

# The Effect of Dates Administration on Hemoglobin Levels in Pregnant Women Trimester III

Rahma Kusuma Dewi<sup>a,1</sup>, Nara Lintan Mega Puspita<sup>a,2</sup>, Huda Rohmawati<sup>a,3</sup>, Siti Khotimah<sup>b</sup>, Gina Salsabila<sup>b</sup>

<sup>a</sup>Midwifery Profession Program, Faculty of Health Science, Kadiri University, Indonesia

<sup>b</sup>Faculty of Health Science, Kadiri University, Indonesia

<sup>1</sup>rahmakusumadewi@unik-kediri.ac.id, <sup>2</sup>naralintan@unik-kediri.ac.id, <sup>3</sup>huda.rohma@unik-kediri.ac.id

## ARTICLE INFO

### Article history:

Received: 3<sup>rd</sup> October 2021

Revised: 20<sup>th</sup> October 2021

Accepted: 2<sup>nd</sup> November 2021

### Keywords:

Dates

Hemoglobin

Pregnant Women

## ABSTRACT

Anemia in pregnancy is a condition of pregnant women with hemoglobin levels below 11 gr / % in TM I and III or <10.5 gr% in TM II. Herbal utilization is one of the alternative treatments non-pharmacology, one of which is the fruit dates. This study aims to determine the effect of giving dates on HB levels of pregnant women trimester III. The research design used is pre-experimental research. The population in this study is 16 people with total sampling techniques. The research instrument used SOP, haemometer, and observation sheet. The results of the study were analyzed using the Wilcoxon test. The Wilcoxon test results showed that there is no effect of giving dates to hemoglobin pressure levels in pregnant women trimester III in the community health center of Bangsongan Kediri in 2018. Based on the study results, it is expected that dates can be used as an alternative treatment for anemia in pregnant women.

## I. Introduction

Anemia in pregnancy is a worldwide health and social problem. While some anemia degrees are delusional very often and can be considered part of the normal physiology of pregnancy, iron deficiency anemia is also common during pregnancy but can have serious adverse health consequences for both mother and child [1]. Anemia during pregnancy is a public health problem, especially in developing countries, and is associated with poor pregnancy outcomes [2]. Since the developing fetus relies only on its mother to be fed, adequate maternal nutrition is essential for its good health. Poor maternal nutritional status has been associated with a myriad of adverse maternal and fetal outcomes such as maternal and perinatal mortality, low birth weight, pregnancy-induced hypertension, restrictions on intrauterine growth, and gestational diabetes and fetal programs [3][4]. Overall, iron needs during pregnancy are significantly greater than those who are not pregnant. The need for iron increases exponentially during pregnancy to meet the increasing demand for feudal units, expand the mass of maternal erythrocytes, and compensate for iron loss during childbirth[5][6]. There is evidence that iron deficiency (ID, ferritin levels 512-15mg/l) and IDA are associated with an increased risk of low birth weight, prematurity, intrauterine growth barriers, low neonatal iron status, preeclampsia, and postpartum hemorrhage[7] [8].

The most common complaints after taking iron tablets are nausea and constipation. This condition is exacerbated when consumed by pregnant women because the body adapts to pregnancy hormones [9]. Herbal remedies are popular among pregnant women. Its prevalence is up to 60% in developed countries, mainly due to the belief that plants are natural and free of side effects compared to conventional medicine [10]. Iron content in dates can increase the number of erythrocytes, thereby increasing hemoglobin levels [11]. Dates contain different vitamins (riboflavin, biotin, thiamin, folic acid, and ascorbic acid), higher percentages of sugars and carbohydrates, proteins, fatty acids, salts, and minerals such as potassium and magnesium. Dates



due to sufficient energy and caloric production can help pregnant women during childbirth and prevent physical weakness [12].

Anemia remains the leading cause of morbidity and mortality in women and children around the world. Due to deficiencies in essential micronutrients such as iron, folate, and vitamin B12 before and during pregnancy, increasing a woman's risk of becoming anemic, adequate intake of nutrients from such nutrients is essential during this important phase life[3]. Therefore, this study aims to prove the influence of date fruit administration on hemoglobin levels in pregnant women in trimester 3. Anemia is a condition in which the number and size of red blood cells, or concentrations of hemoglobin, drops below the specified limit value, consequently disrupting the blood's capacity to transport oxygen throughout the body. Anemia is an indicator of malnutrition and poor health. Anemia in pregnancy is a common phenomenon in low- and middle-income countries. This is due to a decrease in hemoglobin concentration despite an increase in red blood cell mass. Anemia can cause bleeding in the mother during pregnancy, childbirth, and after the baby is born, as well as growth disorders in the fetus [14]. A common type of anemia is iron deficiency, a nutritional deficiency disorder, and pregnant women are a particularly vulnerable population, especially with frequent risks even with the first. According to the WHO, anemia is defined as a pathological condition in which the content of hemoglobin in the blood becomes very low after a deficiency of one or more essential nutrients. Anemia can be easily treated with a healthy diet. However, other types of anemia are serious and can also be life-threatening to a person[16].

Dates (*Phoenix dactylifera*) is one of the fruits used in human food with high nutritional value. There are 314 calories in 100 g of dates. Ten minerals are reported, the main of which are selenium, copper, potassium, and magnesium. Consumption of 100 g of dates can provide more than 15% of this mineral's recommended daily intake. Besides, the amount of iron in dates is about 0.3 mg to 10.4 mg per 100 g. Therefore, eating a few dates every day will provide daily iron for your body. , dates contain vitamin C and fiber, which increases iron absorption. Dates have a high percentage of carbohydrates (44-88%), dietary fiber (6.4-11.5%), in addition to fats (0.2-0.5%), protein (2.3-5.6%), minerals, and vitamins; also contains several fatty acids including palm acid, oleic, linoleic and linolenic [18]. Dates have an important meaning in saving energy and overcoming fatigue and hunger due to high caloric levels.

## II. Method

### A. Design and Samples

This research is a quasy experimental study with One Group Pre Test Post Test Design approach where researchers can test if any changes occur after treatment [26] This research was conducted by giving a pre-test before being given treatment, after being treated, then given a post-test. This study's population was All pregnant women in trimester 3 who had anemia, which amounted to 16 pregnant women. This research uses the total sampling technique. The research was conducted in the Working Area of Bangsongan Health Center, Kediri Regency. Data analysis using univariate analysis and bivariate analysis using Wilcoxon test.

### B. Data Collections

The type of data collected is the type of primary data obtained from observations after giving 50 grams of dates without seeds per day, given for 14 days. The dates is consumed directly without any modification, taken two times a day, once ate 50 grams of time after breakfast and after dinner , se has intervned for 14 days, observations back to see an increase in hemoglobin on day 15

### C. Data Analysis

Statistical tests for both variables used the *Wilcoxon* test . All tests are done by using SPSS for Windows 24

### III. Results and Discussion

#### 3.1 Hemoglobin Level of Pregnant Women in Trimester III before Administering Dates

Table 1. Frequency Distribution of Hemoglobin Level of Pregnant Women in Trimester III before Administering Dates (pre-test)

Variable	N	Mean	Median	Modus	Standard Deviation	Min	Max
HB level before administering dates	8	8,62	8,62	9	0,518	8	9

The table above shows the average hemoglobin levels before being given dates in pregnant women trimester III with anemia in the Working Area Of Bangsongan Health Center in Kediri Regency in 2018 is 8.62 gr/dl. Iron deficiency anemia worsens maternal blood loss and infection during childbirth and also associated with increased mortality and prenatal morbidity that contribute to low birth weight, decreased resistance to disease, poor cognitive development, reduced work capacity, and significant impacts on economic growth and development [20]

#### 3.2 Hemoglobin Level of Pregnant Women in Trimester III after Administering Dates

Table 2. Frequency Distribution of Hemoglobin Level of Pregnant Women in Trimester III before Administering Dates (post-test)

Variable	N	Mean	Median	Modus	Standard Deviation	Min	Max
HB level after administering dates	8	10,50	10,50	10	0,535	10	11

The table above shows the average hemoglobin levels after being given dates in pregnant women trimester III with anemia in the Working Area Of Bangsongan Health center in Kediri Regency in 2018 is 10.50 gr/dl. Dates provide a wide range of essential nutrients and are an excellent source of potassium food. The sugar content of ripe dates is about 80%; the rest consists of proteins, fibers, and trace elements, including boron, cobalt, copper, fluorine, magnesium, manganese, selenium, and zinc [21]. Fruit dates (*Phoenix dactylifera*) seem to be a sensible food choice for pregnant women as part of a balanced diet. It contains a high percentage of carbohydrates, fats, 15 types of salts and minerals, proteins, and vitamins [22].

#### 3.3 The Effect Before and After The Administration of Dates On Hemoglobin Levels of Pregnant Women Trimester III

Table 3. The Effect Before and After The Administration of Dates On Hemoglobin Levels of Pregnant Women Trimester III

Variable	Mean	Std. Deviation
HB level before administering dates	8,62	0,518
HB level after administering dates	10,50	0,518
Total Increase	1,88	
<i>P – Value</i>	0,004	$\alpha = 0,005$

Based on the table above, HB levels before the administration of dates 8.62 gr/dl and after the administration of dates 10.50 gr/dl, the value of the difference between hemoglobin levels before and after the administration of dates is 1.88 gr/dl. In Shapiro-Wilk, normality test differences before and after administering dates to hemoglobin levels obtained  $p$  value 0.00 and 0.00. The normality test of data distribution can be concluded  $p$  value  $> \alpha$  with  $\alpha = >0.05$ , so it can be defined that the distributed data is abnormal and qualified to be used parametric test with Wilcoxon rank signed statistical test. Wilcoxon test results showed a significant number of 0.004, which means less than  $\alpha = 0.05$ . There is an influence of fruit administration dates to changes in hemoglobin levels in pregnant women trimester III. Dates can be categorized as an alternative option in meeting iron needs during pregnancy as long as it regularly consumes. The desired increase in hemoglobin can occur properly. Based on the theory, folic acid in dates can increase leukocytes and platelets within normal limits [23].

#### IV. Conclusion

Based on the results of the study, dates have the potential in increasing HB levels so that they can be used as a supporting therapy on iron deficiency anemia.

#### Acknowledgment

The author is thankful to respondents for their valuable information and their awareness to participate in this research.

#### References

- [1] A. Al-Khaffaf, F. Frattini, R. Gaiardoni, E. Mimiola, C. Sissa, and M. Franchini, "Diagnosis of anemia in pregnancy," *J. Lab. Precis. Med.*, vol. 5, no. 1, pp. 9–9, 2020, doi: 10.21037/jlpm.2019.12.03.
- [2] G. Stephen, M. Mgongo, T. Hussein Hashim, J. Katanga, B. Stray-Pedersen, and S. E. Msuya, "Anaemia in Pregnancy: Prevalence, Risk Factors, and Adverse Perinatal Outcomes in Northern Tanzania," *Anemia*, vol. 2018, 2018, doi: 10.1155/2018/1846280.
- [3] J. Ayensu, R. Annan, H. Lutterrodt, A. Edusei, and L. S. Peng, "Prevalence of anaemia and low intake of dietary nutrients in pregnant women living in rural and urban areas in the Ashanti region of Ghana," *PLoS One*, vol. 15, no. 1, pp. 1–15, 2020, doi: 10.1371/journal.pone.0226026.
- [4] S. Adu-Afarwuah *et al.*, "Impact of small-quantity lipid-based nutrient supplement on hemoglobin, iron status and biomarkers of inflammation in pregnant Ghanaian women," *Matern. Child Nutr.*, vol. 13, no. 2, pp. 1–18, 2017, doi: 10.1111/mcn.12262.
- [5] S. Garzon, P. M. Cacciato, C. Certelli, C. Salvaggio, M. Magliarditi, and G. Rizzo, "Iron deficiency anemia in pregnancy: Novel approaches for an old problem," *Oman Med. J.*, vol. 35, no. 5, pp. 1–9, 2020, doi: 10.5001/omj.2020.108.
- [6] F. Parisi, C. Berti, C. Mandò, A. Martinelli, C. Mazzali, and I. Cetin, "Effects of different regimens of iron prophylaxis on maternal iron status and pregnancy outcome: a randomized control trial," *J. Matern. Neonatal Med.*, vol. 30, no. 15, pp. 1787–1792, 2017, doi: 10.1080/14767058.2016.1224841.
- [7] S. G. A. Basurto, "Iron-Deficiency Anaemia ( IDA ): Socio-Cultural Misconceptions Intersect the Health of Vulnerable Populations in Developing Countries," 2020.
- [8] Who and M. Chan, "Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity," *Geneva, Switz. World Heal. Organ.*, pp. 1–6, 2011, doi: 2011.
- [9] Indrayani, A. Rahmadi, and D. A. Rakhim, "Can date fruits and 7 dates replace iron tablets in increasing hemoglobin levels?," *Pakistan J. Med. Heal. Sci.*, vol. 12, no. 4, pp. 1750–1759, 2018, doi: 10.5281/zenodo.2586881.
- [10] M. Ahmed, J. H. Hwang, S. Choi, and D. Han, "Safety classification of herbal medicines

- used among pregnant women in Asian countries: A systematic review,” *BMC Complement. Altern. Med.*, vol. 17, no. 1, pp. 1–11, 2017, doi: 10.1186/s12906-017-1995-6.
- [11] A. Sari, E. P. Pamungkasari, and Y. L. R. Dewi, “The addition of dates palm (*Phoenix dactylifera*) on iron supplementation (Fe) increases the hemoglobin level of adolescent girls with anemia,” *Bali Med. J.*, vol. 7, no. 2, pp. 356–360, 2018, doi: 10.15562/bmj.v7i2.987.
- [12] A. Bagherzadeh Karimi, A. Elmi, M. Mirghafourvand, and R. Baghervand Navid, “Effects of date fruit (*Phoenix dactylifera* L.) on labor and delivery outcomes: A systematic review and meta-analysis,” *BMC Pregnancy Childbirth*, vol. 20, no. 1, pp. 1–14, 2020, doi: 10.1186/s12884-020-02915-x.
- [13] WHO, “Anaemia Policy Brief,” no. 6, pp. 1–7, 2012.
- [14] C. M. Chaparro and P. S. Suchdev, “Anemia epidemiology, pathophysiology, and etiology in low- and middle-income countries,” *Ann. N. Y. Acad. Sci.*, vol. 1450, no. 1, pp. 15–31, 2019, doi: 10.1111/nyas.14092.
- [15] R. Tandon, A. Jain, and P. Malhotra, “Management of Iron Deficiency Anemia in Pregnancy in India,” *Indian J. Hematol. Blood Transfus.*, vol. 34, no. 2, pp. 204–215, 2018, doi: 10.1007/s12288-018-0949-6.
- [16] M. M. V. Seu, J. C. Mose, R. Panigoro, and E. Sahiratmadja, “Anemia Prevalence after Iron Supplementation among Pregnant Women in Midwives Practice of Primary Health Care Facilities in Eastern Indonesia,” *Anemia*, vol. 2019, 2019, doi: 10.1155/2019/1413906.
- [17] O. Access, “Child safety. Backpacks and back pain in children.,” *Child Health Alert*, vol. 24, no. 3, p. 5, 2006.
- [18] F. Agbozo, A. Abubakari, J. Der, and A. Jahn, “Maternal dietary intakes, red blood cell indices and risk for anemia in the first, second and third trimesters of pregnancy and at predelivery,” *Nutrients*, vol. 12, no. 3, pp. 1–16, 2020, doi: 10.3390/nu12030777.
- [19] B. S. LAICHE Ammar Touhami\*, GHEMAM HAMED Amina, “Evaluation of the anti-anemic activity of date syrup in Wistar rats,” *Alger. J. Biosciences*, vol. 1, no. 1, pp. 7–13, 2020.
- [20] F. Irandegani, A. Arbabisarjou, F. Ghaljaei, A. Navidian, and M. Karaji bani, “<p>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)</p>,” *Pediatr. Heal. Med. Ther.*, vol. Volume 10, pp. 183–188, 2019, doi: 10.2147/phmt.s225816.
- [21] S. H. S. Alghamdy, A. M. Hassan, and S. A. Mohammad, “Protective Effect of Date Fruit Extract Against Ochratoxin a . Genotoxicity and Hepatotoxicity in Mice .,” *Al-Azhar Assiut Med. J.*, vol. 11, pp. 276–310, 2013.
- [22] E. Alfaro-Viquez, B. F. Roling, C. G. Krueger, C. J. Rainey, J. D. Reed, and M. L. Ricketts, “An extract from date palm fruit (*Phoenix dactylifera*) acts as a co-agonist ligand for the nuclear receptor FXR and differentially modulates FXR target-gene expression in vitro,” *PLoS One*, vol. 13, no. 1, pp. 1–23, 2018, doi: 10.1371/journal.pone.0190210.
- [23] M. Kordi, F. A. Meybodi, F. Tara, F. R. Fakari, M. Nemati, and M. Shakeri, “Effect of Dates in Late Pregnancy on the Duration of Labor in Nulliparous Women.,” *Iran. J. Nurs. Midwifery Res.*, vol. 22, no. 5, pp. 383–387, 2017, doi: 10.4103/ijnmr.IJNMR\_213\_15.