Palm Date Increase Adolescents Hemoglobin Levels

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Abstract. Nutritional deficiencies have an impact on the nutritional problems of adolescents as one of the groups prone to suffer from anemia. WHO states 25-40% of adolescents suffer from anemia and in Indonesia more than 57%. Palm dates have the main nutritional content of glucose and various vitamins that the body needs. Every 100 grams of dates contained 50 IU of vitamin A; 0.4 mg of vitamin C; 0.09 mg thiamine; 0.10 mg riboflavin, 2.20 mg niacin; nicotinic acid and iron so that it can be used for anemia. The research method uses analytic with sample of 30 adolescents with simple random sampling technique. Subjects who met the inclusion criteria were measured for Hb levels, then observed until 1.5 months. Giving palm date done to adolescents who have anemia by eating 2 dates a day for 21 days. After intervention (posttest), the effectiveness of palm dates is evaluated hemoglobin levels. Testing the difference in the value of pretest and posttest using the Paired Sample-test. Probability value or Sig. (2- tailed) is 0.002 <0.05. This means that significant differences given of palm dates on the pretest and posttest, and concluded that palm date increase in adolescent’s hemoglobin levels.

1. Introduction
Anemia is an impact of nutritional problems in adolescent and caused by a lack of nutrients among others iron, protein, vitamin B6 which have a role as catalysts in Hem synthetic in the hemoglobin molecule, vitamin C, zinc which affect the stability of the red blood in the formation of hemoglobin. Some causes of iron anemia are lack of iron intake, especially in the form of iron-hem. Iron is needed in the formation of blood, which to synthesize hemoglobin. Excess iron is stored as ferritin and hemosiderin protein in liver, bone marrow and stored in the lymph and muscle. Iron deficiency will cause a decrease ferritin levels followed by decrease saturation of transferrin levels or increase in protoporphyrin, if this condition continues will be iron deficiency anemia, where hemoglobin level falls below normal values [1].

Adolescents are one group that is prone to suffer from anemia. The World Health Organization (WHO) Regional Office of the South East Asia Region Organization (SEARO) states that 25-40% of adolescents become sufferers anemia. Suffered anemia is generally mild to severe iron deficiency anemia in Southeast Asia (MOH, 2008). Anemia attacks more than 57% of adolescents in Indonesia. Since 2002 in East Java have been 33%, West Java 41% and Central Java 22% [2].

Along with the development of an increasingly advanced era, people understand that health very important, general people have changed their consumption patterns for the better one of which is already, starting to open the mind that the efficacy of fruit very helpful in body nutrition, one of it the
Dates have Latin name *Phoenix dactylifera* are popular foods that often served during fasting month. Dates contain nutrients useful for body. The main content in dates is glucose which reaches 50% of the entire fruit content. In addition, dates contain various vitamins that are needed the body. In every 100 grams of dried dates contained 50 IU of vitamin A; 0.4 mg of vitamin C; 0.09 mg thiamine; 0.10 mg riboflavin, 2.20 mg niacin; nicotinic acid and iron [4].

Dates contain iron. High iron content can be used for the treatment of anemia. Anemia is a condition number of red blood cells or amount of hemoglobin (oxygen-carrying protein) in red blood cells below normal. The presence of iron in the dates will be absorbed by the intestine and carried by the blood for hemopoiesis (the process of blood formation) [5]. Iron will bind to heme and four globin’s, which turn from a single unit into hemoglobin. So indirectly, dates can help increase hemoglobin to normal levels for people with anemia, dates also play an important role in treatment of dengue fever because dengue sufferers have decreased platelet counts or pieces of blood, and dates can increase blood platelet levels [6]. Based on description from background above, incidence of anemia still high in adolescent and optimizing non-pharmacological therapies, researchers are interested conducting research by applying dates for the use of non-pharmacological therapies entitled "Palm Date increase Adolescents Hemoglobin Levels."

### 2. Methods

The sample were adolescents had anemia and willing to be respondents in a total of 30 adolescents. The adolescents used as samples high school students. Criteria for inclusion of sample are as follows age 16-18 years, have mild or moderate anemia, are not bleeding and are not suffering from chronic disease, not allowed consume coffee, tea and soda and willing to be respondents. The design of the study was used a quantitative approach. The research design used was quasi-experimental with one group pretest-posttest design and sampling technique used simple random sampling. Subjects measured for Hb levels before dates were administered, then observed again for 1.5 months. After treatment (posttest) and evaluated the effectiveness of giving dates to increase hemoglobin levels. Testing the difference in the pretest and posttest scores of treatment group using the Paired Sample-test [7]. This study used an instrument in the form of observation sheets, measurements using the Quick Check Hb to measure hemoglobin levels The data has been collected recapitulated first in the data recapitulation table and then carried out data management, presented in the form of a frequency table and in the form of a cross table for analytical analysis by conducting a statistical test to analyze the effect of giving dates as an effort to increase Hb levels in young women who have anemia [8].

### 3. Result And Discussion

| Mean  | N     | Std. Deviation | Std. Error Mean |
|-------|-------|----------------|-----------------|
| Pair 1 | First Hb | 12.0300 | 30 | .56639 | .10341 |
| Treatment Hb | 12.2733 | 30 | .49684 | .09071 |

#### Table 1 Paired Samples Statistics

| Pair     | First Hb | Hb and Treatment Hb |
|----------|----------|---------------------|
| N        | 30       | .737                |
| Correlation | .000     |                      |

#### Table 2 Paired Samples Correlations
The amount of data before and after being given date palms is 30 adolescents. The average Hb score before date palms 12,0300 and after date palms 12.2733. Standard deviation (standard deviation) before being given date palms has a score of 0.56639 and after being given date palms has a score of 0.49684.

In the paired sample correlation table contains data about correlation between before and after the administration of date palms to increase Hb levels in adolescents is equal to 0.737 with significance of 0.000. This shows the influence of giving date palms as effort to increase Hb levels in anemia adolescent. Based on the probability value or Sig. (2-tailed) the effect of giving date palms as an effort to increase Hb levels in anemia adolescents is 0.002. It is known that probability value or Sig. (2-tailed) <0.05. This means that there is a significant difference between pretest and posttest data, which can be concluded that influence on the administration of date palms as an effort to increase Hb levels in anemia adolescents.

This study examined the effect of date palms as effort to increase Hb levels in anemia adolescents. At first, adolescents who met inclusion criteria were measured (pre-test) their hemoglobin levels using the Quick Check Hb tool and written on the observation sheet later based on the results of the examination, Anemic adolescents are given 2 date palms a day for 21 days. After all the date palm eaten in 21 days the anemic adolescents (respondent) measured his hemoglobin level again (posttest) using the Quick Check Hb tool.

Based on the research results obtained, the average Hb level score before being given dates in an increase in Hb levels showed a score of 12,0300 and the average Hb level score after being given dates was 12.2733. Anemia is a term that indicates a low red blood cell count and hemoglobin and hematocrit levels below normal [9]. Anemia is not a reflection of the state of a disease or a malfunction of the body's function. Physiologically, anemia occurs when there is a lack of hemoglobin to carry oxygen to the tissues.

Probability value or Sig. (2-tailed) effect of giving date palms to increase in Hb levels in adolescents is 0.002 known that the probability value or Sig. (2-tailed) <0.05. This means that there is a significant difference between the administration of date palms in the pretest and posttest data, which can be concluded that an influence on the administration of dates as an effort to increase Hb levels in adolescents who have anemia.

This is consistent with previous research conducted by Noor Cholifah [10] and Anita [5]. These results show that palm juice which rich iron can increase hemoglobin levels [11]. The content of protein, carbohydrates and fat in palm juice as well as glucose, Ca, Fe, Zn, Cu, P and Niacin content with palmyra which is rich in Vit A content supports the synthesis of hemoglobin [12]. The content of date palm juice which indirectly can also increase the number of platelets, namely minerals such as iron which are essential for the formation of hemoglobin [13]. Iron is immediately needed for the production of red blood cells is absorbed into blood to be distributed to bone marrow and will be used to form hemoglobin for new red blood cells which will bind oxygen.
for the needs of cell metabolism, especially to liver so liver can carry out its functions properly including producing hormones thrombopoietin [4]. Food consumption is related to nutritional status of adolescents who have less iron nutritional status will be at risk of anemia, especially in adolescent girls because every month they experience menstruation [9]. Anemia also directly affected by the consumption of daily foods that contain iron, to increase hemoglobin levels, it is necessary to consume iron-containing foods, one of which by consuming date palms. Date palms can be used as a treatment for various diseases. One of the benefits of date palms is as a treatment for anemia and dengue fever [14]. The content of iron in dates can be used treatment of anemia. The presence of iron in the date palms will be absorbed by the intestine and carried by blood for hemopoiesis (the process of blood formation). Iron will bind to heme and globin, which in turn form whole into hemoglobin. Thus, indirectly dates can help increase hemoglobin to normal levels for people with anemia [4]

4. Conclusion
The amount of data for each before and after date palms given to 30 teenagers. The average Hb score before date palms is 12,0300 and after date palms are 12.2733. Standard deviation (standard deviation) before being given a date palm has score of 0.56639 and after being given a date palm has score of 0.49684. 4.2 In the paired sample correlation table contains data about correlation between before and after the administration of date palms to increase Hb levels in adolescents is equal to 0.737 with a significance of 0.000. This shows the influence of giving date palms as effort to increase hemoglobin levels in anemia adolescent. 4.3 Based on the probability value or Sig. (2-tailed) the effect of date palms administration on increasing Hb levels in adolescents is 0.002. It is known that probability value or Sig. (2-tailed) <0.05. This means that shows is a significant difference between administration of date palms in the pretest and posttest data, which can be concluded that there is an influence on the administration of date palms as effort to increase hemoglobin levels in anemia adolescents.

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