

## Effectiveness of Mung Bean Drink on the Improvement of Hemoglobin in Female Adolescents in Paguyaman District

Fatmah Zakaria\*, Masmuni Wahda Aisya, Yusna Lamatowa

Study Program of DIV Midwife Educationalist, Faculty of Health Sciences, Muhammadiyah University of Gorontalo, Jl. Prof. Dr. H. Mansoer Pateda, Pentadio Timur, Telaga Biru District, Gorontalo Regency, Gorontalo 96181, Indonesia

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\*Corresponding author

Fatmah Zakaria

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**Abstract:** The aim of this research is to know the effectiveness of drinking of mung bean on the increase of Hemoglobin in female adolescents in Paguyaman District. Research type pre-experiment with one group pretest-posttest design. Sample in this research is done with total sampling. The result of the statistical test and the one-sample test results obtained  $p = 0.000$  is known that there is a significant difference between pretest and posttest group, therefore the significant value is less than 5% ( $p = 0.000 < 0.05$ ) so that in this case there is effectiveness of giving mung bean drink with hemoglobin increase in adolescent girls in Paguyaman District. This research can be used as input to improve healthy lifestyle and give special attention intake of nutrition consumed by adolescent itself.

**Keywords:** Mung Bean Drink, Hemoglobin, Female Adolescents.

### INTRODUCTION

Anemia that is better known to the public as a disease of less blood is reduced to below normal mature blood cells that carry oxygen throughout the tissue run by a protein called hemoglobin (HB) with normal levels of 11 g / dl for women and 13 g / dl for men [1]. Anemia is generally caused by iron deficiency, so it is called iron deficiency anemia. World prevalence of anemia by world health organization (WHO) in developed countries 11% and developing country 47%. WHO states iron deficiency anemia in infants and children in developing countries associated with poverty, malnutrition, hookworm infection, human immunodeficiency, vitamin A deficiency and folate [2].

Based on research in Mexico it is known that iron deficiency can also occur 2-4 times in women and obese children. This is due to an increase in the production of hepcidin (a hormone regulator of iron levels in the body, composed of 25 peptide amino acids) that can inhibit iron absorption, 11 while in the United States (USA) showed a higher prevalence of iron deficiency in adolescent samples sons and adolescents who were overweight (9.1%) compared with samples with normal weight (3.1%) [3].

According to Basic health research data 2013, the prevalence of anemia in Indonesia is 21.7%, with the proportion of 20.6% in urban areas and 22.8% in rural areas as well as 18.4% male and 23.9% female. Based on the age group, 5-14 years old anemia patients were 26.4% and 18.4% in the 15-24 age group. In a survey conducted SDKI-R can be seen a picture of adolescent perceptions about anemia. As many as 70% of female adolescent respondents said they had heard about anemia while in adolescent boys as much as 60%. But only 14% of each group is able to correctly answer that anemia is a condition in which the hemoglobin level is low [4, 5].

In the community is known less blood disease commonly called anemia. Anemia is not a disease of less blood. A more precise definition is the lack of (deficiency) of red blood cells due to low blood levels of hemoglobin. Anemia is one of the nutritional problems in Indonesia. The incidence of anemia in adolescents often occurs compared to children and adults, especially young women. Symptoms are often experienced include lethargy, weakness, dizziness, dizzy eyes, and pale face. Anemia can cause various effects in adolescents, among others, lower body resistance so easily affected by disease, decreased activity and learning achievement due to lack of concentration [3].

The prevention and treatment of anemia according to Fatmah overcome the iron deficiency in the body by consuming 60-120 mg Fe per day and increase the intake of food source of Fe, besides to overcome the anemia need consumption of food ingredients of iron source, such as meat, liver, fish, milk, yogurt, nuts, and green vegetables [6]. One type of nuts that contain high iron is green beans [7]. Green

beans are very beneficial for the health of young women, according to Astawan green beans one of the ingredients that contain substances needed for the formation of blood cells that can overcome the effects of Hb decrease. Green beans can play a role in the formation of red blood cells and prevent anemia because the content of phytochemicals in green beans is so complete that it can help the process of hematopoiesis [8, 9].

Efforts to prevent and improve the optimum information needed complete and precise about the nutritional status in adolescents, as well as factors that affect it. Increase consumption of foods containing iron and folic acid such as green vegetables, beans, fruits and fresh meat, especially during menstruation periods in order to eliminate iron intake if you can increase iron intake more and change life habits into patterns living regularly, eating regularly and balanced nutrition.

According to Hamdani Islam has relevance to the science of health and obstetrics. Islam as a Divine doctrine is also loaded with demands for humanity related to menarche, abortion, organ transplantation, insemination and IVF and other health problems. Islam became the main reference in the practice of medicine and midwifery which of course is combined with the latest discovery [10].

Based on data from Gorontalo Provincial Health Office in 2016 the number of female teenagers as many as 35,982 people, in 2017 as many as 33,083

people. Data Boalemo District Office 2016 the number of adolescents as many as 6,848 people, adolescents who have anemia as many as 684 people, and in 2017 as many as 5755 people and adolescents who experienced anemia as many as 575 people. Existing school data in Paguyaman Health Center region in 2017 number of female teenager as much as 521 people spread in 9 junior high school (SMP) and found that have anemia as much as 32 people. From the results of a preliminary survey conducted by researchers in December 2017 in adolescent girls, obtained data from 32 adolescents including 20 people who have mild anemia and 12 people have severe anemia. Based on these data can be seen that the high incidence rate of iron deficiency anemia in young women. Based on the data obtained it is important to do research on the effectiveness of drinking green beans with increased hemoglobin in adolescent girls in the District of Paguyaman.

### RESEARCH METHODS

This research type is pre-experiment research. Pre-experiment is a treatments experiment, measurement of impact measurements and experimental units but does not use random placements. This study with a one-pretest-posttest design is a design that does not use a control group but has made the first observation (pretest) that allows testing changes that occur after the experiment.

### RESULTS AND DISCUSSION

#### Characteristics of Respondents

**Table-1: Distribution of respondents by age in Paguyaman District**

Age	amount	Percentage (%)
12	7	21.90
13	15	46.90
14	8	25.00
15	2	6.20
Total	32	100

Source: Primary Data, 2018

Based on table-1 shows from 32 respondents got most of respondent have age 13 year that is counted 15 respondent (46.90%) and age <14 years counted 8 respondent (25.00%). Based on Table 1 shows that 32 respondents found that most respondents had mild hemoglobin level of 20 respondents (62.50%) and hemoglobin weight was 12 respondents (37.50%). The above results showed that all respondents had mild and severe anemia. This is because the various reasons found, the first teenage daughter who experienced menstruation 2 times a month, young women who have a habit of sleeping

over 10 pm so feel sleepy, tired, weak and lethargic in school.

According to the researcher's assumption of clinical symptoms of anemia experienced by teenage girls that is often felt dizzy, body lethargic and tired as not energized this can happen because the teenage girls are at the time of puberty then the need for iron to balance the development of the greater body. In addition, the double burden that adolescent girls embry is experiencing menstruation, meaning it also has the need to replace the missing iron along with the outbreak of menstruation.

### Univariate Analysis

**Table-2: Distribution of stress frequency of respondents**

HB levels	amount	Percentage (%)
Ringan	20	62.50
Berat	12	37.50
Total	32	100

Source: Primary Data, 2018

Based on table-2 above shows from 32 respondents found most respondents have hemoglobin level before given green beans as much as 20

respondents (62.50%) light and heavy hemoglobin level as much as 12 respondents (37.50%).

**Table-3: Distribution of respondents based on hemoglobin levels after being given green beans**

HB levels	amount	Percentage (%)
Normal	20	62.50
Medium	12	37.50
Total	32	100

Source: Primary Data, 2018

Based on table-3 above shows from 32 respondents found most respondents have hemoglobin level after given green beans as much as 20 respondents (62.50%) normal and moderate hemoglobin level as much as 12 respondents (37.50%). In table-3 above shows an increase in hemoglobin levels from moderate anemia to mild and severe anemia to moderate. This is because young women are given green beans every day during research time in order to increase hemoglobin levels. From the above explanation can be drawn the researcher assumption that the drink of green beans can increase blood hemoglobin level significantly because it contains iron, vitamin c, and zinc and vitamin A has many role in body, for example for growth and differentiation of progenitor erythrocytes, the body against infection and mobilization of iron reserves throughout the network, it is recommended for teenagers or college students to drink green beans at the time of menstruation or after menstruation because to prevent the occurrence of iron deficiency anemia.

increase of Hb level because at the time of research done by student menstruation so that there decrease of hemoglobin level about 0,25-0,5 gr / dl. And green beans drink cannot increase hemoglobin (Hb) but can only restore the original hemoglobin level alone.

This is in accordance with Astawan opinion that green beans besides having iron, vitamin c, and zinc substances that play a role in handling iron deficiency anemia [8]. Green beans also contain vitamin A of 7 mcg in half a cup. Vitamin A deficiency can aggravate iron deficiency anemia. Provision of vitamin A supplementation has a beneficial effect on iron deficiency anemia. Vitamin A has many roles in the body, among others for the growth and differentiation of progenitor erythrocytes cells, immunity against infection and mobilization of iron reserves throughout the tissues. The interaction of vitamin A with iron is synergistic. Based on the amount, protein is the second major preparation after carbohydrates. Green beans contain 20-25% protein.

**Bivariate Analysis**

Results of effectiveness of giving green beans with increased hemoglobin in adolescent girls in Paguyaman District.

**Table-4: the effectiveness of mung bean drink with hemoglobin increase in adolescent girls in Paguyaman sub-district**

Variabel	Paired Difference							
	Mean	SD	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Pre-test	2.38	492	27.314	31	.000	2.375	2.20	2.55
Post-test	1.38	492	15.813	31	.000	1.375	1.20	1.55

Source: Primary Data, 2018.

Based on table 4 shows the results of hemoglobin levels before milk beans given a mean value of 2.38 with a standard deviation of 0.492 and in young women after being given green beans a mean value of 1.38, with a standard deviation of 0.492 and

one-sample test results obtained  $p = 0.000$  is known the significant difference between before and after, therefore significant value less than 5% ( $p = 0.000 < 0.05$ ) so that in this case there is effectiveness of giving of mung bean drink with the increase of

hemoglobin at adolescent girl in Paguyaman District. This is because at the time of doing research found many respondents who experience mild hemoglobin level in accordance with the examination using HB Sahli measuring tool and proved by checkbook sheet conducted by researchers to each respondent and by looking at and observing the condition of each respondent who entered in the category of mild hemoglobin and weight. However, after giving green peanut sauce on each respondent during the research conducted from December 20 until 20 March seen an increase in hemoglobin levels in each respondent from mild hemoglobin level to normal hemoglobin level of 20 respondents (62.50%) while the respondents who experienced severe hemoglobin level to moderate hemoglobin level of 12 people (37.50%). This is evidenced by research conducted by researchers during the time conducted by researchers.

In this study entitled the effectiveness of giving green beans on the increase of hemoglobin in adolescent girls in Paguyaman District with respondents who found more experienced mild hemoglobin level before giving green peanut extract from the respondents with hemoglobin weight. However, after drinking green beans on each respondent during the study period, hemoglobin levels in each respondent experienced an increase from mild hemoglobin levels to normal hemoglobin levels and from severe hemoglobin levels to moderate hemoglobin levels. The mung bean drink is one effective way to increase hemoglobin levels.

According to the researchers' assumptions how to increase Hb levels in the body is to increase the consumption of nutritious foods i.e. foods that contain lots of iron from animal foods (meat, fish, chicken, liver, eggs) and plant foods (dark green vegetables, nuts, Fermented Soybean) the source of iron is red meat (beef, goat, lamb), green beans, green vegetables, eggs, beans, seafood. In this case, green beans are a source of food containing protein sources, rich in fiber, low in carbohydrates, containing healthy fats, rich in vitamin vitamins like other B vitamins, such as riboslavin, B6, pantothenic acid, and niacin.

## CONCLUSION

Levels of hemoglobin in young girls before being given mung bean drink has mild and severe anemia. Hemoglobin levels in young girls after being given green beans drink has mild anemia become normal and severe anemia becomes moderate anemia. The effectiveness of giving mung bean drink with the increase of hemoglobin in adolenscents daughter with significant value ( $p = 0.00 < 0.05$ ). This research can be used as input to improve healthy lifestyle and give special attention intake of nutrition consumed by adolescent itself. This research can be used as a literature for further research on the effectiveness of

hemoglobin increase in adolescent girls to develop variables that already exist and can be useful for all.

## REFERENCES

1. Amalia, A. (2016). Efektifitas Minuman Kacang Hijau terhadap Peningkatan Kadar Hb. In National & International Prosiding (Vol. 1, No. 1).
2. Maulina, N., & Sitepu, I. P. (2015). Pengaruh Pemberian Kacang Hijau (*Phaseolus radiatus*) Terhadap Peningkatan Kadar Hemoglobin Tikus Putih (*Rattus norvegicus*) Jantan Galur Wistar. *Jurnal Pendidikan Kimia*, 7(2), 57-60.
3. Indartanti, D., & Kartini, A. (2014). Hubungan status gizi dengan kejadian anemia pada remaja putri. *Journal of nutrition college*, 3(2), 310-316.
4. Hatma. (2014). Persepsi Tentang Anemia Gizi Pada Remaja Putri Penderita Anemia di sman 10 makassar. Makassar, Hasanuddin University.
5. Anggraeni, E. Y., Oktafianto, O., & Agustina, W. (2016). Sistem pendukung keputusan dalam diagnosa penyakit anemia dengan menggunakan metode SAW (Simple Additive Weighting). *Semnasteknomedia online*, 4(1), 3-3.
6. Fatmah. (2011). Gizi dan Kesehatan Masyarakat: Anemia. Jakarta: PT. Raja Grafindo Persada.
7. Retnorini, D. L., Widatiningsih, S., & Masini, M. (2017). Pengaruh pemberian tablet fe dan sari kacang hijau terhadap kadar hemoglobin pada ibu hamil. *Jurnal kebidanan*, 6(12), 8-16.
8. Astawan, M. (2009). Sehat dengan hidangan kacang dan biji-bijian. *Jakarta: Penebar Swadaya*, 4-130.
9. Faridah. (2017). Pemberian Kacang Hijau Sebagai Upaya Peningkatan Kadar Hemoglobin Pada Remaja Putri. Yogyakarta UAD, URECOL Proceeding.
10. Hamdani, T. (2012). Uji Sensitivitas Perasan Daun Ceremai (*Phyllanthus acidus* L.) terhadap Pertumbuhan *Escherichia coli*.