



Effect of Eel Lumpia as Additional Food in Pregnant Women with Anemia

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ABSTRACT

Background: The prevalence of anemia in pregnant women is high, 4 out of 10 pregnant women experience anemia during pregnancy, 70% of which is mild anemia and occurs during pregnancy. Iron deficiency in the body, brought on by a lack of iron-containing foods, is the primary cause of anemia in pregnant women. **Purpose:** This research intends to assess the impact of eel spring rolls on the hemoglobin levels of anemic pregnant women. **Methods:** This quasi-experimental study used a one group pre-test post-test design. The place of this research was carried in the Community Health Center in Sunga penuh. The sample in this study were all pregnant women with anemia who were taken using a sampling technique, namely total sampling. The intervention by giving eel spring rolls was carried out for 21 days, with a weight of 350 grams of eel spring rolls/day. Hemoglobin levels were measured twice, before and after the intervention. Data analysis was performed using a paired t-test to see the difference in the average pretest and posttest scores. **Results:** there is an effect of giving Eel Lumpia as additional food on changes in hemoglobin levels in Pregnant Women with Mild Anemia in Health Center work area in 2022. **Conclusion:** It is hoped that health workers can provide education about consuming eel as an additional food that pregnant women can use as a prevention of anemia in pregnant women

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ABSTRAK

Latar belakang: Prevalensi anemia kejadian anemia pada ibu hamil tergolong tinggi, 4 dari 10 ibu hamil mengalami anemia selama kehamilan, 70% nya merupakan anemia ringan dan terjadi pada trimester III kehamilan. Penyebab langsung terjadinya anemia di wanita hamil merupakan kekurangan zat besi di dalam tubuh yang ditimbulkan oleh kurangnya sumber makanan yang mengandung zat besi. **Tujuan:** Penelitian ini bertujuan untuk mengetahui pengaruh konsumsi lumpia belut terhadap kadar hemoglobin ibu hamil dengan anemia. **Metode:** Penelitian quasi eksperimen ini menggunakan rancangan one group pre-test post-test design. Tempat penelitian ini adalah Puskesmas di Sungai Penuh. Sampel dalam penelitian ini adalah semua ibu hamil dengan anemia yang diambil dengan teknik pengambilan sampel yaitu total sampling. Intervensi pemberian lumpia belut dilakukan selama 21 hari, dengan 350 gram lumpia belut/hari. Pengukuran kadar hemoglobin dilakukan dua kali, sebelum dan sesudah intervensi. Analisis data dilakukan menggunakan uji paired t-test untuk melihat perbedaan nilai rata-rata pre-test dan post-test. **Hasil:** ada pengaruh pemberian PMT Lumpia Belut terhadap perubahan kadar hemoglobin pada Ibu Hamil dengan Anemia Ringan di wilayah kerja Puskesmas Sungai Penuh tahun 2022. **Kesimpulan:** Diharapkan tenaga kesehatan dapat memberikan edukasi tentang konsumsi

belut sebagai salah satu makanan tambahan yang bisa digunakan oleh ibu hamil sebagai preventif anemia pada ibu hamil.

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INTRODUCTION

Pregnant women have a worldwide problem with anemia, which is a critical issue. Anemia is prevalent. The prevalence of anemia among pregnant women is considerable; four out of ten pregnant women develop anemia throughout their pregnancy, with moderate anemia occurring in the third trimester in 70 percent of cases. Pregnant women from developing countries have a higher risk of experiencing anemia compared to pregnant women in developed countries, associated with economic, sociological, and pregnancy health factors (Karami, 2022).

In Indonesia, the incidence of anemia in pregnancy is still a problem in maternal health. Based on the 2018 Basic Health Research (RISKESDAS) data, it was found that one in two pregnant women experience anemia during pregnancy. The prevalence of anemia has increased compared to 2013 where anemia in pregnancy occurred in 37.1% of pregnant women (Kemenkes, 2018).

Based on data from the Jambi Provincial Health Office in 2018, the coverage of pregnant women with anemia in 2018 was 41.4%, based on data from the Sungai Full City Health Office, the coverage of pregnant women with anemia in 2020 was 47.1%. In the Sungai Kunci Health Center Working Area, data on visits for pregnant women in 2020 were as many as 174 people, with 65 pregnant women experiencing anemia. In 2021, data on visits for pregnant women are as many as 199 people, with the number of pregnant women experiencing anemia as many as 86 people. With the results of these data it is concluded that there is an increase in Anemia in pregnant women from 2020-2021 in the working area of Sungai Penuh Health Center (Dinkes, 2022).

Anemia in pregnancy can cause bad risks, both for the mother and the fetus. Anemia during pregnancy has a significant relationship with premature birth (Rahmati, 2020). Pregnant women with anemia also increase the risk for low birth weight (LBW), perinatal death and neonatal death (Rahman, 2016). Anemia also has a negative impact on maternal health, pregnant women with severe anemia increase the risk of postpartum hemorrhage (Omotayo, 2021).

Iron deficiency in the body caused by a lack of iron-containing food sources is the direct cause of anemia in pregnant women. Food is adequate, but food sources have low iron content so that less iron is absorbed, and the food consumed includes iron. Impediments to iron uptake (Roosley, 2016). The main therapy for anemia is giving Fe supplements every day. If Hb <5 -6 gr%, a blood transfusion is needed (Manuaba, 2010). Government policy in dealing with the problem of anemia in pregnancy is the provision of iron and folic acid supplementation, with a dose of 200 mg of ferrous sulfate and 0.25 mg of folic acid per tablet (Wulan et al., 2021).

Pregnant women who have iron deficiency anemia are strongly advised to have a diet of foods that contain iron and fulfill adequate nutrition. One of the efforts to prevent or overcome anemia can be done by regulating diet, namely by combining and consuming a food menu that is rich in iron (Zuiatna et al., 2021). Foods that contain good nutrition such as iron are found in many animal-based foods, such as meat,

chicken and fish. Other good sources are eggs, cereals, nuts, green vegetables and several types of fruits (Rismawati et al., 2021) (Ningsih et al., 2020).

Eel is one type of fish that is popular in the community. Eel (*Monopterus albus*) is one of the aquatic biota that has a high nutritional content, only iron and protein include the mineral gallate, which is a highly significant dietary material for the body since, in addition to working as fuel, this substance also serves as a builder and regulator (Oppusunggu, 2020). In full, the nutritional content of eel per 100 g of ingredients is as follows: 303 kcal calories; protein 14.00 g; fat 27 g; phosphorus 200 mg; calcium 20 mg; two mg iron; vitamin B1 0.1 mg; 2 mg vitamin C and 58 g water. (Ria et al., 2016)

Research conducted by the author Riris Oppusunggu and Junita Lastari Girsang (2021) shows that there was an effect of giving shredded eel and nutritional education on blood Hb levels in pulmonary TB patients (Oppusunggu, 2020). Based on the results of research conducted by Ida Tri Kurnia Umi Nur Uswatun (2019) showed that based on the results of nutritional content tests on protein, iron and vitamin C content, biscuits with the addition of eel flour can be used as an alternative food product Fe tablets in an effort to prevent anemia in young women.

Based on a preliminary survey conducted by researchers in the Sungai Penuh Health Center work area in May 2022, based on medical record data, there were 87 pregnant women in the I-III trimester who underwent pregnancy checks, where 39 pregnant women experienced anemia. Preventive and therapeutic efforts that have been given so far are by administering and socializing the consumption of Fe tablets. Based on the background above and the large number of eel breeders in the working area of the Sungai Lilin Health Center, and the absence of the application of complementary therapy with innovations in giving eel spring rolls as PMT for the treatment and prevention of anemia in pregnant women in the Sungai Kunci Health Center work area, this made researchers interested in conducting research on the effect of eel spring rolls as PMT in pregnant women with anemia in the Sungai Penuh Health Center Work Area in 2022.

METHOD

Participant characteristics and research design

This was a Quasi Experimental Research with the One Group Pretest-Posttest Design. This research was conducted in the Sungai Penuh Health Center work area. The population of this study was 15 pregnant women who experienced anemia, totaling. Ethical clearance for this study was issued by the Prima Nusantara Bukittinggi ethical committee.

Sampling procedures

The inclusion criteria for this study were pregnant women in the third trimester with mild anemia, taking iron supplement tablets, and not taking other non-pharmacological therapies. The exclusion criteria for this

study were pregnant women who experienced complications, were allergic or did not want to eat eel.

Sample size, power, and precision

The sampling technique used was total sampling, so that 15 pregnant women suffering from mild anemia became the sample in the study.

Measures and covariates

The intervention of this study was giving eel spring rolls. Provision of eel spring rolls as additional food was given twice a day for 21 days as much as 6 pieces of spring rolls or 350 grams of eel spring rolls/day containing 60 mg of iron, which was given 2 times a day, 3 pieces at 10.00 WIB and 3 pieces at 16.00 WIB. Hemoglobin measurements were carried out using a calibrated haemometer, measurements were taken the day before the intervention and the day after the intervention.

Data analysis

To analyze the effect of giving eel spring roll PMT on hemoglobin levels, a normality test was carried out first with

Spahiro Wilk. From the normality test the data is normally distributed so that the paired t-test is used.

RESULTS AND DISCUSSION

Table 1 shows that the average Hb level before giving the intervention was 9.55 gr/dL with a minimum value of 9.2 gr/dL and a maximum value of 10.00 gr/dL.

This study's results align with research conducted by Dwi Putri Cahyati (2020), which shows that the average pre-test hemoglobin level value of 10.70 g/dL is classified as anemia. In line with the research conducted by Aprilia Havilda (2021), it was shown that from the results of statistical tests, the average value of hemoglobin levels in pregnant women before (pre-test) in the intervention group was 10.338gr/dl (Havilda, 2021).

The researchers in this study assumed that the average hemoglobin level of pregnant women before being given eel spring roll PMT was known to be 9.55 gr/dL. The minimum value before giving eel spring roll PMT was 9.20 gr/dL and the maximum before giving eel spring roll PMT was 10.00 gr/dL, this indicated that the respondent had mild anemia during pregnancy.

Table 1. Average Hemoglobin Levels Before Giving Eel Spring Roll as food additional

Hemoglobin level	Average± SD(gr/dl)	Min	Max
Haemoglobin level before intervention	9.55 ± 0.30	9.20	10.00

Table 2. Average Hemoglobin Levels after being given eel spring rolls as Additional Food

Hemoglobin Level	Rata-rata± SD(gr/dl)	Min	Max
Haemoglobin level after intervention	10.64 ± 0.437	10.10	11.10

Table 2 shows that the average Hb level after the intervention was 10.64 gr/dL with a minimum value of 10.1 gr/dL and a maximum value of 11.1 gr/dL.

Eel (*Monopterus albus*) is one of the water nutrients with high nutrient content. Eel flesh offers several health advantages for the human body, including satisfying protein requirements, promoting growth, brain and intellect development, preserving eye health, satisfying mineral requirements, and enhancing focus and stamina. The nutritional content of 100 grams of eel contains 92 kcal of calories, 18.51 grams of protein, 1.42 grams of fat, 20 mg of Fe, and 2.0 mg of Vitamin C and 1,600 SI of Vitamin A. (Ministry of Health RI, 2022). Provision of Eel Lumpia PMT is used as additional nutrition which is intended as a supplement, not as a substitute for the main daily food.

The results of this study are in line with a study conducted by Aprilia Havilda (2021) which showed that the average hemoglobin level before being given the intervention was 10.338 gr/dL and after the intervention was given it was 10.844gr/dL, with the lowest hemoglobin level before being

given bothok eel and Fe tablets was 9.7 gr/dl and the highest was 10.9 gr/dl while the lowest hemoglobin level after being given bothok eel and Fe tablets was 10.3 gr/dl and the highest was 11.4 gr/dL. This is also in line with the research conducted by Riris Oppusunggu and Junita Lastari Girsang (2021) which showed that Hb levels in pulmonary TB patients before and after being given shredded eel had increased. The category of Hb levels classified as normal before being given shredded eel was 13 people (59.1%) and after being given shredded eel increased to 14 people (63.6%). Table 7 previously also showed that the average Hb level of patients before being given shredded eel was 12.17g/dl after being given shredded eel, the Hb level increased to 12.34 g/dl (Oppusunggu, 2020).

The researchers in this study assumed that regular consumption of PMT spring rolls for 21 days can increase hemoglobin levels in pregnant women with mild anemia. The administration of iron tablets and other micronutrients (multiple micronutrients) effectively increases hemoglobin levels.

Table 3 Effect of PMT Lumpia Eel on Hemoglobin Levels of pregnant women with anemia

Haemoglobin Level	Average± SD(gr/dl)	P-Value
Haemoglobin Level before intervention	9.55 ± 0.30	0.000
Haemoglobin Level after intervention	10.64 ± 0.37	

Based on table 3, it can be seen that the results of the paired t-test were conducted that the average before administration of Eel Lumpia PMT was 9.55 gr/dL and after giving Eel Lumpia PMT 10.64 gr/dL, so the mean difference value was 1.09 gr/dL (10.64 – 9.55) and P value = 0.000 ($P > \alpha$) so that it can be concluded that there is an effect of giving PMT Lumpia Eel on changes in hemoglobin levels in Pregnant Women with Mild Anemia in the working area of the Sungaipuh Health Center in 2022.

Eel (*Monopterus albus*) is a type of animal protein that contains high iron. The iron content in eel is higher. The nutritional content of 100 grams of eel contains 92 kcal of calories, 18.51 grams of protein, 1.42 grams of fat, 20 mg of Fe, and 2.0 mg of Vitamin C and 1,600 IU of Vitamin A. Iron absorption is affected by the type of iron found in foods. Eel is a meal that provides iron, which is superior than eggs' 2.7 mg, and as much as 10.8 grams of protein. Whereas beef contains 2.8 milligrams of iron, the iron level of pork is 0.8 milligrams. The transit of iron through the body needs protein as an initiation step. Transfer, a protein generated in the liver, transports iron in the blood so that it may be utilized in the manufacture of hemoglobin. Protein also plays an essential function in the transfer of iron throughout the body. In addition to protein, eel also contains vitamin C. Iron and vitamin C combine to generate a complex iron ascorbate that is soluble and readily absorbed by the body's organs. If the pH of the stomach decreases, the conversion of non-heme iron in the form of metabolic molecules Ferri to Ferro will increase. Vitamin C may improve acidity, hence facilitating a 30% increase in iron absorption. The micronutrient that plays a role in increasing Hb levels is vitamin A. The function of vitamin A is to help the absorption of iron and help the process of forming hemoglobin. Vitamin A has several functions in the body, including proliferation and differentiation of progenitor-erythrocyte cells, protection against infection, and mobilization of iron stores in all tissues. The relationship between vitamin A and iron is synergistic.

Efforts to overcome the occurrence of anemia in pregnant women are giving PMT in the form of eel spring rolls which contain iron and Fe tablets and can help absorb iron properly by minimizing inhibitors and increasing iron absorption facilitators. Based on this theory, it is advisable not to consume tea after eating to avoid the effects of tannins and iron absorption is not disturbed.

The results of this study are in line with research conducted by Oslida Martony and Riris Oppusunggu (2021) which shows that giving shredded eel for 30 days can contribute to increasing Hb levels in pulmonary TB patients (Oppusunggu, 2020). This is also in line with the research conducted by Rika Resmana and Dewi Purwaningsih (2020) which showed that the results of the consumption test of eel chips (*Monopterus albus*) on increasing hemoglobin levels in young women at the Al Ittifaq Islamic Boarding School, Bandung Regency with an independent t test showed that there was a significant effect with p value 0.000 (Reliability et al., 2020). In line with the research conducted by Dewi Marhaeni Diah Herawati, et al (2022), Consumption of eelcookies and IFAS for one month increased the average hemoglobin level of pregnant women by 1.69 g/dL, compared to 0.69 g/dL in the control group (p 0.001) (Herawati et al., 2022).

The researcher's assumption is that there is a significant difference in hemoglobin levels after giving PMT eel spring rolls to changes in hemoglobin levels in pregnant women with mild anemia in the working area of Sungai Full Health Center. Judging from the results of the study, it was shown that the mean before giving PMT Lumpia Eel was 9.55 gr/dL and after

giving PMT Lumpia Eel 10.64 gr/dL, so the mean difference was 1.09 gr/dL (10.64 – 9.55) and P value = 0.000 ($P > \alpha$). Giving PMT eel spring rolls is effective in increasing hemoglobin levels in pregnant women with mild anemia because eel contains high iron, protein which helps transport iron, vitamin C which helps in iron absorption, and contains Vitamin A which helps absorb iron and helps the process of forming hemoglobin, although it has not yet made the hemoglobin level of all pregnant women completely normal. Increased hemoglobin levels occur because the nutrition contained in the eel is a facilitator of iron absorption so that it can help maximize iron absorption

CONCLUSIONS AND SUGGESTIONS

There is an effect of giving eel on hemoglobin levels of anemic pregnant women. It is hoped that health workers can provide education about eel consumption as a supplementary food that can be used by pregnant women as a preventive for anemia in pregnant women.

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