THE RELATIONSHIP BETWEEN THE HABIT OF CONSUMING FOODS CONTAINING IRON WITH THE INCIDENCE OF ANEMIA IN PREGNANT WOMEN AT THE SULTAN DAULAT DISTRICT HEALTH CENTER IN 2025

Ira Sanjaya[1], Irma Noviana[2], Ricca Nophia Amra[3], Fitriani Bancin[4], Rahayu Ningsih[5], Desy Ardian[6]

[1,2,3,4,5,6]Akbid Medica Bakti Persada

irasanjayaa99@gmail.com , irmanoviana314@gmail.com, ricca.ubudiyah@gmail.com, Fitribancin03@gmail.com, rahayuningsihrakasiwi@gmail.com, desymunthe365@gmail.com

ABSTRACT

Anemia in pregnancy is a major health problem in developing countries with high morbidity rates in pregnant women. The average pregnancy caused by anemia in Asia is estimated at 72.6%. The high prevalence of anemia in pregnant women is a problem currently being faced by the Indonesian government because it is related to morbidity and mortality in pregnant women. The purpose of this study was to determine the relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center. This type of research is an analytical survey study using a cross-sectional approach. The population of this study was all pregnant women who visited in January - December 2023 as many as 115 people. The sampling technique was purposive sampling with a sample size of 32 respondents. Data collection using questionnaires and Data analysis using the Chi-square test at a 95% confidence level. The results of the study obtained a pattern of habits of consuming foods containing iron, the majority of which were lacking as many as 20 people (62.5%) and the majority of pregnant women in the third trimester were anemic as many as 19 people (59.4%). The conclusion is that there is a significant relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center p-value = 0.001. Advice to pregnant women to maintain their intake of foods containing iron from vegetables, fish or meat every day to prevent anemia and pregnant women should consume iron tablets (Fe) during pregnancy regularly.

Keywords: Foods Containing Iron, Anemia, Pregnant Women

Introduction

Anemia in pregnancy is a major health problem in developing countries with high morbidity rates in pregnant women. The average pregnancy caused by anemia in Asia is estimated at 72.6% (Mail, et al., 2023). The high prevalence of anemia in pregnant women is a problem currently being faced by the Indonesian government because it is related to morbidity and mortality in pregnant women. Pregnant women who experience anemia in the first and third trimesters have hemoglobin levels of less than 11 gr/dl and in the second trimester less than 10.5 gr/dl (Hariati et al., 2019).

The need for iron increases during pregnancy to form maternal and fetal blood. Another thing that causes the need for iron to increase during pregnancy is that pregnant women lose a lot of blood during the process childbirth. Because before pregnancy, mothers, especially in Indonesia, often experience iron deficiency anemia, in addition to having to increase consumption of foods high in iron content, pregnant women must still be given iron supplements (Wildayani, 2021).

Data from the World Health Organization (WHO) notes that the maternal mortality rate in the world is still high, namely more than 300,000 deaths each year due to bleeding, hypertension and sepsis. WHO states that the incidence of pregnancy anemia ranges from 20.0% to 89.0% by setting Hb 11 g% (g/dl) as the basis (WHO, 2021). Likewise in Indonesia there are 3 main causes of maternal death in Indonesia in 2018-2019, namely bleeding, hypertension and infection. One of the causes of bleeding is because the mother suffers from anemia (Ministry of Health of the Republic of Indonesia, 2020). In Indonesia, the incidence of anemia in pregnant women is still high. According to the 2018 Riskesdas data, the number of pregnant women experiencing anemia was 37.1% and increased in 2018 to 48.9%. Anemia in pregnant women based on age 15-24 years was 84.6%, age 25-34 years was 33.7%, age 36-44 years was 33.6% and age 45-54 years was 28%. (Ministry of Health of the Republic of Indonesia, 2018). The highest number of cases of anemia in pregnant women is still dominated in rural areas, namely 49.5% and in urban areas by 48.3%. In developing countries, maternal mortality rates are highly related to the incidence of anemia in pregnancy.

The prevalence of anemia in North Sumatra Province is in the range of 15 to 39% (North Sumatra Health Office, 2019). Anemia has been a priority health problem at the Sultan Daulat District Health Center in recent years. The prevalence of anemia in pregnant women in Puskesmas Sialang Buah was quite high in 2019 (41.9%), in 2018 it was (40.7%), in 2017 (40.5%) and in 2016 (32.3%).

The prevalence of anemia in pregnant women is still quite high so that health strategies and programs are needed that focus on overcoming the high prevalence of anemia by utilizing existing resources. The incidence of anemia in pregnant women in the first trimester of pregnancy is 20%, the second trimester is 70% and the third trimester is 70%. This is because in the first trimester of pregnancy the iron needed is small because there is no menstruation and fetal growth is still slow. In the third trimester of pregnancy, the incidence of anemia is associated with an increase in gestational age which causes iron in the blood to be divided for fetal growth in the womb, thereby reducing the binding of iron in the mother's blood. Increasing gestational age is also related to physiological changes in pregnant women, starting in the 6th week and peaking in the 26th week. Increased plasma volume causes hemodilution and results in decreased hemoglobin levels (Yuliastuti, et al., 2024).

Several factors can trigger anemia in pregnant women, including lack of energy intake, lack of folic acid intake and inadequate knowledge. An imbalance in energy and nutrient intake can cause several effects, namely decreased hemoglobin levels, such as iron deficiency in the body. Low hemoglobin levels can cause blood to be unable to bind oxygen effectively from the lungs to the entire body, so that it can interfere with concentration, reduce endurance, and

reduce activity (Asiffa & Umaysaroh, 2020).

Based on the results of a preliminary study conducted at the Sultan Daulat District Health Center in 2023, data was obtained in the form of the number of pregnant women in 2023, namely 214 people.

Of that number, there were 115 pregnant women with anemia. Based on an initial survey at the Sultan Daulat District Health Center on December 21-25, 2023, 12 pregnant women visited the Sultan Daulat District Health Center, of which 4 people (33.3%) had Hb levels> 11 gr / dl and 8 people (66.6%) had Hb levels <11 gr / dl. In addition, the results of a preliminary study of 5 pregnant women with anemia, namely the mother's gestational age is trimester III and the mother stated that anemia is a lack of blood, but the mother did not know the cause of anemia other than fatigue.

The researcher conducted an interview regarding the eating patterns consumed, the pregnant woman said that her eating patterns were irregular and the food menu served was also simple, the mother still often consumed fast food that was easy to process such as instant noodles. Based on the background above, the author is interested in conducting research on "the relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center in 2024".

Research Method

This type of research is an analytical survey research using a cross-sectional approach. The population of this study was all pregnant women who visited in January - December 2023 as many as 115 people.

The sampling technique is purposive sampling with a sample size of 32 respondents. Data collection using a 2x 24-hour food recall questionnaire, while Hb levels are obtained by examination using a digital Hb level measuring device (easy touch). Data analysis using the Pearson product moment test.

Result

Based on table 1 shows that the distribution based on the age category of respondents is mostly > 35 years old as many as 17 people (53.1%). Characteristics of the number of children, the majority of mothers have ≥ 3 children as many as 17 people (53.1%). Characteristics of Fe tablet consumption, the majority do not consume it routinely as many as 19 people (59.4%). And the majority of respondents have a history of emesis gravidarum as many as 18 people (56.3%).

Based on table 2. that respondents who have a good diet are fewer, namely 12 pregnant women (37.5%), while respondents who have a poor diet are more, namely 20 pregnant women (62.5%).

Based on table 3, it shows that respondents who experience anemia are more, namely 19 pregnant women (59.4%), while respondents who are anemic are fewer, namely 13 pregnant women (40.6%). Based on table 4 shows that respondents consume iron well with non-anemic mothers (69.2%) and anemic mothers (15.8%).

For respondents consuming less iron with anemic mothers (84.2%) and non-anemic mothers (30.8%). Based on the results of statistical tests using the Pearson product moment test, a P-value of 0.001 (P-value <0.05) was obtained,

meaning a significant relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center.

1. **Respondent Characteristics**

Table 1. Distribution of Respondent Characteristics at Sultan Daulat District Health Center (n = 32)

Age	Frequency	Percentage (%)
< 20 years	5	15.6
20 - 35 years	10	31.3
> 35 years	17	53.1
Number of children	**Frequency**	**Percentage (%)**
≥ 3 children	17	53.1
< 3 children	15	46.9
Consumption of Fe Tablets	**Frequency**	**Percentage (%)**
Regularly	13	40.6
Not Regularly	19	59.4
History of Emesis Gravidarum	**Frequency**	**Percentage (%)**
Not experienced	14	43.8
Experiencing	18	56.3

Tabel 2. Distribution Based on the Habit of Consuming Foods Containing Iron in Pregnant Women at the Sultan Daulat District Health Center in 2024 (n=32)

Habit of Consuming Foods Containing Iron	Frequency	Percentage (%)
Good	12	37.5
Not enough	20	62.5

Table 3. Frequency Distribution Based on the Incidence of Anemia in Pregnant Women at the Sultan Daulat District Health Center in 2024 (n=32)

Anemia occurrence	Frequency	Percentage (%)
Not anemic	13	40.6
Anemic	19	59.4

able 3. Cross Tabulation of the Relationship between the Habit of Consuming Foods Containing Iron and the Incidence of Anemia in Pregnant Women at the Sultan Daulat District Health Center in 2024

Consumption of Iron Rich Foods	Anemia Occurrence						*p*	Coefficient value
	Not anemic		Anemic		Total			
	f	%	f	%	f	%		
Good	9	69.2	3	15.8	12	37.5	0,001	0,542
Not enough	4	30.8	16	84,2	20	62.5		
Total	**13**	**100,0**	**19**	**100,0**	**32**	**100,0**		

Discussion

1. The habit of consuming foods containing iron

Based on the results of the study, descriptively, it can be described that respondents who have a good diet are 12 people (37.5%) and those who have a poor diet are 20 people (62.5%). The diversity of food in the appropriate amount and proportion can be seen from the composition of a balanced diet, so as to meet a person's nutritional needs for growth, development and life processes. The main sources of nutrition that complement each other are carbohydrates, proteins and fats.

The results of the frequency distribution of respondents with good eating patterns where based on the results of the food record sheet obtained that the respondents' eating patterns were varied, but the respondents in their eating portions were not consistent, sometimes eating 2 times a day but snacking a lot, respondents consumed fruit every day but only 1 piece or 1 fruit. As respondents have a sufficient eating pattern consuming food 3 times a day, the types of food consumed are rice, side dishes, vegetables, and fruit. The types of side dishes consumed are vegetable such as tempeh, tofu and nuts and animal side dishes are meat, fish, liver, shrimp, eggs. Animal side dishes are consumed on average 1 piece and vegetable such as Tempeh and tofu are consumed 2-3 pieces in one meal.

The results of the frequency distribution with poor eating patterns, where based on the results of the food record sheet that respondents who have poor eating patterns only eat staple foods 3 times a day, and do not eat healthy snacks such as fruits a day, and do not consume pregnancy milk and there are some pregnant women who do not routinely consume fish and pregnant women also do not consume vegetables because they do not like them. In pregnant women who experience poor eating patterns, they only consume rice 3 times a day, do not consume additional foods. This poor eating pattern, the majority of pregnant women are picky about food, do not like fishy smelling foods, and are picky about consuming fruits such as not liking bananas, papaya, guava because they smell.

2. Occurrence of Anemia in Pregnant Women

The results of the study showed that there were 19 pregnant women (59.4%) who experienced anemia and 13 pregnant women (40.6%) who did not experience anemia. According to the theory, anemia is a condition where there is a decrease in hemoglobin levels, hematocrit and the number of erythrocytes below normal values. In people with anemia, more often called anemia, the level of red blood cells is below normal values. The cause could be due to a lack of nutrients for blood formation, such as iron, folic acid and vitamin B12. But what often happens is iron deficiency anemia (Purba, et al., 2022).

Age is a risk factor for anemia in pregnant women. A mother's age is related to a woman's reproductive organs. A healthy and safe reproductive age is 20-35 years. In the study, it was found that the majority of respondents were > 35 years old, as many as 17 people (53.1%) and the minority were <20 years old, as many as 7 people (15.6%). Pregnancy at the age of <20 years and over 35 years can cause anemia because in pregnancy at the age of <20 years biologically it is not optimal, emotions tend to be unstable, mentality is not mature so that it is easy to experience shocks which result in a lack of attention to meeting nutritional needs during pregnancy. While at the age of > 35 years it is related to decline and decreased immunity and various diseases that often occur at that age (Asri, et al., 2023).

Meanwhile, for the characteristics of the number of children, the majority are ≥ 3 children, as many as 17 people (53.1%) and the minority are <3 children, as many as 15 people (46.9%). In pregnant women and frequent childbirth, there will be more iron loss in the body because frequent pregnancies in women cause reduced iron reserves in the body. And in repeated pregnancies can cause damage to blood vessels and uterine walls which can affect the circulation of nutrients to the fetus, so that the higher the parity of the mother, the higher the risk of anemia (Elvira, et al., 2023).

Based on the characteristics of Fe tablet consumption, the majority do not consume it routinely as many as 19 people (59.4%) and the minority routinely consume it as many as 13 people (40.6%). According to the researcher, based on interviews, the majority of respondents did not consume Fe tablets because respondents thought consuming Fe tablets could cause disturbing side effects such as constipation and nausea so that respondents tended not to consume the tablets given, and some respondents did not routinely because they forgot. And respondents routinely consumed Fe tablets because respondents already knew about the benefits of iron tablets for themselves and their fetuses so that respondents diligently consumed Fe tablets.

Based on the characteristics of emesis history, the majority of respondents had a history of emesis gravidarum as many as 18 people (56.3%) and the minority did not experience it as many as 14 people (43.8%). This emesis gravidarum causes a decrease in appetite so that there is a change in electrolyte balance with potassium, calcium, and sodium so that there is a change in body metabolism and causes pregnant women to become anemic. Pregnant women who experience emesis gravidarum every day with a frequency of nausea and vomiting above 10 times a day are more likely to experience anemia compared to pregnant women who do not experience emesis gravidarum (Usboko, et al., 2020).

3. **The Relationship between the Habit of Consuming Foods Containing Iron and the Incidence of Anemia in**

Pregnant Women at the Sultan Daulat District Health

using the Pearson product moment test, a P-value of 0.001 (P-value <0.05) was obtained, meaning a significant relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center. Research (Istiqumilaily, et al, 2023) with data collection conducted through interviews using Food Recall 2 x 24 hours showed that the results of the Fisher's exact test produced a p value of 0.003, meaning that there is a relationship between consumption of foods high in iron and the incidence of anemia in pregnant women in the Paspan Banyuwangi Health Center Area.

This study is in line with the results conducted by (Sopiah, et al., 2022) obtained that the p-value = 0.000 that there is a significant relationship between diet and anemia in pregnant women. The results of this study are in accordance with the Gozali research journal (2018), that there is a significant relationship (p <0.05) between diet and the incidence of anemia in pregnant women. From the calculated r coefficient = 0.93 (93%). This means that 93% of anemia is influenced by diet. While 7% is caused by other factors. This means that the worse the diet, the higher the incidence of anemia in pregnant women. A good diet for pregnant women must meet the sources of carbohydrates, protein and fat as well as vitamins and minerals, which are adjusted to the needs during pregnancy. Diet here concerns the type and amount of food, where the type and amount of food that must be met during pregnancy. Poor diet is one of the factors that causes anemia during pregnancy, especially due to lack of consumption of foods rich in iron.

A balanced diet is a way of regulating the amount and type of food in the form of a daily food arrangement containing nutrients consisting of six substances, namely carbohydrates, proteins, fats, vitamins, minerals, water. and a variety of foods. Consumption of a balanced diet is an arrangement of the amount of food consumed with balanced nutrition in the body and contains two substances, namely: building substances and regulating substances. Balanced is food that has a lot of nutritional content and nutritional intake found in staple foods, animal and vegetable side dishes, vegetables, and fruits (Herawati & Sattu, 2023).

The way to overcome iron deficiency in the body is by consuming 13 mg of iron (Fe) per day and increasing the intake of foods that are sources of iron (Fe). Food sources of iron include nuts, green vegetables and fruits. There are many types of fruit that can increase blood Hb levels such as red dragon fruit. Dragon fruit is one of the fruits that is rich in vitamin C and iron. In 100 grams of red dragon fruit contains 55-66 mg of iron and 8-9 mg of vitamin C. While the iron requirement of pregnant women is 6.3 mg per day. Dragon fruit also contains vitamin B12 (riboflavin) which functions to keep the nervous system healthy and smooth the DNA replication process. In addition, vitamin B12 also helps regulate the formation of red blood cells (hemoglobin) in the.

From the description above, researchers conclude that pregnant women are advised to consume a variety of foods containing iron. Iron foods can be obtained by consuming meat (especially red meat) such as beef. Iron can be found in dark

green vegetables such as spinach and kale, beans, peas, and nuts. It should be noted that the iron found in meat is more easily absorbed by the body than the iron in vegetables or in processed foods such as cereals fortified with iron. The more often a woman experiences pregnancy and childbirth, the more iron she will lose and become more anemic. If the supply of Fe reserves is minimal, then each pregnancy will drain the body's Fe reserves and eventually cause anemia in the next pregnancy. Therefore, it is necessary to ensure that the gap between pregnancies is not too short, at least more than 2 years. A good diet during pregnancy can help the body cope with the special demands of pregnancy, and has a positive effect on the health of the baby.

Conclusion and Suggestion

Based on the research results, it can be concluded that there is a significant relationship between the habit of consuming foods containing iron and the incidence of anemia in pregnant women at the Sultan Daulat District Health Center with a p-value = 0.001.

References

Asri, N. K., Putri, D. W., & Parthasutema, I. A. (2023). Consumption of TTD on the Incidence of Anemia in Pregnant Women in the Third Trimester at the Denpasar Utara I Health Center. Midwinerslion Journal of Health Stikes Buleleng, 8 (1), 34 -44.

ealth Office of North Sumatra Province. (2019). Health Profile of North Sumatra Province 2018. Medan

Gozali, W. (2018). Relationship of Diet Patterns with Anemia Events in Pregnant Women in the Work Area of Buleleng Health Center III. International Journal of Natural Sciences and Engineering, 2 (3), 117-122.

Hariati, H., Bagu, A. A., & Thamrin, A. I. (2019). Anemia Event in Pregnant Women: (Analytical Study at Pertiwi Health Center in Makassar, South Sulawesi). Scientific Journal of Health (JIKA), 1 (1), 8–17. Ministry of Health of the Republic of Indonesia. (2018). Main Results of Health Research.

Herawati, & Sattu, M. (2023). Basic Knowledge of Nutrition for Pregnant Women. Jambi: PT. Sonpeda Pulishing Indonesia.

Istiqumilaily, R., Nadhiroh, S. R., Sauma, C. A., & Amardiani, Z. G. (2023). Consumption of Foods High in Iron and the Incidence of Anemia in Pregnant Women. Suara Forikes Health Research Journal, 14 (1), 149 - 153.

Ministry of Health of the Republic of Indonesia. (2020). Guidelines for Providing Iron Supplement Tablets for Pregnant Women During the Pandemic. Directorate of Community Nutrition, Ministry of Health of the Republic of Indonesia

Mail, E., Diana, S., Rufaida, Z., Yuliani, F., & Wari, F. E. (2023). Midwifery Care for Pregnancy. Malang: Rena Cipta Mandiri.

Prastika, D. A., Febiani, A. S., & Astyandini, B. (2023). Comparison of Dragon Fruit and Green Bean Juice Consumption on Increasing Hb Levels in Anemic Pregnant Women in the Mranggen II Health Center, Mranggen District, Demak Regency. Journal of Midwifery, 11 (1), 1 - 10.

Purba, T. H., Soromi, S., Demitri, A., & Maisyaroh, Y. (2022). The Relationship of Vegetable and Fruit Consumption to the Incidence of Anemia in Adolescent Girls in Mabar

Village, Medan City. Scientia Journal, 11(2), 61 - 70.

Sopiah, P., Rukmaini, & Suciawati, A. (2022). The Effect of Diet on Anemia in Pregnant Women in the Working Area of the Tinewati Health Center UPTD, Singaparna District, Tasikmalaya Regency, West Java 2022. Journal of Midwifery Information (JoMI), 3 (1), 276 - 283.

Usboko MP, Anggraeni S. (2020). Analysis of Emesis Gravidarum with the Incidence of Anemia in Gravida Mothers at the Mrican Health Center, Kediri City. J Heal Sci Community, 1(2), 130–41.

Wildayani, D. (2021). Monograph: The Effect of Zinc and Iron Tablets on Hemoglobin and Ferritin Levels in Pregnant Women with Iron Deficiency Anemia. Padang: Pustaka Galeri Mandiri.

Yosephina, B., Darwis, Eliana, Maigoda, T., Yuniarti, Wahyudi, A., et al. (2019). Handbook of Kua Officers as 1000 Hpk Counselors in Educating Prospective Brides and Grooms Towards a Stunting-Free Bengkulu. Yogyakarta: CV Budi Utama.

Yuliastuti, M. E., Rahayu, S. Y., Cynthia, Khairiyah, M., & Hasyim, H. (2024). Prevalence and Risk Factors of Anemia in the First, Second and Third Trimesters of Pregnancy in Indonesia: A Systematic Review. Permas Scientific Journal: Kendal Health College Scientific Journal, 14 (2), 725 - 736.