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FACTORS ASSOCIATED WITH THE INCIDENCE OF ANEMIA IN PREGNANT WOMEN

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ABSTRACT

Anemia in pregnant women is a public health problem that has a significant impact on the mother and fetus. Anemia can increase the risk of premature birth, low birth weight, and maternal and infant mortality. In the working area of Puskesmas Wonggeduku Barat, the prevalence of anemia in pregnant women is still relatively high (25.6%) so it is necessary to conduct research to find out the risk factors more specifically. This study aims to determine the risk factors for Fe tablet consumption compliance, knowledge and diet with the incidence of anemia in pregnant women in the working area of Puskesmas Wonggeduku Barat. This type of research is observational analytic with case control study design. The population in this study consisted of a case population of 39 people and a control population of 39 people, with the total sample size being the number of case populations plus the number of control populations using a 1:1 ratio with matching gestational age, namely trimester I, II, and III so that the total sample size was 78 people. The results of the Odds Ratio test showed that compliance with Fe tablet consumption obtained an OR value of 1.758, knowledge obtained an OR value of 1.777 and diet obtained an OR value of 1.657. Because OR> 1, compliance with Fe tablet consumption, knowledge and diet are risk factors for the incidence of anemia in pregnant women in the working area of Wonggeduku Barat Health Center.

Keywords : Anemia, Pregnancy, Fe tablets, Knowledge, Dietary habit.

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INTRODUCTION

Anemia is a symptom of an underlying condition, such as loss of blood components, inadequate elements or lack of nutrients needed for the formation of red blood cells resulting in a decrease in the oxygen-carrying capacity of the blood (Utami, et al. 2020). Anemia is a global public health problem in both developing and developed countries. Anemia occurs at all stages of the life cycle, is the most important factor in the increasing burden of disease worldwide, commonly occurring in childhood and pregnant women (WHO, 2019).

Globally, the prevalence of anemia in pregnant women worldwide is 41.8%. Specifically at the age of 15-49 years, the prevalence of anemia in pregnant women in the world is estimated at 38% or around 32.4 million people. If broken down, the prevalence of anemia in pregnant women is estimated in Asia at 48.2%, Africa 57.1%, America 24.1% and Europe 25.1%. (Astriana, 2019). The consequences of morbidity associated with anemia can affect cognitive and motor development and low productivity which can be associated with the birth of low birth weight babies and an increased risk of maternal and perinatal mortality (Rukiyah & Yulianti, 2019).

Based on national data from the Basic Health Research (Riskesdas) in 2020, there were 48.9% of pregnant women who experienced anemia. This number has increased compared to data from Riskesdas in 2018 which was only 37.1%. From the 2018 data, seen from the age of the mother, anemia occurred mostly at the age of 15-24 years by 84.6%, age 25-34 years by 33.7%, age 35-44 years by 33.6% and age 45-54 years by 24%. The data accumulated from all regions of the province, one of which is Southeast Sulawesi. If you pay attention to the data on the prevalence of anemia in pregnant women in the southeast Sulawesi region, it is 34.70%, which is accumulated from all city districts (Indonesian Health Profile, 2023). While the prevalence data of anemia in pregnant women in the Konawe district area is 11.20% (Dinkes Konawe, 2023).

The data on the prevalence of anemia illustrates that anemia still occurs in pregnant women. Many factors cause anemia. In general, one of the factors causing anemia is the food factor, where the lack of diet on iron intake from food, and also the low level of iron absorption from food. The composition of the community's food which contains more factors that can inhibit iron absorption (inhibitor factors) such as fiber, phytates and tannins is the cause of the low level of iron absorption into the body. While factors that can increase iron absorption such as vitamin C and animal protein are very small proportions in the daily diet (Nursetia A.N. & Susindra, 2020).

Another factor that causes anemia is pregnant women who have poor knowledge so that it can cause anemia. In addition to not maintaining a balanced diet, it is also supported by the lack of knowledge of pregnant women about the increased need for iron (Fe) during pregnancy, making it easy for iron deficiency anemia to occur in pregnant women (Manuaba, 2020).

Preventive efforts in dealing with the incidence of anemia in pregnant women are the need for pregnant women to maintain and consume nutritious and iron-containing foods so that the mother's knowledge is needed in maintaining the health of the mother and fetus, where according to the WHO (Prawihardjo, 2020).

One of the factors for the high incidence of anemia is the lack of knowledge about anemia, lack of knowledge about the signs and symptoms and the impact that causes anemia, so that the knowledge of pregnant women about health, especially anemia, will affect the attitude of pregnant women about the implementation of anemia prevention

programs. The results of research by Ariyani, R. (2019), showed that on average (63%) second trimester pregnant women experienced anemia, the average diet of pregnant women in the second trimester (65%) was unhealthy. The same results were also obtained by Fatimah et al. (2019), in Maros Regency, nutritional anemia was found to be 79.4% with the amount of protein, vitamin C, vitamin B6, iron and zinc intake below the RDA.

Diet in pregnant women during pregnancy changes according to the period of pregnancy that takes place, during the first trimester of pregnancy, pregnant women will experience a decrease in appetite, often nausea and vomiting. Whereas in the second trimester the appetite of pregnant women usually increases. In the third quarter of pregnancy, the fetus experiences very rapid growth and development. The results of Hazelina's research (2019) showed that on average, a small proportion of 6 respondents or (15%) had a good diet, a smaller proportion obtained 6 respondents or (15%) had a sufficient diet, and most of the 28 respondents or (70%) had a poor diet.

Based on preliminary observations made by the author at Puskesmas Wonggeduku Barat, through visits and interviews with one of the midwives at the Puskesmas, information was obtained that the prevalence of anemia among pregnant women at Puskesmas Wonggeduku Barat in the period January to March 2023 was 39 (25.6%) pregnant women suffering from anemia.

Based on the background description, this study was conducted to analyze the relationship between knowledge, consumption of fe tablets and diet with the incidence of anemia in pregnant women.

METHOD

The type of research used in this study is observational analytic with a case control study approach which aims to see the determinants associated with the incidence of anemia in pregnant women, namely the general factors that affect anemia in pregnant women, namely Fe tablet consumption, maternal knowledge about anemia and diet in pregnant women. This research was conducted in December 2023, in the working area of Wonggeduku Barat Health Center, Konawe Regency.

The population in this study consisted of a case population, namely pregnant women who checked their pregnancy and experienced anemia with the results of the examination of hemoglobin levels below 11 gr / dl as many as 39 pregnant women. While the control population is pregnant women who check their pregnancy and do not experience anemia in the working area of Puskesmas Wonggeduku Barat in 2023 as many as 78 people. the case sample used in this study was 39 pregnant women who were taken using the total sampling formula, while the control sample was taken using simple random sampling technique. To determine the sample size of the case group and control group using a ratio of 1: 1 which is adjusted to the gestational age of trimester I, II, and III, so that the total sample in this study was 78 samples.

The inclusion criteria for the case group in this study were anemic pregnant women in trimester I, II and III with hemoglobin levels < 11 gr/dl (suffering from anemia), while the inclusion criteria in the control group were pregnant women with gestational age reaching trimester I, II, and III with hemoglobin levels ≥11 gr/dl (not suffering from anemia).

The flow of this study begins with the identification of pregnant women registered at Wonggeduku Barat Health Center. This study will adhere to the applicable principles of

research ethics. Before conducting the study, the researcher will seek approval from the respondents through informed consent, which explains the purpose of the study, the procedures to be carried out, and the respondent's right to not participate or withdraw at any time without any consequences. In addition, the identity and personal information of respondents will be kept confidential and only used for research purposes.

The instrument used in this study was a questionnaire to measure pregnant women's knowledge about anemia, Fe tablet consumption, and diet. The data collection technique used in this study was direct interviews with pregnant women who became respondents. The data that has been collected will be analyzed descriptively and analytically. For descriptive analysis, researchers will present data in the form of frequency distribution and percentage to describe the characteristics of respondents. For analytic analysis, researchers will use the chi-square test and odds ratio using the spss version 25.0 application.

RESULTS

Table 1 shows that the characteristics of respondents according to age in the case and control groups were mostly aged 26-30 years by 61.5%, the level of education in the case group mostly had a high school education by 64.1%, and in the control group had a college education by 53.8%, the work in the case group mostly worked as housewives by 61.5%, and in the control group worked as private employees by 51.3%.

Table 1. Distribution of Respondent Characteristics by Age, Education and Occupation

Respondent Characteristics	Case		Control	
	n	*f*	n	*f*
Age				
21 - 25 years old	13	33,3	12	30,8
26 - 30 years old	24	61,5	24	61,5
> 30 years old	2	5,12	3	7,7
Education				
Senior high school	25	64,1	14	35,9
Academi	3	7,7	4	10,3
College	11	28,2	21	53,8
Work				
Housewife	24	61,5	2	5,1
Civil servants	7	17,9	6	15,4
Private employee	4	10,3	20	51,3
Self-Employed	4	10,3	11	28,2
Total	**39**	**100**	**39**	**100**

Table 2 shows that in the high risk case group there were 24 respondents with a percentage of 61.5%. At low risk as many as 15 respondents with a percentage of 38.5%. While in the high risk control group there were 26 respondents with a percentage of 66.7%. At low risk were 13 respondents with a percentage of 33.3%.

Table 2: Relationship between adherence to Fe tablet consumption and the incidence of anemia in pregnant women

Tablet Consumption Fe	Case		Control		*OR*	CI 95%
	n	*f*	n	*f*		
High risk	24	61,5	26	66,7		
Low risk	15	38,5	13	3,33	**1.758**	**0.555 - 4.255**
Total	**39**	**100**	**39**	**100**		

Based on table 3 shows that at the level of knowledge of pregnant women respondents in the case group who had a high risk amounted to 13 respondents or 33.3% and those with low risk amounted to 26 respondents or 66.7%. While in the control group who had a high risk amounted to 9 respondents or 23.1% and who had a low risk amounted to 30 respondents or 76.9%.

The Odds Ratio (OR) test results obtained an OR value of 1.777 because OR> 1 then the knowledge of pregnant women is a risk factor for the incidence of anemia in pregnant women in the working area of the West Wonggeduku puskesmas. The OR value of 1.777 means that pregnant women with poor knowledge are 1.777 times more at risk than pregnant women with good knowledge.

Table 3. Relationship between Knowledge and the incidence of Anemia in Pregnant Women

Knowledge	Case		Control		*OR*	CI 95%
	N	*f*	n	*F*		
High risk	13	33,3	9	23,1		
Low risk	26	66,7	30	76,9	**1.777**	**0.534 - 4.213**
Total	**39**	**100**	**39**	**100**		

Based on table 4, it shows that in the diet of pregnant women, respondents in the case group who have high risk are 16 respondents or 41.0% and those who have low risk are 23 respondents or 59.0%. While in the control group who have high risk are 8 respondents or 20.5% and those who have low risk are 31 respondents or 79.5%. The Odds Ratio (OR) test results obtained an OR value of 1.777 means that pregnant women with poor knowledge are 1.777 times more at risk than pregnant women with good knowledge.

Table 4. Relationship of Eating to the incidence of Anemia in Pregnant Women

Diet	Kasus		Kontrol		*OR*	CI 95%
	n	*f*	n	*F*		
High risk	16	41,0	8	20,5		
Low risk	23	59,0	31	79,5	**1.657**	**0.739 - 1.534**
Total	**39**	**100**	**39**	**100**		

DISCUSSION

From the results of the study, there were five pregnant women with adequate Fe intake or classified as an obedient category in consuming Fe and still experiencing anemia. This is because most pregnant women have the habit of eating instant noodles and drinking tea after meals, which is a factor in the low consumption and absorption of iron in the body of pregnant women. Another reason for the relationship between Fe intake and the incidence of anemia is because there are many food taboos or taboos for consumption by pregnant women such as the prohibition of consuming shrimp which is an iron absorption facilitator. This prohibition will result in the inhibition of iron absorption in pregnant women which will lead to anemia.

This is in line with research by Amaliana (2018), the role of midwives who lack influence on the non-compliance of pregnant women in taking Fe tablets because midwives are the first health workers who are directly related to pregnant women, so that the compliance or non-compliance of pregnant women in taking Fe tablets is indeed strongly influenced by midwives. Non-compliance of pregnant women in consuming Fe tablets gives a greater chance of developing anemia.

The results of other studies conducted by Noverstiti (2019), mothers who obediently consume Fe tablets do not experience anemia and fetal well-being, but if pregnant women do not obediently consume Fe tablets, they will be at higher risk of anemia. The results of this study are in accordance with the hypothesis formulated in the study, namely that there is a relationship between the compliance of pregnant women taking Fe tablets in pregnant women with the incidence of anemia.

The incidence of anemia can be avoided by obediently consuming Fe tablets according to the rules, but it can also be supported by the fulfillment of nutrients derived from food consumed and also avoiding factors that can make pregnant women at risk for anemia.

From the results of this study, it can be concluded that there is a relationship between knowledge and the incidence of anemia in pregnant women in the West Wonggeduku Health Center Working Area in 2024.

This is in line with research by Ningsih and Rahmawati (2019), which states that the knowledge of pregnant women about anemia greatly influences the behavior of pregnant women. Lack of knowledge about anemia can result in less than optimal health behavior of pregnant women to prevent pregnancy anemia.

Other research results conducted by Hastuti and Birahy (2019), at the Kedumundu Health Center, Semarang City. It was found that pregnant women who had a low level of knowledge about anemia as many as 94.4% experienced anemia. The results of the study showed an OR value of 1.5, so it can be concluded that there is a significant relationship between the level of knowledge about anemia and the incidence of anemia in pregnant women. According to (Notoatmodjo, 2019), knowledge of an object consists of different levels. Someone who is knowledgeable or knows about something and then understands it is expected to be able to apply their knowledge in everyday life so that they can radiate themselves to something that is applied whether the impact is in accordance with the goals to be achieved.

Pregnant women with less knowledge are 1.657 times more at risk than pregnant women with a good diet. According to the theory that a balanced diet, namely according to needs accompanied by the selection of the right food ingredients will produce good nutritional status. Food intake that exceeds the body's needs will cause excess weight and other diseases caused by excess nutrients. Conversely, food intake less than what is

needed will cause the body to become thin and susceptible to disease (Sulistyoningsih, 2019).

This is in line with research by Mariana (2019), stating that there is a significant relationship between diet and the incidence of anemia in pregnant women, with an OR value of 1.719. Respondents with unhealthy diets are at greater risk of anemia than those with healthy diets. This is because one of the causes of anemia is iron deficiency due to unhealthy diets and the regulation of the amount and type that is not in accordance with the balanced nutrition of pregnant women. One of the factors that influences pregnant women to experience anemia is an unhealthy diet.

Other research results conducted by Wahyuni (2019), which stated that the triggering factor for the high incidence of anemia is because the majority of pregnant women are deficient in iron which is influenced by an imbalance in maintaining diet and lack of food consumption. There is still a lack of awareness of behavior in maintaining a good and healthy diet, behavior in maintaining diet can also be influenced by lack of knowledge.

An unbalanced diet, such as the iron content of the food consumed is not sufficient to meet the needs, will cause anemia in pregnancy. Pay attention to the composition of the dishes at each meal and eat foods that contain a lot of iron from animal foods (meat, fish, chicken, liver, eggs) and plant foods (dark green vegetables, nuts, tempeh). It is also necessary to eat vegetables and fruits that contain a lot of vitamin C (katuk leaves, cassava leaves, spinach, guava, tomatoes, oranges and pineapples) which are very useful for increasing the absorption of iron in the intestines.

CONCLUSION

Based on the results of the research and discussion that have been presented, the author can draw the conclusion that compliance with Fe tablet consumption, knowledge and diet are risk factors for anemia in pregnant women in the work area of the West Wonggeduku Health Center.

RECOMMENDATION

It is recommended for pregnant women to increase their knowledge regarding anemia and how to prevent it. Pregnant women must have good knowledge about healthy eating patterns and maintain a healthy diet so that they can avoid anemia.

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