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The Relationship between Maternal Characteristics and Folic Acid Intake with the Incidence of Anemia in Pregnant Women in Percut Sei Tuan District

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ABSTRACT
Anemia is a nutritional problem with a high prevalence. Anemia often occurs in teenagers, women of childbearing age, and pregnant women. This study aims to determine the relationship between maternal characteristics and folic acid intake with the incidence of anemia in pregnant women. The design of this study is cross sectional. The population is all pregnant women in the second and third trimesters in three villages in the Percut Sei Tuan sub-district. The sampling in this research was porpusive sampling. Data collection was carried out through interviews using questionnaires and food recall tables as research instruments. Data processing through editing, entering and tabulating. Data analysis used the Chi Square test with Ci 95%. The results of the study showed that 87.8% of mothers in the good age group did not experience anemia and 12.1% of mothers in the unfavorable age group experienced anemia. 90.2% of mothers in the good parity group were not anemic and 9.8% of mothers in the poor parity group were anemic. 90.2% of mothers with good ANC group experienced anemia and 9.8% of mothers with poor ANC group did not experience anemia. 9.8% of pregnant women in the good folic acid intake group were not anemic and 48.8% of pregnant women in the not good folic acid intake group were anemic. There is a relationship between parity, ANC visits and folic acid intake in pregnant women in Percut Sei Tuan District. And there is no relationship between maternal age and the incidence of anemia in Percut Sei Tuan District.

INTRODUCTION

Anemia is a nutritional problem with a high prevalence. Anemia often occurs in teenagers, women of childbearing age, and pregnant women. For pregnant women, the pregnancy period is a period that really determines the quality of human resources (HR) in the future because the child's

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growth and development is very much determined by the condition of the fetus and womb. Anemia in pregnant women is a condition where a mother experiences iron deficiency in her blood (Rismawati & Rohmatin, 2018).

Anemia is a nutritional problem in public health, especially in pregnant women. Pregnant women are said to have anemia if the hemoglobin level is less than 11.0 g/dl for the first and third trimesters and less than 10.5 g/adl for the second trimester (Asmin et al., 2021). Anemia often occurs in pregnancy because pregnancy requires additional nutrients and changes occur in the blood and bone marrow. A lot of blood in pregnancy is commonly called hydremia or hypervolemia. However, the increase in blood cells is less than the increase in plasma can cause blood thinning. This is because during pregnancy there is an increase in plasma volume in a greater proportion compared to the increase in erythrocytes (Millah, 2019).

Apart from that, the cause of anemia in pregnant women is a lack of nutrients that play a role in the formation of hemoglobin, one of which is folic acid. This is because consuming folic acid can help improve the Hb levels of pregnant women where folic acid helps in the formation of red blood cells (Tarigan et al., 2021).

According to the World Health Organization (WHO) 2018 globally, the prevalence of anemia in pregnant women throughout the world is 36.5 %. The prevalence of anemia in pregnant women is estimated at 47.8% in Asia, 45.8% in Africa, 23.5% in Europe and 18.9% in America. In Indonesia itself, according to the Ministry of Health of the Republic of Indonesia, the prevalence rate of anemia in pregnant women in Indonesia in 2018 was 48.9%. This figure shows an increase compared to 2013, namely 37.1%. This figure is still far from the national target, namely 28% (Hidayah Pramesty Dewi, 2021).

Several factors that can cause anemia in pregnancy are age, pregnancy spacing, parity, protein intake, iron intake, LILA, maternal knowledge, Antenatal Care visits, and consumption of Fe tablets (Windari et al., 2018).

Age is a risk factor that can cause anemia in pregnant women. Because a mother's age is related to the female reproductive organs. A good age to get pregnant is 20-35 years old. At the age of <20 years, mothers are still emotionally and mentally unstable, resulting in a lack of attention to meeting nutritional needs during pregnancy (Gusnidarsih, 2020). Women aged <20 years are at risk of anemia because at this age malnutrition often occurs. This happens because at the age of teenagers they desire an ideal body, therefore they go on a strict diet without prioritizing nutritional balance so they experience poor nutritional status when entering pregnancy (Rahmaniah, 2019). Age > 35 years in pregnant women is associated with decline and decrease in body resistance as well as a decline in biological organs which causes hemoglobin production to decrease so that pregnant women are susceptible to anemia, this is caused by fertilization which affects the decrease in iron reserves in the body. When entering your first pregnancy at the age of over 35 years you will also experience the risk of complications in childbirth and the start of reproductive organ functions (Septiyaningsih & Yunadi, 2021).

Parity is a mother who has more than three children. Parity is one of the factors that causes anemia during pregnancy. This is because being pregnant too often can deplete the mother's body's nutritional reserves (Amini et al., 2018) . The amount of iron lost is estimated at 250 mg every time a woman gives birth (Octaviana & Indrasari, 2021).

Frequency of Antenatal Care (ANC) is a factor that can influence the incidence of anemia in pregnant women. This is because ANC is one way to prevent anemia. Maternal ANC visits during pregnancy are 1 time in the first trimester, 1 time in the second trimester, and 2 times in the third trimester (Dolang, 2020) Early anemia screening, counseling and administration of Fe tablets are obtained from ANC care. Routine ANC examinations can help reduce maternal and infant morbidity and mortality (Dolang, 2020).

METHOD

This research is quantitative with a *cross sectional method.* This research was conducted in the areas of Cinta Damai Village, Percut Village, and Tanjung Selamat Village, Percut Sei Tuan District, which was carried out in May 2023. The selection of these areas was based on the results of a research survey, where in these three villages there were pregnant women with anemia status.

The population of this study was all pregnant women in the second and third trimesters in three villages of Percut Sei Tuan District, totaling 103 people. The sampling technique for this research was *purposive sampling,* which means there were 41 pregnant women with certain criteria

Data processing in this research went through several stages including editing, entering and tabulating. This research analysis was carried out to explain the relationship between two variables, namely the independent variable and the dependent variable. To analyze folic acid intake, the Nutrisurvey computer program was used. Then the data was analyzed using *the Statistical Package for Social Science* (SPSS) computer program. The analysis in this study used the *chi-square* statistical test and the Odds Ratio at a significance level of 95%. To prove the hypothesis, the p-value is <0.05 (H0 is rejected) and it is concluded that there is a significant relationship between the independent variable and the dependent variable.

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RESULTS

Table 1
Table of Age Distribution of Pregnant Women in Percut Village, Cinta Damai Village, and Tanjung Village Happy 2022

Research variable	Number (n)	Percentage (%)
Mother's Age		
< 20 years	2	4.9
20-35 years	36	87.8
>35 years	3	7.3
Parity		
1-3	37	90.2
≥4	4	9.8
ANC visit		
≥ 4	37	90.2
< 4	4	9.8
Folic Acid Intake		
Good	4	9.8
Currently	16	39.0
Not enough	1	2.4
Deficit	20	48.8
Total	41	100

Based on Table 1 above, it shows that there are 2 pregnant women aged > 20 years (4.9%), 36 pregnant women aged 20-35 years (87.8%), and 3 pregnant women aged > 35 years. people (7.3%). Parity in the good category was 37 people (90.2%) and parity in the not good category was 4 people (9.8%). ANC visits in the good category were 37 people (90.2%) and parity in the not good category were 4 people (9.8%). Folic acid intake in the good category was 4 people (9.8%). The folic

acid intake in the moderate category was 16 people (39.0%), the folic acid intake in the deficient category was 1 person (2.4%), and the folic acid intake in the deficit category was 20 people (48.8%).

Table 2
Relationship between Maternal Characteristics and Folic Acid Intake With The Incidence of Anemia in Pregnant Women

No	Independent Variable	Anemic Status				Total	%	*P - value*
		Anemia (n)	%	Not Anemic (n)	%			
1	**Mother's Age**							
	Good	7	87.5	28	84.4	35	85.3	**0.669**
	Not good	1	12.5	5	15.5	6	14.6	
2	**Parity**							
	Good	5	62.5	32	96.9	37	90.2	**0.019**
	Not good	3	37.5	1	3.0	4	9.8	
3	**ANC visit**							
	Good	5	62.5	32	96.9	37	90.2	**0.019**
	Not good	3	37.5	1	3.0	4	9.7	
4.	**Folic Acid Intake**							
	Good							
	Not good	1	12.5	18	54.5	19	46.3	**0.037**
		7	87.5	15	45.4	22	53.7	
	Total	8	100	33	99.9	41	100	

Discussion

The research results show that there is no relationship between maternal age and the incidence of anemia in pregnant women in Percut Village, Cinta Damai Village, and Tanjung Selamat Village, Percut Sei Tuan District 2022. The statistical test results show a p value of 0.669 (> 0.05 *)* . Based on the research results, the majority of respondents in the 20-35 year category were 36 people with 28 respondents not experiencing anemia, and 7 respondents experiencing anemia aged <20 years and >35 years. This is in line with research (Purwaningtyas & Prameswari, 2017) that there is no relationship between age and anemia in pregnant women (*p value* 1,000). Mothers aged 20-35 years are a good age for pregnancy because there are very few problems or complications during pregnancy and childbirth.

Mothers aged 20-35 years are psychologically ready so they can control their emotions which will affect the growth and development of the fetus. Mothers aged <20 years are emotionally unstable, making it difficult to control the growth and development of the fetus. Apart from that, mothers aged < 20 years are still growing and require more nutrients than those aged 20-35 years. So the main causes of death in women aged 15-19 years are complications of pregnancy, childbirth and complications of miscarriage (Leny, 2019) . Pregnancies that occur in mothers before their teens are fully developed can also pose significant risks to the baby including injury during delivery, low birth weight, and a lower chance of survival for the baby.

Likewise, for mothers aged > 35 years, mothers aged > 35 years are at risk of developing anemia due to the influence of the mother's immunity, making them susceptible to contracting disease during pregnancy. Women aged > 35 years are more likely to experience miscarriage, whether the fetus is normal or abnormal (Leny, 2019) .

At the age of 20-35 years the female reproductive organs are healthy and safe for pregnancy. Biologically, those aged under 20-35 years old have a mental state that is not yet optimal, with emotions that tend to be unstable, so they easily experience shocks which result in a lack of consuming nutrients. Then, those aged over 35 years are also susceptible to various diseases at this age (Amini et al., 2018) .

The statistical test results show that *the p value* is 0.019 (<0.05), meaning that parity influences the incidence of anemia in pregnancy. The more frequently a woman becomes pregnant and gives birth, the greater the risk of experiencing anemia because pregnancy uses iron reserves in the body. Based on the research results, 32 mothers in the good category did not experience anemia (96.9%) and 3 mothers in the not good category experienced anemia (37.5%). This is in line with research by Teja et al., 2021, there is a relationship between parity and the incidence of anemia in pregnant women (*p value* 0.002). Women who frequently experience pregnancy and childbirth are at risk of developing anemia due to iron loss, this occurs due to the use of iron reserves in the body.

Mothers with parity ≥4 times can increase the frequency of complications in pregnancy and childbirth, such as increasing the risk of fetal death in the womb and bleeding before and after birth, which can be fatal. This is because women who have given birth frequently can result in damage to the blood vessels and vascularization of the uterine wall due to previous births, resulting in inadequate blood flow to the placenta which can ultimately reduce its function and affect nutrition to the fetus (Leny, 2019) .

Statistical results show that *the p value* is 0.019 (<0.05), meaning that there is a high risk of anemia in pregnancy in pregnant women who do not regularly make ANC or antenatal care visits during their pregnancy . According to (Nanda and Rodiani, 2017) that pregnant women who do not regularly make ANC visits which can increase the risk of pregnancy, one of which is anemia so that the continuity of health checks during pregnancy can be seen from the first visit (K1) to the K4 visit with visit times according to trimester of pregnancy. Therefore, it is necessary to carry out ANC or antenatal care to provide an overview of the condition of the pregnant woman, the fetus in the womb, and general health.

The mother did not routinely perform ANC because she had experienced a previous pregnancy so she already knew what to do during pregnancy. In addition, mothers with many children feel embarrassed to visit health services such as community health centers or clinics for ANC visits. ANC visits are carried out to produce a healthy pregnancy through physical examination, provision of iron supplements and education regarding the health of pregnant women (akhirin et al., 2021) .

The results of the study showed that *the p value* was 0.037 (<0.05), meaning that the proportion of folic acid consumption among pregnant women who did not consume folic acid was greater than that of pregnant women who consumed folic acid. This is because consuming folic acid is a behavior carried out by pregnant women to fulfill their nutritional needs. This is in line with research. In line with research (Nugrahani, 2020) there is a relationship between folic acid intake and the incidence of anemia with *a p value of* 0.001. Folic acid is a main component in the formation of blood cells, as well as the formation of DNA, so it is also needed for cell development and growth.

Food recall results show that the majority of respondents do not often consume green vegetables, chicken liver and beef liver. This causes some respondents to have poor folic acid intake, because green vegetables, chicken liver and beef liver are sources of folic acid. As well as the habit of eating bad food and frequently consuming snacks such as grilled meatballs, waffers, chips, and so on, which causes pregnant women to feel full quickly.

Folic acid functions to form red blood cells and white blood cells in the bone marrow. If the cells are formed abnormally or abnormally, it will result in megaloblastic anemia which is caused by a lack of folic acid intake in the body. Folic acid plays an important role in DNA synthesis and cell growth. Folic acid deficiency can result in incomplete DNA synthesis and red blood cells not being

able to mature properly so that red blood cells cannot carry oxygen for the body's health, resulting in anemia (Putri et al., 2019).

CONCLUSION

There is a relationship between parity, ANC visits, and folic acid intake in pregnant women in Percut Sei Tuan District in 2022. Before becoming pregnant, mothers need to receive counseling or counseling about nutrition during pregnancy so that mothers and children are carried to a normal weight and strive to achieve normal weight before becoming pregnant. mothers with normal and healthy Hb conditions

Conflict of Interest Declaration

The author has stated that in this article there is no or potential conflict of interest from either the author or the agency in connection with the research that has been conducted, both based on authorship and publication.

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