

MORINGA INCREASES THE HEMOGLOBIN IN POST-PARTUM WOMEN

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ABSTRACT

One of the causes of bleeding in postpartum mothers is anemia. Moringa contains iron, vitamin C in high amounts so that it can increase hemoglobin levels in post partum period. The aim of the study was to determine the effect of giving Moringa capsules on hemoglobin levels of postpartum mothers. This study used a Quasi Experimental design with a nonrandomized pretest-posttest design. Samples were 30 post partum women of reproductive age (15 case groups and 15 controls). Hemoglobin was measured using HB Digital. Hemoglobin measurement was carried out 5 times, namely days 1,7,14,21 and 30 post partum. Data analysis using T test and Repeated annova. The results showed that giving 60 mg of Moringa per day significantly increased hemoglobin levels on day 14, 21 and 30 post partum mothers ($P = 0.00$). Moringa is able to increase hemoglobin levels in postpartum women. Further research is needed on the potential content of active compounds in Moringa plants which are presented in dosage forms other than capsules and powder so that they can be used for more general therapy in the postpartum period.

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1. Introduction

The number of maternal deaths continues to increase. In 2019 , maternal mortality was 4221 and rose to 4627 in 2020 . and the main cause is bleeding [1][2], [3] One of the causes of postpartum hemorrhage is anemia [4] . During delivery, adequate contractions occur. In pregnant women who are anemic, about 25% are likely to experience hypotonia or atony resulting in bleeding. This causes the hemoglobin level to decrease and contractions to weaken due to the reduced energy and oxygen carried by the blood [5], [6] . Anemia during the puerperium can cause prolonged perineal wound healing, pyrexia [7], uterine sub involution, increased risk of infection, stress, lactation failure, sepsis and even maternal death [5], [7]

The main factors that contribute to postpartum anemia are antepartum anemia and postpartum hemorrhage. Women who experience postpartum hemorrhage have a 5.6 times risk of experiencing postpartum anemia. Every pregnant woman has a risk of experiencing postpartum anemia, including those who use supplementation. in this group has a 16% risk of having low hemoglobin levels up to 8 weeks postpartum [1] In addition, visual assessment of blood loss has a higher risk of morbidity for postpartum mothers with PPH when compared with pre-pregnancy hemoglobin tests. and after delivery [8]

In general, guidelines for the management of postpartum anemia are the administration of oral iron for mild postpartum anemia and intravenous iron for moderate anemia [1] In addition to standard therapy, the use of plant resources rich in protein and micronutrients at an affordable cost, can be used to prevent anemia, one of which is the use of Moringa plants.

The optimal time point for measuring postpartum anemia is still being debated, blood tests to detect anemia are at least done after 48 hours postpartum because it is related to hormonal, hemodynamic and hemantic. Labor is also associated with oxidative stress and inflammatory responses [1]

Recent research has shown that intravenous administration of iron may be the first choice of

treatment for postpartum anemia (Sultan et al, 2019) with many advantages, including a fast body response, minimizing non-adherence to oral consumption, but on the other hand it requires costs that need to be reviewed [1].

Moringa is one of the plants that is well known in Indonesia and has many benefits , both leaves, bark, seeds and roots [9] According to research results, Moringa leaves contain vitamin A, Vitamin B, Vitamin C, calcium and potassium, iron and protein which are very easily digested by the human body. The iron content is 25 times higher than spinach [10]

Moringa plants are food crops that are rich in nutrients and effective in tackling anemia [11], [12]. Moringa leaves have a high iron (Fe) content up to 25 times more than spinach [10]. In addition, Moringa contains essential amino acids, proteins, minerals, vitamins, and polyphenols and is rich in phytochemicals including flavonoids. , anthocyanins, isothiocyanates, anthraquinones, alkaloids, essential oils, tannic acid, saponins, steroids, terpenoids [13].

There have been many research results showing that Moringa can reduce anemia during pregnancy both in animal studies [14], as well as in pregnant women as evidenced by increased hemoglobin levels after being given Moringa intervention [1], [12], [15] . Research on postpartum mothers shows that giving Moringa leaves can improve the lipid profile of postpartum mothers [9]

Previous research found that Moringa is directly involved in the hemopoiesis process which directly affects the formation of red blood cells in the bone marrow through its phytochemical components, vitamins and minerals. [14]. Moringa is thought to be efficacious to overcome iron deficiency anemia by increasing the number of red blood cells so that it can increase blood viscosity and peripheral resistance of blood vessels that affect blood flow. [16]. So far, studies that focus on the effect of giving Moringa on increasing hemoglobin, especially in post partum women, have not been widely carried out.

2. Research Methods

This type of research is a quasi-experimental design, with a nonrandomized design pretest—posttest design. Calculation of sample size using the formula for the proportion of two populations, the results were 30 people who were divided into two groups of cases and 15 samples of each control. The sampling technique used purposive sampling with inclusion criteria: ost partum on day 2, 20-38 years old, t not take traditional medicines and other medicines to increase HB except Fe tablets. While the exclusion criteria: experiencing severe anemia, diabetes mellitus, infection, having a blood clotting disorder, resigning from research participation or moving an unknown address.

Data collection techniques in the form of primary research data obtained directly from respondents and obtained from direct observation through HB examination. Initial screening, the subject begins by taking a history of age and medical history. Subjects who met the inclusion criteria then performed an informed consent procedure, measured hemoglobin on the first day with digital Hb. Furthermore, the case group was given 60 mg iron tablets and 500 mg Moringa capsules. while the control group was given only 60 mg iron tablets without moringa capsules. On the 7th,14th,21st, and 30th days of PP, hemoglobin was checked again. This research do it for 30 days . Study carried out in the working area of the Darul Imarah District Health Center Aceh Besar . Data analysis using T test and Repeated annova.

3. Result And Discussion

3.1. Result

TABLE 1.
DESCRIPTIVE ANALYSIS OF AGE, HEMOGLOBIN LEVELS AND NORMALITY TEST

Variable	N	mean	median	SD	Min	Max
Age (Years)	30	28	28.5	4.86	20	38
Hemoglobin						
Day 1	30	10.69	10.30	0.64	9.3	11.70
Case	15	10.52	10.40	0.64	9.3	11.5
Control	15	10.40	10.30	0.65	9.4	11.7
Day 7	30	10.89	10.85	0.62	9.8	12.2
Case	15	11.04	10.9	0.59	9.8	12.2

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Variable	N	mean	median	SD	Min	Max
Control	15	10.47	10.6	0.60	9.8	11.9
Day 14	30	11.61	11.50	0.63	10.2	12.7
Case	15	11.64	11.7	0.59	10.3	12.7
Control	15	11.10	11.10	0.57	10.2	12.1
Day 21	30	11.97	12.0	0.72	10.5	13.8
Case	15	12.42	12.40	0.60	11.3	13.8
Control	15	11.50	11.50	0.54	10.5	12.3
Day 30	30	12.37	12.55	0.70	10.8	13.5
Case	15	12.75	12.80	0.50	11.8	13.5
Control	15	12.00	12.10	0.67	10.8	12.9
Age (Years)	30	28	28.5	4.86	20	38

Based on table 1, it can be seen that the average hemoglobin level of respondents on the first post partum day is 10.69 gr%, day 7 (seven) 10.89 gr %, day 14 (fourteen) 11.61%, day 21 (twenty one) 11.97 gr % and day 30 (thirty) 12.37 gr %. While in table 2, the results of the comparison of hemoglobin measurements on the first day, 7th day, 14th day, 21st day and 30th day are shown. The P value for each comparison is 0.00. So it can be concluded that there are statistically significant differences in all hemoglobin measurements, both in the case group and in the control group.

TABLE 2
ANALYSIS OF THE EFFECT OF MORINGA CAPSULES ON HEMOGLOBIN LEVELS

No	Variable	Group	P Value
1	Hemoglobin (Case) HB day 1	HB day 7	0.00*
		HB day 14	0.00*
		HB day 21	0.00*
		HB day 30	0.00*
		HB day 14	0.00*
		HB day 21	0.00*
		HB day 30	0.00*
		HB day 7	0.00*
		HB day 14	0.00*
		HB day 21	0.00*
2	Hemoglobin (Control) HB day 1	HB day 7	0.00*
		HB day 14	0.00*
		HB day 21	0.00*
		HB day 30	0.00*
		HB day 7	0.00*
		HB day 14	0.00*
		HB day 21	0.00*
		HB day 30	0.00*
		HB day 7	0.00*
		HB day 14	0.00*
HB day 21	0.00*		

TABLE 3
ANALYSIS OF THE EFFECT OF MORINGA CAPSULES ON HEMOGLOBIN IN POST PARTUM WOMEN
IN THE WORKING AREA OF THE DARUL IMARAH HEALTH CENTER, ACEH BESAR DISTRICT

No	Variable	Mean	P Value
1	Hemoglobin day 1		0.6 1*
	Case	10.52	
2	Hemoglobin day 7		0.20*
	Case	11.04	
3	Hemoglobin day 14		0.01*
	Case	11.64	
4	Hemoglobin day 21		0.00*
	Case	12.42	
	Control	11.50	

No	Variable	Mean	P Value
5	Hemoglobin day 30		0.00*
	Case	12.75	
	Control	12.00	

Table 3 shows that there are differences in the mean hemoglobin levels between the case and control groups. On the first day of measurement, the mean hemoglobin of the case group tended to be higher than the control group, namely 10.52 gr% and 10.40 gr%. Likewise, on the seventh day of measurement, the average hemoglobin in the case group tends to be higher than the control group, namely 11.04 g% and 10.47 g%. However, after the statistical test was carried out, the P value was > 0.05. These results indicate that H_0 is accepted, which means that there is a non-significant difference in the mean hemoglobin level between the group given Moringa capsules and the group not given Moringa capsules.

On the 14th, 21st and 30th day measurements, the mean hemoglobin of the case group tended to be higher than the control group, namely 11.64 gr% and 11.10 gr%, 12.42 gr% and 11.50 gr%, 12.75 gr% and 12.00 gr%. the seventh day the mean hemoglobin of the case group tended to be higher than the control group, namely 11.04 g% and 10.47 g%. And after the statistical test, the P value <0.05 was obtained. These results indicate that H_0 is rejected. So it can be concluded that the average hemoglobin level of the mother group who was given Moringa capsules was significantly higher than the group that was not given.

3.2. Discussion

This study showed that the administration of Moringa capsules could significantly increase hemoglobin levels in postpartum mothers compared to a pure control group that was given only iron tablets. This strengthens the evidence that the increase in hemoglobin levels is caused by the administration of Moringa

Measurement of hemoglobin in this study began on the 2nd post partum day and showed that the average postpartum mother in the first week experienced mild anemia with an average value of 10.69 g% in the first week postpartum and started to increase weekly which indicates that, physiologically, Hemoglobin levels rise gradually from day to week which will then reach hemoglobin before pregnancy and childbirth. The hemoglobin level curve increases gradually over 2 weeks in accordance with the hormonal, hemodynamic and hemodynamic roles. In this study, it was found that the increase in hemoglobin levels was seen significantly starting on day 14 post partum.

The significant increase in hemoglobin value in the group given Moringa capsules in this study indicated that Moringa was able to increase hemoglobin levels in postpartum women because of the high content of iron and other phytochemical components including vitamin C where it was known that vitamin C increased iron absorption.

4. Conclusion

Giving Moringa 60 mg/day increased hemoglobin levels in post partum women. Furthermore, further research can be carried out on the effectiveness of Moringa in overcoming other health problems during the puerperium, including for wound healing, considering that one of the effects of anemia is the length of recovery of perineal wounds.

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