

The Effectiveness Of Giving Angkak And Bananas Against Anemia In Children

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Abstract.

Iron is an important nutrient for making Hb, which is a protein in red blood cells that carries oxygen throughout the body's tissues and organs. Iron deficiency can be treated easily and inexpensively. Consuming two bananas a day is an alternative that can meet the needs of iron intake for anemic patients. This study aims to determine the effectiveness of giving Angkak and bananas to anemia in children at PMB Wati in 2021. The design of this study was a descriptive Quasy Experiment, with a two group only pre-post test design. The study involved 2 groups, namely the no-treatment group (added blood) and the treatment group (given added blood and bananas and Angkak). This research data is primary data. This instrument consists of two parts, namely the procedure sheet for giving bananas and Angkak and the action of checking Hb. In this study, the data analysis technique was carried out in two stages of calculation, successively, namely the normality test of the sample data with the Shapiro-Wilk test, and the faired sample test. All calculations were carried out with the help of SPSS for Windows software. Prior to data analysis, using a test on non-parametric statistics. The normality test of the research data used the Shapiro Wilk test. The results of the study were p-value $0.000 < 0.05$, meaning that the addition of blood plus bananas and red rice was more effective in increasing hemoglobin levels in anemic children. The conclusion showed that there was a change (increase) in hemoglobin levels after being given treatment to the two groups, namely the added blood group plus bananas and Angkak.

Keywords: Bananas and Angkak Against Anemia

I. INTRODUCTION

One of the micronutrient problems in Indonesian society is anemia. Based on the Global Prevalence on Anaemia, Southeast Asia is one of the regions with the highest prevalence of anemia, more than 53.8% of children aged 6-59 months are found to have mild anemia, and 3.6% have severe anemia. Meanwhile, in Indonesia, based on the results of the 2013 Basic Health Research, the national prevalence of anemia was 11.9% and most of those with anemia were children in the 1-5 year age group (28.1%), followed by the 5-14 year age group (18.1%) and tends to decrease in the adolescent group (1). In the golden period of the first 1000 days of life (1000 HPK), anemia results in a lack of oxygen intake to the brain. Chronic anemia is associated with delayed and impaired motor and intellectual development that may be irreversible. The impact of anemia for elementary school students is that it can cause impaired physical growth and development, low resistance to disease, a lower level of intelligence than it should, learning achievement and low sports achievement. In addition, anemia in children will have an impact on decreasing learning ability and concentration, disrupting the growth of both body cells and brain cells, causing facial symptoms to look pale, tired, lethargic and tired so that it can reduce fitness and learning achievement (2). Symptoms that often appear in people with anemia are easily tired, lack of energy or weakness, and lack of concentration. In children aged 6-11 years who suffer from iron deficiency anemia have IQ scores not exceeding the average value with impaired attention and cognitive function.

The reduction in stunting focuses on addressing the causes of nutritional problems, namely factors related to food security, especially access to nutritious food (food), the social environment related to infant and child feeding practices (caregiving), access to health services for prevention and treatment (health care), as well as environmental health which includes the availability of clean water and sanitation (environmental) facilities. These four factors affect the nutritional intake and health status of mothers and children. Interventions against these four factors are expected to prevent nutritional problems, both undernutrition and excess nutrition(3). Iron metabolism is an important nutrient for making Hb, which is a protein in red blood cells that carries oxygen throughout the body's tissues and organs. Iron deficiency can be treated easily and cheaply. Consuming two bananas a day is an alternative that can meet the needs of iron intake for anemic patients. The folic acid contained in bananas is needed to make nucleic acid and

hemoglobin in red blood cells and is easily absorbed (4). Ripe Ambon bananas contain 116 calories, 1.60 grams of protein, 0.20 grams of fat, 25.80 mg of carbohydrates, 8.00 mg of calcium, 32.00 mg of phosphorus, 0.50 mg of iron and 72.90 grams of water. Minerals in Ambon banana can be absorbed almost entirely by the body. The vitamin content of Ambon banana is very high, especially pro vitamin A, namely beta-carotene which is 45 mg per 100 grams of dry weight. Bananas contain 72.0 mg of vitamin C, 008 mg of B1, B complex (thiamine, riboflavin, niacin), and B6 (pyridoxine 0.5 mg/100gram) (5).

Vitamin B6 plays a role in the synthesis and coenzyme for several protein metabolism reactions, especially serotonin which plays an active role as a neurotransmitter in the smooth functioning of the brain, while vitamin C plays a role in transferring iron from transferrin in plasma to ferritin in the liver. Vitamin C is needed in the absorption of iron, thus vitamin C plays a role in the formation of Hb, thus accelerating the healing of anemia(6) The results of research conducted on the administration of Ambon bananas to increase hemoglobin levels in third trimester pregnant women with anemia. The results of this intervention were carried out for 7 days by consuming bananas twice a day in the morning and evening accompanied by Fe tablets, the result was an increase of 1.6 g/dl(7). Angkak (red yeast rice) is a red rice fermented by the yeast *Monascus purpureus*. Angkak is used in China, Taiwan, the Philippines, Thailand, and Indonesia as a natural food coloring and as a food additive. Chinese people use Angkak as an ingredient in traditional medicine(8). Angkak is a fermented rice product using *Monascus sp.* Through the solid phase fermentation process using *Monascus* mold, the white rice grains will be covered with the red pigment produced during fermentation. Metabolites formed during the fermentation process are generally in the form of polyketide compounds, such as monascin, ankaflavin, rubropuctatin, and monascorubrin, which are color pigments. Antioxidant compounds have a very important role for health. Various scientific evidence shows that antioxidant compounds have the potential to reduce the risk of chronic disease(9). This study aims to determine the effectiveness of bananas and Angkak against anemia in children at PMB Wati in 2021.

II. METHODS

The design of this research is a descriptive Quasy Experiment, with a two group only pre-post test design(10). The study involved 2 groups, namely the no-treatment group (added blood) and the treatment group (given added blood and bananas and Angkak). The data used in this study is primary data. This instrument consists of two parts, namely the procedure sheet for giving bananas and Angkak and the action of checking Hb. In this study, the data analysis technique was carried out in two stages of calculation, successively, namely the normality test of the sample data with the Shapiro-Wilk test, and the faired sample test. All calculations were carried out with the help of SPSS for Windows software. Prior to data analysis, using a test on non-parametric statistics. The normality test of the research data used the Shapiro Wilk test.

III. RESULT AND DISCUSSION

The results of the study showed that the frequency limit of respondents' anemia in the control group was 10 respondents (100%) with mild anemia, while in the intervention group, there were 9 respondents (90%) with mild anemia and 1 respondent (10%). The difference in the average hemoglobin level before being given the treatment with added blood plus bananas and red spinach was 10,010 g/dl with a standard deviation of 2601 g/dl and a minimum and maximum value of 9.4 g/dl-10.3 gr/dl. After being given the treatment, add blood plus banana consumption and increase the average hemoglobin level of 12,160 g/dl with a standard deviation of 2413 g/dl and a minimum-maximum value of 11.8 g/dl – 12.5 g/dl. In the blood-added treatment group, the average hemoglobin was 10,130 gr/dl with a standard deviation of 1337 gr/dl and a minimum-maximum value of 9.9 gr/dl – 10.3 gr/dl. After being given additional blood treatment, the average hemoglobin level was 11.120 g/dl with a standard deviation of 0789 g/dl and a minimum-maximum value of 11.0 g/dl-11.2 g/dl. the average difference in hemoglobin levels before and after treatment with added blood plus bananas and red spinach is 2.1500 gr/dl with a standard deviation of 2014, standard error is 0637 gr/dl. The p-value of 0.00 means that the addition of blood plus bananas and Angkak is more effective in increasing hemoglobin levels in anemic children. In the group that was given the treatment with added blood, the average difference in hemoglobin levels before and after was 9900 gr/dl with a standard deviation

of 0876 gr/dl and a p-value of 0.00, meaning that added blood was effective in increasing hemoglobin levels in anemic children. The results showed that the frequency limit of respondents' anemia in the control group was 10 respondents (100%) with mild anemia, while in the intervention group, there were 9 respondents (90%) with mild anemia and 1 respondent with moderate anemia (10%).

From the results of interviews with respondents' parents, the majority of the causes of anemia in their children are lack of daily intake (children have difficulty eating). This is in line with the results of regarding the incidence of anemia in elementary school-aged children. The factor that causes anemia is the factor of food intake, besides that it is also due to the infection factor of the child himself (worms)(11). The difference in the average hemoglobin level before being given additional blood plus banana and red onion treatment was 10,010 g/dl with a standard deviation of 2601 g/dl and a minimum and maximum value of 9.4 g/dl-10.3 gr/dl. After being given the treatment, add blood plus banana consumption and increase the average hemoglobin level of 12,160 g/dl with a standard deviation of 2413 g/dl and a minimum-maximum value of 11.8 g/dl – 12.5 g/dl. In the blood-added treatment group, the average hemoglobin was 10,130 gr/dl with a standard deviation of 1337 gr/dl and a minimum-maximum value of 9.9 gr/dl – 10.3 gr/dl. After being given additional blood treatment, the average hemoglobin level was 11.120 g/dl with a standard deviation of 0789 g/dl and a minimum-maximum value of 11.0 g/dl-11.2 g/dl. The results of this study showed that there was a change (increase) in hemoglobin levels after being given treatment in both groups, namely the blood-added group plus banana and red yeast rice by 2.2 – 2.4 g/dl and the blood-only group by 0.9-1.2 g/dl. The results of previous studies also showed an increase in hemoglobin levels by 3-3.6 after being given blood-added tablets and banana juice. This study was also associated with an increase in hemoglobin levels of 0.98 g/dl after being given iron folate treatment once per week for 21 days. Hemoglobin levels have a very important function for the activity of body cells, namely binding oxygen from the lungs to all body tissues. As well as bind and carry carbohydrates from all body tissues to the lungs and maintain the acid-base balance of the body(12)

The results showed that the average difference in hemoglobin levels before and after treatment with added blood plus bananas and red spinach was 2.1500 gr/dl with a standard deviation of 2014, standard error was 0637 gr/dl. The p-value of 0.00 means that the addition of blood plus bananas and Angkak is more effective in increasing hemoglobin levels. In the group that was given the treatment with added blood, the average difference in hemoglobin levels before and after was 9900 gr/dl with a standard deviation of 0876 gr/dl and a p-value of 0.00, meaning that the addition of blood was effective in increasing hemoglobin levels. The results of this study are in line with the research conducted by Putri Ardhana (2017) who intervened with Fe supplementation and Ambon banana juice which stated that hemoglobin levels before and after supplementation had a positive effect on increasing hemoglobin levels with a significant value ($p = 0.000$). In this study, the treatment group added blood and consumed bananas 2 times a day and 100 g of Angkak was dissolved in 200 ml of water per day. Consuming extra blood can be accompanied by food or drinks containing vitamin C or bananas which absorb iron more quickly or together with meat, fish, chicken so that it can stimulate stomach acid. The content of vitamin B6, vitamin C and iron contained in bananas is needed to produce antibodies, fat metabolism, red blood cells and stimulate the production of hemoglobin in the blood in patients with anemia(13). Vitamin C plays a role in helping the process of absorption of non-heme iron so that if there is a lack of vitamin C, the amount of iron absorbed will decrease and anemia can occur(14) One of the content of Angkak is iron. So Angkak can help synthesize hemoglobin (red dye). Angkak is widely used as a natural colorant for beverages and foods, including red wine, fish, cheese, and meat.

IV. CONCLUSION

The conclusion showed that there was a change (increase) in hemoglobin levels after being given treatment to the two groups, namely the added blood group plus bananas and Angkak. It is hoped that health workers, especially midwives, can provide counseling about local wisdom that can increase children's hemoglobin levels, such as banana avocado, brown rice and so on so as to reduce the incidence of anemia in children.

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