# The Relationship Between Anemia in Maternity and Prematurity at the Balaraja Community Health Center

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## Abstrak

The aim of this study was to determine the relationship between anemia in mothers giving birth and prematurity. The research method used a cross sectional approach using secondary data based on medical records of mothers giving birth at the Balaraja health center, which met the inclusion criteria of 735 people. The data is presented in a frequency distribution table and cross table, then the chi squre test is used. The results of this study show that based on maternal characteristics, 78.5% were aged 20-34 years, 68.8% were primiparas, 59.3% had 4 ANC visits, 8.6% had a high prevalence of moderate anemia, and 8.6% had a severe anemia. as much as 0.5%. The prevalence of prematurity is 7.76%. The relationship between anemia in mothers giving birth and prematurity is statistically significant (p<0.05). Relative risk (RR) of mild anemia with prematurity 1.47; RR of moderate anemia with prematurity 3.45; and RR of severe anemia with prematurity 18. The conclusion of this study is that the relationship between anemia in mothers giving birth and prematurity is statistically significant (p < 0.05).

Keywords: Anemia, Prematurity, Maternity

## Introduction

Until now, the high maternal mortality rate (MMR) in Indonesia is still a priority problem in the health sector. Apart from showing the level of public health, it can also describe the level of community welfare and the quality of health services.

The high MMR in Indonesia shows the low level of welfare of the population and identifies the Government's negligence in its partnership with ICPD. Other factors conducive to the high MMR in Indonesia include limited resources and inadequate infrastructure. One indicator of a country's health status is determined by the MMR and IMR (Infant Mortality Rate).

Maternal death is the death of a woman during pregnancy or within the 42 day period following the end of her pregnancy. Regardless of how long the pregnancy lasts or where it is located, it is caused by anything related to the pregnancy or made worse by the pregnancy itself or its management, but not by accidental or incidental factors. Around 12-15% of pregnant women in developing countries experience serious, life-threatening complications.

The high prevalence of anemia can have negative consequences such as: 1) disruption and obstacles to growth, both body cells and brain cells, 2) Lack of Hb in the blood results in a lack of oxygen being carried/transferred to body cells

and the brain. In pregnant women, it can have bad effects on the mother herself and the baby being born. Studies in Kualalumpur show that 20% of premature births occur for mothers whose hemoglobin levels are below 6.5gr/dl. Other studies show that the risk of LBW, premature birth and perinatal death increases in pregnant women with hemoglobin levels of less than 10.4 gr/dl. At gestational age before 24 weeks compared to controls, anemia is a high risk pregnancy factor.

Problems found in babies whose weight does not correspond to the gestational age are perinatal asphyxia, hypoglycemia, hypothermia, pulmonary hemorrhage, meconium aspiration, necrotizing enterocolotis, polycethymia, and diseases related to congenital anomalies, syndromes, or infections.

The general aim of this research is to determine the relationship between anemia in mothers giving birth and prematurity in Balaraja.

**Method**

This research uses a cross sectional approach. The population in this study were all mothers giving birth at the Balaraja Special Hospital for Women and Children who met the inclusion and exclusion criteria. The inclusion criteria were all mothers who gave birth by spontaneous or artificial birth, live births, single fetuses, without congenital abnormalities/defects, without antepartum bleeding, and had their Hb checked before giving birth. Meanwhile, the exclusion criteria are other factors that are outside the inclusion factors in the study subject. In this research, no sampling was carried out.

**Results**
**Univariate Analysis**

The results of univariate analysis, it was found that 13.3% (98) gave birth to mothers > 35 years old and 8.2% (60) aged < 20 years, while those aged 20-34 years were 78.5% (577). Based on the results of univariate analysis, it was found that there were 7.5% (55) mothers with parity > 4, 68.6% (506) for primiparas, while those with parity 2-3 were 23.7% (174). Based on the results of univariate analysis, it was found that 40.7% (299) of mothers who performed ANC < 4 times during pregnancy were 59.3% (436). Based on the results of univariate analysis, it was found that 0.5% (4) of mothers who gave birth had severe anemia, 8.6% (63) had moderate anemia and 34.1% (251) had mild anemia, while 56 were not anemic. 7% (417). Based on the results of univariate analysis, it was found that 7.76% of babies were born prematurely (57 deliveries) while 92.24% of babies were born not prematurely (678 deliveries).

**Bivariate Analysis**
**The Relationship between Anemia in Mothers Giving Birth and Prematurity**

Table-1 Distribution of frequency of delivery according to the relationship between maternal anemia and prematurity

| Anemia / Prematurity | Yes | | No | | Amount | Risk |
|---|---|---|---|---|---|---|
| | f | % | f | % | | |
| Yes | 37 | 64,91 | 20 | 35,09 | 57 | 0,64 |
| No | 281 | 41,45 | 397 | 58,55 | 678 | 0,41 |
| Total | 318 | 43,27 | 417 | 56,73 | 735 | RR : 1,56 |

Result has shown on the table above, it was found that 64.91% of premature babies were born to anemic mothers (37 cases), 35.09% of non-anemic mothers gave birth to premature babies (20 cases)

and the relationship was statistically significant (p < 0.05 ).

**The Relationship between Mild Anemia in Mothers Giving Birth and Prematurity**

Table-2 Distribution of frequency of delivery according to the relationship between mild anemia in mothers giving birth and prematurity

| Mild Anemia  Prematurity | Yes | | No | | Amount | Risk |
|---|---|---|---|---|---|---|
| | f | % | f | % | | |
| Yes | 23 | 53,48 | 20 | 46,52 | 43 | 0,53 |
| No | 228 | 36,48 | 397 | 63,52 | 625 | 0,36 |
| Total | 251 | 37,57 | 417 | 62,43 | 668 | RR: 1,47 |

The table above shows that premature babies were born to mothers with mild anemia as much as 53.48% (23 cases), mothers who were not mildly anemic gave birth to premature babies as much as 46.52% (20 cases) and the relationship was statistically significant (p < 0.05

**The relationship between moderate anemia in pregnant women and prematurity**

Table-3 Distribution of frequency of labor according to the relationship between moderate anemia in mothers giving birth and prematurity

| Mild Anemia  Prematurity | Yes | | No | | Amount | Risk |
|---|---|---|---|---|---|---|
| | f | % | f | % | | |
| Yes | 12 | 37,5 | 20 | 62,5 | 32 | 0,38 |
| No | 51 | 11,38 | 397 | 88,62 | 448 | 0,11 |
| Total | 63 | 13,12 | 417 | 86,88 | 480 | RR : 3,45 |

Based on the table above, it was found that 37.5% of mothers were born prematurely with moderate anemia (12 cases), 62.5% of mothers who were not anemic gave birth to premature babies (20 cases) and the relationship was statistically significant (p < 0, 05).

**The relationship between severe anemia in mothers giving birth and prematurity**

Table-4 Distribution of frequency of delivery according to the relationship between severe anemia in mothers giving birth and prematurity

| Severe Anemia  Prematurity | Yes | | No | | Amount | Risk |
|---|---|---|---|---|---|---|
| | f | % | f | % | | |
| Yes | 2 | 9,09 | 20 | 90,91 | 22 | 0,09 |
| No | 2 | 0,5 | 397 | 99,50 | 399 | 0,36 |
| Total | 4 | 0,95 | 417 | 99,05 | 421 | RR : 18 |

The results in the table above show that premature babies were born to mothers with severe anemia as much as 9.09% (2 cases), mothers who were not severely anemic gave birth to premature babies as much as 90.91% (20 cases) and the relationship was statistically significant (p < 0 .05).

**Discussion**

**Univariate Analysis**

**Description of characteristics of birth mothers based on age**

The results of data collection during 2020 at the Balaraja PUSKESMAS showed that 13.3% (98) gave birth to women aged > 35 years and 8.2% (60) aged < 20 years. Meanwhile, those aged 20-34 years were 78.5% (577). A mother's age is related to the female reproductive organs. A healthy and safe reproductive age is 20-34 years. Pregnancy at the age of less than 20 years and more than the same as 35 years can cause anemia because in pregnancies at the age of less than 20 years the biology is not optimal, the emotions tend to be unstable, the mentality is immature so it is easy to experience shock which results in a lack of attention to meeting nutritional needs. -nutrients during pregnancy.

In terms of age, the younger (< 20 years), the more risky it is because for health reasons a woman should not become pregnant and give birth before the age of 20 years. Physically not ready to give birth, babies born tend to be premature and LBW. Babies in this condition are likely to die in the first year and the risk to the mother will be greater. Over the age of 35 years the health risks of pregnancy and childbirth increase again. If a woman is > 35 years old and has previously given birth 4 times or more, the next pregnancy/delivery carries risks for both mother and baby.

**Description of characteristics of birth mothers based on parity**

The results of the research showed that there were 7.5% (55) mothers with parity > 4, 68.6% (506) for primiparas, while those with parity 2-3 were 23.7% (174). Maternal parity of more than 4 may increase the risk of subsequent pregnancy and childbirth, which may endanger the mother's health.

Meanwhile, if the first and second births are premature, the risk is 28.4% for the third birth. First births have a high risk of premature birth. A mother who frequently gives birth is at risk of experiencing anemia in the next pregnancy if she does not pay attention to nutritional needs. Because during pregnancy the nutrients will be divided between the mother and the fetus she is carrying. The more often a woman experiences pregnancy and gives birth, the more iron she loses and the more anemic she becomes.

**Description of characteristics of mothers giving birth based on Antenatal Care**

The results of the research showed that 40.7% (299) of mothers who performed ANC < 4 times during pregnancy, while 59.3% (436) of mothers who performed ANC > 4 times during pregnancy. Antenatal examination is a strategic policy in the field of obstetrics to achieve reproductive health for all pregnant women. Antenatal examinations aim to, among other things, enable early detection of abnormalities during pregnancy, make referrals and provide knowledge about nutrition.

In terms of health services, especially for pregnant women, antenatal examinations play an important role in efforts to prevent anemia in pregnancy. Early detection of anemia in pregnancy and adequate treatment can be carried out during antenatal checks.

**The incidence of anemia in pregnant women**

Notes obtained from the medical records of the Balaraja Community Health Center showed that women giving

birth were mothers with severe anemia of 0.5% (4), moderate anemia of 8.6% (63) and mild anemia of 34.1% (251), while there was no anemia. namely 56.7% (417). The prevalence of anemia in this study was higher than the 2001 Susenas morbidity study, namely 20%, where in general in Indonesia, anemia is the 4th disease with the highest prevalence. The province with the greatest prevalence of anemia is West Sumatra (82.6%), and the lowest is Central Sulawesi. According to SKRT 1995 and 2001, 40.1% of them were pregnant women with the dominant type of anemia, anemia due to iron deficiency.

Iron deficiency anemia is more likely to occur in developing countries than in developed countries. 36% (approximately 1400 million people) of an estimated population of 3800 million people in developing countries suffer from this type of anemia, while the prevalence in developed countries is only around 8% (approximately 100 million people) of an estimated population of 1200 million people.

**Prematurity Events**

Notes obtained from the medical records of the Balaraja Health Center in 2020 showed that 7.76% of babies were born prematurely (57 deliveries) while 92.24% of babies were born not prematurely (678 deliveries). Preterm labor is delivery at a gestational age of <37 weeks or a birth weight between 500-2499 grams. The incidence is still high and is the main cause of neonatal death. In the United States, the incidence is 8-10% and in Indonesia 16-18% of all live births.

The average incidence of prematurity in the United States is 9% and generally with a gestation period of <32 weeks. In 2002, the incidence of prematurity at RSCM was 13.04% and most occurred at a gestation period > 32 weeks. Meanwhile in RSHS in 1998-2000 it was still quite high (18.3%) and in 2002 premature births were 7.2%, where in this study the prevalence of prematurity in PUSKESMAS Balaraja was higher.

Mothers who have given birth to premature babies have a 20-30% risk of giving birth to premature babies again in their next pregnancy. However, 50% of mothers who give birth prematurely have no risk factors. A history of having given birth prematurely once has a 4-fold risk, while those who have given birth twice prematurely have a 6-fold risk. One of the risk factors for prematurity is anemia. Anemia that occurs in pregnant women can reduce the body's metabolic ability, thereby disrupting the growth and development of the fetus in the womb.

**Bivariate Analysis**

**The relationship between anemia in mothers giving birth and prematurity**

Notes obtained from the medical records of the Balaraja Community Health Center in 2020 showed that 64.91% of babies were born prematurely to anemic mothers (37 cases), 35.09% of mothers who were not anemic gave birth to premature babies (20 cases) and the relationship was statistically significant ( $p < 0.05$). The results of the statistical test analysis obtained an RR of 1.56. This means that mothers with anemia have a 1.5 times higher risk of giving birth to premature babies than mothers who do not suffer from anemia.

Pregnant women are usually not only given iron preparations, but also folic acid preparations, the dose of iron is 60 mg/day and 50 µg folic acid/day. By doing this, it is hoped that the incidence of anemia can be anticipated so that it does not cause bad effects for the mother and fetus, and of course comprehensive

antenatal care for the mother will also be carried out.

## The relationship between mild anemia in mothers giving birth and prematurity

Notes obtained from the medical records of the Balaraja Community Health Center in 2020 showed that 53.48% (23 cases) of premature babies were born to mothers with mild anemia, and 46.52% (20 cases) of mothers who were not mildly anemic gave birth to premature babies and statistically the relationship was significant ($p < 0.05$). The results of the statistical test analysis obtained an RR of 1.47. This means that mothers with mild anemia have a 1.4 times higher risk of giving birth to premature babies than mothers who do not suffer from anemia.

## The relationship between moderate anemia in pregnant women and prematurity

Notes obtained from the medical records of the Balaraja Community Health Center in 2020 showed that 37.5% of babies were born prematurely to moderately anemic mothers (12 cases), 62.5% of mothers who were not anemic gave birth to premature babies (20 cases) and the relationship was statistically significant. ($p < 0.05$). The results of the statistical test analysis obtained an RR of 3.45. This means that mothers with moderate anemia have a 3.4 times higher risk of giving birth to premature babies than mothers who do not suffer from anemia.

## The relationship between severe anemia in mothers giving birth and prematurity

Notes obtained from the medical records of the Balaraja Community Health Center in 2020 showed that 9.09% (2 cases) of premature babies were born to mothers with severe anemia, 90.91% of mothers who were not severely anemic gave birth to premature babies (20 cases) and statistically the relationship significant ($p < 0.05$). The results of the statistical test analysis showed that the RR was 18. This means that mothers with severe anemia have an 18 times higher risk of giving birth to premature babies than mothers who do not suffer from anemia.

## Summary

The characteristics of mothers giving birth at a healthy reproductive age of 20-34 years is 78.5%, but there are still mothers who give birth at a high risk age of 21.5%; primiparas was 68.8% and parity > 4 was 7.5%; the number of ANCs < 4 times was 40.7%. The prevalence of anemia in mothers giving birth is quite high (43.7%) when compared with the 2001 Susenas morbidity study (20%). The prevalence of prematurity is quite high (7.76%) when compared with research in RSHS 2002 (7.2%). The relationship between anemia in mothers giving birth and prematurity is statistically significant ($p < 0.05$). The Relative Risk (RR) of anemia in mothers giving birth to prematurity is quite low (RR: 1.56) when compared with Ridwan Amiruddin's 2020 research (RR: 2.375). The more severe the degree of anemia, the greater the risk of the baby being born prematurely.

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