p-ISSN: 2089-6778
e-ISSN: 2549-5054

THE RELATIONSHIP BETWEEN AGE AND PARITY WITH THE INCIDENCE OF ANAEMIA AMONG PREGNANT WOMEN AT PUSKESMAS SLAWI TEGAL DISTRICT

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Article Information

Received:
August 12, 2024

Revised:
November 15, 2024

Accepted:
December 02, 2024

Abstract

The maternal mortality rate (MMR) in Indonesia remains high at 305 per 100,000 live births, falling short of the target of 183 per 100,000 live births set for 2024. Puskesmas Slawi, a health center in the Tegal Regency, reported two maternal deaths in 2024 due to eclampsia and bleeding. Preliminary studies conducted at Puskesmas Slawi from June to July 2023 revealed that out of 34 pregnant women, 73.5% were anemic, 20.5% were of advanced maternal age, and 52.9% had more than two pregnancies. This study employed a correlational design and was conducted at Puskesmas Slawi in Tegal Regency from June to July 2024. The sample comprised 34 mothers in labor, utilizing secondary data for analysis. The data were processed using SPSS software and analyzed with the Chi-square statistical test. The chi-square analysis yielded a p-value of 0.687 for age, indicating no significant relationship between age and the incidence of anemia at Puskesmas Slawi, Tegal Regency. Conversely, the analysis revealed a p-value of 0.031 for parity, suggesting a significant association between parity and the incidence of anemia in the same setting. Age does not have a significant association with the incidence of anemia among pregnant women at Puskesmas Slawi, Tegal Regency; however, parity is significantly related to the occurrence of anemia in this population

Keywords: *Age, Parity, Anemia*

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1. Introduction

The Maternal Mortality Rate (MMR) in Indonesia remains significantly high, currently at 305 per 100,000 live births, while the national target for 2024 is set at 183 per 100,000 live births [1]. In Central Java, the MMR reached 1,008.87 per 100,000 live births in 2022 [2].

The primary causes of this elevated MMR are inadequate early detection and delays in referral processes to hospitals for high-risk pregnancies [2]. Among the complications that frequently lead to maternal mortality are hemorrhage, hypertension, and preeclampsia, which can occur during pregnancy, childbirth, or the postpartum period. Of these factors, hemorrhage holds the highest position,

p-ISSN: 2089-6778
e-ISSN: 2549-5054

accounting for approximately 28% of total maternal mortality cases and contributing to the development of anemia [3]. According to the 2018 Riskesdas survey, the prevalence of anemia among pregnant women in Indonesia is reported to be 48.9% [4].

Anemia in pregnant women arises due to increased plasma blood volume, which dilutes blood hemoglobin (Hb) levels. This condition poses significant risks to both the mother and the fetus, particularly because Hb is a crucial component of red blood cells responsible for transporting oxygen throughout the mother's body and to the fetus via the placenta[5] [6]. A pregnant woman is diagnosed with anemia if her Hb level falls below 11 g/dL [5].

Anemia in pregnant women can lead to various serious complications, such as miscarriage, premature birth, and impaired fetal development. Additionally, anemia increases the risk of hemorrhage during childbirth and postpartum infections, and it may also reduce breast milk production [7].

In addition to health factors, a mother's age and parity significantly influence the risk of anemia. The ideal age for pregnancy is between 20 and 35 years, during which the mother's body is in optimal condition for conception and childbirth. Outside of this range, specifically for ages under 20 and over 35, the risk of complications, such as hypertension and diabetes, increases, which can adversely affect anemia and the risk of hemorrhaging during labor [11][12].

Parity, defined as the number of previous pregnancies, also notably impacts anemia. The more frequently a woman gives birth, the greater her risk of developing anemia, as her body's nutrient and iron reserves may become significantly depleted [14]. Women with high parity (more than three previous births) tend to face higher risks of hemorrhagic complications and anemia compared to those with fewer deliveries [15].

This study was conducted at the Puskesmas Slawi in Tegal Regency to evaluate the relationship between age and parity with the incidence of anemia in women during childbirth. Preliminary data from Puskesmas Slawi from June to July 2023 revealed that among 34 pregnant women, 73.5% experienced anemia, 20.5% were in high-risk pregnancies, and 52.9% had a parity of more than two [9]. Given the high prevalence of anemia in this population, further research is warranted to understand the relationship between age, parity, and the incidence of anemia to assist in reducing the Maternal Mortality Rate (MMR) in the region.

Several factors influencing the occurrence of anemia in pregnant women include gestational age, number of parties, maternal age, interpregnancy intervals, nutritional status, occupation, socioeconomic conditions, education level, attitudes, social support, worm infestations, bleeding, hyperemesis, iron absorption disorders, infections, illnesses, nutritional intake, and environmental conditions [1].

Research conducted by Sari [1] on "The Relationship Between Age and Parity with the Incidence of Anemia in Pregnant Women in the Working Area of the Seputih Banyak Health Center" demonstrated a significant correlation between maternal age ($p = 0.012$) and parity ($p = 0.037$) with the incidence of anemia in pregnant women in that area in 2020 [1]. This study aims to evaluate the relationship between age and parity with the incidence of anemia in women during childbirth at Puskesmas Slawi, Tegal Regency

2. Method

This study employs a quantitative research design characterized as descriptive analytical with a retrospective approach. The population for this research consists of 34 women who delivered their babies in June and July of 2023, utilizing a total sampling technique, resulting in a sample size of 34 participants. Data analysis was conducted

p-ISSN: 2089-6778
e-ISSN: 2549-5054

using the chi-square test at a confidence level of 95% with a significance threshold of $p < 0.05$.

The measurement of variables in this study involved calculating the age of the participants based on the difference between their birth date and the time of delivery. Participants were categorized into two groups: healthy reproductive age (20–35 years) and high-risk age (either <20 years or >35 years). Age information was obtained from medical records or identification cards. Parity, defined as the number of previous births, was classified into three categories: primipara (one prior delivery), multipara (two to three deliveries), and grand multipara (more than three deliveries).

This data was gathered from medical records and through direct interviews with the respondents. The presence of anemia was determined by measuring hemoglobin (Hb) levels in the blood. Participants were classified as anemic if their Hb levels were below 11 g/dL, while those with Hb levels ≥11 g/dL were categorized as non-anemic. Measurements were conducted using an automatic hematology analyzer or a portable hemoglobinometer, with blood samples collected via fingerstick or venipuncture. All collected data were analyzed using SPSS version 23, applying the chi-square test and logistic regression to evaluate the associations between age, parity, and the incidence of anemia in postpartum women.

3. Results and Discussion

The results of this study focus on the characteristics of age, parity, and the incidence of anemia among 34 postpartum women at Puskesmas Slawi, Tegal Regency.

1. Univariate Analysis

The univariate analysis regarding age, parity, and the incidence of anemia at Puskesmas Slawi is presented in the following table:

Table 1. A Frequency Distribution of Age

Variable	Frequency	
	n	**Prosentase**
Age		
a. Reproductive	27	79,4
b. At Risk	7	20,6
Parity		
a. Primipara	3	8.8
b. Multipara	25	73.5
c. Grande multipara	6	17.6
Anemia Incidence		
a. Non-Anemic	12	35.3
b. Anemic	22	64.7

Based on the frequency distribution table, of the 34 postpartum women, the majority (79.4%) were within the healthy reproductive age range of 20–35 years, 73.5% were multipara, and 64.7% experienced anemia.

2. Bivariate Analysis

Table 2. B Cross Tabulation of Age, Parity, and the Incidence of Anemia

Variable	Anemia Incidence				Total		p value
	Non-Anemic		Anemic				
	n	%	n	%	n	%	
Age							
Normal	10	30	17	50	27	80	0.687
At Risk	2	5	5	15	7	20	
Parity							
Primipara	2	6	1	2	3	8	0.031
Mutipara	10	29	15	44	25	79	
Grande Multipara	0	0	6	18	6	13	

The analysis using the chi-square statistical test revealed a p-value of 0.687 for age, which is greater than 0.05, indicating that there is no significant relationship between age and the incidence of anemia. Conversely, the chi-square test for parity produced a p-value of 0.031, which is less than 0.05, indicating a significant relationship between parity and the incidence of anemia at Puskesmas Slawi, Tegal Regency.

p-ISSN: 2089-6778
e-ISSN: 2549-5054

3. Multivariate Analysis

Table 3. C. Relationship between Age, Parity, and the Incidence of Anemia

Variabel	CI 95%		Sign
Age	0.047	0.048	0.687
Parity	2.017	2.438	0.031

According to Table 3.1, the multivariate analysis included age and parity in relation to the incidence of anemia. The results of the logistic regression analysis are presented in a table that includes the p-values and Confidence Intervals (CI). The analysis for the age variable yielded a 95% CI of 0.047 to 0.048 with a p-value of 0.687. This indicates that there is no significant relationship between maternal age and the incidence of anemia, as the p-value greater than 0.05 signals a lack of significance. In contrast, for the parity variable, the 95% CI ranged from 2.017 to 2.438, with a p-value of 0.031. This p-value, being less than 0.05, suggests a significant relationship between parity and anemia incidence. Therefore, the greater the number of births a woman has experienced, the higher her risk of developing anemia.

In conclusion, this analysis indicates that maternal age does not significantly influence the occurrence of anemia; however, parity is significantly related to anemia incidence. This finding suggests that women with more childbirth experiences are at a higher risk of anemia.

a. The Relationship Between Age and the Incidence of Anemia in Postpartum Women

Based on chi-square test analysis, a p-value of 0.687 was obtained, which is higher than the significance level ($\alpha = 0.05$). This result leads to the rejection of the alternative hypothesis (Ha) and the acceptance of the null hypothesis (Ho), indicating that there is no significant relationship between age and the incidence of anemia among postpartum women at Puskesmas Slawi [9]. This suggests that anemia can affect women across various age groups, including both the healthy reproductive age category and the high-risk age group. These findings are inconsistent with the research by Sari, which reported a significant effect of age on the incidence of anemia, with a p-value of 0.012 and an Odds Ratio (OR) of 2.38 [8].

The majority of respondents in this study (79.4%) fell within the healthy reproductive age range of 20–35 years [9]. This age range is considered ideal for pregnancy and childbirth, as women's bodies are in their best condition and fertility peaks at this stage [8]. In contrast, women over the age of 35 are more susceptible to conditions such as hypertension and diabetes mellitus, which may lead to complications during childbirth and increase the risk of anemia [11]. Furthermore, at this age, uterine contractions may weaken, thereby increasing the risk of postpartum hemorrhage and decreasing hemoglobin production, ultimately leading to anemia [5]. Women under 20 years are also at risk of postpartum hemorrhage due to their reproductive organs not being fully developed. Additionally, their bodies, still in a phase of growth, require greater nutritional intake, thereby potentially compromising nutrient availability for the fetus and increasing the risk of anemia [10].

Anemia in pregnant women is defined as having a hemoglobin (Hb) level below 11 g/dL, indicating an inability to meet physiological needs during pregnancy [6]. Hemoglobin, a component of erythrocytes, plays a vital role in transporting oxygen and nutrients throughout the body, as well as distributing these to the fetus via the placenta [5]. Research by Piesesha indicates that women who give birth under 20 years or over 35 years of

p-ISSN: 2089-6778
e-ISSN: 2549-5054

age have a bleeding risk that is 20 times higher compared to those giving birth within the age range of 20–35 years. Anemia in pregnant women constrains the blood's capacity to carry oxygen, affecting the contractile ability of the uterine muscles (myometrium) and increasing the risk of hemorrhage during delivery [13].

In addition to age, parity—the number of childbirths—significantly influences the risk of anemia. As the number of previous births increases, the risk of depleting iron and nutritional reserves also rises, potentially leading to anemia [14]. Women with a parity greater than three are at higher risk for hemorrhagic complications and chronic anemia due to reduced hemoglobin production during pregnancy [15]. Thus, providing education on healthy dietary practices and the ideal spacing between pregnancies is crucial for preventing anemia in pregnant women [7].

b. The Relationship Between Parity and the Incidence of Anemia in Postpartum Women

The chi-square test calculation results in a p-value of 0.031, which is less than the significance level ($\alpha = 0.05$). Since the p-value is < 0.05, the alternative hypothesis (Ha) is accepted, and the null hypothesis (Ho) is rejected. This indicates a significant relationship between parity and the incidence of anemia among postpartum women. This finding aligns with Sari's study, which reported a relationship between parity and the incidence of anemia with a p-value of 0.037 and an OR of 2.92 [8].

Parity refers to the number of pregnancies a woman has experienced that resulted in a live birth capable of surviving outside the womb. The risk of anemia increases starting from the third pregnancy, as repeated pregnancies can cause damage to blood vessels and intestinal walls, thereby impairing fetal circulation [7]. The more frequently a woman gives birth, the greater her risk of blood loss, which contributes to the decline in hemoglobin (Hb) levels [15]. Women who have given birth more than three times have a heightened risk of experiencing complications such as hemorrhage, especially if anemia has developed during previous pregnancies, and this risk increases with subsequent pregnancies due to lower hemoglobin levels [7].

Parity greater than three is a significant factor contributing to anemia. This is attributed to repeated pregnancies that deplete the body's nutrient reserves. The more often a woman gives birth, the greater her risk of blood loss, which negatively impacts hemoglobin levels[15]. Maintaining a safe birth spacing interval of 2–3 years is recommended to reduce the risk of anemia and associated complications [12].

4. Conclusion

In a survey of 34 postpartum women, it was found that the majority, 79.4%, were within the healthy reproductive age range of 20 to 35 years. Furthermore, 73.5% of the participants were classified as multipara, meaning they had given birth more than once, and 64.7% were found to be anemic. The results of the chi-square test revealed a p-value of 0.687, which is greater than the significance threshold of 0.05. This indicates that there is no significant relationship between age and the incidence of anemia in this study. On the other hand, the p-value for parity was 0.031, which is less than 0.05. This suggests a significant relationship exists between the number of births a woman has had and the incidence of anemia within this study population. As such, early detection of anemia is crucial, especially for postpartum women who are

p-ISSN: 2089-6778
e-ISSN: 2549-5054

at higher risk. This is essential for efforts aimed at reducing maternal and infant mortality rates.

In light of the findings from the study, several key recommendations emerge that aim to enhance the health of postpartum women and promote the advancement of future research in this vital area. First and foremost, healthcare providers play a crucial role in the early detection of anemia, particularly among high-risk groups. It is essential for professionals to focus on women who have high parity or fall within extreme age categories—those under 20 or over 35 years. By identifying and addressing anemia early, healthcare providers can significantly improve maternal health outcomes.

Furthermore, educational initiatives are paramount. Regular education sessions focused on healthy eating patterns, the importance of iron supplementation, and optimal spacing between pregnancies can be instrumental in preventing anemia and reducing complications during childbirth. By empowering women with knowledge, we can foster healthier behaviors that contribute to their well-being.

Continuous health monitoring and support programs for pregnant women are also vital, especially for those with high parity. Establishing these programs ensures that women receive ongoing attention and care throughout their pregnancies. Moreover, making sure that iron supplements are readily available and raising awareness about the importance of nutritional intake can make a significant difference in maternal health.

Looking ahead, future research should strive for a more comprehensive understanding of anemia in pregnant women. Conducting studies with larger populations and sample sizes—taking into account factors such as socioeconomic status and education level—will provide deeper insights and enable tailored interventions to combat this issue more effectively.

Additionally, it is important to encourage women to take a proactive role in their health. Pregnant women should be motivated to monitor their nutritional intake closely and follow the recommendations provided by healthcare professionals, including the consumption of suggested supplements. Considering optimal spacing between pregnancies is also critical for ensuring that their bodies remain in the best possible condition for each new pregnancy.

By embracing and implementing these recommendations, we can work towards reducing the incidence of anemia among postpartum women. Ultimately, these efforts aim to improve the overall health and quality of life for mothers and their infants in the future.

5. Acknowledgment

With deep gratitude, the researcher expresses heartfelt thanks to all parties who contributed to the research process until its completion. Special thanks are extended to Puskesmas Slawi in Tegal Regency for the permission, support, and facilities provided during the research data collection process. Thanks also go to the respondents—postpartum women at Puskesmas Slawi—who willingly participated and provided valuable information for the smooth progress of this research. Lastly, gratitude is extended to Bhamada University Slawi for facilitating and providing the opportunity for the researcher to successfully complete this study.

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