



Effect of Date Syrup (*Phoenix Dactylifera*) on Hemoglobin of Postpartum Mothers in Midwifery Independent Practices, Bengkulu City

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Abstract

BACKGROUND: Anemia is mainly characterized by a lack of red blood cells. Although postpartum anemia is significant, it is rarely detected and studied as anemia among pregnant women. Postpartum mothers physically need to be ready to take care of their newborns, and the normal hemoglobin level needs to be considered to support their activity after delivery. An effort to improve the hemoglobin (Hb) level is by consuming date palm syrup. The study revealed that it could increase hemoglobin levels.

AIM: The purpose of the study was to analyze the effect of date palm syrup on Hb levels in postpartum mothers.

METHODS: The population of this study was all postpartum mothers who came to midwifery independent practices in Bengkulu City; those who met the inclusion criteria were involved as subjects in this study. This research method was quantitative using a quasi-experimental research design. This study used a two-group pre-test–post-test design to check hemoglobin levels before and after the intervention of date syrup of 10 ml/8 h for 10 days.

RESULTS: The result showed date syrup's effectiveness in increasing hemoglobin levels in postpartum mothers in Bengkulu City; p-value was 0.000 or $p < 0.005$.

CONCLUSION: The results of this study are expected to be used as one of the non-pharmacological therapies given by health workers to increase hemoglobin levels in postpartum mothers.

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Introduction

Anemia is a global health problem, especially in developing countries. The WHO states that anemia is one of the critical maternal problems in morbidity in the postpartum period [1]. A lack of red blood cells characterizes it that can be affected by iron intake, an important component of hemoglobin. Hemoglobin is a protein found in red blood cells, functions to carry oxygen in red blood cells from the lungs to all tissues in the body [2].

The puerperium or postpartum period is the period after delivery is completed up to 6 weeks or 42 days, which is the time required for the recovery of the uterus to a normal state [3]. The prevalence of anemia at 24–48 h postpartum is around 50%, while in developing countries, the incidence of anemia in postpartum is 50–80%. The incidence of anemia in postpartum can cause fatigue, shortness of breath, rapid pulse, puerperal infection, decreased thinking ability, unstable emotions, and can cause postpartum blues or postpartum depression [4]. The results showed that anemia in postpartum mothers at Panembahan Senapati Hospital, Indonesia, was 35.7% of 56

respondents [5]. The incidence of anemia in postpartum mothers impacts the survival of mothers and babies, but there are not many promotive and preventive programs in controlling the incidence of postpartum anemia.

There are various ways to overcome and prevent anemia problems in postpartum mothers, including at least three postpartum visits, covering 6 h to 3 days after delivery, 4–28 days after delivery, and 29–42 days after delivery. Consumption of nutritious foods 3 times a day with 2 times more serving size and consuming nutritious foods of iron sources, such as dates, papaya leaves, kale, beef, chicken liver, and milk, can be done by adding therapy complementary in helping to increase hemoglobin [6].

Dates are foods that contain high energy with ideal composition, which contains carbohydrates, tryptophan, omega-3, vitamin C, vitamin B6, Ca^{2+} , Zn, and Mg. Dates contain very high fiber; they also contain potassium, manganese, phosphorus, iron, sulfur, calcium, and magnesium, which are very good for consumption [7].

Date syrup is a filtered mashed date; it is a liquid, thick, dark color, sweet, and contains complete nutrients like date fruits. It seems that the date syrup potentially improves maternal hemoglobin levels [8]. In

Indonesia, dates are processed into date palm syrup. Date palm syrup is a special liquid food that functions for treatment and health care for the body, which contains minerals, including iron which is essential for the formation of hemoglobin to increase hemoglobin levels [9]. Several studies have been conducted to test the effectiveness of date palm syrup, one of which is a study conducted by Rahayu (2017) which reveals that date palm syrup can increase hemoglobin levels in pregnant women [10]. Widowati's (2019) results, 10 ml of date syrup 3 times a day during ten days can increase HB levels from 9.6 g/dL to 10.6 g/dL [11]. Anemia in postpartum is not widely studied like anemia in pregnant women; postpartum anemia is a significant problem but is rarely detected [4]. Therefore, researchers are interested in examining the effect of date palm juice on the increase in maternal hemoglobin postpartum.

Methods

This study used a pre-experimental research design with a two-group pre-test and post-test approach. Measuring hemoglobin levels were carried out before giving date syrup (pre-test) to respondents and reassessed after (post-test).

The stages of the research started after the respondent was obtained; then, we explained the purpose, the benefits, and the confidential information related to the research. Then measure the hemoglobin level using a digital hemometer, after getting the results, the postpartum woman was given date palm syrup, about 10 mg per day, using a measuring spoon for ten days. Later, hemoglobin was measured using a hemometer to determine the impact of consuming date syrup on hemoglobin levels.

Results and Discussion

The research was conducted from August to October 2021; the respondents in this study were postpartum mothers 1–10 days, totaling 15 respondents. The assessment of hemoglobin levels was carried out before (pre-test) and after (post-test) the intervention using a digital hemometer.

Univariate analysis

Table 1 shows that the hemoglobin level of postpartum mothers before intervention was 9 g/dL, and the highest was 10.8 g/dL. However, after 10 days

Table 1: The distribution of hemoglobin levels before and after the intervention was given to postpartum mothers

Variable	Pre-intervention			Post-intervention		
	n	%	Mean	n	%	Mean
Date syrup therapy	15	100	10.0	15	100	10.5
Hb Min	9			9.8		
Hb Max	10.8			11.2		

of date syrup intervention, the lowest hemoglobin level in postpartum mothers was 9.8 g/dL, and the highest was 11.2 g/dL.

Bivariate analysis

Table 2 shows that the analysis results toward 15 samples were before and after the intervention with date palm juice. The mean value of 8.00 was obtained, and the Wilcoxon test results showed $p = 0.001 < 0.05$. It means that there was a significant impact of date palm juice and the improvement of hemoglobin levels of postpartum.

Table 2: The results of the analysis of the effect of date palm juice on HB of postpartum mothers

	n	Mean ranks	p-value
Hemoglobin after intervention	15	8.00	0.001
Hemoglobin before intervention		0.00	

The puerperium is the period that begins after the placenta comes out and ends when the uterine organs return to normal and last about 6 weeks. The postpartum period can be divided into the immediate postpartum period, the early postpartum period, and the late postpartum period. Most of the maternal deaths occurred during the puerperium, of 54.55%. The postpartum period which is at risk for maternal death, mainly occurs in the immediate postpartum period (50%), in the early postpartum period (20%), and the late postpartum period (5%). Anemia is defined as a low hemoglobin concentration (Hb) in the blood [1]. The 2011 American National Institute of Health (NIH) states that anemia occurs when the body does not have a normal number of red blood cells. Anemia in postpartum mothers is defined as a hemoglobin level of <10 g/dL; this is a common problem in obstetrics. Although pregnant women have guaranteed iron levels, hemoglobin concentrations usually range from 11 to 12 g/dl before delivery. This is exacerbated by blood loss during delivery and the puerperium. Research by Bread *et al.*, 2005, found a strong relationship between iron status, level of depression, and knowledge of postpartum mothers.

Dates in Latin are called phoenix dactylifera, which grows specifically in desert areas. This fruit has long been known and is one of the most important fruits in Arabia, North Africa, and the Middle East. Dates contain riboflavin, niacin, pyridoxal, and folate, 100 g of dates that meet more than 9% of daily vitamin needs. Ripe dates are rich in calcium and iron. The iron

content in dates is 1.02 mg. Various research results, such as Febriansyah (2007) and Pravitasari (2014), showed a significant increase in serum Fe after giving dates [12], [13].

Most pregnant women show a decrease in hemoglobin concentration as part of the normal response during pregnancy. There is an increase in plasma and circulating blood volume, protecting the woman from birth-related blood loss. The generally accepted limit for anemia in non-pregnant women is a hemoglobin concentration of <12 g/dL [1]. Anemia in puerperal (postpartum) women is also common; around 10–22% occurs in postpartum women from low-income families [14]. The effect of anemia during the puerperium is the occurrence of uterine subinvolution, which can cause postpartum hemorrhage, facilitating puerperal infection.

Dates have content that is beneficial for the human body. Date palm syrup is a date mashed and taken for its juice in a liquid with a thick consistency, black in color, tastes very sweet, and contains complete nutrients such as dates. Dates syrup preparations are made to make it easier for mothers to consume date palm juice. Date palm syrup is a complete health supplement made from selected dates. There are compounds for energy sources that are needed by the body. Dates syrup contains nutrients: 16.5% water, 0.6% protein, 0.22% fat, 47.9% carbohydrates, 330 kcal/100 mg energy, 776.8 mg/100 g potassium, and 32.5 mg/100 g calcium.

While the composition is fructose and glucose, date syrup increases hemoglobin levels, because it contains iron and is a source of energy needed by the body [15]. Dates palm syrup can be categorized as a choice in meeting iron needs during pregnancy and the puerperium, as long as they are consumed regularly so that the increase in hemoglobin gets better. This fruit has long been known and is one of the most important fruits in Arabia, North Africa, and the Middle East. Dates contain riboflavin, niacin, pyridoxal, and folate, 100 g of dates meet more than 9% of daily vitamin needs. Ripe dates are rich in calcium and iron. The iron content in dates is 1.02 mg. Various research results, such as Utami and Graharti (2017), showed a significant increase in serum Fe after giving dates [16].

Conclusion

Based on the study results, it was found that there was a significant effect of date palm syrup on the improvement in postpartum maternal hemoglobin; the Wilcoxon test with a mean value of 8.00, $p = 0.001$ was obtained. Date palm juice can be used as an alternative non-pharmacological therapy in dealing with anemia in postpartum mothers.

Suggestion

It is suggested for further studies regarding the effectiveness of date palm syrup on increasing hemoglobin levels in postpartum women using other variables. It is also expected to be one of the non-pharmacological therapies given by health workers to patients to increase hemoglobin levels in postpartum women.

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