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HEMOGLOBIN LEVELS IN STUNTING TODDLERS

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Abstract

Stunting is a physical growth disorder characterized by a decrease in growth speed and is the impact of a nutritional imbalance. Stunting is one of the indicators of malnutrition due to inadequate nutritional intake. One of the nutritional intakes needed is iron, stunting children are at greater risk of developing anemia. If iron intake is insufficient, transferrin formation will also be disrupted, resulting in low hemoglobin levels. This study aimed to determine hemoglobin levels in stunting toddlers. This study used a descriptive method by measuring the hemoglobin levels of respondents. With a sample of 35 respondents on stunting toddlers in the Tumbuan Health Center, Lubuk Sandi District, Seluma Regency, Bengkulu Province in 2021. Hemoglobin levels were determined using the POCT (Point of Care Testing) method. The results showed that almost all stunting toddlers had normal hemoglobin levels as many as 30 respondents (85.7%) and as many as 5 respondents had low hemoglobin levels (14.3%). Based on the research, it is known almost all toddlers have normal hemoglobin levels, and a small proportion has low hemoglobin values. Food intake in stunting toddlers needs to be increased, especially foods that contain high iron in order to prevent the occurrence of various diseases, one of which is anemia.

Keywords: Hemoglobin, Stunting, Toddler, Malnutrition, Point of Care Testing

INTRODUCTION

Stunting is the nutritional status of children based on length or height according to age based on WHO-MGRS (Multicentre Growth Reference Study) standards with z-score results less than 2 standard deviations are a category of stunting; stunting is a physical growth disorder characterized by a decrease in growth speed and is the impact of nutritional imbalance. Stunting is still one of the nutritional problems in Indonesia that have not been resolved (Losong & Adriani, 2017).

The World Health Organization (WHO) ranked Indonesia as the third country with the highest stunting prevalence rate in Asia in 2017, reaching 36.4 percent (Novianto, 2019). According to data from the Ministry of Health's Basic Health Research (Riskesdas), the national stunting rate has decreased from 37.2% in 2013 to 30.8% in 2018, according to the Indonesian Toddler Nutritional Status Survey (SSGBI) in 2019, this figure decreased to 27.7%. Reducing stunting rates has been declared a national priority program (Kemenpppa, 2020).

Based on the results of the 2018 Basic Health Research (Riskesdas), stunting in Bengkulu was recorded at 27.98 percent. This figure, it shows that 1 (one) out of 3 (three) children in Bengkulu has stunting in a number of districts or cities (bengkuluprov, 2021). In handling stunting in Bengkulu, the government has designated four districts as priority areas for handling stunting prevalence reduction, namely South Bengkulu Regency, Kaur Regency, Seluma Regency, and North Bengkulu Regency (Ningsi, 2021). One of them is the stunting percentage rate in Seluma Regency from 2015 to 2020 has decreased and there was only an increase in 2016. In 2015 the Seluma Stunting rate was 23%, 2016 it increased to 36.4%, in 2017 it fell to 23.3%, in 2018 it was at 13%, 2019 it fell back to 8.9% and in 2020 it again decreased to 6.4% (ppse kominfo, 2021).

Stunting cases in Seluma Regency, Bengkulu Province, reached 933 people until July 2020. The number of stunting cases until July 2020 reached 933 people, a decrease compared to 2019 and reached more than 1000 people so special attention and treatment are needed from both health agencies and people who take care of children so as not to cause greater nutritional problems in the future (Humanities, 2020). While the number of stunting cases in 2021 reached 1538 children in Seluma regency, the prevalence of stunted children reached 6.6% (Aksi.bangda.kemendagri.go.id, 2021).

Stunting will cause long-term impacts, namely disruption of physical, mental, intellectual, and cognitive development. Children affected by stunting until the age of 5 years will be difficult to repair so it will continue until adulthood and can increase the risk of offspring with low birth weight (BBLR), the incidence of stunting can be influenced by various factors such as, among others, due to the lack of intake of macronutrients such as energy, protein, and fat. However, the intake of micro minerals such as zinc and iron also need to be considered (Losong & Adriani, 2017). Stunting is an indicator of malnutrition due to a lack of nutrient intake. One of the necessary nutrient intakes is iron, children who are stunted are at greater risk of developing anemia (Flora et al., 2019). If iron intake is not sufficient, the formation of transferrin will also be disturbed which results in low hemoglobin levels (Malahayati, 2013).

METHODS

Research Design and Subject

The type of research used in this study was a type of descriptive research. The variable used in this study was hemoglobin in stunted children under five in the Puskesmas Area, Lubuk Sandi District, Seluma Regency. The research time was conducted from December 2021-March 2022. The population of 78 Stunting Toddlers was obtained from the E-PPGBM Application (Electronic Community-Based Nutrition Recording and Reporting) Puskesmas Tumbuan

sub-district Lubuk Sandi Kabupaten Seluma in 2021. The sampling technique in this study uses the purposive sampling method, the sample selected must meet the inclusion criteria.

Instruments and Data Analysis Procedures

Hemoglobin (Hb) level examination is carried out using the POCT (Point of Care Testing) method. Measurement of hemoglobin (Hb) levels using the POCT method is carried out through examination using a strip test. The respondent's blood sampling is placed on the Hb strip then the Hb strip is inserted into the Hb check tool, then automatically the Hb level value will be detected on the device. Category of normal hemoglobin levels in stunted children under five Age Group Children 6 months – 59 months Hb Normal (No Anemia) = 11 g / dL, Low Hb (Mild Anemia) = 10–10.9 g / dL, (Moderate Anemia) = 7– 9 g / dL, (Severe Anemia) = 7.

FINDINGS

The results of a study conducted on stunted children under five in the Tumbuan Health Center area, Lubuk Sandi District, Seluma Regency in 2022, the results were obtained as shown in the table below:

Table 1 Distribution of Hemoglobin Levels in Stunting Toddlers in the Tumbuan Health Center Area, Lubuk Sandi District, Seluma Regency in 2022

Children 6 months – 59 months Hemoglobin Level Results	Frequency	Percentage (%)
Normal Hb (No Anemia) = 11 g/dL	30	85,7%
Low Hb (Mild Anemia) = 10 – 10.9 g/dL (Moderate Anemia) = 7 – 9 g/dL (Severe Anemia) = 7 g/dL	5	14,3%
Total	35	100%

Based on the distribution table above, judging from 35 respondents who are stunted toddlers, there are 30 respondents (85.7%) who have normal hemoglobin levels, while 5 respondents (14.3%) have low hemoglobin levels.

DISCUSSION

In this study, of the 35 respondents, the results were obtained, that almost all stunted toddlers had normal hemoglobin values and a small percentage had low hemoglobin levels of stunted toddlers. This study used capillary blood samples with the tool used is easy touch/Point of Care Testing (POCT) which is one way to measure nutritional status biochemically with Hemoglobin examination. Measurement of hemoglobin (Hb) levels using the POCT method is carried out through examination using a strip test. The respondent's

blood sampling is placed on the Hb strip then the Hb strip is inserted into the Hb Check tool, then automatically the Hb level value will be detected on the device (Nidianti, Ersalina, et al, 2019).

Based on in-depth interviews with research respondents, it was found that almost all stunted children under five have normal hemoglobin values because there are several factors that can affect it, namely nutrients, One of the nutrients needed is the mineral iron, iron is the main constituent that is most important in the formation of hemoglobin, Hemoglobin plays an important role in transporting oxygen throughout the body, gives color to the blood, transports carbon dioxide back to the lungs, and maintains the shape of red blood cells, if iron is sufficient in the body then hemoglobin levels become normal and some parents of stunted toddlers say that their children have difficulty eating, prefer to eat snacks and drink formula milk compared to eating vegetables, side dishes from animals and fruits. Many parents feel calm even though their children have trouble eating but want to drink formula milk every day this will have an impact on normal hemoglobin levels, while some stunted toddlers have low hemoglobin value levels because iron intake has not been fulfilled properly so that it has an impact on low hemoglobin levels which can cause anemia in toddlers, this is also emphasized by the research of Astuti, Prahesti, & Andriyani (2016) where they also mentioned that low iron consumption will affect the nutritional status of children under five and iron deficiency can occur, resulting in decreased blood hemoglobin (Hb) levels and causing anemia.

This was also emphasized by research by Flora and Malahayati who also found that Stunting is an indicator of malnutrition due to a lack of nutritional intake. One of the necessary nutrient intakes is iron, children who are stunted are at greater risk of developing anemia (Flora et al., 2019). If iron intake is not sufficient, the formation of transferrin will also be disturbed which results in low hemoglobin levels (Malahayati, 2013).

Anemia in toddlers is influenced by various factors. The factors that can affect the occurrence of anemia are the characteristics of the toddler itself such as age, gender, birth weight, history of malaria disease, nutritional status of toddlers based on indicators of body weight per age (BB / U), height per age (TB / U), weight per height (BB / TB), vitamin A and DPT immunization (Nofiani Anjar, 2015).

Blood deficiency or anemia can be overcome by the easiest, namely consuming foods rich in iron (nuts, green vegetables, fish, red meat, liver, chicken, and others), getting enough rest, and finally consuming blood-boosting tablets (Nugraha et al., 2019).

CONCLUSIONS AND SUGGESTIONS

Based on the research, it is known almost all toddlers have normal hemoglobin levels, and a small proportion has low hemoglobin values. Food intake in stunting toddlers needs to be increased, especially foods that contain high iron in order to prevent the occurrence of various diseases, one of which is anemia.

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