

THE EFFECT OF GIVING RED GUAVA JUICE ON INCREASING HB LEVELS IN ADOLESCENT WOMEN AGED 13 - 15 YEARS OLD

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ABSTRAK PENGARUH PEMBERIAN JUS JAMBU BIJI MERAH TERHADAP PENINGKATAN KADAR HB PADA REMAJA PUTRI USIA 13-15 TAHUN

Latar Belakang: Anemia terjadi ketika sel darah merah (hemoglobin) atau protein pembawa oksigen didalam sel darah merah berada dibawah kategori normal. Kejadian anemia pada remaja putri di Provinsi Lampung terdapat 69,7% dan kejadian anemia di Pondok Pesantren Nidaul Islam terdapat 30,8%. Jambu biji mengandung zat besi yang dapat menggantikan fe dalam pembentukan hemoglobin sehingga dapat mengatasi anemia.

Tujuan: Untuk mengetahui pengaruh pemberian jus jambu biji merah terhadap peningkatan kadar Hb pada remaja putri usia 13-15 tahun di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat tahun 2022.

Metode: Jenis penelitian ini adalah kuantitatif dengan rancangan *pre eksperiment* dan desain *one group pretest and posttest*. Populasi dalam penelitian ini adalah seluruh remaja putri usia 13-15 tahun yang mengalami anemia di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat berjumlah 30 orang. Teknik sampel yang digunakan yaitu *total sampling*. Analisis data dalam penelitian ini menggunakan *paired sample t-test*.

Hasil: Rata-rata kadar Hb pada remaja putri usia 13-15 tahun sebelum diberikan jus jambu biji merah adalah 10,47 g/dl dan sesudah diberikan jus jambu biji merah meningkat menjadi 12,387 g/dl.

Kesimpulan: Ada pengaruh pemberian jus jambu biji merah terhadap peningkatan kadar Hb pada remaja putri usia 13-15 tahun di Pondok Pesantren Nidaul Islam Kecamatan Karya Penggawa Kabupaten Pesisir Barat tahun 2022 dengan p value 0,000.

Saran Diharapkan setelah dilakukannya penelitian ini dapat menambah pengetahuan remaja putri tentang cara mengatasi anemia yaitu dengan mengkonsumsi jus jambu biji merah. Selain itu diharapkan para remaja putri yang menjadi sampel dalam penelitian ini dapat berbagi informasi kepada teman, saudara, dan kerabat lainnya mengenai manfaat jus jambu biji merah untuk meningkatkan kadar hemoglobin.

Kata Kunci : Jus Jambu Biji Merah, Kadar Hb, Remaja putri

ABSTRACT

Background: Anemia occurred when the red blood cells (hemoglobin) or the oxygen-carrying protein in red blood cells fell below the normal category. The incidence of anemia in adolescent girls in Lampung Province was 69.7% while the incidence of anemia at Nidaul Islamic Boarding School was 30.8%. Guava contained substance of Fe in forming Hb therefore it could overcome anemia.

Purpose: To determine the effect of giving red guava juice to increase Hb levels in adolescent women aged 13 - 15 years at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency in 2022.

Methods: This study was quantitative research with a pre-experimental design and one group pre-test and post-test design. The population in this study were all adolescence women aged 13-15 years who had anemia at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency, totaling to 30 people. The sampling technique used was total sampling. Data analysis in this study used paired sample t-test.

Results: The average Hb level in adolescent women aged 13 - 15 years before being given red guava juice was 10.47 g/dl and after being given red guava juice it increased to 12.387 g/dl.

Conclution: an effect of giving red guava juice on increasing Hb levels in adolescent women aged 13 - 15 years at the Nidaul Islamic Boarding School, Karya Penggawa District, West Pesisir Regency in 2022 with a p-value of 0.000.

Suggestion it is hoped that after doing this research, it can increase the knowledge of young women about how to overcome anemia, namely by consuming red guava juice. In addition, it is hoped that the young women who

were sampled in this study can share information with friends, relatives, and other relatives about the benefits of red guava juice to increase hemoglobin levels.

Keywords : Red Guava Juice, Hb Level, Adolescence Women

INTRODUCTION

Anemia is a disease that is often suffered by the community, both children, adolescents, pregnant women and the elderly. Anemia occurs when red blood cells (hemoglobin) or the oxygen-carrying protein in red blood cells are below the normal category. Anemia is mostly caused by iron deficiency factors which are characterized by low hemoglobin levels and a decrease in ferritin levels. Normal hemoglobin levels in adolescents are 12 g% (Rusdi, 2020).

Data from the World Health Organization (WHO) shows that the incidence of anemia in 2019 was 29.9% cases in women aged 15-49 years (WHO, 2019). Based on Riskesdas data in 2018, the prevalence of anemia in Indonesia was 21.7%. Based on age group, patients with anemia aged 5-14 years were 26.4% and 18.4% were in the age group 15-24 years. And based on gender, there are 23.9% women with anemia and 18.4% men (Kemenkes RI, 2019).

The incidence of anemia in adolescent girls in Lampung Province is 69.7% with iron deficiency anemia. However, in terms of the proportion of adolescent girls aged 10-19 years who received blood supplement tablets (TTD) in Lampung Province, it was found that 20.85% of female adolescents had received iron tablets and 69.82% of female adolescents had received iron tablets in the last 12 months. Meanwhile, in Pesisir Barat Regency, there were only 25.78% of young women who had received iron tablets and 87.46% of young women who had received iron tablets in the last 12 months (Kemenkes RI, 2019).

The incidence of anemia at the Nidaul Islam Islamic Boarding School in 2019 there were 29.1% of young women who had anemia, in 2020 there were 29.9% of young women who had anemia, and in 2021 there were 30.8% of young women who had anemia (Puskesmas Report) Penggawa's work, 2020).

The emergence of anemia can be caused by a lack of food sources that contain iron, because iron is an important compound as a constituent of hemoglobin and this occurs because of the wrong, irregular diet and does not balance the adequacy of the nutritional sources needed by the body (Kompasiana, 2014). With the occurrence of anemia in adolescents can have an impact on decreasing

work productivity or academic ability at school, because there is no passion for learning and concentration. Anemia can also interfere with growth where height and weight become imperfect. In addition, the body's resistance will decrease so that it is easy to get sick (Depkes RI, 2013).

Some of the effects of anemia on adolescent girls are quite concerning, such as a decline in health and school achievement. In adulthood, the condition of anemia is exacerbated during pregnancy which causes non-optimal growth and development of the fetus, complications during pregnancy and childbirth, and results in maternal and child mortality (Permata, 2021).

Management of anemia can be done in various ways, such as taking Fe tablets. Fe tablets are mineral tablets that are needed to form red blood cells (hemoglobin). One of the important elements in the process of formation of red blood cells is the content of Fe tablets. However, the relatively minimal knowledge about anemia by young women leads to minimal prevention of the incidence of anemia, therefore young women need to be equipped with knowledge about anemia and food intake patterns as therapy for people with anemia (Tarwoto in Sari, 2020).

There are two ways to treat anemia, namely pharmacologically and non-pharmacologically. The pharmacological method is to consume 1 tablet of Fe every day. However, many teenagers refuse to take Fe tablets because of the side effects of Fe tablets, namely nausea and vomiting and hard black stools. The second way is non-pharmacological, namely by consuming foods rich in iron and foods that can help the process of iron absorption. Foods that contain lots of iron from animal foods such as meat, fish, chicken, liver, eggs, while plant foods that contain lots of iron are dark green vegetables, nuts, and tempeh.

Absorption of iron is strongly influenced by the presence of vitamin C in the body of adolescents. Vitamin C can help reduce ferric iron (Fe³⁺) to ferrous (Fe²⁺) in the small intestine so that it is easily absorbed by the body, the reduction process will be even greater if the pH in the stomach becomes more acidic. Vitamin C can increase the pH in the stomach so that it can increase the process of iron absorption by up to 30%. The highest content of vitamin C is found in guava fruit. In Latin this guava is known as

Psidium Guajava, and in English it is called Guava. The content of vitamin C in guava is higher than citrus fruit, 100 grams of guava fruit contains 183.5 mg of vitamin C, while 100 grams of citrus fruit contains 50-70 mg of vitamin C (Rusdi, 2020).

In accordance with Tunnisa's research (2018) which states that there is a difference between before and after giving guava juice on hemoglobin levels with a P value of 0.000 where P value <0.005, it is concluded that there is an effect of giving guava juice on hemoglobin levels in adolescent girls at MAN 1 Bantul. .

Based on the results of a pre-survey at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022, there were 10 young women who had anemia. After conducting interviews, it was found that young women did not know that red guava can increase Hb levels.

RESEARCH METHODS

In this research, the writer uses quantitative research, The research design used pre-experimental designs (pre-experimental) with a one-group pretest posttest design. The population in this study was taken from the total number of young women aged 13-15 years who were anemic at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency, amounting to 30 people and the sample in this study was 30 people using total sampling technique. Analysis of univariate and bivariate data using paired sample t-test.

RESEARCH RESULTS

Univariate Analysis

Based on the table above, it is known that from 30 respondents before being given red guava juice, the average hemoglobin level was 10,470 g/dL with a standard deviation of 0.6983 g/dL, a minimum of 9.5 g/dL and a maximum of 11.9 g/dL.

Table 1
Average Hb levels in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

Hb . level	N	Mean	Standard deviation	Min – Max
Before being given red guava juice	30	10,470	0.6983	9.5 – 11.9

Table 2
Average Hb levels in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District West Coast District in 2022

Hb . level	N	mean	Standard deviation	Min-Max
Aftergiven red guava juice	30	12,387	0.6559	11.2 – 13.9

Based on the table above, it is known that from 30 respondents after being given red guava juice, the average hemoglobin level was 12,387 g/dL with a standard deviation of 0.6559 g/dL, a minimum of 11.2 g/dL and a maximum of 13.9 g/dL.

Based on the table above, it is known that from 30 respondents the average hemoglobin level before being given red guava juice was 10,470 g/dL and after being given red guava juice it increased to 12,387 g/dL. Based on the results of the paired t-test, the P value of 0.000 <0.05 means that there is an effect of giving red guava juice to increase Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022.

Bivariate Analysis

Table 3
The effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency year 2022

Hb . level	N	Mean	P value
Pretest	30	10,470	0.000
Posttest	30	12,387	

DISCUSSION

Univariate Analysis

Average Hb levels in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results showed that from 30 respondents before being given red guava juice, the average

hemoglobin level was 10,470 g/dL with a standard deviation of 0.6983 g/dL, a minimum of 9.5 g/dL and a maximum of 11.9 g/dL.

The high incidence of anemia in adolescent girls is caused by an unbalanced dietary intake with the required nutritional sources including energy, carbohydrates, fat, protein, vitamin C, especially the lack of food sources containing iron and folic acid. Another reason is because in this study the majority of respondents were late teens who menstruate every month. Iron expenditure must also be balanced with nutritional intake. Anemia in adolescents is related to the lack of intake of foods containing iron (Handayani, 2021).

Anemia that occurs in adolescents causes fatigue, decreased concentration in learning so that learning achievement is low and can reduce work productivity for teenagers who are already working. In addition, it also lowers the body's resistance so that it is easy to get infections. The high incidence of anemia in adolescents, especially young women, if not handled properly will continue into adulthood and contribute greatly to maternal mortality, premature babies, and babies with low birth weight (Robertus, 2014).

This study is in line with research by Restipa (2018) which states that the average Hb level before being given Fe plus vitamin C tablets with a mean of 9.93, standard deviation of 1.035 with the lowest value being 8 and the highest value being 11.

According to the researcher's assumptions, adolescent girls who experience anemia can be overcome by regularly eating foods that contain lots of vitamin C and iron, in addition to helping lower blood pressure, adolescent girls who have anemia must adopt a healthy lifestyle such as diligently exercising and consuming healthy foods.

Average Hb levels in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results showed that from 30 respondents after being given red guava juice, the average hemoglobin level was 12,387 g/dL with a standard deviation of 0.6559 g/dL, a minimum of 11.2 g/dL and a maximum of 13.9 g/dL.

Anemia is a condition where the hemoglobin (Hb) level in the blood is less than normal which differs according to age group, gender and physiological conditions (Kemenkes RI, 2015). Anemia is also defined as a condition in which a low concentration of hemoglobin (Hb) or hematocrit based on a threshold value (reference) is caused by

low production of red blood cells and Hb, increased erythrocyte breakdown or excessive blood loss.

Treatment of anemia is done by consuming foods rich in iron and foods that can help the process of iron absorption. Foods that contain lots of iron from animal foods such as meat, fish and others. Food ingredients that can help the process of iron absorption such as vegetables and fruits that contain lots of vitamin C such as katuk leaves, cassava leaves, spinach, guava, tomatoes, oranges and pineapples. Absorption of iron is strongly influenced by the presence of vitamin C in the body of adolescents because vitamin C can help reduce ferric iron to ferrous in the small intestine, so it is easily absorbed by the body. The highest vitamin C content is found in red guava fruit (Rusdi, 2018).

This is in line with the research of Mahmudah (2018) which suggests that before being given guava juice intervention, researchers conducted a Hb examination (pretest) on adolescents at the Muhammadiyah 2 Yogyakarta High School Girls Dormitory. ,9%), while moderate Hb levels were 9 respondents (31.1%) and none of the respondents experienced the category of low Hb levels in adolescent girls. Meanwhile, after being given the intervention, the results of the frequency distribution of Hb levels after being given an intervention for 7 days, the criteria for normal Hb levels were 29 respondents (100%), after being given the intervention, none of the teenage girls experienced the criteria for moderate and low Hb levels.

According to the researcher's assumption, red guava juice can be used as an alternative to help overcome anemia in adolescent girls. Because the content in red guava juice can help increase Hb levels. In addition, red guava juice is also a plant that is easily obtained around the research environment by consuming red guava, besides being able to help increase Hb levels, young women also get other benefits such as vitamins contained in guava.

However, in this study there were 8 respondents who had consumed red guava juice experienced an increase in Hb levels but still experienced anemia. This can be caused by unhealthy habits of teenagers such as not being used to breakfast and having a habit of consuming low-nutrient foods such as fast food. In addition, there are teenagers who have a habit of drinking tea, so the iron content in red guava juice is not absorbed properly. But apart from that, there are some teenagers who still experience anemia because the Hb level before the intervention is relatively low.

Bivariate

The effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022

The results of this study showed that from 30 respondents the average hemoglobin level before being given red guava juice was 10,470 g/dL and after being given red guava juice it increased to 12,387 g/dL. Based on the results of the paired t-test, the P value of 0.000 <0.05 means that there is an effect of giving red guava juice to increase Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022.

Several nutrients are needed in the formation of red blood cells. Iron or Fe, vitamin B12 and folic acid are the most important substances. In addition, the body also requires small amounts of vitamin C, riboflavin and copper as well as a balance of hormones, especially erythropoietin (a hormone that stimulates the formation of red blood cells). Without these nutrients and hormones, the formation of red blood cells will be slow and insufficient, and the cells may have deformities and be unable to transport oxygen properly, causing anemia (Yusnaini, 2014).

Pharmacological iron can be replaced with natural ingredients, one of which comes from red guava. Red guava fruit contains compounds that can increase hemoglobin levels in the blood, including: iron, vitamin C, vitamin A, copper and phosphorus. Iron is a mineral needed to transport oxygen throughout the body (Sianturi, 2012).

Iron with vitamin C forms an iron ascorbate complex that is soluble and easily absorbed by organs in the human body. The conversion of non-heme iron in the form of ferric metabolizing compounds to ferrous will be greater when the pH in the stomach becomes more acidic. Vitamin C can increase acidity so that it helps increase iron absorption by as much as 30% (Sianturi, 2012).

This study is in line with research conducted by Hardimarta (2016) that guava juice can increase hemoglobin levels in young women where P value = 0.000 (P value <0.05) which indicates that there is a significant difference between hemoglobin levels before and after consuming guava juice. red seeds.

Supported by Sulistyoningtyas (2022) which shows that there is a difference between before and after being given guava juice with a significance value of 0.000 or <0.05. This means that the provision of guava juice has an effect on the increase in HB levels of adolescent girls in the female dormitory of SMA Muhammadiyah 2 Yogyakarta.

In addition, according to Rusdi's research (2018) which shows that there is an effect of giving red guava juice on hemoglobin levels of anemic adolescent girls with p value = <0.001. This is in line with Handayani's (2021) study which showed that guava juice had an effect on increasing hemoglobin levels in adolescent girls.

According to the assumption of researchers, red guava juice can be used as an alternative in increasing hemoglobin levels in anemic adolescents. Red guava juice can increase hemoglobin levels because the folic acid content of guava helps the body increase the production of red blood cells, thereby helping to improve the functioning of the nervous system, especially the brain, and also prevent anemia. Iron is absorbed in the duodenum and upper jejunum by a complex process. The folic acid content of guava helps the body increase the production of red blood cells, thereby helping to improve the functioning of the nervous system, especially the brain, and also prevent anemia. The increase in hemoglobin levels in adolescents can also be influenced by the food consumed by adolescents is always the same.

CONCLUSION

The average Hb level in adolescent girls aged 13-15 years before being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 was 10.47 g/dl. The average Hb level in adolescent girls aged 13-15 years after being given red guava juice at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 was 12,387 g/dl. There is an effect of giving red guava juice on increasing Hb levels in adolescent girls aged 13-15 years at the Nidaul Islam Islamic Boarding School, Karya Penggawa District, Pesisir Barat Regency in 2022 with a p value of 0.000.

SUGGESTION

It is hoped that after doing this research, it can increase the knowledge of young women about how to overcome anemia, namely by consuming red guava juice. In addition, it is hoped that the young women who were sampled in this study can share information with friends, relatives, and other relatives about the benefits of red guava juice to increase hemoglobin levels.

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