



Date palm (*Phoenix dactylifera*) consumption as a nutrition source for mild anemia[☆]

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ARTICLE INFO

Article history:

Received 28 June 2021

Accepted 30 July 2021

Keywords:

Dates

Hemoglobin

Anemia

ABSTRACT

Objective: The purpose of this review is to describe an intervention that utilizes dates as a source of nutrition for pregnant women to increase hemoglobin levels in the blood in anemia incidence. The findings in this study are related to the use of dates to increase hemoglobin levels in the blood in pregnant women.

Methods: This study uses search databases used in PubMed, Science Direct, and Google Scholar. The keywords used in the initial search for articles are dates and hemoglobin obtained as many as 189 articles. At the time of using the keywords dates, hemoglobin, anemia by obtaining 15 articles and which are used only 10 articles according to the analysis of the purpose, suitability of the topic, the method of research used, sample size, research ethics, the results of each article, as well as limitations that occur.

Result: Anemia in pregnant women causes hemoglobin (Hb) levels to decrease in the blood; the capacity of oxygen transfer to meet the needs of vital organs in the mother and fetus is reduced. All literature reviewed shows that administration of dates increases hemoglobin levels; only one literature shows no influence of consumes date juice on hemoglobin level. The majority of the literature reviewed is mild anemia.

Conclusion: There are effective results in the implementation of health promotion of increased hemoglobin levels in the blood in pregnant women by utilizing dates as a source of nutrition.

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Introduction

Anemia is a state of an insufficient number of red blood cells to meet the body's physiological needs. Anemia is caused by iron deficiency in general. However, several things can cause anemia, including malnutrition (including folate, vitamin B12, and vitamin A), acute and chronic inflammation, parasitic infections, and congenital or acquired abnormalities that affect the synthesis of hemoglobin and red blood cell production, or survival of red blood cells.¹

Pregnancy is the most awaited period because it determines the quality of human resources that determines children's growth in the future. One of the factors that affect the health of the mother and fetus is the nutrients consumed by the mother during pregnancy.²

In pregnant women, anemia is a condition of red blood cells or hemoglobin (Hb) levels in the blood that have decreased, due to which the capacity of oxygen-carrying capacity for the needs of vital organs in the mother and fetus becomes reduced.³ Anemia in

pregnancy is pregnant women who have Hb < 11.00 g% in the I and trimester III trimesters and Hb < levels of 10.50 g% in the II trimester, due to differences in hemodilution, especially the II trimester.⁴

Iron deficiency anemia is the most common anemia during pregnancy.⁵ Anemia can occur due to lack of Hb levels in the blood, causing severe complications in the mother during pregnancy, childbirth, postpartum and can cause abortus, premature, even postpartum bleeding due to uterine atony, shock, and infection.⁶

In Asia, the prevalence of anemia in pregnant women is still relatively high, and the highest rate is Laos with 56.4%, second India at 49.7%, third Iraq at 38.2%, fourth-ranked Saudi Arabia with 32%, fifth South Korea at 22.6% and North Korea at 22.6%. While in Asia, Japan is the country that has the lowest prevalence (14.8%).¹

According to the World Health Organization (WHO), the incidence of anemia in pregnant women ranges from 20% to 89% by setting Hb levels of 11 g% as the basis. According to a 2013 development report, maternal mortality rates in several ASEAN Countries (Association South East Asia Nations) such as Vietnam are 18 per 100,000 live births, Malaysia 55 per 100,000 live births, Filipina 26 per 100,000 live births, and Singapore 3 per 100,000 live births. In ASEAN countries in 2013, the incidence of anemia varied; in Indonesia, it was around 70%, Filipina was around 55%, Thailand 45%, Malaysia 30%, and Singapore 7% suffered from anemia.⁷

Based on the National Health Demographic Survey (SDKI) data in 2013, the rate of anemia in pregnant women is 40.1%. This condition shows that anemia is relatively high in Indonesia. If it is estimated

[☆] Peer-review under responsibility of the scientific committee of the 3rd International Nursing, Health Science Students & Health Care Professionals Conference. Full-text and the content of it is under responsibility of authors of the article.

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that from 2007 to 2013, the prevalence of anemia remains 40%, then there will be 18 thousand maternal deaths per year caused by bleeding after childbirth. The Maternal Mortality Rate (AKI) in Indonesia is very high, 30 per 100,000 live births. The low state of maternal health and nutrition during pregnancy is one of the causes of high maternal mortality.⁸

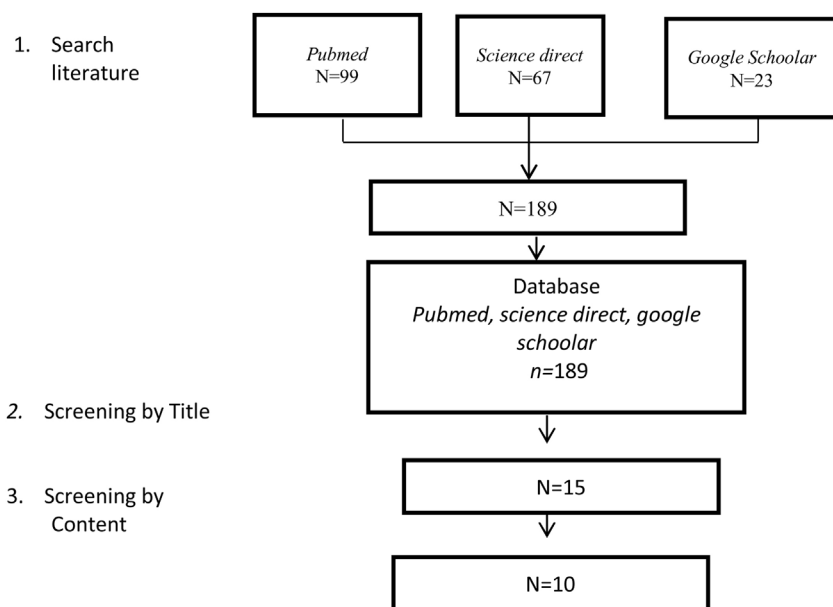
Prevention of anemia in pregnant women can be done by fulfilling nutrients in the body obtained from fruits and vegetables, one of which is by the consumption of dates containing 13.7 mg of iron (per 100 grams).²⁰ Dates are a source of nutrients containing high energy with an ideal composition, containing carbohydrates, tryptophan, omega-3, vitamin C, vitamin B6, Ca2, Zn, and Mg, and very high fiber, in addition to containing potassium, manganese, phosphorus, iron, sulfur, calcium, and magnesium are very good for consumption by mothers during pregnancy.⁹

Methods

This study consists of several stages: determine the purpose of research based on the background of the problem to help determine the type of journal to search. Then, a Journal search was done using the search engines with a predetermined key. Assessment of the study, namely by setting the criteria for inclusion. Review each journal selected for analysis in finding the meaning of research. Combine review results. Set the findings. The journal search in this study uses one of the journal search engines, Scholar, with keywords in the search, namely “dates,” “hemoglobin,” “anemia,” and the journal age range of the last 4 years 2015–2020. The inclusion criteria of the journal to be selected and analyzed in this study are:

Inclusion criteria were article consist of treatment is given in the form of giving dates, pregnant women. Exclusion criteria were; research with unclear methods listed in journals, research that intervention schedule of taking drugs.

Search Results can be described as follows:



Result

Several articles related to this study are presented in [Table 1](#) as follows.

Discussion

The findings in this study are related to the use of dates to increase hemoglobin levels in the blood in pregnant women. The

results of the review literature are presented. All articles explain that the administration of dates increases hemoglobin levels, but one journal says that there is no influence of the increase in hemoglobin that consumes date juice and other journals say there is an influence of increased hemoglobin levels after consuming dates and date extract. The average hemoglobin result before being given dates is mild anemia, but the average hemoglobin increases after giving dates.

The research was conducted by Sugita and Kuswati in the working area of Klateng Health Center in August 2019 by providing treatment in the experimental group to consume seven dates per day for 14 days, in the control group; only consume Fe tablets regularly without consuming dates. Statistical test results obtained a value of $p < 0.05$ ($0.002 < 0.05$) to conclude that consuming dates significantly affects the increase in hemoglobin levels in the blood.¹⁰

The research was conducted by Rahayu at the Wedi Health Center in Klaten Regency with the provision of date juice (25 people) in the treatment group and the administration of Multiple Micro Nutrient (MMN) in the control group result. Hemoglobin levels of anemia in pregnant women given MMN on average is 10.4 mmHg. Hemoglobin levels of pregnant women with anemia before being given date extract obtained an average of 10.38, and after being given date extract on average 10.84. The study found that consuming date extract was more effective than MMN, with a value of $p = 0.045$ ($p < 0.05$).¹¹

The research was conducted by W. Retno et al. (2019) at Midwife Practice Independent (BPM) Tati, Kusmiran, East Bekasi by intervening by consuming date juice as much as 10 ml three times a day for ten days. The results showed a significant influence (p -value $0.004 < 0.05$) administration of date juice on the hemoglobin levels of pregnant women with anemia. Date extract can also be used as a supplement to increase hemoglobin levels.

The research was conducted by J. Miftachul, P. Millatin (2018) in all health centers of Pekalongan City. The number of samples taken for this study as many as 30 people divided into two groups, 1 group of pregnant women who consume date juice and 1 group of pregnant women who consume green bean juice. The results showed no increase in Hb in pregnant women after consuming date juice. As for the group of green beans, juice shows an increase in HB levels of pregnant women. Thus, in this case, the consumption of green bean

Table 1
Flow diagram literature.

Author	Research title	City	Method	Number of Samples	Result
Sugita and Kuswati, 2020	Effect of Consumption of Dates On Increased Hemoglobin Levels In Pregnant Women Trimester III	Klateng	<i>A quasi-experiment with a nonequivalent control group design pre-test-post test design</i>	Thirty people, divided into two, 15 people as a control group and 15 people as a treatment group.	The statistical tests obtained a value of $p < 0.05$ ($0.002 < 0.05$) to conclude that consuming dates significantly affects the increase in hemoglobin levels in the blood.
Rahayu, RD, 2017	Effectiveness of The Addition of Date Palm Juice In The Fulfillment of Nutrition Of Pregnant Women Anemia In Puskesmas Wedi, Klaten Regency	Wedi	Experimental, quasi-experimental approach, using a pretest-posttest control group design	50 people will be divided into two groups; equally, 25 people will be made a treatment group (giving sari kurma), and 25 people will be used as a control group (without date palm juice)	Consuming date extract is more effective compared to MMN, with a value of $p = 0.045$ ($p < 0.05$)
W. Retno, K. Rini, P.L. Puput, 2019	Effect of Date Juice On Increased Hemoglobin Levels of Pregnant Women	Bekasi	<i>Intervention studies with one group pretest method – posttest</i>	11 persons	The presence of a significant influence (p -value $0.004 < 0.05$) administration of date juice with hemoglobin levels of pregnant women with anemia. Sarikurma can also be used as a supplement to increase hemoglobin levels
J. Miftachul, P. Millatin, 2018	Increased Hb Levels Of Pregnant Women With Date Juice And Green Bean Juice In Pekalongan City	Pekalongan	<i>Quasi-experiment</i>	Thirty people were divided into two groups, group of date juice and green bean juice.	Consumption of green bean juice is more effective in increasing HB levels in pregnant women compared to the consumption of dates
Setiowati, 2018	Effect of Date Juice (<i>Phoenix dactylifera</i>) On Increased Hemoglobin Levels of Pregnant Women Trimester III	Tanah Bumbu	<i>Quasi-experimental with pre and posttest without control.</i>	16 person	There is an influence of date juice extract (<i>phoenix dactylifera</i>) on the increase in hemoglobin levels in the blood in pregnant women trimester III with a value of p -value < 0.05 (0.002).
Rahmat, R., & Welis, W. (2018).	The Effect of Sari Kurma On The Durability of Sman 1 Banuhampu Football Team in Agam Regency	Agam	<i>Experimental, pretest-posttest design</i>	13 person	the influence of date juice on the durability of football team players, with the acquisition of a test coefficient “t” namely t -count = 15.08>.
Husnah R et al. (2021)	Addition Of Sukkari Dates (<i>Phoenix dactylifera</i> L) And Fe Supplements In Increasing Hemoglobin Levels In Young Women With Anemia	Pinrang	<i>A quasi-experimental design with pre and posttest design with control group</i>	42 person	There is an effect of Sukkari dates and Fe supplementation on increased hemoglobin levels in anemia young women.
Irandegani F et al. (2019)	The Effect of a Date Consumption-Based Nutritional Program on Iron Deficiency Anemia in Primary School Girls Aged 8 to 10 Years Old in Zahedan (Iran)	Iran	<i>Semi-experimental study</i>	31 person	The consumption of date fruit increased hemoglobin, hematocrit, and serum ferritin levels in primary school girl students with Iron Deficiency Anemia
Heba EE-DY, Abeer AK. (2015)	Effect of Black Dates on Iron Deficiency Anemia of Orphanage Children	Egypt	<i>Semi-experimental study</i>	Forty male children (9-11years) with 4 equal groups. The first group was non-anemic group (negative control group), the second, third and fourth groups were anemic groups	Iron from black dates with or without hulls is cheap, safe, and effective in improving hemoglobin levels and restoring iron stores to correct iron deficiency anemia
Akilarooran A, Gayatri Devi R, Jyothipriya A. (2019)	Comparative study on hemoglobin levels on amla with honey and dates	India	<i>Experimental, pretest-posttest design</i>	50 person different age with 2 groups. 25 people took amla with honey and 25 people took amla with dates	Amla with honey can increase the Hb levels within a short period rather than dates

juice is more effective in increasing HB levels in pregnant women than the consumption of dates.¹²

The research was conducted by Setiowati, W. (2018) in the Working Area of Batulicin Health Center Batulicin District, Tanah Bumbu Regency, South Kalimantan Province, by giving date juice to pregnant women. The results showed that there is an influence of date juice extract (*Phoenix dactylifera*) on the increase in hemoglobin levels in the blood in pregnant women trimester III with a value of p -value < 0.05 (0.002).¹³

The research was conducted by Rahmat, R., and Welis, W. (2018) in SMAN 1 Banuhampu Agam Regency with the provision of date palm juice to as many as 20 people to the football team. This study showed that the influence of date juice on the endurance ability of football team players, with the acquisition of test coefficient “t” namely t -count = 15.08>.¹⁴

The research was conducted by Husnah R et al. (2021) in SMPN 3 Lembang and SMAN 8 Pinrang with hemoglobin levels examined at Bungi health center on October 18–November 19, 2020. 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.¹⁵

The research was conducted by Irandegani F et al. (2019) in primary school girl students of Zahedan, Iran. The hemoglobin levels at the beginning and the end of the study were 11.19 ± 0.38 and 12.05 ± 0.81 g/dL, respectively ($p=0.001$), the hematocrit levels were $34.24 \pm 0.41\%$ and $37.17 \pm 2.36\%$, respectively, $p=0.001$, and the ferritin levels were 47.07 ± 21.89 μ g/dL and 53.98 ± 19.77 μ g/dL, respectively, $p=0.001$. The consumption of date fruit increased hemoglobin, hematocrit, and serum ferritin levels in primary school girl students with Iron Deficiency Anemia.¹⁶

The research was conducted by Heba EE-DY, Abeer AK. (2015) in Egypt. The result showed that iron from black dates with or without hulls is cheap, safe, and effective in improving hemoglobin levels and restoring iron stores to correct iron deficiency anemia.¹⁷

The research was conducted by Akilarooran A, Gayatri Devi R, Jyothipriya A. (2019) in India. People of different age groups were considered, with a sample size of 50 divided into two groups. One group took amla with honey, and the other only dates, and the rise in Hb levels were assessed after a period of 20–25 days. The result showed that eating amla with honey can increase the Hb levels within a short period rather than dates.¹⁸

Dates contain high energy and nutrients with ideal composition, including carbohydrates, tryptophan, omega-3, vitamin C, vitamin B6, Ca2, Zn, and Mg, and contain very high fiber, in addition to containing potassium, manganese, phosphorus, iron, sulfur, calcium is also excellent to be consumed in meeting the nutritional needs in the body.⁹

People often consume fruit from palm trees because it is rich in nutrients and has great potential as an herbal remedy to cure various diseases.¹⁹ Some of the sugar content contained in dates consists of glucose, fructose, and sucrose. Although the sugar content in dates is high at 70%, which is 70–73 g per 100 g of dry weight, the sugar content has been processed naturally by the fruit itself and is not harmful to the health of the body.²⁰

The Institute of Medicine in Nutrition during Pregnancy, referred to by Scholl (2011), states that the mother's need increases to about 1000 mg during pregnancy. Of the 350 mg iron requirement associated with fetal and placental growth, 500 mg experienced an increase in red cell mass and 250 mg as blood loss at the time of delivery. The increased need needs to be supported by iron intake in pregnant women, which increases from 6 mg/day in the first trimester to 19 mg/day in the SECOND trimester and 22 mg/day in the III trimester of pregnancy.²¹

Vitamin B12 and folic acid promote the formation of red blood cells. Vitamin B12 will activate folic acid. The active form of folic acid can improve the performance of cell functions such as bone marrow.²²

Conclusion

In general, this study concludes that the influence of giving dates and date juice to increase hemoglobin levels of pregnant

women, which means consuming dates and date juice routinely, can increase the intake of iron and nutrients that are important for the body. Sari kurma is one type of special drink that is useful for the treatment and maintenance of the health of the body. Containing iron serves to increase hemoglobin levels in the body, especially those needed by pregnant women. Pregnant women who experience complaints and discomfort due to the side effects of blood-added tablets are recommended with the consumption of date palm juice and dates.

Conflicts of interest

The authors declare no conflict of interest.

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