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Warta Pengabdian Andalas

Jurnal Ilmiah Pengembangan dan Penerapan Ipteks

ISSN (Print) 0854-655X | ISSN (Online) 2797-1600

# Family-Involved Health Education to Improve Iron Tablet Adherence among Pregnant Women in Bungus Community Health Centre, Padang

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Submitted: December 21, 2025 Accepted: March 12, 2026 Published: March 25, 2026

## ABSTRACT

Anaemia during pregnancy remains an important maternal health problem in Indonesia. In the Bungus Community Health Centre, anaemia among pregnant women remained high despite the distribution of iron tablets, indicating that tablet availability alone was insufficient to ensure adherence. Limited knowledge, negative attitudes toward side effects, and lack of family support, especially from husbands, were identified as key barriers. To evaluate the effect of family-involved health education on pregnant women's adherence to iron tablet consumption, knowledge, attitudes, and family support. This community-based pre–post educational intervention was conducted in August 2025 in the Bungus Community Health Centre working area, Padang. Participants were 10 pregnant women and 10 husbands selected. The intervention consisted of interactive health education for pregnant women and husbands, printed educational materials, and reminder stickers placed in participants' homes. Knowledge, attitudes, and family support were assessed using pre- and post-test questionnaires. Adherence was monitored using records in the Maternal and Child Health (KIA) book during the activity. Data were analysed using descriptive statistics. Before the intervention, only 30% pregnant women regularly consumed iron tablets, while 70% were non-compliant. After the intervention, adherence of consume iron tablets increased to 80%. The percentage of knowledge improved among pregnant women from 60% to 90%, positive attitudes increased from 50% to 60%, and good family support increased from 50% to 70%. Family-involved health education improved adherence to iron tablet consumption among pregnant women in this community setting. This approach has the potential to strengthen maternal anaemia prevention programmes in primary care, particularly when combined with husband involvement and home-based reminder media.

**Keywords:** anaemia, pregnant women, adherence, iron tablets, family support, health education

## INTRODUCTION

Anaemia is a medical condition in which the number of red blood cells or haemoglobin (oxygen-carrying protein) levels in the body is lower than usual. Anaemia of pregnancy is a condition in which the haemoglobin levels in the blood of pregnant women are lower than usual (Lauer et al., 2024). According to the World Health Organization (WHO), pregnant women are considered anemic if their hemoglobin (Hb) level is less than 11 g/dL (World Health Organization, 2024).

DOI: https://doi.org/10.25077/jwa.33.1.92-104.2026

Anaemia in pregnant women remains a serious health problem in Indonesia, with a prevalence of 27.7% in 2022. In 2023, the Bungus Community Health Center reported that 27.6% of pregnant women were diagnosed with anaemia despite 92.4% of these women receiving iron tablets as part of their treatment. However, only 81.9% of the women consumed the tablets, resulting in a compliance rate of only 39.2%. In May 2025, among a group of 138 pregnant women, 90% received iron tablets, but only about 30% adhered to the regimen (Badan Pusat Statistik Sumatera Barat, 2024). These data indicate an important program gap, although iron tablets have been widely distributed, adherence remains low. This low adherence occurs because many pregnant women have a limited understanding of the importance of iron supplementation, consume the tablets incorrectly, and do not receive adequate family support, especially from their husbands. Consequently, the anticipated benefits of the distribution program have not been fully achieved.

According to the World Health Organization (2024), anaemia during pregnancy has serious consequences for pregnant women and babies, such as an increased risk of postpartum hemorrhage, premature birth, low birth weight (LBW), and cognitive development disorders in children. Non-compliance with taking iron tablets increases the risk of these complications. Consistent iron tablet consumption can significantly lower the risk of anaemia by up to 50% and decrease maternal mortality rates. However, low compliance is often caused not only by lack of knowledge and negative attitudes, but also by inadequate support from the family environment.

Pregnant women's knowledge about anaemia and the importance of iron tablets is the foundation of compliance. Pregnant women who understand that taking Iron tablet helps produce sufficient red blood cells, prevents anaemia, and ensures an optimal oxygen supply to the fetus are more motivated to take them regularly. Conversely, a lack of knowledge often leads to misconceptions (Balcha et al., 2023). Many pregnant women only consume Iron tablets when they feel dizzy or weak, rather than preventively every day. Proper education from health workers, both at health centers and integrated health service posts, is crucial to bridge this information gap. Understanding the side effects of iron tablets is crucial, as they can cause nausea or changes in stool color. These effects are often perceived as dangerous, leading some pregnant women to discontinue their use (Seidu et al., 2024).

The attitudes of pregnant women, which reflect their knowledge and beliefs, also play a significant role. A positive attitude towards taking iron tablets will encourage compliance. However, negative attitudes often arise because of unpleasant side effects, such as severe nausea (Yassin et al., 2024). Pregnant women with an indifferent attitude or who refuse to consume iron tablets due to fear of side effects tend to be non-compliant. Providing guidance on managing side effects, such as suggesting that iron tablets be taken at night before bed or with vitamin C-rich fruit juice to enhance absorption and reduce nausea, can help transform negative attitudes into more positive ones. A proactive approach by health workers in monitoring and providing concrete solutions to pregnant women's complaints is therefore essential (Seidu et al., 2024).

Family support is essential for the success of the iron tablet supplementation program during pregnancy. All family members, especially the husband, should be involved. This support can significantly impact a pregnant woman's health. It may involve daily reminders to take her iron tablets, providing nutritious foods rich in iron, and accompanying her to antenatal care (ANC) visits for important health information. Pregnant women who receive both emotional and practical support from their families, particularly from husbands who understand the importance of iron supplementation, tend to follow their health regimens more closely. Conversely, family ignorance or indifference can create significant barriers to adherence (Seidu et al., 2024). This shows that family support is also a key influence on whether iron tablets are taken consistently.

To enhance compliance with iron tablets among pregnant women, it is crucial to adopt a strategy that goes beyond simple distribution. It must also address the factors contributing to non-adherence. An innovative and engaging educational strategy that involves the entire family, particularly the husband, is necessary. This is important because adherence is significantly influenced by the knowledge, attitudes, and support provided at home. Engaging, relevant health education delivered in an appealing manner can be crucial for effectively conveying information (Mare et al., 2024). Based on the study by Njiru et al. (2024), health education affects knowledge and compliance with iron tablet use among pregnant women. In this context, a family-based education approach was selected because it enables information to reach not only the pregnant women but also the family members who influence her daily health behavior. Health education delivered through engaging slides, leaflets, and attractive discussions can make information more accessible to pregnant women and families and strengthen husbands' roles as companions in preventing pregnancy anaemia. Therefore, this study aimed to improve compliance with iron tablet use among pregnant women by empowering families, particularly husbands, as companions in efforts to prevent pregnancy anaemia in the Bungus Community Health Center's working area in Padang City.

## METHOD

This community service activity was conducted in the Bungus Community Health Center's working area in Padang City in August 2025. The activity used a pre–post educational intervention design, in which participants' knowledge, attitudes, and family support regarding compliance with iron tablet use were assessed before and after the educational session.

### Preparation

Preparation activities included coordination with the Bungus Community Health Center and local regional officials regarding the implementation of the program. Participant screening was conducted in collaboration with the person in charge at the Timbalun Health Center in Bungus Timur District. The participants were 10 pregnant women and their husbands. The inclusion criteria were pregnant women living in the Bungus Community Health Center working area, willing to participate in the activity, and accompanied by their husbands during the education session.

The community service team prepared educational media in the form of PowerPoint slides, leaflets, and reminder stickers. The team also developed pre-test and post-test instruments to assess pregnant women's knowledge and attitudes regarding adherence to iron tablets, as well as their husbands' support in encouraging adherence. The results of these instruments were grouped descriptively into categories of knowledge, attitudes, and support.

### Implementation

The intervention was conducted in late August 2025 at the Timbalun Health Center in Bungus Timur. Before the educational session, data collection included observation of daily iron tablet consumption records in the KIA (Maternal and Child Health) books, checking pregnant women's Hb levels, and administering the pre-test. The pre-test for pregnant women assessed knowledge and attitudes toward iron tablet consumption, while the pre-test for husbands assessed family support (Figure 1).

Interactive health education was then delivered to pregnant women and their husbands on anemia, the importance of regular iron tablet consumption, ways to manage mild side effects, and the role of family support in preventing anemia during pregnancy. The material was adapted to the local language and culture. Reminder stickers about iron

tablet use were placed in participants' homes in areas frequently used by family members, such as near bedrooms or kitchens (Figure 2).

## Evaluation

The evaluation stage was conducted after the educational activity/intervention. A post-test was administered to pregnant women to assess changes in knowledge and attitudes regarding compliance with iron tablet consumption, and to their husbands to assess changes in family support after the intervention. In addition, monitoring was conducted to ensure that both pregnant women and their husbands completed the iron tablet consumption records properly in the KIA book (Figure 3).

The data analysis for this health education service activity used descriptive statistics to compare pre-test and post-test results on knowledge, attitudes, and husband support. The results were presented descriptively to show changes that occurred following the activity.

## Ethical Consideration

Before the activity began, participants were informed about its purpose and procedures. Their participation was voluntary, and both pregnant women and their husbands consented to take part in the activity. Informed consent was obtained prior to the implementation of the educational and assessment activities.

Figure 1. Health education about knowledge, attitudes, and husband support of compliance with iron tablet consumption

Figure 2. Putting a reminder sticker about iron tablet consumption in participants' homes


Figure 3. Pre-test and post-test of knowledge, attitudes, and husband support of compliance with iron tablet consumption

## RESULTS

### Characteristics of pregnant women and their husbands

Table 1. Frequency distribution of characteristics of pregnant women and their husbands

| Characteristics | f | % |
|---|---|---|
| **Pregnant women** | | |
| - Occupation | | |
| Not working | 6 | 60 |
| Working | 4 | 40 |
| - Education | | |
| Low | 3 | 30 |
| Medium | 6 | 60 |
| High | 1 | 10 |
| **Pregnancy status** | | |
| Planned | 6 | 60 |
| Unplanned | 4 | 40 |
| - Obstetric status | | |
| Low gravida | 5 | 50 |
| High gravida | 5 | 50 |
| - Consumption of iron tablets | | |
| Regular | 3 | 30 |
| Irregular | 7 | 70 |
| **Husband** | | |
| - Occupation | | |
| Unemployed | 2 | 20 |
| Employed | 8 | 80 |
| - Education | | |
| Low | 6 | 60 |
| Intermediate | 4 | 40 |
| - Economic Status | | |
| < below minimum wage | 7 | 70 |
| > above minimum wage | 3 | 30 |

Table 1 shows that the majority of pregnant women were not working (60%), had a medium level of education (60%), and had planned pregnancies (60%). Based on obstetric status, low and high gravida were equally distributed across groups (50% each). The majority of pregnant women had irregular iron tablet use before the intervention (70%), while only 30% used it regularly. The majority of husbands were employed (80%), had low levels of education (60%), and had an economic status below the minimum.

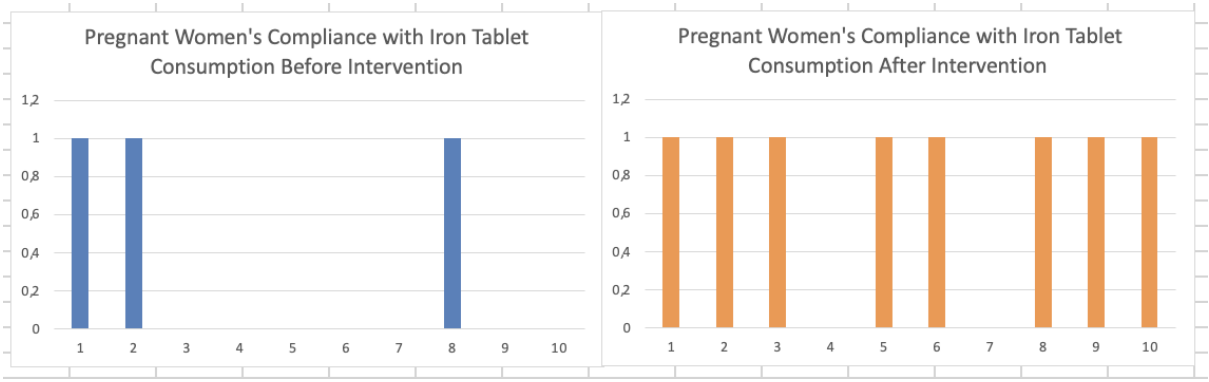
Table 2. The mean score of pregnant women and their husband's age

| Age | Mean | Median | SD | Max | Min |
|---|---|---|---|---|---|
| Pregnant Women | 28,5 | 28 | 3,536 | 34 | 23 |
| Husbands | 32,9 | 33 | 4,725 | 39 | 26 |

Table 2 shows that the average age of pregnant women was 28.5 years, ranging from 23 to 34 years. The average age of husbands was 32.9 years, with a range of 26 to 39 years.

## Compliance of Pregnant Women in Iron Tablet Consumption

The following graph illustrates the compliance of pregnant women with iron tablet consumption:




Graph 1. Pregnant women's compliance with iron tablet consumption before and after intervention

Graph 1 shows that before the intervention, only 3 of 10 pregnant women (30%) were compliant with iron tablets, while 7 of 10 (70%) were noncompliant. After the intervention, the number of compliant pregnant women increased to 8 out of 10 (80%), while the number of non-compliant women decreased to 2 out of 10 (20%). Thus, there was an increase of 5 pregnant women (50%) in compliance after the intervention.

## Pregnant Women's Knowledge about Iron Tablet Compliance

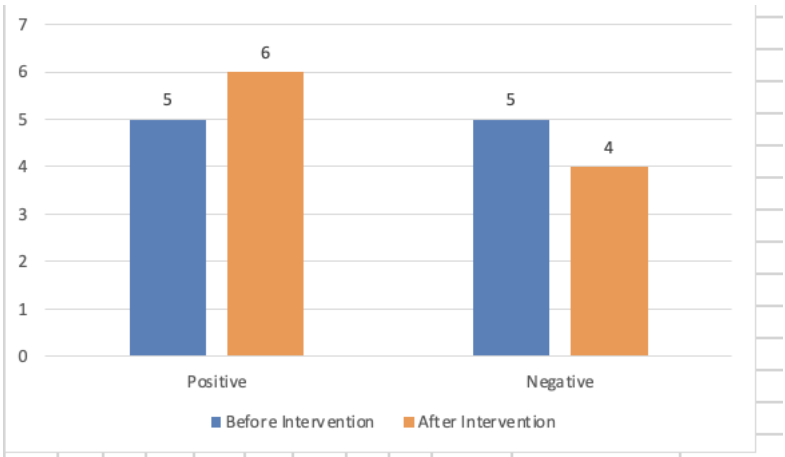
The following graph illustrates the knowledge of pregnant women about anaemia and their compliance with iron tablet consumption before and after the health education intervention.


Graph 2. pregnant women's knowledge of iron tablet compliance before and after intervention

The graph illustrates changes in pregnant women's knowledge of compliance with iron tablet use before and after a health education intervention. Prior to the intervention, the majority of respondents were in the Good category (60%), followed by the Very Good (30%) and Insufficient (1%) categories. After the intervention, a significant improvement in knowledge levels was observed. The number of respondents in the Very Good category increased substantially to 90%. Meanwhile, 10% of participants were in the Good category, and no respondents remained in the insufficient category.

**Attitudes of Pregnant Women Regarding Compliance with Iron Tablet Consumption**

The following graph illustrates pregnant women's attitudes regarding compliance with iron tablet consumption before and after the intervention.

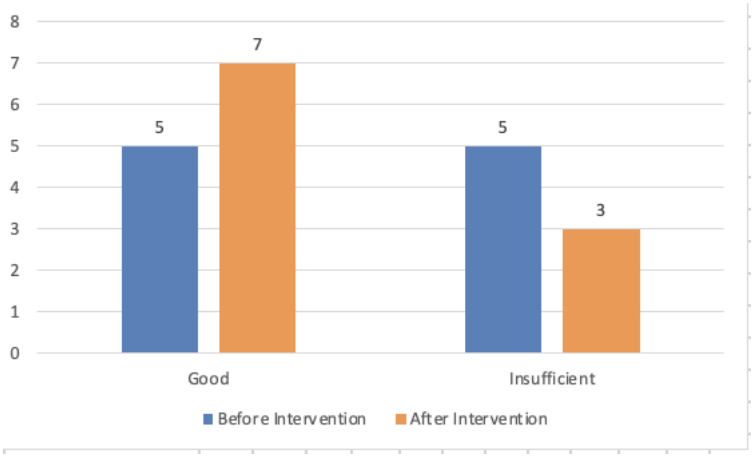



Graph 3. Attitudes of pregnant women toward iron tablet consumption compliance before and after intervention

The graph shows that before the intervention, 50% of pregnant women had a positive attitude toward iron tablets, while 50% had a negative attitude. After the intervention, the percentage of participants with a positive attitude increased t0 60%, whereas those with a negative attitude decreased to 40%.

**Family Support Related to Pregnant Women's Compliance with Iron Tablet Consumption**

The graph below illustrates the family support (husband) on maternal compliance in taking iron tablets.




Graph 4. Family support for pregnant women's compliance with iron tablet consumption before and after intervention

The Graph 4 shows changes in family (husband) support related to pregnant women's compliance with iron tablet consumption before and after the intervention. Before the intervention, family support was good (50%) and insufficient (50%). After the intervention, the percentage of families with good support increased to 70%, while those with insufficient support decreased to 30%.

## DISCUSSION

### Characteristics of pregnant women and their husbands

Table 1 shows that non-compliance with iron tablets occurred in pregnant women who were largely homemakers and came from families with limited socioeconomic conditions. This condition may affect access to health information, the ability to maintain healthy routines during pregnancy, and the support available at home. The high proportion of irregular iron tablet consumption before the intervention also confirms that the main problem in this activity was not only tablet availability but also inconsistent consumption. Table 2 ilustrate the majority of participants fall within the productive adult age groups. This is important because decision-making about health behaviors during pregnancy often occurs within the household and involves both the pregnant woman and the husband. Involving husbands in the intervention was important, as both partners were in an age group that actively participates in family health decisions.

### Compliance of Pregnant Women in Iron Tablet Consumption

Graph 1 indicates an improvement in the consumption of iron tablets among pregnant women. The intervention helped pregnant women change their behavior regarding iron tablet use. Health education likely improved adherence by directly addressing barriers that had previously contributed to non-compliance, such as limited understanding of the benefits of iron tablets, fear of side effects, and a lack of regular reminders. The increase from 30% to 80% compliance indicates that education helped pregnant women understand the importance of daily iron supplementation, not only as treatment when symptoms appear, but also as a preventive measure during pregnancy. This also shows that distributing iron tablets alone was insufficient and that behavior change required supportive educational efforts (Anato & Reshid, 2025)

This data is consistent with the health profile data of Padang City, which shows that cases of anaemia are often found in pregnant women, and if left untreated, can lead to

maternal and infant mortality (Balcha et al., 2023). Iron tablets should be provided to all pregnant women, but the majority of them do not take it consistently. Consuming iron tablets can help prevent anaemia during pregnancy, a condition that can lead to serious complications, such as a higher risk of maternal and infant mortality, as well as potential disorders in fetal development. (Edelson et al., 2023).

Pregnant women who adhered to the recommended intake of iron tablets typically did so due to their intentional family planning. Their commitment to this regimen was motivated by a desire to promote a healthy pregnancy and ensure a healthy infant. After health education was provided, data showed that 8 out of 10 pregnant women were committed to complying and wanted to take the recommended iron tablets. The pregnant women's desire to comply with iron tablet consumption stemmed from their concern about the effects of iron deficiency during pregnancy (Engidaw et al., 2024).

Health education is critical to improving pregnant women's behavior. Pregnant women who are not compliant can become compliant if they understand the changes made to avoid negative impacts on themselves and their fetuses (Lauer et al., 2024). Interactively delivered health education is easier to convey because it is two-way, making the material easier to understand. Reminder stickers placed in every home in areas frequently passed by pregnant women and their families are also an essential factor in ensuring that pregnant women continue to comply with iron tablet consumption.

**Knowledge of Pregnant Women on Iron Tablet Compliance**

Graph 2 shows an increase in pregnant women's knowledge about iron tablet use. These findings indicate that the health education intervention was effective in improving pregnant women's knowledge regarding adherence to iron tablet consumption. Increased knowledge is an important factor that may influence health behavior, particularly compliance with iron supplementation during pregnancy. Improved compliance can help prevent anaemia among pregnant women and support better maternal health outcomes. The increase in knowledge is an important result because understanding is the basis for behavior change. Before the intervention, some pregnant women may not have fully understood the preventive purpose of iron tablets, the correct way to consume them, or the meaning of mild side effects. After health education, pregnant women appeared to better understand anaemia the role of iron tablets in preventing complications, and the need for regular intake. This stronger knowledge likely contributed to the increase in compliance seen after the intervention. In other words, when pregnant women understood why the tablets were important, they were more willing to consume them consistently.

The distribution of knowledge indicates that before receiving health education, most pregnant women had a moderate level of knowledge regarding the importance of adhering to iron tablet consumption, while a small proportion still had insufficient knowledge. By equipping pregnant women with essential health information, they become more aware of important health issues. This knowledge is a key factor in improving compliance with iron tablet consumption during pregnancy (Balcha et al., 2023). Higher levels of knowledge are linked to greater adherence to iron tablet use. However, many pregnant women hold misconceptions circulating in the community regarding the negative effects of iron tablets, such as the belief that they cause excessive nausea (Saeed et al., 2024). In reality, the iron tablets currently provided have only minimal side effects, primarily mild nausea.

**Attitudes of Pregnant Women Regarding Compliance with Iron Tablet Consumption**

Graph 3 shows that the majority of pregnant women became more positive after the intervention. Before the intervention, attitudes toward iron tablets were less favorable; after the intervention, there was an increase in positive attitudes among pregnant women toward compliance with iron tablet consumption. This is consistent with the study by

Abdisa et al., (2023), which reported a significant increase in positive attitudes towards iron and folic acid supplementation after the intervention. Pregnant women who consume iron tablets have a better understanding of their health and fetal growth and development.

This finding suggests that the intervention influenced not only knowledge but also acceptance of iron tablets. A positive attitude is important because pregnant women may already know the benefits of iron tablets but still avoid taking them if they fear side effects or believe negative myths. Through interactive education, pregnant women received explanations about the normal effects of iron tablets and ways to reduce discomfort, such as adjusting the time of consumption. As a result, iron tablets may have become more acceptable and less worrying. This change in attitude likely supported the increase in adherence behavior. The positive attitude shown by pregnant women was reflected in their discipline in taking iron tablets daily and resisting damaging myths circulating in the community (Ramachandran et al., 2023).

**Family Support Related to Pregnant Women's Compliance with Iron Tablet Consumption**

Graph 4 illustrates the improvement in family support. Family support is essential for pregnant women to remain disciplined and consistent in taking iron tablets. Unfortunately, many families do not provide the necessary support for these pregnant women. As a result, pregnant women often feel worried and anxious about the potential side effects of iron tablets, especially due to the myths circulating in the community about these effects. Before health education, family support for pregnant women's compliance with iron tablet consumption was still limited. After the intervention, there was an improvement in husband and family support in reminding, accompanying, and encouraging pregnant women to take iron tablets regularly.

This result shows that family involvement contributed to behavioral change among pregnant women. The intervention included husbands, so the message about anaemia prevention and iron tablet use was received not only by the pregnant women but also by the family member most closely involved in daily support. When husbands understand the purpose of iron supplementation, they can remind pregnant women to take tablets, encourage them when they feel uncomfortable, and help create a supportive home environment (Merga et al., 2025). Conversely, a lack of family support can reduce a pregnant women motivation, foster negative attitudes toward iron tablets, and lead to non-compliance (Seidu et al., 2024). Thus, adherence becomes a shared responsibility rather than a burden borne solely by the pregnant women. This is especially important in community and primary care settings, where family influence on maternal health behavior is strong.

In addition to education, reminder stickers placed in areas frequently passed by family members, such as near bedrooms or kitchens, likely served as behavioral cues. These stickers functioned as visual prompts that reinforced the educational messages delivered during the session. Their role is important because non-compliance may occur not only when pregnant women refuse to take tablets, but also when they forget or do not yet have a routine. By providing a visible reminder in the home, the stickers likely helped support regular behavior and kept both pregnant women and husbands aware of the need for daily iron tablet consumption.

Overall, the findings of this community service activity indicate that the combination of health education, husband involvement, and reminder stickers improved knowledge, attitudes, family support, and compliance with iron tablet use among pregnant women. These results have implications for maternal health programs in primary care settings. Programs to prevent anaemia in pregnancy should not rely solely on distributing iron tablets but should also include structured education, active family participation, and simple

household reminder strategies. This family-based approach may strengthen adherence and improve the effectiveness of maternal health promotion in the community.

This activity had several limitations. The number of participants was small, involving only 10 pregnant women and 10 husbands, so the findings cannot be generalized broadly. The observation period was also short, and adherence was monitored mainly through the KIA book records and participant reporting.

## CONCLUSION

Family-involved health education supported by reminder stickers was effective in improving pregnant women's adherence to iron tablet consumption in the working area of the Bungus Community Health Center. The intervention was also followed by improvements in knowledge, attitudes, and family support. These findings suggest that improving adherence requires not only the distribution of iron tablets but also education and support from the family environment. Therefore, this approach may be considered as a practical strategy to strengthen anemia prevention programs for pregnant women in primary care settings

### Implication

This program has potential implications for maternal health services in primary care settings. Community health centers may improve the effectiveness of iron tablet programs by combining tablet distribution with education, husband involvement, and simple home-based reminder media. Thus, this approach may support better maternal health outcomes and contribute to healthier pregnancies.

## ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the Faculty of Nursing, Universitas Andalas, for providing funding support through the Community Service Grant under the community service "membangun nagari membangun" (Contract No. 81/UN16.13.D/KPT/III/2025). The authors also extend their appreciation to the head of the Bungus Community Health Centre, Padang, and all the health workers at the centre for their cooperation and support throughout the implementation of this program. Special thanks are also extended to the enthusiastic participants, including pregnant women and their husbands, as well as those who actively participated in the activities. Additionally, thanks are due to the nursing students who made significant contributions to the preparation and execution of the community service initiative.

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