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## The Relationship Between Anemia and Premature

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## The Relationship Between Anemia in Pregnancy and Premature Rupture of the Membranes (PROM)

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### ABSTRACT

Anemia in pregnancy is a condition with a hemoglobin (Hb) level of < 11 g% which is characterized by complaints of weakness, dizzy eyes, paleness, and even palpitations. Anemia is one of the factors that causes Premature Rupture of The Membrans (PROM). Mothers who experience anemia, the iron or hemoglobin which is a carrier in the blood will decrease, which results in fragility in several parts of the amniotic membrane, which at the same time causes leakage in the area. This study aims to determine the relationship between anemia in pregnancy and the occurrence of PROM. This study uses the design method study *Observational Descriptive*, *Correlation Analytical* Research Method with *Retrospective Approach*. The data source was obtained from all pregnant women at the gestational age of TM II and III who carried out pregnancy checks at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency, at 12 Februari 2023 – 12 Mei 2023 with a total population of 31 people. The sampling technique used *purposive sampling*. Statistical tests used *Chi-Square* and data were analyzed using *the Fisher Exact Test*. Based on the results of the study, the majority of respondents who experienced anemia as many as 16 respondents (51.6 %). The majority of respondents who experienced PROM were 19 respondents (61.2 %), while the majority of respondents who experienced anemia and PROM were 14 respondents (45.1%). The conclusion of this study is that there is a relationship between anemia in pregnancy and the incidence of premature rupture of membranes (PROM) at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency with a p-value (0.001).

Keywords: Pregnancy, Anemia, Premature Rupture of the Membranes

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## INTRODUCTION

Anemia in pregnancy is a condition with a hemoglobin (Hb) level of  $< 11$  g% which is characterized by complaints of weakness, dizzy eyes, paleness, and even palpitations.<sup>1</sup> Anemia is one of the factors that causes PROM. Mothers who experience anemia, the iron or hemoglobin which is a carrier in the blood will decrease, which results in fragility in several parts of the amniotic membrane, which at the same time causes leakage in the area.<sup>2</sup> Efforts to maintain health during pregnancy must start from the time the fetus is still in the womb by increasing nutritional status and nutritional intake during pregnancy, because nutritional status in pregnancy can affect the growth and development of the fetus in the womb. Assessing the nutritional status of pregnant women, one of which can be done by measuring Hb levels, with known Hb levels, it is easy to diagnose anemia.<sup>3</sup> pregnant women who experience anemia is not a mild problem, this happens because red blood cells play an important role for transport nutrients and oxygen that are useful for fetal growth. It is known that more than half of pregnant women experience anemia, there are even studies that report that anemia in pregnant women can cause low birth weight (LBW), bleeding, premature birth, to premature rupture of membranes (PROM) and can cause infection. Infection is the third largest order of causes of maternal death in Indonesia. In addition, PROM can increase the risk of infection in mothers and babies so that it can increase morbidity and mortality of mothers and babies.<sup>2</sup>

The Factors that cause PROM are anemia, previous history of PROM, socioeconomic conditions, infections, fetal position abnormalities, uterine overdistention, incompetent cervix, parity, maternal age, and history of sexual relations.<sup>4</sup> PROM occurs due to decreased hemoglobin which carries iron in the blood, this can cause the fragility of some parts of the amniotic membranes, thus resulting in leakage in the membrane area. Anemia is the biggest cause of PROM. so there is indeed a relationship between low hemoglobin levels and the incidence of PROM. Low levels of anemia in pregnancy can increase the morbidity rate of pregnant women such as premature rupture of membranes, bleeding, premature birth, the risk of low birth weight babies (LBW), and is one of the main causes of maternal death originating from anemia. Therefore, the prevention of iron nutritional anemia is one of the important programs to improve the quality of human resources.<sup>5</sup>

The handling and solution for PROM that can be done is to provide midwifery care for mothers giving birth quickly, precisely, and comprehensively, because if mothers giving birth with PROM do not receive appropriate care, the risks will result in both the mother and the fetus. With the hope that after prompt and appropriate midwifery care, cases of mothers giving birth with PROM can be handled properly, so that the maternal mortality rate in Indonesia can be reduced. In addition, the government has also made various efforts to reduce anemia in pregnant women, namely through efforts to improve family nutrition programs contained in the Decree of the Minister of Health of the Republic of Indonesia Number 747/MENKES/SK/VI/2007. Government policies regarding anemia are contained in midwifery

service standards, namely standard number 6 which regulates the role of midwives in managing anemia in pregnancy. The application is that midwives can take action, prevention, discovery and referral in all cases of anemia in pregnancy according to applicable regulations . These <sup>12</sup> things are caused because midwives are the spearhead in providing health services for women's mothers, especially pregnant women. Based on the description above, the authors are interested in conducting research, is there a relationship between anemia in pregnancy and the incidence of PROM at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency.

### METHOD

This study uses a design study Observational Analytical , Correlation Analytical Research Method with Retrospective Approach . The data source was obtained from all pregnant women in the second and third trimesters of pregnancy who underwent pregnancy checks at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency, on 12 February 2023 – 12 Mei 2023. The sampling technique was purposive sampling . Statistical test using Chi-Square , a data analysis using Fisher Exact Test , and correlation coefficient test. The number of respondents was 31 respondents and the tools used were observation sheets and checklist .

### RESULTS

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

Characteristics of Respondents	Frequency (F)	Prosentation (%)
<b>Age</b>		
1. Age <20 years	1	3,2
2. 20-30 years	24	77,4
3. >35 years	6	19,3
<b>Total</b>	31	100
<b>Parity</b>		
1. Primipara	13	41,9
2. Multipara	17	54,8
<b>Total</b>	31	100
<b>Education</b>		
1. Elementary School	0	0
2. Junior High School	5	16,1
3. Senior High School	19	61,2
4. College	7	22,5
<b>Total</b>	31	100
<b>Work</b>		
1. Laborer	6	19,3
2. farmer	2	6,4
3. IRT	22	70,9
4. Civil servant	1	3,2
<b>Total</b>	31	100

Based on table 1, there were 31 respondents, the majority aged 20-30 years, 24 (77.4%), the

majority of parity, namely multipara, 17 (54.8%), the majority of education, namely high school, 19 (61.2%), and the majority of IRT jobs were 22 (70.9).

		Premature Rupture of The Membrans (PROM)				Total		P-Value
		Not PROM		PROM		f	%	
		f	%	f	%			
<b>Anemia in Pregnancy</b>	<b>Not Anemia</b>	11	35,4%	5	16,1%	16	51,6%	0,001
	<b>Anemia</b>	1	3,2%	14	45,1%	15	48,3%	
	<b>Total</b>	12	38,7%	19	61,2%	31	100%	

Based on Table 2 shows that of the 31 respondents, pregnant women without anemia and did not experience PROM are 11 (35.4%) respondents, pregnant women with anemia and experiencing PROM are 5 (16.1%) respondents, and mothers who experienced anemia and did not experience PROM are 1 (3.2%) of respondents, while those who experienced anemia and experienced PROM were 14 (45.1%) respondents. From the analysis results obtained p-value = 0.001 <0.05. This means that there is a significant relationship between anemia in pregnant women in the second and third trimesters with the incidence of premature rupture of membranes.

### DISCUSSION

Based on this research, the age that is not at risk for pregnancy and childbirth is the age of 20-35 years, because at that age the uterus is ready to accept pregnancy, is mentally mature and is able to care for the baby and herself. Meanwhile, at the age of more than 20 years and more than 35 years are at high risk of pregnancy and childbirth, it can be seen that the age of the mother at the time of pregnancy also influences the morbidity and mortality of both the mother and the child born later. <sup>6</sup> This is in line with the results of the study that the majority of respondents were 20-30 years old. Parity with more than three pregnancies can increase the risk of anemia, this is caused by repeated pregnancies cause damage to the blood vessels and uterine wall which simultaneously affects the circulation of nutrients in the fetus. The number of deliveries is also associated with anemia. Anemia in the parity 0 group or never having given birth was lower than parity having given birth less than five times. The more often a woman gives birth, the higher and more severe the risk of blood loss and the risk of decreased hemoglobin levels. The amount of iron lost each time a woman gives birth is estimated at 250 mg. <sup>7</sup> This is in line with the results of the study that the majority of respondents were multiparous. Mother's educational background can also influence a person to act and look for causes and solutions in his life. Mother will act rationally if she has a higher educational background. In addition, people who are highly educated are believed to be more receptive to new knowledge and will have their pregnancies checked regularly with the aim of maintaining the health of themselves and the child they are carrying. <sup>8</sup> This is in line



6 with the results of the study that the majority of respondents had high school education. Besides that the mother's socioeconomic level has been shown to have a strong influence on the physical and psychological health conditions of pregnant women. A good social level in pregnant women will automatically have an impact on good physical and psychological well-being as well, the nutritional scale will increase because the nutritional pattern obtained is good and of good quality, besides that the mother is ensured that if her social level is high then she will not be psychologically burdened regarding her delivery costs and daily needs after her baby is born. <sup>17</sup> This is in line with the results of the study that the majority of respondents were housewives .

3 Cases of anemia still occur because pregnant women do not adhere to taking Fe tablets and do not follow the recommendations for taking Fe tablets during pregnancy. Anemia in third trimester pregnant women occurs when pregnant women have Hb levels <11 g%. <sup>3</sup> Anemia in pregnancy occurs due to iron deficiency or iron deficiency anemia, this occurs due to a lack of consuming iron elements in food, impaired use, impaired reabsorption, or due to the release of iron from the body in large quantities, for example bleeding. <sup>5</sup> Routine administration of iron vitamins aims to achieve iron reserves, muscle blood synthesis, blood cell synthesis. <sup>3</sup> Iron tablets work essential in the body, namely as a carrier of electrons in cells and become an arranged part in various enzyme reactions in body tissues. Blood iron tablets also play a role in suppressing the occurrence of anemia in pregnancy when taken regularly. At least pregnant women consume 90 tablets of iron during pregnancy. Pregnancy can be maintained by iron. If during pregnancy the mother is deficient in iron, there is a great risk for the mother to experience bleeding after giving birth . The need for iron during pregnancy continues to increase, especially in the third trimester. It is not only important for every pregnant woman to meet her iron needs, but also for the growth of her fetus, so every pregnant woman is advised to take iron tablets properly and regularly. <sup>9</sup> Lack of iron consumption can result in anemia. Anemia in pregnant women that is not treated can harm the mother and the fetus in her womb . The effect of anemin can also reduce the immune system in pregnant women, so that mothers get sick easily, inhibit the growth of the fetus which causes the fetus to be born with low birth weight (LBW), and preterm labor. For this reason, it is recommended that cases of anemia should be diagnosed early so that they can be treated early, and be able to carry out treatment as quickly as possible to prevent further complications carry on. <sup>10</sup>

15 This study can provide an illustration that the majority of pregnant women at the Maduran Health Center experience premature rupture of membranes. If this is not handled quickly and appropriately, it can cause harm to the mother and fetus. PROM can be defined as the state of rupture of the membranes at the end of gestation and before entering labor. It can also be defined with rupture of the membranes prematurely or before in labor, at an opening < 4 cm in the latent phase. <sup>9</sup> This is very easy to happen at the end of pregnancy even though it is far from the due date, patients who experience PROM can cause pyrexia puerpera as much as 11%, chorioamnionitis as much as 3%, higher incidence of respiratory

distress syndrome is observed as much as 26%, septicemia as much as 14%, preterm as much as 64% with low birth weight and neonatal death as much as 7%.<sup>11</sup>

Based on statistical tests using *chi-square* then results with a *p-value* of  $0.001 < \alpha$  (0.005), it can be concluded that  $H_0$  is rejected  $H_a$  is accepted, which means that there is a significant relationship between anemia and premature rupture of membranes in pregnant women at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency. Anemia is the most dominant factor in the occurrence of PROM. and there is a relationship between hemoglobin levels and the incidence of PROM.<sup>11</sup> Based on this, it can be seen that there is a tendency that if pregnant women experience anemia, the possibility of PROM occurring during pregnancy will be higher and greater.<sup>12</sup>

## CONCLUSION

The conclusion in this study is that there is a relationship between anemia in pregnancy and the incidence of PROM at the Maduran Health Center, Maduran Village, Maduran District, Lamongan Regency, with a *p-value* (0.001). As for suggestions in this study, efforts to promote health, information communication and education (IEC) are needed to increase awareness of pregnant women about the importance of consuming Fe tablets as well as information related to the impact that can be caused on the mother and fetus, so that it is expected to increase awareness of pregnant women independently.

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