PEMPEK FROM CHANA STRIATA FISHSKIN AS AN ALTERNATIVE FOOD SUPPLEMANTARYFOR CHRONIC ENERGY DEFICIENCY (CED) PREGNANT WOMEN

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Abstract

The government launched the Supplementary Feeding Program based on local food ingredients with regional specialties as a way toone of the efforts to overcome the problem of Chronic Energy Deficiency in pregnant women. One of the typical foods of the city of Palembang is fish cake. This study was to determine the effectiveness of giving Channa Striata skin fish cake on weight gain and upper arm circumference for pregnant women with Chronic Energy Deficiency. This research used Quasi Experiment with Non-equivalent Control Group Design. The sample of this study was 38 people in the intervention and control groups. Statistical test used Independent t-test. Analysis of administration of fish cake for 30 days showed that there was an increase in body weight and size of upper arm circumference. There was no difference in weight and size of the upper arm circumference in the group given Chana Striata skinfish cake with the control group (p-value >0.05), meaning that giving fish cake and giving biscuits could increase the weight and size of the upper arm circumference. Consumption of fish cake can increase body weight and size of upper arm circumference in pregnant women with chronic energy deficiency.

Keywords: *Fish cake, pregnant women, Chronic energy Deficiency*

INTRODUCTION

Mothers with chronic energy deficiency often have malnourished children. Chronic Energy Deficiency (CED) in pregnant women in developing countries is responsible for 1 in 6 cases of low birth weight[1]. Epidemiological studies have shown that low birth weight is associated with a variety of poor outcomes in later life, including low 'human capital' (shorter stature, lower cognitive abilities), increased risk factors for disease (high blood pressure, reduced glucose tolerance, lung disease, kidney disease and immune function), clinical disease (diabetes, coronary heart disease), chronic disease (lung disease and kidney disease) and an increase in all-cause cardiovascular to death[2].

In general, malnutrition is used to describe a broad spectrum of conditions of imbalance between intake and needs, ranging from undernutrition to nutrition advantages. Usually, malnutrition is caused by inadequate food intake, increased body requirements, malabsorption syndrome, or a combination thereof[3]. More than 3.5 million mothers and children under five every year are caused by malnutrition, and millions more experience permanent physical and mental disabilities as a result of lack of food intake in early life[4].

CED is recognized as the best indicator to see the quality of a country's human resources. CEDis caused by malnutrition in the mother before, during pregnancy, during breastfeeding and the child during the first two years of life[5]. The prevalence of CED risk in pregnant women aged 15-49 years, nationally is 24.2%, South Sumatra <24.2%. Chronic energy deficiency has caused many problems during pregnancy, especially during the first period of pregnancy[6].

The factors associated with CED according to the results of research are the amount of energy consumption and the distance between pregnancies[7], knowledge level (p-value = 0.005), diet (p-value = 0.015), dietary restrictions (p-value = 0.023) and anemia status (p-value = 0.011) are factors related to the incidence of CED in pregnant women at the Tampa Padang Health Center, Mamuju. The variable with the greatest contribution was dietary restrictions (Exp (B)=3.989)[8].

The risk of prevalence in Women of Childbearing Age in Indonesia is 13.6%[9]. Meanwhile, based on the Indonesian health map, the prevalence of CED pregnant women is 16.8%.The risk of the prevalence of CED pregnant women aged 15-49 years, nationally as much as 24.2%, South Sumatra <24.2% and the prevalence of CED pregnant women in Palembang City in 2013 was 4.2%. The highest prevalence was in the area Karya Jaya Health Center (16.9%), and the lowest was in the Punti Kayu Health Center area (0.1%)[10].

Based on data from the Palembang City Health Office the number of pregnant women in CED is 1,027 pregnant women. The highest number was found in the Multiwahana Public Health Center (79 pregnant women), Gandus Health Center (55 pregnant women), 4 Ulu Health Center (52 pregnant women), Makrayu and Kramasan health centers with 46 pregnant women and 45 pregnant women respectively[11].

The government launched the Supplementary Feeding Program based on local food ingredients with regional specialties adapted to local conditions[12]. The city of Palembang is the capital of the province of South Sumatra, which is famous for the city of Fish cake. Fish cake is a typical food of South Sumatra which has become one of the favorite foods in all levels of Indonesian society. The taste of fish cake is very distinctive and delicious, so it is favored by people from various backgrounds. The nutritional content of fish cake is very beneficial for the human body. fish cake contains animal protein, which is very good because it is made from fish. While carbohydrates as a source of energy owned by fish cake comes from sago flour[13].

During this time fish cake made in Palembang City with the basic ingredients of cork fish, meat without accompanying skin and bones so there is a lot of waste cork fish that is not utilized. In connection with that, the researchers are interested in conducting research on the consumption of Fish cake (Skin Fish Gabus/Channa Striata) as an Alternative Food Supplement inCED Pregnant Women in Palembang City.

MATERIAL AND METHODS

The research method uses a Quasi Experiment with Non-equivalent Control Group Design. This study is an attempt to utilize locally-based food (Chana Striata skin fish cake) to increase the weight and size of upper arm circumference pregnant women with CED in Palembang City. This research was conducted in the working Area of the Multiwahana Health Center and the Gandus Health Center in Palembang City. The population in this study was all pregnant women in the second trimester without pregnancy complications who experienced CED in the working area of the Multiwahana Health Center and Gandus Health Center totaling 116 people. The research sample was some of the pregnant women with CED at the Multiwahana Public Health Center who received 19 people of fish cake (pregnant women who did not get Providing Supplementary-Recovery Food in the form of biscuits due to delays in Providing Supplementary-Recovery Food distribution on October 2016). While the control group was CED pregnant women who received Providing Supplementary-Recovery Food (biscuit) at the Gandus Health Center as many as 19 people.

The sources needed in this study were: fish cake and biscuits, the tools used were the LILA meter and Camry brand digital weight scales. The research technique was carried out by: before the intervention, the weight and size of pregnant women were measured. Then the intervention group was given the consumption of fish cake for 30 consecutive days and the control group received biscuits for 30 consecutive days. After 30 days, the pregnant women's weight and upper arm circumference were measured again.

Data analysis used the chi-square test to determine the differences in the characteristics of respondents andstatistical test paired samples t-test to determine the difference in weight and size of upper arm circumference before and after treatment. While the t-test independent samples to determine the difference in weight and size of upper arm circumference between the two groups (fish cake group and biscuit group).

RESULTS

Based on the chi-square statistical test on the age characteristics of the respondents, it is known that the p-value is 0,500, this can be it was said that there was no age difference between the two groups (fish cake group and biscuit group). Most of the ages in both the intervention group and the control group were 20-30 years old, respectively, 15 and 16 people.

Meanwhile, based on parity characteristics, it is known that the p-value is 0,060, so it can be said that there is a difference in parity between the two groups, in the control group there were no pregnant women with parity >3. Meanwhile, based on the characteristics of gestational age, it is known that the p-value is 0,373, it can be said that there is no difference in gestational age between the two groups (fish cake group and biscuit group). Should be

presented in chronological sequence in the text, table, and illustration. Organize the results according to their importance. Repetition of data already given in tables and figures should be avoided. Every table must have a descriptive title. The preferred formats for illustrations are JPG (JPEG). Color photographs, if found to improve the article, would be published at no extra-charge at the print version of the journal.

Table 1. Characteristics of Respondents

Variable	Fish cake	Biscuits	*p*
Age			
20-30 years old	15 (78,9)	16 (84,2)	0,500
>30 years	4 (21,1)	3 (15,8)	
Parity			
1	3 (15,8)	8 (42,1)	
2–3	13 (68,4)	11 (57,9)	0,066
>3	3 (15,8)	0 (0)	
Gestational Age			
13-27 weeks	11 (57,9)	9 (47,4)	0,373
28-40 weeks	8 (42,1)	10 (52,6)	

Table 2 shows that there is an average increase in weight after consuming fish cake for 30 consecutive days from 47,763 kg to 49,316 kg. Body weight initial average was around 47,763 kg and the average body weight after the intervention was 49,316 kg. There was a significant difference between body weight before and after consuming, which was proven to be significant with a p-value of 0,001.

Likewise with the control group, happened weight gain before and after giving biscuits. The average initial body weight was 47,863 kg and the final weight was 48,774 kg. There was a significant difference between the initial and final body weight, which proved to be significant with a p-value of 0,003 <0,05. The results of this study proved that there was an average weight gain of 0,69 kg.

Table 2. Average Weight of Respondents in the Intervention and Control Group

	Mean	SD	SE	*p-value*
Intervention Group				
Before	47,763	5,926	1,359	0,001
After	49,316	5,875	1,348	
Control Group				
Before	47,863	4,465	1,024	0,003
After	48,774	4,778	1,096	

Table 3 shows that there is an average increase in upper arm circumference after consuming fish cake for 30 consecutive days from 22,609 cm, to 23,295 cm. Upper arm circumference initial average was around 21,542 cm and the average upper arm circumference end is around 21,826 cm. There is a significant difference between the initial and final Lila mean, which is proven to be significant with a p-value of 0,004 <0,05. The results

of this study proved that there was an increase in upper arm circumference with an average of 0,69 cm.

Where as the average of the initial upper arm circumference in the control group was 21,542 and the late upper arm circumference was 21,826, there was an increase in the size of upper arm circumference by 0,284 cm. Statistically, there was no difference between upper arm circumference in the control group with p-value 0,078>0,05. The results of the analysis concluded that the intervention of consuming fish cake as an alternative to Providing Supplementary-Recovery Food in CED pregnant women was proven to increase upper arm circumference body weight and size.

Table 3. Average Respondents in the Intervention and Control Group

	Mean	SD	SE	*p-value*
Intervention Group				
Before	22,605	0,883	0,203	0,004
After	23,295	1,391	0,319	
Control Group				
Before	21,542	0,961	0,220	0,078
After	21,826	0,902	0,207	

Based on the Independent Samples Test statistical test, it is known that the homogeneity test results appear F=4,813 (p=0,035), because p value <0,05, it can be said that there is a difference in variance in the weight data of the group given fish cake and the control group, it can be concluded that the data is not homogeneous. The difference in the mean weight of the intervention group and the control group was from -0,181 to 1,496 (table 4).

The value of t-test=1,592 (sig<0,05), meaning that there is no difference between the difference in body weight in the group intervention and control groups. Although the difference in body weight in the intervention group was greater, there was no statistically significant difference. It can be concluded that giving fish cake and giving biscuits can increase body weight in CED pregnant women.

Table 4. Comparison of the Difference in Weight in the Intervention and Control Group

	n	Average±sd	Difference Mean±sd	95% CI	*p value*
Fish cake	19	1,568±1,361	0,658±0,413	-0,181-1,496	1,592
Biscuits	19	0,911±1,181			

Based on the Independent Samples Test statistical test, it is known that the results of the homogeneity test appear to be F = 17,193 (p = 0,001), because p value <0.05, it can be said that there is a difference in variance in the upper arm circumference data group given Fish cake and the control group, it can be concluded that the data is not homogeneous. The difference in the mean weight of the intervention group and the control group was from -0,090 to 0,785 (table 5).

The value of t-test=1,661 (sig<0,05), meaning that there is no difference between the difference between Lila in the intervention group and the control group. It can be concluded that giving fish cake and giving biscuits can increase the size of upper arm circumference in CED pregnant women.

Table 5. Comparison of Upper Arm Circumference Difference in the Intervention and Control Group

	n	Average±SD	Difference Mean±SD	95% CI	*p value*
Fish cake	19	0,689±0,897	0,347±0.209	0,090-0,785	1,661

DISCUSSION

Research in India states that complementary foods greatly affect maternal weight gain, intrauterine fetal growth, birth weight and increase the outcome of expulsion of the baby[14]. Results study in Jember Regency showed that there was an average increase in the body weight in third trimester pregnant women who were given Providing Supplementary-Recovery Food, which was 4,48±3,2 kg with the highest increase of about 12 kg and the lowest value of 0,5 kg. The results showed that there was a relationship between Providing Supplementary-Recovery Food, and weight gain of pregnant women with CED (p=0,007)[15].

Different from the results study at the Surabaya City Health Center using the Mann Whitney test showed that the Providing Supplementary-Recovery Food program for pregnant women with CED was only able to improve nutritional status to normal by 13%. Energy and protein intake of CED pregnant women after the Providing Supplementary-Recovery Food, program was able to change the nutritional status to normal by 20%. Statistical results show there was no difference in energy and protein intake after the Providing Supplementary-Recovery Food program, on the nutritional status of CED and normal pregnant women (p>0.05). This can be caused by diet, food consumption, economic status, health status and internal factors[16].

The strategy carried out by the government to deal with nutritional problems in CED pregnant women is by Providing Supplementary-Recovery Food and counseling for pregnant women[17]. The government launched the Supplementary Feeding program based on local food ingredients with regional specialties adapted to local conditions.

One of the typical food of the Palembang region is fish cake. Fish cake is a processed food made from a mixture of sago flour and fish. One type of fish that is used as a mixture for making fish cake is Gabus fish (Chana Striata) which mostly lives in the Palembang area. The provision of fish cake is intended as an alternative food additive to increase the weight and size of upper arm circumference in CED pregnant women. The addition of weight and upper

arm circumference size can be done by consuming fish cake as an alternative food supplement that can be used as a snack for pregnant women.

Whereas in the long term, after an increase in body weight and upper arm circumference size will certainly reduce the risk of CED pregnant women and can prevent Low Birth Weight and complications during pregnancy and childbirth.

The results showed that there was an increase in body weight before giving fish cake and after giving fish cake. Pregnant women before consuming fish cake had an average body weight of 47,763 kg, after giving fish cake there was an increase in body weight with an average weight of 49,316 kg. Statistically, there was a significant difference in the weight of pregnant women before and after being given fish cake.

Analysis of the difference in weight gain between pregnant women who were given fish cake and those who received biscuits did not show any difference (*p-value*> 0,05). It can be concluded that pregnant women who were given fish cake and biscuits had the same weight gain.

There was an increase in the size of upper arm circumferencein pregnant women who were consumedfish cake, the average size of the upper arm circumference of pregnant womenbefore consuming fish cake was 22,605 cm and after consumingfish cakewas 23,295 cm. Statistically, there was a significant difference between upper arm circumference pregnant women before and after consumingfish cake.

The analysis of the difference in the addition of upper arm circumference between pregnant women who were given fish cake and those who received biscuits did not show any difference (p-value> 0.05). It can be concluded that pregnant women who are given fish cake and biscuits have the same difference in the addition of upper arm circumference.

CONCLUSION

Fish cake for 30 consecutive days can increase body weight and increase the size of Lila in CED pregnant women, so it can be concluded that giving fish cake can be given as an alternative to Providing Supplementary-Recovery Food for pregnant women with CED.

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