

THE EFFECT OF CONSUMPTION STRAWBERRY JUICE AGAINST LEVEL OF HAEMOGLOBIN IN THIRD TRIMESTER OF PREGNANT WOMAN

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Abstract

Strawberry is a one of fruit that have rich of benefits, content of strawberry juice provides many benefits for the body because have many vitamin C , folic acid and iron that very important to prevent anemia.

The purpose of this research was to determine any effect of consumption strawberry juice against level of haemoglobin in third trimester of pregnant woman in Balowerti Public Health Center at Kediri city on 2016.

The research design is pre-experimental with one group pretest posttest design . The population are all third trimester pregnant woman and there are 15 respondents selected by accidental sampling. This research have been work on May 2016. The data were analyzed by Wilcoxon test.

The results showed that after consuming strawberry juice can increase hemoglobin levels. The analysis showed $\alpha = 0,05$, and it was obtained ρ value = 0,001 so ρ value $< \alpha$ it means H_0 is denied and H_1 is accepted. There is a correlation between consuming strawberry juice and level of haemoglobin among the pregnant woman in Balowerti Public Health Center at Kediri City on 2016.

Keywords:

Strawberry Juice, Pregnant Woman, Level Of Haemoglobin

INTRODUCTION

Generally, there are some changes in anatomy and physiology system of pregnant women. One of that is a cardiovascular or haemodynamic. According to Varney (2008), a natural physiological changes that occur during pregnancy may experience normal blood cell count in pregnancy. The increase in the volume of blood plasma increase results from the mother, not the result of an increased number of red blood cells. Although there is an increase in the number of red blood cells in circulation, but the amount was not balanced by an increase in plasma volume. This imbalance will be visible in the form of a decrease in hemoglobin levels, which in turn can cause anemia in pregnant women.

Until now, high maternal mortality rate in Indonesia is still a priority in health department. According to the WHO 40% maternal deaths in developing countries are associated with anemia in pregnancy and mostly caused by Fe deficiency and of acute bleeding, even not uncommon either integrate each other (Saifuddin, 2007). Generally anemia happens all over the world, especially in developing countries and in low socio-economic groups. Overall anemia occurred in 45% of women in developing countries and 13% in developed countries. In America there are 12% of women of fertile age 15-49 years and 11% of pregnant women are anemia (Fatimah, 2007).

Anemia means a deficiency of red blood cells can be caused due to the loss of red blood cells too much or the formation of red blood cells too much or the formation of red blood cells is too slow (Ganong, 2008). Anemia is a decrease in the quality of red blood cells in circulation, abnormality of hemoglobin content of red blood cells or both. Anemia in pregnant women increases the frequency of complications in pregnancy and childbirth. The impact of anemia in pregnancy are abort, immature partus/premature, at the time of delivery, anemia can cause interference with his primary as well as secondary, high action due to childbirth the mother quickly tired and travel disruption

operative actions need to be delivered, at the time of parturition, anemia can cause uterine involution Sub, durability against infections and a low breastmilk production , in the fetal are can make dismaturitas, mikrosomia, low birth weight, perinatal death.

Fe absorption is greatly influenced by the availability of vitamin C in the body of mother. The role of vitamin C in the process of Fe absorption that is helping the reduction of Ferri into Ferro in the intestine that facilitating absorption of the reduction process will be even greater when the pH in stomach is getting sour.

Vitamin C can increase the acidity so it can increase Fe up to 30%. The need for vitamin C of a pregnant women increased from mothers who are not pregnant, where a pregnant women need the 70 mg of vitamin C per day. The content of vitamin C in 100 grams of strawberries contains 60 mg of vitamin C, it also contains several types of minerals that are able to prevent various diseases as well as maintain the immunity of the body. In addition to containing vitamin C fruits of Strawberry also contains folic acid, vitamin B2, vitamin B1, vitamin A, Selenium, potassium, magnesium, riboflavin, Fe, phosphorus, calcium, energy, carbohydrates, fats and proteins. The fruit of the Strawberry is highly recommended for pregnant women, because the very beneficial to the formation of the hemoglobin levels in the blood.

Because of many benefit of strawberry to pregnant woman, the researcher interested to study “The Effect Of Consumption Strawberry Juice Against Level Of Haemoglobin In Third Trimester Of Pregnant Woman in Balowerti Public Health Center at Kediri city in 2016.”

MATERIAL AND METHOD

Methods

This research is a pre-experimental study with One Group Pre Test Post Test Design. This research is giving a pre-test before treatment, after being treated, then given a post-test. This methods are to determine whether there are differences between the results before being treated with after being treated.

The population is all third trimester of pregnant woman in the Balowerti health centers. The sample is a part of third trimester of pregnant woman are in the Balowerti health centers. The sampling technique uses accidental sampling technique. The independent variables is the strawberry juice and the dependent variable is level of haemoglobin. This research was conducted in Balowerti Public Health Center at Kediri city, whereas this study was conducted in April 2016.

Ethical clearance process:

- a. Giving informed consent
- b. Interview with pregnant woman who being a sample
- c. Giving pre test
- d. Giving strawberry juice
- e. Giving post test

To determine the effect of strawberry juice againts level of haemoglobin, the research used digital haemometer test and analytical data using Wilcoxon test with an error level of 5%. Interpretation of the results of analysis, if the value of the test statistic > table value or values obtained level $p < \alpha$ with $\alpha = 0.05$ significance level.

Instrument

1. Blender
2. Cups
3. Straws
4. Knife

5. Digital haemometer
6. Blood lancet
7. Alcohol swab
8. Cotton

Materials

1. 100 grams of strawberry
2. 200 ml boiled water
3. 1 tablespoon sugar

How to make strawberry juice:

- a. Separate the leaves of strawberries with fruit, then wash it
 - b. Enter strawberries, sugar and 200 ml of boiled water into a blender and then puree
- Pour into serving cups.

*Strawberry juice***RESULTS AND DISCUSSION****Results***Table 1. Frequency Distribution Characteristics of Respondents Based on Age in Balowerti Public Health Center at Kediri City In 2016*

Age	Frequenc y	Presentation (%)
< 20 years old	0	00,0
20 – 29 years old	8	53,3
>30 years old	7	46,6
Total	15	100

(source : Primary data 2016)

Tabel 2. Frequency Distribution Characteristics of Respondents Based on Educational Background in Balowerti Public Health Center at Kediri City In 2016

Educational Background	Frequency	Presentation (%)
Elementary school-junior high school	1	6,66
High school	12	80,0
College	2	13,3
Total	15	100

(source : Primary data 2016)

Tabel 3 Frequency Distribution Characteristics of Respondents Based on Job in the Balowerti Public Health Center at Kediri City In 2016

Job	Frequency	Presentation (%)
Housewife	9	60,0
Entrepreneur	2	13,3
Non Government Employees	4	26,6
Government Employees	0	00,0
Total	15	100

(source : Primary data 2016)

Tabel 4 Frequency Distribution Characteristics of Respondents Based on Number of Labor in Balowerti Public Health Center at Kediri City In 2016

Number of Labor	Frequency	Presentation (%)
Primipara	5	33,3
Multipara	9	60,0
Grandepara	1	6,67
Total	15	100

(source : Primary data 2016)

Tabel 5 Frequency Distribution of level of haemoglobin Before Consuming strawberry juice in Balowerti Public Health Center at Kediri City In 2016

Level of haemoglobin	Frequency	Presentation(%)
≥11 gr/dl (no anemia)	1	6,66
9-10 gr/dl (low anemia)	10	66,6
7-8 gr/dl (moderate anemia)	4	26,6
>7gr/dl (high anemia)	0	00,0
Total	15	100

(source : Primary data 2016)

Tabel 5 Frequency Distribution of level of haemoglobin after Consuming strawberry juice in Balowerti Public Health Center at Kediri City In 2016

Level of haemoglobin	Frequency	Presentation (%)
≥11 gr/dl (no anemia)	9	60,0
9-10 gr/dl (low anemia)	6	40,0
7-8 gr/dl (moderate anemia)	0	00,0
>7gr/dl (high anemia)	0	00,0
Total	15	100

(source : Primary data 2016)

Tabel 7 The Effect of Consumption Strawberry Juice Against Level Of Haemoglobin in Balowerti Public Health Center at Kediri City In 2016

Before Consuming strawberry juice	After Consuming strawberry juice								Total	
	≥11gr/dl (no anemia)		9-10gr/dl (low anemia)		7-8gr/dl (moderate anemia)		<7gr/dl (high anemia)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
≥11 gr/dl (no anemia)	1	6,66	0	0,0	0	0,0	0	0,0	1	6,6
9-10 gr/dl (low anemia)	5	33,3	5	33,3	0	0,0	0	0,0	10	66,7
7-8 gr/dl (moderate anemia)	0	0,0	4	26,6	0	0,0	0	0,0	4	26,7
>7gr/dl (high anemia)	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0
Total	6	39,9	9	59,9	0	0,0	0	0,0	15	100,0
		ρ = 0,001		Z = -3,464		α = 0,05				

Based on table 7 show that before consuming strawberry juice, a half of respondents (50%) have level of haemoglobin 9-10% gr/dl. Then after consuming strawberry juice they have level of haemoglobin ≥ 11gr/dl. Based on *Wilcoxon Sign Rank Test* show $\rho = 0,001 < \alpha = 0,05$ with ($Z = -3,464$) so ρ value α H0 defined < rejected H1 is accepted.

Discussion

In terms of educational level of respondents the majority of educated middle (80,0%). Education level of mothers is also very influential in the health status of families optimally. Mother's education is the important things that become the primary capital in regulating finance family also plays a role in putting together a family of food consumed. Food quality and quantity of which is less by not paying attention to the nutritional needs that should be consumed in a day because of ignorance and low education level affects the incidence of deficiency in pregnant women (Bapelkes, 2004).

Lack of hb levels in pregnancy influence outcomes for infants and mothers, either in childbirth or pregnancy, parturition and the next. Many diseases can arise because of anemia, such as abort, prematurus partus, partus long because postpartum atony inertia, bleeding due to uterine atony, shock, infections of both intrapartum or postpartum. Anemia in pregnancy is a potential cause of morbidity and mortality of mothers and children (Winkjosastro, 2009).

The results showed that levels of hemoglobin during pregnancy is very important and routinely control checks the levels of hemoglobin and consume nutrition healthy and balanced in order to reply during her pregnancy did not experience a decrease in hemoglobin levels.

The most common parameter used to indicate the mass of red blood cells is the levels of hemoglobin. Through measurement of hemoglobin levels after consuming Strawberry juice, it was concluded that an increase in the levels

of hemoglobin after the consumption of the Strawberry juice based on table 7 indicates that there is a difference in hemoglobin levels before and after consuming of the strawberry juice on pregnant women.

Strawberry contain a variety of nutrients that are beneficial to the body a lot. One of the benefits given the fruits of Strawberry was instrumental in the formation of red blood cells, white blood cells, Fe absorption and prevents anemia due to the rich content of folic acid and vitamin c content of folic acid in the fruit of the Strawberry as much as 17.7 mg of Vitamin C and as many as 60 mg in each 100 grams. (Padmiarso, 2011).

The theory of Padmiarso (2011) stating that Strawberry fruit contain minerals that are needed by the body such as Fe, magnesium and calcium/potassium where Fe is very important to prevent anemia. The theory of such padmiarso in accordance with the results of this research the content of Fe in strawberries 0,8 mg in 100 g fruit strawberries. The effect of Fe with the levels of hemoglobin can be explained that the Fe is the main component that play an important role in the formation of the blood (hemopoiesis) the synthesis of hemoglobin. If Fe deposits enough then the need for red blood cell formation in the bone will always be met. Fe contained in Strawberry when consumed sufficient Fe needs in the process of hemopoiesis.

Folic acid content in strawberry fruits as much as 17,7 mg in each 100 gr fruit strawberries too many plays in the formation of red blood cells. Folic acid that serves as a component of Coenzyme flavor-a protein that plays an important role in the regeneration of energy to the body through the process of cellular respiration, optimizes the absorption of iron/function where it is stored in the body and a small portion is stored in the liver and kidneys. On kidney cells located between the renal tubule (peritubular cells interstitial) produced red blood cells.

The research was also supported by previous research carried out by Rina Marlina under the title influence awarding of Strawberry juice against normal blood pressure in adult women in Bandung in 2007. The results of the research there is a relationship between the granting of Strawberry juice against normal blood pressure in adult women.

In this study there were respondents who experienced a decrease in hemoglobin levels, this indicates that the hemoglobin levels can be affected by several factors, such as diet or intake of nutrients that are consumed daily, activities undertaken, psychological on pregnant women and also disorders of the hemopiesis (the process of the formation of the blood). The decline in levels of haemoglobin can also be influenced by the ignorance of the pregnant women in food processing. The food is too often heated and cooked for too long will reduce the amount of nutrients found in vegetables.

CONCLUSION

Almost all respondents after consuming strawberry juice is have increase level of hemoglobin. There so good to prevent anemia. There is a effect Of Consumption Strawberry Juice Against Level Of Haemoglobin In Third Trimester Of Pregnant Woman in Balowerti Public Health Center at Kediri city in 2016.

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