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Red Guava (*Psidium Guajava*) *Juice* as an Alternative to Increase Hb Levels of Anemia in Pregnant Women : *Literature Review*

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Abstract

Anemia in pregnant women can increase the risk of premature birth, maternal and child mortality, and infectious diseases. Iron deficiency anemia in the mother can affect the growth and development of the fetus/infant during pregnancy and afterward. The prevalence of anemia in pregnant women is estimated to be 44.2% in Indonesia. Based on the results of the 2018 survey, data on the proportion of anemia in pregnant women increased from 37.1% (2013) to 48.9% (2018). This study aimed To analyze the benefits of red guava juice (*Psidium Guajava*) as an alternative in increasing HB levels in anemic pregnant women. This study uses the Literature Review method by using several sources selected based on predetermined criteria . The result is red guava juice (*Psidium guajava*) has an effect on increasing HB levels in pregnant women with anemia. Giving red guava juice accompanied by consuming Fe tablets regularly as an alternative to increasesing the Hb levels in pregnant women. The increase in hb levels of anemic pregnant women who consumed red guava juice for 7-14 days accompanied by consuming Fe tablets increased with an interval of 0.85-3.25gr/dl or an average of 1.893 gr/dl .

Keywords: Red guava, Anemia in pregnant women, *Psidium guajava*

Introduction

Maternal Mortality Rate (MMR) is one indicator to see the success of maternal health efforts. According to WHO (World Health Organization) in 2014 the MMR in the world was 289,000 people. The United States is 9,300 people, North Africa is 179,000, and Southeast Asia is 16,000. The maternal mortality rate in Indonesia in 2019 was 10,294 cases. In 2019, the most common causes of maternal death were bleeding (1,280 cases), hypertension in pregnancy (1,066 cases), infection (207 cases) (Ministry of Health, 2020).

The prevalence of anemia is high, evidenced by data from the World Health Organization World Health Organization (WHO) in 2016, the prevalence of anemia among pregnant women is 40.1 %. The Prevalence of anemia among pregnant women is expected in Indonesia is 44 , 2 %. Based on the results of 2018 survey data obtained Riskesdas proportion of anemia in pregnant women has increased from 37.1 % (2013) to 48.9% (2018).

Maternal Mortality in South Kalimantan in 2019 reached 589 cases, while maternal mortality rate in Banjarmasin City in 2019 recorded 11 cases. The main causes of death are bleeding, preeclampsia/eclampsia, complications due to abortion, infection and childbirth

complications, while indirect causes of maternal death are cancer, kidney, heart, tuberculosis and other diseases suffered by the mother (Ministry of Health, 2020).

Anemia in pregnant women can increase the risk of premature birth, maternal and child mortality, and infectious diseases. Iron deficiency anemia in the mother can affect the growth and development of the fetus/infant during pregnancy and afterward. Riskesdas 2018 states that in Indonesia by 48.9 % of pregnant women are anemic. A total of 84.6 % of anemia in pregnant women occur in the age group 15-24 years. To prevent anemia, every pregnant woman is expected to get a blood-added tablet (TTD) of at least 90 tablets during pregnancy (Ministry of Health of the Republic of Indonesia, 2020) .

Conditions that occur in the lack of use of red guava, currently not all people, especially pregnant women know about the benefits of red guava, based on this, the researchers want to research further based on literature reviews both nationally and internationally, so that people do not hesitate to consume guava red seeds.

The purpose of this study was to analyze the benefits of red guava juice (*Psidium Guajava*) as an alternative in increasing HB levels in anemic pregnant women based on a literature review.

Material and Methods

The method of research that is used in this study is a literature review. The literature review method is a form of research carried out through searching by reading various sources, both books, journals, and other publications related to the research topic, to answer exiting issues or problems. Sources of literature are used in research this is google scholar and Pubmed using said key Guava and Anemia in Pregnant Women, Psidium Guajava. Searches were carried out from the month of March 2021 until July 2021.

Results and Discussion

The process of collecting literature is done by selecting the number of journals or articles from 41 kind of literature to 10 literatures. The search process is carried out through an indexed electronic-based such as Google Scholar (n=9), and Pubmed (n:1). It was found that there was an effect of giving red guava juice on increasing HB levels of anemic pregnant women.

1. **The content of red guava juice on the increase in HB levels in pregnant women**

   Based on the results of a literature review regarding the content of red guava juice which can increase HB levels in pregnant women who have anemia. According to the journal Agustina, Rina (2020) Red guava juice is very rich in vitamin C, iron and several types of minerals that are able to ward off various types of diseases and maintain body fitness. Vitamin C contained in guava is able to increase the absorption of iron in the stomach which will then increase hemoglobin levels in the blood. This is in line with the journal Fitriani (2017) that guava contains twice as much vitamin C as oranges and the vitamin C contained in guava increases the absorption of iron by the body so that the body can absorb iron optimally to increase HB levels in the body.

   Further research was conducted by Yantina , Yuli (2018) red guava fruit contains iron, vitamin C and minerals. The mineral content in red guava fruit can overcome anemia sufferers because red guava fruit also contains mineral substances that can facilitate the formation of

hemoglobin in red blood cells. This research is in line with Melissa, Dina (2021) guava is a high source of Vitamin C compared to other fruits and the minerals contained in guava can overcome anemia because of mineral substances that can facilitate the process of forming hemoglobin in red blood cells.

From some of the research results above, in accordance with Noviana's theory (2018), giving guava juice to anemic pregnant women affects the increase in hemoglobin levels due to substances contained in guava such as iron, vitamin C and minerals. Guava juice is a fruit that increases HB levels because it contains minerals that can accelerate the process of forming red blood cells. Consuming guava fruit as a source of vitamin C can help increase iron absorption, the high vitamin C content in guava can be used by pregnant women for the formation of red blood cells. Iron is a mineral needed to carry oxygen throughout the body, lack of iron in the body can make a person experience a decrease in endurance and often feel lethargic which is one of the causes of anemia.

2. Benefits After Consuming Red Guava Juice with Increased HB Levels for Pregnant Women

Based on research conducted by (Agustina et al., 2020) stated that giving red guava juice accompanied by Fe tablets to pregnant women with anemia obtained results before being given Fe tablets and red guava juice obtained an average hemoglobin level of 10 ,16gr% and after being given Fe tablets and red guava juice for 15 days, the average value of hemoglobin levels was 11.01gr%. This is in line with research conducted by (Yantina, 2018) , pregnant women who experience anemia with HB levels of 8.26gr% after being given 250 ml of red guava juice for 7 days experienced an increase in HB of 11.51gr%.

Subsequent research conducted by (Herdiani et al., 2019) stated that hemoglobin levels in anemic pregnant women before consuming guava juice and Fe tablets with hemoglobin levels of 9 gr% and after being given guava juice and Fe tablets increased to 11.58gr. %. This study is in line with (Melissa et al., 2021) , the average hb level of pregnant women before being given guava juice and fe tablets was 9.6 gr%, after being given guava juice and fe tablets, hemoglobin levels increased by 11.3 gr%.

Subsequent research conducted by Fitriani et al., 2017 found that before giving guava juice, 6 respondents had hb levels between 9-10.9 g% or mild anemia and after giving guava juice 250 ml per day for 7 days in these 6 respondents had an increase in Hb levels 11 gr%. This study is in line with (Khairussyifa et al., 2020) which states that the average hb level of pregnant women before being given guava juice is 9 g% and after being given guava juice for 7 days the average hb level in pregnant women increases. by 11 gr%.

According to (Wahyuntari & Wahtini, 2020) giving guava juice accompanied by Fe tablets to pregnant women with anemia, the results were that it could increase the hemoglobin level from 9.83 g/dl to 11.24 g/dl after giving 200 ml/day for 2 weeks. . This study is in line with (Yati et al., 2020) which showed that the hemoglobin level in pregnant women before consuming guava juice was 11.26 g/dl and after consuming guava juice 200 ml/day for 14 days and Fe tablets. Hb rose to 12.61gr/dl .

Table.4.2. Changes in HB

No	Before consuming red guava juice	after consuming red guava juice	Increase in g/dl	Giving Time

1.	10.16 gr/dl	11.01 gr/dl	0.85 gr/dl	For 14 days
2.	8.26 gr/dl	11.51 gr/dl	3.25 gr/dl	250 ml for 7 days
3.	9 gr/dl	11.58 gr/dl	2.58 gr/dl	-
4.	9.6 gr/dl	11.3 g/dl	1.7 gr/dl	-
5.	9-10.9 g/dl	11 gr/dl	0.1-2 gr/dl	250 ml/day for 7 days
6.	9 gr/dl	11 gr/dl	2 gr/dl	For 7 days
7.	9.83 gr/dl	11.24 gr/dl	1.41 gr/dl	200 ml/day for 14 days
8.	11.26 gr/dl	12.61 gr/dl	1.35 gr/dl	200 ml/day for 14 days
9.	10.109 gr/dl	11.182 gr/dl	1.073 gr/dl	150 gr fruit for 20 days
10.	11 gr/dl	13.69 gr/dl	2.69 gr/dl	-

That based on these results it is known that there is an increase of 0.85 g/dl in the administration of 14 days and there is an increase of 3.25 g/dl at the time of administration of 7 days. This is the concern of researchers that several factors can lead to an increase in hb levels in addition to consuming red guava juice. This increase can be supported by consuming iron tablets, foods rich in iron, fruits, and foods high in vitamins B9 and B12 such as green beans and seaweed (Rimawati et al., 2018) .

In the results of the literature review, there are the same content and benefits in red guava and white guava, one of which is that it can increase the hemoglobin level of pregnant women with anemia. but the difference between the two is only in texture and color. The red guava has a smoother and softer flesh texture, while the white guava has a harder pulp. Based on the literature reviewed, it is also known that there is 1 journal which states that to prevent anemia or a decrease in HB levels, namely by consuming foods or fruits that depend on iron and Vitamin C such as red guava, fruits in iron content help to increase levels of iron. hemoglobin in the mother by consuming red guava, with increased HB levels will be able to improve the quality of the mother's pregnancy. Mothers do not get tired easily and can avoid the risk of bleeding during childbirth. This will form the basis for further research comparing red guava and white guava and studying more about preventing anemia by consuming red guava.

Conclusion

Based on the results of a study conducted with 10 journals, the researchers stated that giving red guava juice (*Psidium guajava*) affected increasing Hb levels in pregnant women with anemia. Giving red guava juice 200-250 ml per day for 7-14 days and accompanied by consuming Fe tablets regularly as an alternative to increase Hb levels in anemic pregnant women compared to pregnant women who only consume Fe tablets. The increase in hb levels of anemic pregnant women who consumed red guava juice for 7-14 days increased with an interval of 0.85-3.25gr/dl or with an average of 1.893 gr/dl.

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Declaration of Interest Statement

The author declares no conflict of interest in preparing this article.

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