Behavioral Determinants of Compliance with Iron Tablet Consumption in Pregnant Women: An Analytical Study in Primary Obstetric Services

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Abstract

Adherence to iron tablet consumption among pregnant women remains suboptimal despite its critical role in preventing iron deficiency anemia. Previous studies have identified various influencing factors; however, evidence regarding the relative contribution of behavioral determinants, particularly the role of the husband's support in primary obstetric care, remains limited. This study aimed to analyze the influence of knowledge, attitudes, and husbands' support on adherence to iron tablet consumption among pregnant women. An analytical cross-sectional study was conducted involving 47 pregnant women in primary obstetric services. Data were collected using a validated questionnaire and analyzed using Fisher's Exact test and binary logistic regression to identify the most dominant factor. The results showed that 63.8% of respondents were non-adherent to iron tablet consumption. Bivariate analysis indicated significant associations between husband's support (p=0.001), knowledge (p=0.024), and attitude (p=0.018) with adherence. Multivariate analysis revealed that husband's support was the strongest predictor of adherence (OR=9.15; 95% CI: 2.45–34.1), followed by attitude (OR=5.22) and knowledge (OR=4.14). In conclusion, the husband's support plays a pivotal role in improving adherence to iron tablet consumption among pregnant women. Therefore, interventions in primary obstetric care should incorporate partner involvement in antenatal education to strengthen reinforcing factors and improve maternal health outcomes

Keywords: Husband's Support, Compliance, Knowledge, Attitude, Iron Tablets

INTRODUCTION

Pregnancy is a meaningful and highly anticipated phase for married couples. Therefore, expectant mothers are encouraged to maintain proper nutrition and overall health to prevent complications that may negatively affect both their own well-being and that of the fetus. (Romalasari, 2020). One of the problems that can arise is anemia with Hb levels in the blood of less than 11 gr/dl in the first and third trimesters (Amalia et al., 2024; Pohan, 2022).

The World Health Organization (WHO, 2023) estimates that 40% of pregnant women worldwide will suffer from anemia by 2023. Approximately 32 million pregnant women suffer from anemia globally, with 27% in Southeast Asia. The incidence of anemia in pregnant women is considered high, with a prevalence of 48.9% in Indonesia. This figure approaches the serious health problem that occurs in society, with a prevalence of anemia in pregnancy exceeding 40% (Dalle, 2023).

Data from the Central Statistics Agency states that the MMR in Indonesia in 2015 was 305/100,000 live births, which has not yet reached the target of 183/100,000 live births in 2024. The number of MMR in Indonesia in 2021 shows that there were 6,856 maternal deaths in 2021, an increase of 38.8% compared to the previous year of 4,197 maternal deaths in 2019. Globally, 80% of maternal deaths are caused by hemorrhage (25%), sepsis (15%), hypertension in pregnancy (12%), prolonged labor (8%), abortion complications (13%), and other causes (8%). Maternal deaths in developing countries are usually caused by several factors, such as anemia in pregnancy (40%), eclampsia (34%), due to disease (26%), and infection (12%) (SKI, 2023).

In Indonesia, the prevalence of pregnant women who experience anemia is 48.9%. Pregnant women with anemia occur in the 15-24 year age group as much as 84.6%. FE tablet supplementation is one of the most effective prevention and management programs for iron deficiency anemia. It increases hemoglobin levels in pregnant women and can reduce the prevalence of anemia in pregnant women by 20-25%. FE tablets contain 200 mg of Ferrous sulfate and 0.25 mg of folic acid bound with lactose. (Kemenkes, 2024) .

Based on Basic Health Research (Riskesdas) data, the incidence of anemia in pregnant women increased by 48.9% in 2018, up from 37.1% in 2013. The 2018 Riskesdas results also showed that 84.6% of pregnant women under 25 years of age experienced anemia, and 57.6% of pregnant women aged 35 or older experienced anemia (Riskesdas, 2023)

Based on data from the Indonesian health profile, the coverage of compliance with iron tablet consumption for pregnant women in Indonesia in 2019 was 64%, and increased to 83.6% in 2020 (Ministry of Health of Indonesia), while based on SSGI 2021 data, the proportion of pregnant women who had received compliance with iron tablet consumption in Indonesia was 90.4%. Based on data from the Medan Deli region, husbands' support for pregnant women's adherence to compliance with iron tablet consumption in 2023 showed that approximately 83.3% of husbands provided positive support. However, data also showed that 60% of respondents reported insufficient husband support, which could impact pregnant women's compliance (Sumut, 2023).

Iron Supplement Tablets (TTD) are a nutritional service that must be carried out and consumed by every pregnant woman. (Safanah, 2022). This aims to meet iron needs during pregnancy to ensure adequate iron supply for the growth and development of the fetus and placenta, and to prevent bleeding during delivery. Pregnant women's iron needs increase by 25% compared to non-pregnant women (Munir et al., 2024).

Husband's support for pregnant women's compliance in consuming iron supplements is a form of interaction and involvement of the husband, which aims to help and encourage his wife in undergoing a health program during pregnancy, especially in terms of consuming iron supplements containing iron and folic acid. (Handayani, 2022). Iron tablets are very important for pregnant women to prevent anemia, which can hurt the mother's health and the development of the fetus. (Putri, 2023).

The impact of anemia on pregnant women includes Hemorrhagic Post Partum (HPP) 28%, shock 24%, prolonged labor 20%, uterine atony 11%, uterine inertia 8%, other causes 5%, while the impact of anemia on babies is LBW 11%, congenital defects 7%, long-term impacts that can occur are changes in brain function and body cells due to iron deficiency during pregnancy or stunting. (Nafiah et al., 2022) .

Moreover, many studies have focused on general maternal populations without emphasizing the contextual role of partner involvement in routine antenatal care. Given that husband's support is considered a reinforcing factor in health behavior, its relative contribution compared to cognitive factors such as knowledge and attitudes requires further investigation. Understanding the dominant determinant is essential to design more targeted and effective interventions. (Amalia et al., 2024).

METHODS

This study used an observational analytical design with a cross-sectional approach to examine the dynamics of husbands' support, knowledge, and attitudes, and their relationship to compliance with iron tablet consumption. The study was conducted at the Independent Midwife Practice (PMB) of Hj. Dewi Sesmera, Medan City, North Sumatra, in 2025 (Notoadmodjo, 2022). Population and Sample: The study population was all pregnant women who underwent antenatal visits at the study site. A sample of 47 respondents was selected using a total sampling technique (saturated sample) to ensure comprehensive data representation within the clinical scope. Data Collection and Instruments Primary data were collected through guided interviews using a validated structured questionnaire with a calculated r > r table, and reliability values can be seen using Cronbach's Alpha ≥ 0.70. Adherence to iron tablet consumption was assessed using a 10-item questionnaire measuring frequency and consistency of intake, with scoring (1 = yes, 0 = no) and categorized as adherent (≥50%) and non-adherent (<50%). Knowledge was measured using 8 questions, with correct answers scored as 1 and incorrect as 0, then categorized into good (≥50%) and poor (<50%). Attitude was assessed through 10 statements using a Likert scale and categorized as positive (≥50%) and negative (<50%). Husband's

support was measured using 10 items covering emotional, informational, and instrumental aspects, categorized as supportive (≥50%) and non-supportive (<50%).

Prior to data collection, all participants were informed about the objectives, procedures, benefits, and potential risks of the study. Participation was voluntary, and written informed consent was obtained from all participants before enrollment. Participants' confidentiality and anonymity were maintained throughout the study.

The variables measured were the husband's support, knowledge, attitudes, and adherence to iron supplement consumption, measured based on the consistency of frequency and dosage of consumption according to clinical recommendations. Statistical Analysis: Data were processed using SPSS software. Univariate analysis was performed to describe the frequency distribution of variables. For bivariate analysis, Fisher's Exact Test was used as an alternative to the Chi-Square test, considering that there was one cell (25%) that had an expected count of less than 5 (minimum value = 2.67). The significance value was set at $p < 0.05$. Next, a logistic regression test was conducted to determine the most dominant factors influencing adherence.

RESULT

Respondent characteristics in this study included maternal age, education level, occupation, trimester, and gestational status. The study involved 47 pregnant women receiving antenatal care (ANC) services at the HJ. Dewi Sesmera Clinic in Medan.

Table 1. Respondent Characteristics (n=47)

No	Respondent Characteristics	Total	
		f	%
1	**Age**		
	< 20 years	16	34.0
	20–35 year	23	48.9
	> 35 years	8	17.1
	Total	**47**	**100**
2	**Education**		
	SD	3	6.4
	SMP	5	10.6
	SMA	38	80.9
	S1	1	2.1
	Total	**47**	**100**
3	**Work**		
	Housewife	38	80.9
	Self-employed	3	6.4
	Employee	4	8.5
	Teacher	2	4.2
	Total	**47**	**100**
4	**Trimester**		
	I	18	38.3

No	Respondent Characteristics	Total	
		f	%
	II	17	36.2
	III	12	25.5
	Total	**47**	**100**
5	**Pregnancy Status**		
	Primigravida	14	29.8
	Secundigravida	24	51.1
	Multigravida	6	12.7
	Grande Multigravida	3	6.4
	Total	**47**	**100**

Based on Table 1, the characteristics of respondents (n=47) in Primary Obstetric Services, the majority of pregnant women were in the productive age group of 26-30 years (48.9%), with the majority having completed high school (80.9%) and being housewives (80.9%). In addition, the distribution of respondents was mostly in the first trimester of pregnancy (38.3%), and the majority were secundigravida or second pregnancies (51.1%).

Table 2. Frequency distribution of variables of husband's support, knowledge, attitude, and compliance (n=47)

Variables	F	%
Husband's Support		
Does not support	32	68,1
Support	15	31,9
Total	47	100
Knowledge		
Not good	25	53.2
Good	22	46.8
Total	47	100
Attitude		
Negatif	27	57.4
Positif	20	42.6
Total	47	100
Compliant		
Non Compliant	30	63.8
Compliant	17	36.2
Total	**47**	**100**

Based on Table 2, it is known that the majority of respondents did not receive support from their husbands regarding iron tablet consumption (68.1%), had insufficient/adequate knowledge (53.2%), and had negative/neutral attitudes toward supplementation consumption (57.4%). Consequently, the majority of respondents were non-compliant in consuming iron tablets (63.8%).

Table 3. The relationship between husband's support, knowledge, and attitude with compliance with iron consumption (n=47)

No	Determinants of behavior	Compliant				Total		p-value
		Compliant		Non-Compliant				
		F	%	F	%	F	%	
1	**Husband's Support**							
	Support	13	86.7	2	13.3	15	31.9	0.001
	Does not support	4	12.5	28	87.5	32	68.1	
2	**Knowledge**							
	Good	12	54.5	10	45.5	22	46.8	0.024
	Not good	5	20.0	20	80.0	25	53.2	
3	**Attitude**							
	Positive	11	55.0	9	45.0	20	42.6	0.018
	Negative	6	22.2	21	77.8	27	57.4	

Based on Table 3, the bivariate test results show a significant relationship between husband's support (p=0.001), knowledge (p=0.024), and attitude (p=0.018) with compliance with iron tablets consumption, where all three variables have a p value <0.05. This means that of these three variables, there is a relationship between husband's support, knowledge, and attitude towards compliance in consuming iron tablets.

Table 4. Logistic Regression of Determinants of Compliance (n=47)

No	Variable	*B*	p-value	Odds ratio (OR)	95% C.I. for OR
1	Husband's support	2.214	0.001	9.15	2.45-34.1
2	Attitude	1.653	0.021	5.22	1.28-21.1
3	Knowledge	1.421	0.042	4.14	1.05-16.3

Based on Table 4, multivariate analysis, husband's support was the strongest predictor of iron tablets compliance with an OR of 9.15 (95% CI: 2.45 – 34.1). Mothers who received husband's support were 9.15 times more likely to be compliant with iron tablets consumption than mothers who did not receive support, after controlling for knowledge and attitude variables.

DISCUSSION

This study examined the determinants of adherence to compliance with iron tablet consumption among pregnant women in primary obstetric care. The findings revealed that the majority of respondents were non-adherent (63.8%), indicating that adherence to compliance with iron tablet consumption remains a significant public health issue. This result highlights a gap between program implementation and actual maternal behavior, particularly in preventing iron deficiency anemia during pregnancy. Similar findings have been reported by (Khairunnisa, 2023; Simbolon, 2022) who identified that low adherence is often associated with limited awareness of anemia risks and the presence of perceived side effects such as nausea and dizziness.

The multivariate analysis demonstrated that husband's support was the most influential factor associated with adherence (OR=9.15), followed by attitude (OR=5.22) and knowledge (OR=4.14). These results indicate that pregnant women who receive support from their husbands are more than nine times more likely to adhere to compliance with iron tablet consumption compared to those without support. This finding emphasizes the substantial role of interpersonal and social influences in shaping maternal health behavior.

From a theoretical perspective, these findings are consistent with Lawrence Green's behavioral model, which categorizes health behavior determinants into predisposing, enabling, and reinforcing factors. In this study, husband's support functions as a reinforcing factor that strengthens the likelihood of adherence. Emotional encouragement, reminders, and practical assistance from husbands contribute directly to improving compliance. This is in line with (Hertati, 2024), who reported that spousal support significantly enhances maternal motivation to follow health recommendations. Furthermore, (Nabila, 2023; Baska, 2024) highlighted that social support, particularly from close family members, plays a critical role in sustaining health-related behaviors.

Attitude and knowledge were also found to significantly influence adherence, although their effects were lower compared to husband's support. A positive attitude reflects a pregnant woman's belief in the benefits of compliance with iron tablet consumption for both maternal and fetal health. This finding supports (Rizawati, 2023), who reported that favorable attitudes are associated with higher compliance. Meanwhile, knowledge contributes to awareness and understanding; however, knowledge alone is not sufficient to ensure adherence. This is supported by (Sumarna, 2023), (Triana, 2022) who found that individuals with adequate knowledge may still demonstrate non-compliant behavior if not accompanied by a positive attitude. Therefore, adherence behavior is likely the result of an interaction between cognitive (knowledge) and affective (attitude) components.

The clinical implications of this study suggest that interventions in primary obstetric care should adopt a family-centered approach. Programs aimed at improving adherence to compliance with iron tablet consumption should not only target pregnant women but also actively involve their husbands. Integrating husbands into antenatal education and counseling sessions may strengthen their role as key supporters, thereby improving maternal adherence. This approach is supported by (Ambarsari, 2023), who emphasized that partner involvement significantly enhances the effectiveness of maternal health interventions.

Overall, this study highlights that adherence to compliance with iron tablet consumption is a multifactorial behavior, with husband's support emerging as the most

dominant determinant. Strengthening social support systems, alongside improving knowledge and attitudes, is essential to optimizing maternal health outcomes.

CONCLUSION

Adherence to iron tablet consumption among pregnant women in primary obstetric services remains low, with the majority of respondents classified as non-adherent. Among the examined factors, husband's support emerged as the strongest predictor, followed by attitude and knowledge. Pregnant women who received positive emotional and instrumental support from their husbands were significantly more likely to adhere to iron tablet consumption. While knowledge contributed to adherence, its influence was lower compared to attitude and husband's support. These findings highlight that improving adherence requires not only enhancing maternal knowledge and attitudes but also strengthening partner involvement through family-centered approaches in antenatal care.

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