



The use of corn in trimester I pregnant women against complaints of trimester I pregnant women at Lohia District, Muna Regency, Southeast Sulawesi in 2020

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ABSTRAK

Latar Belakang: Hemoglobin (Hb) adalah molekul protein yang mengandung zat besi dari sel darah merah dan mioglobin di dalam otot yang berfungsi membawa oksigen dari paru-paru ke seluruh jaringan tubuh dan membawa kembali karbondioksida dari seluruh jaringan tubuh ke paru-paru untuk dikeluarkan dari tubuh. Kadar Hb selama kehamilan sangat penting karena mempengaruhi kondisi ibu dan janin. Jika kadar Hb ibu hamil rendah dapat menyebabkan anemia. Gejala anemia adalah pusing, pucat, mual, muntah, kelelahan, dan nafsu makan menurun. Salah satu makanan yang baik untuk dikonsumsi ibu hamil adalah jagung. Mengandung vitamin B1, B6, B9, B12, Biotin dan asam pantotenat untuk metabolisme karbohidrat, koenzim, meningkatkan daya tahan tubuh, mengatasi mual dan muntah, pembentukan Hb dan mencegah anemia.

Tujuan: Penelitian ini bertujuan untuk mengetahui manfaat jagung pada ibu hamil trimester I terhadap keluhan ibu hamil trimester I.

Metode: Penelitian ini merupakan eksperimen semu dengan pendekatan pretest-posttest two group design di Kecamatan Lohia, Kabupaten Muna, Sulawesi Tenggara Tahun 2020. Dengan simple random sampling dan subjek dalam penelitian ini terdiri dari 20 kelompok intervensi dan 20 kelompok kontrol. Teknik pengumpulan data dilakukan dengan menggunakan lembar observasi untuk mencatat hasil pengukuran Hb. Uji t digunakan sebagai uji analisis sampel untuk mengetahui manfaat jagung.

Hasil: Hasil penelitian menunjukkan bahwa pada ibu hamil trimester I terjadi peningkatan kadar Hb yang signifikan setelah diberikan jagung (*Zea Mays*) dengan nilai $P = 0,000 < \alpha = 0,05$.

Kesimpulan: Ada manfaat pemberian jagung pada ibu hamil trimester I terhadap keluhan ibu hamil trimester I.

KATA KUNCI: jagung; trimester pertama kehamilan; hemoglobin (hb); ibu hamil; tekanan darah

ABSTRACT

Background: Hemoglobin (Hb) is a protein molecule containing iron from red blood cells and myoglobin in the muscles which functions to carry oxygen from the lungs to all body tissues and brings back carbon dioxide from all body tissues to the lungs to be excreted from the body. Hb level during pregnancy is very important because it affects the condition of the mother and fetus. If the Hb level of pregnant women is low, it can cause anemia. Symptoms of anemia are dizziness, pallor, nausea, vomiting, fatigue, and decreased appetite. One of the foods that are good for pregnant women to consume is corn. It contains vitamins B1, B6, B9, B12, Biotin and pantothenic acid to metabolize carbohydrates, coenzymes, increase endurance, overcome nausea and vomiting, Hb formation and prevent anemia.

Objectives : This study aimed to determine the benefits of corn in trimester I pregnant women against complaints of pregnant women in trimester I.

Methods : This research was a quasi-experiment with a pretest-posttest two group design approach in Lohia District, Muna Regency, Southeast Sulawesi in 2020 with simple random sampling and the subjects in this study consisted of 20 in intervention and 20 in controls. The data collection technique was done by using an observation sheet to record the Hb measurement results. The t-test was used as a sample analysis test to determine the benefits of corn.

Results : The results showed that in the first trimester of pregnant women, there was a significant increase in Hb levels after being given corn (*Zea Mays*) with P value = 0.000 $< \alpha = 0.05$.

Conclusion : The benefits of giving corn to trimester I pregnant women against complaints of trimester I pregnant women

KEYWORD: corn; first trimester of pregnancy; hemoglobin (hb), pregnant women, blood pressure

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INTRODUCTION

Pregnancy is a union of spermatozoa and ovum. Intra-uterine fetal growth and development begins from conception and ends until the onset of labor. Pregnancy occurs for approximately 9 months (1). The trimester of pregnancy is divided into three, namely: the first trimester (between 0 and 12 weeks), the second trimester (between 13 and 27 weeks), the third trimester (between 28 and 40 weeks) (2).

In the first trimester all fetal organs develop by the end of the third month. At this time it is very important to maintain a healthy diet, including adding sufficient amounts of folic acid to help prevent neural tube defects in the fetus. During the first trimester, the risk of miscarriage is high. Therefore, pregnant women must maintain the condition and vitality of the body properly. Based on the standard of midwifery service during Antenatal Care (ANC), a pregnant woman is recommended to do ANC examination 3 times (1 doctor's examination to screen the complete maternal health).

During pregnancy, a woman has an increase in blood plasma by 30%, blood cells 18%, but Hb only increases by 19%. As a result, the frequency of anemia in pregnancy is quite high (3). Anemia in pregnancy is a condition of mothers with hemoglobin levels below 11 g% in the first and third trimesters or Hb levels < 10.5 g% in the second trimester (4).

Anemia during pregnancy consists of three, namely iron deficiency anemia that arises due to iron deficiency so that the formation of red blood cells and other functions in the body is disrupted (5). Folic acid deficiency anemia (megaloblastic) is anemia caused by a lack of folic acid which functions in the maturation of red blood cells. B12 deficiency anemia is B12 in the blood which functions as the formation of red blood cells (6).

The most common cause of anemia is a lack of nutrients needed for the synthesis of erythropoiesis, especially iron, folic acid and vitamin B12. Anemia is caused by the lack of nutrients in the body that play a role in the formation of red blood cells. The substances that play a role

in hemopoiesis are protein, vitamins (folic acid, B12, C and E) and minerals (Fe and Cu). Of the various causes, the most prominent ones that cause hemopoiesis are Fe, Folic Acid and B12. Common symptoms of anemia are pale, lethargic, tired quickly, and dizzy eyes (7).

Hemoglobin (Hb) is a protein molecule containing iron from red blood cells and myoglobin in muscles. Hb in red blood cells functions to carry oxygen from the lungs to all body tissues and bring back carbon dioxide from all body tissues to the lungs to be excreted from the body (8). Micro effects that arise due to lack of hemoglobin levels: fatigue, laziness and weakness, shortness of breath, palpitations, nausea, pale face, decreased immune system power, pale eyes, headaches and fainting (9).

Eating healthy food is very important during pregnancy, both for the health of the mother herself and for the fetus that is being conceived. One of the foods that are good for pregnant women to consume is corn. It is the 3rd largest food produced in Indonesia. Adequacy of food nutrition is one of the most important factors in developing the quality of human resources. This is a key factor in the successful development of a nation. Nutrition greatly affects one's intelligence and productivity. In general, the Indonesian population, who are mostly farmers, still rely a large part of their food on staple foods. The staple foods produced are rice, tubers (especially cassava and sweet potato), sago and corn. Its use is based on regional availability which is the result of family farming and has developed into eating habits in an area (8).

Apart from being a source of carbohydrates, corn is also an important source of protein in the menu of Indonesian society. Corn contains calories, water, protein, carbohydrates, sugar, fiber, fat, omega-3, omega-6, folate, vitamins and minerals such as zinc and magnesium. The content of corn which plays an important role during pregnancy, namely vitamin B1 (thiamine),

its main function is as carbohydrate metabolism, the initial symptoms of thiamine deficiency are decreased appetite, constipation and fatigue. Biotin functions as a coenzyme, a symptom of a deficiency in biotin, namely fatigue, lack of appetite and vomiting. Pantothenic acid functions as coenzyme A, the initial symptoms of pantothenic acid deficiency are vomiting and fatigue. Vitamin B6 functions to increase endurance and overcome nausea and vomiting, symptoms of vitamin B6 deficiency, namely weakness and difficulty sleeping. One of the further effects of vitamin B6 deficiency is anemia. Vitamin B12 functions as a builder of red blood cells, one of the symptoms of vitamin B6 deficiency, namely anemia due to folate deficiency. Iron functions as a builder of blood cells, iron deficiency generally causes pallor, weakness, fatigue, dizziness, lack of appetite, decreased fitness and impaired wound healing. Lack of vitamins B1, B6, B9, B12, Biotin and pantothenic acid can cause complaints in the first trimester of pregnancy.

In previous studies, corn milk intervention was very beneficial for pregnant women, namely folate supplementation could cure megaloblastic anemia a lot. And for pregnant women, of course, the need for folic acid will increase. Because to provide for pregnant women and also the fetus itself (11,12).

For pregnant women, the benefits of sweet corn are to provide high amounts of folic acid. Lack of this substance for pregnant women can affect the future baby (12). Lack of folic acid in the body can affect the baby's weight later. The nutritional content and nutrients in sweet corn are useful for preventing babies from being underweight and helping to avoid other birth defects (13).

The prevalence of anemia in pregnant women at Southeast Sulawesi in 2018 was 10.5%, where the largest prevalence was in Muna district at 40.69%. Based on a preliminary study conducted in the working area of Puskemas

Waara, Lohia District, Muna Regency, 12 pregnant women consume corn once a month while the amount of corn in Lohia District is abundant, but farmers choose to sell it to the nearest traditional market on the grounds that it is more economically profitable.

From the above background, the researchers were interested in knowing the benefits of giving corn to pregnant women in the first trimester against trimester I pregnancy complaints. The focus of the problem in this study are; consumption of corn in trimester I pregnant women with the quantity of complaints experienced by trimester I pregnant women, in this case the levels (HB) of trimester I pregnant women in Lohia District, Muna Regency, Southeast Sulawesi in 2020.

MATERIALS AND METHODS

This research is a quantitative research with a quasi-experimental method and a pretest-posttest two group design approach for the period 24 February 2020-June 2020 in Lohia District, Muna Regency, Southeast Sulawesi in 2020. The purpose of this study was to determine the use of corn in pregnant women in the first trimester against complaints experienced in trimester I of pregnancy. The population in this study were all trimester I pregnant women in the working area of Puskesmas Waara, Lohia Subdistrict, Muna Regency wa 40 peoples The sampling technique was total sampling, totaling 40 pregnant women, divided into an intervention group consists of 20 pregnant women and a control group consists of 20 pregnant women. The data collection technique was done by using an observation sheet to record the Hb measurement results. Analysis of data using the T-Test Independent with 95% confidence using the SPSS program.

RESULTS AND DISCUSSION

From the results of data analysis performed using the Sample T-test statistical test, obtained

P value = 0,000 Sig (2-tailed), which means that Ho is rejected and Ha is accepted, which means that there is a benefit of giving corn for pregnant women in trimester 1 against complaints experienced by pregnant women in trimester 1 in Lohia District, Muna Regency.

Respondent Characteristics

Table 1 shows that the first trimester pregnant women aged ≤ 20 years were 3 respondents (7.5%) and > 20 years were 37 respondents (92.5%).

Table 1. Distribution of First Trimester Pregnant Women by Age

AGE	F	(%)
≤ 20 years	3	7.5
> 20 years	37	92.5
Total	40	100

Source: Primary Data 2020

Table 2 shows that in the first trimester of pregnant women based on Gravidia, 17 respondents (42.5%) were primiparous and 23 respondents (57.5%) were Multipara.

Table 2. Distribution of First Trimester Pregnant Women by Gravidia

Gravidia	F	(%)
Primipara	17	42.5
Multiparous	23	57.5
Total	40	100

Source: Primary Data 2020

Table 3 shows that pregnant women in the first trimester with Hb levels < 11 Gr / dl were 34 respondents (85%) and Hb ≥ 11 Gr / dl were 6 respondents (15%).

Table 3. Distribution of First Trimester Pregnant Women Based on Hemoglobin Levels (Hb)

HB	F	(%)
Hb < 11 Gr / dl	34	85
Hb ≥ 11 Gr / dl	6	15
Total	40	100

Source: Primary Data 2020

Respondents' Hb Levels Before Granting Corn

Table 4 shows the Hb levels before giving corn. In the intervention group there were 16 respondents (80%) had Hb levels <11gr / dl and 4 respondents (20%) had Hb levels ≥11 gr / dl, while in the control group there were 18 respondents (90%) having Hb levels <11gr / dl and 2 respondents (10%) had Hb levels ≥11 gr / dl.

Table 4. Frequency Distribution of Respondents' Hb Levels Before Giving Corn

Group	<11grdl		≥11 gr / dl		F	(%)
	F	%	F	%		
Intervention	16	80	4	20	20	100
Control	18	90	2	10	20	100

Source: Primary Data 2020

Respondents' Hb Levels After Giving Corn

Table 5 shows the Hb levels after giving corn. In the intervention group, 4 respondents (20%) had Hb levels <11gr / dl and 16 respondents (80%) had Hb levels ≥11 gr / dl, while in the control group there were 16 respondents (80%) having Hb levels <11gr / dl and 4 respondents (20%) had Hb levels ≥11 gr / dl.

Table 5. Frequency Distribution of Respondents' Hb Levels After Giving Corn

Group	<11grdl		≥11 gr / dl		F	(%)
	F	%	F	%		
Intervention	4	20	16	80	20	100
Control	16	80	4	20	20	100

Source: Primary Data 2020

Table 6 shows the data of both groups statistically with p value = 0.000, so it can be concluded that there is a benefit of giving corn to trimester I pregnant women towards complaints experienced in first trimester.

Table 6. Test of Corn Utilization towards First Trimester Pregnant Women against Complaints Experienced in First Trimester of Pregnant

Group	P value	Terms
Control	0,000	p _{value} <0.05
Intervention		

T-Test Result

DISCUSSION

From the results of data analysis performed using the Independent T-Test, it was found that p value = 0.000 <α = 0.05 so that H₀ was rejected and H₁ was accepted. The conclusion is that there are benefits of giving corn to trimester I pregnant women towards complaints experienced by trimester I pregnant women in Lohia District, Muna Regency.

The results showed that before giving corn, in the intervention group there were 16 respondents (80%) who had Hb levels <11gr / dl and 4 respondents (20%) who had Hb levels ≥11 gr / dl, while in the control group there were 18 respondents (90%) who had Hb levels <11gr / dl and 2 respondents (10%) who had Hb levels ≥11 gr / dl. The majority in both groups had anemia. Anemia in pregnancy is a condition of a mother with an Hb level below 11 g% in the first and third trimesters or an Hb level <10.5 g% in the second trimester (4). Anemia in trimester I pregnancy is a physiological thing that occurs due to a lack of Hb levels in the blood below normal values. This is in line with the theory that in the first trimester there are complaints in pregnant women, namely morning sickness, dizziness, pallor, nausea, vomiting, weakness, and difficulty concentrating which are signs and symptoms of anemia due to lack of Hb in the blood. Micro effects that arise due to lack of Hb levels: fatigue, laziness and weakness, shortness of breath, palpitations, nausea, pale face, decreased immune system power, pale eyes, headaches and fainting (9).

In the intervention group after giving corn 100 gr / week for 7 consecutive weeks as additional food, there were 16 respondents (80%) who had Hb ≥11 gr / dl.

Corn contents that play an important role during pregnancy include; vitamin B1 (thiamine), whose main function is to metabolize carbohydrates. Early symptoms of thiamine deficiency include decreased appetite, constipation and tiredness; Biotin

which functions as a coenzyme. Symptoms of a deficiency in biotin include fatigue, lack of appetite and vomiting; Pantothenic acid which functions as a coenzyme A. The initial symptoms of pantothenic acid deficiency are vomiting and feeling tired; Vitamin B6 which functions to increase endurance and overcome nausea and vomiting. Symptoms of vitamin B6 deficiency include weakness and insomnia. One of the further effects of vitamin B6 deficiency is anemia; Vitamin B12 which functions as a builder of red blood cells. One of the symptoms of vitamin B6 deficiency is anemia due to folate deficiency; Fe which functions as a builder of blood cells. Iron deficiency generally causes pallor, weakness, fatigue, dizziness, lack of appetite, decreased fitness and impaired wound healing. Giving corn during the first trimester of pregnancy can reduce the occurrence of complaints to pregnant women in the first trimester because in the corn content there are several elements of vitamins B1, B6, B9, B12, Biotin and pantothenic acid which are very good in reducing various complaints that arise in early pregnancy. Vitamin A or carotenoids and vitamin E are found in corn, especially yellow corn. Apart from its function as a micronutrient, vitamin A plays a role as a natural antioxidant that can increase body immunity and inhibits degenerative damage to cells (14,15). One of the most important nutritional content in corn is pantothenic acid. This substance plays a role in developing important functions of several organs such as the heart, kidneys, lungs and brain. If during pregnancy the fetus lacks this intake, there are usually several abnormalities related to organ function (16,17,18).

Other studies have shown that giving food substances containing Fe and B9 can increase the Hb of female workers (10).

CONCLUSIONS AND RECOMMENDATION

There are benefits of giving corn to trimester I pregnant women on hemoglobin levels (Hb)

for pregnant women in Lohia District, Muna Regency, Southeast Sulawesi with $p = 0.000$.

Pregnant women are advised to take Fe and Folic Acid tablets regularly in the right way coupled with corn intake because it is a source of nutritional intake that can help increase Hb during pregnancy. In addition, it is also recommended to increase the consumption of other nutrients that contain lots of iron and folic acid during pregnancy which can reduce trimester I pregnancy complaints. Midwives are expected to be able to provide counseling to pregnant women during early pregnancy visits as well as counseling in the community about the benefits of corn during pregnancy in reducing complaints of pregnant women in the first trimester (dizziness, pale, nausea, vomiting, fatigue, and decreased appetite). Other researchers are expected to carry out further research in the provision of corn during pregnancy with other variables and the frequency of administration can be increased.

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