Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

The Effect of Giving Date Palm Juice (Phoenix Dactykiferal.) and Mung Beans (Vigna Radiata) on The Increasing Hemoglobin of Young Woman in Class XI Students at SMA Negeri 10 Pekanbaru

Yesi Septina Wati[1], Lira Sismawati Hasibuan[2]

[1]Family Midwifery Departement, STIKes Al Insyirah Pekanbaru
[2]Student Midwifey Program, STIKes Al Insyirah Pekanbarugtgg

ARTICLE INFO

Keywords:
Hemoglobin, Date Palm Juice, Mung Beans,

ABSTRACT

Anemia is a condition where the level of hemoglobin (Hb) in the blood is <12 g / dl. Teenagers have a high risk of anemia, especially iron nutritional anemia. Adolescent girls have a higher risk of anemia compared to boys because of some risk factors such as menstruation (too frequent frequency, too much blood coming out, and too long menstruation) etc. One way to overcome it is by food fortification. One of the foods that can prevent iron deficiency is dates and green beans. The purpose of this study was to analyze the effect of administration of dates palm juice and green bean extract on increasing levels of HB adolescent girls. This study uses a pretest and posttest research design with samples 13 respondents of the date palm juice group and 13 respondents of the mung bean juice group, with a sampling technique that is purposive sampling. Analysis of data using t-test dependent test with a degree of confidence <0.05. Statistical results are the influence of giving date palm juice with p value = 0.001 and green bean juice with p value = 0,000. The conclusion is that there is an effect of giving dates palm juice and green bean juice on increasing Hb levels in young women. It is hoped that students will understand correctly about nutritional needs to prevent anemia.

E-mail:
Yesiseptinawati@yahoo.com

1. Introduction

Anemia is a public health problem around the world. More than half of the world's population, especially pre-school children and pregnant women in several countries have anemia. Anemia is a condition when the hemoglobin (Hb) level in the blood is low (<12 g / dl) for young girls (WHO, 2011). Based on data from WHO (2011), two billion people in the world suffer from iron deficiency anemia. About 50% of cases of anemia are due to iron deficiency. Iron deficiency anemia is a condition when the hemoglobin (Hb) level in the blood is low. According to the results of research conducted by WHO (2015) states that the prevalence of anemia in adolescent girls is 29%. The prevalence of anemia among adolescent girls (aged 10-18 years) reaches 41.5% in developing countries. Indonesia is a developing country, according to WHO, the prevalence of anemia among adolescent girls in Indonesia is 37% higher than the prevalence of anemia in the world. (IDHS, 2012)

The rate of iron nutrition anemia in Indonesia is 72.3%. Iron deficiency in adolescents results in pallor, weakness, fatigue, dizziness, and decreased learning concentration. The causes, among others: education level of parents, economic level, level of knowledge about anemia from young woman, consumption of Fe, Vitamin C, and the length of menstruation. The total population of adolescents (10-19 years) in Indonesia is 26.2% consisting of 50.9% male and 49.1% female. In addition, based on the results of Riskesdas 2013, the prevalence of anemia in Indonesia is 21.7% with anemia sufferers aged 5-14 years of 26.4% and 18.4% of patients aged 15-24 years (Lestari, et al. 2017).

The 2012 Household Health Survey (SKRT) data states that the prevalence of anemia in toddlers is 40.5%, pregnant women are 50.5%, postpartum mothers are 45.1%, adolescent girls aged 10-18 years are 57.1% and aged 19-45 years at 39.5%. Women have the highest risk of developing anemia, especially in young women. The prevalence rate of anemia in Indonesia, namely 26.50% in adolescent women, 26.9% for women of childbearing age, 40.1% for pregnant women and 47.0% for toddlers (Lestari, et al. 2017).

Adolescents have a high risk of anemia, especially iron deficiency anemia. This happens because adolescence requires higher levels of nutrients, including iron for growth and development. Young women have a higher risk than young men, this is because young women experience menstruation every month (menstruation). There are several risk factors for adolescents experiencing anemia such as menstruation (frequency that is too frequent, blood loss is too much, and the length of menstruation is too long), history of disease (malaria, tuberculosis, and worms), too heavy physical activity such as athletes, and age (Wari. 2017).

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

Iron deficiency anemia is a state of decreasing iron concentration in the body, both in storage, circulation, and in the form of bonds with heme so that it can cause a decrease in the concentration of red blood cells. Iron deficiency anemia is a stage of severe iron deficiency (Arisman M., 2009).

Anemia is a deficiency of hemoglobin (Hb) levels in the blood caused by a lack of nutrients needed for the formation of hemoglobin. Normal Hb levels in young woman are 12 gr / dl. Adolescents are said to be anemia if their Hb levels are <12 gr / dl (Proverawati & Asfuah, 2009).

One way to overcome this is by means of food fortification. The fortification of widely consumed and centrally processed foods is at the heart of anemia control in many countries. Food fortification is one of the most effective ways to prevent iron deficiency (Arisman M., 2007). One of the foods that can prevent iron deficiency is dates and green beans.

Dates have various kinds of nutritional content such as: potassium, salicylic acid, sugar, vitamin A, thiamin, riboflavin, niacin, caratenoids, phosphorus, dietary fiber, unsaturated fats, and iron. The health benefits of dates include anti-diabetes, anti-microbial, anti-inflammatory, anti-oxidant, anti-hyperlipidemic, preventing anemia, rickets, and osteomalacia, and facilitating labor.

Mung beans are one of the food ingredients that contain substances necessary for the formation of blood cells so that they can overcome the effects of reducing Hb. Mung beans can play a role in the formation of red blood cells and prevent anemia because the phytochemical content in green beans is very complete so that it can help the process of hematopoiesis. Mung beans also contain vitamins and minerals. Minerals such as calcium, phosphorus, iron, sodium and potassium are abundant in green beans (Astawan, 2009).

In line with the research conducted by Faridah et al (2017), namely the effect of increasing hemoglobin levels after being given green bean juice in class X students of SMK Al-Islam Kudus by showing the results of the analysis of increasing Hb levels from 10.57 to 11.10 after being given green beans. . And research conducted by Agustina et al. (2017) has a significant effect on the increase in HB levels in female students at the Al-Munawwir Krapyak Bantul Islamic boarding school, Yogyakarta with the results showing that changes in Hb levels before and after treatment, the majority experienced an increase in Hb by 64.7 %.

The results of a preliminary study conducted by researchers by interviewing several XI grade students of the 5 interviewed students showed that 3 students had never received information about the juice of dates and green beans which could increase hemoglobin levels, while the other 2 students stated that they had received this information.

2. Methodology

This study uses a quantitative approach. This research is a quasi experimental research. The design or design used ispre-test design post-test designs (1). The sampling technique in this study is to use the nonprobability sampling technique with purposive sampling design, namely taking samples from the population according to certain considerations made by researchers, namely based on certain criteria. (2).

Inclusion criteria: Students of class XI SMA N 10 Pekanbaru who were present at the time of the study were willing to fill out the informed consent as respondents and students who had a hb <12 gr / dl (8-11.9 gr / dl, namely mild and moderate anemia).

Exclusion Criteria: Students who have a hb> 12 gr / dl and are not willing to fill out the informed consent as respondents.In this study, it was conducted with 2 different groups, namely the date palm extract and green bean extract, before giving the treatment, both date palm extract and mung bean juice, the hb level was checked first. And the next day the palm juice group was given date juice as much as 15cc / day for 7 days of administration. While in the green bean extract group2 times a day, namely in the morning and evening, each with 1 cup measuring 250cc for 7 days. After 7 days of giving, the hemoglobin level was checked to see changes in the Hb level before and after giving.

This research was conducted on students of SMA Negeri 10 Pekanbaru, door to door, from May 2020 to July 2020. Data was collected in December 2019. The variables in this study consisted of independent and dependent variables. The independent variable was the distribution of dates and green beans extract and the dependent variable was the Hb level.Data analysis is an activity to research, examine, study, compare existing data and make the necessary interpretations. The data analysis used in this research is Univariate and Bivariate. This analysis is a descriptive analysis

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

(univariate). This analysis aims to explain the characteristics of each variable under study and calculate through the frequency distribution of research results to determine the results which will later be used as benchmarks for discussion and conclusions (Notoatmodjo, 2010). Bivariate analysis is an analysis to show the relationship between the dependent variable and the independent variable.

3. Result and Discussion

Table 1.
Frequency distribution of the effect of increasing hemoglobin levels for female adolescents at SMA Negeri 10 Pekanbaru before and after being given dates palm juice.

Category	Pretest		Posttest	
	F	%	*F*	%
Mild anemia	7	53.8	5	38.5
Moderate anemia	6	46.2	2	15.4
Not anemia	0	0	6	46.1
Total	13	100	13	100

Source: Data Processed Research Results 2020

Based on the table above, it can be seen that an increase in HB levels in adolescent girls by giving date palm juice for 7 days is 15cc. Before being given date palm juice, respondents who had Hb levels in the mild anemia category were 53.8% (7 people) after being given date juice decreased to 38.5% (5 people), and the moderate anemia category before being given date juice was 46.2% (6 people) after being given the juice. dates to 15.4% (2 people), and none of the 0% respondents had Hb levels above 12gr / dl after being given date palm juice increased to 46.1% (6 people).

Table 2
Frequency Distribution of Influence of Increased Hemoglobin Levels for Girls in SMA Negeri 10 Pekanbaru before and after being given green beans

Kategori	Pretest		Posttest	
	F	%	*F*	%
Anemia ringan	5	38.5	1	7.7
Anemia sedang	8	61.5	3	23.1
Tidak anemia	0	0	9	69.2
Total	13	100	13	100

Source: Data Processed Research Results 2020

Based on the table above, it can be seen that there is an increase in Hb levels of female adolescents who are given 2 times a day, namely in the morning and evening as much as 1 cup of 250cc size is given for 7 days. Before being given green bean juice, the respondent had a Hb level with a mild anemia category, namely from 38.5% (5 people) after being given green bean juice decreased to 7.7% (1 person), and the moderate anemia category before being given mung bean juice was 61.5% (8 people) After being given green bean juice, it increased to 23.1% (3 people), and no one respondent 0% (0 people) had Hb levels above 12gr / dl after being given green bean juice increased to 69.2% (9 people). From table 3 is found that the average value of the frequency distribution before being given date palm juice is 10,577 with a standard deviation of 0.9722. While the average frequency distribution after being given date palm Juice was 11,831 with a standard deviation of 0.9196. The difference between the pretest and posttest values in the date palm Juice group was -1.2538. There was a significant change between before being given and after being given date palm juice because there were respondents who experienced a decrease in Hb levels caused by factors from respondents who experienced menstruation. The results of the analysis obtained p value (0.001) <0.05, it can be concluded that there is a significant difference between the mean intensity of the frequency distribution before and after giving date palm juice.

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

Table 4
The Effect of Green Bean Extract on the Increase of Hb Levels for Young Woman in SMA Negeri 10 Pekanbaru

Measurement of Hb levels	Mean	Mean change	SD	SE	*P value*
Pretest	10,477	-2.9385	0.8064	0.2237	0.000
Posttest	13,415		2.4815	0.6883	

Source: Data Processed Research Results 2020

From table 4, it is found that the average value of the frequency distribution before being given green bean juice is 10.477 with a standard deviation of 0.8064. Meanwhile, the average frequency distribution after being given mung bean juice was 13,415 with a standard deviation of 2.4815. The difference between the pretest and posttest values in the green bean juice group was -2.9385. This difference in average was due to changes in data before and after being given green bean juice and this was because there was one respondent who experienced menstruation on day 2 with the number spending a lot of blood, so that it is a factor that does not increase the level of respindent Hb. The analysis results obtained p value (0.000) <0.05,

3.1 Discussion

a. Differences in the Increase Hemoglobin Levels of Young woman in SMA N 10 Pekanbaru before and after being given dates extract

Based on the results of the study showed that of the 13 respondents or young women after being given date palm juice, 46.1% had Hb levels in the non-anemia category, the mild anemia category decreased to 38.5% and those who had Hb levels in the moderate anemia category were 15.4%. There is an increase or decrease in the data on the distribution of date palm juice due to the condition of the respondent who is currently menstruating.

The results of research conducted using the dependent t-test showed the mean value of Hb levels at pre-test was 10.577 while the mean Hb level at posttest was 11.831 with a p-value of 0.001. It can be assumed that there is a significant change between the average increase in hemoglobin levels before and after being given date juice. This means that the provision of date palm juice is effective in increasing hemoglobin levels in adolescent girls who have anemia.

The results of previous research support the results of current research, conducted by Lestariningsih (2018) The Effect of Dates Consumption on Increased Hb Levels in Class X Ma Darul A'mal Metro Students, using the Wilcoxon p value test of 0.031 (p <0.05) . So statistically there is an effect of consumption of dates on the increase in Hb levels in class X MA Darul A'mal. From the above statement it can be assumed that before and after consuming date palm juice there are significant changes.

Likewise with research conducted by Pertiwi, Danis., Et al. 2013. Effect of Phenix dactylifera on Hemoglobin Levels in Experimental Studies in Wistar Male White Rats Given a Diet Low in Iron (Fe). The results of the One Way Anova test showed that the administration of date palm juice had a significant effect (p <0.05) on the hemoglobin levels of iron deficient rats.

Dates, which in Latin are called Phoenix dactylifera, are a typical fruit that grows in desert areas. This fruit has long been known and is one of the most important fruits in the Arab, North African and Middle East regions.Dates contain iron. High iron content can be used for the treatment of anemia. Anemia is a condition in which the number of red blood cells or the amount of hemoglobin (oxygen-carrying protein) in red blood cells is below normal. The presence of iron in dates is later absorbed by the intestines and carried by the blood for hemopoiesis (the process of forming blood). Iron will bind to heme and four globins, which in turn form a unit into hemoglobin. So, dates can indirectly help increase hemoglobin to normal levels for anemia sufferers. Apart from being useful as an anemia treatment, dates also play an important role in the treatment of dengue fever. This is because people with dengue fever experience a decrease in the number of platelets or platelets,

There is a significant effect on changes in hemoglobin levels in adolescent girls before and after being given date juice which is consumed as much as 15cc a day. This means that H0 is rejected and Ha is accepted with p value 0.001 <0.005.

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

b. Differences in Increasing Hemoglobin Levels of young woman in SMA N 10 Pekanbaru before and after being given mung bean juice

Based on the results of the study showed that of the 13 respondents or young women after being given green bean juice, 69.2% had Hb levels in the non-anemia category, the mild anemia category decreased to 7.7% and those who had Hb levels with moderate anemia were 23.1%. There is an increase or decrease in the data on giving green bean juice due to the condition of the respondent who is menstruating.

The results of research conducted using the dependent t-test showed that the mean Hb level at pre-test was 10.477 while the mean Hb level at posttest was 13.415 with a p-value of 0.000. It can be assumed that there is a significant change between the average increase in hemoglobin levels before and after being given green bean juice. This means that green bean juice is very effective in increasing hemoglobin levels in adolescent girls who have anemia.

In line with research conducted by Faridah, U. et al. 2017. The provision of green beans as an effort to increase hemoglobin levels in young women, based on the results of the Wilcoxon test, the difference in the ratio of the average Hb levels in the intervention group was 0.53. While the difference in the ratio of the average Hb levels in the Control Group was 0.03. Obtained ρ value of 0.005, this shows that the value of ρ value <0.05. So it can be concluded that Ha is accepted and Ho is rejected, that is, there is an effect of green beans on increasing Hb levels in adolescent girls who experience anemia in grade X at SMK Al - Islam Kudus in 2016.

Likewise with research conducted by Amalia, A ,. 2016. The Effectiveness of Mung Bean Drinks on Increasing Hb Levels Based on the research conducted showed that female students had mild anemia with an average of 9.6 gr / dl and after being given green bean drinks, students did not experience anemia with an average of 10.6 gr / dl , resulting in an increase in hemoglobin (Hb) levels, namely 1 g / dl. Based on the results of the calculation of paired t-test with the help of SPSS version 16.0, it was obtained p = 0.000 where p <0.05, then H1 was accepted, meaning that there was an effect between giving green bean drinks to an increase in hemoglobin (Hb) levels in Semester 4 D3 Midwifery STIKES Students Muhammadiyah Lamongan in 2016.

Mung beans (Vigna Radiata) are very popular for us. Mung beans are included in the legume tribe and contain many benefits in human life, both for daily consumption which are processed in various forms of food and drink, as well as for health. Green beans are easily found in Indonesia because they are one of the typical tropical plants (Akbar). , 2015).

Mung beans are short, upright branched plants. The flowers are greenish yellow or pale yellow. From this flower, a legume is formed which contains from 10 to 15 green bean seeds Tribe: Leguminoceae (Akbar, 2015).

From the explanation above, it can be concluded that green bean drink can significantly increase hemoglobin levels in the blood towards changes in hemoglobin levels for adolescent girls before and after being given green bean juice, which is consumed twice a day. This means that H0 is rejected and Ha is accepted with*p value*0.000 <0.005. Although there was 1 student who experienced a decrease in Hb levels after giving green bean juice.

c. Differences in the Increase in Hemoglobin Levels of Teenage Girls in SMA Negeri 10 Pekanbaru before and after being given date palm extract and mung bean juice

Based on the research conducted on 26 female respondents or female remedies, which were divided into 2 groups, namely the date palm extract group and the green bean extract group, there were differences in the increase in female hemoglobin levels before and after treatment.

The results of research conducted using the dependent t-test showed the mean value of Hb levels at pre-test was 10.577 while the mean Hb level at posttest was 11.831 with a p-value of 0.001. It can be assumed that there is a significant change between the average increase in hemoglobin levels before and after being given date juice. This means that the provision of date palm juice is effective in increasing hemoglobin levels in adolescent girls who have anemia.

This proves that date palm juice has an effect on hemoglobin levels. These results indicate that date juice which is rich in iron can increase hemoglobin levels. The protein, carbohydrate and fat content in date juice as well as the content of glucose, Ca, Fe, Zn, Cu, P, and Niacin with palmyra which is rich in Vit A content supports hemoglobin synthesis, the content of date palm

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

juice which can indirectly increase the number of platelets, namely mineral substances such as iron which are essential for the formation of hemoglobin.

Meanwhile, the results of the study of green bean extract using the dependent t-test showed that the mean Hb level during the pre-test was 10.477, while the mean Hb level at posttest was 13.415 with a p-value of 0.000. It can be assumed that there is a significant change between the average increase in hemoglobin levels before and after being given green bean juice. This means that green bean juice is very effective in increasing hemoglobin levels in adolescent girls who have anemia.

This shows that green bean drinks can significantly increase hemoglobin levels in the blood because they contain iron, vitamin C, and zinc and vitamin A has many roles in the body, including growth and differentiation of progenitor erythrocyte cells, body immunity against infection and mobilization of iron reserves throughout the network, therefore it is recommended for teenagers or female students to drink green beans during menstruation or after menstruation because it is to prevent iron deficiency anemia (Astawan, M., 2009).

The results showed that date palm extract and mung bean extract both had an effect on the increase in Hb levels of female adolescents at SMA Negeri 10 Pekanbaru. Although the p value of date palm extract (0.001)> compared to green bean extract (0.000). with the mean ratio for date palm juice that is -1.2538 while the mean comparison for mung bean juice is -2.9385.

4. Conclusion

a. There was an increase in the frequency of HB levels for female adolescents in grade XI at SMA Negeri 10 Pekanbaru before and after being given date palm extract, namely before being given date juice, respondents who had Hb levels with mild anemia category were 53.8% (7 people) after being given date palm juice decreased to 38.5% (5 people), and the category of moderate anemia before being given date palm juice was 46.2% (6 people) after being given date palm juice to 15.4% (2 people), and no one respondent 0% had Hb levels above 12gr / dl after being given date palm juice increased to 46.1% (6 people).

b. There was an increase in the frequency of HB levels for female adolescents in grade XI at SMA Negeri 10 Pekanbaru before and after being given green bean juice, namely before being given green bean juice, the respondents had Hb levels with the mild anemia category, from 38.5% (5 people) after being given mung bean juice decreased to 7.7 % (1 person), and the moderate anemia category before being given green bean juice was 61.5% (8 people) after being given green bean juice to 23.1% (3 people), and no one respondent 0% (0 people) had Hb levels above 12gr / dl after being given green bean juice increased to 69.2% (9 people).

c. Based on the results of the dependent t-test, there was an effect on the provision of date palm extract with p value = 0.001 and green bean extract with p value = 0.000. With the mean value of comparison for date palm extract is -1.2538 while the mean ratio for green bean extract is -2.9385. So it can be concluded that Ha is accepted and Ho is rejected, which means that there is an effect of giving date palm juice and mung bean juice on the increase in Hb levels in class XI adolescents at SMA Negeri 10 Pekanbaru in 2020.

5. References

[1] Akbar R. Various Pharmacy Plants Living Around Us, printing 1. 2015;

[2] Ahmad F, Lestariningsih S, Lestari GI. Effect of Dates Consumption on the Increase of Hb Level on X Grade Female Students At Ma Darul a 'Mall Metro The Effect of Dates Consumption on Increasing Hb Levels in Class X Students Ma Darul a' Mal Metro. J Heal Technol. 2018; 14 (1): 22–5.

[3] Arisman M. Textbook of Nutrition in Life. Jakarta: EGC; 2007.

[4] Arisman M. Textbook of Nutrition in the Cycle of Life. Jakarta: Medical book publisher.EGC; 2009.

[5] Astawan M. Sehat with Nuts and Seeds. Depok: Self-Help Distribution; 2007.

[6] Agustina S, Faujiah S, Lanangu S. the Impacts of Fe With Vitamin C and Date Extract Consumption To the Increasing Level of Hemoglobin on Anemia Female Students in Pondok Pesantren Al-Munawwir Krapyak Bantul. Pros Semin Nas. 2017; (November): 343–50.

Contents lists available at iocspublisher

Science Midwifery

Journal Homepage: www.midwifery.iocspublisher.org

[7] Amalia A. Effectiveness of Mung Bean Drinks on Increasing Hb Levels. Rakernas Aipkema [Internet]. 2016; 13–8. Available from: https://media.neliti.com/
[8] Umi Farida VI. Giving green beans as an effort to increase hemoglobin levels in young women. J Health [Internet]. 2017; (February): 218–9. Available from: http://lpp.uad.ac.id
[9] Hidayat A. Midwifery Research Methodology and Data Analysis Techniques. Jakarta: Salemba Medika; 2007.
[10] Kaimudin N, Lestari H, Afa J. Screening and Determinants of Anemia Incidence in Young Girls at SMA Negeri 3 Kendari Tahun Kaimudin, N., Lestari, H., & Afa, J. (2017). Screening and Determinants of Anemia Incidence in Young Girls at SMA Negeri 3 Kendari in 2017. Scientific Journal of Health Students M. J Ilm Mhs Kkes Masy Unsyiah. 2017; 2 (6): 185793.
[11] Proverawati, A., & Asfuah S. Nutrition for Midwifery. Yogyakarta: Nuha Medika; 2009.
[12] Sugiyono. Educational Research Methods, Quantitative Approaches, Qualitative and R & D. Bandung: Alfabeta; 2010.
[13] WHO Hemoglobin concentration for the diagnosis of anemia and assessment of saverity. Vitamin and Mineral Nutrition System Geneva. 2011;