, AR) explicitly stated they did not know the consequences of anemia for mother or fetus. Others provided partial or medically imprecise answers: Ny. NT mentioned "unhealthy baby inside, malnutrition inside"; Ny. AT stated anemia causes "deformity", a belief shaped by a neighbor's experience. Ny. NA showed the most comprehensive understanding, recognizing the hemorrhage-to-mortality pathway and the postpartum Hb risk: "It is very dangerous because many cases of bleeding can lead to death. The fear is Hb deficiency after delivery" (Ny. NA, 07 March 2026).

The absence of direct, proximate exposure to severe anemia cases in their social environment reinforced low severity perceptions for most informants. Conversely, the husband's direct exposure to a family member's blood transfusion episode generated a high severity perception, which translated into active reminder behavior. These findings align with Syafti et al. (2021) and Pormehr-Yabandeh (2025), who found that perceived severity is closely linked to experiential exposure and information depth.

5. Perceived Benefits

Perceived benefits toward IST and nutritious diet were the strongest HBM construct in this study, functioning as the primary driver of preventive behavior. Most informants reported experiential benefits: reduced dizziness and improved physical wellbeing after IST consumption. Ny. AZ noted "to fulfill the blood"; Ny. EL stated "after drinking it, the dizziness disappears...

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health feels good"; Ny. AR observed "usually after taking it, I start to feel better." Some informants articulated preventive benefits (Ny. AT, Ny. DS), while Ny. RS expressed the most comprehensive long-term benefit perception, encompassing fetal growth, disability prevention, and breastmilk quality.

For ANC, perceived benefits were multi-dimensional: health monitoring (knowing fetal development, blood pressure, Hb level), educational benefits (receiving nutrition information from midwives), psychological reassurance (reduced anxiety after examination), and economic benefits (free services and IST provision). Ny. NT exemplified psychological benefit: "Fortunately... actually [the results are] all normal. So I am no longer scared... rather than staying home in silence." These findings support Irawati and Madinah (2024) and Yahya et al. (2025), who found that perceived benefits correlate with IST adherence.

6. Perceived Barriers

IST side effects are nausea, vomiting, tablet odor ("blood smell"), dizziness, and insomnia—constituted the most prominent perceived barriers. Ny. EL reported severe nausea with four vomiting episodes in one day; Ny. NT stated she had never successfully maintained regular IST consumption since her first pregnancy due to persistent vomiting. Coffee consumption was cited by Ny. AZ as a behavioral barrier she found difficult to modify despite advice. Informant Ny. RS declined MMS based on social information that it had an "earth smell" and increased nausea, illustrating the role of social information in shaping barrier perception.

However, the majority of informants (8 of 12) reported experiencing no barriers, which may reflect either genuine tolerance or unrecognized barriers, a gap between actual and perceived behavioral impediments. IST stock at Puskesmas Lere was consistently adequate; the midwife confirmed: "It's fine, it's never run out of stock" (NPD, 07 February 2026). Thus, structural supply barriers were absent; barriers were predominantly physiological and behavioral. Coping strategies employed by informants included taking IST at night before sleep, drinking warm water, consuming milk after IST, or tolerating discomfort. These findings are consistent with Mishra et al. (2021) and Juandri et al. (2024), who identified side effects as the leading cause of non-adherence.

7. Cues to Action

Perceived benefits toward IST and nutritious diet were the strongest HBM construct in this study, Internal cues were the most dominant trigger for IST adherence. Most informants stated that self-awareness, driven by fear of harm to the fetus, desire for normal delivery, and maternal responsibility was the primary motivator: "I always remember every night to take it. I am afraid something happens to the baby. I want a normal [delivery], healthy. It's just self-motivation, there is no one who supports me" (Ny. AZ, 07 February 2026). External cues from husbands, reminders to take IST, attention to supplementation schedules were important for several informants (Ny. SY, NS, AT, AR). Midwife reminders through WhatsApp groups and personal messages served as effective institutional cues (Ny. DS). The midwife identified the KIA (Maternal and Child Health) booklet checklist and the village midwife communication group as the most effective reminder mechanisms.

Importantly, some informants reported receiving no anemia-specific education during the pregnant-women class (Ny. EL, NR, SY), revealing an information gap that constitutes a missed opportunity for structured cues. The posyandu cadre coordinated weekly with the midwife, providing community-level cues through home visits and direct communication. These findings align with Irawati et al. (2024), Anato and Reshid (2025), and Mardiana et al. (2025), who highlight

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the complementary roles of professional health workers, families, and digital reminders in triggering preventive action.

Figure 2. Research Documentation

In-depth interview with pregnant woman, Silae


PEMERINTAH KOTA PALU
DINAS KESEHATAN
UPTD PUSKESMAS LERE

SURAT KETERANGAN SELESAI PENELITIAN

In-depth interview with pregnant woman, Lere

In-depth interview, Kabonena

Interview with Puskesmas Lere Midwife (key informant)

Interview with posyandu cadre

Interview with husband of pregnant woman

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Pregnant women class session, Silae

Pregnant woman displaying IST brought to clinic visit

8. Self-Efficacy / Health Motivation

Self-efficacy was generally adequate but not uniformly stable. The majority of informants assigned high confidence scores (8–10 out of 10) for daily IST consumption. Rationales included habitual night-time dosing, fear of consequences, and family reminders: "10, because I can take it every day" (Ny. WD, 03 March 2026); "9, because there is a husband who reminds me, there is a mother-in-law" (Ny. AT, 14 February 2026). However, forgetfulness persistently eroded adherence consistency for informants who otherwise expressed high motivation: "8, because sometimes I forget" (Ny. SY); "8... once during New Year's night I forgot" (Ny. DS).

For dietary self-efficacy, most women felt capable of maintaining iron-rich food consumption, like fish, eggs, chicken, and green vegetables, particularly when food was available at home or supported by family. Confidence declined when physical discomfort (nausea from excessive eating) or limited food variety was present. The midwife described a monitoring protocol involving repeated Hb checks and re-education for non-adherent women. The cadre conducted weekly home visits as a community-level self-efficacy reinforcement strategy. These findings align with Irawati et al. (2024) and Fauzianty et al. (2025), who found that self-efficacy and family support are significantly associated with IST adherence.

9. Practical Knowledge and Skills

Most informants possessed basic practical knowledge about IST consumption: taking IST at night before sleep, with plain water, separated from calcium supplements. However, spontaneous knowledge of inhibitor avoidance (tea, coffee) and iron absorption enhancers (vitamin C) was incomplete. Some informants continued habitual tea consumption ("teh poci") several times daily despite receiving the contrary advice. These findings are consistent with Daghash et al. (2024), who found that knowledge of supplement timing is stronger than knowledge of dietary interactions, and Siebenthal et al. (2023), who demonstrated that coffee reduces iron absorption while vitamin C enhances it. The knowledge-practice gap knowing the correct behavior but not consistently applying it, highlights the need for reinforced, practical education beyond single-session counseling.

10. Social Norms, Food Beliefs, and Cultural Context

Cultural food taboos were prevalent and constituted a meaningful constraint on dietary diversity. Most informants reported inherited prohibitions against consuming squid (cumi-cumi), shrimp, durian, local corn (binte), and instant noodles, based on beliefs that these foods cause the baby to be "weak," "dark," "spotted," or impede labor. Some informants adhered strictly to family

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prohibitions; others had begun questioning the evidence base. The posyandu cadre actively counteracted misinformation, a protective social norm function.

From a nutritional standpoint, the prohibition against squid and shrimp is particularly relevant, as these marine foods are rich in iron, protein, vitamin B12, and omega-3 fatty acids that support fetal development. Cultural restrictions on these foods can meaningfully reduce dietary iron intake. Husband and mother-in-law influence on dietary decisions was substantial for several informants, consistent with Sulistyorini et al. (2025) and Ginting et al. (2025), who identified family hierarchy as a key determinant of food choices during pregnancy. These findings highlight that culturally sensitive nutrition education acknowledging local belief systems while providing scientific evidence is essential.

CONCLUSIONS

This qualitative study reveals that anemia prevention behavior among pregnant women at Puskesmas Lere is shaped by the interplay of all six HBM constructs, with perceived benefits functioning as the dominant driver while low perceived susceptibility and severity are the primary behavioral inhibitors. Perceived barriers—chiefly IST side effects—and incomplete practical knowledge further constrain adherence. Cues to action derive predominantly from internal motivation and are reinforced by husband support, midwife communication, and cadre monitoring. Self-efficacy is generally adequate but undermined by forgetfulness and physical discomfort. Sociocultural food taboos restrict dietary iron access for a significant portion of women.

These findings underscore the need for HBM-informed, multi-component interventions: (1) education intensification that personalizes risk messaging using local clinical cases; (2) side-effect management counseling integrated into every ANC contact; (3) husband and family engagement as active prevention partners; (4) digital reminder systems (WhatsApp groups, KIA booklet checklists) combined with cadre home visits; (5) culturally sensitive nutrition education that respectfully addresses food taboos; and (6) continuous Hb monitoring with timely follow-up. Puskesmas Lere should maintain IST supply chain reliability and expand anemia-specific content within pregnant-women class sessions.

ACKNOWLEDGMENTS

The authors express sincere gratitude to the leadership and staff of Puskesmas Lere, Palu City, for granting research access and institutional support. Special appreciation is extended to all informants, pregnant women, the midwife, the posyandu cadre, and the participating husband, who generously shared their time and experiences. The authors also thank the Faculty of Public Health, Universitas Muhammadiyah Palu, for academic guidance. No external funding was received for this research.

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