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IMPROVING ADOLESCENT HEALTH THROUGH THE IMPLEMENTATION OF DATE MILK CONSUMPTION TO INCREASE HEMOGLOBIN LEVELS

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ABSTRACT

Anemia is a health problem that is often found in teenagers with a prevalence of 32%. Anemia in adolescents has a negative impact on growth, development, cognitive abilities and learning concentration, as well as increasing susceptibility to infectious diseases. The causes of anemia in teenagers include lack of intake of nutrients needed for the formation of hemoglobin, namely energy, protein, iron (Fe), and vitamin C. Dates are rich in calcium and iron. Consuming date milk regularly can help the body have enough iron, thereby reducing the risk of anemia. Objective to determine HB levels before and after giving date milk and to find out the difference in average HB levels in teenagers before and after giving date milk. This type of research uses a quasi experiment with a two group pre and post test with control design. The research subjects were 32 teenagers consisting of treatment and control groups. The treatment group was given date milk at a dose of 300 ml/day for 7 days, while the control group was not given it. Data analysis used the independent t-test. The average hemoglobin level in the treatment group increased by 0.72 g/dL, while in the control group there was a decrease in hemoglobin level by 2.78 g/dL with a ρ value of 0.000 < alpha 0.05 so there was a significant difference between the average hemoglobin level before and after giving date milk. Consuming 300 ml of date milk/day for 7 days can increase hemoglobin levels in adolescents.

Keywords: date milk; hemoglobin; teenagers

INTRODUCTION

Anemia is a health problem, especially in countries with high risk groups, namely teenagers. Anemia is a condition when the number of red blood cells or the concentration of oxygen carriers in the blood (Hb) is less than normal so that it is insufficient for the body's physiological needs (Andriani, 2014). The prevalence of anemia in adolescents is 32% of adolescents in Indonesia who experience anemia (Riskesdas, 2018). Adolescence is a period of accelerated growth and development which causes an increase in the need for iron in the body. In teenage girls, iron is also needed to replace iron during menstruation. Entering adolescence, there are many activities and hobbies that you want to pursue. Therefore, it is important for teenagers to continue to maintain their health and physical fitness, in order to avoid various kinds of health problems that can interfere with their activities. Anemia in adolescents has a negative impact on growth, development, cognitive abilities and learning concentration, as well as increasing susceptibility to infectious diseases. Anemia in adolescents is anemia which is mostly caused by a lack of intake of nutrients needed for the formation of hemoglobin, namely iron (Fe), vitamin C and copper. Iron is needed to form the heme part of hemoglobin, vitamin C is also an essential element for the formation of hemoglobin and copper is needed for the absorption of iron from the gastrointestinal tract. Anemia is characterized by symptoms of tiredness, lethargy, paleness, lack of energy, lack of appetite and cold hands and feet. These symptoms must be addressed immediately so as not to have a more serious impact on the quality of human resources. The impact of anemia on teenagers includes decreased learning ability and concentration, disrupting growth, reduced physical abilities, reduced endurance and decreased work productivity and fitness.

Apart from that, it also reduces the body's resistance, making it easier to get infections. The high prevalence of anemia among teenagers, if not handled properly, will continue into adulthood and contribute greatly to maternal mortality rates, premature babies and babies with low birth weight. Food consumption is the biggest contributing factor affecting hemoglobin levels in the blood. Food is a source of nutrients needed by the body, one of which plays a role in the formation of hemoglobin. Anemia in adolescents is anemia which is mostly caused by a lack of intake of nutrients needed for the formation of hemoglobin, namely energy, protein, iron (Fe), and vitamin C. Energy is needed to provide energy, protein is a means of transporting iron throughout the body, Iron is needed to form the heme part of hemoglobin, vitamin C is also an essential element for the formation of hemoglobin (Savitri, et al, 2015).Preventing anemia in teenagers can be done by fulfilling the body's nutrition from fruit and vegetables, one of which is by consuming dates. Dates are rich in nutrients, phytochemicals, water and natural sugars which can be used to maintain health. Ripe dates are rich in calcium and iron. Dates also contain natural sucrose, fructose and glucose. Date milk is a drink made from dates mixed with milk which has many health benefits. Dates are rich in fiber, potassium and antioxidants, while milk is a good source of protein and calcium. Date milk can be a healthy and delicious drink choice. Milk is a source of animal protein which stores various important nutrients for body health, including protein, carbohydrates, fat, vitamin A, vitamin B complex, vitamin D, calcium, potassium, iron, phosphorus, and other vitamins and minerals. This study aims to determine HB levels before and after giving date milk and to find out the difference in mean HB levels in adolescents before and after giving date milk.

METHOD

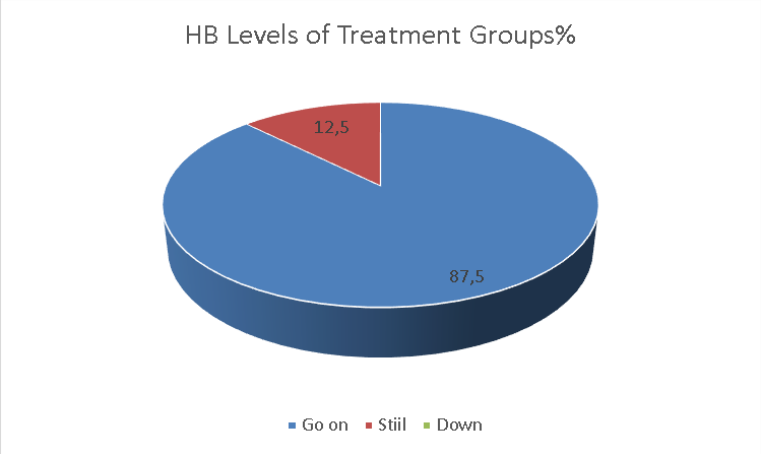
This research uses a quasi-experimental research design with a two group pre and post test with control design. Respondents in this study used two groups of respondents consisting of an intervention group and a control group. The population in this study were teenagers at the Az Dzikro Manggung Wukirsari Imogiri Bantul Orphanage. Sampling used a non-probability sampling technique, namely using purposive sampling with inclusion criteria, namely teenagers aged 11-20 years, not currently consuming Fe/blood supplement tablets, not smoking, not consuming alcohol, cooperative and willing to be respondents. Meanwhile, the exclusion criteria are teenagers with a history of blood disorders or treatment for blood diseases. The sample size taken in this study was 32 people consisting of 16 respondents in the treatment group and 16 respondents in the control group. This research will be carried out at the Az Dzikro Manggung Orphanage in the Wukirsari Imogiri Village area of Bantul, while the research will be carried out in August-September 2024.This research instrument uses a data collection format and a GCU easy touch hemoglobin level measuring tool along with lancets, hemoglobin strips and alcohol swabs. Checking Hemoglobin levels to measure hemoglobin levels in the blood during the pre and post test. Before data collection, the researcher provided an explanation of the aims, objectives and procedures of the research being carried out, respondents voluntarily participated and were willing to sign informed consent. The measuring instrument used in this study was the Easy Touch digital HB level measuring tool. Data collection was carried out by measuring HB levels in both treatment and control group respondents and then intervention was given by administering date milk at a dose of 300 ml which was consumed every day at night. before going to bed for 7 days, but in the control group no intervention was given. After administering the intervention, HB levels were measured on day 8. The process of making date milk is done by selecting dates that are brightly colored and evenly colored, sorting them, then separating the flesh from the seeds to crush them and making

date juice by adding enough ripe ar. Date juice. then added with UHT milk in a ratio of 1: 1 and then packaged using bottles with a volume of 300 ml. Data analysis used univariate and bivariate analysis using IBM SPSS Statistics 22 with the independent t-test statistical test.

RESULT AND DISCUSSION

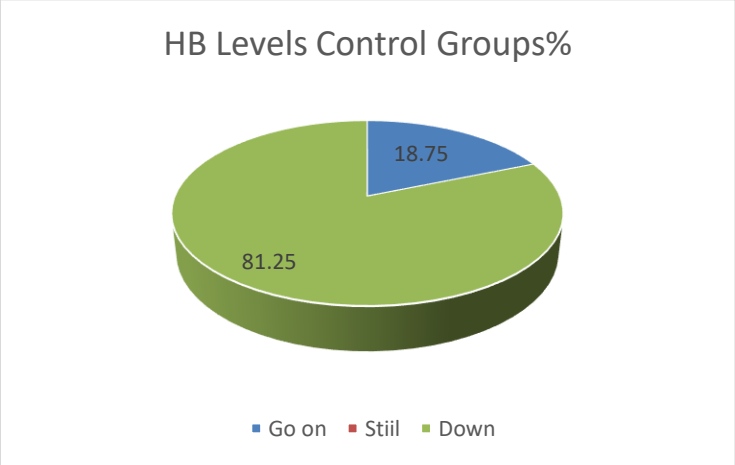
Data collection for stages I and II was carried out in August 2024 by measuring hemoglobin levels in teenagers at the Az Dzikro Manggung Wukirsari Wukirsari Imogiri Bantul Orphanage with 32 respondents consisting of 16 respondents in the treatment group and 16 respondents in the control group. The research results are as follows:

Treatment Group HB Levels



Based on the graph above, it can be seen that the majority of respondents in the treatment group had increased hemoglobin levels, namely 87.5% and remained 12.5%.

Control Group HB Levels



Based on the graph above, it can be seen that the majority of respondents in the group with increased hemoglobin levels were 87.5% and remained at 12.5%.

Table 1.
Mean Hemoglobin Level of Treatment Group

Group	N	Mean	SD	Std. Error Mean	Sig. (2-tailed)
Pre	16	14,25	1,076	,269	0,007
Post	16	14,97	1,121	,280	

Based on the table 1, it can be seen that the 16 respondents in the treatment group had a mean pre-test hemoglobin level of 14.25 g/dL with a standard deviation of 1.076, Std. Mean error is 0.269, while the mean post-test hemoglobin level is 14.97 g/dL with a standard deviation of 1.121 and Std. Mean error 0.280. The mean difference between the pre and post test treatment groups obtained a p-value of 0.000.

Table 2.
Mean Hemoglobin Levels of Control Group

Group	N	Mean	SD	Std. Error Mean	Sig. (2-tailed)
Pre	16	15,91	1,879	,469	0,000
Post	16	13,13	0,482	,120	

Based on the table 2, it can be seen that the 16 respondents in the treatment group had a mean pre-test hemoglobin level of 14.25 g/dL with a standard deviation of 1.076, Std. Mean error is 0.269, while the mean post-test hemoglobin level is 14.97 g/dL with a standard deviation of 1.121 and Std. Mean error 0.280. The mean difference between the pre and post test treatment groups obtained a p-value of 0.000.

Table 3.
Independent Samples T Test on the Treatment and Control Groups

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std.Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
HB levels	Equal variances assumed	10,704	,003	6,040	30	,000	1,84375	,30526	1,22032	2,46718
	Equal variances not assumed			6,040	20,371	,000	1, 84375	,30526	1,20773	2,47977

Based on the Independent Samples T Test using IBM SPSS Statistics 22 in the treatment and control groups, the p-values were 0.000 < Alpha 0.05, so it was stated that Ho was rejected so there was a difference between respondents who consumed date milk and those who did not consume date milk. mean hemoglobin levels between respondents who consumed date milk and those who did not consume date milk.

The younger generation has an important role to continue the development and development of the nation. The health and nutritional status of teenagers must be prepared from an early age so that they can produce the nation's next generation who are productive, creative and competitive so that healthy teenagers are an investment in the nation's future. Adolescence is a transitional period experienced by a person with physical and psychological changes that will be experienced as preparation for entering adulthood. Changes during adolescence cause several health problems,

one of which is anemia.Anemia is a health problem that can affect the growth, development and quality of life of teenagers. For growth, teenagers need more nutrients than other ages, especially iron, making them susceptible to anemia. Adolescence is a period of accelerated growth and development which causes an increase in the need for iron in the body. Iron is needed in all body cells and is basic in physiological processes, such as the formation of red blood cells (hemoglobin) and enzyme function. Adolescents who experience anemia have a negative impact on growth, development, cognitive abilities and learning concentration, as well as increasing susceptibility to infectious diseases. Entering adolescence, the many activities and hobbies that are carried out make teenagers more active in carrying out daily activities.

Thus, it is important for teenagers to maintain a healthy body, in order to avoid various kinds of health problems that can interfere with daily activities. One disease to watch out for is anemia. According to Manuaba (2001), hemoglobin is a protein molecule in red blood cells which functions as a transport medium for oxygen from the lungs. The iron content in hemoglobin makes blood red. Hemoglobin is a component in red blood cells/erythrocytes which functions to bind oxygen and deliver it to all body tissue cells. Oxygen is needed by body tissues to carry out their functions. Lack of oxygen in brain and muscle tissue will cause symptoms including lack of concentration and lack of fitness in carrying out activities. Hemoglobin is formed from a combination of protein and iron and forms red blood cells/erythrocytes.The main cause of anemia that can affect teenagers' lifestyles is eating habits/diet patterns that do not implement balanced nutritional guidelines, especially low iron intake from food and low awareness of regularly consuming blood supplement tablets. The impact of anemia is not only felt during adolescence, but will continue into adulthood, especially in the group of young women who will experience pregnancy and childbirth in the future. The impact of anemia in teenage girls cannot be seen immediately, but it can last a long time and affect the lives of teenagers later. The dangers of anemia in teenagers include delayed physical growth, behavioral and emotional disorders. This can affect the process of growth and development of brain cells, causing decreased endurance, impaired concentration, easy weakness, decreased learning achievement and low work productivity (Cahya, 2013)

Based on the results of research conducted with 32 teenagers who were divided into a treatment group and a control group with 16 respondents in each group. The research began by examining hemoglobin levels in 32 respondents in the treatment and control groups. The treatment group was given date milk at a dose of 300 ml which was drunk every day before going to bed for 7 days, while the control group was not given it. Of the respondents in the treatment group, 87.5% experienced an increase in hemoglobin levels and hemoglobin levels remained constant at 12.5%, while in the control group, hemoglobin levels experienced an increase of 18.75% and hemoglobin levels decreased by 81.25%. Respondents in the treatment group had a mean pre-test hemoglobin level of 14.25 g/dL with a standard deviation of 1.076, Std. Mean error is 0.269, while the mean post-test hemoglobin level is 14.97 g/dL with a standard deviation of 1.121 and Std. Mean error 0.280. The mean difference between the pre and post test treatment groups obtained a p-value of 0.000. In the treatment group respondents, the average hemoglobin level was 14.97 g/dL, an increase compared to the pre-test, namely 14.25 g/dL. In the control group, the mean pre-test hemoglobin level was 15.91 g/dL with a standard deviation of 1.879, Std. Mean error is 0.469, while the mean post-test hemoglobin level is 13.13 g/dL with a standard deviation of 0.482 and Std. Mean error 0.120. The mean difference between the pre and post test control groups obtained

a p-value of 0.000. In the control group respondents, the average hemoglobin level was 13.13 g/dL, a decrease compared to the pre-test, namely 15.91 mg/dL with a decrease of 2.78 g/dL.
The normality test using the Kolmogorov-Smirnov test in the treatment group obtained a p-value of 0.200 > alpha 0.05 and in the control group a p-value of 0.200 > alpha 0.05. Meanwhile, the Shapiro-Wilk test in the treatment group obtained a p-value of 0.600 > alpha 0.05 and in the control group a p-value of 0.354 > alpha 0.05 so that in the treatment and control groups the data was normally distributed. Based on the results of statistical analysis using the Independent T Test in the treatment and control groups, it was found that the p-value was 0.000 < 0.05 so that there was a significant difference between the average Hemoglobin levels in the respondents in the treatment group and in the control group. Thus, there is a difference in the increase in hemoglobin levels between respondents who consume date milk and those who do not. Consuming 300 ml of date milk/day for 7 days is effective in increasing hemoglobin levels in adolescents with an average increase of 0.72 g/dL. In the control group who did not consume date milk, there was a decrease in hemoglobin levels with an average of 2.78 g/dL.

This is in accordance with the results of research conducted by Indira, et al (2024) that giving date palm juice for 12 consecutive days at a rate of 2x15 ml/day after breakfast and dinner showed an increase in hemoglobin levels in young women. Before therapy, the hemoglobin level value was an average of 10.03 g/dL and after being given date palm juice the hemoglobin level increased to an average value of 15.73 g/dL. Date palm juice therapy is a supplement that can be a complementary therapy for anemia sufferers. Adriyani's research shows that consumption of date juice 30ml/day/person or 1 tablespoon/day after breakfast and dinner for 12 days, was given to 19 female adolescent respondents with asymptotic sig value (0.023) < probability value (0.05) so there is difference in hemoglobin between the control group and the intervention group. Date palm juice has a significant effect on increasing hemoglobin levels in adolescent girls (Adryani et al, 2021) Dates are a fruit that has various benefits for body health. This benefit is obtained thanks to the various nutrients it contains. Dates are a source of antioxidants and contain iron, potassium, selenium, magnesium, copper, vitamin B complex, vitamin C, fiber, protein and natural sugar. Meanwhile, milk is rich in calcium, riboflavin, iron, vitamin B12, zinc, phosphorus, potassium, vitamin A, magnesium and vitamin D. One of the nutrients contained in dates is iron, which plays a role in the process of forming red blood cells. ..Dates contain iron which plays a very important role in the formation of red blood cells, so consuming dates regularly can prevent anemia. Date milk is a nutritious drink that combines the benefits of milk and dates, two ingredients that are rich in nutrition and health benefits. The process of making date milk is done by selecting dates that are brightly colored and evenly colored, sorting them, then separating the flesh from the seeds to be crushed and making date juice by adding enough ripe water. Date juice is then added with UHT milk in a ratio of 1: 1 for further processing. packaging uses bottles with a volume of 300 ml. Date milk is a delicious drink and provides various important nutrients that the body needs. If consumed regularly, date milk can provide optimal health benefits. Date milk is a combination of milk which is rich in protein and dates which are rich in nutrients, making this drink a source of healthy energy and improving body health. Regular consumption of date milk can help the body have enough iron, thereby reducing the risk of anemia.

CONCLUSION

Based on the results of the research that has been carried out, the following conclusions can be drawn: The results of research on adolescent respondents showed that the average pre-test

hemoglobin level in the treatment group was 14.25 g/dL and post-test 14.97 g/dL, while in the control group the average pre-test hemoglobin level. 15.91 g/dL and post test 13.13 g/dL. The Independent T Test in the treatment and control groups obtained p-values of 0.000 < Alpha 0.05 so that there was a difference between respondents who consumed date milk for 7 days and those who did not consume date milk. Consuming date milk at a dose of 300 ml/day for 7 days can increase hemoglobin levels with an average increase of 0.72 g/dL. In the control group who did not consume date milk, there was a decrease in hemoglobin levels with an average of 2.78 g/dL.

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