



Analysis of Dietary Patterns and Level of Nutritional Knowledge with the Incidence of Anemia in Pregnant Women in the Work Area of Wanasari Community Health Center, Bekasi Regency

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Abstract

Anemia in pregnant women is said to have the potential to endanger mother and child. For this reason, anemia requires serious attention from all parties involved in health services. This study aims to determine the relationship between diet and level of nutritional knowledge with the incidence of anemia in pregnant women in the Wanasari Community Health Center working area. This type of research is descriptive research with a cross-sectional approach. The population and sample in this study were pregnant women in the third trimester in the work area of the Wanasari Community Health Center who were taken using total sampling technique. Data collection used questionnaires and Hb sahli. The variables studied were the incidence of anemia in pregnant women, eating patterns, and level of nutritional knowledge. Bivariate analysis used the chi square test (CI=95%, $\alpha=0.05$). There are 39.2% of pregnant women experience anemia, 31.4% of pregnant women have poor eating patterns, and 35.3% of pregnant women lack nutritional knowledge. The results of statistical tests on the relationship between diet and the incidence of anemia show a value of $P = 0.000$ ($p < 0.05$), and the level of nutritional knowledge for the incidence of anemia shows a value of $P = 0.000$ ($p < 0.05$). Each variable in this study is related to the incidence of anemia. It is hoped that the public can know and understand the factors related to anemia and prevent anemia from pregnant women to childbirth and breastfeeding.

Keywords: Anemia, pregnant women, diet, nutritional knowledge

Introduction

The prevalence of anemia in pregnancy in Indonesia in 2019 was 48.9%, which has increased significantly compared to the 2013 Rikesdas results of 37.1%. The most common anemia in pregnancy in Indonesia is caused by iron deficiency of 62.3%, which can cause

miscarriage, premature labour, uterine inertia, prolonged labour, uterine atony and cause bleeding and shock. The impact that iron deficiency anemia can cause in pregnant women is a 12% - 28% fetal death rate, 30% perinatal death rate and 7% - 10% neonatal death rate (RI Ministry of Health, 2019).

The direct impact of anemia in pregnant women when the mother gives birth is bleeding at 17.24%. This condition certainly requires special attention to reduce maternal and child mortality rates. Even though the government has implemented a program to control anemia in pregnant women by giving 90 Fe (iron) tablets to pregnant women during pregnancy, the incidence of anemia is still high (Purba, M. E., Nurazizah, 2019). After giving birth, anemia can cause uterine atony, placental retention, difficult-to-heal wounds, *febris puerpuralis* and uterine involution disorders (Alam, 2018).

Several factors also influence anemia, including poor diet (Erni Yetti et al., 2024). A balanced diet consists of foods in appropriate quantities and proportions to meet a person's nutritional needs (Pathak et al., 2024). An unbalanced diet will cause an imbalance of nutrients entering the body and can cause nutritional deficiencies; conversely, an unbalanced consumption pattern will also result in an excess of certain nutrients and cause overnutrition (Waryana, 2014).

Factors influencing diet are knowledge, culture of each region, and socio-economic and social environment (Fitriyani et al., 2024). Pregnant women with anemia can be prevented and treated by improving their diet and healthy eating habits and consuming ingredients rich in protein, iron, and folic acid during pregnancy (Indrayani & Kurniati, 2024). Even though pregnant women stop menstruating, additional iron is still needed for the fetus placenta and increased maternal blood volume. This amount is close to 1000 mg of iron, greater during early pregnancy (Puri et al., 2024). Daily requirements during pregnancy increase from 0.8 per day in the first trimester to 6.3 mg per day in the third trimester. *Intervention*, the easiest and broadest reach is through Posyandu and Puskesmas institutions (Prawiirahardjo, 2018)

Literature Review

Pertiwi's research (2019), the title of the relationship between eating patterns and the incidence of anemia in pregnant women in the Kerjo Health Center Working Area, Karanganyar Regency, research results that 49% of pregnant women have the main eating habit < 3 times a day, 16.3% of pregnant women consume less of 5 types of food a day, 36.7 pregnant women experienced anemia and 63.3% were not anemic, there was a relationship between food frequency and the incidence of anemia ($p=0.002$), there was a relationship between type of food and the incidence of anemia ($p=0.01$), and it was concluded from the research results that there was a relationship between diet and the incidence of anemia in pregnant women. The results of this study are in line with research by Sandrayayuk et al. (2019), entitled the relationship between diet and the incidence of anemia in pregnant women in the third trimester at the Pleret Bantul Community Health Center, with the results that there is a relationship between diet and the incidence of anemia in third trimester pregnant women at the Pleret Bantul Community Health Center. With 43.3% of pregnant women having a good diet, 50% of

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pregnant women having a moderate diet, 6.7% of pregnant women having a poor diet, 43.3% of pregnant women not having anemia, 53.3% of pregnant women having mild anemia, 3.3% moderate anemic pregnant women.

Yuniasih Purwaningrum's 2020 research was titled "Pregnant Women's Knowledge About Nutrition and the Incidence of Anemia During Pregnancy. The research results found that 12 (36%) pregnant women experienced anemia during pregnancy. This is because many pregnant women abstain from certain foods, the mother's lack of knowledge about the importance of nutrition during pregnancy and improper methods of providing food can damage the types of vitamins contained therein. If the food consumed daily does not contain enough iron or the absorption is low, then the body's availability is not enough to meet the need for iron.

Research Method

This research aims to determine the relationship between diet and level of nutritional knowledge and the incidence of anemia in pregnant women in the Wanasari District Health Center, Bekasi, working area, in 2023. This research will be conducted in April 2023. This research method uses a cross sectional design which was carried out in Bekasi Regency. The number of samples in this study was 51 Tm III pregnant women. Data analysis using univariate analysis was carried out on each variable from the research results by describing each variable, including the independent variables and related variables. Biviral analysis is used to find the relationship between the independent variable and the dependent variable using the Chi-Square Test. This relationship is identified by looking at the p-Value

Result

1. Univariate Analysis

Univariate data analysis means simplifying or facilitating data intervention through graphical or tabular presentation. This study aims to look at factors related to anemia in pregnant women. The variables studied include diet and knowledge of the analysis results as follows.

- a. Frequency Distribution of Respondents Based on Anemia in the Wanasari Community Health Center Working Area

Table 4.1 Frequency Distribution of Respondents Based on Anemia

Anemia	f	(%)
Anemia	20	39,2
Not Anemic	31	60,8
Total	51	100

Based on Table 4.1 above, it can be seen that of the 51 respondents who had anemia, there were 20 respondents (39.2%).

b. Frequency Distribution of Respondents Based on Diet in the Wanasari Community Health Center Work Area

Table 4.2 Frequency Distribution of Respondents Based on Dietary Patterns

Dietary habit	f	(%)
Not enough	16	31,4
Enough	15	29,4
Good	20	39,2
Total	51	100

Based on Table 4.2 above, it can be seen that of the 51 respondents with poor eating patterns, there were 16 respondents (31.4%).

c. Frequency Distribution of Respondents Based on Nutrition Knowledge in the Wanasari Community Health Center Working Area

Table 4.3 Frequency Distribution of Respondents Based on Nutrition Knowledge

Nutrition Knowledge	F	(%)
Not enough	18	35,3
Good	33	64,7
Total	51	100

Based on Table 4.3 above, it can be seen that of the 51 respondents with less knowledge, 18 respondents (35.3%).

2. Bivariate Analysis

Bivariate analysis aims to study 2 variables, namely the independent variable and the dependent variable. The statistical test used is *chi-square*, using a confidence level of 95% to determine the relationship between diet and knowledge and anemia in pregnant women; the analysis results are as follows.

a. Relationship between respondents' eating patterns and the incidence of anemia in pregnant women

Table 4.4 Relationship between respondents' eating patterns and incidents Anemia In Pregnant Mothers

Pola Makan	Anemia Pada Ibu Hamil				Total	<i>p value</i>
	Anemia		Tidak Anemia			
	F	%	F	%		
Kurang	14	27,45	2	4	16	0,000
✚ Cukup	4	7,84	11	21,57	15	
Baik	2	4	18	35,29	20	
Total	20	39,29	31	60,86	51	

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Based on Table 4.4, it can be seen that the majority of respondents who have a poor diet experience anemia, namely 14 respondents (27.45%) and of the 15 respondents who have an adequate diet, the majority do not experience anemia, namely 11 respondents (21.57%) while from The majority of 20 respondents who had a good diet did not experience anemia, namely 18 respondents (35.29%).

From the test results *chi square* obtained $p\text{ value} = 0,000$ ($r < 0.05$), which shows a significant relationship between the respondent's diet and the incidence of anemia in pregnant women in the Wanasari Community Health Center work area.

b. Relationship between Nutrition Knowledge Respondents with Anemia in Pregnant Women

Table 4.5 Relationship between respondents' nutritional knowledge and the incidence of anemia in pregnant women

Pengetahuan Gizi	Anemia Pada Ibu Hamil				Total	p value
	Anemia		Tidak Anemia			
	F	%	F	%		
Kurang	17	33,33	1	1,96	18	0,000
Baik	3	5,88	30	60	33	
Total	20	39,21	31	61,96	51	

Based on Table 4.5, it can be seen that the majority of respondents who had poor knowledge experienced anemia, namely 17 respondents (33.33%), while of the 33 respondents who had good knowledge, the majority did not experience anemia, namely 30 respondents (60%).

From the test results *chi square* obtained $p\text{ value} = 0,000$ ($r < 0.05$), which shows a significant relationship between respondents' knowledge and the incidence of anemia in pregnant women in the Wanasari Community Health Center work area.

Discussion

A. Univariate Analysis

1. Frequency Distribution of Respondents Based on Anemia in the Wanasari Community Health Center Working Area

The research showed that of the 51 respondents who experienced anemia in pregnant women, there were 20 respondents (39.2%). Anemia in pregnancy is defined as a decrease in haemoglobin levels of less than 11g/dl during pregnancy in the first trimester and less than 10g/dl during postpartum and the second trimester. Blood will increase during pregnancy, which is commonly called hydremia or hypervolemia. However, the increase in blood cells is less than plasma, resulting in blood thinning. The comparison is as follows: plasma 30%, blood cells 18% and haemoglobin 19%. The increase in blood in pregnancy begins at 10 weeks of gestation and reaches its peak

between 32-36 weeks of gestation (Sepduwiana & Sutrianingsih, 2017). The results of this research are in line with Mariana et al.'s 2017 research on the Relationship between Diet and the Incidence of Anemia in Pregnant Women in the Jalan Gedang Community Health Center Working Area with 8 (26.7%) anemia results and 22 (73.3%) without anemia.

2. Frequency Distribution of Respondents Based on Diet in the Wanasari Community Health Center Work Area

The research results showed that of the 51 respondents who had poor eating patterns, 16 respondents (31.4%) were at risk of experiencing anemia in pregnant women. Diet is a method or effort to regulate the amount and type of food with a description of information, including maintaining a healthy nutritional status and preventing or helping to cure disease. A good diet contains food sources of energy, building substances, and sources of regulatory substances because all nutrients are needed for the growth and maintenance of the body, brain development, and work productivity. They are eaten in sufficient quantities according to needs. A balanced and safe daily diet is useful to achieve and maintain optimal nutritional and health status (Sulistyoningsih, 2020).

This research is in line with research by Pebriana et al. (2021) entitled The Relationship between Dietary Patterns and the Incidence of Anemia in Pregnant Women with the results of the research showing that (52.5%) pregnant women have anemia, (50.0%) mothers have poor eating patterns, and there is a relationship between diet and the incidence of anemia in pregnant women with a value (p value = 0.025).

3. Frequency Distribution of Respondents Based on Nutrition Knowledge in the Wanasari Community Health Center Working Area

The research results showed that of the 51 respondents who had insufficient nutritional knowledge, 18 respondents (35.3%) were at risk of experiencing anemia in pregnant women, according to the Indonesian Ministry of Health (2020). A low level of nutritional knowledge causes pregnant women not to understand how to fulfil the nutrition they need during their pregnancy (Goni et al. 2021).

Good nutritional knowledge is knowing the food ingredients' sources and the right choices, which will influence good food intake. Nutritional knowledge reflected through health behaviour will increase anemia status as seen from normal haemoglobin levels. Knowledge about anemia includes understanding symptoms, causes, dangers/consequences and efforts to prevent anemia. Nutrition can influence the mother's anemia status. The better the knowledge of women of childbearing age about anemia, the better the Hb levels will determine the mother's anemia status, which is normal or not anemia (Argana, 2019).

This is in line with Purwaningrum's research, 2019, entitled Knowledge of Pregnant Women About Nutrition with the Occurrence of Anemia During Pregnancy. The research results showed that 8 (25%) pregnant women had good knowledge about nutrition, 1 pregnant mother was anemia, and 7 pregnant women were not anemia 13

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(40%) were sufficient, 3 pregnant women were anemic, and 10 pregnant women were not anemic, less than 11 (34%), 8 pregnant women were anemic, and 3 pregnant women were not anemic.

B. Bivariate Analysis

1. Relationship between respondents' eating patterns and the incidence of anemia in pregnant women

From the test results *chi square* obtained $p\text{ value} = 0,000$ ($r < 0.05$), which shows a significant relationship between the respondent's diet and the incidence of anemia in pregnant women in the Wanasari Community Health Center work area.

This is in accordance with the opinion that the poorer the diet, the higher the incidence of anemia in pregnant women (Amiruddin, 2017). A healthy diet with a balanced menu is very important for the development of the fetus in the womb. But sometimes prospective mothers don't pay attention to this. This is how the fetus in the womb becomes the seat until the baby is born. As expectant mothers, women should be encouraged to eat foods that contain lots of nutrients. Because during pregnancy, the need for calcium, iron and folic acid increases (Manuaba, 2018).

The mother's diet during pregnancy requires additional iron and multivitamins; her need for iron almost doubles. To get more benefits from iron, mothers should consume lots of vegetables, such as beans, artichokes and red beans, and combine them with foods that contain vitamin C, such as citrus fruits, broccoli, bell peppers and strawberries. This is because plant iron is not absorbed as effectively as iron from red meat, fish and poultry. So, mothers need vitamin C, which helps them absorb this mineral (Sulistyoningsih, 2017).

2. Relationship between respondents' nutritional knowledge and the incidence of anemia in pregnant women

From the test results *chi square* obtained $p\text{ value} = 0,000$ ($r < 0.05$), which shows a significant relationship between respondents' knowledge and the incidence of anemia in pregnant women in the Wanasari Community Health Center work area.

This is in line with Purwaningsih's research, 2017, entitled Knowledge of Pregnant Women About Nutrition and the Incidence of Anemia During Pregnancy, with the research results showing a relationship between knowledge of pregnant women about nutrition and the incidence of anemia during pregnancy. The Somers test obtained a value of $p = 0.011$, which is smaller than a <0.05 . So, it can be concluded that a lack of knowledge of pregnant women can cause anemia during pregnancy (Purwaningsih, 2017).

Pregnant women's knowledge about nutrition plays an important role in fulfilling maternal nutrition. Good nutrition for pregnant women is needed so fetal growth runs quickly and does not experience obstacles. Lack of knowledge of pregnant women

regarding the benefits of nutrition during pregnancy can cause pregnant women to lack nutrition. Iron deficiency anaemia can occur if pregnant women experience malnutrition, especially iron and folic acid (Purwaningsih, 2016).

Conclusion

There were still respondents experiencing anemia, namely 20 respondents (39.2%). There are still 16 respondents (31.4%) with poor eating patterns. Still, 18 respondents (35.3%) have insufficient nutritional knowledge. There is a significant relationship between the respondent's diet and the incidence of anemia in pregnant women, with a p value of 0.000. There is a significant relationship between nutritional knowledge. Respondents with the incidence of anemia in pregnant women with a p value of 0.000

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