Research Article

Effectiveness Of Beetroot And Spinach Against The Increase In Hemoglobin Levels Of Pregnant Women In The Primary Clinic Kasih Bunda, 2022

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Abstract

Aims: Pregnant women who suffer from anemia are at risk of miscarriage, premature birth, low birth weight babies, and bleeding before and after delivery.

Purpose: It is known the effectiveness of giving beetroot and spinach to increase hemoglobin levels in pregnant women in primary clinics in 2022.

Methods: One-group "quasi-experiment" Designing a test with a pre- and post-test. Quasi-experimental studies are a type of experimental research that omits the use of a control group.

Result: The average hemoglobin level of pregnant women before consuming beetroot is 10.8 gr / dl and after consuming beets 11.9 gr / dl 200 gr every day for 28 days the average hemoglobin level increases to 12.3 gr / dl. The average hemoglobin level of pregnant women before consuming spinach is 10.2 gr / dl and after consuming spinach every day for 28 days the average hemoglobin level increases to 11.4 gr / dl. With a maximal number of 11.9 gr / dl, the p value >0.05

Conclusion and Advice: Beetroot and spinach consumption is associated with increased hemoglobin levels in pregnant women and offers a safe and healthy alternative to fe tablets for women who may suffer from their uncomfortable side effects, such as nausea, vomiting, constipation, heartburn, and stomach cramps. Pregnant women with anemia are often advised to eat beets or spinach every day so that their hemoglobin levels can rise as quickly as possible.

Keywords
Anemia, hemoglobin, consumption of beets, spinach

INTRODUCTION

The prevalence of anemia is increasing worldwide, and it is a major public health concern because of the potential impact on mortality and disability. According to the 2020 WHO report, the global MMR was 261/100,000. (KH). Bleeding is the leading cause of maternal mortality worldwide, accounting for 27.1% of deaths in developing countries and 16.3% in developed nations (1)

Pregnancy-related anemia is a common culprit in blood loss. Worldwide, 41.8% of pregnant women were anemic in 2020, according to the World Health Organization. Pregnancy-related anemia affects

approximately 48% of Asian women, 57% of African women, 24% of American women, and 25% of European women. Approximately 40% of maternal deaths in low-income countries are caused by anemia during pregnancy (1). (2) found that 56% of pregnant women in low and middle income countries experienced anemia.

Anemia was found to affect 48.9% of pregnant women in Indonesia in 2018, according to data from the Basic Health Research (3). This figure increased when compared to 2013 which was 37.1%. Most pregnant women with anemia occurred in the age group 15-24 years at 84.6%, 25-34 years at 33.7%, 35-44 years at 33.6% (4). This of course needs special attention, because it means that almost half of pregnant women in Indonesia are anemic. Pregnancy-related anemia has been linked to an increase in the risk of both maternal and perinatal mortality, as well as a decrease in the health of both the mother and the child. Fatigue, poor work capacity or performance, impaired immune function, an increased risk of heart disease, and even maternal death are all negative health impacts for mothers. Several studies have found that in developing countries, anemia during pregnancy is one of the top indirect causes of maternal mortality. Babies born to anemic mothers are more likely to be born prematurely and to be of low birth weight (LBW). The risk of fetal death, growth restriction, asphyxia, short stature, and stillbirth is all increased by anemia during pregnancy (5).

To combat anemia during pregnancy, the government recommends giving pregnant women a combination of iron (Fe) and folic acid. During pregnancy, women should take at least 90 tablets containing the equivalent of 200 mg of ferrosulfate, which contains 60 mg of iron and 0.25 mg of folic acid. The first trimester of pregnancy is the ideal time to start taking tablets. Unfortunately, some pregnant women who take Fe tablets may experience unwanted side effects like nausea, vomiting, constipation, and heartburn (6). (7) Izzati's study at the Margasari Public Health Center in Surakarta found that, of 50 pregnant women, 64% did not adhere to the recommended dosage of folic acid tablets due to the unpleasant side effects (nausea, vomiting, and heartburn) they caused.

Eating beets and spinach is one of several complementary therapies that can be used in conjunction with Fe tablets to help pregnant women increase their hemoglobin levels. Beets and spinach. Bits contain the main nutritional content of beets, namely folic acid 109 mg or 27% in every 100 grams of beets. And the content in spinach has a high iron value to stimulate the formation of red blood cells or hemoglobin in the blood. Namely 3.9 mg / 100 grams. (8)

METHODS

In this study, we employ a quasi-experimental design based on a pre- and post-test with a single group. Without a control group, experimental research is called "quasi-experimental.". The effectiveness of the treatment was assessed by comparing the posttest and pretest scores (9). Thus the results of the treatment can be known more accurately. To eliminate bias from the results of the study, a pre-test and post-test will be carried out for each administration of beetroot and spinach. The research data collection method uses primary data taken directly from the respondents by observation.

Participants included 18 pregnant women who met inclusion criteria and visited the Pratama Kasih Bunda clinic. In this study, we employ SPSS univariate and bivariate analysis with the Paired Samples T-Test.

RESULTS

Normalized Differences in Hemoglobin Levels Between the Beet and Spinach Groups in Pregnant Women Before and After Treatment.

Table 1.
Frequency Distribution of Haemoglobin Levels Before and After Giving Beets and Spinach at the Pratama Kasih Ibu Clinic in 2022

	Pre test beetroot	Post test beetroot	Age of respondent	Pre test spinach	Post test spinach	Age of respondent
Mean	10,8	11,9	26	10,2	11,4	27
Median	10,1	11,9	26	10,1	11,4	18
Minimal	9,6	11,4	16	9,8	11.0	21
Maximal	10,5	12,3	36	10,9	11,9	33

Based on table 1, the results before and after consuming beets showed that the average hemoglobin level of respondents was 10.8 mg. /dl, with the lowest score of 9.6 mg. /dl for 1 respondent. The median age of respondents was 26 years, and the minimum age was 16 years. Finally, the highest score is 10.5. In contrast, post-test results show an average hemoglobin level of 11.9 mg.dl, with a minimum score of 11.4 mg/dl. Furthermore, 12.3 mg/dl is the maximum value. More importantly, the average age of the group before and after spinach was added was 27 years old, with the youngest member being 21 and the oldest member being 33. Before receiving spinach, participants' hemoglobin levels averaged 10.2 mg/dl (range, 9.8-10.9 mg/dl), according to the results. The average hemoglobin level was 11.4 mg/dl in the follow-up test. The range of values for the spinach post test is from 11.0 to 11.9 g/dl.

Hemoglobin Normality Testing Before and After Vegetable Intake in Pregnant Women

Table 2 Normality test of hemoglobin levels of pregnant women before and after consumption of beets and spinach at the clinic for the love of mothers in 2022.

Group	Statistics	Sig
Pre-test of beets	982	0,975
Post test beetroot	956	0,753
Spinach pre test	906	0,288
Spinach post test	877	0,145

It is known in table 2 from the cumulative results of the normality test using Shapiro-Wilk, the results of normality in the pretest and post-test have a value > 0.05, namely the pre-test of beets is 0.975 and Post-test of beets is 0.753, then the pre-test of spinach is 0.288 and post-test is spinach test of 0.145. so that it has a conclusion that the data is normally distributed and the next paired sample T-test is tested

Bivariate Analysis

Hemoglobin Levels Before and After Treatment in Pregnant Women: Beetroot and Spinach Groups

Table 3.
Differences in Hemoglobin Levels of Pregnant Women Before and After Treatment in the beetroot group and the spinach group at the Pratama Kasih Ibu clinic in 2022

Treatment		Mean	n	Std. Deviation	Std. error
Pre-test	of beets	10.0889	9	.29.345	0,9782
Post beetroot	test	11.9000	9	.26.458	0,8819
Spinach test	pre	10.1778	9	.24.381	0,8127
Spinach test	post	10.8778	9	.20.480	0,6827

In table 3, it is known that the mean value of the pre-test bits is 10.0889 and this value is smaller than the post-test bits which is 11.9000, so it indicates that there is a difference. Furthermore, the mean value of the spinach pre-test was 10.1778 and this value was smaller than the spinach post-test result, which was 10.8778, thus indicating that there was a difference as well.
The number of respondents as many as 9 Std Values. Dev on pre test bits 29,345 post test bits 26,458 Std. Spinach pre test Dev 24,381 spinach post test 20,480, The mean pre test error value of beetroot is 0.9782 post test 0.8819. Mean error value pre test bit 0.8127 and post test 0.6827.

Comparing the Effects of Beets and Spinach on Pregnant Women's Hemoglobin Levels Before and After Treatment

Table 4.
Paired Sample Correlations Haemoglobin Levels of Pregnant Women Before and After Consumption of Bits and Spinach at Pratama Kasih Bunda Clinic in 2022

Treatment	n	Correlations	Sig.
Pre test and post test beetroot	9	-435	0,245
Spinach pre test and post test	9	590	0,95

It is known from table 4 that the correlations value in the pre-test bit bit is -435 with a sig value. of 0.245 so that it can be said that there is a relationship between beetroot pre-test and beetroot post-test, then the correlation value in spinach is 0.590 with a Sig value. 0.95 so it can be said that there is also a relationship between the spinach pre-test and post-test spinach variables

The Effectiveness of Giving Beets and Spinach to Increase in Hemoglobin Levels in Pregnant Women

Table 5.
Effectiveness of giving beets and spinach to the increase in hemoglobin levels in pregnant women at the Cinta Bunda Clinic in 2022

Treatment	Mean	Std. Dev	Lower	Upper	T	Sig. (2.Tailed)
Pre-test of beets – post-test of beets	-1.81111	47288	-2.17460	-1.44763	-11.490	0.00
Spinach pre test – spinach post test	-70000	20616	-85846	-54154	-10.186	0.00

Based on the data in Table 5, the mean in the pre-test and post-test bits is -1.81111, this value shows the difference between -2.17460 to -1.44763. while the mean for pre post spinach and post test spinach was -70000 with the difference between -85846 to -54154.

Known: the value of Sig. (2-tailed) in beetroot is 0.00 < 0.05 with a t count value of -11,490 < t table -2.30600 so it can be said that there is a significant difference so that it means that there is an effectiveness of the method of giving beets in increasing hemoglobin levels (H0 is rejected). and Ha is accepted) so that the first hypothesis is accepted.

It is known: The value of sig (2. Tailed) in spinach is 0.00 < 0.05 with a t count value of -10.186 < t table -2.30600 so that it can be said that there is a significant difference so that it means that there is an effectiveness of the spinach method in increasing levels of hemoglobin (H0 is rejected and Ha is accepted) so that the second hypothesis is accepted.
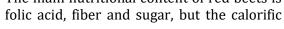
DISCUSSION

The average increase in hemoglobin levels of pregnant women with anemia after treatment with beets was 12.3 g/dl for those in the intervention group who consumed beets at a rate of 200 grams per day for 28 days, up from 9.6 g/dl before treatment, while those in the spinach group experienced an increase of 1.7 g/dl over the same time period. It follows that while both beetroot and spinach were effective in raising hemoglobin levels in pregnant women with mild anemia, beets were more effective than spinach. The Pratama Kasih Ibu clinic found that pregnant women whose hemoglobin levels were low saw significant increases after receiving beetroot and spinach in a bivariate intervention. The red beet, or Beta vulgaris L., is a member of the Chenopodiaceae family of flowering plants. It has a tuber-like morphology and is most commonly used as a vegetable.

The fact that pregnant women who eat beets have higher hemoglobin levels demonstrates their efficacy in combating anemia, it can not only be done pharmacologically but can also be used in a non-pharmacological way by giving beets (10). The content of vitamin C in beets is greater than that of citrus fruits so that they get effective absorption of iron and increase endurance. (11,12)

The main nutritional content of red beets is folic acid, fiber and sugar, but the calorific

value of red beets is still classified as moderate in folic acid content. The content of beets in the list of foodstuffs (13) include 108 mg of folic acid, 27.0 mg of calcium, 43.0 mg of phosphorus, 43 mg of vitamin C, 23 mg of magnesium, 9.6 mg of carbohydrates, 1.0 mg iron, (14). Hemoglobin levels in anemic pregnant women were shown to rise after supplementation with beetroot and spinach. But how often respondents eat beets or spinach will determine how much their hemoglobin levels rise (15)

CONCLUSION

Based on the findings of the existing literature, we can draw the following conclusions:

Hemoglobin levels in pregnant women are on average 10.8 g/dl before eating beets and increase to 12.3 g/dl after eating beets (11.9 g/dl 200 g daily for 28 days).

The average value of the hemoglobin level of pregnant women before consuming spinach was 10.2 g/dl and after consuming spinach every day for 28 days the average hemoglobin level increased to 11.4 g/dl. With a maximum number of 11.9 gr/dl

The Pratama Kasih Ibu clinic found that in 2022, pregnant women whose hemoglobin levels were below target were given either beetroot or spinach, and their levels rose to above target.
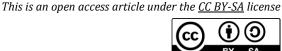
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