



Fe TABLET WITH SWEET ORANGE (*Citrus x sinensis*) JUICE SUBSTITUTION EFFECTS HEMOGLOBIN LEVEL IN TRIMESTER III PREGNANT WOMEN WITH ANEMIA

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Abstract

Background: Organic acids such as ascorbic acid (vitamin C) can help absorb iron by reducing Ferric to Ferrous which is easily absorbed 3-6 times (Almatsier, 2014). The purpose of this study is whether Fe tablets with the addition of sweet orange juice (*Citrus x sinensis*) can affect hemoglobin levels in third trimester pregnant women with anemia. **Method:** The study design was a pre-post control group design. The population in this study were all 35 pregnant women with anemia in the third trimester in Tuban district, using a simple random sampling technique. The sample size is 32 respondents with each group consisting of 16 respondents. The treatment group was given Fe tablets & sweet orange juice for 14 days and statistical analysis using Wilcoxon test. **Result:** Most of the hemoglobin levels of anemic pregnant women in the third trimester before being given Fe tablets experienced moderate anemia by 9 (56.3%) and after being given Fe tablets experienced an increase to mild anemia by 9 respondents (56.3%). There is an effect of giving Fe tablets with sweet orange juice (*Citrus x sinensis*) on increasing hemoglobin levels in third trimester anemic pregnant women the results Wilcoxon signed ranks test $\alpha=5\%$ $p=0,005$. **Conclusion:** Giving Fe tablets with sweet orange juice (*Citrus x sinensis*) has a more significant role in increasing hemoglobin levels in anemic pregnant women in the third trimester, as health workers it is recommended to do more education to the public, especially pregnant women about how to consume Fe tablets with sweet orange juice (*Citrus x sinensis*) so that absorption of Fe is better

keyword : Anemia, pregnant women, sweet orange juice

INTRODUCTION

Riskesdas in 2018 stated that in Indonesia 48.9% of pregnant women had anemia. As much as 84.6% of anemia in pregnant women occurs in the age group of 15-24 years. To prevent anemia, every pregnant woman is expected to get iron tablets (TDD) of at least 90 tablets during pregnancy (Indonesian Health Profile, 2020). Based on data from the 2020 Indonesia Health Profile report, administration of Fe-3 in Indonesia in 2018 amounted to 81.16%, 2019 amounted to 64.0%, 2020 amounted to 83.6%, 2021 amounted to 84.2% there is an increase even though it has not met the target of 98%. The provision of Fe-3 in East Java Province in 2018



was 90.8%, the achievement in 2019 was 95%, in 2020 it was 88.9% which experienced a decrease, in 2021 it was 91.3% which experienced an increase even though it had not reached the target of 98%. Based on data from the 2020 East Java Health Profile report, the provision of Fe-3 in Tuban Regency in 2019 was 93.0%, the achievement in 2020 was 93.3%, the achievement in 2021 was 91.6%, there was an increase even though it had not met the target of 98%.

Orange fruit contains high will vitamin c. It is necessary to know that vitamin c helps iron absorption up to 30%. When the need for iron is large then vitamin c is very needed to help the process of absorption of iron. Organic acids such as ascorbic acid (vitamin c) can help iron absorption by reducing ferric to a ferrous that is easily absorbed 3-6 times (almaty-, 2014). Sweet orange fruit one of the nutritious fruit options has an iron content of 0.4 mg, and compounds useful for the health of pregnant women. Other than iron content, Sweet oranges are also fruits that are easy to obtain and good for consumption treatment of anemia in pregnancy is not enough with the administration of iron tablets alone.

Cooperation between governments is necessary, health and society to maximize the iron donation program. Besides that the role of the family is also very important to supervise the pregnant woman in her family in the consumption of iron tablets (Nugraha etc, 2020).

The purpose of this study is whether Fe tablets with the addition of sweet orange juice (*Citrus x sinensis*) can affect hemoglobin levels in third trimester pregnant women with anemia

METHOD

The study design was a pre-post control group design. The population in this study were all 35 pregnant women with anemia in the third trimester, using a simple random sampling technique. Place of the research in Rengel, Tuban, East Java. The sample size is 32 respondents with each group consisting of 16 respondents. Inclusion criteria for case group are Pregnant women who are willing to be respondents, Pregnant women 20-35 years, Third trimester pregnant women with Hb levels <11gr/dl, Pregnant women who are willing to take Fe tablets regularly, Pregnant women who are willing to consume sweet orange juice

according to the SOP (intervention group). The treatment group was given Fe tablets & sweet orange juice for 14 days, the control group was given Fe tablets for 14 days and statistical analysis using wilcoxon test. Ethical legal accept by Institut Ilmu Kesehatan Nahdlatul Ulama Tuban.

RESULT AND DISCUSSION

Table 1. Hemoglobin levels of third trimester pregnant women with anemia before and after in the control group

Hemoglobin Level	Pre test		Post test	
	n	%	n	%
Normal	0	0	3	18,8
Mild anemia	7	43,8	9	56,3
Moderate anemia	9	56,3	4	25
Total	16	100	16	100

Most of the hemoglobin levels of anemic pregnant women in the third trimester before being given Fe tablets experienced moderate anemia as many as 9 (56.3%) and after being given Fe tablets increased to mild anemia as many as 9 respondents (56.3%).

Giving Fe tablets combined with sweet orange juice is influenced by the dose given, so there is a relationship between dose and increased hemoglobin levels, giving sweet orange juice will help in iron absorption by converting non-heme iron into a simpler form so that iron absorption is more optimal. So that the administration of iron tablets combined with vitamin C has a more significant role in increasing hemoglobin levels in pregnant women.

Hemoglobin levels in the intervention group also experienced a significant increase but some were still anemic. This is because age affects the condition and condition of a mother's uterus. It is said to have healthy reproductive organs because at the age of 20-35 years it is classified as a healthy reproductive age, so it is easy to get pregnant. At this age, the uterus and other organs of the body are ready to accept pregnancy, mentally and physically ready. Meanwhile, the age group 20 years and under on average are physically and mentally not ready to get pregnant, where physically they tend to still need a lot of nutrition.

Table 2. Hemoglobin levels of third trimester pregnant women with anemia before and after in the treatment group

Hemoglobin Level	Pre test		Post Test	
	n	%	n	%
Normal	0	0	9	56,3
Mild anemia	8	50	6	37,5
Moderate anemia	7	43,8	1	6,3
Severe anemia	1	6,3	0	0
Total	16	100	16	100

Half of the hemoglobin level of anemic pregnant women in the third trimester before being given Fe tablets with sweet orange juice (*citrus x sinensis*) experienced mild anemia by 8 (50%) and after being given Fe tablets with sweet orange juice (*citrus x sinensis*) increased to normal by 9 respondents (56.3%).

In line with Neila Sulung's research (2018) concerning giving orange juice to increase hemoglobin levels in anemic pregnant women at the Nila Sari Bukittinggi Health Center, that giving orange juice for 7 consecutive days can increase hemoglobin levels by 0.63 gr/dl. This is because citrus fruits contain iron of 0.4 mg/100 grams, and vitamin C content of 49 mg/100 grams.

Absorption of heme iron is not much affected by food composition and gastrointestinal secretions as well as by a person's iron status. Hem iron is only a small part of the iron obtained from food (approximately 5% of total dietary iron), especially in Indonesia, but that which can be absorbed can reach 25% while non-hem is only 5% (Almatsier, 2015).

Table 3. Hemoglobin levels of third trimester pregnant women with anemia after being given Fe tablets in the control group and after being given Fe tablets with sweet orange juice (*citrus x sinensis*) in the treatment group

Hemoglobin Level	Control Group		Treatment Group	
	n	%	n	%
Normal	3	18,8	9	56,3
Mild anemia	9	56,3	6	37,5
Moderate anemia	4	25	1	6,3
Total	16	100	16	100

Most of the hemoglobin levels in the control group of third trimester anemic pregnant women after being given Fe tablets experienced mild anemia as



many as 9 (56.3%) and most of the hemoglobin levels in the intervention group after being given Fe tablets with sweet orange juice (*Citrus x sinensis*) experienced an increase to normal as many as 9 respondents (56.3%).

The Wilcoxon signed ranks test obtained a value of $\rho=0.005<0.05$ in the control group, a value of $\rho=0.000<0.05$ in the intervention group and a value of $\rho=0.030<0.05$ in the post control and post intervention which means that H_0 is rejected and H_1 is accepted. So it can be concluded that statistically there is an effect of giving Fe tablets with sweet orange juice (*Citrus x sinensis*) on increasing

Iron is one of the nutrients that cannot be obtained in adequate quantities from food consumed during pregnancy, because it is a substance that is difficult for the body to absorb, so vitamin C is needed so that iron can be absorbed optimally (Neila Sulung & Beauty Hartini, 2018).

With the presence of vitamin C, it will facilitate the absorption of iron, especially from non-hem iron which is commonly found in plant foods. Absorption of non-hem iron, which is only 5 (whereas normally for heme iron is 37) can be increased fourfold by the presence of an absorption enhancing agent such as vitamin C. The role of vitamin C is also as a strong enhancer in reducing ferrous ions, so that it is easily absorbed at higher pH. high in the duodenum and small intestine. Therefore the absorption of iron tablets is more optimal so that it can increase hemoglobin levels better (Amanda, 2018).

Giving Fe tablets combined with sweet orange juice is influenced by the dose given, so there is a relationship between dose and increased hemoglobin levels, giving sweet orange juice will help in iron absorption by converting non-heme iron into a simpler form so that iron absorption is more optimal. So that the administration of iron tablets combined with vitamin C has a more significant role in increasing hemoglobin levels in pregnant women.

Hemoglobin levels in the intervention group also experienced a significant increase but some were still anemic. This is because age affects the condition and condition of a mother's uterus. It is said to have healthy reproductive organs because at the age of 20-35 years it is classified as a healthy reproductive age, so it is easy to get pregnant. At this age, the uterus and other organs of the body are ready to accept pregnancy, mentally and physically ready. Meanwhile, the age

group of 20 years and under on average are physically and mentally not ready to get pregnant, where physically they tend to still need a lot of nutrition.

CONCLUSION AND SUGGESTION

Giving Fe tablets with sweet orange juice (*Citrus x sinensis*) has a more significant role in increasing hemoglobin levels in anemic pregnant women in the third trimester, as health workers it is recommended to do more education to the public, especially pregnant women about how to consume Fe tablets with sweet orange juice (*Citrus x sinensis*) so that absorption of Fe is better.

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