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Original Article

The Relationship between Maternal Anemia Status and Childhood Stunting at Baumata Primary Health Care Center

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ABSTRACT

Anemia remains a major public health problem in Indonesia, affecting both mothers and children. Numerous studies have examined the relationship between anemia in mothers and children; however, limited research has specifically focused on the association between maternal anemia status and stunted children during the caregiving period. Mothers who experience anemia during this period are more likely to suffer from fatigue and reduced capacity to meet their children's basic needs, including breastfeeding, complementary feeding, and maintaining hygiene and nutritional adequacy. Suboptimal caregiving practices may increase the risk of anemia in children, particularly among those who are already stunted. This study aimed to determine the relationship between maternal anemia status and anemia among stunted children. A laboratory-based analytical study with a cross-sectional design was conducted involving 20 pairs of mothers and stunted children selected through purposive sampling. Hemoglobin levels were measured using the cyanmethemoglobin method and analyzed using Fisher's Exact Test. The results showed that 15% of mothers were anemic, while 65% of stunted children were diagnosed with anemia. However, no significant association was found between maternal anemia status and anemia in stunted children ($p > 0,05$). In contrast, maternal education level was significantly associated with anemia status in children ($p < 0,05$). In conclusion, although no statistically significant relationship was observed between maternal anemia and anemia in stunted children, the high prevalence of anemia remains a concern. Various factors may contribute to anemia in mothers and children, including poor dietary intake, chronic infections, limited access to health services, low socioeconomic status, and inappropriate complementary feeding practices. Maternal knowledge emerged as an important factor associated with anemia among stunted children.

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Introduction

Anemia is a condition characterized by decreased levels of hemoglobin, hematocrit, and erythrocyte count below normal values, resulting in a reduced capacity of the blood to transport oxygen to body tissues (Tristyanto & Suriaman, 2023). Hemoglobin, as the primary component of red blood cells, plays a crucial role in oxygen transport throughout the body. Hemoglobin deficiency may lead to various clinical symptoms and, over time, can significantly reduce an individual's quality of life (Meliliyanti & Ramadhani, 2020; Aliyah & Krianto, 2023).

Mothers are particularly vulnerable to anemia due to increased nutritional requirements during pregnancy, especially for iron, vitamin B12, and folic acid (Amalia, Eliska, & Nurhayati, 2022). Iron deficiency not only affects maternal health but may also reduce breast milk quality and increase the risk of anemia in infants who depend on breast milk as their primary source of nutrition (Pujiastuti, 2010). Reinbott et al. (2016) reported that anemic mothers have a 1,77-fold higher risk of having anemic children. In addition, maternal anemia may reduce work capacity and caregiving ability, thereby negatively affecting child growth through suboptimal child-rearing practices, including inappropriate breastfeeding, inadequate complementary feeding, and insufficient attention to environmental hygiene and sanitation, which increase the risk of anemia in children (Iftikhar et al., 2018).

Uncontrolled anemia in children aged 0–5 years can impair physical and cognitive development, reduce immune function, increase susceptibility to recurrent infections, impair nutrient absorption, and ultimately contribute to stunting (Aisyah et al., 2024). Stunting is a condition of chronic growth failure caused by long-term malnutrition, characterized by short stature and delayed cognitive development, with a length-for-age or height-for-age z-score below -2 standard deviations according to World Health Organization standards (Anjani, Nurhayati, & Immawati, 2024).

East Nusa Tenggara (NTT) has the second-highest prevalence of stunting in Indonesia, reaching 37,9% in 2023. According to e-PPGBM data from February 2023, there were 67.538 stunted children (15,7%) in the province, with Kupang District reporting 4.889 cases (16,2%). One of the areas within this coverage is the Baumata Health Center, which reported 172 cases of stunting across eight villages in March 2025.

Improving maternal nutrition plays a crucial role in preventing anemia and stunting in children, particularly during pregnancy, when higher nutritional intake is required to support fetal growth and breast milk production (Dina, 2023). However, no study has specifically examined the association between maternal anemia status and anemia among stunted children in the working area of the Baumata Health Center. Therefore, this study was conducted to investigate the relationship between maternal anemia status and anemia among stunted children in this area. This study is expected to provide evidence that anemia in stunted children may be associated with maternal anemia. This also includes parenting patterns and children's daily dietary habits, which are strongly influenced by maternal roles. We hypothesized that there would be a relationship between maternal anemia status and anemia among stunted children.

Methods

This study was a laboratory-based analytical study with a cross-sectional design. It was conducted from February to April 2025 at the Baumata Health Center, Taebenu District, Kupang Regency. The study involved 20 pairs of mothers and stunted children selected using a purposive sampling technique based on predefined inclusion and exclusion criteria. The inclusion criteria were children with stunting registered in the Baumata Community Health Center database, aged under 5 years, and mothers who were willing to be respondents by signing an informed consent form. The exclusion criterion was refusal to participate. The research procedures included obtaining research permits, approaching respondents, collecting blood samples, and measuring hemoglobin levels using a hematology analyzer. The collected data were analyzed using Fisher's exact test.

Results

The distribution of sample characteristics based on maternal anemia and child anemia status was obtained from 20 mothers and 20 stunted children. Based on Table 1, the number of mothers who experienced anemia was 3 people (15%) and 17 people (85%) who did not experience anemia. Based on child anemia status, 13 children (65%) were anemic and 7 children (35%) were not anemic.

Table 1. Characteristics of Respondents Based on Maternal Anemia and Child Stunting

Characteristics	Number	Percentage (%)
Maternal Anemia Status		
Anemia	3	15,0
Non anemia	17	85,0
Child Anemia Status		
Anemia	13	65,0
Non anemia	7	35,0
Total	20	100

Table 2 shows that most mothers had a junior high school education (45%), were unemployed (95%), were aged 20–35 years (65%), and came from families with an income of IDR 500.000-IDR 1.000.000 (55%). Most have 2–3 children (55%), with 2-year-old children dominating (40%).

Table 2. Characteristics of Respondents Based on Mother's Education, Mother's Occupation, Family Income, Number of Children, Age of Children and Gender of Children

Characteristics	Number	Percentage (%)
Maternal Education		
Elementary School	4	45,0
Junior High School	9	30,0
Senior High School	6	5,0
College	1	
Mother's Occupation		
Working	1	5,0
Not Working	19	95,0
Mother's Age		
<20 years	0	00,0
20–35 years	13	65,0
>35 years	7	35,0
Family Income		
<IDR 500.000	8	40,0
IDR 500.000–IDR 1.000.000	11	55,0
IDR 1.000.000–IDR 2.000.000	1	5,0
Number of children		
1 child	3	15,0
2–3 children	11	55,0
>3 children	6	30,0
Child's age		
1 year	2	10,0
2 years	8	40,0
3 years	5	25,0
4 years	4	20,0
5 years	1	5,0
Total	20	100

This analysis was conducted to determine the relationship between maternal anemia status and anemia among stunted children. Based on Table 3, the statistical test results showed a *p-value* of 0,27 ($p > 0,05$), indicating that the incidence of anemia in mothers is not statistically related to the incidence of anemia in children experiencing stunting.

Table 3. Relationship between Maternal Anemia Status and Anemia Status of Stunting Children

Mother's Group	Group of Stunted Children				Total		p-value
	Anemia		Non anemia				
	N	%	N	%	N	%	
Anemia	1	33,3%	2	66,7%	3	100%	0,270
Non anemia	12	70,6%	5	29,4%	17	100%	
Total	13	65%	7	35%	20	100%	

This analysis was conducted to determine the relationship between anemia status in stunted children and maternal education. Based on Table 4, the statistical test results show a *p-value* of 0,019 ($p < 0,05$), indicating that anemia status in stunted children is statistically related to maternal education.

Table 4. Relationship between Anemia Status of Stunting Children and Maternal Education

Child Anemia Status	Maternal Education										<i>p-value</i>
	Elementary School		Junior High School		Senior High School		College		Total		
	N	%	N	%	N	%	N	%	N	%	
Anemia	4	30,8%	7	53,8%	1	7,7%	1	7,7%	13	100%	0,019
Non anemia	0	0,0%	2	28,5%	5	71,4%	0	0,0%	7	100%	
Total	4	20,0%	9	45,0%	6	30,0%	1	5,0%	20	100%	

This analysis was conducted to determine the relationship between anemia status in stunted children and their mothers' occupations. Based on Table 5, the statistical test results show a *p-value* of 1,0 ($p > 0,05$), indicating that the anemia status of stunted children is not statistically related to their mothers' occupations.

Table 5. Relationship between Anemia Status of Stunting Children and Mother's Occupation

Child Anemia Status	Mother's Occupation				Total		p-value
	Work		Not Working		N	%	
	N	%	N	%			
Anemia	1	7,7%	12	92,3%	13	100%	1,000
Non anemia	0	0,0%	7	100%	7	100%	
Total	1	5,0%	19	95,0%	20	100%	

This analysis was conducted to determine the relationship between anemia status in stunted children and family income. Based on Table 6, the statistical test results show a *p-value* of 0,1 ($p > 0,05$), indicating that the anemia status of stunted children is not statistically related to family income.

Table 6. Relationship between Anemia Status of Stunting Children and Family Income

Child Anemia Status	Family Income						Total	<i>p-value</i>	
	< IDR 500.000		IDR 500.000–IDR 1.000.000		IDR 1.000.000–IDR 2.000.000				
	N	%	N	%	N	%			
Anemia	7	53,8%	5	38,5%	1	7,7%	13	100%	0,158
Non anemia	1	14,3%	6	85,%	0	0,0%	7	100%	
Total	8	40,0%%	11	55,%	1	5,0%	20	100%	

This analysis was conducted to determine the relationship between anemia status in stunted children and the number of children. Based on Table 7, the statistical test results show a *p-value* of 0,1 ($p > 0,05$), indicating that the anemia status of stunted children is not statistically related to the number of children in the family.

Table 7. Relationship between Anemia Status of Stunting Children and Number of Children

Child Anemia Status	Number of Children						Total		<i>p-value</i>
	1 child		2–3 children		>3 children		N	%	
	N	%	N	%	N	%			
Anemia	2	15,4%	7	53,8%	4	30,8%	13	100%	1,000
Non anemia	1	14,3%	4	57,1%	2	28,6%	7	100%	
Total	3	15,0%%	11	55,0%	6	30,0%	20	100%	

This analysis was conducted to determine the relationship between anemia status in stunted children and the gender of stunted children. Based on Table 8, the statistical test results show a *p-value* of 0,1 ($p > 0,05$), indicating that anemia status among stunted children was not statistically related to child gender.

Table 8. Relationship between Anemia Status of Stunting Children and Age of Stunting Children

Child Anemia Status	Child's Age										<i>p-value</i>
	1 year		2 years		3 years		4 years		5 years		
	N	%	N	%	N	%	N	%	N	%	
Anemia	1	7,7%	6	46,2%	3	23,1%	2	15,4%	1	7,7%	0,942
Non anemia	1	14,3%	2	28,6%	2	28,6%	2	28,6%	0	0,0%	
Total	2	10,0%	8	40,0%	5	25,0%	4	20,0%	1	5,0%	

Discussion

The characteristics of the respondents in this study show that the majority of mothers have a junior high school education, are unemployed, are in the reproductive age range of 20–35 years, and come from families with relatively low incomes. In addition, most mothers have 2–3 children, with the most dominant age being 2 years old. This pattern of characteristics reflects the condition of mothers and families who are in the active parenting phase with limited educational and economic resources. This condition is an important context in understanding the dynamics of meeting children's nutritional needs, because the educational background, employment status, and socioeconomic conditions of mothers have the potential to influence parenting patterns, food choices, and access to health information and services.

This study is consistent with several previous studies that emphasize the role of maternal and family characteristics in children's nutritional status. Dwihestie (2018) states that the mother's level of education plays an important role in the ability to choose and manage a balanced diet for the family, which has an impact on children's anemia status. Meanwhile, Ronald, Warwuru, & Rahail (2024) explain that working mothers often face time constraints in childcare and providing nutritious meals, although additional income from work can help meet nutritional needs. In terms of age, Sari, Fitri, & Dewi (2021) mention that mothers under the age of 20 are more prone to anemia due to iron requirements, while mothers over the age of 35 are at risk of anemia due to decreased bodily functions. Low family income also impacts the quality and diversity of food consumption, thereby increasing the risk of nutritional problems in children (Kurniawati & Yulianto, 2022). Additionally, repeated pregnancies, childbirth, and breastfeeding in mothers with 2–5 children can deplete iron reserves and increase the risk of anemia (Opitasari & Andayasari, 2015).

The cross-tabulation and statistical test results in this study indicate that there is no significant relationship between maternal anemia status and anemia status in stunted children. These findings suggest that the incidence of anemia in stunted children is not solely influenced by maternal anemia status, but involves other more complex factors. These results are in line with the study by Dewi et al. (2022), which states that consumption patterns, feeding practices, and socioeconomic and environmental conditions also play a role in the occurrence of anemia in toddlers. This contrasts with the study conducted by Fauzia, Wahyuntari, & Wahtini (2021), which found a strong relationship between maternal and child anemia, whereby mothers with anemia had a 13,7 times greater risk of having children with anemia. Research conducted in Hunan, China, and several regions in Africa has also shown that moderate to severe maternal anemia contributes significantly to the incidence of anemia in children, with a contribution of 52–71%. A limitation of this study is that anemia status was assessed solely using hemoglobin levels without erythrocyte count and hematocrit measurements.

Maternal education level shows a significant relationship with anemia status in stunted children. Children of mothers with low education levels have a higher risk of anemia than children of mothers with higher education levels. This finding is supported by research by Sintia, Wardiyah, & Novikasari (2025), which shows that mothers with low education have more than four times the risk of having children with anemia ($OR = 4,241$; $p = 0,001$). This study is also in line with research conducted by Gumilang et al. (2021), which found that toddlers of mothers who did not attend school are more prone to anemia. This condition is related to limited nutritional knowledge, the ability to understand health information, and decision-making related to meeting children's nutritional needs. This contrasts with several other studies that did not find a significant relationship, such as those conducted by Supriyati (2018) and Rezky et al. (2022), which may have been influenced by health behavior factors, access to health services, and the role of health workers.

Based on the mother's employment status, the results of the study show no significant relationship with the status of anemia in children experiencing stunting. Both working and non-working mothers show relatively similar levels of anemia in their children. These findings indicate that whether a mother works or not does not directly determine the incidence of anemia in children, but rather depends on the quality of care and fulfillment of children's nutritional needs. These research results differ from those of Supriyati (2018), which showed that working mothers had a 1,3 times greater risk of having children with anemia. The high workload of working mothers can affect their health and nutritional intake, as well as limit the time they can spend caring for their children, especially if the children are cared for by others who do not fully understand their nutritional needs.

The results of this study also show that there is no significant relationship between family income and anemia status in stunted children, so that income is not a direct factor affecting the incidence of anemia in stunted children. This study differs from that of Gantini, Hendrawan, & Barkah (2024), which showed a significant relationship between family income and the incidence of anemia in toddlers ($p = 0,002$). Income affects a family's ability to purchase nutritious food, where low income often limits the fulfillment of nutritional needs, while an increase in income is usually followed by an increase in the variety, quantity, and quality of food consumption.

Based on the number of children in the family, cross-tabulation results and statistical tests show no significant relationship between the number of children in the family and the status of anemia in stunted children. This is in line with the research conducted by Rezky et al. (2022), which also found no significant relationship, possibly due to other factors such as the child's nutritional status, mother's education, occupation, income, susceptibility to disease, and low appetite in children. These results differ from the study conducted by Opitasari & Andayasari (2015), which stated that the number of children affects the risk of iron deficiency anemia due to a decrease in the mother's iron reserves as a result of repeated pregnancies, childbirth, and breastfeeding.

The results of this study also show that there is no significant relationship between the age of children and the status of anemia in stunted children. This study is in line with research conducted by Sintia, Wardiyah, & Novikasari (2025), which also found no significant relationship ($p = 0,111$). However, children over 24 months of age have a 1.741 times higher risk of anemia than younger children, which is thought to be related to iron

requirements that are not always met. These results differ from the study conducted by Yuwono, Suryawan, & Sucipta (2020), which found a relationship between the age of the child and the incidence of anemia, especially in children under 2 years of age, and is supported by Iannotti et al. (2015) study, which reported the highest prevalence of anemia in 2-year-old children with statistically significant results.

This study has limitations in terms of sample size, which was only 20 pairs of mothers and children. Therefore, the results of this study may not be generalized outside this community. Purposive sampling, although purposeful, can cause selection bias because it depends on the researcher's judgment rather than randomization.

Conclusions

Based on the results of the research that has been conducted, it can be concluded that of the 20 respondents of mothers and stunted children, 15% of mothers experience anemia and 65% of stunted children also experience anemia. The majority of mothers have a junior high school education (45%), do not work (95%), are 20–35 years old (65%), earn IDR 500.000–IDR 1.000.000 (55%), and have 2–3 children (55%) and the majority of stunted children are at the age of 2 years (40%). Based on the statistical test results, there was no significant relationship between maternal anemia status and anemia among stunted children, as well as variables of education, occupation, income, number of children, and child age ($p > 0,05$). However, there was a significant relationship between anemia in stunted children and the mother's education level ($p < 0,05$), which indicates that low maternal education is at risk of increasing anemia in children.

Author contributions

MAV, SD, MFB, I, K, and A contributed to the research design, data collection, data analysis, data processing, and manuscript review. All authors have read and approved the final version of the manuscript.

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Ethical approval statement

The study received ethical approval from the Ethics Committee of Poltekkes Kemenkes Kupang (Certificate No. LB.02.03/1/0081/2025).

Conflicts of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Supplementary materials

No supplementary material available.

References

- Aisyah, I. S., Khomsan, A., Tanzihah, I., & Riyadi, H. (2024). Modeling Hidden Hunger in Toddlers to Determine the Most Influential Micronutrients in Stunting. *Nutrición Clínica y Dietética Hospitalaria*, 44(3). <https://doi.org/10.12873/443khomsan>
- Aliyah, N., & Krianto, T. R. I. (2023). Pengetahuan dalam Perilaku Konsumsi Tablet Tambah Darah pada Remaja Putri di Kecamatan Cimanggis Kota Depok Tahun 2023. *Journal of Nursing and Public Health*, 11(2), 426–435. <https://doi.org/10.37676/jnph.v11i2.5173>

- Amalia, K., Eliska, E., & Nurhayati, N. (2022). Faktor-Faktor yang Berkaitan dengan Kejadian Anemia Defisiensi Besi pada Ibu Hamil di Wilayah Kerja Puskesmas Lasi. *Prosiding Nasional FORIKES*, 3, 58-65. <https://forikes-ejournal.com/index.php/profo/article/view/1815>
- Anjani, D. M., Nurhayati, S., & Immawati, I. (2024). Penerapan Pendidikan Kesehatan terhadap Pengetahuan Ibu Tentang Stunting pada Balita di Wilayah Kerja UPTD Puskesmas Rawat Inap Banjarsari Metro Utara. *Jurnal Cendikia Muda*, 4(1), 62-69. <https://jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/557/362>
- Dewi, M., Khomsan, A., Ekawidyani, K. R., & Pravansa, A. A. (2022). Pola Asuh Makan dan Konsumsi Pangan Balita Anemia di Kabupaten Cirebon. *Amerta Nutrition*, 5(3), 227-234. <https://doi.org/10.20473/amnt.v6i3.2022.227-234>
- Dina, N. (2023). Pemberdayaan Masyarakat dalam Upaya Penanggulangan Stunting di Desa Podosari Kecamatan Pringsewu. (Doctoral dissertation), UIN Raden Intan Lampung. Retrieved from: <https://repository.radenintan.ac.id/id/eprint/31423>
- Dwihestie, L. K. (2018). Tingkat Pendidikan Ibu dan Tingkat Pendapatan Orang Tua Tidak Berhubungan dengan Kejadian Anemia pada Remaja Putri. *Intan Husada: Jurnal Ilmiah Keperawatan*, 6(2), 28-38. <https://e-jurnal.akperinsada.ac.id/index.php/insada/article/view/115>
- Fauzia, F. R., Wahyuntari, E., & Wahtini, S. (2021). Relationship between Maternal Anemia and the Incidence of Anemia in Infants Aged 6–36 Months: Hubungan Anemia pada Ibu Hamil dengan Anemia Bayi Usia 6–36 Bulan. *Jurnal Kebidanan Midwifery*, 7(2), 93-102. <https://doi.org/10.21070/midwifery.v7i2.1633>
- Gantini, T., Hendrawan, H., & Barkah, M. R. (2024). Hubungan Pendapatan Keluarga dengan Status Gizi Balita di Desa Bojong Kecamatan Pameungpeuk Kabupaten Garut. *Agrotekh (Jurnal Agribisnis dan Teknologi Pangan)*, 4(2), 99-107. <https://doi.org/10.32627/agrotekh.v4i2.888>
- Gumilang, L., Nurlaelasari, D., Dhamayanti, M., Judistiani, R. T. D., Martini, N., & Pramatirta, A. Y. (2021). Gambaran Faktor Risiko Kejadian Anemia pada Balita. *JKM (Jurnal Kebidanan Malahayati)*, 7(4), 681-687. <https://doi.org/10.33024/jkm.v7i4.4736>
- Iannotti, L. L., Delnatus, J. R., Odom, A. R., Eaton, J. C., Griggs, J. J., Brown, S., & Wolff, P. B. (2015). Determinants of Anemia and Hemoglobin Concentration in Haitian School-Aged Children. *The American journal of tropical medicine and hygiene*, 93(5), 1092. <https://doi.org/10.4269/ajtmh.15-0073>
- Iftikhar, A., Attia Bari, F. Z., Jabeen, U., Masood, Q., & Waheed, A. (2018). Maternal Anemia and its Impact on Nutritional Status of Children Under the Age of Two Years. *Biomedical Journal*, 2(4), 1-4. <https://doi.org/10.26717/BJSTR.2018.05.001197>
- Kurniawati, N., & Yulianto, Y. (2022). Pengaruh Jenis Kelamin Balita, Usia Balita, Status Keluarga dan Pendapatan Keluarga terhadap Kejadian Pendek (Stunted) pada Balita di Kota Mojokerto. *Pengembangan Ilmu dan Praktik Kesehatan*, 1(1), 76-92. <https://doi.org/10.56586/pipk.v1i1.192>
- Meliliyanti, M., & Ramadhani, D. (2020). Pemantauan Terapi Obat pada Pasien Penyakit Anemia di Rumah Sakit X. *Social Clinical Pharmacy Indonesia Journal*, 5(2), 1-3. DOI: [10.52447/scpij.v5i2.3899](https://doi.org/10.52447/scpij.v5i2.3899)
- Opitasari, C., & Andayasari, L. (2015). Young Mothers, Parity and the Risks of Anemia in the Third Trimester of Pregnancy. *Health Science Journal of Indonesia*, 6(1), 7-11. DOI: [10.22435/hsji.v6i1.4479.7-11](https://doi.org/10.22435/hsji.v6i1.4479.7-11)
- Pujiastuti, N. (2010). Korelasi antara Status Gizi Ibu Menyusui dengan Kecukupan ASI di Posyandu Desa Karang Kedawang Kecamatan Soko Kabupaten Mojokerto. *Jurnal Keperawatan*, 1(2). <https://doi.org/10.22219/jk.v1i2.407>
- Reinbott, A., Jordan, I., Herrmann, J., Kuchenbecker, J., Kevanna, O., & Krawinkel, M. B. (2016). Role of Breastfeeding and Complementary Food on Hemoglobin and Ferritin Levels in a Cambodian Cross-Sectional Sample of Children Aged 3 to 24 Months. *PloS one*, 11(3). <https://doi.org/10.1371/journal.pone.0150750>
- Rezky, I. Z., Ringoringo, H. P., Panghiyangan, R., Hartoyo, E., & Rahmiati, R. (2022). Prevalensi Anemia Defisiensi Besi dan Faktor-Faktor yang Memengaruhi pada Anak Balita dengan Gizi Buruk. *Homeostasis*, 5(2), 255-262. <https://doi.org/10.20527/ht.v5i2.6269>
- Ronald, R., Warwuru, P. M., & Rahail, R. B. (2024). Hubungan Pekerjaan dan Pendidikan Ibu dengan Status Gizi Balita di Puskesmas Samkai Kabupaten Merauke. *Jurnal Cakrawala Ilmiah*, 3(9), 2647-2656. <https://bajangjournal.com/index.php/JCI/article/view/7753>

-
- Sari, S. A., Fitri, N. L., & Dewi, N. R. (2021). Hubungan Usia dengan Kejadian Anemia pada Ibu Hamil di Kota Metro. *Jurnal Wacana Kesehatan*, 6(1), 23-26. <https://doi.org/10.52822/jwk.v6i1.169>
- Sintia, M. B. D., Wardiyah, A., & Novikasari, L. (2025). Faktor Resiko Kejadian Anemia pada Balita Usia 6–59 Bulan di Kelurahan Way Lunik Kecamatan Panjang Kota Bandar Lampung. *Malahayati Nursing Journal*, 7(2), 862-876. <https://doi.org/10.33024/mnj.v7i2.16752>
- Supriyati, Y. R. (2018). Faktor Risiko Kejadian Anemia pada Bayi Usia 6 Bulan di Puskesmas Tegalrejo Kota Yogyakarta. (S1) skripsi, Poltekkes Kemenkes Yogyakarta. Retrieved from: <http://eprints.poltekkesjogja.ac.id/id/eprint/1465>
- Tristyanto, N., & Suriaman, E. (2023). Perbedaan Kabar Hemoglobin pada Pasien Anemia Sebelum dan Sesudah Vaksin Covid 19. *Klinikal Sains: Jurnal Analisis Kesehatan*, 11(1), 23-29. https://doi.org/10.36341/klinikal_sains.v11i1.3326
- Yuwono, E., Suryawan, I. W. B., & Sucipta, A. A. M. (2020). Faktor faktor Yang Berhubungan dengan Kejadian Anemia pada Anak Usia 6–59 Bulan di RSUD Wangaya, Denpasar, Bali, Indonesia tahun 2019. *Intisari Sains Medis*, 11(1), 75-80. <https://doi.org/10.15562/ism.v11i1.572>