

Relationship Between Diet Patterns, Sleep Quality, and Nutritional Status Towards Anemia Incidence in Pregnant Women in The Work Area of Pulosari Community Health Center, Koranji Village, Pandeglang Regency, Banten in 2023

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Abstract

Background: Pregnancy is a very important period for the formation of the quality of human resources in the future, because the child's growth and development will be very much determined by the conditions when the fetus is in the womb. This is related to nutritional problems in pregnant women. One of the most common nutritional disorders and a major nutritional problem in Indonesia is anemia. **Objective:** The relationship between diet, sleep quality, and nutritional status on the incidence of anemia in pregnant women in the work area of the Pulosari Health Center, Koranji Village, Pandeglang Regency, Banten in 2023. **Methodology:** This study used an observational research type with a cross-sectional design. The sample in this study was 61 respondents, all pregnant women. Sampling used an accidental research instrument technique for dietary pattern variables using a food record sheet, sleep quality using the PSQI instrument, and for nutritional status using a questionnaire sheet in calculating LILA Data were analyzed using univariate and bivariate analyses with the chi-square statistical test. **Results:** The results of a univariate analysis of diet, sleep quality, and nutritional status in pregnant women showed that the majority of pregnant women were not anemic, 72.1% of pregnant women who had moderate eating patterns were 34.4%, and 24.6% had poor eating patterns. The results of the bivariate analysis show that the p-value after it is carried out is 0.000, so that the comparison results obtained are 0.000 < 0.05. The quality of sleep is good several 49 pregnant women (80.3%), while the

respondents who have not experienced a change or have less sleep quality by 12 pregnant women(19.7%). Analysis of nutritional status with a risk of 50.8% and nutritional status of pregnant women as normal as 49.2%. **Conclusions:** most pregnant women have good eating patterns, sleep quality, and nutritional status; most pregnant women experience no anemia; there is an influence of diet, sleep quality, and nutritional status on the incidence of anemia in pregnant women. It is expected that pregnant women can improve their diet, sleep quality, and nutritional status to prevent anemia.

Keywords: Diet, sleep quality, nutritional status, anemia, pregnant women

Introduction

Pregnant women are a group vulnerable to malnutrition. Inability to meet nutritional intake needs during pregnancy will cause Chronic Energy Deficiency (CED) and anemia, and increase the risk of illness and even death in pregnant women (Sri M et al, 2019). Prevalence of iron deficiency anemia in pregnant women in Indonesia. Based on basic health research in 2018, the prevalence of anemia in pregnant women increased by 11.8% from 2013 (37.1%) to 48.9%, with 95% of cases caused by iron deficiency. This condition states that anemia is quite high in Indonesia and shows a figure exceeding a serious public health problem, with an anemia prevalence limit of 40% (Ministry of Health of the Republic of Indonesia, 2018). According to data from the Pulosari Health Center, the incidence of anemia in pregnant women in 2023 was 123 people, from the target number of pregnant women in 2023 of 208 people

According to Handayani (2016), factors related to the incidence of anemia in pregnant women in addition to Fe consumption, nutritional status. When pregnant, a mother needs more balanced nutrition than before pregnancy, both sources of calories (carbohydrates and fat), protein, folic acid, VIT B12, iron, zinc, calcium, vitamin C, vitamin A, vitamin D, vitamin B6, vitamin E, including the fulfillment of nutritional content needed for the fetus including DHA, ganglioside (GA), folic acid, iron, EFA, FE, and choline. (Ministry of Health, 2015).

The main etiology of anemia in pregnant women is a lack of iron. Iron deficiency anemia, often referred to as Iron Nutritional Anemia (AGB), can occur because the body lacks iron, folic acid, and vitamin B12. Low iron availability and inadequate iron content are the causes of iron deficiency anemia (Kartika, 2012).

In addition to diet, several things affect the availability of iron, one of which is the way food is processed. The way food is processed can affect the bioavailability

(availability) of iron in food, for example, the washing method can remove iron from water. In addition, the heating process of food can also affect the content of substances in food (Mryana, Wulandari, & Padila, 2018)

The nutritional status of pregnant women is the fulfillment of nutrition for pregnant women, between the balance of nutritional needs and intake, which greatly affects the development of their fetus. If a mother's nutritional status is lacking, it will affect the body mass index and arm circumference of pregnant women during pregnancy process and the development of their fetus (Nofita & Darmawati, 2016).

Based on the results of a preliminary study conducted in the Pulosari Health Center Work Area, Pandeglang Regency in 2023, data was obtained in the form of the number of pregnant women in 2023, namely 208 people. Of that number, there were 123 pregnant women with anemia. Based on an initial survey in the Pulosari Health Center work area on June 20, 2023, 5 pregnant women who visited the Pulosari Health Center had Hb levels <11 gr/dl. The author conducted interviews regarding iron, folic acid, and vitamin B12 deficiencies in pregnant women. Based on the background above, the author is interested in researching "The Relationship Between Diet, Rest Patterns and Nutritional Status in Anemic Pregnant Women in the Pulosari Health Center Work Area, Koranji Village, Pandeglang Regency, Banten 2023."

Method

The method should be structured as follows:

1. Research design

This research design uses cross-sectional because the research data (independent variables and dependent variables) were measured at the same time/at the same time.

2. Setting and samples

The population in this study was all pregnant women, namely 154 people in the Pulosari Health Center UPT Work Area in June 2023. The sampling technique used in the study was the incidental technique, namely a sampling determination technique based on coincidence, namely anyone who coincidentally meets the researcher can be used as a sample, if it is considered that the person who was met coincidentally matches the data source (Sugiyono, 2018). The sample size taken in this study was 61 respondents.

3. Intervention (applies to experimental studies)

The independent variable (independent variable) in this study is diet, while the dependent variable (dependent variable) in this study is anemia in pregnant women in the Working Area of the Pulosari Health Center UPT, Koraniji Village, Pandeglang Regency, Banten in 2023. The instrument used is a food consumption survey sheet using the estimated food record method, which is a sheet for assessing nutritional status, which is converted into the nutrisurvey application and calculated using the Individual Nutrition Adequacy Figure formula and the percentage of consumption levels.

4. Measurement and data collection

Data collection tools in this study there are 2 types of questionnaires related to the study, namely: Pittsburgh Sleep Quality Index (PSQI) Questionnaire Pittsburgh Sleep Quality Index is a questionnaire that aims to determine a person's subjective sleep quality for the past 1 month, PSQI has 9 questions that form 7 assessment components, namely subjective sleep quality, sleep latency, sleep duration, daily sleep efficiency, sleep disorders, use of sleeping pills and dysfunction of daytime activities. The final assessment of the PSQI is obtained in the form of a Sleep Index, which is obtained by filling out the PSQI questionnaire with a certain weighting. Through this index, it can be seen how good a person's sleep quality is and vice versa. The final score of the PSQI questionnaire is, if the value is > 5 indicates poor sleep quality, and if the value is ≤ 5 indicates good sleep quality

5. Data analysis;

Data analysis in this study used a quantitative approach, namely univariate (descriptive) analysis and bivariate analysis.

6. Trustworthiness/rigor (applies to qualitative studies)

Respondents must meet the specified criteria. The informed consent sheet must be completed with the title of the research and the benefits of the research. If the respondent refuses, the researcher must not force and respect their rights. Anonymity, the researcher does not include the respondent's name to maintain the respondent's

confidentiality

Results

Univariate Analysis

Pregnant Women's Diet

Table 1: Frequency Distribution of Dietary Patterns for Anemia in Pregnant Women in the Working Area of the Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Dietary habit	Frequency (f)	Percentage (%)
Good	14	23
Medium	21	34,4
Lack	15	24,6
Deficit	11	18
Total	61	100

Based on the results of table 1, it is known that of the 61 respondents, 14 (23%) of pregnant women had a good diet, 21 (34.4%) had a moderate diet, 15 (24.6%) had a poor diet and 11 (18%) had a deficit diet.

Sleep Quality of Pregnant Women

Table 2: Frequency Distribution of Sleep Quality Patterns of Pregnant Women in the Working Area of Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Sleep Quality	Frequency (n)	Percentage (%)
Good	49	80,3
Lack	12	19,7
Total	61	100

Table 2 shows that of the 61 respondents, almost all had good sleep quality, namely 49 pregnant women (80.3%). In contrast, respondents who had not experienced any changes or had poor sleep quality were 12 pregnant women (19.7%).

Nutritional Status of Pregnant Women

Table 3: Frequency Distribution of Nutritional Status Quality of Pregnant Women in the Working Area of Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Nutritional Status of Pregnant Women	Frekuensi (n)	Percentage (%)
Risk	31	50,8
Normal	30	49,2
Total	61	100

The results of the study in Table 3 show that the nutritional status of mothers was poor as many as 31 pregnant women (50.8%), and the nutritional status was good as many as

30 pregnant women (49.2%).

Occurrence of Anemia in Pregnant Women

Table 4: Frequency Distribution of Anemia Incidence in Pregnant Women in the Working Area of Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Diagnosis	Frequency(f)	Persentase (%)
No Anemia	44	72,1
Anemia	17	27,9
Total	61	100

Based on the results of Table 4, it is known that of the 61 respondents, 44 (72.1%) pregnant women were not anemic, and 17 (27.9%) pregnant women were anemic.

Bivariate Analysis

Relationship between Diet and Anemia Incidence

Table 5: Relationship between Diet and Anemia Incidence of Pregnant Women in the Working Area of Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Pulosari Health Center Of 1, Kloranj Village, Pangajene Regency, Banten in 2023								
Anemia Occurrence				Total		P value		
		Anemia		No Anemia				
		F	%	f	%	f	%	
Dietary habit	Deficit	9	81,8	2	18,2	11	100	0,001
	Lack	6	40	9	60	15	100	
	Medium	1	4,8	20	95,2	21	100	
	Good	1	7,1	13	92,9	14	100	
Total		17	33,4	44	66,6	61	100	

Based on the results of Table 5, it is known that out of 61 respondents, pregnant women who are not anemic with a good diet are 13 people (92.9%), while those who are anemic are 1 person (7.1%). For pregnant women who are not anemic with a moderate diet are 20 people (95.2%), while those who are anemic are 1 person (4.8%). For pregnant women who are not anemic with a poor diet are 9 (60%), while those who are anemic are 6 people (40%) and for pregnant women who are not anemic with a deficit diet are 2 people (18.2%), while there are 9 people (81.8%) pregnant women who are anemic with a deficit diet. From the results of statistical tests using Chi Square calculation analysis, a p-value of 0.001 was obtained, where this value will be compared with the value of $\alpha = 0.05$ so that the comparison result is $0.001 < 0.05$ or it can be concluded that there is a significant relationship between diet and anemia in

pregnant women.

Relationship between Sleep Quality and Anemia Incidence

Table 6: Relationship between Sleep Quality and the Incidence of Anemia in Pregnant Women in the Working Area of Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Variable		Anemia Occurrence				Total		P value
		Anemia		No Anemia				
		f	%	f	%	f	%	
Sleep	Not Good	10	83,3	2	16,7	12	100	0,001
Quality	good	7	14,3	42	85,7	49	100	

Based on Table 6, shows that out of 61 respondents, pregnant women who are not anemic with poor sleep quality are 2 people (16.7%), while for good sleep quality, there are 42 people (85.7%). Pregnant women who are anemic with poor sleep quality are 10 people (83.3%), while for good sleep quality, there are 7 people (14.3%).

From the results of statistical tests using Chi Square calculation analysis, the p-value = 0.001 is obtained where the value will be compared with the value of $\alpha = 0.05$ so that the comparison result is $0.001 < 0.05$ or it can be concluded that there is a significant relationship between sleep quality and anemia in pregnant women.

Relationship between Nutritional Status and Incidence of Anemia

Table 7: Relationship between Nutritional Status and the Incidence of Anemia in Pregnant Women in the Working Area of the Pulosari Health Center UPT, Koranji Village, Pandeglang Regency, Banten in 2023

Variable		Anemia Occurrence				Total		P value
		Anemia		No Anemia				
		f	%	f	%	f	%	
Nutritional Status	Risk	17	54,8	14	45.2	31	100	0,001
	Normal	0	0	30	100	30	100	
Total		17	27,4	44	72,6	61	100	

Based on Table 7 shows that out of 61 respondents, pregnant women who are not anemic with a nutritional risk status are 14 people (45.2%), while for normal nutritional status, there are 30 people (100%). There are no pregnant women who are anemic with normal nutritional status, while pregnant women who are anemic for nutritional risk status are 17 people (54.8%).

From the results of statistical tests using Chi Square calculation analysis, a p-value of

0.001 was obtained where this value will be compared with the value of $\alpha = 0.05$ so that the comparison result is $0.001 < 0.05$ or it can be concluded that there is a significant relationship between nutritional status and anemia in pregnant women.

Discussion

Relationship between Diet Patterns and the Incidence of Anemia in Pregnant Women in the Working Area of Pulosari Health Center, Koranji Village, Pandegalnng Regency, Banten.

The current study showed that pregnant women who were not anemic with a good diet were 13 people (92.9%), while those with anemia were 1 person (7.1%). For pregnant women who were not anemic, a moderate diet was 20 people (95.2%), while those with anemia were 1 person (4.8%). For pregnant women who were not anemic with a poor diet were 9 (60%), while those with anemia were 6 people (40%) and for pregnant women who were not anemic with a deficit diet were 2 people (18.2%), while there were 9 people (81.8%) pregnant women who were anemic with a deficit diet. Based on the results of the food record, most pregnant women who had a good diet did not experience anemia, but from the results of the study some pregnant women had a good diet but experienced anemia. The pregnant woman who experienced anemia was 19 years old and did not consume pregnancy milk, and drank tea. This is in line with research by Dina Mariana (2018) that there were pregnant women who had a good diet but experienced anemia. This is because pregnant women who consume good diets can experience anemia because many factors affect not only their diet but some that affect it, namely not consuming iron tablets or a type of folic acid, not consuming pregnancy milk, being pregnant at a risky age, failure to absorb iron due to drinking tea or coffee. The results of this study are in line with those conducted by Meihartati et al., (2017) the more often pregnant women consume foods containing non-heme iron, the lower the incidence of anemia. Dietary patterns in pregnant women will affect the incidence of anemia, the better the diet of pregnant women, the lower the risk of anemia, conversely, a diet that is lacking in pregnant women in meeting the nutrients needed by mothers during pregnancy, the higher the incidence of anemia in pregnant women. Pregnant women must also consume a variety of foods because one food with another food has different nutritional content, if the food eaten during pregnancy varies, these nutritional

needs will be met according to the Adequate Nutritional Intake (AKG) of pregnant women, then the mother's diet will increase research, as well as other variables that have not been studied by researchers.

Relationship between Nutritional Status and the Incidence of Anemia in Pregnant Women in the Working Area of Pulosari Health Center, Koranji Village, Pandegaln Regency, Banten

Current respondent results, pregnant women who are not anemic with a nutritional risk status are 14 people (45.2%), while for normal nutritional status, there are 30 people (100%). There are no pregnant women who are anemic with normal nutritional status, while pregnant women who are anemic for nutritional risk status are 17 people (54.8%).

And found that there is a relationship between nutritional status and the incidence of anemia in pregnant women at the Mowila Health Center in 2020 ($X^2 = 8.766$; $p\text{-value} = 0.003$). Pregnant women with poor nutritional status are at risk of experiencing anemia in their pregnancy by 3.658 times compared to pregnant women with good nutritional status ($OR = 3.68$; $CI_{95\%} = 1.608-8.321$).

The nutritional status of pregnant women is a state of balance in the body of pregnant women as a result of food intake and the use of nutrients by the body for survival in maintaining the function of its organs. One way to measure nutritional status in pregnant women is by examining the upper arm circumference (LILA). The results of a study conducted by Sunarti and Kartini (2019) showed that nutritional status factors affect the incidence of anemia in pregnant women. Pregnant women with poor nutritional status will be at 3.514 times greater risk of experiencing anemia compared to mothers with good nutritional status. The results of a similar study that also supported the study conducted by Dhini et al. (2019), stated that there was a relationship between nutritional status and the incidence of anemia in pregnant women ($p\text{value} = 0.001$). Where pregnant women with poor nutritional status are at 0.300 times greater risk of experiencing anemia than pregnant women with good nutritional status. Iron is one of the main points that helps the formation of red blood cells. Iron deficiency in pregnant women can interfere with energy metabolism so that it can cause a decrease in the ability of the body's organs to work. According to (Abrori et al., 2017) not all pregnant

women with poor nutritional status can experience anemia, this can be caused because even though the results of the mother's LILA measurement are <23.5 cm, the mother's nutritional needs, especially iron, are still met so that red blood cells can be produced sufficiently for the needs of the mother and fetus. However, the study's results still indicate that mothers with poor nutritional status are at a 2.667 times higher risk of experiencing anemia compared to pregnant women with good nutritional status. This shows that mothers still have a higher risk of experiencing anemia if their nutritional needs are not met according to their gestational age. Likewise, pregnant women with good nutritional status can still experience anemia during pregnancy. This can be caused by other risk factors such as pregnancy spacing, maternal age and parity (Abrori et al., 2017). It can be assumed that pregnant women who suffer from KEK are at risk of suffering from anemia. Pregnant women who suffer from KEK and anemia have a greater risk of illness, especially in the third trimester of pregnancy compared to normal pregnant women. Pregnant women with poor nutritional status will be at greater risk of experiencing anemia than women with good nutritional status. This is because one of the causes of anemia is iron deficiency due to unhealthy eating patterns and the regulation of the amount and type that is not in accordance with the balanced nutrition of pregnant women so that the mother experiences KEK or the mother's nutritional status is lacking. When pregnant women experience an increase in nutritional needs, especially iron, which is needed by the body. During pregnancy, the amount of blood in the mother's body increases up to 50% more than the body's normal condition. So the mother needs a lot of nutrients, especially iron which forms hemoglobin to compensate for the increase in blood volume. If the need for iron is not met, the formation of hemoglobin will not be met according to the mother's blood volume needs so that the mother experiences anemia.

Conclusion

From the results of the research that has been conducted, the following conclusions can be drawn:

- a. The majority of respondents are pregnant women who have a moderate diet, as many as 21 people (34.4%),
- b. The majority of respondents are pregnant women who have good sleep quality, as

many as 49 people (80.3%).

- c. The majority of respondents are pregnant women who have a risk nutritional status, as many as 31 people (50.8%).
- d. The majority of respondents are pregnant women who are not anemic as many as 44 (72.1%).
- e. The results of this study show a significant relationship between diet, ($0.001 < 0.05$) sleep quality ($0.001 < 0.05$) and nutritional status ($0.001 < 0.05$) and the incidence of anemia in pregnant women in the work area of the Pulosari Health Center, Koranji Village, Pandeglang Regency, Banten in 2023.

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