Relationship Of Sweet Potato Consumption Habits And Adherence To Taking Iron Tablets With The Incidence Of Anemia On Pregnant Women In The Work Area Of Sentani Health Center

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Abstract:

Background: Anemia is one of the nutritional disorder diseases that are still often found in Indonesia. Diet for pregnant women is food that has the amount of nutrients that are in accordance with the needs of the mother and fetus contained. The habit of consumption of sweet potatoes can be utilized in handling anemi because in 100 grams of sweet potatoes contain 4 mg of iron.

Research Objectives: This study aims to find out the relationship of sweet potato consumption habits and compliance with iron tablets with the incidence of anemia in pregnant women in the Sentani Health Center Work Area.

Research Method: Research design is cross sectional. The study sample was pregnant women in the second and third trimesters in the Sentani Health Center Work Area which numbered 60 pregnant women. Data collection instruments in the form of questionnaires about anemia in pregnancy, diet (sweet potato consumption habits) using food recall and compliance with taking iron tablets. Data analysis using chi square.

Results: The results showed the incidence of anemia in pregnant women in the Sentani Health Center Work Area as many as 30 pregnant women (50%). The habit of consumption of sweet potatoes in pregnant women in the Sentani Health Center Work Area as many as 40 pregnant women (66.7%). Compliance with taking iron tablets in pregnant women in the Sentani Health Center Work Area as many as 34 pregnant women (56.7%). There is a significant relationship between sweet potato consumption habits and the incidence of anemia in pregnant women in the Sentani Health Center Work Area (p-value = 0.00). There is a significant association between compliance with taking Fe tablets and the incidence of anemia of pregnant women in the Sentani Health Center Work Area (p-value = 0.019).

Keywords: Incidence of anemia, sweet potato consumption habits, adherence to taking iron tablets

I. INTRODUCTION

One of the nutritional disorder diseases that are still often found and is a major nutritional problem in Indonesia is anemia (Rasmaliah, 2014). The group that is prone to malnutrition is pregnant women, because during pregnancy there is an increase in nutritional needs to meet the needs of the mother and fetus. Increased nutritional needs are used for fetal growth, placenta, the addition of blood volume that will carry oxygen and food juices, helping the basal metabolic

process that occurs increases and enlarged mammae in preparation for breast milk (Patimah, 2017).

A worldwide health problem even in developing countries is anemia and an estimated 40% of the world's population suffers from anemia. Most anemia in pregnancy is caused by iron deficiency and acute bleeding. The prevalence of pregnant women who experience blood deficiency is 35-75% and increasing with the age of pregnancy (WHO, 2015).

The results of Basic Health Research (Riskesdas) in Indonesia in 2018 there were 48.9% of anemia pregnant women with almost the same proportion in urban areas 48.3% and rural (49.5%). Anemia in pregnant women in Indonesia is still a public health problem because the prevalence is more than 50% (Kemenkes RI, 2016). Anemia in pregnancy if not handled properly will be dangerous for the mother and fetus. Anemia in pregnant women can be at risk of post partum bleeding and premature labor (Proverawati and Asfuah, 2013).

Based on the performance report of the Papua Provincial Health Office in 2019, pregnant women who get Blood Added Tablets (TTD) 90 tablets during pregnancy are as many as 22,757 (29%) of 78,473 pregnant women (Dinkes Papua Province, 2019). While the data of pregnant women who get TTD in Jayapura Regency as much as 1,841 (57.7%) from 3,190 pregnant women (Jayapura District Health Office Profile, 2018).

Anemia in pregnancy can affect the antenatal period, including Low Birth Weight (BBLR), placenta previa, Amniotic Rupture Early (KPD), eclampsia, anemia during intranatal period that can occur intranatal bleeding so there is no energy to strain and in the postnatal period can occur subinvolution. In the second trimester and third trimester can harm pregnancy including premature partus, bleeding, low scoring apgar, asphyxia to death (Mansjoer, 2015).

The most common cause of anemia in pregnancy is due to iron deficiency. So it is important to check anemia at the first visit of pregnancy. Nutrients in pregnant women are needed in large quantities to meet the iron needs of the mother and the fetus it contains. Iron deficiency results in a deficiency of hemoglobin (Hb) due to iron as one of its forming elements. Hemoglobin serves as a much-needed oxygenal rank by cell metabolism (Sulistyawati, 2011). Factors that affect the occurrence of anemia in pregnancy are direct, indirect and basic factors. Direct factors consist of adherence to consuming iron, infectious diseases and bleeding. Indirect factors consist of Antenatal Care (ANC) visits, attitude, parity, age, pregnancy distance and diet. Basic factors consist of socioeconomic, knowledge, education and culture (Istiarti, 2012).

The prevention of anemia due to iron deficiency in pregnant women in Indonesia is carried out through a nutrition education program accompanied by the distribution of blood-added tablets as many as 90 tablets during pregnancy in the second trimester. The provision of blood-added tablets to pregnant women is one of the K4 services that must be given to pregnant women, namely as many as 90 Fe tablets (Regulation of the Minister of Health, 2019). Factors that affect the occurrence of anemia in pregnancy are direct, indirect and basic factors. Direct factors consist of compliance with iron consumption, infectious diseases, bleeding. Indirect factors consist of Antenatal Care (ANC) visits, attitude, parity,

pregnancy distance, age, diet. Basic factors consist of socioeconomic, knowledge, education, culture (Istiarti, 2012).

A healthy diet for pregnant women is a food that has a number of calories and nutrients that suit the needs such as carbohydrates, fats, proteins, vitamins and minerals and water (Manuaba, 2015). Some factors that affect diet are habits, pleasure, religion, culture and economy, so often diet affects nutritional status. If a balanced diet is not met it can result in anemia in pregnancy (Keisnawati, et al, 2015).

The habit of sweet potato consumption in the people in eastern Indonesia is not new. This is evidenced that until now, sweet potatoes are one of the alternative staple foods or even a companion food for some local communities and non-local communities domiciled in Papua. Sweet potatoes are food crops and tubers, the spread of sweet potatoes is very wide on several islands, one of which is Papua Island (Purbasari and Sumadji, 2018). This sweet potato is orange that contains betakaroten and there is also purple sweet potato contains antisianin compounds that are useful as antioxidants because it can absorb air pollution, oxidation toxins in the body and inhibit the clumping of blood cells (Ekoningtyas, ddk, 2016).

Sweet potatoes contain many vitamins and minerals such as Vitamin A, vitamin C, vitamin B1, vitamin B2, iron, calcium, folate and others. Because of its many content, so sweet potatoes can be used in the treatment of anemia in pregnant women because in 100 grams of sweet potatoes contain 4 mg of iron (Yuliani, et al, 2017).

Based on the results of pertiwi research (2019) stated that there is a relationship between diet and the incidence of anemia in pregnant women in the Working Area of Kerjo Health Center of Karanganyar Regency. The results of elisa Ulfiana et al (2019) also stated that there is an effect of sweet potato administration on increasing hemoglobin levels in pregnant women in Semarang City Genuk Health Center. The results of Erni Rosita's research (2017) also stated that efforts to fulfill iron in pregnant women in the Third Trimester with anemia one of them is by consuming sweet potatoes because they contain Fe and vitamin C. And also adherence to the consumption of iron tablets has a significant effect to prevent anemia in pregnant women in the Central Jakarta District Health Center with a significance value of 0.027 (Sugeng Triyani, 2016).

In Indonesia, iron tablet supplements are one way that has benefits to prevent anemia and has been given regularly to pregnant women both in puskesmas and in Posyandu. Compliance in taking iron tablets is measured by the accuracy of the number of tablets consumed, the accuracy of the way of consumption and the frequency of consumption per day. Iron tablet supplements given contain iron and equipped with folic acid that can prevent anemia due to folic acid deficiency (Afnita, 2014).

The initial data obtained in the Sentani Health Center Work Area is the number of pregnant women in 2021 as many as 1154 pregnant women. The number of pregnant women who experienced anemia in October - December 2021 as many as 355 pregnant women (30.76%). Pregnant women with anemia are referred for collaboration with doctors and nutrition teams in October - December 2021 as many as 65 pregnant women (PWS-KIA Puskesmas Sentani, 2021).

From the problem based on the data above, the author is interested in conducting research to find out the relationship of sweet potato consumption habits and compliance with iron tablets with the incidence of anemia in pregnant women in the Sentani Health Center Region.

II. RESEARCH METHODS

The type of research used is observational with a *cross sectional* approach. This study aims to find out the relationship of sweet potato eating habits with the incidence of anemia in pregnancy in the working area of Sentani Health Center. The research design *uses cross sectional* because the research data is done at the same time.

It was conducted in the Working Area of Sentani Health Center of Jayapura Regency and was carried out in February 2022. A population is a collection of subjects, variables, concepts or phenomena. We can examine each member of the population to find out the nature of the population concerned (Morissan, 2012). The population in this study is all pregnant women in the Sentani Health Center Work Area in January 2022, which is 60 pregnant women. A sample is a part of the number and characteristics possessed by the population that the sample taken must be completely representative or represent the population studied (Sugiyono, 2018). The sample in this study was pregnant women in the second trimester and trimester III in the Sentani Health Center Work Area which amounted to 60 pregnant women. Sampling technique is *total sampling* which is the entire number of pregnant women used as samples.

III. RESEARCH RESULTS

CHARACTERISTICS OF RESPONDENTS

Category	Frequency	Percentage (%)
Age		
< 20 years	13	21,7
20-35 years	41	68,3
≥ 35 years	6	10,0
Education		
SD	6	10,0
JUNIOR	8	13,3
SMA	35	58,3
College	11	18,3
Work		
Work	33	55,0
Not Working	27	45,0
Parity		
< 3 children	34	56,7
≥ 3 children	26	43,3
Gestational Age		
Trimester II	42	70,0
Trimester III	18	30,0
Incidence of anemia in pregnancy	30	50,0
Anemia	30	50,0

Category	Frequency	Percentage (%)
Not anemic		
Sweet Potato Consumption Habits	40	66,7
Always consumed	20	33,3
Not consumed		
Compliance with Taking Iron Tablets	34	56,7
Obedient	26	43,3
Disobedient		

Table 1: Distribution of Frequency characteristics of pregnant women in the Working Area of Sentani Health Center

Based on table 1 above it is known that of 60 pregnant women, most aged 20-35 years as many as 41 pregnant women (68.3%), most are high school educated as many as 35 pregnant women (58.3%), most work as many as 33 pregnant women (55.0%), most have children < 3 as many as 34 pregnant women (56.7%), most of the gestational age trismester II as many as 42 pregnant women (70.0%), On average, pregnant women have anemia as many as 30 pregnant women (50%), most have a habit of consuming sweet potatoes as many as 40 pregnant women (66.7%) and most pregnant women obediently take iron tablets as many as 34 pregnant women (56.7%).

Variable	Incidence of Anemia				Total		Sig	RP	95 CI	
	Anemia		Not anemic							
	n	%	n	%	n	%			Lower	Upper
Sweet potato consumption habits: 1. Not Consumed	17	85,0	3	15,0	20	100,0	0,000	11,769	2,919	47,458
2. Always Consume	13	32,5	27	67,5	40	100,0				
Compliance with taking iron tablets: 1. Disobedient	18	69,2	8	30,8	26	100,0	0,018	4,125	1,387	12,270
2. Obey	12	35,3	22	64,7	34	100,0				

Table 2: Relationship of Sweet Potato Consumption and Iron Tablet Compliance with The Incidence of Anemia in Pregnant Women in the Working Area of Sentani Health Center

Based on table 2 it is known that out of 60 pregnant women, in the variable consumption habits of sweet potatoes there are 27 pregnant women (67.5%) who have a habit of eating sweet potatoes that are not anemic. While in the compliance variable of taking iron tablets there were 22 pregnant women (64.7%) who were obedient to the consumption of iron tablets that were not anemic. The results of statistical tests on variables of sweet potato consumption habits against the incidence of anemia with *a p-value of* 0.000 stated that there was a significant association between sweet potato consumption habits and the incidence of anemia in pregnant women in the Sentani Health Center Work Area. *Prevalence ratio* in variables of sweet potato consumption habits against the incidence of anemia in pregnant women in the Sentani Health Center Work Area is RP = 11,769 so it can be concluded that pregnant women who have a habit of consuming sweet potatoes are at risk of 11,769 times not experiencing anemia. The results of statistical tests on the variables of compliance with iron tablets to the incidence of anemia with *a p-value of* 0.018 stated that there was a significant association between compliance with taking iron

tablets and the incidence of anemia in pregnant women in the Sentani Health Center Work Area. *Prevalence ratio* in the compliance variable of taking iron tablets to the incidence of anemia in pregnant women in the Sentani Health Center Work Area is RP = 4,125 so it can be concluded that pregnant women who obediently take iron tablets are at risk of 4,125 times not experiencing anemia.

IV. DISCUSSION

The results stated that there is a significant association between sweet potato consumption habits and the incidence of anemia in pregnant women in the Sentani Health Center Work Area (p-value 0.00). The results of this study are supported by several studies that belong to Pertiwi (2019) which states that there is a relationship between diet and the incidence of anemia in the Working Area of Kerjo Health Center of Karanganyar Regency. Ulfiana research (2019) which states there is an effect of sweet potato administration on increasing Hb levels in pregnant women in the third trimester. Farida research (2017) which also states that the consumption of sweet potatoes has an effect on increasing hemoglobin levels in pregnant women in the third trimester in the Genuk Health Center. Siti's research (2020) where in her research stated that there is an influence of consuming sweet potatoes on the hemoglobin levels of pregnant women in the third trimester at The South Lampung Branti Health Center.

Anemia is one of the most common health problems in developing countries in the world. The main causes are iron deficiency and bleeding, so anemia is one of the risk factors that cause maternal death. Maternal Mortality Rate (AKI) is one of the indicators of the success of health services in Indonesia. AKI due to anemia in Indonesia is 70% (Ministry of Health, 2018). The high incidence of anemia in pregnant women is actually a reflection of the socio-economic incompetence of the family or knowledge of pregnant women so that nutritional value cannot be met in accordance with health conditions (manuaba, 2015). Anemia in pregnancy can have a bad impact on the mother and fetus. If not treated early on, anemia can cause premature labor (Proverawati and Asfuah, 2013).

Anemia in pregnancy in general is iron deficiency. So that when pregnant women make an ANC visit then hemoglobin examination is important to do, because if at the time of the first anc visit the mother has anemia does not rule out the possibility at the following visits other anemia can occur again. This causes a pregnant woman to need to eat foods with high nutrients to meet the needs for herself and the fetus they contain. Iron deficiency can also be called hemoglobin deficiency (Hb) where iron is one of the hemoglobin-forming elements. Hemoglobin itself serves to transport oxygen needed in the process of cell metabolism (Sulistyawati, 2011).

Factors that affect the occurrence of anemia in pregnancy are direct, indirect and basic factors. Direct factors consist of compliance with iron consumption, infectious diseases, bleeding. Indirect factors consist of Antenatal Care (ANC) visits, attitude, parity, pregnancy distance, age, diet. Basic factors consist of socioeconomic, knowledge, education, culture (Istiarti, 2012).

A healthy diet for pregnant women is a food that has a number of calories and nutrients that suit the needs such as carbohydrates, fats, proteins, vitamins, minerals, fiber and water (Manuaba, 2015). Diet is also influenced by several things, namely habits, culture, pleasure, religion, economic and natural levels. If a healthy and balanced diet is not met in pregnant women then it tends to result in anemia in their pregnancy (Keisnawati, 2015). In this study, diet influenced by the habit of eating sweet potatoes is one of the factors associated with the incidence of anemia in pregnant women in the Sentani Health Center Work Area.

Purple sweet potatoes are a traditional food that has health benefits. Purple sweet potatoes have a nutritional and physiological composition that is good for the health of the body. Purple pigment in purple yam is useful as an antioxidant because it can absorb air pollution, toxins, oxidants in the body and inhibit the clumping of blood cells. Purple sweet potatoes contain anthocyanin compounds that serve as antioxidants, anticancers, antibacterials, as well as protection against liver, heart damage and stroke (Ekoningtyas, Triwiyatini and Nisa, 2016).

The opinion of these experts can be interpreted in general that diet is the way or behavior taken by a person or group of people in choosing, using food ingredients in daily food consumption which includes the type of food, the amount of food and the frequency of eating based on socio-cultural factors (Almatsier, 2014).

According to Hong in Kardjati in Arisman (2013), suggesting that, diet is a variety of information that provides an idea of the variety and amount of food eaten each day by a person or group of people in meeting nutritional needs every day. The amount and dose of a person's meal with others varies, depending on gender, physical activity and condition of a person.

The use of sweet potatoes can be consumed by pregnant women so that it can increase hemoglobin levels in red blood cells, can prevent and treat anemia because it is rich in iron (Yuliandini, Dewi and Ratri, 2017).

A good diet for pregnant women should meet the source of carbohydrates, proteins, fats, vitamins and minerals. For the replacement of rice can be used corn, sweet potatoes and bread. For the replacement of animal protein can be used tempeh, tofu. The mother's food during pregnancy is expected to meet the nutritional needs so that the mother and fetus are in good health. The nutritional state of the mother at the time of conception is expected to be in good condition and during pregnancy should get additional protein, minerals, vitamins and energy (Prastiono, 2016).

According to researchers, the habit of eating sweet potatoes with a diet interconnected with the incidence of anemia in pregnant women because of a good diet by following the message of a balanced nutritional menu consumed by pregnant women every day also has an important role. For example, in this study pregnant women consume sweet potatoes as a source of carbohydrates, mujair fish as a source of protein and supported by eating green vegetables and fruit is one of the hopes that the nutrients needed by pregnant women can be fulfilled. To get a better influence from the diet of pregnant women, the habit of eating sweet potatoes either as a source of carbohydrates or as a source of

interludes needs to be considered the principle of pregnant women, namely more numbers, better quality, in addition to the menu arrangement must also be balanced.

Limitations in this study are researchers in collecting data on the incidence of anemia using secondary data obtained from laboratory examination results of hemoglobin levels at previous visits.

Compliance with taking Fe tablets given by health workers is one form of obedience of pregnant women to carry out government advice while also reducing the prevalence of anemia. Compliance with taking Fe tablets can be measured from the number of Fe tablets consumed each day by pregnant women as well as the accuracy of how to consume them and the frequency of consumption each day. The provision of Fe tablet supplements is one of the efforts to prevent the occurrence of anemia caused by iron deficiency. Fe tablets given contain folic acid that can serve effectively to prevent anemia (Afnita, 2014). So if pregnant women do not comply with the consumption of Fe tablets given by the officer then most likely the pregnant woman will experience anemia.

Obedience comes from the basic word obedient which means to obey. So compliance is the level of patients carrying out the recommended treatment and behavior of health workers (doctors, midwives, nurses, etc.) or others (Fuady, 2013). But sometimes the problem for pregnant women is disobedience in taking Fe tablets (Hernawati, 2013). The prevention of anemia in Indonesia is currently still focused on the provision of blood added tablets (Fe) in accordance with PMK Number 4 of 2019.

Fe tablets are the most abundant micro minerals found in the body, which is as much as 3-5 grams in the adult human body (Megasari, 2012). Iron needs in pregnant women with a single fetus about 1000mg during pregnancy or up about 200-300%. The number of pregnant women who get Fe tablets but there are still pregnant women who suffer from anemia even though they have been given Fe tablets, this is due to several factors, including mothers do not understand how to take Fe tablets. Should Fe tablets be taken after eating and drinking, Fe tablets are not recommended along with taking supplements containing calcium or milk high in calcium, coffee, and tea because iron absorption will be disrupted because it can bind to Fe so as to reduce the amount of uptake (Amperaningsih, 2011).

These Fe tablets should be taken at night after meals before bed to reduce the effects of nausea (Azzam, 2012). During pregnancy the iron needed by the body is more than when not pregnant. Iron needs in pregnancies with a single fetus are: a). 200-600 mg to meet the increase in red blood cell mass; b) 200-370 mg for a fetus that depends on its birth weight; c). 150-200 mg for external loss, d). 30-170 mg for the umbilical cord and placenta; 90-130 mg to replace blood lost at birth.

Thus the total need for iron in pregnancy ranges between 800 mg, 500 mg for red blood cell accretion and 300 mg for the fetus and placenta (Kartikasari, 2010). To overcome this loss, pregnant women need an average of 3.5-4mg of iron per day.

V. CONCLUSION

Based on the results of the above study, the conclusion in this study is that there is a significant relationship between sweet potato consumption habits and adherence to taking Fe tablets with the incidence of anemia of pregnant women in the Sentani Health Center Work Area in 2022.

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