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The Effect of Giving Super Red Dragon Fruit (Hylocereus Costarisensis) on Increasing Hemoglobin Levels Preparing for Preconception in Prospective Brides

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ABSTRACT

Anemia is the biggest public health problem in the world, especially for women of childbearing age. Anemia plays a role in increasing the prevalence of maternal mortality and morbidity and for infants it can increase the risk of infant morbidity and mortality as well as LBW. Dragon fruit contains iron, antioxidants and folates in abundance and can help in the formation of red blood cells, preventing anemia and increasing hemoglobin levels. The aim of this is to determine the effect of giving dragon fruit on hemoglobin levels in preparing for preconception in prospective brides and grooms. The design used in this research was pre-experimental one group pretest-posttest design. The population in this study were prospective brides and grooms who experienced anemia at the Ngadiluwih Community Health Center, Kediri Regency. A sample of 16 respondents was taken using an incidental sampling technique. The instruments used were observation sheets, HB, dragon fruit. This data analysis uses the Wilcoxson Signed Rank Test analysis. The results of the analysis before giving dragon fruit were 8.8 gr%/dl and after giving dragon fruit it was 11.60%/dl. Based on the Wilcoxon test, a significant value (p value) = 0.001 (< α= 0.05) was obtained, so it can be concluded that H0 is rejected and H1 is accepted, so there is an effect of giving super red dragon fruit on hemoglobin levels in preparing for preconception in prospective brides.

Keywords: anemia, dragon fruit, prospective brides

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BACKGROUND

Preconception or pre-pregnancy is an important examination in helping couples to have a healthy pregnancy and a healthy baby. Therefore, preconception is provided for women who are still productive and still have an active sexual life with their male partner (Fauzia et al, 2012).

Anemia is the biggest public health problem in the world, especially for women of childbearing age (WUS). Anemia is a condition where the hemoglobin (Hb) or hematocrit concentration is low based on the threshold value caused by low production of red blood cells (erythrocytes) and Hb, increased erythrocyte damage or excessive blood loss. Anemia in WUS is known to have a negative impact on the health of the mother and baby. Anemia plays a role in increasing the prevalence of maternal mortality and morbidity and for infants it can increase the risk of infant morbidity and mortality as well as LBW (Fatmah, 2016).

Data from the World Health Organization (WHO), anemia in non-pregnant WUS is defined if the hemoglobin level is less than 12gr%. The prevalence of anemia in non-pregnant WUS in the world was still quite high in 2018 at 30.2%, while the global nutrition target by 2025 could reduce anemia in WUS by 50%. Based on 2019 riskedas data, the prevalence of anemia in Indonesia is still quite high. Of pregnant women, namely 48.9%, most of whom are women aged 15 – 24 years. In addition, the prevalence of anemia in women of childbearing age in East Java showed an increase from 23.40% to 25.12% in 2019 (Dieny, et al. 2019).

So that anemia that occurs in Catin will be at high risk of experiencing anemia in pregnancy which will have a negative impact on the condition of growth and development of the fetus, and has the potential to cause complications in pregnancy and childbirth, and can even cause death of newborns and mothers (Ministry of Health of the Republic of Indonesia, 2020).

Prevention and treatment of anemia in preconception must be addressed appropriately, namely not only by consuming Fe tablets but also the need for iron intake in the food consumed by pregnant women, which is found in food ingredients including red meat, liver, fish, cereal, eggs, milk, green vegetables, fruit and nuts. One fruit that contains high levels of iron and vitamin C is dragon fruit. Dragon fruit contains iron which is useful for increasing blood cells, vitamin B1 which is useful for preventing fever in the body, and vitamin B2 which is useful for increasing appetite. Of the several types of dragon fruit, purplish red dragon fruit (Hylocereus Polyrhizus) is the most popular fruit. widely consumed in society. According to previous research results, consuming dragon fruit can help increase the amount of iron in the blood. The iron content in dragon fruit is higher than pears which contain 0.2 mg of iron and 6 mg of vitamin C per 100 grams, while apples have 0.1 mg of iron and 6 vitamin C per 100 grams. 100 grams of dragon fruit (Hylocereus Polyrhizus) contains nutritional value of 82.5-83.0 g water, 0.16-0.23 g protein, 0.21-0.61 g fat, 0.70-0.90 g fiber, 6.30-8.80 mg calcium, 30.2-31.6 mg phosphorus, 0.55-0.65 mg iron, 8.00-9.00 mg vitamin C. This iron will be converted into cells red blood, so it is useful for pregnant women who tend to experience anemia (Retno Rini, et all, 2017).

From the above background, researchers are interested in conducting research on the effect of giving Super Red Dragon Fruit (Hylocereus Costarisensis) on increasing hemoglobin levels in preparing for preconception in prospective brides.

METHODS

This research design is a pre-experimental one group pretest-posttest design. The independent variable in this study was the provision of Super Red Dragon Fruit (Hylocereus Costarisensis). The dependent variable in this research is increasing hemoglobin levels in preparing for preconception in prospective brides and grooms. The research instrument is an observation sheet.

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The population in this study were prospective brides and grooms who experienced anemia. A sample of 16 respondents was taken using incidental sampling technique.

At the research stage, prospective bride and groom respondents filled in the questionnaire sheet and carried out the treatment using HB touch. Then give dragon fruit for 2 weeks in 1 day 1 x 24 hours by giving 100 grams. After finishing giving the dragon fruit, the researcher conducted a post-test on the respondents by making observations. Statistical tests for both variables used the Wilcoxon test.

RESULTS

Characteristics of Respondents

Data from the following research results describe the distribution and characteristics of respondents from each group including age, education and occupation which are presented in the following table.

Table 1. Characteristics of Respondents

Characteristics of Respondents	Giving super red dragon fruit	
	n	**%**
Age		
<20 year	4	26,7%
20-35 year	9	53,3%
>35 year	3	20,0%
Total	**16**	**100%**
Education		
Basic	10	60,0%
Intermediate	6	40.0%
High	0	0%
Total	**36**	**100%**
Pekerjaan		
Not working	9	53.3%
Working	7	46,7%
Total	**16**	**100%**

Based on table 1, Based on data on the characteristics of respondents, it is known that the majority of respondents are aged 20-35 years, 9 people (53%), and regarding education, almost all respondents have basic education, 10 people (60.0%), for work, the majority 9 people (53%) did not work.

Analysis based on the hemoglobin levels of the bride before consuming super red dragon fruit

The data below describes the hemoglobin levels of the prospective bride before consuming super red dragon fruit. These results are presented in table form as follows:

Table 2. Hemoglobin levels of the bride before being given Super Red Dragon Fruit

Variable	Mean	Median	Modus	SD	SE	P Value	N
Hemoglobin levels before consuming dragon fruit	8,80	9,00	10	0,1082	0,1121	0,000	16

Based on table 2, it can be interpreted that the average hemoglobin level before consuming dragon fruit is 8,80 gr/dl.

Analysis based on the hemoglobin levels of the bride after consuming super red dragon fruit

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The data below describes the hemoglobin levels of the prospective bride after consuming super red dragon fruit. These results are presented in table form as follows:

Table 3. Hemoglobin levels of the bride after being given Super Red Dragon Fruit

Variable	Mean	Median	Modus	SD	SE	P Value	N
Hemoglobin levels after consuming dragon fruit	11,60	12,00	12	0,1404	0,1121	0,000	16

Based on table 3, it can be interpreted that the average hemoglobin level after consuming dragon fruit is 11.60 gr/dl.

Analysis of the hemoglobin levels of the bride and groom before and after being given super red dragon fruit

To determine the effect of giving super red dragon fruit (hylocereus costarisensis) on increasing hemoglobin levels in preparing for preconception in prospective brides, statistical testing was carried out using the Wilcoxson Signed Rank Test.

Table 4. Results of Differences in the Effectiveness of Peer Education and Audio Visual Methods

up to hemoglobin	before	after	Total
Mean	8,80	11,60	20.4
Median	9,00	12,00	21
Modus	10	12	22
SD	0,1082	0,1404	0.2486
SE	0,1121	0,1121	0.2242
Total	28.0203	35.8525	63.8728
P value : 0,001		α:0,05	N : 16
Positif : 16	Negatif : 0		Ties : 0

Table 4 showed that it was interpreted that the highest increase in Hb levels before being given dragon fruit was 8.80. and after giving dragon fruit the Hb level was 11.60. The difference between Hb levels before and after consuming dragon fruit increased by 2.8. Positive Rank, namely 16, which means that the 16 respondents experienced an increase in hemoglobin levels after being given dragon fruit. Negative Rank was 0, namely there was no decrease in levels. hemoglobin after being given dragon fruit, Ties is 0, which means it shows different results and has increased from before being given dragon fruit, in essence it does not just remain at the HB level before it was given.

The research results obtained from analysis using the Wilcoxon Signed Ranks Test statistical test showed a significant value = 0.001, meaning $p<0.05$, so H1 was accepted, meaning that there was an effect of dragon fruit juice on increasing hemoglobin in the prospective bride and groom.

DISCUSSION

Hemoglobin levels before giving Super Red Dragon Fruit to prospective brides with anemia

Hemoglobin levels are not a sensitive indicator to see a person's iron status, because a decrease in hemoglobin levels is an advanced stage of iron deficiency. Three stages in the development of iron deficiency, the first stage occurs when iron stores are reduced as seen by

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a decrease in plasma ferritin to 12 u/l. This is compensated by iron absorption which can be seen from an increase in total iron binding ability. At this stage, no functional changes are visible in the body. The second stage is seen by the depletion of iron stores, a decrease in transferrin saturation of less than 16% in adults, an increase in protoporphin, which is the precursor form of heme. At this stage the hemoglobin in the blood is still at 95% of the normal value. In the third stage, iron deficiency anemia occurs, where total hemoglobin levels fall below normal values (Adriani 2013).

Based on the research results, anemia in prospective brides and grooms. Judging from age characteristics, it shows that the majority of respondents were 20-35 years old, 9 people (53%). In general, the mother's age is an indicator of maturity in making decisions that refer to every experience (Mubarak, 2017). Age is very influential because age is one of the factors that shape thinking patterns and young people usually assume that anemia in prospective brides and grooms in preparation for pregnancy is a normal thing that is not harmful to the fetus they are carrying later.

Hemoglobin levels after giving Super Red Dragon Fruit to prospective brides with anemia.

Changes in anemia sufferers, especially brides-to-be, after being given super red dragon fruit juice because dragon fruit contains a lot of vitamin C, as well as folates, carotene and fiber, which are very good for the preconception period. Folates are needed for the formation of red blood cells (Almatsier, 2011).

The results of research conducted in the Ngadiluwih Community Health Center work area showed that almost all respondents experienced an increase in hemoglobin levels. This is because the respondents followed the procedures given by the researcher well, the respondents were able to properly apply the Health Education that had been given by the researcher before administering dragon fruit juice, they were able to regulate their diet, implement healthy living behavior, and the respondents paid more attention to their health condition. . So the results of the study showed that respondents experienced increased hemoglobin.

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Based on the results of statistical tests, a positive rank was obtained: 16, meaning there was an increase in 16 respondents who experienced an increase in hemoglobin levels. The Wilcoxon Signed Ranks Test shows that the average value before being given dragon fruit juice was 8.80 and the standard deviation value was 1.082, while the average value after being given dragon fruit juice was 11.60 and the standard deviation value was 1.404. The research results obtained from analysis using the Wilcoxon Signed Ranks Test statistical test showed a significant value = 0.001, meaning $p<0.05$, so H1 was accepted, meaning there was an influence of dragon fruit juice on increasing hemoglobin in the prospective bride.

The preconception period is a critical period in achieving a healthy life, especially for couples who are starting a household. Preconception consists of two words, namely pre and conception. Pra means before and conception means the meeting of the ovum and sperm cells so that fertilization occurs. Literally preconception is the period before fertilization occurs, namely the meeting of sperm cells with the ovum. The preconception period ranges from three months to one year before conception, but ideally should include the time when the ovum and sperm mature, namely 100 days before conception. Nutritional status in the period of three to six months during the preconception period is a determinant of the condition of the baby to be born. Preconception women are assumed to be adult women or women of childbearing age (WUS) who are ready to become mothers. During the preconception period, the nutritional needs of WUS are certainly different from those of teenagers, children and the elderly. The prerequisite for perfect nutrition during the preconception period is the key to the

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birth of a normal and healthy baby (Susilowati, et al. 2016).

At first glance, Hylocereus costaricensis looks like the fruit of Hylocereus polyrhizus. However, the color of the fruit flesh is redder. That is why this plant is called super red flesh dragon fruit.

Dragon fruit is rich in vitamin C, as well as folates, carotene and fiber, folic acid, vitamin B, potassium, omega 9, vitamin E, vitamin A. Folates are necessary for the formation of red blood cells. The content contained in dragon fruit is useful as an anti-anemic or can increase Hb levels in the blood. If there is a deficiency of one of these substances, it will cause anemia. The iron contained in dragon fruit plays a role in the body in forming hemoglobin and preventing anemia. The process that occurs in the body is that iron carries oxygen throughout the body and iron absorption occurs mainly in the small intestine. If the body has excess iron, it will be reduced, otherwise if the body lacks iron, absorption can be increased up to 5 times. One source of iron that is useful for increasing Hb levels is dragon fruit. (Fatimah St, 2011).

Based on theory and research, it shows that many factors influence the occurrence of anemia in. Each factor can have both good and bad impacts on the mother and fetus. Giving dragon fruit can be an alternative to support the increase in hemoglobin levels in pregnant women in addition to consuming iron tablets. So consuming dragon fruit is not the only thing that can increase hemoglobin levels, because the main thing that really influences the success of increasing HB levels is the mother's initial awareness. The mother is aware that anemia during pregnancy has a bad impact on herself and the fetus, so consuming iron tablets and foods that can have a good effect on her, such as super red dragon fruit, will automatically be consumed by the mother.

CONCLUSION

Dragon fruit juice can be an alternative natural medicine for increasing hemoglobin during the preconception period, by consuming dragon fruit juice until the hemoglobin is more than 11 gr/dl. so it can help in preventing anemia.

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