



## The Effect of Green Coconut(Cocos Nucifera) Water Consumption on Hemoglobin (Hb) Increase in Pregnant Women in Trimester I And II in the Work Area of Air Salobar Health Center Ambon

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**Annotation: Background:** Hemoglobin is a protein which rich in iron and has affinity for oxygen by forming oxyhemoglobin in red blood cells. The decrease of hemoglobin levels occurs gradually from the first trimester, then reaches its minimum level at the end of the second trimester and tends to increase in the third trimester. **Objective:** This study aims to determine the effect of green coconut water consumption (Cocos nucifera) on the increase of hemoglobin (Hb) in pregnant women in the first and second trimesters in the Air Salobar Health Center Work Area, Ambon City in 2021. **Methods:** This study is a quantitative study using quasy Experiment Design which aims to measure the effect of green coconut water (Cocos nucifera) consumption on increasing hemoglobin in first and second trimester pregnant women using the one group pre test-post test design method. The sample of this study was 12 respondents with the sampling technique used was total sampling. The instrument in this study was an observation sheet. **Results:** The results of the study using the paired T-test showed an average increase in hemoglobin levels of 0.57% after giving 500 ml of green coconut water (Cocos nucifera) per day within one week to 12 respondents seen from the significant value or p- value = 0.000 where it is said to have an effect if ( $p < 0.05$ ).

**Keywords:** Coconut Water, Pregnant Women, Hemoglobin.

**Conclusion:** Based on the results of the study, it was found that there was a significant effect on the average pre-test and post-test Hb levels of the intervention. It is hoped that the results of the study can be used as a preventive and curative effort for pregnant women with low Hb (<11 g/dl).

## INTRODUCTION

Hemoglobin is an iron-rich protein that has an affinity for oxygen by forming oxyhemoglobin in red blood cells. Hemoglobin is the pigment that gives red color in bloods. (Harveni Mutia Rahmi, 2019)

The decrease in hemoglobin levels occurs gradually from the first trimester, then reaches its minimum limit at the end of the second trimester and tends to increase in the third trimester (Cakmak et al., 2018). The diagnosis of anemia is established when the Hb level in pregnant women in the first trimester is < 11 g/dl, in the second trimester < 10.5 g / dl and in the third trimester < 10 g / dl. (Ana Zumrotun Nisak, 2018)

Based on the data of World Health Organization, the number of populations experiencing anemia in the worldwide is 83.2% from 114 countries, while for Southeast Asia it is 97.8% and Indonesia is fourth ranks anemia in pregnant along with Thailand at 30%, this figure is higher from Malaysia and Singapore, which is 27% and 28% (Romlah, 2020)

The initial data was collected on 21 June 2021 at the Air Salobar Health Center Ambon, the number of pregnant women with anemia in 2020 was 30 people, the average incidence of anemia in pregnant women occurred in the second trimester, while in 2021 from the month of From January to June the number of pregnant women with anemia was 12 people, which occurred in the first trimester were 5 pregnant women, and in the second trimester are 7 pregnant women.

Based on the results of an interview with a pregnant woman with low Hb at the *Air Slobber* health center in Ambon city, she said that in dealing with her low Hb level, she had been given blood-adding tablets by the midwife at the Air Slobber health center in Ambon city, but was lazy to take the drug. The reason is because when taking the blood-added tablet, the mother often feels nauseous and vomits so that the mother does not feel comfortable.

Management low Hb levels, it can also be done by consuming phytic acid,

oxalic acid, and tannins which are widely found in cereals, vegetables, nuts, and tea. To increase iron absorption, it is recommended to consume more vitamin C and animal protein and also foods that can increase hemoglobin such as brown rice, pomegranate, spinach, avocado, green coconut water and so on. (Sri Ayu Arianti, 2020)

According to the description and background above, the researchers are interested in conducting research on the effect of consuming green coconut water (*Cocos nucifera*) on the increase in hemoglobin (Hb) in first and second trimester pregnant women in the *Air Salobar* health center work area, Ambon City.

## OBJECTIVE

This study aims to determine the effect of green coconut water (*Cocos nucifera*) on increasing hemoglobin levels in first and second trimester pregnant women in the *Air Salobar* Health Center Work Area, Ambon.

## METHOD

1. This research is a quantitative research with quasi-experimental research method with one group pretest-posttest design. The responden will be given green coconut water (*Cocos nucifera*) about 500 ml a days for seven days. This research was conducted on 20 – 27 September 2021 in the Work

Area of the *Air Salobar* Health Center, Ambon. The population in this study were all pregnant women in the first and second trimesters in the Air Salobar Health Center Work Area, Ambon City, the research sample was 12 pregnant women with a total of 5 people in the first trimester and the second trimester. as many as 7 pregnant women with low Hb (<11g/dl). Sampling in this study is using total sampling where the entire population is sampled.

## RESULTS

### 1. Characteristics of Respondents

**Table 1.** Distribution of Respondents by Age

Age	Frequenc y	(%)
19 – 25 y.o	3	25.0
26 – 30 y.o	9	75.0
Total	12	100.0

Based on table 1 above, the age distribution of pregnant women in the first and second trimesters is mostly at the age of 26-30 years with a total of 9 pregnant women (75.0%) and at least 3 people aged 19-25 years (25.0%).

**Table 2.** Distribution of Respondents Based on Last Education

Education	Frequency	(%)
High School	10	83.3
Bachelor	2	16.7
Total	12	100.0

Based on table 2 above, the distribution of the last education of pregnant women in the first and second trimesters, most of them have high school education with a total of 10 pregnant women (83.3%) and at least 2 people with bachelor (16.7%).

**Table 3.** Distribution of Respondents by Occupation.

Occupation	Frequency	(%)
Housewife	9	75.0
Entrepreneur	3	25.0
Total	12	100.0

Based on table 3 above, the distribution of work of pregnant women in the first and second trimesters is mostly without work or as housewives with a total of 9 pregnant women (75.0%) and at least 3 people working as self-employed workers (25.0 %).

**Table 4.** Distribution of pre-test Hb levels and post-test Hb levels

Hb Level	N	Mean	Median	Std. Deviation
<i>Pre-Test</i>	12	9.86	9.95	0.866
<i>Pos-Test</i>	12	10.43	10.65	0.773

Based on table 4 above, the distribution of the average Hb level of 12 pregnant women before treatment was 9.86 with a standard deviation of 0.866, while the average Hb level of 12 pregnant women after treatment was 10.43 with a standard deviation of 0.773.

**Tabel 5.** Analysis the Effect of Consumption of Green Coconut Water (*Cocos nucifera*) on the Increase of Hemoglobin in First and Second Trimester Pregnant Women in the Work Area of the *Air Salobar* Health Center, Ambon in 2021.

Hb Level	Mean	N	Sig
<i>Pre – test</i>	9.86	12	P = 0.000
<i>Post – test</i>	10.43	12	

Based on the data in table 5 above, the results of the paired t-test before and after giving green coconut water (*Cocos nucifera*) there is a difference in the average value before and after giving coconut water, for the pre-test 9.86 and for the average value heading – test is 10.43. The table above explains that the significant value of  $p = 0.000$  when compared to the degree of significance ( $p\text{-value} < 0.05$ ), it can be concluded that there is an effect of consuming green coconut water (*Cocos nucifera*) on increasing hemoglobin (Hb) levels in first trimester pregnant women. and II in the *Air Salobar* Health Center Work Area, Ambon City.

## DISCUSSION

### Hemoglobin Levels before Giving Coconut Water

The classification of Hb levels of pregnant women according to WHO is divided into 4 categories, that are normal Hb levels  $>11\text{ gr/dl}$ , and Hb levels abnormal if  $<11\text{ gr/dl}$  (Irdyanti, 2017).

According to the results of the study, it was found that the number of pregnant women with low hemoglobin levels ( $<11\text{ gr/dl}$ ) was 12 pregnant women who occurred in the first trimester as many as 5 people and in the second trimester as many as 7 people. The average value of Hb levels for pregnant women in the first and second trimesters before giving 500 ml of green coconut water (*Cocos nucifera*) is  $9.2\text{ g/dl} - 10.8\text{ g/dl}$ , if the Hb level is below  $11\text{ gr/dl}$  then it concluded that the Hb level is abnormal.

Based on the results of interviews with several pregnant women in the Work Area of the *Air Salobar* Health Center, the factors causing their low Hb levels are caused by their unhealthy lifestyle such as staying up late, not consuming fruit and vegetables and milk, but what is often consumed is like noodles, instant food, as well as other ready-to-eat foods and it is also rare to consume blood-added tablets that have been given by the midwife at the *Air Salobar* Health Center, Ambon City. Some of the reasons pregnant women do not take blood-added tablets are because the effect of consuming blood-added tablets makes pregnant women feel sick and vomits so that pregnant women do not feel comfortable, then some forget to take them and some have not because they still have symptoms of nausea and vomiting.

### Hemoglobin Levels after Giving Coconut Water

According to the results of the study, it was found that the hemoglobin level of pregnant women after giving green coconut water (*Cocos nucifera*) 500 ml a day for a week, the average hemoglobin level of pregnant women in the first and second trimesters increased from  $10.1\text{ gr/dl} - 11.2\text{ g/dl}$  or increase amount 0.57%.

The results of hemoglobin levels obtained after giving 500 ml of green coconut water (*Cocos nucifera*) a day for a week, from  $10.1\text{ gr/dl} - 11.2\text{ gr/dl}$ , only 4 of 12 pregnant women in the first trimester and II whose the hemoglobin is normal or  $>11\text{ gr/dl}$ . While the abnormal about 8 pregnant woman with hemoglobin levels  $<11\text{ g/dl}$ .

One of the results of a study conducted by Sri Ayu Arianti, et al (2020) about The Relationship Between Coconut Water Consumption With Increased Hemoglobin (Hb) in Post Partum Mothers at the Cikuncung Health Center, was also found that the average Hb value for post partum mothers who

did not Most of the consumption of coconut water did not increase, namely as much as 77.3% (34 people). Meanwhile, the hemoglobin in post partum mothers who consumed coconut water mostly increased by 86.4% (38 people). Chi Square calculation results with 95% confidence level and 5% error rate; it concluded that there is a relationship between coconut water consumption and an increase in hemoglobin as evidenced by the p-value (0.000) which is smaller than the value (0.05).

This study concluded that after giving 500 ml of green coconut water (*Cocos nucifera*) for a week have an effect on increasing Hb levels of pregnant women, even though it is only given for a week, but the results obtained have an effect on increasing Hb levels of pregnant women.

### **The Effect of Green Coconut Water (*Cocos nucifera*) on the Increase of Hemoglobin (Hb) in Pregnant Women in the First and Second Trimesters**

The results of the study using the paired t-test showed a significant effect of giving 500 ml of green coconut water (*Cocos nucifera*) a day on hemoglobin levels in pregnant women in the first and second trimesters for a week, which was indicated by the p value. = 0.000, where to see the level of influence of a data then the p value <0.05.

This study argues that after giving 500 ml of green coconut water once a day for a week, it affects the increase in hemoglobin levels of pregnant women in the first and second trimesters in the *Air Salobar* Health Center Work Area, Ambon, because according to the results of the study, the Hemoglobin levels of pregnant women in general abnormal or <11gr/dl, then after giving coconut water the Hb level of pregnant women increased, although only 4 out of 12 people had Hb levels increased to normal (>11gr/dl).

Hemoglobin is a very important component in maintaining the integrity of the body's circulatory system. Its main function is to regulate the exchange of O<sub>2</sub> and CO<sub>2</sub> in body tissues, and for transport O<sub>2</sub> from the lungs and then carrying it throughout the body tissues to be used as body fuel and carrying CO<sub>2</sub> from body tissues as a result of metabolism to the lungs for disposal. Hemoglobin also have a role in maintaining the normal shape of red blood cells (Harveni Mutia Rahmi, 2019).

This is in line with research conducted by Tapiana Sari Harahap, (2018) with the title The Effect of Coconut Water on Increased Hemoglobin (Hb) Levels in Second Trimester Pregnant Women In Nyalindung Village, Cugenang District, Cianjur Regency, the average value of hemoglobin levels of pregnant women is obtained. the second trimester before intervention was 8.6 g% or less than the normal limit of 10.5-12 g%. While the results of the average hemoglobin level of pregnant women in the second trimester after the intervention was 9.7 g% or an increase of 0.97 g% within 1 week. So it can be concluded that coconut water can affect the increase in hemoglobin levels, the increase given by coconut water on average hemoglobin levels is 0.97 gr % within one week as much as 500 cc per day.

This study assumes that the research conducted related to giving 500 ml of green coconut water (*Cocos nucifera*) per day for a period of 1 week has an effect on increasing hemoglobin (Hb) levels of pregnant women in the first and second trimesters, because after giving green coconut water (*Cocos nucifera*) as much as 500 ml, there was an increase in Hb levels of 0.57%. In this case, if green coconut water (*Cocos nucifera*) is given for a long period of time, it may have a fairly good effect in increasing the hemoglobin (Hb) level of pregnant women.

### **CONCLUSION**

Based on the results of the analysis and discussion, the following conclusions can be drawn:

1. The average Hb level of pregnant women in the first and second trimesters before giving green coconut water (*Cocos nucifera*) was 500 ml, which was 9.2 g/dl – 10.8 g/dl.



2. The average Hb level of pregnant women in the first and second trimesters after giving green coconut water (*Cocos nucifera*) as much as 500 ml per day for a period of 1 week, increased from 10.1gr/dl – 11.2 gr/dl or experienced an increase by 0.57%.
3. There is an effect of consumption of green coconut water (*Cocos nucifera*) on the increase in hemoglobin (Hb) in first and second trimester pregnant women, seen from the significant value of  $p = 0.000$

### Recommendation

Consumption of green coconut water can be used as a complementary effort to increase hemoglobin levels in pregnant women with anemia. For further research, it is advisable to conduct research with a comparison group and a longer intervention time.

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