

The Effectiveness Of The Administration Of Beet Juice And Honey Against Increased Hemoglobin Levels In Nursing Mothers

Samsa Qomariyah^{1*}, Novita²

^{1,2} Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara, Indonesia

*Corresponding Author:

Email : samsaqomariyah41@gmail.com

Abstract.

WHO in 2020, said some 295,000 women worldwide lost their lives during and after pregnancy and childbirth. Africa, sub-Saharan and South Asia account for around 86% of all maternal deaths worldwide. MMR in Indonesia in 2020 is 230 per 100,000 live births. Causes of maternal death are bleeding, hypertension, infection, prolonged labour, abortion, CED and anemia (Hb <11gr). The prevalence of anemia in pregnant and lactating women in Indonesia is 48.9%. The impact of anemia on pregnant women will occur during pregnancy, childbirth and the postpartum period. Knowing the effectiveness of giving beetroot juice and honey to increase hemoglobin levels in nursing mothers. Quasy Experiment with Pretest Posttest With Control Group Design The sample in this study were lactating mothers with anemia who were registered at the KIA PMB Samsa Qomariyah register in May-October 2022 as many as 40 people, the sampling technique was total sampling. The average HB level in the intervention group was 10.175 gr/dl pretest and 10.865 gr/dl posttest. The average HB level in the control group was 11.250 gr/dl pretest and 11.275 gr/dl posttest. Beetroot juice and honey are effective in increasing hemoglobin levels in lactating mothers with a p.value of 0.000 (p <0.005). Beetroot juice and honey are effective in increasing hemoglobin levels in nursing mothers. It is expected that breastfeeding mothers consume vegetables and fruit that contain lots of iron and vitamin C to increase HB levels and prevent anemia.

Keywords: Beets, Honey, HB Levels and Breastfeeding Mothers.

I. INTRODUCTION

According to the World Health Organization (WHO), maternal death is defined as death that occurs during pregnancy or within 42 days of delivery. The World Health Organization (WHO) in 2020, said as many as 295,000 women around the world lost their lives during and after pregnancy and childbirth. Africa, sub-Saharan and South Asia account for about 86% of all maternal deaths worldwide (WHO, 2020). The Maternal Mortality Rate (MMR) in Indonesia has generally decreased maternal mortality during the period 1991-2015 from 390 to 305 per 100,000 live births. MMR in Indonesia in 2020 was 230 per 100,000 live births, but although there was a tendency to decrease maternal mortality, it did not succeed in achieving the MDGs target that must be achieved, namely 102 per 100,000 live births in 2015 (Ministry of Health of the Republic of Indonesia, 2020). The direct cause of maternal death by 90% is complications that occur at the time of delivery and after childbirth. The cause is known as the "Classical Triassic" namely bleeding (30.0%), hypertension (27.1%), infection (7.3%), old partus (1.8%), abortus (1.6%) and others (40.8%). Meanwhile, indirect causes of maternal death include anemia, diabetes, chronic lack of energy (SEZ) by 37% and anemia (Hb < 11gr) by 40%. This cause can actually be prevented by adequate antenatal care (Kemenkes RI, 2020). The World Health Organization (WHO) in 2019 reported that the Maternal Mortality Rate (MMR) in developing countries related to anemia in pregnancy is caused by iron deficiency of 40.3%. The countries in Asia with the highest prevalence of anemia of pregnant women are Laos (57.1%) and Filiphina (56.2%), while in European countries the highest prevalence of anemia is Spain (18.3%) and Portugal (16.9%).

Complications that make up the majority of maternal death cases, around 75% of the total maternal death cases, including bleeding, infection, high blood pressure during pregnancy, complications of childbirth, and unsafe abortions (WHO, 2019). In 2019 WHO reported that anemia in pregnant and lactating women in developing countries was 45% higher than in developed countries by 13%. The prevalence of pregnancy anemia in developed countries such as America is around 17% and Turkey is 28%, while in developing countries such as Asia namely Laos 57.1%, Filiphina 56.2%, India 54% and the highest prevalence is the African region at 60% (WHO, 2019). Indonesia is a developing country with a fairly high prevalence of anemia in pregnancy. According to Riskesdas in 2018, the prevalence of anemia of pregnant and lactating women in Indonesia was 48.9%, this figure increased when compared to 2013 which was 37.1%. The number of pregnant women who experience anemia is the most at the age of 15-24 years at 84.6%, aged 25-34 years at

33.7%, aged 35-44 years at 33.6% and aged 45-54 years at 24% (RISKESDAS, 2018). The high prevalence of anemia in pregnant and lactating women in Indonesia is influenced by poverty, where nutritional intake is severely deficient, gender inequality, and ignorance of the right diet. The province in Indonesia with the highest incidence of anemia of pregnant women is Central Java at 78.9%, this figure is higher than the national figure of 71.2% (Ministry of Health of the Republic of Indonesia, 2020). The problem of anemia in pregnant and lactating women in Indonesia often occurs due to iron deficiency as much as 62.3%, and has an influence that can be fatal if not overcome immediately, including can cause miscarriage, partus prematus, inertia uteri, partus lama, atony uteri, bleeding and shock and even death for the mother and fetus (Cunningham, 2018). Another impact of anemia on pregnant women will occur during pregnancy, childbirth and puerperium.

The impact on pregnancy is: growth disorders in body cells and brain cells, resulting in a lack of oxygen is transferred to the body's cells as well as to the fetal brain. Anemia in the mother may have postpartum hemorrhage caused by uterine atony. Iron deficiency, folic acid deficiency, infections and blood disorders cause anemia in pregnant women (Rimawati et al., 2018). Anemia often occurs in the third trimester and can continue until the mother breastfeeds. The average prevalence of anemia in the third trimester is more than 30%, 4.5% of pregnant women suffer from anemia in the first trimester of 4.5%, in the second trimester 44.1% and in the third trimester 45.7%. In the third trimester there is hemodilution and a decrease in hemoglobin levels that begins from 6-8 weeks of gestation and reaches its peak at 32-34 weeks gestation (Supriasa, 2018). The government's policy in dealing with pregnancy anemia is to give iron (Fe) and folic acid tablets. Pregnant women are recommended to take 60 mg of iron and 0.25 folic acid or the equivalent of 200 mg of ferrous sulfate during pregnancy of at least 90 tablets. Administration of tablets begins in the first trimester of pregnancy. However, not a few pregnant women who consume Fe tablets experience several side effects such as nausea, vomiting, constipation and heartburn (Kundaryanti et al., 2019). Efforts to increase hemoglobin levels of pregnant women in accordance with government recommendations are usually through 2 ways, namely pharmacology and nonpharmacology. Consumption of Fe tablets during pregnancy is pharmacological therapy, while non-pharmacological therapy is in the form of eating vegetables green, consumption of beetroot and date palm fruit (Pratami, 2017).

Beetroot has a role in the cleansing/neutralization of toxins in body, and healing of infections and inflammations. The results of Stephana's research (2018) stated that beet administration is effective in increasing Hb levels in pregnant women with anemia. In addition, the high content of Fe and folic acid in beetroot plays a role in the formation of the baby's brain. (Stephana, 2018). Honey is also rich in iron, vitamins and minerals, there is about 0.42 mg of iron in 100 grams of honey. In addition, honey also contains copper and magnesium which will help increase hemoglobin. To get the benefits of honey as a blood enhancer, you can add a tablespoon of honey to a glass of beet juice or you can also directly consume it with a spoonful of honey in the morning (Sari, 2019). A preliminary study conducted at PMB Samsa Qomariah in May 2022, by conducting interviews with 10 breastfeeding mothers, found that 6 of them had anemia, from the results of direct interviews with mothers who have anemia, 3 mothers stated that they regularly drink Fe tablets but rarely consume nutritious foods, fruits and vegetables due to the mother's lack of economic conditions, while in 3 other mothers stated that they did not regularly drink Fe tablets because they often forgot and during pregnancy mothers rarely consume fruits that contain vitamin C including consuming beets and honey both in the form of juice and eating the fruit directly and do not know the properties of beetroot and honey. Based on the data above, researchers are interested in conducting a study entitled "The effectiveness of giving beetroot juice and honey to increase hemoglobin levels in breastfeeding mothers at PMB Samsa Qomariyah in 2022".

II. METHODS

The research method uses Quasy Experimental with Pretest Posttest With Control Group Design. Data collection is carried out using primary data, namely data obtained from observations. The data retrieval instrument used is an observation sheet. The samples in this study were breastfeeding mothers with anemia registered in the KIA PMB Samsa Qomariyah register in May-October 2022 as many as 40 people, the sam-

pling technique was total sampling. The analysis method used is univariate and bivariate analysis with paired simple t test.

III. RESEARCH RESULTS

Table 1. Average HB Levels of Breastfeeding Mothers in the Intervention Group and Control Group Before and After Giving Beet Juice and Honey

Variable	Types of Groups	Mean		Std. Deviation		Min – Max	
		Pre test	Post test	Pre test	Post test	Pre test	Post test
Power							
HB	Intervention	10,175	10,865	0,5543	0,6226	9,4 – 11,3	9,7 - 12,4
	Control	11,250	11,275	0,4674	0,5857	10,2 – 12,0	9,8 – 12,3

Based on the table above, the results were obtained that in the intervention group before being given beet juice and honey, the average HB content was 10.175 and after being given beet juice and honey, the average HB content was 10.865. In the control group that was not given beet juice and honey, the average HB level was 11,250 and afterwards it was 11,275. The standard deviation value in the pre-test intervention group was 0.5543 and the post test was 0.6226, while in the pre-test control group it was 0.4674 and the post-test was 0.5857. The minimum HB levels in the pre-test intervention group were 9.4 – 11.3 and the post test was 9.7 – 12.4 while in the control group the minimum-maximum pre-test values were 10.2 – 12.0 and the post test was 9.8 – 12.3.

Table 2. Effectiveness of Beetroot Juice and Honey Against Increased Hemoglobin Levels in Breastfeeding Mothers

Variable	Jenis Kelompok	Mean		Std. Deviation		Selisih Mean	Selisih SD	P value
		Pre test	Post test	Pre test	Post test			
Power								
HB	Intervention	10,175	10,865	0,5543	0,6226	0,690	0,0683	0,000
	Control	11,250	11,275	0,4674	0,5857	0,025	0,1183	0,804

Based on the table above, it can be seen that the test for changes in HB levels by giving beet juice and honey for 1 month using the paired sample t-test obtained results that had a significant value of 0.000 (< 0.05). Meanwhile, in the control group, the results of the paired sample t-test obtained a p value of 0.804 (> 0.05). These results mean that there is a change in HB levels in breastfeeding mothers after being given beet juice and honey. And in the control group did not show any significant changes in HB levels. The mean difference column showed that breastfeeding mothers who consumed beet juice and honey showed a greater increase in HB levels compared to the control group. Dari data diatas dapat disimpulkan bahwa adanya efektifitas pemberian jus buah bit dan madu terhadap peningkatan kadar HB pada ibu menyusui.

IV. DISCUSSION

Average HB levels of breastfeeding mothers in the intervention group and control group before and after being given beet juice and honey From the results of the study, the results were obtained that in the intervention group before being given beet juice and honey, the average HB content was 10.175 and after being given beet juice and honey, the average HB content was 10.865. In the control group that was not given beet juice and honey, the average HB level was 11,250 and afterwards it was 11,275. The standard deviation value in the pre-test intervention group was 0.5543 and the post test was 0.6226, while in the pre-test control group it was 0.4674 and the post-test was 0.5857. The minimum HB levels in the pre-test intervention group were 9.4 – 11.3 and the post test was 9.7 – 12.4 while in the control group the minimum-maximum pre-test values were 10.2 – 12.0 and the post test was 9.8 – 12.3. The results of this study are in accordance with the theory of Sathya, (2017) which says that anemia is a condition in which blood hemoglobin levels are lower than normal as a result of the lack of one or more essential nutrients. Increased hemoglobin levels in nursing mothers with anemia, one of which is by consuming tablets to add blood or iron.

The iron needs of pregnant women increase so that an additional 700-800 mg is needed, including 500 mg to increase hemopoiesis, 300 mg for fetal needs for the hemopoiesis process while in the womb, 200

mg for the reserve of loss due to postpartus bleeding, or it takes additional iron around 30-60 mg per day (Mansjoer, 2017). The results of this study are in line with the results of Risnawati's research (2021) which said that there was a change in the average hemoglobin level of pregnant women with anemia before giving Fe tablets and beetroot juice by 8.81 gr / dl and afterwards by 9.69 gr / dl. According to the opinion of researchers from the results of a study conducted at PMB Samsa Qomariah, it was found that there was a change in the average HB cadaver of breastfeeding mothers before being given beet juice and honey by 10,175 gr / dl and after being given beet juice and honey increased to 10,865, while in the control group that was not given beet juice and honey there was a slight change in HB kadr but a little anya, from 11,250 gr / dl to 11,275 gr / dl. From the results of this study, we can see that changes in hemoglobin levels in the intervention group and control group are very impressive, this is because beetroot juice contains a lot of vitamin C and honey contains a lot of vitamin C, vitamin A, iron (Fe), and vitamin B12 which functions as the formation of red blood cells and hemoglobin which can increase hemoglobin levels in nursing mothers.

Effectiveness of Beetroot Juice and Honey Against Increased Hemoglobin Levels in Breastfeeding Mothers

From the results of the study, it can be seen that the test for changes in HB levels by giving beet juice and honey for 1 month using the paired sample t-test obtained results that had a significant value of 0.000 (< 0.05). Meanwhile, in the control group, the paired sample t-test results obtained a p value of 0.804 (> 0.05). These results mean that there is a change in HB levels in breastfeeding mothers after being given beet juice and honey. And in the control group did not show any significant changes in HB levels. The mean difference column showed that breastfeeding mothers who consumed beet juice and honey showed a greater increase in HB levels compared to the control group. From the data above, it can be concluded that there is an effectiveness of giving beet juice and honey against increasing HB levels in nursing mothers. The results of this study are in accordance with Sephia, (2020) who said that beetroot is rich in iron, so it can increase hemoglobin levels in nursing mothers. Honey is one of the best natural ingredients that helps in treating a number of diseases. Due to its rich iron content, honey is considered one of the best ingredients for treating anemia. Along with its iron content, honey also contains magnesium and copper, so it can increase hemoglobin levels in the blood (Dewifarhanah, 2018). The results of this study are in line with the results of Risnawati's research (2021) which said that the statistical test results obtained p-value = 0.004 < 0.005 meaning that statistically there is a significant difference in the increase in HB levels of mothers who consume beet juice with mothers who do not consume beet juice.

The results of this study are also supported by the results of stephana's research (2018) which said that the average hemoglobin level of pregnant women after being given beetroot juice in the experimental group was 11.27 and the average hemoglobin level of pregnant women after without giving beet juice was 9.22. The results of the analysis obtained p (0.000) $< \alpha$ (0.05), so it can be concluded that the administration of beetroot juice is effective against hemoglobin levels in pregnant women with anemia. According to the opinion of researchers from the results of research conducted at PMB Samsa Qomariah in the intervention group, the average difference between pre-test and post-test was 0.690 gr/dl, while in the control group the average difference was 0.025 gr/dl. Based on the results of statistical tests, a p value of 0.004 was obtained, which means that there was a change in the average pre-test and post-test values in respondents who were given beet juice and honey for 1 month. From the results of this study we can also conclude that beet juice mixed with honey is very effective for increasing hemoglobin levels in nursing mothers. The content of beetroot which is like folic acid and vitamin C, and contains iron can increase the body's hemoglobin levels in people with anemia, while honey contains a lot of vitamin C, vitamin A, iron (Fe), and vitamin B12 which functions as the formation of red blood cells and hemoglobin which can increase hemoglobin levels.

V. CONCLUSION

The average HB levels in the pretest intervention group were 10.175 gr/dl and the posttest was 10.865 gr/dl. The average HB levels in the pretest control group were 11,250 gr/dl and the posttest was 11,275 gr/dl. Beet juice and honey are effective against increasing hemoglobin levels in nursing mothers with a p.value of 0.000 (p < 0.005)

REFERENCES

- [1] Cunningham, F.G. (2018). Williams Obstetrics, Issue 21, CT: Appleton & Lange, Norwalk.
- [2] Ministry of Health of the Republic of Indonesia. (2020). Indonesia's Health Profile in 2019. Ministry of Health of the Republic of Indonesia. General Secretariat
- [3] Kundaryanti R. (2019). The Effect of Giving Green Spinach Juice on Increasing Hemoglobin Levels in Anemic Pregnant Women in the Working Area of the Pasar Minggu Health Center, South Jakarta.
- [4] Mansjoer, M. (2017). Iron deficiency anemia in pregnant women, BPK Gunung Mulia, Jakarta.
- [5] Pratami, E. (2017). Evidence Based in Obstetrics: Pregnancy, childbirth, & puerperium. Jakarta: EGC
- [6] Rimawati, E., Kusumawati, E., Gamelia, E., Sumarah, S., & Nugraheni, S. A. (2018). Dietary supplement intervention to increase hemoglobin levels in pregnant women. *Journal of Public Health Sciences*, 9(3), 161-170. <https://doi.org/10.26553/jikm.v9i3.307>
- [7] Riskesdas. (2018). Basic Health Research Report. Jakarta: Research Agency and Health Development of the Ministry of Health of the Republic of Indonesia. Ministry of Health RI
- [8] Sari Mutia Nisa, (2019). 5 Blood-Boosting Foods That Must Be Consumed by People with Anemia. <https://hot.liputan6.com/read/4022965/5-makanan-penambah-darah-yang-wajib-dikonsumsi-penderita-anemia>
- [9] Stephana, W., Utami, S. & Elita, V. (2018). The effectiveness of beetroot juice against hemoglobin levels of pregnant women with anemia. *Journal of Nursing Sciences*. 2018: 334-341.
- [10] Supriasa, I.D.N.(2018). Nutritional Status Assessment (Revised Edition), EGC Medical Book Publisher, Jakarta.
- [11] Sathya P, Gandhimathi R, Viruthasarani K, Poornima MR, Rajeswari PM, Subhathra N, et al. (2017). A study to assess the prevalence of anemia among women in a selected urban area in Coimbatore district. *JSIR*. 2017;6(1):11-5.
- [12] Sephia, E. D. (2020). The Effect Of Giving Sari Kurma (Phoenix dactylifera) On Increasing Hemoglobin Levels Of Pregnant Women. *Journal of Medika Hutama*, 2(01), 377-381. Retrieved from <https://jurnalmedikahutama.com/index.php/JMH/article/view/94>
- [13] WHO. (2019). Trends in Maternal Mortality: 2014 to 2018, Estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division.
- [14] WHO. World Health Statistics, (2020). World Health Organization; 2019