



## Factors Associated with the Incidence of Anemia in Toddlers at RS Dera As-Syifa Banjarharjo

Ela Felawati<sup>1</sup>, Nurhasanah<sup>2</sup>, Eka Ratnasari<sup>3</sup>

<sup>1,2,3</sup> STIKes Muhammadiyah Cirebon, West Java, Indonesia, ela.fela0804@gmail.com

**Abstract.** The incidence of anemia is a global problem that occurs in developed and developing countries that can have an impact on health, social and economic. Based on data from the World Health Organization (WHO) estimates that 42% of children under 5 years and 40% of pregnant women in the world suffer from anemia. The increased incidence of anemia of toddlers can be caused by the nutritional needs of toddlers more during the growth period. Toddlers who have anemia can have an impact on their immune system and intellectual abilities. The purpose of this study was to determine the factors associated with the incidence of anemia in toddlers at Dera As-Syifa Hospital Banjarharjo Brebes in 2023. This study design used analytical observational research with a cross sectional approach. The sampling technique in this study used a total sampling of 30 people. The results showed that based on the results of the spearman test, a p-value of  $0.00 < 0.05$  was obtained, which means that there is a relationship between birth weight, parents' economic status and maternal knowledge with the incidence of anemia in toddlers at Dera As-syifa Hospital Banjarharjo Brebes. The conclusion of this study is that there is a relationship between birth weight, parents' economic status and maternal knowledge with the incidence of anemia in toddlers at Dera As-syifa Hospital Banjarharjo.

**Keywords:** Anemia; Balita

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### INTRODUCTION

The incidence of anemia is a global problem that occurs in developed countries as well as in developing and poor countries, which has an impact on health, social and economic. Children under 5 years old experience a phase of rapid growth, in this stage will need reserves of iron, folic acid, and vitamins to help the growth process. If not given adequate nutritional intake, it will cause hemoglobin levels to decrease and cause anemia. Insufficient nutrient intake can be caused due to the introduction of early feeding with low iron levels. In addition, the increased frequency of infectious and parasitic diseases among children under five is also an important factor in determining anemia in children (Leite, 2013).

According to The United States Centers for Disease Control and Prevention (US CDC), explaining children who have a risk of anemia include premature or babies with low

birth weight, babies given cow's milk before the age of 12 months, anemia in children is a consequence of a complex interaction of several factors (Dewi, 2017). The World Health Organization (WHO) estimates that 42% of children under 5 years old and 40% of pregnant women in the world suffer from anemia (WHO, 2016). The number of anemia in toddlers in Indonesia based on Basic Health Research (Riskesda) data in 2013 was 28.1% and increased in 2018 by 38.5%. (Ministry of Health RI, 2018). Anemia cases in Central Java are quite high, according to Semarang pediatrician dr JC Susanto Sp.A (K) said the number of anemic toddlers is 47% in 2022. Around 1,775 children were treated at Dera As-Syifa Hospital Banjarharjo in 2022, there are around 700 children who have anemia, both mild, moderate and severe anemia. Of these 700 children there were 400 toddlers who were anemic, and 50 of them had to be done blood transfusions and further examinations.

The increased incidence of anemia of toddlers can be caused by the nutritional needs of toddlers more during the growth period. The incidence of anemia under five in Indonesia in rural areas is known to be higher at 25.0% than in urban areas at 22.7%. The presence of nutritional deficiencies, iron deficiency, folate deficiency, vitamins B12 and A as well as infectious diseases, such as malaria are the most common main causes of anemia in children. This disease can occur when the body has difficulty producing red blood cells or damaged red blood cells, where anemia can affect children's growth and development (Riskesdas, 2018). A preliminary study conducted showed that out of 10 random respondents of hospitalized pediatric patients, there were 7 who did not understand and understand anemia and its effects. Based on this background description, researchers are interested in conducting research on factors that affect anemia in children in the pediatric inpatient room of Dera As-Syifa Hospital Banjarharjo for 2 weeks, starting from June 5, 2023 to June 19, 2023.

## **LITERATURE**

Anemia or lack of red blood cells is a condition in which the number of red blood cells or hemoglobin (a protein that carries oxygen) in red blood cells is below normal. Red blood cells themselves contain hemoglobin which plays a role in transporting oxygen from the lungs and delivering to all parts of the body. (Hasdianah & Suprpto, 2016). Anemia is one of the common blood disorders that occurs when red blood cell levels in the body become too low. This can cause health problems because red blood cells contain hemoglobin, which carries oxygen to body tissues. Anemia can cause various complications, including fatigue

and stress on organs. Anemia is actually a sign of the disease process not the disease itself (Proverawati, 2011).

Birth weight is related to maternal factors, mothers who experience anemia during pregnancy tend to give birth to children with low birth weight. The birth weight of infants <2500 grams has a significant relationship with anemia in infants aged 6 to 12 months. Babies with a birth weight of <2500 grams are 2.09 times more anemic than the birth weight of babies  $\geq$ 2500 grams. Babies born with normal birth weight have more iron stores than babies whose birth weight is less than normal. In addition, the weight of babies born less has a faster growth rate than babies born with normal weight, so that the iron stores they have are more quickly used up for metabolic processes (Helmyati, 2007).

In essence, nutrition is one of the determining factors for the quality of human resources. Nutritional adequacy is needed by every individual from the womb, infants, children, adolescence, to old age. Nutritional adequacy can be influenced by age, sex, activity, weight and height. A person's nutritional state is a picture of what he consumes for a long period of time and is reflected in the value of his nutritional status. Nutritional status is the expression of a state of equilibrium in the form of a certain variable or the embodiment of a nutrient in the form of a certain variable. Body Mass Index (BMI) is a simple tool to monitor nutritional status. BMI is a person's weight index in relation to height, which is determined by dividing body weight in kilograms by the square of height in meters squared. Nutritional status has a positive correlation with hemoglobin concentration, meaning that the worse a person's nutritional status, the lower the Hb level. BMI that is classified as thin has a risk of 1.4 times suffering from anemia compared to normal BMI (Handayani, 2017).

Anemia will interfere with the development of the immune system in children. This will decrease the normal immune response and increase the susceptibility to infection. Acute or chronic infections will interfere with growth because they decrease food intake, interfere with nutrient absorption, increase energy loss, increase metabolic needs, and inhibit the delivery of nutrients to tissues. Furthermore, infection will increase the risk of cardiovascular and metabolic diseases. Iron is required by the host to provide an effective immune response, although it is also required by most pathogens for its survival. Iron is useful in the regulation of growth and differentiation of cells, including immune cells. Iron plays a role in the formation of peroxide and nitrooxide enzymes that are important in immune cell function. Iron also acts as an intermediary in signaling cytokine formation (FAM, 2014).

High maternal education has a protective effect against toddler anemia. This is due to good feeding and child care practices by educated mothers. Various other studies have also shown that the prevalence of anemia under five is found to be greater in mothers who do not go to school. The higher the risk if you have an illiterate mother. Mothers with low education will affect the nutritional status of children, lack of maternal awareness about nutrition and unhealthy food consumption habits (Asefa, 2014). Socioeconomic levels include (income, education and number of family members). A low economic (income) level can affect diet. Most of the expenditure is aimed at meeting food needs, oriented to carbohydrate foods. This is because foods that contain a lot of carbohydrates, cheaper than food sources of iron, so iron needs will be difficult to meet, and can have an impact on the occurrence of iron nutrition anemia. The size of a family, as well as the composition of a family and the income level of the family, are associated with the quality and quantity of diet prevailing in that family. The number of large family members is certainly different from the number of small family members in terms of food and income distribution. In families with a large number of members, the distribution and adequacy of food in the family is lacking, thus causing malnutrition and having an impact on anemia (Sugiarsih, 2013).

## **METHOD**

This study design used analytical observational research with a cross sectional approach. Cross sectional research is research by studying objects within a certain period of time (not sustainable in the long term). In research using this method, information from part of the population is collected directly empirically with the aim of knowing the opinions of some populations on the object being studied in the field (Nursalam, 2017). The sampling technique in this study used a total sampling of 30 people.

## **DISCUSSION**

Based on table 1, it is known that the majority of the incidence of anemia in toddlers at Dera As Syifa Hospital Banjarharjo Brebes in 2023 is with mild anemia as many as 20 toddlers (66.7%). Based on table 2 shows that the results of the analysis conducted using spearman's rho test obtained a p-value value which can be seen in the correlation coefficient column. The value of sig (2 tailed) and the value of the strength of the relationship in the correlation coefficient column. A sig value of  $0.00 < 0.005$  means that  $H_0$  failed to be accepted, which means that there is a relationship between birth weight, parents' economic

status and maternal knowledge with the incidence of anemia in toddlers at Dera As-syifa Hospital Banjarharjo Brebes.

**Table 1. The incidence of anemia at Dera As-Syifa Hospital Banjarharjo**

Incidence of Anemia		
Category	Frequency	Presented
Low Anemia	20	66,7%
Moderate Anemia	8	26,7%
High Anemia	2	6,7%
Total	30	100.%

**Table 2. The relationship between birth weight, economic status and maternal knowledge with the incidence of anemia in toddlers at RS Dera As-Syifa Banjarharjo**

Variable	Correlation Coefficient	Sig. (2-tailed)
Birth Weight	.744**	.000
Economic Status	.421*	.021
Knowledge	.863**	.000

The main factor causing anemia is insufficient iron intake. About two-thirds of the iron in the body is contained in the red blood cells hemoglobin. Other factors associated with the occurrence of iron deficiency anemia are parental education, knowledge and attitudes of adolescent girls about anemia, nutritional consumption levels, menstrual patterns, and the incidence of infection with the incidence of anemia in children (Harahap, 2018). This study is in line with research conducted by Wahtini (2019) showing that there are 3 (2.8%) infants with BGM status (Below the Red Line) and 55 (51.4%) babies with anemia. Another study stated that the results of research conducted at Muhammadiyah Hospital Palembang found that from 96 respondents, there were 63 (65.6%) in the anemia category and 33 (34.4%) in the non-anemia category (Budiarti, et al. 2022). Other studies also stated that toddlers who had anemia as many as 13 toddlers (18.6%) and those who did not have anemia as many as 57 toddlers (81.4%) (Hanifah, 2019).

The socioeconomic status of the family that is more dominant is in the sufficient category, good socioeconomic status will affect the process of meeting the needs of children since the womb. Parents with low socioeconomic status cannot meet daily family needs which have an impact on children's growth and development (Umboh, et al. 2018). The results of this study are in line with previous studies, it is known that the frequency of respondents with the income level of respondents' parents >MSEs, the majority do not suffer

from anemia amounting to 25 respondents (38.5%) and the minority suffering from anemia amounting to 8 respondents (12.3%). Respondents with the income level of MSE respondents' parents (Harahap, 2018). Researchers previously mentioned that toddlers who do not have anemia are more in toddlers with well-informed mothers than mothers with knowledge of malnutrition (Hanifah, 2019). Another opinion from previous researchers mentioned the results of the study that income is not a factor in the incidence of anemia in infants, obtained a p value of  $> 0.05$ . In this study, 89 (83.2%) mothers with high income, even though the mother does not work, the mother earns income from her husband (Wahtini, 2019).

## CONCLUSION

There is a significant relationship between birth weight, parents' economic status and maternal knowledge with the incidence of anemia in toddlers at Dera As-syifa Hospital Banjarharjo. Based on this, it is necessary to formulate an anemia management program by taking into account these determinants.

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