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Descriptive Overview of Iron (Fe) Tablet Compliance Levels Among Pregnant Women at Sangkrah Health Center

Alya' Fatin Ramadhani*, Anjar Nurrohmah

Faculty of Health Sciences, Aisyiyah University of Surakarta, Indonesia
Email: 202213012@unisa-surakarta.ac.id *

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ABSTRACT

Maternal Mortality Rate in Surakarta City increased to 41.04 per 100,000 live births in 2024, with anemia identified as a primary medical cause. Achieving the 2030 Sustainable Development Goals depends heavily on controlling gestational anemia. Sangkrah Health Center records the second-highest number of anemia cases (72 cases), indicating a gap between 100% iron (Fe) tablet distribution and actual consumption rates. Compliance is crucial to prevent complications but remains hindered by maternal characteristics. Objective: This study is designed to provide an overview of the respondents' characteristic profiles and their level of compliance in consuming Fe supplements. Using a descriptive quantitative design, this study involved 74 pregnant women in their second and third trimesters, selected through purposive sampling. Results: Most respondents were aged 21-34 years (78.4%), had high school education (60.8%), were multigravida (55.4%), and were unemployed (75.7%). Regarding compliance, 55 respondents (74.3%) were compliant, while 19 (25.7%) were non-compliant due to forgetfulness and side effects. Conclusion: Most pregnant women are compliant; however, the non-compliant group requires intensive intervention. Puskesmas should improve counseling frequency and utilize digital monitoring to bridge the gap between distribution and consumption.

Keywords: Pregnant Women; Compliance; (Fe) Tablets

INTRODUCTION

The maternal mortality rate (MMR) is a crucial indicator of a nation's well-being. According to SDGs data, the global target for reducing the MMR is 70 per 100,000 live births by 2030 (1, 2). Emphasis that gestational anemia remains a primary cause of both maternal and neonatal mortality, highlighting the critical nature of maintaining adequate hemoglobin levels during pregnancy. However, in Surakarta City, the maternal mortality rate actually increased to 41.04% per 100,000 live births in 2024 (3). One of the main causes of morbidity and mortality is anemia in pregnancy, which is a condition where the hemoglobin (Hb) level is <11 g/dl (4). Sangkrah Community Health Center recorded 72 cases of anemia, making it the area with the second highest number of cases in Surakarta even though iron (Fe) tablet distribution coverage has reached 100% (3).Even though the percentage of pregnant women who receive iron tablets is quite high, if they are not consumed by pregnant women, the expected results in preventing and treating cases of anemia will not be achieved (5).

Previous research shows that iron deficiency is the main cause of anemia in pregnant women in Indonesia due to the increase in blood volume and fetal needs (6). Government

efforts through supplementation of at least 90 Fe tablets have been carried out, but the prevalence of anemia remains high due to non-compliance with consumption (7). The issue of anemia among pregnant women is influenced not only by the availability of supplements but also by various interrelated supporting factors within the community health center's working area (8). Characteristics such as age, education, parity, and occupation have been shown to influence this level of compliance (9).

Pregnant women who do not comply have a 2.6 times greater risk of experiencing anemia (10). Although the distribution of iron tablets in Surakarta City has reached the target of 100%, the number of anemia cases at Sangkrah Community Health Center remains the highest in the city (3). There is a clear gap between the success of government program distribution and the reality of consumption among pregnant women.

The novelty of this study is focused on identifying the real consumption levels and adherence of pregnant women in their second and third trimesters at this specific location to understand why maximum distribution has not effectively reduced anemia rates; therefore, this study recommends the need for intensive intervention through digital monitoring and increased counseling frequency to bridge the gap between distribution and actual consumption in the community (11). Further highlights that untreated anemia due to non-compliance remains a significant danger sign during pregnancy, potentially leading to more severe maternal health complications.

A preliminary study found that only 6 out of 15 pregnant women regularly took iron tablets. Subjective barriers, such as forgetfulness and the belief that their bodies were not showing symptoms of illness, led pregnant women to neglect taking iron tablets despite receiving education. This provides an overview of the gap between logistics availability at health facilities and actual consumption behavior at the household level.

METHODS

This study employed a descriptive quantitative design to provide a systematic and precise overview of iron (Fe) supplement adherence among pregnant women. The research was conducted within the Sangkrah Community Health Center’s working area in Surakarta from September to October 2025. Based on an average monthly visit of 286 individuals, the sample size was determined using the Slovin formula with a significance level of d = 0.1, resulting in a minimum of 74 respondents. A non-probability sampling approach with a purposive sampling method was utilized. The inclusion criteria focused on pregnant women in their late second trimester (at least 6 months) and late third trimester (at least 8 months) who received iron tablets from the health center. Data collection involved an open-ended questionnaire validated through expert judgment by senior midwives to ensure content relevance. Univariate analysis was subsequently performed to determine the frequency distribution and percentages of respondent characteristics and compliance levels.

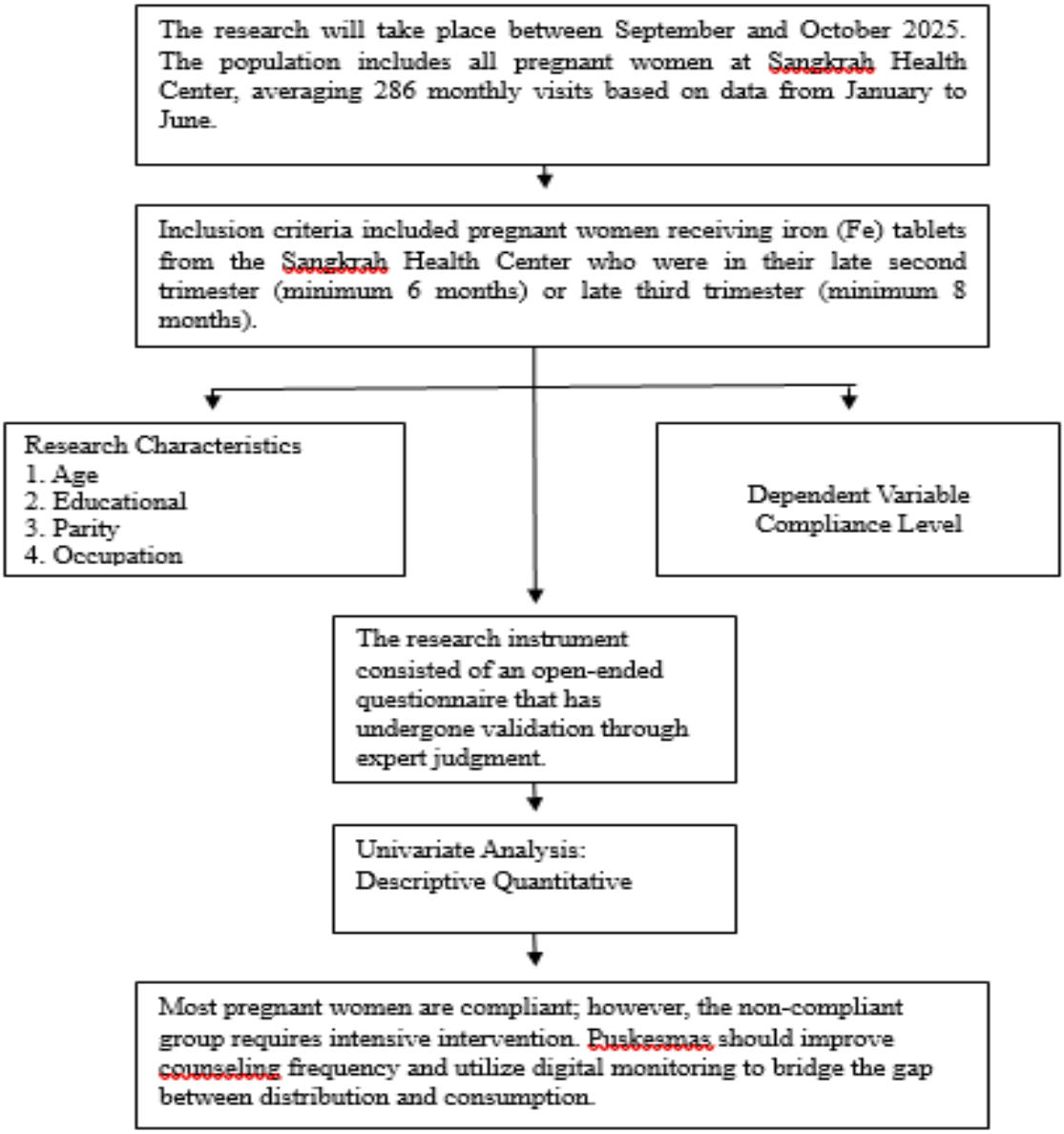

Figure 1. Research Stages Flowchart

RESULTS

Characteristics of Pregnant Women

Table 1 The distribution of respondents by age

Age	Frequency (f)	Percentage (%)
Pregnant mother's age < 20 years	6	8.1
Pregnant women aged 21-34 years	58	78.4
Pregnant mother's age > 35 years	10	13.5
Total (n)	74	100.0

Source: Primary Data (2025)

Based on table 4.1, the majority of respondents are in the healthy reproductive age group of 21-34 years for 58 respondents (78.4%. Conversely, the minority group consist of respondent aged <20 years, 6 respondents (8.1%).

Characteristics of Pregnant Women

Table 2. Frequency distribution of respondents by Education Level

Education	Frequency (f)	Percentage (%)
Elementary/Middle School	19	25.7
High School/Vocational School	45	60.8
University	10	13.5
Total(n)	74	100.0

Source: Primary Data (2025)

Based on table 4.2, more than half of the respondents attained a secondary education (High School/Vocational School), totaling 45 respondent (60.8%). Respondents with higher education (College/University) constituted the smallest portion of the sample, at (13.5%).

Characteristics of Pregnant Women by Parity

Table 3. Frequency distribution of respondents based on parity

Parity	Frequency (f)	Percentage (%)
Primigravida	25	33.8
Multigravida	41	55.4
Grande Multipara	8	10.8
Total(n)	74	100.0

Source: Primary Data (2025)

Based on table 4.3, indicates that the majority of respondents were multigravida (having given birth 1-2 times prior), comprising 41 respondents (55.4%), and the minority were categorized as Grnde Multipara pregnancies or giving birth more than 3 times, namely 8 respondents (10.8%).

Characteristics of Pregnant Women by Occupation

Table 4. Frequency distribution of respondents based on occupation

Work	Frequency (f)	Percentage (%)
Work	18	24.3
Doesn't work	56	75.7
Total(n)	74	100.0

Source: Primary Data (2025)

Based on table 4.4, the frequency distribution of respondents based on the occupation of pregnant women, shows that the majority of pregnant women who do not work are 56 respondents (75.7%), and the minority of pregnant women who work are 18 respondents (24.3%).

Category of Compliance Level of Pregnant Women in Consuming Iron (Fe) Tablets

Table 5. Frequency distribution of categories of compliance levels of pregnant women

Compliance	Frequency (f)	Percentage (%)
Obedient	55	74.3
Not obey	19	25.7
Total(n)	74	100.0

Source: Primary Data (2025)

Based on table 4.5, the frequency distribution of compliance of pregnant women in consuming iron (Fe) tablets shows that the majority of pregnant women are compliant in consuming iron (Fe) tablets, namely 55 respondents (74.3%), and the minority of pregnant women are not compliant in consuming iron (Fe) tablets, namely 19 respondents (25.7%).

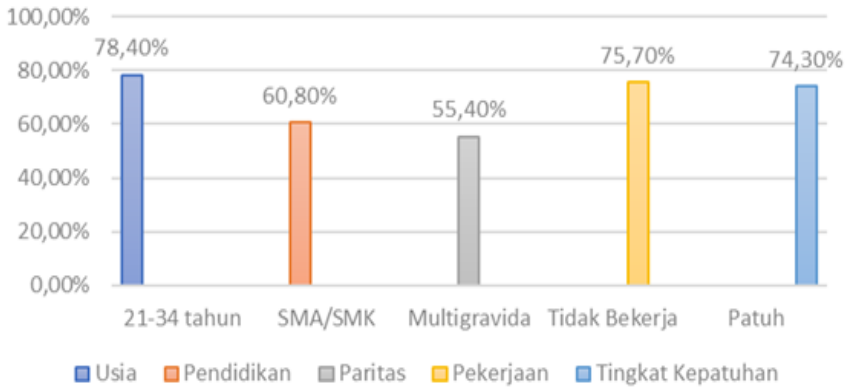

Figure 2. Research Results Diagram

DISCUSSION

The findings of this study indicate that a significant majority of pregnant women at the Sangkrah Community Health Center (78.4%) fall within the healthy reproductive age category of 21–34 years. From a physiological standpoint, this age range represents the optimal period for maternal biological systems to function effectively. Specifically, the endocrine and cardiovascular systems are at their peak capacity to adapt to the complex hemodilution changes that naturally occur throughout the gestation period (12). This finding is in line with studies (13) which states that optimal age supports the mother's physical readiness to face increased nutritional needs. Conversely, at-risk age groups (<20 and >35 years) require extra monitoring due to nutritional competition between maternal and fetal growth or decreased reproductive organ function, which exacerbates the risk of anemia (9). The urgency of compliance is further illustrated by the fact that non-adherence is a direct precursor to clinical anemia. Hapitri (22) explains that pregnant women who fail to maintain their iron intake, especially in the third trimester, face a much higher risk of falling below the 11 g/dL hemoglobin threshold. This strengthens the results of this study that the 25.7% non-compliant group is the most vulnerable population that needs to be prioritized by the Sangkrah Health Center (14).

The majority of respondents had a secondary education (60.8%). This level of education significantly influences their health literacy skills and logical thinking in understanding the

risks of anemia (15). Mothers with higher education tend to be more cooperative and independent in seeking health information through digital literature. Conversely, mothers with less education often face obstacles in understanding medical terms and are more susceptible to myths, requiring a more intensive and simple educational approach from health workers (9). This is in line with research by (16), which states that the level of knowledge associated with educational background will influence maternal dietary patterns and health behaviors. If mothers possess good knowledge, they tend to be more compliant as they understand the social and health impacts of anemia.

Parity status Most respondents were multigravida. Experiences in previous pregnancies were a motivating factor for mothers to be more aware of the importance of maintaining health and preventing complications (17). Empirical experience of facing complaints due to iron deficiency in the past directly increased the mother's motivation to comply with the supplement regimen (18). However, special attention is still needed for the grand multipara group who are at risk of chronic iron depletion due to repeated pregnancies, which clinically increases the risk of postpartum hemorrhage (9).

Occupational characteristics show that 75.7% of respondents are unemployed or are housewives. This provides mothers with flexible time to focus on antenatal care and minimizes physical fatigue, which is often a barrier for working mothers (19). Mothers who do not work have a greater chance of consistently following health recommendations compared to working mothers who are often hampered by double burdens and stress, which risks reducing compliance with daily nutritional consumption (20).

The compliance rate for iron (Fe) tablet consumption at Sangkrah Community Health Center is high (74.3%). This compliance is a key determinant in preventing anemia and pregnancy complications such as low birth weight or premature birth (21). Strengthens this finding by stating that the risk of Low Birth Weight (LBW) increases significantly in mothers who are non-compliant in consuming iron (Fe) tablets, both in urban and rural areas (22). However, 25.7% of respondents were still non-compliant due to forgetfulness, lack of family support, or minimal anemia symptoms. In this study, the non-adherent group of respondents confirmed that psychological and physical reasons were the primary barriers to achieving anemia free targets. This support findings that interventions to improve adherence must address side-effect management to ensure maternal comfort during the supplementation process (19). The effectiveness of health programs can be improved through collaboration with community cadres and the use of digital applications to monitor side effects such as nausea, which is often the reason for discontinuing supplement consumption (23). Compliance in taking iron (Fe) tablets is one of the factors that significantly contributes to the occurrence of anemia in pregnant women (24).

While a significant portion of pregnant women at the Sangkrah Community Health Center exhibit adherence, the roles of knowledge and attitude remain pivotal variables that necessitate continuous reinforcement from healthcare providers. A notable discrepancy exists between administrative adherence defined as the successful collection of supplements and actual therapeutic adherence, which refers to the correct consumption of the medication. This gap is frequently precipitated by lingering maternal concerns or misconceptions regarding the safety of iron supplementation for fetal development (25).

CONCLUSION

In conclusion, this study identifies that the demographic profile of pregnant women at the Sangkrah Community Health Center is predominantly characterized by the healthy reproductive age group (21–34 years), secondary education level (High School/Vocational School), and multigravida parity status. Furthermore, the majority of respondents are unemployed (housewives). Regarding the primary research variable, the findings indicate a high level of adherence among pregnant women in consuming iron (Fe) supplements. These results provide an essential overview for tailoring future nutritional interventions in the primary healthcare setting.

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