Dates And Hemoglobin Levels: Literature Review

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Abstract: Objective: The aim of this systematic review is to review studies on the effect of dates on increasing hemoglobin levels in anemia.
Methods: The method used is an electronic database that has been published through the online libraries PubMed and Sciendirect. The keywords used for article searches are based on research questions.
Result: A review of six health articles stated that dates are effective for increasing hemoglobin levels. Dosage, timing of administration, type of dates, food intake, a person's health condition should be of particular concern in giving date palm interventions. Not only increase hemoglobin levels, dates can also play a role in increasing ferritin, hematocrit, transferring saturation and serum iron levels in the majority of people.
Conclusion: Dates can be used as an additional alternative to increase hemoglobin levels. However, disease or systemic syndrome in each person should be a concern because it can affect the effectiveness of dates in increasing hemoglobin levels.

Keywords: Dates, Hemoglobin, Anemia, Iron, Food

1. INTRODUCTION:

Anemia is a condition characterized by low concentrations of hemoglobin in red blood cells. Low hemoglobin concentrations affect the ability to deliver oxygen to all body tissues, thereby reducing work productivity¹. Despite adequate knowledge of the causes and availability of treatment, anemia remains recognized as the most common health problem worldwide, especially in children and women. Iron Deficiency Anemia (IDA) is the most common cause of anemia in the world²,³. Anemia can lead to increased morbidity and mortality and decreased quality of life either directly or as another cause of risk factors. Prevention of anemia should start before pregnancy, especially in young women⁴. Consumption of iron-rich foods through dietary changes, nutrition education, treatment and prevention of parasitic infections, and weekly iron supplementation to prevent iron deficiency anemia are some of the ways that can be done to prevent anemia. Iron is an important component of hemoglobin that can be obtained through iron intake from fruits and vegetables. Dates are a type of fruit that is rich in benefits, with the highest iron content (1,648 mg / 100g). The benefits of consuming dates are that they are able to neutralize toxins, kill cancer cells, strengthen auditory nerves, strengthen nerves, soften blood vessels, keep the intestines from irritation and other disorders, strengthen teeth and bones, maintain vitality, facilitate the birth process, overcome anemia, pain relievers, reduce fever¹-³,⁵.
The iron content in dates can increase the number of erythrocytes thereby increasing hemoglobin levels¹. Apart from iron, the protein, carbohydrate and fat content in dates can help the process of hemoglobin synthesis. Carbohydrates are broken down into
monosakaradika and then into glucose. Glucose as the main fuel for metabolism will undergo glycolysis (breakdown) into 2 pyruvate and produce energy in the form of ATP and each of the pyruvate is oxidized to succinyl CoA. Long-chain fat is converted into acylcarnitine and penetrates the mitochondria which is further oxidized to succinyl CoA.6,7. Several studies related to giving dates to increase hemoglobin levels or as a supplement rich in iron have been conducted. However, information regarding how long to administer, the dosage and the types of dates that are most effective at increasing hemoglobin levels is still minimal. Therefore, this literature review aims to identify this. So that in the future, it is hoped that dates can be an alternative morphology in treating anemia.

2. METHODS

Keywords for article searches were identified based on the research question. Key words consist of dates; hemoglobin; anemia or keyword combination using Boolean. The online libraries PubMed and Sciendirect were used to search for studies relevant to the effect of dates on hemoglobin levels in anemia.

3. RESULT

Based on the objectives of this systematic review there are six articles that were relevant in the last 5 years. One study is a True Experiment study, two Quasy Experiment studies, one Semi Experiment study, one Pre-Experiment study and one controlled trial study. Dosage or dosage, duration of administration and types of dates vary in the six articles. The longest time for giving dates from the six articles was 8 weeks. Measurement of hemoglobin levels was carried out before and after the intervention of dates with due observance of the research criteria. After giving dates and other additional interventions, not only hemoglobin levels were the parameters but also ferritin, hematocrit, serum iron and transferrin saturation levels. The characteristics of the study are presented in table 1.

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<thead>
<tr>
<th>Author</th>
<th>Purpose</th>
<th>Population</th>
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<th>Study Design</th>
<th>Result</th>
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<tr>
<td>Sari et al. (2018)1</td>
<td>The purpose of this study was to determine the effect of adding dates on iron supplementatio n on hemoglobin levels in adolescent girls</td>
<td>Teenage girls with anemia were divided into two groups, namely the intervention group and the control group</td>
<td>The intervention group of 36 young women was given iron supplementatio n plus 7 dates for 30 days. While the control group of 36 young women was only given iron supplementatio n</td>
<td>Quasi Experiment research with pretest-posttest control group design</td>
<td>There was a significant difference in hemoglobin levels in the groups given iron supplementatio n plus dates (11.2 g / dL) and only given iron supplementatio n (9.94 g / dL). However, statistically this difference</td>
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<tr>
<td>Study Authors</td>
<td>Study Aim</td>
<td>Group Description</td>
<td>Experimental Design</td>
<td>Results/Conclusion</td>
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<td>Wulandari et al. (2019)</td>
<td>This study aims to prove the increase in hemoglobin and ferritin levels by using dates within 14 days in young girls</td>
<td>Young women were divided into two groups, namely the intervention group and the control group</td>
<td>True Experiment research with pretest-posttest control group design</td>
<td>Dates can significantly increase hemoglobin levels (Mean ± SD 11.76 ± 0.69, p value 0.041). Meanwhile, ferritin levels did not change significantly (Mean ± SD 38.61 ± 18.99, p value 0.057). Dates can be used as an alternative treatment for anemia</td>
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<td>Indrayani et al. (2018)</td>
<td>This study aims to examine hemoglobin levels and differences in bowel movements resulting from the government's iron supplementaion program and consumption of fruit and dates as well as two general products freely available to Indonesian consumers.</td>
<td>Respondents in this study were 40 adolescent girls with anemia who were selected using a random permutation block.</td>
<td>This research is a randomized controlled trial with four groups, namely three treatment groups and one control group</td>
<td>There were significant differences in hemoglobin levels before and after the intervention in the four groups. The difference is seen at week 1,2,3 and tends to decrease. Based on this research, dates can be used as a substitute for iron tablets and packaged date drinks that have been certified can be used as a companion to iron tablets.</td>
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<td>Study</td>
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<td>Karajibani et al. (2019)</td>
<td><em>This study aims to examine hemoglobin levels and differences in bowel movements resulting from the government's iron supplement program and consumption of fruit and dates as well as two general products freely available to Indonesian consumers.</em></td>
<td>The study population consisted of 31 primary school girls in Iran. Respondents were given dates for two months. Before and after being given dates, the hemoglobin, hematocrit, and ferritin levels were measured.</td>
<td>The consumption of dates increases hemoglobin, hematocrit and ferritin levels in students with IDA. Hemoglobin levels at the beginning and end of this study were 11.19 ± 0.38 g/dL and 12.05 ± 0.81 g/dL (p = 0.001), the hematocrit was 34.24 ± 0.41% and 37.17 ± 2.36% (p = 0.001), and the ferritin content was 47.07 ± 21.89 μg/dL and 53.98 ± 19.77 μg/dL (p = 0.001).</td>
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<td>Youssef et al. (2015)</td>
<td><em>This study aimed to evaluate the effects of black dates in children suffering from iron deficiency anemia.</em></td>
<td>Eighty boys aged 9-11 years were randomly selected from two orphanages. Forty children were divided into four equal groups. The first group was the non-anemia group (negative control group), the second group was the non-anemic and anemic groups with lower intakes of thiamin, vitamin A, vitamin E, calcium and...</td>
<td>Quasi Experiment research with pretest-posttest control group design. The non-...</td>
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<td>Akilaroora n et al. (2019)&lt;sup&gt;14&lt;/sup&gt;</td>
<td>This study aims to estimate hemoglobin levels by consuming amla accompanied by honey and dates alone</td>
<td>The study consisted of 50 people from different age groups and did not have any systemic diseases or syndromes</td>
<td>50 respondents were divided into two groups. 25 respondents were given amla and honey, then 25 were given dates for 25 days</td>
<td>True Experiment research with pretest-posttest control group design</td>
<td>Consumption of amla accompanied by honey and consumption of dates, have nutritional components that play a role in increasing hemoglobin levels</td>
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4. DISCUSSION
Dates are one type of fruit that grows widely in arid and semi-arid parts of the world. Dates and their by-products such as seeds, have nutritional and medicinal value. However, the fruit and seeds of dates are not yet fully considered potential foods with promising health benefits. Dates contain 70% carbohydrates, several minerals including potassium, iron, calcium, dietary fiber and low levels of lipids and protein. The high iron content in dates plays a role in the formation of complexes with molecular oxygen in hemoglobin and myoglobin. Iron can synthesize heme which can increase hemoglobin levels.

Based on a review of six articles, the majority of date palm interventions were carried out on young women and children. Women and children are the groups most vulnerable to anemia. Dates are not only able to increase hemoglobin levels, but also increase other hematological parameters, such as: ferritin levels, hematocrit, serum iron and transferrin saturation. However, other studies have stated that there is no increase in ferritin levels after consuming dates.
The six research articles provide date interventions with different dosages or dosages and duration of administration. Research by Sari et., Al (2018) did not specify the weight of the dates given, only 7 dates were given. Meanwhile, other studies have determined the weight of dates given, namely 70-75gr / day and 100gr / day. Dates varieties should also be a concern, because they will affect their nutritional value and quality.

5. CONCLUSION
Dates can be used as an additional alternative to increase hemoglobin levels. However, disease or systemic syndrome in each person should be a concern because it can affect the effectiveness of dates in increasing hemoglobin levels.

6. REFERENCES


