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Research Article

Effect of Green Nuts (Vigna radiata L.) Extract on Blood Hemoglobin (Hb) Levels in Adolescent Women During Menstruation

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Abstract

Aims: The most common nutritional problem in adolescents, especially young women, is iron deficiency or anemia. The World Health Organization (WHO) in 2015 reported that more than 30% or 2 billion adolescents in the world are anemic and in developing countries, one of them is Indonesia. Riskesdas data (2018) shows 32% have anemia in the 15-24 year age group. The cause of anemia is due to lack of iron and the impact of anemia is stunted growth, the body is susceptible to infection, reduced body fitness, and decreased enthusiasm for learning. Mung bean essence is a drink that contains 13.41 mg of iron in 100 gr/100 ml.
Objective: To analyze the effect of green bean extract (Vigna radita L.) on blood hemoglobin (Hb) levels during menstruation in female adolescents at SMA Negeri I Ketapang
Method: Pre-experimental design with one group pre-post test. The sampling technique used a purposive sample, namely 44 young women at SMA N 1 Ketapang. Data analysis with Wilcoxon test
Results: Hb levels before being given mung beans, the average value was 11.31 gr/dL, the lowest Hb level was 9 and the highest was 13. Meanwhile, after being given mung beans, the average respondent's Hb level was 12.90 gr/dL with the lowest level is 11 gr/dL and the highest is 14 gr/dL. The results of the Wilcoxon test found a p-value of 0.000 <0.05 meaning that there was an effect of giving green bean extract (Vigna Radita L.) on blood hemoglobin (Hb) levels during menstruation in young women at SMA Negeri I Ketapang.
Conclusions and suggestions: mung bean extract affects the Hb level of female adolescents during menstruation. It is hoped that teenagers can use mung bean extract as an option in an effort to increase Hb to prevent anemia in adolescents, especially young women.

Keywords:
Green Beans Extract, Hb Levels, Young Women

INTRODUCTION

Adolescence is a stage of growth and development that every person goes through. Adequate dietary intake is necessary for healthy growth and development. Because having an ideal figure is everyone's ambition, teenagers frequently choose to limit their food consumption. As a result, adolescents are more sensitive to nutritional issues (1). Iron deficiency, sometimes known as anemia, is the most prevalent nutritional concern among teenagers, particularly young women. Anemia is a condition in which the number of red blood cells (erythrocytes) and the amount of hemoglobin contained in red blood cells are both lower than normal. Anemic people have hemoglobin levels less than 13.5 g/dL for men and less than 12.0 g/dL for women (2,3).

Nutritional deficiencies in iron, vitamin B12, folic acid, protein, and vitamins all

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Vol. 9 Special Edition June 2023

contribute to anemia (4). Due to the increased risk of anemia associated with monthly menstruation in adolescent females, it is recommended that they increase their iron intake (5). The effects of anemia in young women include slowed growth, increased susceptibility to infection, poor physical fitness, and a loss of interest in learning that can lead to worse academic attainment.

Iron is a mineral required for the formation of red blood cells and also plays a role in the formation of myoglobin, a protein responsible for transporting oxygen to muscles. Iron can be found in various foods. Iron deficiency anemia is caused by not getting enough iron in one's diet on a regular basis. Foods rich in iron include red meat, poultry, seafood, eggs, almonds, and leafy greens (6).

Hemoglobin levels can be raised with the help of supplements and by diet. Iron pills, folic acid, and vitamin C are all dietary supplements that can raise hemoglobin levels. In addition to supplements, green beans are a good source of iron and hemoglobin. The body can benefit from the vitamins and minerals included in green beans. Green beans are a good source of many essential minerals, including calcium, phosphorus, iron, sodium, and potassium (7).

Apart from being used as food and beverage ingredients, green beans can be used as an additional intake of iron to prevent anemia. Mung bean is a type of legume that is familiar to the community because it is easily consumed and processed into mung bean extract, mung bean puree, and mung bean pia. Test results in the laboratory of the Faculty of Agricultural Technology (FTP) Brawijaya University, in 100 gr / 100 mL of green beans has an iron content of 13.41 mg which can help form blood cells so that it can increase hemoglobin.

More than 30%, or 2 billion, teenagers worldwide are anemic, according to the World Health Organization (WHO) in 2015; the prevalence of anemia is higher in underdeveloped countries like Indonesia. There was a 48.9% increase in anemia in Indonesia in 2018, according to the results of the 2018 Basic Health Research.

2018 Basic Health Research found that whereas 20.3% of men have anemia, 27.2% of women do. Anemia affects 32% of people between the ages of 15 and 24 (Riskesdas, 2018). According to 2017 data from Suryani et al., 43% of young women in Bengkulu City had iron nutritional anemia.

The Ketapang Health Center is one of 20 Health Centers in Ketapang City with the highest anemia in female adolescents with a percentage of 17% in the 10-14 year old group in 2020 (Ketapang City Health Office, 2020). State Senior High School (SMAN) 1 Ketapang is one of 5 high schools in Ketapang City with the largest number of female students.

METHODS

The study used a pre-experimental design with a pre- and post-test for a single group. The research for this study took place at SMAN 1 Ketapang. Young ladies from SMAN 1 Ketapang made up the study's population. Forty-four teenage girls who were menstruating were selected using a purposive selection method. Administering mung bean extract was the study's independent variable, and the Hb level of adolescent girls during menstruation was the study's dependent variable. In this study, 200 gr/250 ml of mung bean extract was given daily for 7 days, and Hb was measured using POCT Hb before and after administration. The POCT Hb Easy touch brand and observation sheets are used as measuring instruments. The Wilcoxon test was used to compare the means of two groups to determine whether or not green bean extract (Vigna radita l.) lowered hemoglobin (Hb) levels in the blood of young women at SMA Negeri I Ketapang while they were menstruating.

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

RESULTS

Table 1. Distribution of respondents based on age, length of menstruation, number of pads changed, and complaints during menstruation

No	Variable	Frequency (n)	Percentage (%)
1	Age		
	12-15 Years (Early Teen)	0	0
	16-18 Years (Middle Teenagers)	44	100
	19-21 Years (Late Youth)	0	0
	Amount	**44**	**100**
2	Menstrual duration		
	<3 days or	0	0
	3 - 7 days	44	100
	>7 days	0	0
	Amount	**44**	**100**
3	Number of dressing changes		
	≤3x a day	0	0
	4-5x a day	44	100
	>5x a day	0	0
	Amount	**44**	**100**
4	Complaints during menstruation		
	There are complaints	5	11,4
	No complaints	39	88,6
	Amount	**44**	**100**

Based on table 1 above, it is known that all respondents (44 students) were in the age range of 16-18 years, the duration of menstruation was 3-7 days and the number of pads changed 4-5 times a day. Of the 44 respondents, the majority (88.6%) had no complaints during menstruation and of these 5 respondents (11.4%) experienced complaints of pain during menstruation.

Table 2. Distribution of respondents based on Hb levels before giving green bean extract

Not Anemia	Frequency	%
Mild Anemia	9	20.5
Moderate Anemia	25	56.8
Severe Anemia	10	22.7
Not Anemia	0	0
Total	**44**	**100**

Based on the results of the study in table 2 above, it is known that the majority of respondents' Hb levels before being given mung bean extract experienced mild anemia (56.8%) with Hb levels of 11-11.9 gr/dL. 10 respondents had moderate anemia (22.7%) with Hb levels of 8-10.9 gr/dL, and only 9 respondents (20.5%) did not have anemia with Hb levels above 12 gr/dL.

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Table 3. Distribution of respondents based on Hb levels after giving green bean extract

Category	Frequency	%
Not Anemia	42	95.5
Mild Anemia	2	4.5
Moderate Anemia	0	0
Severe Anemia	0	0
Total	**44**	**100**

Based on table 3 above, it shows that after being given mung bean extract, most of the respondents (95.5) did not experience anemia or Hb levels above 12 gr/dL and only 2 respondents (4.5%) experienced mild anemia with Hb levels of 11- 11.9 gr/dL.

Table 4. The effect of green bean extract on Hb levels during menstruation in young women

Hb	Mean	SD	Min-Max	CI 95%	Z	p-value
Pre	11,31	0,73	9-13	11,09-11,53	-5,78	0,000
Post	12,90	0,80	11-14	12,66-13,14		

The results in table 4 above show that the Hb level before being given mung beans, the average value is 11.31 gr/dL, the lowest Hb level is 9 and the highest is 13. Meanwhile, after being given mung beans, the average respondent's Hb level rises to 12, 90 gr/dL with the lowest level being 11 gr/dL and the highest being 14 gr/dL. These results indicate that there is an increase in Hb levels before and after being given green beans. The results of the Wilcoxon test found a p-value of 0.000 <0.05 meaning that Ho was rejected and H1 was accepted, so that it can be said that there is an effect of giving mung bean extract (Vigna Radita L.) on blood hemoglobin (Hb) levels during menstruation in young women at SMA Negeri I Ketapang.

DISCUSSION

Description of Hb Levels Before Giving Mung Bean Extract

In this study it was found that the majority of respondents (56.8%) had mild anemia with Hb levels of 11-11.9 gr/dL before being given green bean extract and 10 respondents (22.7%) had moderate anemia with Hb levels 8-10.9 gr/dL. Based on the results of the researchers' observations, it was found that adolescents during menstruation did not consume iron tablets and the majority of adolescents had poor eating patterns, namely going on a diet by reducing food because they wanted a certain body shape.

The results of the study also found that 9 respondents (20.5%) were not anemic with Hb levels ≥12 gr/dL. This happened because of the good diet of the respondents with the support of their parents in providing a balanced diet.

According to the Indonesian Ministry of Health (2016), at the age of >15 years and not currently pregnant with a blood Hb level of ≥12 gr/dL is normal. While Hb levels 11-11.9 gr/dL are said to be mild anemia, Hb levels 8-10.9 gr/dL are moderate anemia and Hb levels <8 gr/dL are said to be severe anemia. According to (8) factors that affect hemoglobin levels are bleeding, menstruation, intake of iron, protein, and chronic disease. In this study, what affected respondents who experienced anemia were

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

menstruation, iron intake, and diet. Women during menstruation bleed a lot, so they are at risk of anemia and are burdened by a diet that is low in iron or low in iron absorption. Iron can be obtained from food or consuming Fe tablets (9).

Based on the description above, the majority of respondents experienced anemia due to blood loss due to menstruation, lack of iron intake due to poor diet, and not taking blood booster tablets during menstruation.

Description of Hb Levels After Administration of Mung Bean Extract

After being given mung bean extract for 7 days, the majority of respondents (95.5%) did not experience anemia with Hb levels ≥12 gr/dL and 2 respondents (4.5%) experienced mild anemia with Hb levels of 11-11.9 gr /dL. This is because green beans contain nutrients such as protein, fat, iron, calcium, and others. The nutritional content contained in green beans per 100 g is 323 kcal calories, 22.9 g protein, 1.5 g fat, 56.8 g carbohydrates, 223 mg calcium, 319 mg phosphorus, 7.5 mg iron, 11 mg vit. C, and 2.9 g zinc. This is believed to be able to increase Hb levels in the blood.

Hb levels can be increased, one of which is by giving green bean extract for 7 days. As was done by (10) in her research on the effect of green bean juice on increasing Hb levels. Mung bean juice was given to respondents in the experimental group for 7 days and found that there was an effect of green bean juice on increasing hemoglobin levels (p-value 0.001).

Iron is the main component in the formation of hemoglobin. If iron intake is lacking, it will interfere with the process of forming hemoglobin in the blood, so that it can cause a deficiency in hemoglobin levels or what is known as anemia (4). Based on the description above, it can be said that the majority of respondents had normal blood Hb levels after being given mung bean extract. This is in line with the theory that green beans can affect Hb levels because they contain a substance which is the main component in the formation of Hb, namely iron.

Differences in Hb Levels Before and After Giving Mung Bean Extract

Before being given mung bean extract, the majority of respondents (56.8%) experienced mild anemia with Hb levels of 11-11.9 gr/dL. Meanwhile, after being given mung bean extract, most of the respondents (95.5%) did not experience anemia or Hb levels above 12 gr/dL. Differences in Hb levels before and after administration of mung bean extract can also be seen from the average, minimum and maximum values. Before being given green beans, the average Hb level of respondents was 11.31 gr/dL with the lowest level being 9 gr/dL and the highest being 13 gr/dL. Meanwhile, after being given green beans, the average respondent's Hb level was 12.90 gr/dL with the lowest level of 11 gr/dL and the highest level of 14 gr/dL (CI 95%). Therefore it can be said that in this study an increase in Hb levels was found after administration of mung bean extract.

The Effect of Giving Mung Bean Extract (Vigna radita l.) on Blood Hemoglobin (Hb) Levels during Menstruation in Young Girls at SMA Negeri I Ketapang

Based on the results of data analysis using the Wilcoxon test, a p-value of 0.000 <0.05 was obtained, meaning that Ho was rejected and H1 was accepted, so it can be said that there was an effect of giving mung bean extract (Vigna radita l.) on blood hemoglobin (Hb) levels during menstruation in young girls at SMA Negeri I Ketapang. The results of this study are in line with research from (11,12) entitled the effect of giving green bean extract (Vigna radiata l.) on menstrual blood hemoglobin (Hb) levels in young women at Man 1 Dormitory Malang City and the results showed that there was an effect of giving peanut extract green on HB levels of female adolescents (p-value 0.000). This study gave treatment to 4 groups, namely group 1 with a dose of 92 gr/300 ml, group 2 with a dose of 183 gr/300 ml, group 3 with a dose of 275 gr/300 ml and obtained the

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

results of a minimum dose of green bean extract which can increase blood levels Minimum Hb of 183 gr.

The results of this study are also in line with (10) entitled the effectiveness of green bean drinks on increasing Hb levels. It was found that the average hemoglobin (Hb) level before giving green bean drink was 9.6 gr/dL or experiencing mild anemia and after giving green bean drink was 10.6 gr/dL or not anemia. The results of this study are also in line with research by (12) with the title effect of giving mung bean extract on hemoglobin levels in pregnant women at the Sirnajaya Health Center, Serang Baru District, Bekasi in 2019. In this study it was shown that the average Hb level in the intervention group before being given mung bean extract 9.993 gr/dL and after being given mung bean extract 11.287 gr/dL, the average Hb level in the control group before being given mung bean extract was 9.780 gr/dL and after 9.967 gr/dL. There were differences between the intervention group and the control group, so it was concluded that mung bean extract had an effect on increasing Hb levels (p-value 0.000).

(10) in her research, gave 200 g of green bean juice once a day for 7 days to young women, showing that the average hemoglobin level before giving mung bean juice in the intervention group was 10.24 gr/dL and after giving pea juice green is 14.05 gr/dL. The average hemoglobin level in the control group before administration of mung bean juice was 10.26 gr/dL and after administration of mung bean juice was 10.98 g/dL. The results of the statistical analysis showed that there was an effect of giving mung bean juice on increasing hemoglobin levels in anemic patients which was also in line with the results of this study (p-value 0.001). in teenage girls who are menstruating. This is supported by previous research which found the same results, namely giving green bean extract can increase Hb levels. Therefore, this discovery can be an easy way that can be done by young women to increase blood Hb levels so as to prevent anemia in adolescents, especially young women.

CONCLUSION

The study found that 56.8% of respondents had mild anemia with Hb levels 11-11.9 gr/dL before being given green bean extract. The majority experienced anemia due to menstruation, iron intake, and poor eating patterns. After 7 days of mung bean extract, the majority did not experience anemia with Hb levels ≥12 gr/dL, and 4.5% experienced mild anemia with Hb levels 11-11.9 gr/dL. Green beans contain nutrients that can increase hemoglobin levels, and the extract may help increase hemoglobin levels. The study found that mung bean extract increased blood hemoglobin levels during menstruation in young girls at SMA Negeri I Ketapang. The results were consistent with previous research on the effects of green bean extract on menstrual blood hemoglobin levels in young women. The study also found that mung bean juice increased hemoglobin levels in anemic patients, supporting previous findings. This discovery could be beneficial for young women to increase blood hemoglobin levels and prevent anemia in adolescents, particularly young women. All respondents experienced an increase in Hb levels after administration of green bean extract. There is an effect of green bean extract (Vigna Radita L.) on blood hemoglobin (Hb) levels during menstruation in young women at SMA Negeri I Ketapang (p-value 0.000).

REFERENCES

1. Sari P, Judistiani RTD, Herawati DMD, Dhamayanti M, Hilmanto D. Iron Deficiency Anemia and Associated Factors Among Adolescent Girls and Women in a Rural Area of Jatinangor, Indonesia. Int J Womens Health. 2022;1137–47.
2. Handayani TY, Tarigan RA, Sari DP. Pengaruh Jus Jambu Biji Merah (Psidium Guajava) Terhadap Meningkatkan Kadar Hemoglobin

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Pada Remaja Putri. Window of Health: Jurnal Kesehatan. 2021;4(2):177–85.

3. Loh SP, Khor GL. Iron intake and iron deficiency anaemia among young women in Kuala Lumpur. Malaysian Journal of Medicine and Health Sciences. 2010;6(1):63–70.
4. Ummah SK, Ratibi HFA. The correlation between folate and vitamine E with anaemia accident of adolescents woman in islamic boarding school. Darussalam Nutrition Journal. 2021;5(2):140–7.
5. Madanijah S, Dwiriani CM, KOLOPAkING R. Determinant of Highschool Girl Adolescent'Adherence to Consume Iron Folic Acid Supplementation in Kota Depok. J Nutr Sci Vitaminol (Tokyo). 2020;66(Supplement):S369–75.
6. Abbaspour N, Hurrell R, Kelishadi R. Review on iron and its importance for human health. J Res Med Sci. 2014;19(2):164.
7. Bjørklund G, Aaseth J, Skalny A V, Suliburska J, Skalnaya MG, Nikonorov AA, et al. Interactions of iron with manganese, zinc, chromium, and selenium as related to prophylaxis and treatment of iron deficiency. Journal of Trace Elements in Medicine and Biology. 2017;41:41–53.
8. Wahyurin IS, Rahmah HA. Amount of Menstrual Blood and Nutrient Intake with Hemoglobin Level. KEMAS: Jurnal Kesehatan Masyarakat. 2021;17(1):31–6.
9. Silvia A, Kartini A, Nugraheni SA. Hubungan asupan zat gizi (protein, zat besi, vitamin c) dan pola (Siklus, lama) menstruasi dengan kadar hemoglobin (Studi pada Remaja Putri di SMK Negeri 10 Semarang). Jurnal Kesehatan Masyarakat. 2019;7(4):504–16.
10. Mariyona K. Penurunan Tekanan Darah Penderita Hipertensi dengan Pemberian Air Rebusan Seledri (Apium graveolens L). MIKIA: Mimbar Ilmiah Kesehatan Ibu dan Anak (Maternal and Neonatal Health Journal). 2020;1–6.
11. Retnorini DL, Widatiningsih S, Masini M. Pengaruh pemberian tablet fe dan sari kacang hijau terhadap kadar hemoglobin pada ibu hamil. Jurnal kebidanan. 2017;6(12):8–16.
12. Suheti E, Indrayani T, Carolin BT. Perbedaan pemberian jus daun kelor (moringa oleifera) dan kacang hijau (vigna radiata) terhadap ibu hamil anemia. Jurnal akademi keperawatan husada karya jaya. 2020;6(2).

https://doi.org/10.33755/jkk