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Relationships between age and parity with the occurrence of anemia in pregnant women

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Abstract

Anemia remains a major health problem in developing countries and is an indirect cause of maternal mortality, with Indonesia reporting a prevalence of 37.1% despite increased iron tablet supplementation programs. This study aimed to analyze factors associated with anemia in pregnant women, focusing on age, parity, and maternal knowledge. Using an analytical survey with a case-control design at the Kom Yos Sudarso Community Health Center in Pontianak, the study compared pregnant women with and without anemia. The results showed that parity and maternal knowledge were significantly associated with the incidence of anemia, while age showed no significant relationship. In conclusion, efforts to reduce anemia should prioritize improving maternal knowledge and monitoring high-parity pregnancies to enhance maternal health outcomes.

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INTRODUCTION

The approximately 30% of pregnant women in developing countries and 15.2% in developed countries suffer from anemia, with a global prevalence of 41.8% (Karami et al., 2022; Araujo Costa & de Paula Ayres-Silva, 2023). According to Competency 3 for Midwives, midwives are expected to provide high-quality antenatal care to optimize maternal health during pregnancy, including the management of anemia, which remains a common condition, particularly among pregnant women. Factors contributing to anemia include maternal age below 20 years or above 35 years, low knowledge, high parity, acute bleeding, heavy workload, infrequent meals, and consumption of iron-deficient foods (Natalia, 2015).

In Indonesia, anemia among pregnant women remains a significant public health problem. Basic Health Research reported a prevalence of 37.1%, while iron tablet distribution reached 85%, an increase from 83.3% in 2011 (Badan Penelitian dan Pengembangan Kesehatan, 2019). Despite the government's program to provide 90 iron tablets during pregnancy to prevent anemia, the incidence remains high (Kementerian Kesehatan Republik Indonesia, 2014). In West Kalimantan alone, 12,018 pregnant women (10.73%) were reported to have anemia in 2017 (Dinas Kesehatan Kota Pontianak, 2017). Anemia, defined as a condition characterized by a reduced number of red blood cells containing hemoglobin, limits oxygen delivery to body tissues and is one of the indirect causes of maternal mortality. Indonesia continues to have the highest maternal mortality rate compared to other ASEAN countries (Proverawati, 2011; Salmariantity, 2012).

Maternal age and parity are key determinants of anemia in pregnancy (Owais et al., 2021; Aznam, & Inayati, 2021; Armah-Ansah, 2023; Siregar et al., 2023). Age influences a mother's maturity and compliance in taking iron tablets. Pregnant women under 20 years may be less prepared to meet nutritional and environmental requirements for fetal growth, while those over 30 years face declining iron reserves, increasing their risk of anemia (Natalia, 2015). Parity, defined as the number of births a mother has experienced, also plays a critical role. Low-risk parity ranges from 2 to 3 births, while high-risk parity (<1 or >3 births) is associated with higher maternal mortality. Family planning can mitigate these risks (Natalia, 2015).

Knowledge about anemia is another crucial factor. Studies indicate that maternal knowledge significantly correlates with anemia prevalence (Osborn et al., 2021; Karami et al., 2022). Kafiyanti, & Muhartati (2016) reported that pregnant women with good knowledge mostly experienced mild anemia. A preliminary survey at the Kom Yos Sudarso Community Health Center in Pontianak revealed that only 20% of pregnant women had adequate knowledge about anemia, while 80% were at risk due to high parity, and 21% were confirmed to have anemia based on hemoglobin tests conducted from January to December 2018.

Despite existing prevention programs, anemia remains prevalent, indicating gaps in the effectiveness of health education, compliance with iron supplementation, and attention to maternal risk factors. The novelty of this study lies in simultaneously analyzing the influence of maternal age, parity, and knowledge on anemia prevalence among pregnant women in Pontianak, providing localized evidence to support targeted interventions. Therefore, the objective of this research is to examine the relationship between maternal age, parity, and knowledge with the incidence of anemia in pregnant women at the Kom Yos Sudarso Community Health Center, with the aim of informing more effective anemia prevention strategies in the local context.

METHOD

The research employed an analytical survey with a case control design, a method that compares two groups cases and controls to identify factors associated with a particular condition. In this study, the case group consisted of pregnant women diagnosed with anemia, while the control group comprised pregnant women without anemia. This design

was used to analyze the relationship between maternal age and parity with the incidence of anemia among pregnant women at the Kom Yos Sudarso Community Health Center in Pontianak.

RESULTS AND DISCUSSION

Table 1. Frequency distribution table based on age and parity.

Variable	Frequency	
	n	%
High-risk age (<20 or >35 years)	26	37.1
Low-risk age (20-35 years)	44	62.9
Primipara	14	20
Multipara	46	65.7
Grand multipara	10	14.3

Based on Table 1, it is known that there were 26 pregnant women (37.1%) in the high-risk age group and 46 pregnant women (65.7%) who were multiparous.

Table 2. Distribution of the relationship between age and parity with the incidence of anemia in pregnant women at the Kom Yos Sudarso Pontianak Community Health Center.

Variable	Anemia		No Anemia		Total		p-value*
	n	%	n	%	n	%	
Age							
High risk	17	48.6	9	25.7	26	37.1	0.083
Low risk	18	51.4	26	74.3	44	62.9	
Parity							
Primipara	2	5.7	12	34.3	14	20	0.011
Multipara	27	77.1	19	54.3	46	65.7	
Grandemultipara	6	17.1	4	11.4	10	14.3	

Based on Table 2, the relationship between age and parity with the incidence of anemia in pregnant women at the Kom Yos Sudarso Pontianak Community Health Center is as follows: It was found that 26 (37.1%) pregnant women with high-risk ages had anemia, while 17 (48.6%) pregnant women with high-risk ages had anemia. Among the 44 (62.9%) pregnant women with low-risk ages, 18 (51.8%) had anemia. From the analysis, p= 0.083 (p<0.05), meaning that there is a relationship between age and the incidence of anemia in pregnant women. There were 14 (20%) primiparas, of which 2 (5.7%) had anemia. Of the 46 (65.7%) multiparas, 27 (77.1%) had anemia, and of the 10 (14.3%) grandemultiparas, 6 (17.1%) had anemia. The analysis yielded p=0.011 (p<0.05), indicating that there is a relationship between parity and the incidence of anemia in pregnant women at the Kom Yos Sudarso Community Health Center.

DISCUSSION

The findings of this study indicate that both maternal age and parity play an important role in the occurrence of anemia in pregnant women. Pregnant women in the high-risk age category (<20 years or >35 years) showed a considerable proportion of anemia cases, with 17 out of 26 women (48.6%) experiencing anemia. Meanwhile, among those in the low-risk reproductive age (20–35 years), 18 out of 44 women (51.8%) were found to be anemic. The statistical analysis resulted in a p-value of 0.083 (p < 0.05), demonstrating a significant association between maternal age and anemia. This relationship is supported by previous studies, such as Natalia (2015), who reported that women under 20 years are often not physically and psychologically prepared for pregnancy, making them more vulnerable to complications. Pregnant women over 30 years tend to have declining iron reserves,

increasing their risk of anemia due to higher physiological demands (Cappellini et al., 2022; Cançado, 2023; Li et al., 2023).

In addition to maternal age, parity was also found to have a significant association with anemia among pregnant women. The results showed that anemia was more common in multiparous and grandemultiparous women compared to primiparas. Only 2 out of 14 primiparous women (5.7%) experienced anemia, whereas 27 out of 46 multiparous women (77.1%) and 6 out of 10 grandemultiparous women (17.1%) were affected. Statistical analysis produced a p-value of 0.011 ($p < 0.05$), indicating a strong relationship between parity and the incidence of anemia. These findings are in line with Natalia (2015), who noted that repeated pregnancies can deplete iron stores, increasing susceptibility to anemia. The high parity, especially when combined with inadequate nutrition and short birth intervals, significantly contributes to the development of anemia in pregnant women.

Overall, this study reinforces existing evidence that both extremes of maternal age and higher parity levels can increase the risk of anemia during pregnancy. These factors should be considered carefully in prenatal care programs to ensure early detection, prevention, and management of anemia among pregnant women.

CONCLUSION

The study found that maternal age was not associated with the occurrence of anemia, whereas parity showed a clear relationship with anemia among pregnant women. These findings indicate the need for further investigation using alternative research designs to better understand how age and parity may influence anemia risk. Future studies should address the methodological limitations identified in this research to obtain more comprehensive and accurate results.

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