

MACRONUTRIENT INTAKE OF CHRONIC ENERGY DEFICIENCY PREGNANT WOMEN IN PEKANBARU CITY

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ABSTRACT

The Background : Chronic Energy Deficiency (CED) is a nutritional problem that affects pregnant women when their macronutrient intake is inadequate. This condition is a risk factor for the incidence of low birth weight babies that can increase the risk of stunting. **Objective:** The purpose of the study was to describe of macronutrient intake of CED pregnant women. **Method:** This research was descriptive research with cross sectional design, and sample collection techniques using cluster random sampling technique which carried out at 12 Primary Health Care in Pekanbaru City consisting of 20 CED pregnant women and 20 normal pregnant women. Data was collected by interviewing a questionnaire consisting of the identity of the subjects, economic status and household food security; food recall 2x24 hours that collected on weekdays, and anthropometric measurements of upper arm circumference. **Result and Conclusions:** Macronutrient intake of pregnant women in Pekanbaru City with chronic energy deficiency (upper arm circumference <23.5 cm) was categorized as inadequate the nutritional needs of pregnant women. Pregnant women need to increase their intake, maybe it can be a program of primary health care in providing nutrition counselling.

Keywords: Chronic Energy Deficiency ;Macronutrient Intake; Pregnant Woman

INTRODUCTION

Implementation of good health is one of the SDGs' 2030 indicators. The availability of these indicators is supposed to promote a healthy lifestyle and improve people's well-being. Improving human quality is key to achieving people's wellbeing. Good nutrition is one of the aspects required to build quality human beings. Efforts should be made since the fetus is still in the womb. According to Barker (2008), Fetal nutrition is critical for growth and development while in the womb. If the nutritional status of pregnant women is good, it is likely that the health of the fetus they carried is good and the safety of the mother during childbirth will be guaranteed (Muhamad, Z., et al, 2019).

Nutritional issues during pregnancy are one of the issues that

Indonesians encounter. Chronic Energy Deficiency (CED) is a nutritional problem that often occurs in pregnant women. A lack of energy and macronutrients is one of the causes of CED. This imbalance of energy and macronutrients causes the nutritional needs of pregnant women to not be insufficient. Because the central nervous system is highly sensitive in the first 2-5 weeks of pregnancy, women who have chronic energy deficiency problems before or during pregnancy are more likely to have children with brain and bone marrow damage. If the woman waits until the final week of pregnancy, the baby will be born with a low birth weight. (LBW) (Azizah, 2017). The findings of Fijiyanti's (2018) study back up this claim, indicating that CED is a risk factor for low birth weight kids. Low birth weight raises

the likelihood of stunting, according to Erowati (2016). The frequency of LBW in Indonesia is 6,2 percent, according to statistics from Riskesdas from 2018. CED is common in developing countries, with upper arm circumference <23.5 and/or BMI <18.5 . Based on data obtained from Riskesdas in 2018, the prevalence of CED in pregnant women in Indonesia is 17.3%.

The results of previous studies stated that chronic energy deficiency was caused by irregular eating patterns 3x/day with small portions, food intake that was not varied and inadequate, also low income (Fadillah, 2020). There is a statistically significant association between nutrition consumption (carbohydrates and protein) and Chronic Energy Deficiency, according to Anggoro 2020. (CED). The study's aim was to determine the macronutrient consumption of CED pregnant women.

METHOD

This is a descriptive study with a cross-sectional research design that examines the intake of groups of pregnant women who have CED and normal (who have not undergone CED), and the data is gathered all at once (Sastroasmoro, 2011). This research was conducted in August - November 2021. The sample collection was carried out using a cluster random sampling technique which was carried out at 12 Primary Health Care in Pekanbaru City, namely Rejosari Primary Health Care, Harapan Raya Primary Health Care, Payung Sekaki Primary Health Care, Rumbai Primary Health Care, Sidomulyo Inpatient Primary Health

Care, Kota Pekanbaru Primary Health Care, Karya Wanita Primary Health Care, Garuda Primary Health Care, Sail Primary Health Care, Lima Puluh Primary Health Care, Langsung Primary Health Care, and Tenayan Raya Primary Health Care. The sample size was 40 pregnant women, including 20 CED pregnant women and 20 normal pregnant women.

The researcher acquired primary data directly from participants through interviews using questionnaires that included subjects' identify, economic situation based on regional minimum wage Rp 2.997.971 and household food security. In addition, a food recall 2x24 hour was carried out to assess intake (not enough $<80\%$, enough 80-100%, more $>100\%$), and anthropometric measurements of upper arm circumference to assess the status of CED of pregnant women (upper arm circumference <23.5 cm categorized as CED, and ≥ 23.5 cm categorized as normal).

RESULTS AND DISCUSSION

1. Characteristic of Subjects

Based on table 1, the following results were obtained 72.5% of mothers aged between 19-29 years; 55% of mothers have a high school education background; 82.5 % of housewives had a second pregnancy on average, and 52.5 % were in their third trimester.

Table 1. Characteristic of Subjects

Variable	N	%
Age		
19-29 Years	29	72.5
30-49 Years	10	25.0
>49 Years	1	2.5
Mother's Education		
Elementary (not completed)	1	2.5
Elementary(graduated)	2	5.0
Middle(Graduated)	10	25.0
High (Graduated)	22	55.0
College(graduated)	5	12.5
Mother's Job		
Government employees	1	2.5
Private employees	1	2.5
Entrepreneur	3	7.5
Housewife	33	82.5
Gestational Age		
First trimester	5	12.5
Second trimester	14	35.0
Third trimester	21	52.5
Economic Status		
Poor	10	25.0
Not Poor	30	75.0
Food security		
Food insecure	26	65.0
Not Food Resistant Without Hunger	9	22.5
Not Food Resistant Moderate Hunger	3	7.5
Not Resistant to Heavy Hunger Food	2	5.0

Maternal gestational age ranges from 19 to 29 years for 72.5 %, 30 to 49 years for 25 %, and >49 years for 2.5 %. The median age is 27 years, indicating that it is not in danger. According to Ernawati's (2018) previous studies, pregnant women aged 20 to 35 years are at risk of chronic energy deficiency. The recommended non-risk pregnancy age range is 20-35 years. Energy needs based on the 2019 Recommended Dietary Allowance (RDA) for the age group 19-29 years are 2250 kcal/day and 30-29 years old are 2150 kcal/day. Mother's educational status is

elementary-junior-high schooleducation 87.5%; and 12.5% of pregnant women have tertiary education. Previous studies provided a correlation between knowledge and pregnant women's dietary requirements. This is supported by a higher education background, which makes it simpler to absorb pregnant women's information and apply it to the fulfillment of pregnant women's dietary demands.

The employment status of the mother is 12.5% of working mothers and 82.5% of mothers not working. Based on previous

research, it shows that working mothers have the ability to recognize family health problems, have the knowledge and ability to make decisions to overcome health problems. Therefore, mothers who act as workers as well as wives and housewives generally have better health (Ernawati, 2018).

Maternal gestational age was 12.5% in the first trimester, 35% in the second trimester, and 52.5% in the third trimester. The range of gestational age is related to the addition of nutritional needs based on the 2019 RDA.

According to the findings of the survey, 25% of the population was impoverished, while 75% were not. Poverty, malnutrition, infectious illnesses, housing, safe drinking water, environmental cleanliness, and health services are all associated to nutritional issues.

The results of research related to food security show that 65% are food insecure, 22.5% are food insecure without hunger, 7.5% are food insecure with moderate hunger, and 5% are food insecure with severe hunger. Food access in the community is intimately linked to the community's economic situation, which will exacerbate nutrition and health issues.

2. Nutritional Needs of Pregnant Women

Based on the 2019 RDA, the nutritional needs of adult women aged 19-29 years are 2250 kcal/day; protein 60 g/day; fat 65 g/day; 360 g/day. While 30-49 years old, the energy requirements are as follows:

2150 kcal/day; 60 g protein/day; 60 g fat/day; 340 g/day. In the first trimester, there are additional requirements for energy (180 kcal/day), protein (1 g/day), fat (2.3 g/day), and carbohydrates (25 g/day). In the second trimester, necessarily require 300 kcal/day of calories, 10 g of protein, 2.3 g of fat, and 40 g of carbohydrates. The third trimester requires 300 kcal/day of calories, 30 g of protein, 2.3 g of fat, and 40 g of carbohydrates.

3. Macronutrient Intake of Pregnant Women

The calculation of energy intake is based on the results of a food recall 2x24 hour compared to the energy requirements of pregnant women according to age group and extra needs according to gestational age.

Inadequate energy intake was found in 20 of the pregnant women with CED (60%) and adequate energy intake was found in 8 (40%). In normal pregnant women, 15 energy intake was inadequate (75%), 4 energy intake was adequate (20%), and 1 energy intake was excessive (5%). In the group of pregnant women with CED, 11 had inadequate protein intake (55%), 7 had adequate protein intake (35%), and 2 had higher protein intake (10%). Pregnant women with CED, fat intake was considered inadequate in 10 (50%), adequate in 8 (40 percent), and excessive in 2 (10%).

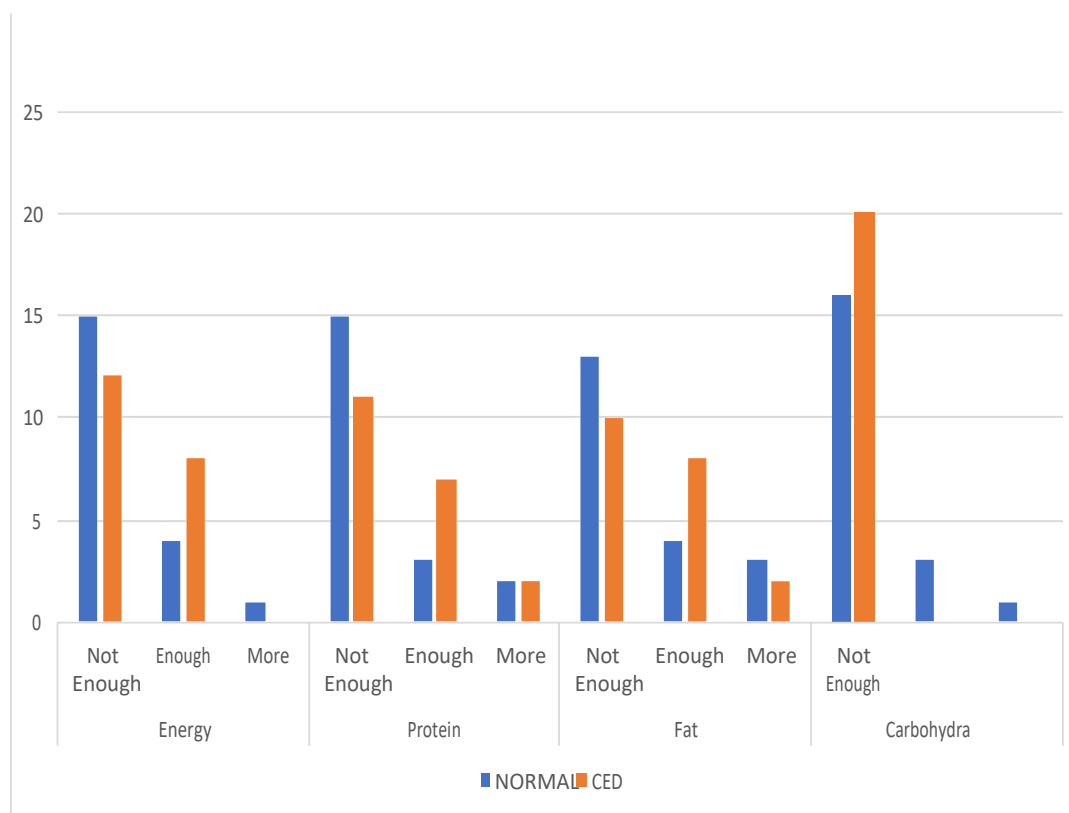


Figure 1. Macronutrient Intake of Pregnant Women in Pekanbaru City

Meanwhile, in normal pregnant women, it was found that 13 intakes of fat were less (65%), 4 were sufficient (20%), and 3 were more (15%). Carbohydrate intake in the group of pregnant women with CED showed that 20 was less (100%). Meanwhile, in normal pregnant women, the results showed that 16 carbohydrate intakes were less (80%), 3 were sufficient (15%), and 1 was more (5%).

Based on Figure 1 Macronutrient intake of pregnant women in Pekanbaru City who lack chronic energy (upper arm circumference <23.5 cm) and normal (upper arm circumference \geq 23.5 cm) are in the category of inadequate or not meeting the nutritional needs of pregnant

women. Factors that affect the nutritional status of pregnant women are energy balance or nutritional intake, namely the fulfillment of specific energy and nutritional needs of pregnant women that support maternal and child health. According to Barasi (2007), inadequate intake of macronutrients, which is less than the daily energy requirement, can result in impaired growth in children. The process of growth and maintenance of various body functions is one of the main roles of protein.

The quantity of protein, carbohydrate, and fat adequacy is not associated with the prevalence of CED, according to previous studies. This can be induced by using food recall 2x24 hours to

collect data on macronutrient consumption. This method is used to describe food intake during a short period of time. While chronic energy deficiency is a nutritional problem that occurs for a long time (Azizah, 2017). Low consumption of macronutrients and/or not meeting needs is thought to be due to the COVID-19 pandemic, so that mothers' access to nutritious food has decreased, besides that, it also has an impact on low family income so that the purchasing power of nutritious food also decreases (Abadi, 2020).

The results of previous studies stated that the provision of additional food in the form of biscuits with local food ingredients had a significant effect on increasing the weight of pregnant women with chronic energy deficiency ($p < 0.05$) (Chandradewi, 2018). In addition to supplementary feeding, the results of previous studies stated that the source of information had a direct role in the gestational weight gain. Providing information is very necessary because it is to correct the lack of knowledge and wrong public attitudes about health such as weight gain according to pregnancy, good and bad food consumed during pregnancy. (Manik, 2017). Therefore, support from health workers such as nutritionists is needed in providing education and/or information so that pregnant women can fulfill their needs so

that the fetus can grow and develop optimally.

CONCLUSIONS AND SUGGESTIONS

The macronutrient intake of chronic energy deficiency (upper arm circumference < 23.5 cm) pregnant woman showed that 60% was less energy intake, 55% less protein intake, 50% less fat intake and 100% less carbohydrate intake. Pregnant women need to increase their intake, maybe it can be a program of primary health care in providing nutrition counselling.

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