

Correlation of Parity and Maternal Age with the Incidence of Anemia in Pregnant Women

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Abstract: Anemia during pregnancy is a public health problem, particularly in developing countries. Women during pregnancy are more likely to have anemia since many women go through their pregnancy without attaining the minimum required intake of iron. The age of the mother and high parity are linked to the psychological and biological elements of pregnant women. This study aims to determine the correlation between parity and maternal age with the incidence of anemia in pregnant women. This study, conducted in Dr Murjani Sampit Hospital, used a cross-sectional design. There were 90 pregnant women involved in this study selected using a purposive sampling method. 58.9% of the participants were primigravid, 56.7% were high-risk age (age < 20 years old and age > 35 years old), and 54.4 % were anemic. The Chi-square test showed no relationship between parity and anemia in pregnant women (p 0.713); however, there was a significant relationship between age and anemia in pregnant women (p 0.001). The pregnant women with high-risk age had suffered anemia during their pregnancy.

Keywords: parity; age; anemia; risk factors

INTRODUCTION

Anemia during pregnancy is one of the most common diseases in developing countries. It is known when the hemoglobin (Hb) level is lower than 11 g/dl.¹ Physiological changes and malnutrition often cause anemia in pregnancy. Anemia that is often found in pregnancy is caused by iron deficiency.²

The total number of cases of anemia among pregnant women, according to WHO, was 40.1%. The highest prevalence is in Africa 57.1%, Asia 48.2%, Europe 25.1% and America 24.1%. In Indonesia, the total number of cases of anemia sufferers in 2015 was 40.5%, and in 2016, it was 42%.³ According to the Ministry of Health of the Republic of Indonesia, the total number of cases of anemia in pregnant women has increased from 37.1% in 2013 to 48.9% in 2018.⁴ Complications that can occur in pregnant women who experience anemia during childbirth can increase the incidence of postpartum hemorrhage, placental abruption, postpartum maternal death, premature labor, infection, bleeding, and eclampsia.⁵

Anemia is one of the factors for the high maternal mortality rate in Indonesia. The impact of anemia that is not treated immediately can cause harm to the mother and fetus. In the mother, uterine inertia, miscarriage, premature labor, prolonged labor, uterine atony, bleeding and shock can occur. Meanwhile, the impact of anemia on the fetus is the risk of *low birth weight babies* (LBW) and growth disorders in children at the beginning of their growth period. Anemia can also cause maternal death, fetal malnutrition and infant death.⁶

According to research that has been conducted by Apriliana et al., it turns out that there are quite a lot of cases of anemia in pregnant women at the Ketapang I Sampit Health Center, Central Kalimantan. It increased by 150 patients in 2018 from 112 patients in 2017.⁶ The high incidence of anemia in this study is in accordance with several research results. The study by Alamsyah showed that the incidence of anemia according to the 2018 KIA report from the NTB Provincial Health Office was still high; namely there were 336 cases of pregnant women experiencing anemia.⁷

Parity is a factor of anemia during pregnancy. A woman who often gives birth is prone to anemia in pregnancy since the woman's body loses more iron.⁸ It is in line with the results of a study at the Seputih Many Health Centers in Central Lampung Regency with the results of the Chi-square test yielding a p-value of 0.037 demonstrating a significance between parity and the incidence of anemia in pregnant women.⁹

The majority of anemic patients are pregnant women with a history of primiparous births. It is a fact that, on average, pregnant women with a history of giving birth once go through a difficult adaptation phase related to their pregnancy. Their knowledge and experience tend to be relatively lower than women who have given birth several times.¹⁰ It is in line with the results of a study conducted at the Gayaman Health Center by carrying out the Chi-square test resulting in a p-value of 0.478. Thus, it was stated that the relationship between parity and the incidence of anemia in pregnant women had an insignificant relationship.¹¹

Another factor is the age of the mother as if the age of the mother is too young and too old, it will greatly affect the nutrition needed when pregnant. A mother's age of less than 20 years is biologically not optimal, and emotional instability often occurs, which results in a lack of attention in fulfilling nutrition. At age of more than 35 years, there is a decrease in the body's immune system, which can cause anemia during pregnancy.⁸ It is in line with the results of research at the Totoli Health Center in Majene Regency, where there is a significant relationship between maternal age and the occurrence of anemia in pregnant women.¹² However, according to Herawati & Rusmiati,¹³ many pregnant women aged 20-35 years experienced anemia of reproductive age. An unfertilized ovulation will become menstruation. In the process of menstruation, every woman will bleed an average of 16 cc or about 40 mL in one cycle, so if it is not supported with good nutrition, it can cause anemia.¹³ This theory is in accordance with the results of research by Dopu et al. at the Puwari Health Center, that there is no significant relationship between the age of pregnant women and the incidence of anemia in pregnant women.¹⁴ This condition shows that the parity and maternal age as the risk factors of anemia in pregnant women were still inconsistent. It may be influenced by many factors such as knowledge, social economics, or the environment conditions.

This study aims to determine the relationship between parity and maternal age with the incidence of anemia in pregnant women at Dr Murjani Sampit General Hospital. This research provides information to the community and government, especially in the Sampit area, about the risk factors of parity and mother's age to anemia in pregnant women. Thus, it can be used as a basis for anemia prevention programs in pregnant women, especially in the Sampit area.

MATERIAL AND METHOD

The research was conducted using an analytic observational approach based on secondary data with a cross-sectional study design from November to December 2022 at Dr Murjani Sampit Hospital. This study received a code of ethics from ethics committee No. 4663/C.1/KEPK-FKUMS/XI/2022 for conducting research at Dr. Murjani Sampit Hospital.

The sampling method was a purposive sampling of 90 samples based on the inclusion and exclusion criteria by the researcher. The inclusion criteria were pregnant women in a risky age (<20 and >35 year). An old and young pregnant woman will affect the nutrition needed. The mother's age <20 is biologically not optimal, and emotional instability often occurs, which results in a lack of attention in fulfilling nutrition. Meanwhile, in the age of >35 years, there is a decrease in the body's immune system, which can cause anemia during pregnancy. The best age to get pregnant is related to the readiness of the mother's reproductive organs, primigravida, and multigravida. The exclusion criteria were pregnant women with comorbidities and eligible medical record data. The independent variables were parity and maternal age, and dependent variables were anemia status. The confounding variables were economic status, level of education, Fe tablet consumption patterns, while gestational age is not included in the study.

Anemia in pregnant women was measured randomly in all trimesters, including trimesters 1, 2 and 3. The measurement incident of anemia was carried out by counting the number of pregnant women who were anemic and not anemic based on medical record data. Hb levels categorized as anemia is < 11 gr/dl and not anemia is >11 gr/dl. The definition of parity is the number of pregnancies that result in a fetus capable of surviving outside the uterus. Maternal age is the length of life or existence since birth. The anemic incident is the body condition of pregnant women who experience a shortage of red blood cells lower than the normal limit, which is < 11 gr/dl.

The obtained data was processed in stages from univariate analysis to determine frequency. Bivariate using the chi-square test to determine the significant correlation between the parity and mother's age with the incidence of anemia in pregnant women.

RESULT

This study used data from medical records at Dr. Murjani Sampit Hospital showing 90 samples according to the inclusion and exclusion criteria. The characteristics of the respondents are shown in Table 1.

Table 1. Subject Characteristics

Characteristics	Frequency (n)	Percentage (%)
Anemic Incidence		
Anemic	49	54.4
Not Anemic	41	45.6
Parity		
Primigravida	53	58.9
Multigravida	37	41.1
Age		
<20 & >35 years	51	56.7
20-35 years	39	43.3

Table 1 shows that at Dr. Murjani Sampit Hospital for the 2020-2022 period, there were 90 pregnant women as participants, including 58.9% primigravida and 41.1% multigravidas. The highest mean age of patients was found in patients who were at risk, namely age <20 years and >35 years in 51 patients (56.7%). Pregnant women aged <20 and >35 are at risk since the mother is too young and too old that will affect the nutrition needed when pregnant. The mother's age <20 is biologically not optimal, and emotional instability often occurs, which results in a lack of attention in fulfilling nutrition. Meanwhile, in the age of >35 years, there is a decrease in the body's immune system, which can cause anemia during pregnancy. Whereas in patients who were not at risk, namely those aged 20 – 35 years, there were 39 patients (43.3%) with the best age to get pregnant. It is related to the readiness of the mother's reproductive organs. The average status of patients with anemia was 49 patients (54.4%), while 41 patients (45.6%) were not anemic.

Table 2. Results of Chi-squares Analysis of the Relationship between Parity and Maternal Age

Variable	Anemic Incident				p
	Anemic		Not anemic		
	n	%	n	%	
Parity					
Primigravida	28	25.2	25	27.7	0.713
Multigravida	21	18.9	16	17.7	
Age					
Risk (<20& >35 years old)	37	41.1	14	15.5	< 0.001
Not Risk (20-35 tahun)	12	13.3	27	30	

Table 2 shows that based on medical records of anemia patients in pregnant women at Dr. Murjani Sampit Hospital for the 2020-2022 period, the anemia in pregnant women of primigravidas was higher (53; 58.9%) than in multigravidas (37; 41.1%) patients. The chi-square test revealed p 0.713, proving no significant correlation between parity and the incidence of anemia in pregnant women.

The average incidence of anemia at-risk age (<20 years & >35 years) was 51 patients (56.7%), while the incidence of anemia that was at not risk age (20 – 35 years) was 39 patients (43.3%). The chi-square test showed that p < 0.001 indicated that there was a significant correlation between maternal age and the incidence of anemia in pregnant women.

DISCUSSION

Anemia during pregnancy is a public health problem, especially in developing countries when hemoglobin is less than 11 g/dl. According to the Ministry of Health, anemia among pregnant women increased from 37.1% in 2013 to 48.9% in 2018.⁴ Anemia in pregnancy is often caused by physiological changes

and malnutrition. Anemia that is often found in pregnancy is iron deficiency anemia.² According to World Health Organization 2019, in 2016, the total number of cases of anemia in pregnant women was 40.1%. The highest prevalence was in Africa 57.1%, Asia 48.2%, Europe 25.1% and America 24.1%.³

Based on research that has been conducted by Aprilliana et al., it turns out that there are quite a lot of cases of anemia in pregnant women at the Ketapang I Sampit Health Center, Central Kalimantan, experiencing an increase of 150 patients in 2018 compared to 112 patient in 2017.⁶ The high incidence of anemia in this study is in accordance with several research results. The study by Alamsyah showed that the incidence of anemia, according to the 2018 KIA report from the NTB Provincial Health Office, was still high, namely there were 336 cases of pregnant women experiencing anemia.⁷

Anemia can impact the fetus with the growth and development of the fetus to be less than optimal, which can lead to complications during pregnancy and childbirth, including maternal and child mortality. Other complications that can be experienced by pregnant women with anemia include during childbirth, which can increase the incidence of postpartum hemorrhage, placental abruption, postpartum maternal death, premature labor, infection, bleeding, eclampsia.⁵

Pregnancy is a period when the body really needs maximum food intake both physically and spiritually (always relaxed and not stressed). Pregnant women's frequent complaints include being tired, having headaches, shortness of breath, pale faces, and various other complaints. All of these complaints are an indication that the pregnant woman is suffering from anemia during pregnancy. This disease occurs due to low levels of hemoglobin in the body during pregnancy. The rate of anemia in pregnancy in Indonesia is quite high, around 67% of all pregnant women, with variations depending on each region. About 10-15% are classified as severe anemia, which will affect the growth and development of the fetus in the womb.¹⁵

The majority of anemia patients are pregnant women with a history of primiparous births, having given birth once through a difficult adaptation phase related to their pregnancy, and relatively low knowledge and experience than women who have given birth several times. Primigravida births tend to be at higher risk of anemia during the pregnancy phase due to lower knowledge about anemia. This statement is evidenced regarding the number of pregnancies and experience as a factor that increases this knowledge.¹⁰

Based on the results of bivariate analysis, it can be seen that the group of mothers at risk, namely primigravidas, experience anemia more often than the group of mothers with multigravidas. Based on the chi-square analysis, it was found that $p = 0.713$, indicating that parity had no significant effect on the incidence of anemia in pregnant women. This study is in line with the theory stating that the majority of anemic patients are pregnant women with a history of primiparous births.¹⁰ Furthermore, in this study, there were women with multigravida as much as 41.1% experiencing anemia. These inconsistent results occurred because the pregnant woman's body lost more iron.⁸

According to the research of Isnaini et al., there was no significant relationship between maternal parity and the incidence of anemia in pregnant women. Thus, mothers with primigravida parity can reduce the risk of anemia 0.63 times compared to multigravida parity.¹⁶ Research conducted at the Gayaman Health Center with the chi-square test yielded a p -value = 0.478; it can be concluded that there was no significant relationship between parity and the incidence of anemia in pregnant women.¹¹

Besides, maternal age affects the state of red blood cells in the body. Pregnant women at an early age will experience a lack of preparation in giving birth. It is caused by a lack of awareness of mothers in paying attention to nutrition, as well as the nutrients needed to support fetal development. In addition, there is a struggle for nutrition between the mother and the fetus due to the lack of knowledge. Besides, there is competition for food between the fetus and the mother herself, who is still in its infancy. Women aged > 35 years are at higher risk of anemia because there is a degenerative process in the mother's own body.¹⁷

According to Fatkhiyah, the mother who is too young and too old will affect the nutrition needed when pregnant. Pregnancy at the age of <20 and >35 often causes anemia in pregnancy since the mother's age <20 is biologically not optimal, and emotional instability often occurs, which results in a lack of attention in fulfilling nutrition. Meanwhile, in the age >35 years, there is a decrease in the body's immune system, which can cause anemia during pregnancy.⁸

Furthermore, this study revealed that the group of mothers at risk, namely <20 and > 35 years, experienced anemia more often than the group of mothers who were not at risk, namely 20-35 years. Based on the results of the bivariate analysis using the chi-square statistical test, it can be seen that the at-risk group of mothers aged <20 & >35 years experienced anemia more frequently than the group of mothers who were not at risk, namely 20-35 years. Based on the chi-square analysis, it was found that the value of $p < 0.001$ indicated that the age of the mother had a significant effect.

The results of this study are in line with research in the previous year by Rahmaniah & Syari. The results of the chi-square test at the Totoli Health Center, Majenepada Regency, demonstrated a p-value = 0.002 and 87.5% of subjects suffered from anemia. When viewed from an age perspective, 67.5% of respondents were aged <20 and >35 years. In other conditions, subjects with a more at-risk age, namely 20-35 years, were as much as 32.5%. It illustrated the existence of a significant relationship between the age of the mother and the occurrence of anemia in pregnant women.¹² The research conducted by Ariendha et al., also found 16 (17.4%) pregnant women were anemic at risk age and 13 (13.4%) were non-anemic at risk age. It showed p = 0.001 indicating a significant relationship between age mothers with the incidence of anemia in pregnant women.¹⁸

Another risk factor that can cause anemia is the economy. Family economics has an influence on food purchasing power depending on the wages earned. Furthermore, the level of education is identified to be another factor of anemia. Higher education will affect knowledge as well as the mother's awareness of good nutrition to prevent anemia during pregnancy.¹⁹ Furthermore, the consumption pattern of Fe tablets is a risk factor influenced by compliance or non-adherence level. The recommendations of health workers regarding the use of iron tablets in pregnant women would also become the risk factor.²⁰ According to research by Sjahriani & Faridah, the risk of anemia increases with increasing gestational age. Besides, anemia will occur if the mother does not consume healthy diet and iron regularly. Another aspect that can cause anemia in pregnant women is the occurrence of fertilization in a short time interval of <2 years. It will affect the return of the reproductive organs before pregnancy.²¹

CONCLUSION

It is concluded that there was a correlation between maternal age and the incidence of anemia in pregnant women. However, there was no correlation between the parity and the incidence of anemia in pregnant women. These results indicated that the anemia prevention program for pregnant women in the Sampit area should be more focused on the risk age women, namely those <20 years old and >35 years old.

CONFLICT OF INTEREST

There is no conflict of interest.

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