



The Relationship between Age and Parity in Pregnancy to the Incidence of Anemia in the Working Area of the Sipatana Health Center

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ABSTRACT

Anemia in pregnant women has serious consequences for both mother and baby, including fatigue, heart problems, infections, bleeding during delivery, postpartum depression, and even the risk of death. In infants, anemia can cause prematurity, growth retardation, low birth weight, and even death. Anemia cases are most common in those aged <20 and >35 years, and are at greater risk in mothers with high parity due to increased plasma volume and hemodilution. Anemia management in pregnant women can be done through health education, ANC examinations, and regular consumption of Fe tablets. This study aims to determine the relationship between age and parity in pregnancy and the incidence of anemia in the Sipatana Community Health Center working area. This study used an analytical method with a cross-sectional model, with a sample size of 104 pregnant women. The results showed that pregnant women at risk had a 0.140 times greater chance of experiencing anemia based on statistical tests ($p = 0.034$), while mothers with high parity had a 3.628 times greater chance of experiencing anemia ($p = 0.033$). Conclusion: There is a relationship between age and parity in pregnancy and the incidence of anemia in the Sipatana Community Health Center work area.

Keywords: Anemia, Age, Parity, Pregnant Women

INTRODUCTION

Anemia is a condition of lack of hemoglobin in the blood, which is generally triggered by insufficient intake of nutrients for the process of hemoglobin formation. Anemia in pregnant women is a condition of hemoglobin (Hb) deficiency, with a limit of <11 g/dL in the first and second trimesters, and <10.5 g/dL in the third trimester. In Indonesia, anemia is more common due to iron deficiency or known as iron deficiency anemia, which is the most common disorder during pregnancy.(Riandini et al., 2025)(Cappellini et al., 2022; Toole et al., 2023; Zeng & He, 2024)

Anemia in pregnant women can have serious consequences, both for the mother and the baby. Pregnant women with anemia can experience weakness, fatigue easily, heart problems, easy to get infections, bleeding during childbirth, and even risk depression after childbirth. In severe conditions, anemia can lead to maternal death. As for babies, anemia can cause premature birth, stunted fetal growth, low baby weight, babies experience anemia from birth, and even lead to infant death.(Arfan et al., 2024; Farhan & Dhanny, 2021; Maritasari & Perdana, 2022) According to the *World Health Organization* (WHO) in 2021, it is stated that anemia in pregnant women occurs if the hemoglobin (Hb) level is less than 11 g/dL. Each year, anemia causes more than 115,000 maternal deaths and 591,000 infant deaths worldwide,

with about 40% of pregnant women in the world suffering from anemia. In the ASEAN region, the prevalence is high, in fourth place with a figure of $\geq 40\%$, including Cambodia at 51.5%, Laos at 47%, Myanmar at 47.8%, and Indonesia at 44.2%. In Indonesia itself, the number of pregnant women who experience anemia has continued to increase since 2015 (42.1%) until it reached 44.2% in 2019.(Situmorang et al., 2025; Skolmowska et al., 2022)

The results of the 2023 Indonesian Health Survey (SKI) show that 27.7% of pregnant women in Indonesia experience anemia. To prevent this condition, the government recommends that pregnant women routinely consume at least 90 Blood Supplement Tablets (TTD) during pregnancy. In 2023, the coverage of TTD in Indonesia will reach 88.5%, an increase compared to the previous year (86.2%). However, there are several provinces with the lowest coverage, namely Central Papua (52%), Aceh (58.6%), and Gorontalo which are in the 17th lowest position out of 38 provinces, with coverage of 81.6%. In Gorontalo itself, the number of pregnant women who experience anemia was recorded as many as 371 people or around 9.7%.(Ministry of Health, 2023; Indonesian Health Survey, 2023)

Judging from the age group, the most cases of anemia in pregnant women occurred at the age of 35–44 years, which was 39.6%, while at the age of 15–24 years it was 14.6%. The

factor of number of children or parity is closely related to the occurrence of anemia in pregnant women. The higher the frequency of childbirth, the volume of blood plasma in the body will increase, which results in greater hemodilution. Mothers who have given birth more than three times have a greater risk of developing serious complications such as bleeding. This condition is exacerbated if the mother experiences anemia during pregnancy. Loss of hemoglobin and iron reserves due to bleeding will make the mother more susceptible to anemia in the next pregnancy.(Indonesian Health Survey, 2023)(Ariani et al., 2023)

Nutrition is one of the factors that affect the success of pregnancy. Nutritional deficiencies, especially iron, can adversely affect maternal health and fetal development. Iron plays an important role in the formation of hemoglobin which functions to carry oxygen throughout the body, prevents anemia, reduces the risk of bleeding during childbirth, and helps prevent congenital defects in the fetus.(Toole et al., 2023; Zeng & He, 2024)

Research conducted by Sihite in February-July 2024 at the Aek Parombunan Health Center showed a relationship between high-risk gestational age and the incidence of anemia. Statistical testing using Fisher's Exact Test, caused by the presence of two

cells with an expected value below 5. The test results showed $p = 0.030$ ($p < 0.05$), so the relationship was declared significant (Sihite, 2024).

A woman should always be cautious, especially if she is pregnant or has already given birth to four or more children. Pregnant women are particularly vulnerable to health problems, such as anemia or nutritional deficiencies (Gumanti, 2023). The results of Adawiyah's (2021) research in the work area of the Samarinda Trauma Center Health Center show that parity has a significant effect on the incidence of anemia in pregnant women. A statistical test using Fisher Exact yielded $p = 0.03$, which means that there is a meaningful relationship because $p < 0.05$ (Adawiyah & São Paulo , 2021).

Preliminary studies show that the largest number of pregnant women in 2024 will be found in the Central City Health Center (507 people), the East City Health Center (463 people), and the Sipatana Health Center (347 people). Based on this data, the researcher chose to conduct a study entitled "The Relationship between Age and Parity in Pregnancy to the Incidence of Anemia in the Working Area of the Sipatana Health Center".

METHOD

A sample is a part of the population that represents its characteristics. If the

population is less than 100 people, then it is taken in its entirety. However, for a population of more than 100 people, a sample can be taken as much as 10-25% of the total population (Arikunto, 2020).

The population used by all pregnant women in the work area of the Sipatana Health Center in 2024 is 347 people as the population in this study. The sample taken by the researcher is 30% of the total population, considering the number of population of more than 100 people. Thus, the number of samples in this study is 104 pregnant women. The data obtained from filling out the respondents' questionnaire was transformed into numbers so that from this study in the form of quantitative data analyzed with a statistical approach. The analysis of this study was assisted by using the SPSS program, to find the relationship between free and bound variables using the Chi-Square test with an error level set at 5% or a confidence level of 95%.

RESULTS AND DISCUSSIONS

Respondent Characteristics

Table 1. Respondent Characteristics

Category	Frequency (n)	Percentage (%)
Education		
Basic Education	12	11,5
Intermediate	81	77,9
Higher Education	11	10,6
Total	104	100,00
Work		
IRT	95	91,3

Private	1	1,0
Honor	4	3,8
PNS	4	3,8
Total	104	100,00

Based on the characteristics of the respondents in this study, it is known that the majority of respondents have a secondary education level, namely 81 people (77.9%), while respondents with basic education amount to 12 people (11.5%) and those with higher education as many as 11 people (10.6%). In terms of employment, most of the respondents were housewives (IRT), namely 95 people (91.3%), while respondents who worked as private employees were only 1 person (1.0%), as honorary 4 people (3.8%), and as civil servants as many as 4 people (3.8%). The total number of respondents in this study was 104 people

Univariate Analysis

Table 2. Age, Parity, Incidence of Anemia of pregnant women in the working area of the Siptana Health Center

Category	Frequency (n)	Percentage (%)
Age		
Risk	73	70,19
No Risk	31	29,81
Total	104	100
Paritas		
Primigravida	67	64,42
Multigravity	37	35,58
Total	104	100
Incidence of Anemia		
Anemia	89	85,58
No Anemia	15	14,42
Total	104	100

Based on table 2 of the age of the respondents, the majority were in the risk category, namely 73 people or 70.19% of the total 104 respondents. Meanwhile, respondents who are included in the non-risk category amounted to 31 people or 29.81%. This suggests that most respondents are in age groups at risk for certain health conditions, such as anemia in pregnant women, which are generally related to ages outside the ideal range of pregnancy (less than 20 years or more than 35 years).

Based on parity data, most of the respondents were included in the primi and grandemultigravida categories, which were 67 people or 64.42% of the total 104 respondents. Meanwhile, respondents who were included in the multigravida category amounted to 37 people or 35.58%. This data shows that the majority of pregnant women

in this study were at first parity or had experienced more than four pregnancies (grandemultigravida), which can contribute to the risk of pregnancy such as anemia, compared to pregnant women who were at moderate parity (multigravida).

Based on the data on the incidence of anemia, it is known that most of the respondents experienced anemia, namely 89 people or 85.58% of the total 104 respondents. Meanwhile, only 15 people or 14.42% did not experience anemia. The high prevalence of anemia suggests that anemia is a significant health problem in pregnant women in the study population, and requires special attention in prevention and treatment efforts, such as through nutritional interventions.

Bivariate Analysis

The Relationship of Pregnant Women's Age to the Incidence of Anemia

Table 3. The relationship between the age of pregnant women and the incidence of anemia in the work area of the Sipatana Health Center

Age	Hemoglobin				Total	%	P. Value	OR
	Anemia	%	No Anemia	%				
Risk	59	80,8	14	19,2	73	70,2	0,034	0,140
No Risk	30	96,8	1	3,2	31	29,8		
Total	89	177,6	15	22,4	104	100,0		

Based on the results of the analysis, it was found that 59 people (80.8%) were at risk of anemia and 14 people (19.2%) were not anemic. Meanwhile, in the non-risk age

group, as many as 30 people (96.8%) had anemia and only 1 person (3.2%) was not anemic out of a total of 31 people (29.8%). A significance value (p-value) of 0.034

indicates that there is a significant relationship between maternal age and the incidence of anemia, because $p < 0.05$. In addition, an Odds Ratio (OR) value of 0.140 indicates that the low-risk age group has a

0.140-times lower chance of anemia than the high-risk age group. Thus, it can be concluded that high-risk age has a significant effect on the increase in the incidence of anemia in mothers.

Relationship of Parity of Pregnant Women to the Incidence of Anemia

Table 4. The parity relationship of pregnant women to the incidence of anemia in the work area of the Sipatana Health Center

Paritas	Hemoglobin				Total	%	P. Value OR	
	Anemia	%	No Anemia	%				
First & Grandemultigravida	61	91,0	6	9,0	67	64,4	0,033	3,268
Multigravity	28	75,7	9	24,3	37	35,6		
Total	89	166,7	15	33,3	104	100,0		

The results of the analysis showed that pregnant women with primigravida and grandemultigravida parity (which are categorized as risk parity) had anemia in 61 people (91.0%) and 6 people (9.0%) did not have anemia out of a total of 67 respondents (64.4%). Meanwhile, in the multigravida group (non-risk parity), as many as 28 people (75.7%) had anemia and 9 people (24.3%) were not anemic out of a total of 37 respondents (35.6%). A p-value of 0.033 indicates that there is a significant relationship between parity and the incidence of anemia ($p < 0.05$). In addition, an Odds Ratio (OR) value of 3.268 indicates that mothers with primigravida and grandemultigravida parity have a 3.27 times greater chance of developing anemia compared to multigravida mothers. Thus, risk parity has a significant effect on the

increase in the incidence of anemia in pregnant women.

Discussion

The Relationship of Pregnant Women's Age to the Incidence of Anemia

Based on the data, in the age group at risk of anemia as many as 59 people (80.8%) and non-anemia as many as 14 people (19.2%) out of a total of 73 people (70.2%). Meanwhile, in the non-risk age group, as many as 30 people (96.8%) had anemia and only 1 person (3.2%) was not anemic out of a total of 31 people (29.8%). A significance value (p-value) of 0.034 indicates that there is a significant relationship between maternal age and the incidence of anemia, because $p < 0.05$. In addition, an Odds Ratio (OR) value of 0.140 indicates that the non-at-risk age group has a lower chance of developing anemia than the at-risk age group. Thus, it can be concluded that age at

risk has a significant effect on the increase in the incidence of anemia in mothers.

The age of pregnant women is one of the important factors that can affect health conditions during pregnancy. The ideal age to get pregnant is in the range of 20–35 years, because at that age the reproductive organs are mature and the mother's physical condition tends to be more stable. In contrast, pregnancies at the age of <20 years or >35 years are categorized as a risk age. At the age of <20 years, the mother's body is not fully ready to face the burden of pregnancy, while at the age of >35 years there is a decrease in organ function, including the circulatory system, thus increasing the risk of complications, one of which is anemia. (Arfan et al., 2024; Fowor & Revelation, 2022; Shirley, Kirana, Megawati, & Hapisah, 2024)

Physiologically, pregnant women who are in the risk age group are more susceptible to anemia because the increased nutritional needs are often not balanced with adequate intake. At a young age (<20 years), mothers often do not have a good knowledge of the importance of nutrition during pregnancy. Meanwhile, in old age (>35 years), iron absorption in the body tends to decrease, and nutrient reserves are reduced due to the aging process. Both of these conditions put the mother at risk of experiencing a decrease

in hemoglobin levels during pregnancy. (Ramadhini & Dewi, 2021)

Anemia that occurs in pregnant women is at risk of causing various serious complications, both for the mother and the fetus. Risks such as premature delivery, babies born with low body weight (BBLR), and even maternal and infant mortality can increase if anemia is not handled properly. In young pregnant women, anemia can interfere with fetal growth due to inadequate nutrient intake. Meanwhile, in older pregnant women, anemia can worsen pregnancy conditions because the body is not able to work optimally in meeting the oxygen and nutritional needs of the fetus. (Farhan & Dhanny, 2021; Pitrians, Nurvinanda, & Lestari, 2023)

Efforts to prevent anemia in pregnant women, especially in at-risk age groups, must be carried out comprehensively through iron supplementation programs, nutrition education, and regular pregnancy monitoring. Education about the importance of planning pregnancy at the right age must also continue to be improved. In addition, health workers have an important role in providing counseling and assistance for pregnant women to understand the risks that may occur if pregnancy takes place at too young or too old a child. (Stuttgart, Suparni, & Setianto, 2025)

These findings are in line with the results of Jenni SS's (2024) research which examined the relationship between age-related high-risk pregnancies and the incidence of anemia in the work area of the Aek Parombunan Health Center, Sibolga City. The study showed that the majority of respondents were pregnant women aged >35 years, which was 68.1%, while the rest were 35 years old at 31.9%. The results of the study stated that there was a significant association between age-based high-risk pregnancies and the incidence of anemia in the region.(Sihite, 2024)

In accordance with the results of Arfan's (2024) research, about risk factors for anemia in pregnant women in the third trimester at the Tanjung Sekayam Health Center. The research sample consisted of 62 respondents selected using a simple random sampling technique, consisting of 31 cases and 31 controls. Data were collected through questionnaires and analyzed using the Chi-Square test to assess factors associated with the incidence of anemia. There was a relationship between the mother's age ($p=0.000$; $OR=22.9$), pregnancy distance ($p=0.024$; $OR=6.9$), parity ($p=0.011$; $OR=2.2$), nutritional status (chronic energy deficiency) ($p=0.000$; $OR=11.3$), compliance ($p=0.021$; $OR=3.9$), and knowledge ($p=0.001$; $OR=8.2$) with the prevalence of anemia in the third trimester.

Family support did not show a significant relationship.

Based on the results of the study, the researcher assumes that the high incidence of anemia in the at-risk age group (<20 years and >35 years) is influenced by several interrelated factors. In pregnant women less than 20 years of age, researchers assume that anemia often occurs due to a lack of physical and psychological readiness, as well as limited knowledge about the importance of nutrition during pregnancy. Pregnant women at a young age generally do not have experience in maintaining health during pregnancy and do not fully understand the importance of nutritional fulfillment, especially iron intake which plays an important role in the formation of hemoglobin.

Meanwhile, in pregnant women over 35 years old, researchers assume that the risk of anemia increases with age, where there is a decrease in the body's ability to absorb iron, as well as a decrease in nutrient reserves due to the aging process. In addition, the possibility of comorbidities or suboptimal health conditions also increases the risk of anemia. Changes in the body's physiological function that occur naturally with age make pregnant women more susceptible to iron metabolism disorders.

Therefore, according to researchers, the high incidence of anemia in pregnant women at risk age is the result of the interaction of

various factors, both biological, psychological, social, and environmental. At the Sipatana Health Center itself, promotional efforts have been made through the provision of additional food such as milk and biscuits, as well as the distribution of MMS tablets. However, these findings are an important basis for the need to increase more intensive promotive and preventive efforts, especially in the form of nutrition education, ideal pregnancy planning, and regular pregnancy check-ups to prevent complications during pregnancy. With a more comprehensive and sustainable approach, it is hoped that the incidence of anemia in pregnant women, especially in at-risk age groups, can be significantly reduced.

Relationship of Parity of Pregnant Women to the Incidence of Anemia

Based on the results of the analysis, it was known that pregnant women with primigravida and grandemultigravida parity (which are categorized as risk parity) experienced anemia as many as 61 people (91.0%) and no anemia as many as 61 people (9.0%) out of a total of 67 respondents (64.4%). Meanwhile, in the multigravida group (non-risk parity), as many as 28 people (75.7%) had anemia and 9 people (24.3%) were not anemic out of a total of 37 respondents (35.6%). A p-value of 0.033 indicates that there is a significant relationship between parity and the

incidence of anemia ($p < 0.05$). In addition, an *Odds Ratio* (OR) value of 3.268 indicates that mothers with primigravida and grandemultigravida parity have a 3.27 times greater chance of developing anemia compared to multigravida mothers. Thus, risk parity has a significant effect on the increase in the incidence of anemia in pregnant women.

Parity is the number of births that a woman has experienced, both live and dead babies with a gestational age of more than 20 weeks. Parity is grouped into two, namely low parity (1 pregnancy or ≥ 4 times) which is in the risk category, and moderate parity (2–3 times pregnant) which is not at risk. The more often a woman experiences pregnancy and childbirth, the more her body's nutritional needs, especially iron, will increase to support the health of the mother and fetus. If this nutritional need is not met optimally, the risk of the mother experiencing anemia will be greater. (Budiarti et al., 2025; Mardiah et al., 2021)

Anemia occurs when the level of hemoglobin (Hb) in the blood of a pregnant woman drops below the normal number, which is less than 11 g/dL. One of the main causes is iron deficiency which is needed more during pregnancy. Other factors that can aggravate this condition include poor nutrition, too close pregnancy distances, and frequent repeated pregnancies. Untreated

anemia can lead to serious complications, such as premature birth, low birth weight, to the risk of maternal and infant death.(Arfan et al., 2024; Farhan & Dhanny, 2021)

In general, high parity is closely related to an increased risk of anemia, as the mother's body needs time to recover its nutrient reserves after childbirth. Mothers with low parity, such as the first pregnancy, can also develop anemia due to a lack of knowledge about nutritional needs during pregnancy. On the other hand, mothers with moderate parity (2–3 times) tend to better understand how to maintain their health during pregnancy. Therefore, the higher the number of pregnancies, especially if the distance is close and without adequate nutritional intake, the risk of anemia will increase.(Sari et al., 2022)

In order for anemia to prevent anemia from occurring in pregnant women, preventive measures are needed that include regular consumption of iron supplements, the implementation of a healthy and nutritious diet, and regular pregnancy check-ups at health care facilities. Careful pregnancy planning by paying attention to the distance between pregnancies is also an important step to reduce the risk of anemia. In this case, the role of health workers is needed in providing education and assistance to pregnant women to better understand the importance of maintaining reproductive

health to prevent various complications during pregnancy.(Maritasari & Perdana, 2022)

In line with research conducted by Adawiyah (2021) regarding the relationship between parity and the incidence of anemia in pregnant women at the Samarinda Trauma Center Health Center, the results of the analysis using the Fisher exact test showed a p value of 0.03 ($p < 0.05$). Based on these results, it can be concluded that there is a significant influence between parity and the incidence of anemia in pregnant women in the working area of the Samarinda Trauma Center Health Center.

In line with the results of research conducted by Damanik (2025) regarding the relationship between parity and the incidence of anemia in pregnant women in the third trimester at the Lontar Health Center, Kotabaru Regency in 2024. The data was analyzed using *the Chi-Square* test, and the results showed that as many as 63.2% of pregnant women had anemia with hemoglobin levels below 11 g/dL. In addition, as many as 57.9% of respondents were pregnant women with high-risk parity (≥ 3 pregnancies). Based on the results of *the Chi-Square test*, it was found that there was a significant relationship between parity and the incidence of anemia ($p = 0.000$), where a higher prevalence of anemia was found in

mothers with high parity (95.5%) compared to mothers with low parity (10.5%).

Based on the results of the research that has been conducted, researchers assume that the high incidence of anemia in pregnant women with risk parity is influenced by several interrelated factors. One of the main factors underlying this is the need for nutrients, especially iron, which increases as the number of pregnancies increases. Mothers who have experienced repeated pregnancies and childbirth tend to have decreased iron reserves because the iron they had previously had been used to meet the needs of the fetus in previous pregnancies. If after giving birth the mother does not perform optimal nutritional recovery before getting pregnant again, then it is likely that her body does not have enough iron reserves to face the next pregnancy, so she is at risk of anemia.

In addition to these physiological factors, researchers also assume that the mother's lack of knowledge about the importance of nutritional fulfillment during pregnancy is also the cause of the high incidence of anemia. In mothers with low parity such as the first pregnancy, anemia also often occurs due to a lack of experience in maintaining health during pregnancy. Meanwhile, mothers with high parity, despite having previous pregnancy experience, do not necessarily have full awareness to maintain nutritional adequacy, especially if they are

influenced by low levels of education and socioeconomic status. Low levels of education often correlate with a lack of access to information about the importance of nutritious food intake, including the consumption of blood-boosting tablets during pregnancy.

The researcher also assumes that socioeconomic factors have an influence on the health status of pregnant women. Economic limitations can have an impact on the mother's low ability to meet daily nutritional needs. This limitation causes mothers to prefer foods that are cheap and filling, but less nutritious, so that iron needs during pregnancy are not optimally met. In addition, low access to adequate health facilities is also one of the factors that cause pregnant women not to get regular checkups and nutrition education needed to prevent anemia.

Therefore, according to the researcher, the high incidence of anemia in the group of pregnant women with risk parity is not only caused by biological or physiological factors, but also influenced by knowledge factors, health behaviors, socioeconomic conditions, and access to health services. At the Sipatana Health Center itself, various efforts have been made to reduce the number of anemia, such as providing additional food in the form of milk and biscuits, as well as distributing multi-micronutrient tablets (MMS) to pregnant women. However, these

findings show that efforts to prevent anemia are not enough with physical interventions in the form of supplementation and supplements, but must also be accompanied by continuous education, increased nutritional awareness, and support from the social environment to form a healthy lifestyle for pregnant women. With a comprehensive and sustainable approach, it is hoped that the incidence of anemia in pregnant women, especially in groups with risk parity, can be minimized.

CONCLUSION

Based on the results of the study on the relationship between age and parity in pregnancy to the incidence of anemia in the work area of the Sipatana Health Center, it can be concluded that the age of pregnant women with anemia in the Sipatana Health Center work area is mostly in high-risk breasts compared to low-risk. Meanwhile, the parity of pregnant women with anemia in the Sipatana Health Center Working Area is the parity of primigravida and grandemultigravida. For the incidence of anemia in the Sipatana Health Center Working Area, there are 89 people (anemia) and 15 people (non-anemia).

Pregnant women have a 0.140 times chance of anemia based on a P-Value statistical test of 0.034. So it can be concluded that there is a relationship between the age of pregnant women and the incidence of anemia in the

Sipatana Health Center Working Area. Pregnant women have a 3.628 times chance of anemia incidence based on a P-Value statistical test of 0.033. So it can be concluded that there is a relationship between the age of pregnant women and the incidence of anemia in the Sipatana Health Center Working Area.

THANK YOU

The author expressed his gratitude to the Head of the Sipatana Health Center and all staff who have given permission and support during the research data collection process. Gratitude was also conveyed to pregnant women who had participated as respondents in this study. Not to forget, the award was given to the supervisor for guidance and input that was very meaningful in the preparation of this article.

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