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Original Article

Parity is Related to Anemia in Pregnant Women in the Coastal Area

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ABSTRACT

Maternal mortality is still a serious problem in Indonesia. One of the causes is anemia in pregnant women. Anemia in pregnant women is very influential not only on the mother, but on the fetus, and the process of childbirth. The purpose of the study was to analyze the relationship between parity, gestational age and the incidence of anemia in pregnant women in coastal areas in Soropia sub-district, Konawe Regency Design Method of analytical observational research with cross sectional design, sample selection with purposive. The population of all pregnant women in Soroia sub-district. Large sample of 38 respondents, variables of parity study, gestational age and anemia. Questionnaires and Hb check tools were used to measure the variables of parity, gestational age and Hb respondents. Chi-square statistical analysis with α = 0.05. The results showed a significant relationship between parity and anemia in pregnant women (p = 0.036). Pregnant women in the 2nd and 3rd trimesters were more likely to have anemia than pregnant women in the 1st trimester, although the relationship was not significant (p = 0.12). Conclusion. The more parity many tend to be anemic and the closer to birth the Hb decreases.

INTRODUCTION

Anemia is defined as a medical condition of low red blood cell count or hemoglobin in the body , and one group that is susceptible to anemia is pregnant women.[1] Pregnant women need more iron to support the development of the fetus in the womb. The problem of anemia in pregnant women is still a major problem that affects the low health status of mothers and children in Indonesia. The results of the 2018 Basic Health Research (Riskesdas) [2]showed that the incidence of anemia in pregnant women was 48.9%, pregnant women who received Iron Supplements were 73.2%. The provinces with the most pregnant women experiencing anemia were South Sulawesi 87.9%, Central Kalimantan 84.6%, North Sulawesi 78.7%, and Aceh 43.3%. This is in line with the still high maternal mortality rate of around 305 per 100,000 live births, while this target figure is still far from the target of 183 per 100,000 live births in 2024 based on Presidential Regulation of the Republic of Indonesia Number 18 of 2020 concerning the National Medium-Term Development Plan for 2020-2024.

The high prevalence of anemia in pregnant women is a serious problem currently being faced by the Indonesian government. Maternal Mortality Rate (MMR)is a reflection of the high risk faced by mothers during pregnancy and childbirth. Anemia in pregnancy has negative impacts on maternal and infant health and increases the risk of maternal and perinatal mortality.[3,4] Negative impacts on the mother include fatigue, decreased work capacity, impaired immune function, increased risk of heart disease, and death.[4–6] Several studies have shown that anemia in pregnancy contributes to 23% of indirect causes of maternal mortality, especially in developing countries.[1,5] Previous studies have shown a link between anemia in pregnancy and an increased risk of premature birth and low birth weight babies.[5,7,8] In fact, the problem of premature birth and low birth weight babies is still the leading cause of the high incidence of stunting in Indonesia.[9] In addition, anemia is associated with an increased risk of intrauterine death (IUFD), low APGAR scores at 5 minutes after birth, and intrauterine growth retardation (IUGR), which are at risk for stunting in children under two years of age.[7]

Anemia is a pathological condition characterized by low levels of red blood cells (erythrocytes) that contain hemoglobin (Hb).[1] Hemoglobin plays a crucial role in transporting oxygen into the body's cells and tissues. Consequently, anemia results in a decrease in the blood's oxygen-carrying capacity, with implications for the risk of fetal growth impairment caused by anemia.[10]

Anemia that occurs in pregnant women is primarily due to iron deficiency. Several factors that influence this are the mother's nutritional status, socioeconomic conditions, poor health conditions prior to pregnancy, the occurrence of various complications during pregnancy and childbirth, the availability and utilization of healthcare facilities, including prenatal and obstetric services.[11,12] This study aims to analyze the association between gestational age and parity and anemia in pregnant women in coastal areas.

METHODS

This research design uses analytical observational, with a cross-sectional design, where the research variables are measured once at a relatively simultaneous time. The study population was all pregnant women in the Soropia sub-district, Konawe Regency, in June 2023. The sample selection was by *purposive sampling* with inclusion criteria of 1) pregnant women who made ANC visits at the Soropia Health Center, and 2) pregnant women who were willing to be respondents, a sample size of 38 respondents.

The data collection instrument used a questionnaire sheet and the EasyTouch®GCHb Hemoglobinmeter . Blood sampling was carried out by the research team, and the hemoglobin level was set in the range of 12.0-16.0 g/dL. The study has obtained approval from the Health Research Ethics Committee, Faculty of Health Sciences, Jenderal Soedirman University, Number 320/EC/KEPK/2023. Respondents were informed and signed a statement of consent.

Data analysis was conducted in two stages: the first stage involved descriptive analysis, and the second stage involved bivariate analysis. Univariate analysis is performed on each variable descriptively by calculating the frequency distribution. Bivariate analysis using a chi-square statistical test at an alpha level of 0.05 examined the relationship between parity and gestational age with anemia in pregnant women.

RESULTS

Table 1. Frequency distribution of respondents based on number of children

Variables	Frequency (n)	Percentage (%)
Parity		
> 2	16	44.4
1-2	20	55.6
Gestational Age		
Trimester 1	9	25.0
Trimester 2	20	55.6
Trimester 3	7	19.4
Anemia		
Anemia	20	55.6
No Anemia	16	44.4

There is a difference in the frequency of respondents based on parity. Most respondents 20 (55.6%) have given birth more than 2 times. There is a difference in the percentage of respondents based on the mother's gestational age. The largest percentage of the mother's gestational age in Trimester 2 is 20 respondents (55.6%). The smallest percentage of the mother's age in Trimester 3 is 7 respondents (19.4%). There is a difference in respondents based on the incidence of anemia in pregnant women. The incidence of anemia in pregnant women is 20 respondents (55.6%).

Table 2. Relationship between Number of Children and Anemia in Pregnant Women

Variables	Anemia		Total	*p*
	Yes	No		
Parity				
>2	12 (75%)	4 (25%)	16 (100%)	0.036
1-2	8 (40%)	12 (60%)	20 (100%)	
Gestational age				
Trimester (TM) 2 & 3	17 (63.0%)	10 (37%)	27 (100%)	0.120
Trimester (TM) 1	3 (33.3%)	6 (66.7%)	9 (100%)	

Table 2 shows that out of 16 respondents with more than 2 children, 12 respondents (75%) suffered from anemia, while in respondents with less than or equal to 2 children, 20 respondents, most of them 12 (60%) did not experience anemia. The results of statistical tests revealed a significant relationship between the number of children and the incidence of anemia in pregnant women ($p = 0.036$). The pattern of relationship between gestational age and anemia in pregnant women. A total of 27 respondents with pregnancies in TM2 and 3 mostly experienced anemia, 17 (63%), while in respondents with pregnancies in TM1, there were 9, most of whom did not experience anemia, 6 (66.7%). However, the results of statistical tests showed that there was no significant relationship between gestational age and the incidence of anemia in pregnant women ($p = 0.12$).

DISCUSSION

From the results of the study, pregnant women who have a parity of more than 2 experience a higher level of anemia (by 50%) compared to pregnant women who have a parity of less than or equal to 2 (by 10%). This finding indicates a significant correlation ($p = 0.01$), which shows that the risk of experiencing anemia in pregnant women increases more than twofold for those who have a parity of more than 2. The relationship between parity and the incidence of

anemia in pregnancy can be caused by physiological changes in pregnant women, and by risk factors of age during pregnancy and lifestyle, as the results of research from Al-Farsi et al. that teenage pregnancy and smoking behavior contribute to anemia in pregnancy.[13]

The results of this study are in line with Ristica's study that high parity (>3) has a 4.6 times risk of experiencing anemia.[14] Anemia in pregnancy requires specific identification to determine the type of anemia experienced by pregnant women.[15] The method of measuring anemia is one of the shortcomings of this study using an HB meter so that the type of anemia and its severity are not known.[16]

Parity factors are related to the occurrence of anemia through the mechanism of hemodilution. Hemodilution in pregnancy is a physiological phenomenon of an increase in the volume of blood plasma in pregnant women in response to hormonal changes and adaptation in pregnancy.[17] This process begins in the first trimester and peaks in the second and third trimesters, aiming to ensure adequate supply of nutrients and oxygen to the fetus and to support the increase in blood volume required.[18,19] Hemodilution can cause a decrease in the concentration of dissolved substances in the blood, such as hemoglobin and iron, thus affecting blood test results.[17]

The results of the study showed that statistically there was no relationship between gestational age and the incidence of anemia in pregnant women, although from the research data, in the 2nd and 3rd trimesters of pregnancy, respondents experienced anemia. Anemia in the 2nd and 3rd trimesters of pregnancy can be caused by increased nutritional needs of pregnant women for fetal growth and sharing iron in the blood with the fetus.[17] Pregnant women with inadequate nutritional intake can experience anemia.

The need for nutrients in pregnant women continues to increase by the increasing age of pregnancy, and one of these needs is iron. Based on research by Zuiatna [20], nutritional status and compliance with iron tablet consumption are significantly related to anemia. Research by Sjahriani & Faridah[21] confirmed that the increasing age of pregnancy is associated with the tendency to experience anemia.

The results of this study provide an overview of the critical phase in which pregnant women, families, cadres and health workers must increase their awareness of anemia and especially in the 2nd and 3rd trimesters, so that the pregnancy and birth process runs smoothly and healthily.

CONCLUSION

Based on the study's results, parity is associated with anemia during pregnancy. It is recommended that prevention efforts involve families, integrated health post cadres and health workers by increasing nutritional intake and integrated and sustainable iron supplementation.

Author's Contribution: Askrening: Conceptualization and Methodology. **Wiralis:** Writing – Original Draft and Formal Analysis. **Mardiani Mangun:** Investigation, Data Curation, Writing – Review and Editing. **Suwarni**: Supervision, Funding Acquisition, Writing – Review and Editing

Conflicts of Interest

The authors declare that they have no conflicts of interest relevant to this research.

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