



THE INCIDENCE OF ANEMIA IN PREGNANT WOMEN WHO CONSUME TEA

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ABSTRACT

Tea is the strong inhibitor to absorb non-heme iron because of tannin inside it. The Iron absorption is caused by inhibitor content and food trigger. Iron losing, nutrition factor, iron necessary increasing, and absorption disturbance in the food such as polifenol in the tea are one of iron deficiency anemia cause in pregnancy. The purpose of this research is for knowing what the relationship between tea drinking habit and iron deficiency anemia in woman pregnancy gestational age 37-40 weeks at Singosari Local Government Clinic, Malang Regency. The research design is using cross sectional analytic survey, Purposive Sample about 45 pregnant-woman respondents agree with inclusion criteria. The data collection is using questionnaire. Data analysis is using univariate and bivariate. The result of this research is acquired which the pregnant-woman who experience anemia about 51.1% with often tea consumption about 35.6%. The conclusion of this research has relationship between tea consumption and iron deficiency anemia about 0.574.

Keywords: Anemia, Deficiency Fe, Pregnancy, Tea consumption.

INTRODUCTION

Tea, coffee and cocoa are known as the three main beverages in the world. So far more than 50 countries in the world grow tea with people from more than 160 countries who have the habit of drinking tea. Tea is not only a part of the lifestyle of people all over the world but is also an important medium of international communication. Indonesia has won the *Innovative Idea Award 2009* from the *International Association of Antioxidant and Nutrition and Health* in Paris, France, as a producer of *High Catechin Tea Clones* or tea producers with the highest catechin content in the world. Currently, international tea cultural exchange activities have often been carried out.

However, there is an important thing to remember when consuming tea, that in the body the mechanism that occurs is not chemical, but rather a biochemical mechanism. At certain doses, the bioactive components can act as antioxidants, but at other doses, the same bioactive components can act as pro-oxidants.

Scientifically revealed with the discovery of a unique amino acid compound which later became known as *L-tea-hanine*. The tea leaves of *Camellia sinensis* variety *Assamica* are very rich in *L-Tehanine*, *tannin* can slow down the absorption of several important minerals, such as iron, calcium, and zinc (Ratna Somantri, 2011).

Loss of iron, nutritional factors, increased iron requirements, and impaired absorption of iron in foods such as *polyphenols* in tea are one of the causes of iron deficiency anemia in pregnancy (Luh Seri, 2018).

If the body does not have enough iron, the body cannot make extra blood. Many pregnant women experience iron deficiency in the second and third trimesters. When the body needs more iron than is available, it can potentially lead to anemia (Natalia, 2015).

The habit of drinking tea during pregnancy can inhibit iron absorption. If this happens continuously, it can result in low hemoglobin levels so that it will have an impact on the high prevalence of anemia in pregnant women. Based on this description, the researcher wanted to know the relationship between tea consumption and the incidence of iron deficiency anemia in pregnant women aged 37-40 weeks. The purpose of this study was to determine the relationship between tea drinking habits and the incidence of iron deficiency anemia in pregnant women.

METHOD

The research design used was an analytic survey through a *cross sectional*, with the independent variable being tea drinking habits and the dependent variable being iron deficiency anemia. The research location is Singosari Public Health Center, Malang Regency. The population is all UK 37-40 weeks pregnant women with a total of 83 people according to register data for new pregnant women in the cohort for the period September 2020 to March 2021. To get a sample according to the criteria that have been set, the researcher used *purposive sampling technique* and obtained a sample of 45 mothers. pregnant.

The instruments used for data collection are Screening Form, Check List and Cyanmeth for measuring Hb levels. Furthermore, data analysis was carried out through 2 stages, namely Univariate to describe the characteristics of each research variable and Bivariate aiming to determine the relationship between tea drinking frequency and Hemoglobin levels by stages, Proportion or percentage analysis by comparing the cross distribution between two variables, correlation test *Contingency coefficient C (coefficient of Cramer)*, the strength of the correlation (*Correlation Coefficient*) and the direction of the correlation.

RESULTS

Table 1. Classification of Parity of Respondents

Gravida	f (%)
Primigravida	16 (35.6)
Multigravida	29 (64.4)

Based on table 1 it can be seen that most of the respondents are multigravida (64.4%).

Table 2. Age of Last Child

Age of last child	f (%)
< 5 years	9 (31.03)
≥ 5 years	20 (68.97)

Based on table 2, it can be seen that respondents with the age of the last child ≥ 5 years were 68.97%.

Table 3. Habits of Pregnant Women in Consumption of Tea

Consumption of tea	f (%)
Often	29 (64.4)
Rarely	16 (35.6)

Based on table 3 it can be seen that most of the respondents have a habit of frequent tea consumption (64.4%).

Table 4. Anemia criteria based on hemoglobin

Hb levels	f (%)
Anemia	19 (70.4)
No anemia	8 (29.6)

Based on table 4 it can be seen that most of the respondents are anemic (70.4%).

Table 5. Adequacy of iron

Intake iron	f (%)
Less	23 (51.1)
Enough	22 (48.9)

Based on table 5 it can be seen that most of the respondents experienced less iron intake (51.1%).

Table 6. Cross tabulation of tea drinking habits with the incidence of anemia

Tea drinking habits	Incidence of anemia in pregnant women		Total
	Anemia	Not Anemia	
	f (%)	f (%)	
Often	21 (72.4)	8 (27.6)	29 (64.4)
Rarely	2 (12,5)	14 (87,5)	16 (35.6)
Total	23 (51.1)	22 (48,9)	45 (100)

From table 6 it is known that respondents who have a habit of drinking tea are in the frequent category (≥ 7 glasses). / week) experienced more anemia, namely 21 respondents (72.4%) and 8 respondents (27.6%) did not experience anemia. Furthermore, respondents who have the habit of drinking tea in the rare category (< 7 glasses / week) are more likely to not experience anemia, namely 14 respondents (87.5%) and 2 respondents (12.5%) experience anemia. Thus, it can be said that the majority of respondents who often consume tea experience anemia during their pregnancy.

Based on the results of the *Coefficient Contingency correlation test*, a significant value of 0.000 was obtained, less than a significant value of 0.05, which means that there is a significant relationship between the habit of consuming tea and the incidence of anemia. The resulting correlation value of 0.574 indicates the direction of the positive correlation with moderate strength. These results indicate that the more often the respondent consumes tea, the higher the incidence of anemia will be.

DISCUSSION

Tea Consumption

Lack of nutrient intake is the cause of anemia, besides that there are other factors, namely impaired absorption of iron from tea drinking habits. In this study, it is known that most of the frequency of drinking tea from 45 respondents is classified as frequent, namely 29 respondents (64.4%). From the results of the analysis stated that respondents consume tea more than 7 times a week. This may be influenced by the habit of consuming tea which has become a tradition, because the price of tea is also affordable and easy to obtain. Based on research by Besral (2007), that 49% of respondents have a habit of drinking tea every day so

they are at risk of suffering from anemia. According to Febrianti (2013), tea consumption is categorized as frequent (≥ 7 times/week) and rarely (< 7 times/week). The absorption of iron is strongly influenced by the combination of foods that are absorbed at the time of eating certain foods, especially strong tea which will have a significant inhibitory effect on iron absorption.

Hemoglobin Levels Hemoglobin

Is a protein in red blood cells that includes oxygen. Hemoglobin can be increased or decreased. Decreased hemoglobin levels in the blood can be caused by many factors including anemia, bleeding, nutrition, lack of iron intake, and hemodelution that occurs in physiological changes in pregnancy. The results showed that most of the hemoglobin levels of pregnant women < 11 g% were in the anemia category as many as 23 respondents (51.1%) compared to pregnant women who did not experience anemia 11 g%. This may be influenced by the lack of iron intake with an average of 51.1%, or as many as 23 respondents. In addition, tea consumption habits can also be a factor because the results of the study showed that pregnant women often consumed tea, as many as 29 respondents (64.4%). According to Besral (2007) that black tea can inhibit the absorption of non-heme iron by 79-94%, if consumed together. In addition, in tea there is a compound called tannin, this tannin can bind several metals such as iron, calcium, and aluminum, then form chemical complex bonds. Because in a continuously bound position, the iron and calcium compounds found in food are difficult to absorb by the body, causing a decrease in iron (Fe). (Priest, 2010)

Relationship between Tea Consumption and Hemoglobin Levels

The results showed that there was a relationship between tea consumption and the incidence of anemia in pregnant women in UK 37-40 weeks, with a value of sig = 0.000 less than 0.05 with a correlation value of 0.574 indicating that the direction of the correlation was positive in the moderate category. The average tea consumption was 7 times/week in the frequent category and most of the hemoglobin levels were < 11 g% in the anemia category.

In the study, pregnant women who consumed tea in the frequent category (≥ 7 glasses / week) experienced more anemia, as many as 21 respondents (72.4%) and only 8 respondents (27.6%) who did not experience anemia. This is in line with research conducted by Suni (2016), which shows that there is a relationship between tea drinking habits and hemoglobin levels in pregnant women. Tea has many health benefits, but tea is also known to inhibit iron absorption due to the content of tannins and polyphenols in tea that bind proteins. The habit that is often done by Indonesian people in general is to consume tea after every meal.

Drinking tea before/after/with meals can reduce iron absorption. This is in accordance with Farida's research (2007) which states that the habit of drinking tea \pm 3 hours before/after eating or between meals will reduce iron absorption by up to 86%. A cup of tea with a volume of 120 ml using a starfruit glass can reduce iron absorption by 75-85%.

CONCLUSION

Tea has many health benefits, but tea is also known to inhibit iron absorption. The results of the study stated that the habit of frequent consumption of tea is at risk of anemia in pregnant women. Therefore, if consumed too often, the body will lack iron which is used for the formation of red blood cells (hemoglobin), resulting in anemia. Anemia can be prevented by increasing the consumption of animal protein for the formation of blood hemoglobin, such as beef, chicken, and fish, as well as eating foods high in vitamin C to help absorb iron in the body. Vitamin C can help the absorption of non-heme iron by changing the form of ferric (Fe^{3+}) into ferrous (Fe^{2+}) which is easily absorbed. In addition, it can also be done by reducing the consumption of tea, coffee, and alcohol, as well as exercising regularly.

ABBREVIATIONS

No abbreviations

COMPETING INTEREST

No competing interest

AUTHORS' CONTRIBUTION

Didien Ika Setyarini performs data analysis and representation of results. while Rohana Mauludianah writes background and research methods and conducts data collection.

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REFERENCES

- Atikah Proverawati. 2018. *Anemia and Anemia of Pregnancy*. Yogyakarta: Nuha Medika
- Dartiwen Yati. 2019. *Midwifery Care in Pregnancy*. Yogyakarta: ANDI
- Malang District Health Office. 2021. *Malang Regency Health Profile*, 2020. Malang

- East Java. 2020. Malang Regency Health Profile 2020. http://www.depkes.go.id/resource/download/PROFIL_KES_PROVINSI_2020/19_Jatim_2020.pdf (accessed on 04 August 2020 at 21.00 WIB).
- Indonesian Ministry of Health. 2020. *Indonesia Health Profile 2020*. <http://www.depkes.go.id/resources/download/pusdatin/profil-kesehatan-Indonesia/profil-kesehatan-Indonesia-2020.pdf>. (accessed on 04 August 2020 at 21:10 WIB).
- Indonesian Ministry of Health. 2020. *Health Profile of East Java Province 2020*. <http://www.depkes.go.id/resources/download/pusdatin/profil-kesehatan-Indonesia/profil-kesehatan-Indonesia-2020.pdf>. (accessed on August 04, 2020 at 21:10 WIB)
- Luh Seri. 2018. *Pocket Book of Iron Deficiency Anemia During Pregnancy & Pregnancy*. Jakarta: EGC
- Natalia Erlina. 2015. *Blood Disorders*. Yogyakarta: Nuha Medika
- Notoatmodjo. 2010. *Health Research Methodology*. Jakarta: Rineka Cipta.
- Notoatmodjo. 2012. *Health Research Methodology*. Jakarta: Rineka Cipta.
- Nur, Wafi, et al. 2010. *Midwifery Documentation*. Yogyakarta: Fitramaya
- Prawirohardjo, Sarwono. 2014. *Midwifery Science*. Jakarta: Sarwono Prawirohardjo Bina Pustaka Foundation.
- Basic Health Research (Riskesdas). 2015. *Research and Development Health Ministry*
- Sugiyono. 2013. *Quantitative and Qualitative Approaches*. Bandung : Alfabeta
- Varney, Helen. 2014. *Textbook of Midwifery Care*. Jakarta : EGC
- William, Harry. 2010. *Obstetrics Pathology and Physiology of Childbirth*. Yogyakarta: ANDI and YEM