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The effect of maternal parity on the incidence of anemia in pregnant women at the pampang health center Makassar

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ABSTRACT

Pregnant women are a target group that requires more attention because they are vulnerable to nutritional status problems. One of the problems affected by nutritional status is anemia. Anemia in pregnant women is generally caused by iron deficiency. One of the internal factors that cause anemia is parity, which is a cause of particular concern because it is a dominating risk factor in pregnant women with anemia. This study aimed to determine the effect of parity on the incidence of anemia in pregnant women. The research method uses a quantitative design with a cross-sectional approach. The population was all pregnant women at the Pampang Primary Health Center in Makassar City. The samples were 239 pregnant women selected using a purposive sampling technique. Data analysis used the Chi-Square formula. The results indicated that pregnant women with anemia were 72.4%, and there was a significant relationship between parity and the incidence of anemia in pregnant women with a p-value of 0.000. Therefore, parity has a substantial connection with the incidence of anemia in pregnant women at the Pampang Health Center in Makassar City.
Keywords: Parity, Anemia, Pregnant Women

1. INTRODUCTION

Pregnant women are one of the target groups that must be given more or special attention because they are included in groups vulnerable to nutritional status problems. One of the problems affected by nutritional status is anemia (Aznam & Inayati, 2021). Anemia is the most challenging micronutrient problem to overcome globally and also occurs in many pregnant women. More than 40% of the population has anemia. According to WHO (World Health Organization), anemia in Southeast Asia is highly

classified compared to other areas such as America, Europe, Asia Pacific, and the Eastern Mediterranean (Shah et al., 2020).

National Basic Health Research data in 2018 showed that the prevalence of pregnant women experiencing anemia in Indonesia was 48%, proving that anemia cases in pregnant women are still high and most occur due to iron deficiency (Kemenkes RI, 2018). The incidence of anemia in pregnant women in Indonesia increased, fluctuating from 2016 to 2019. In 2019 and 2020, it decreased; anemia is also used to indicate high and low-quality nutritional health. Based on data from WHO, as many as 40% of deaths in pregnant women in developing countries are caused by anemia during pregnancy. This high enough number makes anemia in pregnant women a significant health problem in developing countries. Anemia is a condition where the number of red blood cells or hemoglobin levels is below average, so it can cause the distribution of oxygen by the blood throughout the body to be disrupted. According to WHO, a pregnant woman is said to have anemia if hemoglobin levels are less than 11 mg/dl in the first and third trimesters, then if hemoglobin levels are less than 10.5 g/dl in the second trimester or hematocrit less than 37%. In pregnancy, there is an increase in plasma volume, blood circulation, and red blood cell volume so that hemodilution occurs, which can decrease hemoglobin levels in the blood. Therefore, pregnant women will be more easily anemic (Ekasari et al., 2022).

Anemia in pregnancy due to iron deficiency, or potential iron deficiency, can also be caused by folic acid and vitamin B12 deficiency due to low iron availability or inadequate intake. Some people think that anemia is a normal thing experienced by pregnant women and argue that the condition will improve on its own without special treatment. If not handled properly, it will harm the welfare of the mother and fetus. Anemia in pregnancy influences maternal and infant mortality and morbidity. Pregnant women who suffer from anemia are at high risk of experiencing preeclampsia, shortness of breath, bleeding during pregnancy, hypovolemic shock to the risk of death, while in infants, at risk of experiencing low birth weight events, fetal death in utero, fetal infection, premature birth, congenital disabilities and even neonatal death (Tiwari & Mishra, 2020).

Several conditions can cause anemia in pregnancy; these conditions are influenced by two factors, namely external and internal factors. External factors include education, economy, socio-culture, and employment. Internal factors include age, pregnancy spacing, parity, congenital diseases, or conditions during pregnancy. Parity is a cause that has exceptional attention because it is one of the dominating risk factors in pregnant women with anemia. Pregnant women who have a history of giving birth twice or too often can affect the mother's physical and mental condition, impacting iron needs for the mother and the fetus she contains. Mother and fetus need iron many

times, that is, 2 mg/day in early pregnancy to reach 7 mg/day—iron requirements during pregnancy range from 800 to 1200 mg overall. High parity rates can also cause various health problems, as evidenced by increased maternal and fetal mortality rates at parity above two (Imai, 2020). Underlying causes of nutritional anemia include inadequate intake, absorption, increased nutrient loss, excessive need, and insufficient utilization of hematopoietic nutrients (Lipoeto et al., 2020).

2. METHODS

The research design used was quantitative study analytics to evaluate the connection between age, parity, distance pregnancy, education, and work with an incidence of maternal anemia pregnant at the Health Center Pampang. The approach study used was quantitative with a cross-sectional design. The cross-sectional design links research between independent variables or factor risk with the dependent variable or effect on the object research and is measured simultaneously. This study got data from record medical form hemoglobin levels in mothers who did control at the Health Center Pampang Makassar City with consideration criteria inclusion and criteria exclusion. The population in this research was the whole pregnant mothers at the Health Center Pampang Makassar City. The samples were selected using a purposive sampling technique. The data was the medical record of pregnant mothers with anemia in the health center of Pampang in Makassar City with inclusion and exclusion criteria. A big sample used in this study was taken using the Slovin formula.

Data was not taken directly from research respondents. In addition to primary data, secondary data was used with a view record of medical data in the Health Center. Secondary data included the patient's name, address, age, parity, pregnancy distance, education, work, and Hb levels. Data were obtained from medical patient records at the Health Center Pampang. This research used inclusion criteria from medical pregnant mother records with anemia during pregnancy. As for the exclusion criteria, among them were medical pregnant mother records that were not completed, a record of medical pregnant mothers showing pregnancy complications, and a medical record showing disease innate to pregnant mothers.

Data processing steps were carried out in several stages. The researchers obtained medical records of patients' history of anemia. Then, data coding was done by giving signs or patient codes with the appropriate history of anemia with Hb levels. Data was analyzed by inputting data into a computer program to simplify distribution frequency. Data were described in tables to make it easy for data tabulation to analyze the data accordingly in objective research. Researchers did withdrawal conclusion and verification by looking for meaningful connections between variables gained and described it in narrative form. Furthermore, the last data analysis was used to test hypothesis research

to know whether Ho or Ha. Deep data analysis study tests influenced each variable of maternal anemia pregnant.

Analysis univariate was done descriptively. Each variable was in table distribution frequency or average value. The middle score was marked for continuous data. Bivariate analysis was done to evaluate the connection between two variables, dependent and independent variables. The analysis technique used was the chi-square test with statistical test software. Multivariate analysis was carried out to determine the most influential independent variable (parity) to the dependent variable (incidence of anemia) in the pregnant mothers using logistic regression statistical test.

This study followed research ethics, including submitting research agreement ethics to the research committee and applying permission letters. Patients' identities never would be revealed so that none feel harmed, and no coercion or intervention of the study respondents during the data collection process.

3. RESULTS AND DISCUSSION

Incidence of Anemia

The following table illustrates the distribution of patients' status:

Table 1. Distribution of Respondents Based on Anemia Status

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Anemia	173	72.4	72.4	72.4
	Not Anemia	66	27.6	27.6	100.0
	Total	239	100.0	100.0	

Source: Data from Pampang Health Center in Makassar City in 2021

Table 1 shows the pregnant mothers' status in 2021. Respondents with anemia were 173 people (72.4%), and respondents who did not have anemia 66 people (27.6%). Pregnant women are determined to be anemic when they have Hb levels <11 g/dl.

Parity

The following table describes the distribution of patients' parity:

Table 2. Distribution of Respondents Based on Parity

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	≤3	104	43.5	43.5	43.5
	>3	135	56.5	56.5	100.0
	Total	239	100.0	100.0	

Source: Data from Pampang Health Center in Makassar City in 2021

Table 2 shows the pregnant mothers' parity in 2021. The frequency distribution of respondents who experienced anemia with parity ≤3 was 104 people (43.5%), and >3 was 135 people (56.5%). High-risk parity is pregnant women with a parity of more than three, and low-risk parity is women with a history of parity ≤3.

Risk relationship of anemia incidence based on maternal parity at Pampang Health Center

The following table shows the relationship between anemia incidence based on maternal parity:

Table 3. Relationship between the risk of Anemia Incidence based on parity

Parity	Hb		Total	*p*-value	PR	95% CI
	Anemia	Not Anemia				
≤3	96 (40.2%)	8 (3.3%)	104 (43.5%)	0.000	1.618	1.384-1.893
>3	77 (32.2%)	58 (24.3%)	135 (56.5%)			
Total	173 (72.4%)	66 (27.6%)	239 (100.0%)			

Source: Data from Pampang Health Center in Makassar City

Table 3 describes the relationship between anemia and parity. Pregnant women who experienced anemia with parity ≤3 were 96 (40.2%) respondents, and did not have anemia with equality ≤3 were 8 (3.3%) respondents. Furthermore, the number of respondents who

experienced anemia with equality >3 was 77 (32.2%) respondents, and not anemia with parity >3 was 58 (24.3%) respondents. The p-value obtained was 0.000 < 0.005.

The findings of this study showed that respondents having >3 parity included a high risk of anemia and ≤3 parity had a low risk. The results on the relationship between equality and the incidence of anemia during pregnancy obtained a p-value of 0.000 < 0.005 with a level of significance (95% CI), meaning there was a significant relationship between parity and the incidence of anemia in pregnancy.

The results of this study are in line with research conducted by Riyani, Marianna, and Hijriyati (2020) with the research title Relationship Between Age and Parity with the Incidence of Anemia in Pregnant Women; the study shows the results that there was a significant relationship between parity and the incidence of anemia in pregnant women (p = 0.003). In contrast, research conducted by Sjahriani and Faridah (2019) entitled Factors Associated with the Incidence of Anemia in Pregnant Women showed no significant relationship between parity and the incidence of anemia (p = 0.472).

Anemia is when the number of red blood cells in the body decreases; red blood cells contain hemoglobin that carries oxygen to body tissues. Anemia occurs in pregnant women if hemoglobin levels are less than 11 g/dl in the first and third trimesters and hemoglobin levels are less than 10.5 g/dl in the second trimester. The most common cause of anemia in pregnancy is iron deficiency anemia, which is a lack of iron, folic acid, and vitamin B12 due to low iron availability or inadequate intake. Anemia has potential danger to mother and child. Anemia in pregnancy cannot be separated from physiological conditions that change during pregnancy. Pregnant women experience significant changes, including the amount of blood that increases in the body by 20% to 30% compared to before pregnancy. The body needs iron and vitamin intake to make hemoglobin with this increase. During pregnancy, mothers must share it with their fetuses so that their bodies produce more blood (Nti et al., 2021).

Parity is the number of children born by a mother, either alive or stillborn. Parity is a risk factor that plays an essential role in the incidence of iron anemia in pregnant women. Pregnant women with repeated pregnancies and frequent childbirth is more at risk of anemia because of a lot of iron deficiency (Figueiredo et al., 2019). Because during pregnancy, pregnant women use iron reserves stored in their bodies. Pregnant women with parity 2 to 3 are the safest parity in terms of the health of the mother and baby. In contrast, pregnant women with parity 4 have a high risk of anemia because the large number of parties can affect maternal health, making them susceptible to anemia (Dai et al., 2023).

Repeated pregnancies can damage blood vessels and uterine walls so that blood flow to the placenta is inadequate, causes decreased function, and affects the circulation of nutrients to the fetus. The risk of blood loss for pregnant women is more significant as a woman gives birth, making the frequency of iron in the mother's body reduced and an impact reducing hemoglobin levels (S. Sharma et al., 2020). The amount of iron that is reduced per woman who gives birth is 250 mg >3 parity can cause anemia in pregnant women by 3 or 2 times greater than ≤3 parity. This statement is supported by a theory that mothers who often give birth risk anemia in

subsequent pregnancies if their nutritional needs are not considered because nutrients in pregnant women are shared with the fetus in the womb (Zegeye et al., 2021). High parity can also increase the blood plasma volume, increasing hemodilution. In addition, mothers who have a history of giving birth more than three times are at risk of bleeding complications, one of the causes of which is the condition of anemia during pregnancy. Hence, the mother loses much hemoglobin, and iron reserves decrease. This condition causes the mother to be even more at risk in subsequent pregnancies for anemia due to reduced hemoglobin levels (D. Sharma et al., 2020).

One of the efforts that can be made to prevent and overcome anemia in pregnant women is to provide iron intake in the form of Fe tablets and be educated to consume regularly every day during pregnancy as many as 90 tablets. In addition, counseling and health education for pregnant women are also essential to do including knowledge about anemia during pregnancy, the importance of taking suitable iron tablets, choosing foods rich in iron, and the importance of vitamin C in increasing iron absorption in the body (Khan et al., 2022).

4. CONCLUSION

Based on the research results on risk factor analysis of anemia incidence in pregnant women at the Pampang Health Center in Makassar City, it was found that women who had anemia were 72.4%. Most of the parity distribution for pregnant women at the Pampang Makassar Health Center was in the risk parity category, which was more than three times. It can be concluded that there was a significant relationship between parity and the incidence of anemia in pregnant women with a p-value of 0.000.

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