



The Effect of Tablet Blood Booster (Fe) and Bagea Sasigo on the Increase of Weight and Hemoglobin Levels in Female Students of the Female Islamic Boarding School, South Konawe Regency

Lisnawati^{1*}, Juli Purnama Hamudi², Via Zakiah³, Nur Afni⁴, Rizka Mutmainnah⁵,
Ira Nurmala⁶, Harni⁷, Irman Idrus⁸

Abstract

Cases of anemia in students at the Gontor Putri Islamic boarding school are still found every year which can have an impact on learning achievement if there is a decrease in hemoglobin levels in their blood. The purpose of this study was to determine the effect of giving blood supplement tablets and Bagea SASIGO (sago, cassava and gonad) on the increase in hemoglobin levels in female santri at Pondok Pesantren Gontor Putri, Konawe Selatan district. This type of research is a quantitative research with a pre-experiment approach with pretest-posttest design. The results showed that there was no effect of giving blood added tablets on the increase in body weight t count = 0.555 < 1.6999, Sig. 0.583 > α 0.05 H_0 was accepted, there was an effect of giving blood added tablets and sasigo biscuits on weight gain with t count = 2.312 > 1.6999, Sig. 0.028 < α 0.05 H_0 is rejected, there is an effect of FE giving to the increase in hemoglobin levels t count = 2.075 > 1.6999, Sig. 0.011 < α 0.05 H_0 was rejected, there was an effect of giving blood added tablets and sasigo biscuits on the increase in hemoglobin levels t count = 12.184 > 1.6999, Sig. 0.000 < α 0.05 H_0 was rejected, there was a difference in giving blood added tablets and blood added tablets plus sasigo biscuits on the increase in body weight t count = 2.101 > 1.676, Sig. 0.040 < α 0.05 H_0 is rejected, there is a difference in the effect of giving blood added tablets and blood added tablets plus sasigo biscuits on the increase in hemoglobin t count = 3.743 > 1.676, Sig. 0.000 < α 0.05 H_0 is rejected. It was concluded that there was no effect of supplemented blood tablets with an increase in body weight, there was an effect of giving blood added tablets with bageasasigo on weight gain, there was an effect of giving blood added tablets and blood added tablets plus bageasasigo on increasing hemoglobin levels, there was a difference in the effect of giving added tablets Blood (Fe) and giving blood supplement tablets with Bagea SASIGO to increase body weight and hemoglobin levels. Suggested In the hope of a decrease in the incidence of anemia or a decrease in hemoglobin levels in adolescent girls which has an impact on decreasing learning activities, it is suggested that the boarding school caregivers coordinate with the nearest health facility to provide guidance and our tips for preventing anemia in young women.

Key Words: Blood Supplement Tablets, Bagea SASIGO and increased body weight and hemoglobin levels

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Introduction

The Anemia Convention 2017 report, There are 202 million women in Southeast Asia and 100 million women in the Western Pacific aged 15-49 years who have anemia. World data shows that 41.8% of

pregnant women and nearly 600 million preschool and school-age children are anemic, about 60% of pregnant women (Sandrianti, 2017).

Corresponding author: Lisnawati

Address: ¹Departement of Hospital Administration, Pelita Ibu Institute of Health Science, Indonesia, ^{2,3,4,5,7}Department of Midwifery, Pelita Ibu Institute of Health Science, Indonesia, ^{6,8}Department of Pharmacy, Pelita Ibu Institute of Health Science, Indonesia

E-mail:

alfaridzfaqi16@gmail.com



Data from the National Development Planning Agency in 2012 shows that young women aged 10-19 years are one of the groups that are prone to anemia. While young women are the nation's future assets as determinants of the next generation.

The World Health Organization (2016), released data about 2.3 billion people in the world living with anemia, half of which is caused by iron and partly because of iron deficiency as the basis for forming hemoglobin. This condition is particularly prevalent in preschool children (<5 years), women of reproductive age and pregnant women with prevalence rates, reaching up to 41.7%, 32.8% and 40.1%, respectively (Health Observation Data Global 2016) data in Southeast Asia and Africa has the highest anemia rate reaching 85 percent. While in Indonesia there are 1 in 3 pregnant women, women of childbearing age 15-49 years with the fifth highest number of anemia sufferers in the world. This shows that Indonesia is ranked fifth in the world with a group of women of childbearing age at risk of being unproductive, unintelligent (Endang, 2017).

One of the causes of anemia is a poor diet or low iron intake. Poor diet in small quantities inhibits adolescent growth, because the amount of food consumed such as rice will decrease. Eat boring and rich foods that can block the absorption of iron so that iron cannot be used in the body. Iron deficiency can also be affected by poor nutritional status, especially those related to folic acid and vitamin A or B12 deficiencies, as occurs in developing countries (Silviana Faedah, 2019)

Bagea cake is a typical snack that almost exists in every area of Eastern Indonesia. A dry and slightly hard textured cake with a sweet and savory taste, where sago flour is the basic ingredient in making the cake. The basic ingredients made from sago flour, this cake is very unique because it has its own characteristics, besides it tastes good, this cake is also like a biscuit (Santosa, 2010).

Research related to Bagea SASIGO (Sago Cassava Gonads) efforts to increase hemoglobin levels and the amount of protein has previously been examined with the results where it can be concluded that the nutritional content of bagea made from cassava flour and gonads is that every 100 grams of bagea SASGO contains Energy = 267.65 kcal, Protein = 6.76 g, fat = 9.2 g, carbohydrates = 52.2 g, vitamin E = 4.7 mg, vitamin A = 596.8 IU, albumin = 0.2 g, Iron = 0.004 mg, magnesium = 0.4 mg and Zinc = 0.004 mg and is recommended as a formula food for pregnant

women which has a high energy and protein

content (La Banudi, Anasiru, Petrus, & Laksono, 2017).

Anemia due to iron deficiency causes fatigue in the end this condition causes them to be unable to compete for work opportunities. Teenagers need more iron and women certainly need more to replace the iron that is wasted with menstrual blood (Arisman, 2007).

Nanik Kristyan (2010); The results showed that there were differences in hemoglobin levels before and after administration of iron (Fe) tablets to female students of Al-Hidaya Islamic Boarding School, Groupujan Regency (probability value = 0.0001). A similar study by Fitri Gyanti et al. 2013; This indicates that there is a difference in the increase in hemoglobin levels between the control group and the experimental group with a mean increase of 0.1 and 0.7. In the control group there was an increase of 40% and in the experimental group it was 93.33% and Noky Tri Rachmadito (2013); The results of his research also showed that there was a positive effect of giving Blood Plus tablets and a healthy diet rich in nutrients.

Anemia cases in students at the Gontor Putri Islamic boarding school are still found, from 93 students who were examined in June found 15 students (16.12%) with Hb 9-10gr%, 5 students (5.47%) with Hb 7-8gr% 1 student (1.07%) < 7 gr%, anemia cases in July 14 students (15.05%) with Hb 9-10gr%, 4 students (4.30%) with Hb 7-8gr%, Hb < 7 g% not found, cases of anemia in August 26 students (27.95%) with Hb 9-10gr%, 9 students (9.67%) with Hb 7-8gr% 1 student (1.07%) < 7 gr% (Register for Konda Health Center, South Konawe Regency in 2019)

Based on the data above, this study was conducted with the aim of assessing the effectiveness of the program of giving blood-added tablets to adolescent girls with the title The Effect of Giving Blood-Adding Tablets (Fe) and Bagea SASIGO on Increasing Hemoglobin Levels in Gontor Putri Islamic Boarding Schools, South Konawe Regency.

Methods

The type of research conducted is pre-experimental research with a pretest-posttest design regarding the effect of giving blood supplement tablets and local snacks Bagea SASIGO on increasing hemoglobin levels in students at the Gontor Putri Islamic Boarding School (Sugiono, 2012).



respondents who were given treatment for 28 days which can be described in tabular form and given the following explanation

Results

Descriptive Analysis

The number of respondents consisted of 60

Table 1. Weight distribution before and after treatment

No Res	Giving Tablets To Add Blood				No Res	Giving Tablets Add Blood and Bagea SASIGO			
	Weight					Weight			
	Pre	Post		Ket		Pre	Post		Ket
1	70	68	-2	CE	1	60	59	-1	CE
2	64	68	4	M	2	70	68	-2	CE
3	80	78	-2	CE	3	47	48	1	M
4	57	58	1	M	4	83	84	1	M
5	58	61	3	M	5	74	77	3	M
6	45	47	2	M	6	65	67	2	M
7	61	59	-2	CE	7	56	54	-2	CE
8	60	59	-1	CE	8	57	56	-1	CE
9	70	68	-2	CE	9	60	58	-2	CE
10	47	48	1	M	10	58	59	1	M
11	83	84	1	M	11	57	58	1	M
12	74	77	3	M	12	58	61	3	M
13	65	67	2	M	13	45	47	2	M
14	56	54	-2	CE	14	61	59	-2	CE
15	57	56	-1	CE	15	60	59	-1	CE
16	60	58	-2	CE	16	70	68	-2	CE
17	58	59	1	M	17	47	48	1	M
18	48	50	2	M	18	56	54	-2	CE
19	70	68	-2	CE	19	57	56	-1	CE
20	47	46	-1	CE	20	60	58	-2	CE
21	83	81	-2	CE	21	58	59	1	M
22	74	75	1	M	22	57	58	1	M
23	65	67	2	M	23	58	60	2	M
24	56	54	-2	CE	24	44	45	1	M
25	57	56	-1	CE	25	43	45	2	M
26	67	65	-2	CE	26	43	44	1	M
27	50	51	1	M	27	49	51	2	M
28	52	53	1	M	28	42	43	1	M
29	43	46	3	M	29	36	37	1	M
30	48	50	2	M	30	38	40	2	M

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Table 2. Distribusi Kadar Hemoglobin sebelumPerlakuan dan setelahperlakuan

No Res	Giving Tablets To Add Blood				No Res	Giving Tablets Add Blood and Bagea SASIGO			
	HB levels					HB levels			
	Pre	Post		Ket		Pre	Post		Ket
1	13,4	12,7	-0,7	CE	1	13	14,2	1,2	M
2	11,6	12	0,4	M	2	13,2	13	-0,2	CE
3	12,2	13	0,8	M	3	14	15,4	1,4	M



4	14,5	13,4	-1,1	CE	4	15,5	16,9	1,4	M
5	12,7	14,3	1,6	M	5	13	14,4	1,4	M
6	15,5	14,2	-1,3	CE	6	14,2	15,6	1,4	M
7	10,9	11,1	0,2	M	7	14	15,2	1,2	M
8	13	14,5	1,5	M	8	12,7	13,9	1,2	M
9	14,2	13,3	-0,9	CE	9	14	15,2	1,2	M
10	14	14,5	0,5	M	10	12,2	13,4	1,2	M
11	12,7	14,3	1,6	M	11	13	14,2	1,2	M
12	14	14,2	0,2	M	12	13,4	14,8	1,4	M
13	11	11,1	0,1	M	13	13	13,8	0,8	M
14	13	14,5	1,5	M	14	13,5	13	-0,5	CE
15	14	14,2	0,2	M	15	14	14,5	0,5	M
16	11	11,1	0,1	M	16	15,5	15,6	0,1	M
17	13	14,5	1,5	M	17	10,9	12,6	1,7	M
18	14	13,3	-0,7	CE	18	13	14,7	1,7	M
19	14,5	15	0,5	M	19	14,2	15,6	1,4	M
20	12,1	14,3	2,2	M	20	14	15,4	1,4	M
21	13	13,2	0,2	M	21	12,7	14,1	1,4	M
22	12,2	13,4	1,2	M	22	14	15,3	1,3	M
23	14,5	15,7	1,2	M	23	12	13,3	1,3	M
24	12	13,2	1,2	M	24	14,2	15,5	1,3	M
25	14,7	16	1,3	M	25	14	15,3	1,3	M
26	14,5	14	-0,5	CE	26	12,7	13,9	1,2	M
27	13	13,2	0,2	M	27	14	15,2	1,2	M
28	15	15,2	0,2	M	28	12,7	13,8	1,1	M
29	10,2	10,4	0,2	M	29	13,8	15,1	1,3	M
30	13,1	13	-0,1	CE	30	15,1	16,4	1,3	M

From the table above, it can be explained that 7 (23.33%) respondents did not experience an increase in Hemoglobin Levels during the treatment given the intake of Blood Supplementary Tablets and it was found that 2 (6.66%) respondents did not experience an increase in hemoglobin levels with the administration of Blood Supplementary Tablets. and Bagea Sasigo. A decrease or no increase in hemoglobin levels after having been given food treatment is assessed as having problems with the organ system and it is suspected that there are other intakes that can

reduce hemoglobin levels and or not become effective

Inferential Analysis
Data Normality Test

The normality test of the data was carried out to find out whether the sample distribution was included in the normal distribution or not, thus the One-Sample Kolmogorov-Smirnov Test was carried out, which can be interpreted in the table below accompanied by an explanation

Table 3. Distribution of Data Normality Test Results for Each Variable

No.	n	Variable Pre Test-Post Test	Asymp. Sig. (2-tailed)	Alpha (α)
1	30	Tablets Add Blood	0.099	0.05
2	30	Giving Tablets To Add Blood + Bagea SASIGO	0.150	0.05

It is known from the results of the normality test of the data for the treatment of pre and post Blood Add Tablets with the Asymp value. Sig. (2-tailed) which is 0.099 greater than 0.05 which can be concluded that having a normal sample

distribution, the regression model has met the assumption of normality. It is known from the results of the normality test of the data for the treatment of pre and post Blood Supplement Tablets and BageaSasigo with the Asymp value. Sig.



(2-tailed) which is 0.150 greater than 0.05 which can be concluded that having a normal sample distribution, the regression model has met the assumption of normality.

Dependent t-test

The results of statistical tests in this study are to see the effect of the independent variable on the dependent variable and can be described in the form of a distribution table accompanied by a brief explanation, for more details will be reviewed in the following table

Statistical test

Table 4: Distribution of Effects of Giving Blood Add Tablets on Weight Gain

Responsen (n)	Average Weight Loss		T Count	T Table	Sig.
	Before	After			
30	60.8333	61.0333	0.555	1,6999	0.583

The results of the summary of descriptive statistics from both pretest and posttest data. The average score for the treatment of giving blood-boosting tablets before and after experiencing an increase in

body weight was from 60.8333. becomes 61.0333, t count = 0.555 < 1.6999, Sig. 0,583 > 0.05 H0 is accepted, which means that there is no effect of giving blood-added tablets to increase body weight.

Table 5: Distribution of Effects of Giving Blood Add Tablets and Bagea SASIGO on Weight Gain

Responsen (n)	Average Hemoglobin		T Count	T Table	Sig.
	Before	After			
30	55.6000	58.8333	2.312	1,6999	0.028

The results of the summary of descriptive statistics from both pretest and posttest data. The average score for the administration of blood-supplementing tablets before and after experiencing an increase in body weight from 55,6000. becomes 58.8333, t count = 2.312 >

1.6999, Sig. 0.028 < 0.05 H0 was rejected, which means that there was an effect of giving blood-added tablets and bagea SASIGO to increase body weight.

Table 5.6 Distribution of The Effect of Giving Blood Supplement Tablets on Increasing Hemoglobin Levels

Responsen (n)	Average Hemoglobin		T Count	T Table	Sig.
	Before	After			
30	13.1167	13.5600	2.705	1,6999	0.011

The results of the summary of descriptive statistics from both pretest and posttest data. The average value for the treatment of giving blood supplement before and after has increased from 13.1167 to 13.5600, where t count is greater than t table (2.705 > 1.6999) with a significance value of 0.011 <

of 0.05 which indicates that there is an effect of giving FE to increase HB levels, or it can be concluded that through treatment giving treatment can give changes to Hemoglobin Levels, in the statistics it is explained that Ha is accepted and Ho is rejected.

Table 5.7 Distribution of Effect of Blood Supplement Tablets and SASIGO bagea on Increasing Hemoglobin Levels

Responen (n)	Rata-Rata Hemoglobin		T Hitung	T Tabel	Sig.
	Sebelum	Sesudah			
30	13.5167	14.6433	12.184	1,6999	0.000

For the treatment of adding Blood Tablets and Bagea SASIGO before treatment and after it was found to have increased from 13.5167 to 14.6433, where T count was greater than t table (12.184 > 1.6999) with a significance value of 0.000 < from 0.05 which indicates there is an effect of giving FE

and sasigo biscuits on the increase in HB levels, or it can be concluded that through treatment giving treatment by giving Blood Add Tablets and Bagea Sasigo can give changes to the increase in hemoglobin levels in statistics, it is explained that Ha is accepted and Ho is rejected



Independent t-test

Independent sample t-test is a type of statistical test that aims to compare the averages of two groups that are not paired or unrelated. Unpaired

can mean that the research was conducted for two different sample subjects. In this study, the Independent t-test was used to identify differences in hemoglobin levels and body weight for each treatment.

The results of this study can be described in the form of a table and given a brief explanation as a description of the table as follows:

Table 5.8 Distribution of differences in the effect of Giving Blood Added Tablets (FE) and Giving Blood Plus Bagea SASIGO Tablets on Weight Gain

Responsen (n)	Average BB Increase for each treatment		t Count	t Table	Sig.
	Fe Giving	Administration of FE and SASIGO			
30	0.2000	3.2333	2.101	1,676	0.040

From the table above, it is known that the value of t count = 2.101 > 1.676, and the value of Sig. 0.040 < 0.05 which means that H0 is rejected or there is a difference in giving blood-added tablets and the treatment of giving blood-added tablets with bagea SASIGO on weight gain.

The average weight gain after being given blood-added tablets and BAGEA Sasigo was greater than the average weight gain after being given blood-added tablets alone, so that the administration of blood-supplementing tablets with bagea SASIGO was better for weight gain.

Table 5.9 Distribution of differences in the effect of Giving Blood Add Tablets (FE) and Giving Blood Plus Bagea SASIGO Tablets on hemoglobin increase

Responsen (n)	Average HB Increase for each treatment		t Count	t Table	Sig.
	Fe Giving	Administration of FE and SASIGO			
30	0.4433	1.1400	3.743	1,676	0.000

From the table above, it is known that the value of t count is greater than t table (3.743 > 1.676), and the value of Sig. 0.000 < 0.05, which means that H0 is rejected or there is a difference in the administration of blood-added tablets and the treatment of giving blood-added tablets with bagea SASIGO to the increase in hemoglobin levels.

The average increase in hemoglobin after being given blood-supplementing tablets and BAGEA Sasigo was greater than the average increase in hemoglobin after being given blood-added tablets alone, so giving blood-supplementing tablets with bagea SASIGO was better for increasing Hemoglobin Levels

body weight was from 60.8333. becomes 61.0333, t count = 0.555 < 1.6999, Sig. 0,583 > 0.05 H0 is accepted, which means that there is no effect of giving blood-added tablets to increase body weight. Body weight is a chronic condition due to the accumulation of fat in the body that is very high. Obesity occurs because the intake of calories is more than the activity of burning calories, so that excess calories accumulate in the form of fat. If this condition occurs for a long time, you will gain weight and become obese (Arthur C & Hall, 2014). Weight gain occurs when a person consumes high-calorie foods and drinks without doing physical activity to burn those excess calories. Calories that are not used are then converted into fat in the body, thus making a person gain weight and eventually become obese. Other factors that cause obesity are: heredity or genetics, side effects of drugs, pregnancy, lack of sleep, increasing age and certain diseases or medical problems (Arisman, 2007). Oral iron supplements can cause nausea, vomiting, stomach cramps, heartburn, and constipation (sometimes diarrhea). However, the degree of

Discussion

The effect of giving blood-added tablets (Fe) on weight gain in female students at the Gontor Putri Islamic Boarding School, South Konawe Regency. The results of the summary of descriptive statistics from both pretest and posttest data. The average score for the treatment of giving blood-boosting tablets before and after experiencing an increase in



nausea caused by each preparation depends on the amount of elemental iron absorbed. Iron doses above 60 mg can cause unacceptable side effects so that non-compliance occurs in the use of drugs so that low doses of iron tablets are more likely to be tolerated (and taken) than high doses. For many women a low dose is sufficient (Dhabangi, et al., 2019).

Iron supplements have a good effectiveness when taken at night because the effects of these supplements often cause nausea. different depending on each individual. It is necessary if the need for iron is 3000 to 5000 mg in the body, the rest is excreted by the body every day about 1 mg and only 60% (1800-3000 mg) in erythrocytes, 30% as iron reserves and only 20% is found in erythrocytes. other organs such as muscles, enzymes and others (Arisman, 2007).

Blood-added tablets are theoretically proven that giving Fe tablets to young women is very beneficial in menstruation conditions, because at that time there can be iron loss due to bleeding. Because the average menstruation bleeds 60 ml per month which is equal to 30 mg of iron, so women need a tablet to add one milligram of blood per day to maintain balance (Supariasa, 2015).

Thus, theoretically, blood supplement tablets have no indication to increase body weight, but weight can increase if a person consumes excess fat and protein carbohydrates but does not do physical activity that can increase metabolic processes in the body.

Effect of giving blood-added tablets (Fe) and Bagea SASIGO on weight gain in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency

The results of the summary of descriptive statistics from both pretest and posttest data. The average score for the administration of blood-supplementing tablets before and after experiencing an increase in body weight from 55,6000. becomes 58.8333, t count = 2.312 > 1.6999, Sig. 0.028 < 0.05 H₀ was rejected, which means that there was an effect of giving blood-added tablets and bagea SASIGO to increase body weight.

The nutritional content of SASIGO bagea with ingredients of cassava flour and gonads is that every 100 grams of bagea contains Energy = 267.65 kcal, Protein = 6.76 g, fat = 9.2 g, carbohydrates = 52.2 g, vitamin E = 4.7 mg, vitamin A = 596.8 IU, albumin = 0.2 g, Iron = 0.004 mg, magnesium = 0.4 mg and Zinc = 0.004 mg (La Banudi, Anasiru, Petrus,

& Laksono, 2017).

With a distinctive function of protein in Bagea SASIGO snacks, of course, it can replace protein that is deficient in the body by having a dual function which contains iron and multi-vitamins. Basically, protein cannot be replaced with other nutrients, and its specific function is as a building block, maintaining cells and body tissues. These substances are chemically more complex, like carbohydrates and fats, and proteins are also composed of simple complex compounds. All proteins contain carbon, oxygen, hydrogen and nitrogen atoms, as well as proteins containing sulfur and phosphate (Gaag, Margareet, Schoorl, & Bartels, 2012).

Sea urchin is a type of marine biota, has a strong immune system which is included in the content of SASIGO bagea, sea urchins have 10 to 20 times more immunity than humans, have a strong immune system and can live up to 100 years. Seventy percent of sea urchin genes are similar to humans, including genes associated with Parkinson's, Alzheimer's, and Huntington's disease, as well as muscular dystrophy (Nakao & Nelson, 2010).

The researcher assumes that the administration of Blood Add Tablets with SASIGO is considered to have a better level of effectiveness, besides being rich in protein it also has a high iron value so that the decrease in hemoglobin levels can be prevented, but nutritional intake rich in iron and protein can also be found in vegetables. greens, beans and meat.

Judging from the content of bagea SASIGO has levels of carbohydrates, protein and several other elements that can be at risk of increasing weight but can also increase hemoglobin levels in the body but with unmeasured daily consumption and not doing balanced physical activity can increase body weight in that person, because SASIGO bagea are snacks and not staple foods.

The Effect of Giving Blood Supplementary Tablets (Fe) on increasing hemoglobin levels in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency

From the results of the summary of descriptive statistics from both pretest and posttest data, the average value for the treatment of giving blood supplement before and after has increased from 13.1167 to 13.5600, where the T count is greater than the T table with a significance value of 0.011 < 0.05 which indicates there is influence, or it can be concluded that through treatment giving treatment



can give changes to Hemoglobin Levels, in the statistics it is explained that H_a is accepted and H_0 is rejected

The results of this study, in line with research conducted by FitriGiyanti at SMK 1 PonjongGunungKidul, found that 100% of respondents experienced a mild decrease in hemoglobin, which was as many as 15 people. This shows that the majority of young women experience a decrease in HB levels.

Women of childbearing age (15-49 years) are categorized as anemia if they have Hb <12 g/dl. Based on data from Riskesdas 2013 the proportion of anemia in women (23.9%) is higher than in men (18.4%). The proportion of anemia in the 15-24 year age group was 18.4% in 2013. Based on the 2018 Riskesdas data, the proportion of anemia in women (27.2%) was higher than in men (20.3%). The proportion of anemia in the age group 15-24 years is 32% in 2018 (Sintha Fransiske Simanungkalit, 2019).

Low hemoglobin levels are a sign of disease. Anemia is always an abnormal condition and its cause must be sought. History, physical examination, and simple laboratory tests are helpful in evaluating an anemic patient. Symptoms and signs of anemia depend on the degree and speed of anemia, and the patient's oxygen requirements. Symptoms will be milder with anemia that occurs slowly, because it is possible that homeostatic mechanisms adapt to the reduced ability of the blood to carry oxygen (Oehadian, 2012).

Low hemoglobin levels in adolescents can cause fatigue, decreased reproductive health, motor and mental development, and decreased stamina so that they are susceptible to infection, decreased concentration in learning that affects educational attainment, and failure to achieve maximum height and height. productivity. Human strength. The high prevalence of anemia in adolescents if not handled properly will have a negative impact on adulthood because it can cause maternal death, premature babies and low birth weight babies (Kementerian Kesehatan RI, 2013).

Iron is the main component that plays an important role in hematopoiesis (hematopoiesis), namely the synthesis of hemoglobin. Excess iron in the form of ferritin and hemosiderin is stored in the liver and spinal cord and the rest in the spleen and muscles. If iron stores are sufficient, the need for the formation of red blood cells in the bone marrow is met. However, if the amount of iron stores and the

amount of iron in the body decreases, the result is that the hemoglobin level drops below the normal range, known as iron nutritional anemia. Adolescent girls also experience an increased need for iron up to 1.4 mg during menstruation (Toruntju, Banudi, Leksono, Rahmat, & Salma, 2020).

From the results of the study, it was found that there was a significant relationship between the effect of giving Blood Add Tablets with an increase in hemoglobin levels in adolescent girls at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency. The significance value is less than 0.05, so it can be concluded that through the treatment of Blood Add Tablets, it can change the hemoglobin level in the statistics, it is explained that H_1 is accepted and H_0 is rejected.

Based on the results of this study, there was a significant effect between pre-test and post-test hemoglobin levels given the FE table treatment. The results of this study are in line with research conducted by Dwi Kartika CahayaNingtias at SMA 2 NgaglikSleman. Based on this study, there was a significant effect of giving blood supplement tablets to adolescent girls for 30 days on increasing hemoglobin levels of adolescent girls.

The effect of giving blood (Fe) and Bagea SASIGO tablets to increase hemoglobin levels in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency.

The results showed that the treatment of giving Blood Add Tablets and Bagea SASIGO before and after treatment was found to have increased from 13.5167 to 14.6433, where T count was greater than T table with a significance value of $0.000 < 0.05$ which indicates there is an effect, or it can be concluded that through treatment giving treatment by giving Blood Add Tablets and BageaSasigo can give changes to the increase in hemoglobin levels in statistics, it is explained that H_a is accepted and H_0 is rejected

Bagea cake is a typical snack like in the Ternate area, Maluku. This cake has a dry texture that is rather hard and tastes sweet and savory where the basic ingredient used is sago flour. In addition, bagea cakes are also found in Sulawesi and Papua. Palu City, the capital of Central Sulawesi Province, also produces bagea cakes (La Banudi, Anasiru, Petrus, & Laksono, 2017).

The nutritional content of the bagea formula made from cassava flour and gonads is that every 100 grams of bagea contains energy = 267.65 kcal, protein = 6.76 g, fat = 9.2 g, carbohydrates = 52.2 g,



vitamin E = 4,7 mg, vitamin A = 596.8 IU, albumin = 0.2 gr, Iron = 0.004 mg, magnesium = 0.4 mg and Zinc = 0.004 mg (La Banudi, Anasiru, Petrus, & Laksono, 2017).

Sea urchin is one type of marine biota, has a strong immune system has been widely reported. According to Calestani, et al (2006), sea urchins have 10 to 20 times more immunity than humans, have a strong immune system and can live up to 100 years. Seventy percent of sea urchin genes are similar to humans, including genes associated with Parkinson's, Alzheimer's, and Huntington's disease, as well as muscular dystrophy (Nakao & Nelson, 2010).

With a distinctive function, protein certainly cannot be replaced by other nutrients, its specific function is as a building material, maintaining cells and body tissues. Chemically this substance is more complex, as well as carbohydrates and lipids, proteins are also composed of simple compound compounds all proteins contain carbon, oxygen, hydrogen, and nitrogen atoms as well as proteins containing sulfur and phosphate (Gaag, Margareet, Schoorl, & Bartels, 2012).

Iron supplements have a good effectiveness when taken at night because the effects of these supplements often cause nausea. different depending on each individual. It is necessary if the need for iron is 3000 to 5000 mg in the body, the rest is excreted by the body every day about 1 mg and only 60% (1800-3000 mg) in erythrocytes, 30% as iron reserves and only 20% is found in erythrocytes. other organs such as muscles, enzymes and others (Arisman, 2007).

A large loss of iron can also be found during conditions of excessive bleeding or normal bleeding such as during the menstrual cycle. Therefore, the loss of iron must be replaced. Menstrual bleeding ranges from 60 ml per month, or the equivalent of 30 mg of iron., Women need an extra milligram per day to be absorbed to maintain balance (Gaag, Margareet, Schoorl, & Bartels, 2012).

Differences in the Effect of Giving Blood-Adding Tablets (Fe) and Giving Blood-Adding Tablets with Bagea SASIGO on increasing body weight in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency.

The results of this study are known by the results of statistical tests, the value of t count = 2.101 > 1.676, and the value of Sig. 0.040 < 0.05 which means that H₀ is rejected or there is a difference in giving blood-added tablets and the treatment of giving blood-added tablets with bagea SASIGO on weight

gain.

The average weight gain after being given blood-added tablets and BAGEA Sasigo was greater than the average weight gain after being given blood-added tablets alone, so that the administration of blood-supplementing tablets with bagea SASIGO was better for weight gain.

Blood-added tablets are theoretically proven that giving Fe tablets to young women is very beneficial in menstruation conditions, because at that time there can be iron loss due to bleeding. Because the average menstruation bleeds 60 ml per month which is equal to 30 mg of iron, so women need a tablet to add one milligram of blood per day to maintain balance (Supariasa, 2015).

Oral iron supplements can cause nausea, vomiting, stomach cramps, heartburn, and constipation (sometimes diarrhea). However, the degree of nausea caused by each preparation depends on the amount of elemental iron absorbed. Iron doses above 60 mg can cause unacceptable side effects so that non-compliance occurs in the use of drugs so that low doses of iron tablets are more likely to be tolerated (and taken) than high doses. For many women a low dose is sufficient (Dhabangi, et al., 2019).

Tablets add blood can even be consumed by children to the elderly. For children, what usually happens is iron deficiency. The symptoms are mild from the effects of taking blood-boosting tablets, namely children have less appetite and their weight does not increase significantly. Of course, blood-added tablets for children are provided in doses that are adjusted to their body weight. The same is true for adults and seniors. As long as blood-boosting drugs are consumed in accordance with the dosage, then the benefits are certainly good for the body (Arthur C & Hall, 2014). Anemia can be caused by various things, for example iron deficiency, due to malaria, it can also occur due to rapid growth and bleeding. Iron deficiency is only one of the causes of anemia. Many research results confirm that there are several foods that are recommended to increase hemoglobin levels, namely seafood, vegetables and fruits, nuts and meat. However, for purposes other than increasing hemoglobin levels and aiming to increase body weight, you can choose foods that are high in meat and carbohydrates.

In this study, blood-added tablets had no effect on increasing hemoglobin levels, but consumption of blood-added tablets together with bagea SASIGO had the effect of increasing body weight in students



at the Gontor Putri Islamic boarding school, this was because bagea SASIGO in addition to having nutritional value to increase hemoglobin levels also contained energy. = 267.65 kcal, Protein = 6.76 g, fat = 9.2 g, carbohydrates = 52.2 g. Thus, physiologically can increase body weight.

Researchers assume that it is highly recommended for people with anemia in addition to consuming blood-added tablets, it is necessary to take additional nutrients rich in protein, fat and carbohydrates, all of which are beta-carotene substances that support hemoglobin production.

Differences in Effects of Giving Blood-Adding Tablets (Fe) and Giving Blood-Adding Tablets with Bagea SASIGO on increasing Hemoglobin levels in female students at Gontor Putri Islamic Boarding School, South Konawe Regency.

The results of the statistical test show that the t-count value is greater than the t-table (3.743 > 1.676), and the value of Sig. 0.000 < 0.05, which means that H₀ is rejected or there is a difference in the administration of blood-added tablets and the treatment of giving blood-added tablets with bagea SASIGO to the increase in hemoglobin levels.

The average increase in hemoglobin after being given blood-supplementing tablets and BAGEA Sasigo was greater than the average increase in hemoglobin after being given blood-added tablets alone, so giving blood-supplementing tablets with bagea SASIGO was better for increasing Hemoglobin Levels

Approximately 4-5 grams of the total amount of iron in the body, about 65 percent of which is found in the form of hemoglobin 4%, about 1% of myoglobin in the form of heme compounds that aid intracellular oxidation, about 0.1% combines with the protein transferrin in blood plasma and 15-30% is in the reticuloendothelial space and liver parenchyma cells, mainly in the form of ferritin (Proverawati & Asfuah, 2011).

The utilization of iron by the body is very efficient, some iron in the form of ferries is converted into ferros. This formation process is supported by acidic conditions in the stomach as well as the content of HCl and vitamin C substances contained in food (Almatsier, 2010). Certain biological and molecular mechanisms necessary for the absorption, transportation and storage of iron. The main place of absorption of heme and nonheme is the duodenum, where nonheme iron can be reduced to iron iron by cytochrome B of the apical duodenal reductase. Heme iron, on the contrary, is absorbed intact by different transport pathways,

but the identification of special heme receptors remains elusive (Christian, 2005).

The nutritional content of bagea made from cassava flour and gonads is that every 100 grams of bagea SASGO contains Energy = 267.65 kcal, Protein = 6.76 g, fat = 9.2 g, carbohydrates = 52.2 g, vitamin E = 4,7 mg, vitamin A = 596.8 IU, albumin = 0.2 gr, Iron = 0.004 mg, magnesium = 0.4 mg and Zinc = 0.004 mg and is recommended as a formula food for problems with anemia or iron deficiency, where bagea SASIGO is believed to have a high Energy and Protein content (La Banudi, Anasiru, Petrus, & Laksono, 2017).

Iron content can also be obtained in foods such as foods rich in folate, such as the heme component, which is a constituent of hemoglobin, which carries oxygen. Folate-rich foods are beef, spinach, rice, black peas, kidney beans, avocado, lettuce, and supplements as recommended by a doctor and foods that increase iron absorption such as vitamin A-rich intake are fish, liver, pumpkin, sweet potatoes, cabbage, and mustard greens. For intakes rich in beta carotene, which are marked in yellow, red, and orange, are carrots, sweet potatoes, pumpkin, yellow melon, and mango (Briawan, Andriyani, & Pusporini, 2009).

Bagea SASIGO is a supplement or formula that is made and is quite recommended with the content of various intakes rich in beta carotene which can increase or stimulate the production of hemoglobin levels, excess bagea SASIGO is a snack with no negative side effects for the body because it is only in the form of food or snacks, not snacks. Supplements are like pills and other drugs.

After oxidizing, Fe³⁺ binds to transferrin and is transported to tissue cells containing transferrin receptors. Transferrin binds to transferrin receptors and endocytosis, once inside the cell, iron can be used for cellular purposes (cofactors for enzymes, etc.) Or it can be stored in iron storage proteins, ferritin or hemosiderin. Ferritin is the main iron storage protein, but at higher concentrations, iron is also stored in hemosiderin (Gaag, Margaret, Schoorl, & Bartels, 2012)

The rate of absorption of iron is regulated by the mucosa of the digestive tract which is determined by the needs of the body. Mucous transferrin released into the bile acts as a shuttle protein transporter to transport iron to the surface of small intestinal cells to bind to transferrin receptors and back into the lumen of the gastrointestinal tract to transport other iron. In mucosal cells, iron can bind to apovretin and form ferritin as a temporary store



of iron in cells. In mucosal cells, apoferritin and ferritin form an iron pool (Waryono, 2010).

The researcher assumes that the administration of Blood Add Tablets with SASIGO is considered to have a better level of effectiveness, besides being rich in protein, it also has a high iron value so that the decrease in hemoglobin levels can be prevented, but nutritional intake rich in iron and protein can also be found in vegetables, greens, beans and meat.

With a distinctive function, the protein in Bagea SASIGO snacks can certainly replace a protein that is in deficit in the body by having a dual function which contains iron and multi-vitamins. Basically, protein cannot be replaced with other nutrients, and its specific function is as a building block, maintaining cells and body tissues. These substances are chemically more complex, like carbohydrates and fats, and proteins are also composed of simple complex compounds. All proteins contain carbon, oxygen, hydrogen and nitrogen atoms, as well as proteins containing sulfur and phosphate (Gaag, Margareet, Schoorl, & Bartels, 2012).

Conclusion

Based on the results of research and discussion, it can be concluded as follows:

There is no effect of giving blood-supplementing tablets (Fe) to increase body weight (BB) in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency.

There is an Effect of Giving Blood Add Tablets and Bagea SASIGO cakes on increasing body weight (BB) in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency

There is an effect of giving blood supplement tablets (Fe) to increase hemoglobin levels in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency

There is an Effect of Giving Blood Add Tablets and Bagea SASIGO cakes on increasing hemoglobin levels in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency

There is a difference in the effect of giving blood supplement tablets (FE) and giving blood plus bagea SASIGO tablets to increase body weight in female students at the Gontor Putri Islamic Boarding School, South Konawe Regency.

There is a difference in the effect of giving blood supplement tablets (FE) and giving blood supplement tablets plus bagea SASIGO to increase

hemoglobin in female students at the Gontor Putri Islamic Boarding School, Konawe Selatan Regency.

Suggestion

The results of this study after being briefly reviewed and concluded for each variable, there are several suggestions that the researcher conveys from the results of this study, namely:

With the hope of decreasing the incidence of anemia or decreasing hemoglobin levels in adolescent girls, which has an impact on decreasing learning activities, boarding school caregivers coordinate with the nearest health facility to provide guidance and tips for preventing anemia in young girls.

For relevant agencies, namely the Konda Public Health Center, the South Konawe District Health Office and the Provincial Health Office to put more emphasis on preventing anemia in young women in general and the Gontor Islamic Boarding School in particular,

Future researchers are expected to be more specific in multiplying variables and developing variables to obtain more specific research results and the latest information related to effective prevention and treatment.

References

- Almatsier, S. (2010). *Prinsip Dalam Ilmu Gizi*. Jakarta: Pustaka Utama.
- Arisman. (2007). *Gizi Dalam Daur Kehidupan*. Jakarta: EGC.
- Arthur C, G., & Hall. (2014). *Buku Ajar Fisiologi Kedokteran*. Jakarta: EGC.
- Briawan, Andriyani, & Pusporini. (2009). Determinan Keberhasilan Program Suplementasi Zat Besi pada Siswa Sekolah. *Jurnal Gizi Klinik Indonesia*, 78-83.
- Christian, P. (2005). *Iron Deficiency and Anemia, Causes, Consequences and Solutions*. American: Johns Hopkins University.
- Dhabangi, A., Idro, R., John, C. C., Dzik, W. H., Opoka, R., Ssenyonga, R., & Hensbroek, M. B. (2019, Januari 18). Risk factors for recurrent severe anemia among previously transfused children in Uganda: an age-matched case-control study. *PubMed*, I(27). doi:10.1186/s12887-019-1398-6
- Endang. (2017, Mei 5). Endang. Retrieved Mei 5, 2018, from Endang: <https://www.viva.co.id/gaya-hidup/kesehatan-intim/1031041-1-dari-5-orang-indonesia-derita-anemia>
- Gaag, D. V., M. S., Schoorl, M., & Bartels, P. C. (2012). Effects of iron Supplementation on red blood cell hemoglobin content in pregnancy. *Pagepress*, 91-94.
- Kementerian Kesehatan RI. (2013). *Riset Kesehatan Dasar*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- La Banudi, Anasiru, A., Petrus, & Laksono, P. (2017). formula bagea berbahan ekstrak tepung singkong dengan penambahan Gonad Diadema Setosum (Sea urchins) sebagai makanan alternatif meningkatkan kadar hepcidin



- dan ferritin pada ibu hamil. Poltekkes Kemenkes Makassar.
- Nakao, & Nelson. (2010). Landak laut merupakan salah satu jenis biota laut, memiliki sistem imun tubuh yang kuat telah banyak dilaporkan. Menurut Calestani, et al (2006), landak laut mempunyai imunitas 10 sampai 20 kali lebih banyak dari manusia, memiliki sistem imun yang kuat dan. *Anticancer research*, 2721-2725.
- Notoatmodjo, S. (2016). *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta.
- Oehadian. (2012). Pendekatan Klinis dan Diagnosis Anemia. *Jurnal CDK* 194, 407- 412.
- Proverawati, A., & Asfuh, S. (2011). *Buku Ajar Gizi Untuk Kebidanan*. Yogyakarta: Nuha Medika.
- Sandrianti, M. (2017). Tatalaksana Perawatan Anemia dan Rinitis untuk Meningkatkan Kualitas Hidup Anak dan Keluarga. *Anemia Konvention*, 1-3.
- Santosa. (2010). Hidrolisa Enzimatik Pati Tapioka Dengan Kombinasi Pemanas Microwave-Water Bath Pada Pembuatan Dekstrin. Jakarta: Momentum 6.
- <https://www.kompasiana.com/silviafaidah/5e072bcb097f361859457b92/anemia-sebagai-tantangan-bangsa?page=all>
- Sintha Fransiske Simanungkalit. (2019). Pengetahuan dan Perilaku Konsumsi Remaja Putri yang Berhubungan dengan Status Anemia. *Jurnal Universitas Pembangunan Indonesia*, 175-182
<https://doi.org/10.22435/bpk.v47i3.1269>.
- Sugiono. (2012). *Statistika Untuk Penelitian*. Bandung: Alfabeta.
- Supriasa, I. N. (2015). *Penilaian Status Gizi*. Jakarta: EGC.
- Toruntju, S. A., Banudi, L., Leksono, P., Rahmat, M., & Salma, W. O. (2020). The Influence of Wedge Sea Hare (*Dolabella auricularia*) Extract and Papaya Juice on Hemoglobin (Hb) and Ferritin Levels of Mice Strain (Balb / C) with Anemia. *Medico-legal Update*, 1347-152. doi:10.37506/v20/i1/20/mlu/194490
- Waryono. (2010). *Gizi Reproduksi*. Yogyakarta: Pustaka Rihama.

