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REVEALING ANEMIA FACTORS IN PREGNANT WOMEN IN THE SECOND TRIMESTER AT THE SINGANDARU HEALTH CENTER (JULY-SEPTEMBER 2024)

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Abstract
Anemia is a significant micronutrient deficiency problem among pregnant women, with a global prevalence of 41.8%. In Indonesia, 48.9% of pregnant women experience anemia, leading to health risks for both mothers and babies, including low birth weight and mortality. The provision of iron (Fe) supplement tablets is one of the solutions to reduce anemia rates. Despite government efforts, such as distributing Fe tablets, adherence among pregnant women at the Singandaru Public Health Center (UPTD Puskesmas Singandaru) in Kota Serang remains low. At the UPTD Puskesmas Singandaru, 58% of pregnant women were reported to have anemia during the January–December period in 2022, and this number increased to 60% in 2023, according to data from the health center. A study involving 16 respondents found that, based on the compliance with ANC visits, 10 respondents (62.5%) were categorized as non-compliant, while 6 respondents (37.5%) were compliant. In the category of iron tablet (Fe) consumption compliance, 11 respondents (68.8%) were non-compliant, while 5 respondents (31.3%) were compliant. Regarding family support compliance, 11 respondents (68.8%) were categorized as non-compliant, and 5 respondents (31.3%) as compliant. The role of healthcare workers showed that 3 respondents (18.8%) reported no involvement, while 13 respondents (81.3%) indicated the presence of support or assistance. The Chi-Square results for the four variables were as follows: compliance with ANC visits (p-value 0.551), compliance with Fe tablet consumption (p-value 0.119), compliance with family support (p-value 0.119), and the role of healthcare workers (p-value 0.247).

Keywords: Anemia, Anemia Factors, ANC Visits, Fe Tablets, Family Support

1. Introduction

The gestation period is a period of growth and development of the fetus towards the birth period, therefore nutritional disorders that occur during pregnancy will have a big impact on the health of the mother and fetus. The problem that often occurs in pregnant women is anemia, anemia is the largest and most difficult micronutrient problem around the world (Tanziha et al., 2016). Anemia is a condition in which red blood cells do not meet the physiological needs of the body, physiological needs can vary from person to person, this can be affected by gender, place of residence, smoking behavior, and pregnancy stage (Ministry of Health, 2022). Maternal mortality is an important indicator of the quality of health services, this anemia problem often occurs in the world and is suffered by more than 600 million people (Nurharsanto & Prayitno, 2017).

World Health Organization (WHO) said that the prevalence of pregnant women worldwide affected by anemia is 41.8%, the prevalence of anemia in pregnant women in the Americas is 24.1%, Europe is 25.1%, the western Pacific is 30.7%, Africa is 57.1%

and in Southeast Asia is 48.2% (Malacca et al., 2023). Anemia is one of the factors that contribute to the high maternal mortality rate, therefore it is recommended to consume Fe tablets, to reduce the mortality rate that occurs in Banten Province (Fakhrurozi, 2024). According to the Ministry of Health, (2018) iron (Fe) tablets are mineral tablets needed by the body for the formation of red blood cells or hemoglobin. Fe is the most important element for the formation of red blood cells.

Iron is naturally obtained from food. If pregnant women lack iron in the food they consume daily, it can cause nutritional anemia disorders (lack of blood). At the UPTD Singandaru Health Center, Serang City, there are 58% pregnant women with anemia in the January-December period in 2022 and in 2023 as much as 60% of this data is obtained from the UPTD Singandaru Health Center. From the results of the data, it is known that at the Singandaru Health Center there are still many pregnant women who do not comply with consuming Fe tablets, so that the incidence of anemia in pregnancy has increased. Based on the above background, the researcher is interested in conducting a study entitled Factors Affecting the Incidence of Anemia in Pregnant Women in the Second Trimester at the UPTD Singandaru Health Center for the period of July-September 2024.

2. Theoretical Background

2.1 Anemia

Anemia is a condition in which the body lacks enough healthy red blood cells to carry adequate oxygen to tissues. It is commonly characterized by symptoms such as fatigue, weakness, pale skin, and shortness of breath. One of the most prevalent causes of anemia is iron deficiency, but it can also result from vitamin B12 deficiency, folic acid deficiency, chronic diseases, or genetic disorders such as thalassemia (World Health Organization [WHO], 2021).

2.2 Factors Contributing to Anemia

Several factors contribute to the development of anemia, including nutritional deficiencies, infections, chronic diseases, and genetic conditions. Poor dietary intake of iron, folate, and vitamin B12 is one of the leading causes, particularly among pregnant women and young children. Additionally, parasitic infections such as malaria and hookworm infestations significantly contribute to anemia in developing countries. Socioeconomic factors, such as poverty and limited access to healthcare, also play a crucial role in the prevalence of anemia (Balarajan et al., 2011).

2.3 ANC (Antenatal Care) Visits and Anemia Prevention

Regular antenatal care (ANC) visits are essential for monitoring maternal health and preventing anemia during pregnancy. ANC services include screening for anemia, nutritional counseling, iron supplementation, and treatment of underlying infections. Pregnant women who attend ANC visits regularly are more likely to receive timely interventions that help prevent complications associated with anemia, such as preterm birth and low birth weight (Kumar et al., 2018).

2.4 Iron (Fe) Tablets and Their Role in Anemia Prevention

Iron supplementation through Fe tablets is one of the most effective strategies to prevent and treat iron deficiency anemia, especially in pregnant women. The WHO recommends daily iron and folic acid supplementation during pregnancy to reduce the risk of maternal anemia, low birth weight, and neonatal mortality. However, adherence

to iron supplementation remains a challenge due to side effects such as nausea, constipation, and gastrointestinal discomfort (WHO, 2021).

2.5 Family Support in Managing Anemia

Family support plays a crucial role in preventing and managing anemia, particularly among pregnant women and children. Encouragement from family members can improve adherence to iron supplementation, promote a healthy diet rich in iron-rich foods, and facilitate access to healthcare services. Studies have shown that women with strong family support are more likely to follow medical advice and maintain proper nutritional intake, reducing the risk of anemia-related complications (Lassi et al., 2016).

3. Methods

In this study, primary data was used with a cross-sectional approach. Cross sectional is a method that studies risk factors with effects, by way of approach, observational or data collection at once. then the researcher observed the Singandaru Health Center in Serang City by collecting data looking at medical records for pregnant women affected by anemia. With a population of 16 people for the period of July – September 2024, the sample in the study was pregnant women affected by anemia with a total sampling technique.

4. Results and Discussion

This study aims to find out the factors of pregnant women affected by anemia with a total of 16 respondents by filling out a questionnaire at the UPTD Singandaru Health Center, Serang City.

4.1 Univariate Analysis

Table 1. ANC Visit Compliance Frequency Distribution

ANC Visit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irregular	10	62.5%	62.5%	62.5
	Orderly	6	37,5%	37,5%	100,0
	Total	16	100,0	100,0	

Based on table 1 above, the compliance of mothers' visits to conduct ANC visits in the non-compliant category was 10 respondents (62.5%) while for the compliant category as many as 6 respondents (37.5%).

Table 2. Fe Consumption Compliance Frequency Distribution

Fe Consumption					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Irregular	11	68,8%	68,8%	68,8
	Orderly	5	31,3%	31,3%	100,0
	Total	16	100,0	100,0	

Based on table 2 above, the compliance with Fe tablet consumption in the non-compliant category was 11 respondents (68.8%). As for the compliant category, there were 5 respondents (31.3%).

Table 3. Family Support Compliance Frequency Distribution

Support					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Supported	11	68,8%	68,8%	68,8
	Support	5	31,3%	31,3%	100,0
	Total	16	100,0	100,0	

Based on table 3 above, the compliance of family support in the non-compliant category was 11 respondents (68.8%) while for the compliant category as many as 5 respondents (31.3%).

Table 4. Distribution of the Role of Health Workers

The Role of Health Workers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No role	3	18,8%	18,8%	18,8
	Role	13	81,3%	81,3%	100,0
	Total	16	100,0	100,0	

Based on table 4 above, for the category of health workers, there was no direct role as many as 3 respondents (18.8) while the role of health workers in the category was 13 respondents (81.3%).

4.2 Bivariate Analysis

The results of the study on the relationship between characteristics regarding ANC compliance, Fe compliance, and family support in pregnant women affected by anemia at the UPTD Singandaru Health Center, Serang City in 2024.

4.2.1 Relationship of ANC compliance to pregnant women affected by anemia

Table 5. Relationship of ANC Compliance with Anemia Pregnant Women

ANC	Non-Compliance	%	Obedient	%	Total	P value
Pregnant Women Have Irregular ANC Visits	8	50.0	2	12.5	62.5	0.551
Pregnant Women Regular ANC Visits	4	25.0	2	12.5	37.5	
Total	12	75.0	4	25.0	100	

Based on table 5.5 above, ANC compliance with the irregular category was 10 (62.5%) and the regular category was 6 (37.5%). The results of the Chi Square test obtained a p value of 0.551 > 0.05 where there was a relationship between ANC compliance with pregnant women affected by anemia at the UPTD Singandaru Health Center, Serang City in 2024, a total of 16 respondents.

4.2.2 The relationship between Fe tablet consumption compliance with pregnant women affected by anemia

Table 6. Compliance Relationship of Fe Tablets Against Anemia Pregnant Women

Fe	Non-Compliance	%	Obedient	%	Total	P value
Pregnant Women Consume Fe Irregularly	7	43.8	4	25.0	68.8	0.119
Pregnant Women Consume Fe Regularly	5	31.3	0	0	31.3	
Total	12	75.0	4	25.0	100	

Based on table 6 above, ANC compliance with the irregular category was 10 (62.5%) and the regular category was 6 (37.5%). The results of the Chi Square test obtained a p value of 0.551 > 0.05 where there was a relationship between ANC compliance with pregnant women affected by anemia at the UPTD Singandaru Health Center, Serang City in 2024, a total of 16 respondents.

4.2.3 Relationship of family support compliance with pregnant women affected by anemia

Table 7. Relationship of Family Support Compliance with Anemia Pregnant Women

Family Support	Non-Compliance	%	Obedient	%	Total	P value
Family Support Not Supportive	7	43.8	4	25.0	68.8	0.119
Supportive Family Support	5	31.3	0	0	31.3	
Total	12	75.0	4	25.0	100	

Based on table 7 above, compliance with consuming Fe tablets with irregular categories was 12 (68.8%) and regular categories were 4 (25.0%). The results of the Chi Square test obtained a p value of 0.119 > 0.05 where there was a relationship of compliance with consuming Fe tablets for pregnant women affected by anemia at the UPTD Puskesmas Singandaru Kota Serang in 2024, a total of 16 respondents.

4.2.4 The relationship between the role of health workers at the Singandaru Health Center, Serang City in 2024

Table 8 Role of Health Workers

The Role of Health Workers	Anemia Pregnant Women				Total	P value
	Role	%	No role	%		
	7	43.8	4	25.0	68.8	0.247
	5	31.3	0	0	31.3	
Total	12	75.0	4	25.0	100%	

Based on table 8 above, the role of health workers in this study is related, the results of the square test get a value of 0.254 > 0.05. At the Singandaru Health Center, Serang City.

4.3 Discussion

1) Based on the data presented, the compliance of pregnant women in undergoing Antenatal Care (ANC) shows that the majority of respondents affected by anemia fall into the non-compliance category, with 10 respondents (62.5%). Meanwhile, only 6 respondents (37.5%) are in the compliance category. Non-compliance with ANC visits can be a contributing factor to the incidence of anemia in pregnant women. Regular ANC check-ups allow healthcare providers to monitor the condition of both the mother and fetus, provide iron (Fe) supplements, and educate pregnant women on a healthy diet to prevent anemia. Lack of compliance with ANC can lead to delays in detecting anemia and other health disorders, thereby increasing the risk of pregnancy complications such as preterm birth or low birth weight (LBW). Several factors may influence the level of compliance among pregnant women in attending ANC visits, including education level, knowledge about the importance of prenatal check-ups, access to healthcare facilities, family support, and socioeconomic conditions. Therefore, interventions that involve health education and improved access to ANC services should be enhanced to reduce the prevalence of anemia in pregnant women.
2) Compliance with the consumption of iron (Fe) tablets among pregnant women affected by anemia shows that the majority fall into the non-compliance category, with 11 respondents (68.8%). Meanwhile, only 5 respondents (31.3%) are categorized as compliant. Non-compliance with Fe tablet consumption can significantly contribute to the high prevalence of anemia in pregnant women. Iron is essential for red blood cell formation, and during pregnancy, the body's demand for iron increases to support fetal development and maternal blood volume expansion. Failure to consume Fe supplements as recommended can lead to iron deficiency anemia, which increases the risk of pregnancy complications such as premature birth, low birth weight (LBW), and maternal health issues. Several factors may influence adherence to Fe tablet consumption, including side effects such as nausea and constipation, lack of awareness regarding the importance of iron supplementation, forgetfulness, and cultural or personal beliefs about medication. Additionally, socioeconomic factors and limited access to healthcare services may also affect compliance. To address this issue, targeted health education campaigns, improved counseling by healthcare providers, and strategies to minimize side effects should be implemented to increase adherence and reduce the incidence of anemia in pregnant women.
3) Compliance with family support among pregnant women shows that the majority fall into the non-compliant category, with 11 respondents (68.8%). Meanwhile, only 5 respondents (31.3%) are in the compliant category. Family support plays a crucial role in ensuring the health and well-being of pregnant women, particularly in promoting adherence to antenatal care (ANC) visits, iron (Fe) tablet consumption, and overall maternal health practices. Lack of family support can contribute to non-compliance with essential prenatal care, leading to an increased risk of anemia and pregnancy complications such as low birth weight (LBW), preterm birth, and maternal health issues. Several factors may influence family support compliance, including cultural beliefs, family awareness of maternal health needs, socioeconomic conditions, and the level of involvement of partners or other family members in pregnancy-related care. Pregnant women who receive strong emotional, financial, and practical support from their families are more likely to attend regular ANC check-ups, maintain a healthy diet, and adhere to iron supplementation. Therefore, strengthening family involvement through health education programs and counseling sessions can

be an effective strategy to improve maternal compliance and reduce the incidence of anemia in pregnant women.

4) The role of health workers in supporting pregnant women shows that the majority of respondents, 13 (81.3%), reported receiving assistance from healthcare providers, while 3 respondents (18.8%) indicated that they did not receive any support. Healthcare workers play a vital role in maternal health by providing essential prenatal care, educating pregnant women about nutrition and iron (Fe) supplementation, and monitoring their overall health to prevent complications such as anemia. Their guidance ensures that pregnant women understand the importance of regular antenatal care (ANC) visits, adherence to Fe tablet consumption, and maintaining a balanced diet to support both maternal and fetal well-being. Despite the high percentage of respondents acknowledging the presence of healthcare support, the existence of a small group without such assistance highlights gaps in healthcare accessibility, awareness, or engagement. Possible barriers include limited healthcare resources, lack of communication between healthcare providers and pregnant women, or personal reluctance to seek medical advice. Strengthening healthcare outreach programs, ensuring active engagement of health workers in maternal health education, and improving accessibility to prenatal services can further enhance maternal compliance and reduce the prevalence of anemia during pregnancy.

5. Conclusion

Based on research that has been conducted by researchers on "Factors Affecting the Incidence of Anemia in Pregnant Women in the Second Trimester at the UPTD Puskesmas Singandaru for the July-September 2024 Period", the following conclusions can be drawn:

1) ANC compliance in pregnant women affected by anemia in the non-compliance category as many as 10 respondents (62.5%). As for the compliant category, there were 6 respondents (37.5%).
2) Compliance with the consumption of Fe tablets in pregnant women affected by anemia in the non-compliance category was 11 respondents (68.8%). As for the compliant category, there were 5 respondents (31.3%).
3) Compliance with family support in pregnant women compliance with family support in the non-compliant category was 11 respondents (68.8%). As for the compliant category, there were 5 respondents (31.3%).
4) The role of health workers in the category of no role was as many as 3 respondents (18.8). Meanwhile, the role of health workers in the category of existing or assisting as many as 13 respondents (81.3%).
5) The results of the chi square of the 4 variables obtained a value, ANC visit compliance received a value of 0.551, Fe tablet consumption compliance received a value of 0.119, family support compliance received a value of 0.119, and the role of health workers received a value of 0.247.

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