

## Maternal Age and Parity As Risk Factors Affecting The Incidence of Iron Deficiency Anemia in Pregnant Women in The Working Area of The Bungus Health Center, Padang City

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**Abstract.** Anemia is a serious health problem in pregnant women because red blood cells play an important role in distributing supplements and oxygen for fetal development. Based on WHO data (2019), the number of people in the world who suffer from anemia is more than 2 billion people or 30% of the total population. Pregnant women who experience anemia worldwide reach 41.8%. The prevalence of anemia in pregnant women at the Bungus Community Health Center in 2021 is 36% and is the highest incidence of anemia among all community health centers in Padang City. Among the risk factors that cause iron deficiency anemia in pregnant women are age and parity. This research uses quantitative methods through a cross sectional approach with a sample of 67 pregnant women in the Bungus Community Health Center working area. Random sampling technique proportional simple random sampling and data analysis using tests Chi-Square. The results of the study showed that there was a relationship between maternal age ( $p=0,046$ ) with the incidence of anemia, while parity showed no significant relationship ( $p=0,119$ ). It is hoped that Bungus Community Health Center officers can increase intensive outreach strategies so that the incidence of anemia in pregnant women can be prevented from an early age.

**Keywords:** Anemia, Pregnant Woman, Maternal Age, Parity

### INTRODUCTION

Iron deficiency anemia occurs when platelet levels in the blood decrease due to iron deficiency (Proverawati, 2011). Untreated nutritional deficiencies can result in anemia during pregnancy and will continue during the postpartum period. According to Maryanti (2015), iron deficiency anemia is common, it is estimated that around 30% of the world's population suffers from anemia and the majority suffer from iron deficiency anemia. This type of anemia occurs due to insufficient intake of iron, folic acid, vitamin B12, iron and nutritional deficiencies (Andyarini, 2018). Pregnancy can increase iron requirements by two or three times. Iron is required for the production of red blood cells, for certain enzymes required by the tissues, fetus and placenta and to replace normal daily increases in losses. The fetus' greatest need for iron occurs during the last four weeks of pregnancy, and this need will be met by overriding the mother's needs (Putri & Hastina, 2020)

Maternal age is one of the determinants of iron deficiency in pregnancy. The ideal age for a mother to become pregnant is 20-35 years, because at that age a person's reproductive condition is in good and healthy condition and the risk of complications is very low. Pregnant mothers who are >35 years old already have low immunity, making them susceptible to infections which can result in the mother experiencing anemia. The risk of spontaneous miscarriage also increases due to reduced egg cell quality and chromosomal abnormalities. At this age, mothers tend to experience complications such as high blood pressure, blood sugar,

anemia and other chronic diseases that affect the mother's pregnancy. In addition, at this age the mother experiences a decline in the body's physiological functions, including the ability to create new red blood cells (Amini & Pamungkas, 2018).

Based on previous research, it is known that the mother's age influences the incidence of anemia, because the mother's relatively young age causes hemoglobin levels in the blood to also be lower. In other research, it is known that there is a relationship between maternal age and the incidence of anemia during pregnancy. This is because age <20 or >35 years is at risk of endangering pregnancy (Riyani, et al, 2020). According to Ariyani (2016), parity is the number of children born alive or dead, but not through abortion. Parity is an indirect causal factor in the occurrence of anemia. Parity 1-3 is the safest parity when viewed from the maternal mortality rate. Anemia can occur at high parity because it affects the biological condition of the mother. Mothers who have  $\geq 4$  children are at greater risk of developing anemia. According to Herlina (2006), women who are pregnant >3 are 1.454 times more at risk of suffering from anemia than mothers with low parity (Kesuma, 2018).

## RESEARCH METHODS

This research is a quantitative research with an analytical observational research design using a cross-sectional approach. The sample in this study was 67 pregnant women who were in the working area of the Bungus Health Center, Padang City. Sampling using the method *proposional simple random sampling* which is divided into 6 sub-districts. Data were analyzed using the Chi-Square test.

## RESEARCH RESULT

**Table 1. Frequency Distribution of Respondent Characteristics**

<b>Variable</b>	<b>Frequency</b>	<b>%</b>
<b>Age (years)</b>		
At risk	17	25,4
Not at risk	50	74,6
<b>Parity</b>		
At risk	14	20,9
Not at risk	53	79,1
<b>Anemia</b>		
Yes	24	35,8
No	43	64,2

Based on table 1. It is known that the age of pregnant women at risk is 25,4%, parity of pregnant women at risk is 20,9%, and the frequency of pregnant woman experiencing anemia is 35,8%.

**Table 2. Relationship between maternal age and the incidence of iron deficiency anemia**

Variable	Anemia				Total		p- Value	OR (95% CI)
	Yes		No					
	n	%	n	%	n	%		
<b>Maternal Age</b>								
At Risk	10	58,8	7	41,2	17	100	0,046	3,673 (1,167 – 11,55)
Not At Risk	14	28	36	72	50	100		

Table 2. shows that the percentage of respondents who are at risk of anemia is 58.8%, while those who are not at risk is 28%. The results of the Chi Square test show that a p value of 0.046 ( $p > 0.05$ ) is obtained, which means there is a relationship between maternal age and the incidence of anemia in pregnant women with an OR value of 3.673 (95% CI 1.167–11.55) indicating that mothers with Those aged at risk are 3.6 times more at risk of experiencing anemia than mothers who are not at risk.

**Table 3. Relationship between parity and the incidence of iron deficiency anemia**

Variable	Anemia				Total		p- Value	OR (95% CI)
	Yes		No					
	n	%	n	%	n	%		
<b>Parity</b>								
At Risk	8	57,1	6	42,9	14	100	0,119	3,08 (0,919 – 10,34)
Not At Risk	16	30,2	37	69,8	53	100		

Table 3. shows that respondents who experienced anemia at risk parity were 57.1%, while those without risk parity were 30.2%. The results obtained from the Chi Square test showed that the p value was 0.119 ( $p > 0.05$ ), which means there is no relationship between parity and the incidence of anemia in pregnant women. However, if you look at the OR value, it is 3.08 (95% CI 0.919–10.341 ) that mothers with at-risk parity ( $\geq 4$  children) will be 3 times more at risk of experiencing anemia than mothers with no-risk parity (1-3 children). So it can be concluded that high parity will influence the incidence of anemia in pregnancy.

## DISCUSSION

Research conducted at the Bungus Community Health Center, Padang City, revealed that of the 67 respondents, 24 people (35.8%) were diagnosed with anemia and 43 people (64.2%) were not anemic. Anemia is a condition where hemoglobin (Hb) is below normal limits. The World Health Organization (WHO) explains that pregnant women are said to be anemic if the hemoglobin (Hb) level in the blood is  $<11$  g/dL. Pregnant women who experience iron deficiency anemia cause the concentration of Insuline-like Growth Factor (IGF), which functions to accelerate bone growth, to decrease, which can result in the transport of nutrients obtained by the fetus from the mother not being optimal, as a result of which the growth and development of the fetus is not optimal. The suboptimal Insuline-like Growth Factors (IGF) obtained by the fetus as a growth promoting factor in the growth and development process and also as a mediator for Growth Hormone (GH) which functions to increase children's linear growth is one of the factors causing stunting (Wija & Hilman, 2018 ).

Research conducted on 67 respondents showed that 10 (58.8%) mothers of at-risk ages were anemic and 7 (41.2%) were not anemic, while 14 mothers of non-risk ages were anemic ( 28%) and 36 people who were not anemic (72%). Mark *p-value* 0.046 which means  $H_0$  is rejected and  $H_a$  is accepted so that there is a significant relationship between maternal age and the incidence of anemia in pregnant women in the Bungus Health Center Working Area, Padang City in 2021. From the table it is also known that the OR value is 3.673 (95% CI 1.167 – 11.55) that Mothers of at-risk age are 3.6 times more at risk of experiencing anemia compared to mothers of non-risk age.

In line with Afriyanti's (2020) research in Bukittinggi City on 56 respondents, it was found that 14 people of risk age (38.9%) had anemia and 22 people (61.1%) were not anemic. Meanwhile, 15 respondents (75%) were anemic and 5 people (25%) were not anemic. From the Chi-Square statistical test, a *p-value* of 0.025 ( $<0.05$ ) was obtained, which means there is a relationship between age and the incidence of anemia in pregnant women.

Yanti's research (2016) at the Bernung Community Health Center, Pesawaran Regency with a total of 86 respondents, from the Chi-Square test it was found *p-value* 0.002, which means there is a relationship between the mother's age during pregnancy and the incidence of anemia. Still in line with previous research, research conducted by Amini, et al (2018), states that there is a significant relationship between maternal age and the incidence of anemia and *p-value* 0,017.

Research conducted at the Bungus Community Health Center found that 10 pregnant women in the age range of 20-35 years experienced anemia. The results of the Chi-Square test

show that there is a relationship between the mother's age during pregnancy and the incidence of anemia. These results are supported by the theory which states that women aged <20 years can increase the risk of anemia because physiologically the mother's body still needs iron for growth, but this must be accompanied by an increase in needs due to pregnancy, resulting in food sharing between mothers (for physical growth. ) and fetal growth. In addition, mothers aged <20 years may be at high risk because the reproductive system is not yet able to accept the results of conception and is not psychologically mature enough (Ricci, 2008).

At the age of >35 years, the health and function of the mother's uterus begins to decline, causing an increase in medical complications during pregnancy and childbirth. The healthy reproductive age for a woman to become pregnant and give birth is between 20-35 years. At that time, reproductive conditions are mature enough and ready for the process of pregnancy and childbirth. Therefore, early detection at the beginning of pregnancy is very necessary to prevent anemia in this age group. Pregnant women who are detected early can be prevented by consuming iron supplementation to prevent worsening anemia (Yanti, 2016).

The results of research on 67 respondents, 8 mothers at risk parity who experienced anemia (57.1%) and 6 people who did not experience anemia (42.9%). Meanwhile, there were 16 mothers with no risk parity who experienced anemia (30.2%) and 37 people who did not experience anemia (64.2%). Mark *p-value* 0.061 ( $p < 0.05$ ) then  $H_a$  is rejected which means there is no relationship between parity and the incidence of anemia in pregnant women in the working area of the Bungus Health Center, Padang City in 2021. The OR value is 3.08 (95% CI 0.919 – 10.341) that mothers with parity at risk will be 3 times more susceptible to anemia compared to mothers who have parity not at risk.

In line with research conducted by Ekasari, et al (2022) on 48 pregnant women in Bali, it shows that there is a significant relationship between parity and the incidence of anemia (*p-value* 0.007) with an OR value of 5.440, which means that pregnant women with high parity are at 5.440 times the risk. experiencing anemia during pregnancy. Pregnant women with high fertility who have 3 or more children or frequently give birth may experience increased plasma volume. This can increase the risk of pregnancy complications such as bleeding.

In general, the more deliveries, the risk of the mother experiencing anemia also increases. This shows that mother's parity or experience is a measure to determine the level of knowledge. Children with a higher parity order tend to experience iron disorders. In addition, mothers who do not pay attention to their nutritional needs during pregnancy have a higher risk of anemia in their first pregnancy. The results of the 1985-1986 SKRT referred to in Wijianto (2002) show

that the higher the number of births (parity), the higher the incidence of anemia. The more frequently a woman gives birth, the higher the risk of blood loss and the greater the impact on reducing Hb levels.

The majority of pregnant women at the Bungus Community Health Center are at safe parity, it is known that 79.1% of mothers with parity are not at risk and there are 20.9% of mothers with parity at risk. The results of bivariate analysis between parity and the incidence of anemia did not show a specific relationship. However, parity was proven to have an effect on the incidence of anemia based on an OR value of 3.08. Anemia is related to previous pregnancies where iron reserves in the body are reduced, so subsequent pregnancies will deplete iron supplies in the body, thus causing anemia in subsequent pregnancies (Sjahriani, 2019).

Based on the research results, researchers concluded that the more children a mother gives birth to, the higher the risk of experiencing anemia in subsequent pregnancies. So efforts are needed to limit the number of pregnancies and meet nutritional needs before pregnancy, during pregnancy and after giving birth. Apart from that, you also have to pay attention to the distance between pregnancies and ensure that the condition of the uterus has recovered so that the body is truly ready to get pregnant again.

## CONCLUSIONS

Of the 67 pregnant women, 35.8% of the mothers had anemia, 25.4% of the pregnant women were at risk and 20.9% were at risk parity. There is a relationship between maternal age and the incidence of anemia in pregnant women. Meanwhile, the parity variable is not related to the incidence of anemia in pregnant women in the Bungus Health Center Working Area, Padang City in 2021. Therefore, it is hoped that the role of Puskesmas officers can increase more intense strategies in providing education, especially regarding risk factors for anemia in pregnant women.

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