

Addition Of Sukkari Dates (*Phoenix Dactylifera L*) And Fe Supplements In Increasing Hemoglobin Levels In Young Women With Anemia

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ABSTRACT

Purpose: This study aims to determine the Effect of Addition of Sukkari Dates (*Phoenix Dactylifera L*) and Fe Supplements in increasing Hemoglobin Levels in Young Women with Anemia. **Method:** This type of research uses Quasi experimental design with pre and post-test with control group design. The research was conducted at SMPN 3 Lembang and SMAN 8 Pinrang, with hemoglobin levels examined at Bungi health center on October 18 to November 19, 2020. Sampling techniques using purposive sampling. The sample was 14 samples of anemia in the first intervention group, 14 samples of the second intervention group and 14 samples in the control group. The first intervention group was given 2x1 weeks of Fe tablets, the second intervention group was given 50 grams/day of Fe 2x1 week combination dates and the control group through a 24-hour food recall. The data was analyzed using Whitney's Post hoc Wallis-Wallis test, Friedman's test using SPSS version 22. **Results:** The results of this study show that there are relevant differences between before and after treatment in each group. The first intervention group of Fe supplement administration was seen from the average hemoglobin value of 10.4286 g/dL to 13.1286 g/dL, in the second intervention group the administration of Fe supplements and Sukkari dates as well as experienced a significant change from the pre value of 9.3143 g/dL increased at post-12 values. 5714 g/dL, and the control group monitoring nutrient intake changed the average hemoglobin level from 10.7429 g/dL to 11.5286 g/dL value p value = 0.000 <0.05. **Conclusion:** There is an effect of Sukkari dates and Fe supplementation on increased hemoglobin levels in anemia young women. It is recommended for young women and the elderly to meet nutritional intake that can help prevent anemia.

Keywords: Sukkari Dates, Fe Supplements, Hemoglobin Levels, Anemia.

INTRODUCTION

The World Health Organization defines adolescence as a period of 10-19 years. Adolescents are characterized by rapid growth and development with a significant increase in the need for macronutrients and micronutrients, adolescence is one of the windows of opportunity to break the cycle of intergenerational malnutrition. (Seifu Hagos Gebreyesus et al, 2019).

Micronutrient deficiency can cause abnormalities such as anemia usually affecting adolescents in developing countries. About a quarter of adolescents in developing countries experience anemia, the estimated prevalence for adolescent anemia in the Southeast Asian region ranges from 27% to 55% sensitivity of adolescents to anemia is generally associated with the need for micronutrients (such as iron and folic acid) associated with significant physical growth. In late adolescence, men quickly regain adequate nutritional reserves, while women remain susceptible to anemia caused by blood loss during menstruation. Therefore, they have a risk of becoming anemic or becoming severe anemia due to the increased need for micronutrients from menstruation. (Binaya Chalise et al, 2018).

Anemia is a widespread public health problem around the world especially in adolescents that causes most nutritional problems such as iron deficiency. Its prevalence is much higher among people living in developing countries (89%) due to low socioeconomic status for health care. Anemia affects about 2 billion world populations, with consequences not only on human health but also on social and economic development. (Nazneen Habib et al, 2019).

The impact of anemia on young women remains a global public health problem affecting the rest of the world with major consequences on health, social and economic development. This happens at all stages of human life but is more common in young women. Anemia among adolescent girls occurs due to increased need, physical growth, reproductive maturation and cognitive transformation in the continuum of life. Even if the cause of Anemia is multifactorial, globally, the most significant contributor to the onset of anemia is iron deficiency that connects at least 50% of cases of anemia as well as other contributing factors are large amounts of blood loss, parasitic infections, acute and chronic infections and the presence of other micronutrient deficiencies. (Melaku Tadege Engidaw et al, 2018).

Intervention programs to overcome or prevent iron deficiency consist of a diet high in iron, fortification of food (the addition of nutrients to foods with higher levels), supplementation and improvement of public health status globally. Fortified foods contain high iron, namely livestock meat, red meat, poultry, liver, fish, salmon tuna, eggs, green vegetables, nuts, and fruits (oranges, guava, and bananas). Iron content in oranges 0.4 mg and iron content in bananas 0,5 mg. Another fruit that can overcome anemia is dates, because in dates contained iron, namely 1.2 mg / 100 grams of dates (Al-Fatah, 2011). Naufal quoted (Hammad, 2014) suggests that consuming 10 dates daily can meet 10% of iron needs (1 mg). Consumption of dates 7 grains at the time Dhuha can increase the level of Hb (overcome anemia), in accordance with the teachings of the Prophet Muhammad SAW (Rahayu, 2015).

Dates in general do have certain properties for treatment, based on the research of scientists; dates are rich in protein, sugar fiber, vitamins A and C, as well as minerals such as iron, calcium, sodium, and potassium. Protein content in dates is 1.8-2.0%; fiber as much as 2.0-4.0%; and sugar of 50-70% glucose. In addition to containing rich sugar energy, dates also contain alkaline salts that are

able to increase the acidity of the blood that serves to offset the influence of excess carbohydrate foods (Andriawan, 2015) (Achmad, 2021).

The results of studies in several regions in Indonesia also showed a high prevalence of anemia in young women by showing there is a relationship of nutritional status with the incidence of anemia in young women. This is because young women have a habit of consuming less iron source foods, energy intake, protein intake, vitamin C intake, tea or coffee drinking habits, and other causative factors. (Wahyu Putri Handayani et al, 2015).

METHOD

This study uses Quasi experimental design with pre and post-test design with control group. The population in this study was all female students of SMPN 3 Lembang and female students of SMAN 8 Pinrang as many 789 students. The sample of this study is some students at SMPN3 Lembang Pinrang Regency as well as students of SMAN 8 Pinrang who comply with the criteria of inclusion and exclusion of 42 respondents with sampling techniques using purposive sampling. Inclusion criteria are young women aged 13-18 years who have anemia, have menstruation, are not taking additional vitamins or supplements, are not undergoing a diet program, and are not experiencing diseases such as lumps under the stomach, diarrhea, and colitis. Exclusion criteria are having diseases related to decreased hemoglobin levels, consuming blood-enhancing substances due to menstrual disorders, having a history of chronic stomach diseases, obesity, prolonged menstrual cycles.

Data collection instruments are questionnaire sheet screening prospective respondents, approval sheet or informed consent, respondent characteristic data sheet, food recall sheet 24 hours, control sheet of Sukkari date administration and control sheet of Fe supplement administration, as well as observation sheet of hemoglobin levels of young women before and after treatment. To analyze characteristics of respondents using chi-square statistics analysis and to analyze hemoglobin levels in young women anemia using statistical analysis Test One-way Anova, Kruskal-Wallis test posthoc mann-whitney and Friedman test posthoc Wilcoxon.

RESULT

A. Univariate Analysis

Univariate analysis was conducted to determine the characteristics of respondent data in the form of education, age, weight, height, menstruation period, parents' education, and parents' occupation. The data obtained as presented in the following table (table 1):

Table 1 Respondent Characteristic Frequency			
Intervention 1	Intervention 2	Control	P Value

Respondent Category	(Giving Fe Supplement)	(Giving Sukkari Dates with Fe Supplement)	(Monitoring Nutrient Intake)	
	n (%)	n (%)	n (%)	
Education:				
Middle School	5(11.90)	6(14.29)	10(23.81)	0.747
High School	9(21.42)	8(19.04)	4(9.52)	
Age:				
13 – 15 Years old	10 (23.81)	8(19.04)	13(30.95)	0.100
16 – 18 Years old	4 (9.52)	6(14.29)	1(2.38)	
Weight:				
< 35 kg	2 (4.76)	0(0)	5(11.90)	0.204
35-60 kg	12 (28.57)	14(33.33)	9(21.43)	
Height:				
<145 cm	3 (7.14)	2 (4.76)	6(14.29)	0.213
145 – 151 cm	11 (26.19)	12 (28.57)	8(19.04)	
Menstruation Period:				
<3 days and >7 days	5(11.90)	5(11.90)	8(19.04)	0.900
3 – 7 days	9 (21.42)	9(21.42)	6(14.29)	
IMT				
Thin : < 17	2 (4.76)	1 (2.38)	7 (16.67)	0.001
Normal : 17 – 25	11(26.19)	13(30.95)	7 (16.67)	
Fat : > 25	1 (2.38)	0(0)	0 (0)	
Parents' Education:				
Elementary	3 (7.14)	2(4.76)	1(2.38)	0.654
Middle School	4(9.52)	2(4.76)	3(7.14)	
High School	6(14.29)	6(14.29)	7(16.67)	
Bachelor-Master	1(2.38)	4(9.52)	3(7.14)	
Parents' Occupation:				
Farmer	11(26.19)	9(21.42)	10(23.80)	0.812
Entrepreneur	2(4.76)	4(9.52)	2(4.76)	
Civil Servant	1(2.38)	1(2.38)	2(4.76)	

* *Chi square*

Table 1 data shows that the education of junior high and high school respondents has the same number, each as many as 21 respondents. The number of junior high school level respondents was 11.90% in the group with Fe supplements, 14.29% in the group given Fe supplements and Sukkari dates and the nutrient intake control group as much as 23.81%, while in high school educated

respondents, the group given Fe supplements amounted to 21.42%, 19.04% in the group with Fe supplements and Sukkari dates and nutrient intake control group as much as 9.52%. At age characteristics, most of the respondents of the intervention and control group had an age of 13-15 years, in the Fe supplement administration group with an amount of 23.81%, 19.04% in the group given Fe supplements and Sukkari dates and 30.95% in the control group that means all three groups were in the adolescent age range of anemia. In the characteristics of weight loss, the majority of respondents weighed 35-60 kg, in the group given Fe supplements as much as 28.57%, 33.33% in the group given Fe supplements and dates Sukkari and 21.43% in the group control nutrient intake. In the characteristics of height most respondents have a height of 145 - 151 cm, the number of respondents who have a height of 145-151 cm in the first intervention of Fe supplement administration as much as 26.19%, the second intervention given Fe supplements and dates Sukkari as much as 28.57% and control nutrient intake as much as 19.04%.

Next is the length of menstruation, most of the respondents had menstruation for 3-7 days, the number of respondents on the first intervention and the second intervention had the same number of 21.42% and respondents in the control group was 14.29%. In the educational characteristics of parents, the majority of parents' education is high school, the number of respondents in the Fe supplement group as much as 14.29%, the second intervention given Fe supplements and Sukkari dates amounted to 14.29% and control of nutrient intake as much as 16.67%. In the characteristics of parents' work respondents, the majority of parents worked as farmers, the number of respondents in the first intervention was 26.19%, in the second intervention amounted to 21.42% and control nutrient intake as much as 23.80%. In the homogeneity test all characteristics of the three groups were equivalent to $p > 0.05$.

Table 2
Nutritional Adequacy of Macronutrients and Micronutrients before the Distribution of Sukkari Dates and Fe Supplements

Nutrition	AKG	MEAN $\pm$ SD						P-Value
		Intervention 1 (Fe Distribution)	% AKG	Intervention 2 (Distribution of Sukkari Dates with Fe)	% AKG	Control (Monitoring of Nutrient Intake)	% AKG	
Energy (kcal)	2125	450.76 $\pm$ 577.52	21.21	657.48 + 946.67	30.94	224.96 + 172.37	10.58	0.110
Protein (g)	69	38.75 $\pm$ 23.77	56.15	28.91 + 23.97	41.89	31.85 + 16.00	46.15	0.471
Fat (g)	71	49.20 $\pm$ 33.39	69.29	40.48 + 15.58	57.01	47.51 + 27.65	66.9	0.930
Carbohydrate (g)	292	161.92 $\pm$ 32.38	55.45	151.62 + 42.13	51.92	138.74 + 41.68	47.51	0.068
Calcium (mg)	1200	367.64 $\pm$ 149.29	30.63	341.35 + 171.07	28.44	307.14 + 75.89	25.59	0.467

Phosphor (mg)	1200	38.23 ± 27.50	3.18	26.51 + 14.66	2.2	36.25 + 11.37	3.02	0.149
Iron (mg)	26	17.24 ± 6.64	66.30	15.70 + 6.60	60.38	14.76 + 9.47	56.76	0.692
Vitamin C (mg)	65	27.23 + 17.07	41.89	38.24 + 24.73	58.83	34.41 + 24.40756	52.9	0.453

^aOne-way Anova Test; ^bKruskal-Wallis posthoc mann-whitney Test

Based on the data in table 2 shows that the three groups of respondents have AKG of energy nutrients, protein, fat, carbohydrates, calcium, phosphorus, iron, and vitamin C as a whole is still below the minimum 80% of AKG that has been set, so it can be said that it is not sufficient for nutritional needs per day. After being tested the analysis of energy nutrients, proteins, fats, carbohydrates, calcium, phosphorus, iron and vitamin C as a whole had a value of $p = > 0.05$ which means before being treated intervention group 1, intervention group 2 and control group had a comparable or equivalent nutrient intake.

Table 3

Nutritional Adequacy of Macronutrients and Micronutrients after Distribution of Sukkari Dates and Fe Supplements

Nutrition	AKG	MEAN ± SD						P-Value
		Intervention 1 (Fe Distribution)	% AKG	Intervention 2 (Distribution of Sukkari Dates with Fe)	% AKG	Control (Monitoring of Nutrient Intake)	% AKG	
Energy (kcal)	2125	143.24 ± 28.03	6.74	130.97 ± 25.76	6.16	112.41 ± 14.30	5.28	0.005
Protein (g)	69	63.65 ± 14.45	92.24	55.06 ± 21.27	79.79	50.62 ± 46.60	73.36	0.144
Fat (g)	71	27.13 ± 8.02	38.21	66.36 ± 34.77	93.46	62.30 ± 16.77	87.74	0.000
Carbohydrate (g)	292	127.25 ± 18.28	43.57	126.62 ± 24.28	43.36	111.49 ± 8.86	38.18	0.079
Calcium (mg)	1200	116.95 ± 122.95	9.74	126.59 ± 75.79	10.54	58.12 ± 50.58	4.84	0.054
Phosphor (mg)	1200	95.59 ± 77.99	7.96	89.61 ± 58.98	7.46	39.60 ± 14.99	3.3	0.025
Iron (mg)	26	19.82 ± 8.32	76.23	13.91 ± 5.56	53.5	16.77 ± 9.72	64.5	0.165
Vitamin C (mg)	65	13.70 ± 6.70	21.07	48.92 ± 53.35	75.2	28.69 ± 37.51	44.13	0.139

^aOne-way Anova Test; ^bKruskal-Wallis posthoc mann-whitney Test

Based on the data in table 3 shows from the overall nutrition only Fats and proteins that have AKG % which is more than the minimum requirement (80%) 93.46% and 92.24%. After the analysis test it was known that some nutrients namely energy, fat and phosphorus that have a level of significance namely $P = < 0.05$ which means that some of these nutrients have a significant average difference between the intervention group and the control group after being treated.

Table 4
Differences towards hemoglobin levels of respondents before and after the distribution of Sukkari dates and Fe supplements

Hemoglobin Level	N	Mean $\pm$ SD		Mean	P*	P Value
		Pre	Post			
Intervention 1 (Fe Distribution)	14	10.42 + 56491	13.12 + 82874	-2.7	0.01	
Intervention 2 (Distribution of Sukkari Dates and Fe)	14	9.31 + 53039	12.57 + 91435	-3.25	0.01	0.00
Control (Monitoring of Nutrient Intake)	14	10.74 + 40328	11.52 + 45477	-0.78	0.01	
P-Value		0.00	0.00			

^aKruskal-Wallis Post hoc Mann whitney Test; ^bFriedman Test

Based on the data in table 3.4 after Friedman test in all three groups there was an increase in hemoglobin levels in the second intervention group between before and after treatment with a mean difference of -3.25 statistically with $p = 0.000$, where $p < 0.005$ which means there is a significant difference between before and after treatment. In the intervention group and control group there was also an increase between before and after treatment with a difference in mean in the first intervention – 2.7 and a mean difference in the control of -0.78, where $p < 0.005$ which means there is a significant difference between before and after treatment.

Based on the results of the analysis of Kruskal-wallis test in table 3.4 obtained the average difference in hemoglobin level difference in the first intervention group -2.7, the second intervention group -3.25 and the control group -0.78. The results of the analysis also showed p value 0.00 (< 0.05), then H_a was accepted and H_o rejected which means there is an influence of

Sukkari dates and Fe supplementation on increased hemoglobin levels in adolescents who have anemia.

DISCUSSION

This study discusses the effect of Sukkari dates and Fe tablets on increasing hemoglobin levels that aims to determine the effectiveness of Sukkari Dates in improving the hemoglobin levels of adolescents who have anemia.

Based on the results of the Friedman test, it was found that there were relevant differences between before and after treatment in the group given Fe tablets judging by the average hemoglobin value of 10.4286 g/dL to 13.1286 g/dL with a mean difference of 2.7, in the group given Sukkari dates fe supplement combination also experienced a significant change from the pre value of 9.3143 g/dL increased at post value 12. 5714 g/dL, with the difference in average hemoglobin levels of 3.25 and in the control group there was also a change in the average hemoglobin level from 10.7429 g/dL to 11.5286 g/dL the difference in mean 0.78 and the value of $p = 0.001$, $p < 0.05$ indicates that there is a difference in hemoglobin level value between before and after the intervention of Sukkari dates and Fe tablets. The increase in hemoglobin levels in all three intervention groups made the average value fall into the normal category than the previous one less than normal.

The results of this study are in line with the results of Yuniarti research, et al., (2020) on the influence of date juice in young women with hemoglobin levels in Palangka Raya, using Wilcoxon signed rank test, and obtained mean rank value in the group before intervention is 2.83 and sum of rank 8.50. While in the group after being given intervention, the mean rank is 13.38 and the sum of rank is 267.50. With a p-value of 0.000 (<0.005), it can be concluded that there is an influence of date juice on hemoglobin levels in young women who are anemic.

In line with the results of research conducted by Arini Pradita Roselyn, et al., (2018) which examined the provision of dates (*Phoenix Dactylifera*) to people with anemia in young women against hemoglobin levels in public high school 1 Natar, Natar South Lampung district, using quasi experiment design research design with the design of Non Equivalent Control Group. In this study dates were given as much as 400 gr (66.7 gr / day) for 6 days. Intervention group obtained the average value of the difference between before and after consuming dates is 1.93200 with a standard deviation of 0.48881, the control group obtained the average value of the difference between before and after given dates is 0.15200 with a standard deviation of 0.23650. The value of p value is 0.000 ($p = <0.05$), which means there is an increase in the average hemoglobin level in the intervention group given dates with a control group that is not given any treatment.

In accordance with the conclusion of the results of research conducted by Sofia Mawaddah (2019) on the influence of date juice on the increase in hemoglobin levels in young women who have anemia, it showed that the dates can be used as an alternative option for young women to meet the needs of iron by consuming regularly so that the increase in hemoglobin levels can increase well.

CONCLUSION

Based on the data obtained in the study of the addition of Sukkari dates (*Phoenix Dactylifera* L) and Fe supplementation in increasing hemoglobin levels in young women with anemia in Lembang, Pinrang district it was concluded that there was an increase in the average value of haemoglobin levels between before and after the administration of Sukkari dates and Fe supplementation proved that Sukkari dates have an effect on increasing hemoglobin levels in young women who have anemia. For researchers can then conduct a hepsidin examination that is examined as an inflammatory indicator that can inhibit the absorption of iron and review the problem of stunting that occurs in adolescents in Lembang, Pinrang.

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