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Analysis of factors: Prevalence and determinants of anaemia among pregnant women in Mimika, Indonesia

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Abstract

Background: Anemia in pregnant women remains a chronic issue in Indonesia, with a prevalence of 48.9% based on the 2018 Basic Health Research. A preliminary study at Atuka Health Center, Mimika Regency, found that 4 out of 7 pregnant women had anemia.
Purpose: To analyze the factors influencing the incidence of anemia in pregnant women at Atuka Community Health Center, Mimika Regency.
Method: This observational analytic study used a cross-sectional design with simple random sampling. The sample included 101 multigravida pregnant women. Independent variables were gestational age, pregnancy spacing, and Fe tablet compliance; the dependent variable was anemia incidence. Logistic regression was used for analysis.
Results: Gestational age (p = 0.013), pregnancy spacing (p = 0.022), and Fe tablet compliance (p = 0.005) significantly influenced anemia incidence.
Conclusion: Gestational age, pregnancy spacing, and compliance with Fe tablet consumption significantly influence the incidence of anemia. Compliance with Fe tablet consumption is the most influential factor (OR = 4.320).

Keywords: Age; Anemia; Distance; Fe Tablets; Pregnancy.

INTRODUCTION

Anemia is a condition characterized by a hemoglobin (Hb) level in the blood that is lower than normal. This can be caused by an insufficient number of red blood cells (for example, due to severe bleeding from an accident or other causes) or by an adequate number of red blood cells that contain too little hemoglobin. A pregnant woman is considered anemic if her Hb level is below 11 g/dL (Ani, 2013; Nurbaya, Yusra, & Handayani, 2019; Ministry of Health of the Republic of Indonesia, 2023).

Anemia during pregnancy, also known as gravidarum anemia, is defined as an Hb level of less than 11 g/dL in the first and third trimesters, or less than 10.5 g/dL in the second trimester (Putri & Mudlikah, 2019).

Pregnant women are particularly vulnerable to anemia. In Indonesia, anemia among pregnant women remains a chronic and common health issue (Notoatmodjo, 2007). Anemia is a condition where a person does not have enough healthy red blood cells to carry adequate oxygen to the body's tissues, resulting in lower-than-normal hemoglobin concentrations. Anemia is not a specific disease but rather a sign of an underlying disorder (Tarwoto & Wasnidar, 2016; Jitowiyono, 2018; Proverawati, 2018).

Factors influencing the occurrence of iron deficiency anemia include knowledge, education, socioeconomic status, and spousal support. Direct factors include adherence to iron tablet consumption,

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parity, pregnancy spacing, nutritional status, dietary patterns, infections, cultural practices, and bleeding. Indirect factors include the frequency of antenatal care (ANC) visits and maternal age (Astutik & Ertiana, 2018; Hidayati & Andyarini, 2018).

According to the 2018 Basic Health Research, the prevalence of anemia among pregnant women in Indonesia was 48.9%, consisting of 84% among women aged 15–24, 33.7% among those aged 25–34, 33.6% among those aged 35–44, and 24% among those aged 45–54. Meanwhile, preliminary study data collected on January 20, 2024, at the Atuka Community Health Center in Mimika Regency showed that 4 out of 7 pregnant women were diagnosed with anemia (Ministry of Health of the Republic of Indonesia, 2018).

Based on this phenomenon, the researcher is interested in conducting a study titled: Analysis of Factors Related to the Incidence of Anemia in Pregnant Women at Atuka Community Health Center, Mimika Regency.

RESEARCH METHOD

This study employed an analytical observational approach with a cross-sectional design to examine factors influencing the incidence of anemia in pregnant women. Respondents were selected through a simple random sampling technique to ensure each eligible participant had an equal chance of selection. The study population consisted of all pregnant women who were at least in their second pregnancy (multigravida) and were registered as patients at the Atuka Community Health Center, Mimika Regency, during the study period. The inclusion criteria specified that participants must meet the multigravida requirement, be officially recorded in the health center's registry, be present at the time of data collection, and be willing to take part in the research by providing informed consent. Pregnant women were excluded if they expressed unwillingness to participate, suffered from severe illnesses that could disrupt the data collection process, failed to complete the required information, or were absent during scheduled data collection sessions.

A total of 101 pregnant women meeting these criteria were included as the study sample. The independent variables examined were gestational age, pregnancy spacing, and adherence to Fe (iron) tablet consumption. Gestational age was categorized as *at risk* or *not at risk* based on trimester-specific vulnerability to anemia. Pregnancy spacing was classified as *at risk* if the interval between pregnancies was less than two years, and *not at risk* if two years or more. Adherence to Fe tablet consumption was divided into *compliant* (taking the recommended number of tablets as advised) and *non-compliant* (taking fewer than the recommended amount). The dependent variable was the incidence of anemia, classified into *anemia* or *no anemia* based on hemoglobin (Hb) levels, using the Ministry of Health and World Health Organization (WHO) standards—less than 11 g/dL in the first and third trimesters or less than 10.5 g/dL in the second trimester was considered anemia.

This study has received permission from The Health Research Ethics Committee of STRADA Indonesia University with the number: 001869/EC/KEPK/I/11/2024.

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RESEARCH RESULTS

Table 1. Characteristics of the Participants (N=110)

Variable	Results
Age (n/%)	
17 - 25 years	57/56.4
26 - 35 years	34/33.7
> 35 years	10/9.9
Education (n/%)	
Elementary School	17/16.8
Junior High School	24/23.8
Senior High School	38/37.6
Diploma/Bachelor	22/21.8
Profession (n/%)	
State Civil Apparatus	17/16.8
Self-Employed	10/9.9
Housewife	74/73.3
Gestational Age (n/%)	
At Risk	42/41.6
No Risk	59/58.4
Nutritional Status (n/%)	
At Risk	35/33.3
No Risk	70/66.7
Compliance with Fe Tablet Consumption (n/%)	
No	47/46.5
Yes	54/53.5
Anemia Incidence (n/%)	
Anemia	42/41.6
No Anemia	59/58.4

Based on Table, it is known that the majority of respondents were aged 17–25 years, totaling 57 people (56.4%), nearly half of the respondents had a high school education, totaling 38 people (37.6%). The majority of respondents were housewives, totaling 74 people (73.3%). The majority of respondents had a gestational age categorized as not at risk, totaling 59 people (58.4%) and had a pregnancy interval categorized as not at risk, totaling 70 people (66.7%). The majority of respondent's compliance with Fe tablet consumption was categorized as compliant, totaling 54 people (53.5%) and categorized as not having anemia, totaling 59 people (58.4%).

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Table 2. Analysis of Anemia Incidence Based on Gestational Age, Pregnancy Spacing, and Compliance with Iron Tablet Consumption

Variable	Anemia Incidence				Total	Results	Signification Value
	Anemia		No Anemia				
	N	%	N	%			
Gestational age							
At risk	21	20.8	21	20.8	42	41.6%	0.013
No risk	21	20.8	38	37.6	59	58.4%	
Pregnancy Spacing							
At risk	16	15.9	17	16.8	33	32.7%	0.022
No risk	26	25.7	42	41.6	68	67.3%	
Compliance with FE Tablet Consumption							
Not obey	24	23.8	23	22.8	47	46.6%	0.005
Obedient	18	17.8	36	35.6	54	53.4%	

Based on table, the majority of respondents had a gestational age categorized as not at risk, totaling 59 people (58.4%), and 38 people (37.6%) didn't experience anemia. The majority of respondents had a pregnancy interval categorized as not at risk, totaling 68 people (67.3%), and 42 people (41.6%) didn't experience anemia. The majority of respondents were categorized as compliant with Fe tablet consumption, totaling 54 people (53.4%), and 36 people (35.6%) didn't experience anemia.

DISCUSSION

The significance value is 0.013 < 0.05, indicating that gestational age has a significant effect on the incidence of anemia in pregnant women at Atuka Community Health Center, Mimika Regency. Which also reported a significant relationship between gestational age and the incidence of anemia among pregnant women.

Gestational age is one of the factors that influence iron-deficiency anemia during pregnancy. Pregnant women are at greater risk of developing anemia in the first and third trimesters (Helen, Kriebs, Gregor, & Mahmudah, 2007). The iron requirement during the first trimester is approximately 0.8 mg/day, which increases to around 7.5 mg/day in the third trimester. When this increased need is not matched by appropriate iron intake, the risk of anemia in the third trimester becomes higher (Purwaningrum, 2019; Fauziah & Kasmiati, 2023).

The table shows a significance value of 0.022 < 0.05, indicating that pregnancy spacing has a significant effect on the incidence of anemia among pregnant women.

According to the researcher, short pregnancy spacing (less than 2 years) increases the risk of anemia. This is because the reproductive organs may not have fully recovered their form and function, leading to complications in subsequent pregnancies. Close birth intervals can increase the risk of anemia and associated complications such as low birth weight (LBW), preterm birth, and stillbirth, all of which can negatively affect the delivery process (Heriansyah & Rangkuti, 2020). The significance value is 0.005 < 0.05, indicating a significant effect of adherence to iron tablet consumption on the incidence of anemia in pregnant women. A significant relationship between iron tablet adherence and anemia among pregnant women (p-value: 0.009) (Donsu, 2017; Anggraini, Purnomo, & Trijanto, 2018).

According to the researcher's assumption, adherence to iron tablet consumption reduces the risk of anemia. Pregnant women who comply with iron supplementation are less likely to suffer from iron deficiency. Non-compliance with iron tablet intake can result in insufficient iron levels, increasing the likelihood of anemia. Therefore, ensuring adequate iron intake during pregnancy is essential in preventing anemia (Lone, Qureshi, & Emanuel, 2018).

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The results of data analysis using logistic regression to assess the effect of adherence to iron tablet consumption on the incidence of anemia, the significance value was found to be 0.005 < 0.05. Therefore, it can be concluded that there is a significant effect of adherence to iron tablet consumption on the incidence of anemia among pregnant women at the Atuka Community Health Center, Mimika Regency. A significant relationship between adherence to iron tablet intake (p-value: 0.009) and the incidence of anemia in pregnant women (Ministry of Health of the Republic of Indonesia, 2014; Mardalena, 2017).

According to the researcher's assumptions, adherence to iron tablet consumption influences the occurrence of anemia in pregnant women. Pregnant women who consistently take iron tablets are at a lower risk of developing anemia.

On the other hand, non-adherence to iron tablet consumption may lead to iron deficiency, thereby increasing the risk of anemia during pregnancy. Therefore, ensuring adequate iron intake during pregnancy is crucial to prevent anemia.

CONCLUSION

Based on the research conducted on the Analysis of Factors Influencing the Incidence of Anemia in Pregnant Women at Atuka Community Health Center, Mimika Regency, the following conclusions can be drawn:

1. Gestational age has a significant effect on the incidence of anemia in pregnant women, with a significance value of 0.013.
2. Pregnancy spacing has a significant effect on the incidence of anemia in pregnant women, with a significance value of 0.022.
3. Adherence to iron tablet consumption has a significant effect on the incidence of anemia in pregnant women, with a significance value of 0.005.

Therefore, it is expected that public awareness especially among pregnant women can be increased to pay attention to gestational age, plan appropriate pregnancy spacing, and improve adherence to iron tablet consumption, in order to reduce the risk of anemia.

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