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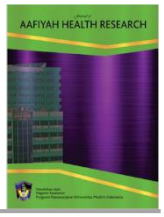

Original Article

The Effect of Supplementary Feeding on Body Weight of Pregnant Women Who Have Chronic Energy Deficiency in Indonesia

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Abstract

Backgrounds: The high rate of infant and maternal mortality, as well as infants with low birth weight (LBW), is essentially also determined by the nutritional status of pregnant women. The purpose of this study was to determine the effect of supplementary feeding on the bodyweight of pregnant women who experience chronic energy deficiency (KEK) in the working area of the Tanasitolo Health Center.
Methods: This research was conducted using a Quasi-Experimental method with a Pretest-Posttest Control Group Design. The population in this study were all mothers who experienced chronic energy deficiency in the working area of the Tanasitolo Health Center with a total sample of 32 mothers using consecutive sampling. The statistical test used in this study is the Paired Sample t-Test, with SPSS 20.0
Results: There was a difference in body weight (p=0.000) in KEK pregnant women before and after supplementary feeding.
Conclusion: In this study, there were differences in body weight, upper arm circumference, blood pressure, and hemoglobin levels in chronic energy deficient pregnant women before and after supplementary feeding in the working area of the Tanasitolo Health Center. It is hoped that the puskesmas will provide counseling about nutritional intake related to the content contained in ebi cassava crackers as a snack to optimize body weight, upper arm circumference, blood pressure, and hemoglobin levels during pregnancy.

INTRODUCTION

Maternal and child health issues are one of the aspects that are considered in the current Nawa Cita Program of the President of the Republic of Indonesia in order to improve the quality of life of the Indonesian people. These problems do not stand alone but are related to each other. One of the maternal health problems that still occurs in Indonesia is the case of chronic energy deficiency (KEK). (Triatmaja, 2017). The growth and development of the fetus is determined by the nutrition provided by the mother, both from the mobilization of maternal savings during pregnancy, as well as those given by the mother after the fetus is born. When nutritional intake during pregnancy is lacking, the fetus quickly makes adjustments(Hamzah, 2017).

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Basic Health Research Data (RISKESDAS) in 2018 shows the prevalence of the risk of CED in pregnant women (15-49 years) is still quite high at 17.3%. The percentage of pregnant women with SEZ is expected to decrease by 1.5% every year. DKI Jakarta is the province with the lowest percentage of SEZ pregnant women at 4%, while the province with the highest SEZ pregnant women is East Nusa Tenggara at 24.3%(Ministry of Health RI, 2018). Several causes that can affect Chronic Energy Deficiency (KEK) are low level of education, low knowledge about nutrition, low family income, maternal age <20 years or >35 years, high maternal parity, pregnancy spacing that is too close and antenatal frequency. less care(Andini, 2020). Meanwhile, according to the Association of Indonesian Nutritionists (1999), states that the factors that cause malnutrition are direct factors such as food intake and infectious diseases, indirect factors are food supplies at home, care for children and pregnant women, and health services. consists of poverty, lack of education, and lack of skills and the root of the problem includes the economic crisis(Fitrianingtyas et al., 2018).

KEK prevention measures related to energy consumption are to consume foods that are varied and contain sufficient calories and protein(Utami et al., 2017). KEK pregnant women need more energy and protein intake, because to meet the lack of energy needs for a long time so that nutritional status can improve to normal(Nugrahini et al., 2014). Supplementary food for recovery is needed for the target group as food additive for restoration of nutritional status(Hernawati & Kartika, 2019). One example of a good supplementary food for pregnant women who experience SEZ is ebi cassava crackers. Cassava contains nutrients that can neutralize blood pressure, where cassava contains various kinds of nutrients for pregnant women as ingredients that have the benefit of maintaining the digestive system, increasing energy during pregnancy and containing antioxidants. Cassava is also one of the foodstuffs that contain protein, vitamins, carbohydrates, iron, calcium, and minerals that can optimize blood pressure in pregnant women with CED.(Arfiani et al., 2020). Meanwhile, dried shrimp (ebi) is an alternative food ingredient that can be used to replace fresh shrimp because dried shrimp (ebi) has an edible weight (BDD) which is quite large, which is 90%. In addition, the protein content of dried shrimp (ebi) is also high at 62 g/100 g, which is good for optimizing the nutritional status of pregnant women.(Yasmin, 2017).

Based on the results of the preliminary study, it was found that of the 6 KEK mothers interviewed, almost all mothers said they did not know about additional food for pregnant women who were chronically deficient in energy. This could be due to the lack of mother's participation in participating in counseling conducted by health workers regarding additional food for pregnant women. The high incidence of chronic energy deficiency in pregnant women is due to lack of knowledge about complementary foods that are good in improving body weight, upper arm circumference status, blood pressure and hemoglobin levels of pregnant women.

Based on the description above, it is necessary to study to conduct further research on: "The Effect of Supplementary Feeding on Pregnant Women with Chronic Energy Deficiency in the Work Area of the Tanasitolo Health Center". The selected PMT is ebi cassava crackers because it has a complete nutritional content.

METHOD

Type, Location and Time of Research

The type of research used is quantitative research using the Quasi Experimental method. The design used in this study was the Pretest-Posttest Control Group Design, which was to choose a research group that was carried out randomly, both the control and treatment groups and prior to treatment, both groups were pretested to measure the initial state of the two groups (Hidayat, 2018). The purpose of this study was to determine differences in body weight, upper arm circumference, blood pressure and

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hemoglobin levels in chronic energy deficient pregnant women before and after being given additional food in the working area of the Tanasitolo Health Center.

Table 1. Quasi Experimental Design

Subject	Pre test	Treatment	Post test
KA	O	I	OIA
KB	O	-	OB
	Time 1	**2 time**	**3 time**

Information : (KA) Pregnant women in group 1, (KB) Pregnant women in group 2, (OO) Body weight, LILA, blood pressure and Hb levels before, (I) Intervention (giving food in the form of ebi cassava crackers, (-) No intervention was given, (OIA & OB) Body weight, LILA, blood pressure and Hb levels after.

Ebi cassava chips used as intervention materials were tested in the health laboratory of the South Sulawesi Provincial Health Office for nutritional content, by means of a proximate test. The content of cassava chips ebi protein is 3.16%, fat 25.4%, carbohydrates 28.86%, ash content 0.03%, fiber 10.59%, vitamin A 68.08%, vitamin C 87.31%, iron (Fe) 40.29mg/g, potassium (K) 4396.88 mg/g, calcium (ca) mg/g 2070.86 mg/g, Magnesium (Mg) 1382.55mg/g, sodium (Na) mg/ g 683.31 mg/g, zinc (Zn) 25.13 mg/g. The research location will be held at the Tanasitolo Health Center, Wajo Regency, on December 6, 2021 to January 6, 2022.

Respondent

Respondents for each group were 16 people in the intervention group (feeding in the form of ebi cassava crackers) and 16 people in the control group (no treatment). So the total sample in this study was 32 people. With inclusion criteria; pregnant women with 4 weeks of pregnancy, pregnant women who are able to follow the intervention, and pregnant women who are able to follow the feeding schedule. Exclusion criteria; pregnant women who are not cooperative, pregnant women who have allergies, and pregnant women who are not willing to be respondents.

Variable

The supplementary feeding in this study was the provision of nutritional supplementation in the form of ebi cassava crackers made with a special formulation and fortified with vitamins and minerals given to pregnant women with the category of Chronic Energy Deficiency (KEK) to meet nutritional needs.

Body weight (BB) in this study is a measurement of the amount of protein, fat, water, and minerals contained in the body which is measured using a weight scale. Objective Criteria: Appropriate: if the mother's weight gain is >9 kg at 20 weeks of gestation, Not suitable if the mother's weight gain is <9 kg at 20 weeks of gestation.

Analysis

Univariate, bivariate, and multivariate analyzes were performed with SPSS 20.0.

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RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondents Based on Characteristics in the Work Area of Tanasitolo Health Center

Characteristics of Respondents	Intervention		Control	
	N = 16	%	N=16	%
Age				
17-25 years old	7	43.8	3	18.8
26-35 years old	8	50.0	12	75.0
36-45 years old	1	6.3	1	6.3
Education				
SD	3	18.8	5	31.3
JUNIOR HIGH SCHOOL	6	37.5	3	18.8
SENIOR HIGH SCHOOL	4	25.0	4	25.0
S1	3	18.8	4	25.0
Profession				
IRT	11	68.8	12	75.0
civil servant	1	6.3	1	6.3
Honorary	2	12.5	3	18.8
Self-employed	2	12.5	0	0.0
Number of children				
There is no	5	31.3	3	18.8
1 child	4	25.0	7	43.8
Two children	3	18.8	2	12.5
3 children	3	18.8	4	25.0
4 kids	1	6.3	0	0.0

Table 2. Frequency distribution of BB, LILA, TDS, TDD, and HB in the intervention and control groups

Variable		Pre test		Post test 1		Post test 2		Post test 3		Posttest 4	
		n	%	n	%	n	%	n	%	n	%
Weight	***Intervention***										
	In accordance	0	0.0	0	0.0	0	0.0	9	56.3	13	81.3
	It is not in accordance with	16	100.0	16	100.0	16	100.0	7	43.8	3	18.8
	Control										
	In accordance	0	0.0	0	0.0	0	0.0	2	12.5	2	12.5
	It is not in accordance with	16	100.0	16	100.0	16	100.0	14	87.5	14	87.5

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Table 3. Differences in Body Weight in Pregnant Women with Chronic Energy Deficiency Before and After Supplementary Feeding

Variable		mean	SD	Sig.	Sig.
Weight	***Intervention***				
	Pre-test	46.25	4,359		
	Post-test 1	46.31	4,512	0.333	
	Post-test 2	47.31	4,347	0.000	
	Post-test 3	48.69	4,715	0.000	
	Post-test 4	49.69	5,134	0.000	0.108
	Control				
	Pre-test	45.38	4,334	0.333	
	Post-test 1	45.44	4,258	0.000	
	Post-test 2	46.13	4,209	0.000	
	Post-test 3	46.75	4,313	0.000	
	Post-test 4	46.88	4,455	0.000	

Differences in Body Weight in Pregnant Women with Chronic Energy Deficiency Before and After Supplementary Feeding

Based on the results, before giving additional food, there were 0 mothers (0.0%) who had the appropriate weight and 16 mothers (100.0%) who had the wrong weight. The results of this study indicate that the mother's weight is not appropriate because the mother's weight gain is <9 kg at 20 weeks of gestation. According to research Iriani et al., (2021), stated that the causes of the mother's weight not being ideal during pregnancy are lack of food intake and infectious diseases. Pregnant women who have adequate food intake but suffer from illness will experience malnutrition. As for pregnant women whose food intake is less then the immune system will be weakened and will be susceptible to disease. Malnutrition during pregnancy can result in less good for the mother, the fetus and the course of delivery. Therefore, attention to nutrition and control of body weight (BB) during pregnancy is one of the important things in health surveillance during pregnancy.

The results of observations after giving additional food in the form of ebi cassava crackers for 1 month obtained 13 mothers (81.3%) who had the appropriate weight and 3 mothers (18.8%) who had the wrong weight. The results of the Paired Sample t Test obtained p value = 0.000, which means that there is a difference in body weight in chronic energy deficient pregnant women before and after supplementary feeding. However, there are still 3 mothers who have an inappropriate weight. This is influenced by the education level of mothers who only have elementary and junior high school education, so it is difficult to receive the information provided regarding the nutritional status of pregnant women. According to research Iriani et al., (2021), explained that low education is very influential because the level of education can determine attitudes, knowledge and skills in determining family food.

The provision of additional food for 1 month distributed to pregnant women with poor nutritional status is the right step because it is in accordance with the basic principles of giving PMT to meet the nutritional adequacy of pregnant women with SEZ. However, PMT is not the main cause of weight gain in pregnant women. Dietary regulation and the type of nutrition consumed are important factors for increasing the weight of pregnant women(Juliasari & Ana, 2021). Providing additional food

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in the form of ebi cassava crackers can help mothers increase body weight during pregnancy. Consuming cassava is the right choice for pregnant women who are underweight. Cassava can help pregnant women to gain a healthy weight because cassava is rich in carbohydrates, where there are37.90 g carbohydrates contained in every 100 g of cassava (Septiriyani, 2017).

This research is in line with research Chandradewi (2015), suggested that supplementary feeding had a significant effect on weight gain of chronically deficient pregnant women. The eating arrangements of pregnant women will affect the nutritional adequacy and nutritional status of pregnant women. For pregnant women, basically all nutrients require additional, but what often becomes a deficiency is protein energy and some minerals such as iron and calcium.

Based on the researcher's analysis, there are differences in body weight in pregnant women with chronic energy deficiency before and after additional food in the form of ebi cassava crackers. So, it can be concluded that There is an effect of giving additional food in the form of ebi cassava crackers to increase the body weight of pregnant women with chronic energy deficiency. Giving additional food in the form of ebi cassava crackers for 1 month has the effect of increasing body weight in pregnant women. However, the regulation of diet and the type of nutrition consumed must also be considered as important factors for increasing the weight of pregnant women.

Research Limitations

The limitations of this study are that this study coincided with the COVID-19 pandemic, so it was necessary to apply health protocols such as keeping a distance from pregnant women, the patients in this study were also difficult to control by researchers regarding the control of food and drinks consumed by pregnant women. Also, the number of samples in this study is still relatively small and the results obtained cannot be generalized in a wide area and this research is only temporary and cannot be used as a long-term reference.

CONCLUSION

Based on the results of research onthe effect of supplementary feeding on chronic energy deficient pregnant women in the working area of the Tanasitolo Public Health Center, then it can be concluded that there is Differences in body weight in pregnant women with chronic energy deficiency before and after supplementary feeding.

SUGGESTION

Some suggestions from researchers; 1). Expected the wider community, especially pregnant women, to carry out pregnancy checks more regularly to checkweight.2). It is hoped that the puskesmas will provide counseling about nutritional intake related to the content contained in ebi cassava crackers as snacks in order to optimize body weight.

Thank-you note

The researcher expresses his deepest gratitude to the Head of the Puskesmas and the staff of the Tanasitolo Health Center and all respondents in this study.

Declaration of Conflict of Interest

All authors state that there is no potential Conflict of Interest in this research and article.

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