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Relationship between Nutrition Knowledge, Family Income, and Consumption Pattern with the Incidence of Chronic Energy Deficiency in Pregnant Women

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Abstract: *Background: Indirect factors that play an important role in complications in pregnant women, one of which is chronic energy deficiency (CED) caused by insufficient energy and protein intake in pregnant women. In 2020 the number of cases of CED in pregnant women at the Birayang Health Center has increased to 14.56%. The incidence of CED can occur because of low knowledge about nutrition, low family income, and fewer consumption patterns. Objective: To determine the relationship between nutritional knowledge, family income, and consumption patterns with the incidence of chronic energy deficiency (CED) in pregnant women in the work area of the Birayang Health Center, Central Hulu Sungai Regency. Methods: This type of research used observational analytics with a cross-sectional study design. Results: Respondents who experienced CED were 31.25% and those who did not experience CED were 68.75%. Respondents with good nutrition knowledge were 66.7%, adequate nutrition knowledge was 27.1% and 6.2% lacked nutrition knowledge. Family income in the high category is 29.2% and in the low category is 70.8%. Consumption patterns in the good category were 45.8% and the less category was 54.2%. Results: There is a relationship between nutritional knowledge, family income, and consumption patterns with the incidence of CED in pregnant women.*

Keywords: Chronic Energy Deficiency, Pregnant Women, Knowledge, Income, Consumption Pattern

INTRODUCTION

The still high Maternal Mortality Rate (MMR) and the slow decline in this figure indicate that maternal health services are urgently needed to be improved both in terms of coverage and quality. The high AKI can occur due to many factors, either directly or indirectly. One of the indirect factors that play an important role in complications in pregnant women and childbirth is chronic energy deficiency (CED). One of the causes of CED in pregnant women that occurs in Indonesia is due to lack of nutritional intake such as energy and protein, thus making the body's nutrition inadequate (Kemenkes, 2017).

Pregnant women who experience CED will be at risk of reducing muscle strength that helps the delivery process so that it can result in fetal death (miscarriage), premature birth, congenital disabilities, low birth weight babies (LBW), and even infant and maternal death. CED pregnant women can also interfere with fetal growth and development, namely physical growth (stunting), brain, and metabolism that cause infectious diseases in adulthood. For this reason, pregnant women who are at risk of CED, namely those who have a Mid Upper Arm Circumference (MUAC) <23.5 cm, are given additional food (Kemenkes, 2017).

According to data from the Central Hulu Sungai District Health Office, in 2019 the prevalence of pregnant women with CED conditions was 10.86%, then in 2020, CED pregnant women in the Central Hulu Sungai District increased to 12.32%, indicating an increase in the incidence of CED pregnant women. of 1.46%.

The Central Hulu Sungai District Health Office has 19 health centers, one of which is the Birayang Health Center which experienced an increase in the prevalence of pregnant women with

CED by 0.66%. In contrast, in 2019 it was recorded at 13.9% and increased in 2020 to 14.56%. It is also known that in addition to increasing CED in pregnant women at the Birayang Health Center, the high Maternal Mortality Rate (MMR) is also one of the problems there because death in pregnant women has just occurred in the first semester of 2021 and one of the indirect factors of maternal mortality is CED.

Several factors can cause CED in pregnant women, one of which is the lack of nutritional knowledge of pregnant women which can lead to nutritional deficiencies during pregnancy because knowledge of pregnant women's nutrition can affect how mothers plan and prepare healthy and balanced meals (Marmi, 2013).

Family income is one of the determining factors to improve the nutritional status of pregnant women. The level of income has a major influence on the purchasing power of the family's daily needs, especially in food, which ultimately affects the nutritional status of the pregnant woman and can cause malnutrition in the mother such as Chronic Energy Deficiency (CED) (Rahayu, 2019).

Consumption patterns have been known as one of the risk factors for nutritional problems in pregnant women. Habits or eating patterns that are wrong in pregnant women can have an impact on the occurrence of nutritional disorders. The level of nutritional adequacy can be determined by the frequency of eating, namely how often people eat every day which will determine the amount of food that enters a person's body (Almatsier, 2011).

The problems that have been described above show that the important variables that affect CED are important. Therefore, it is necessary to study in more depth the relationship between nutritional knowledge, family income, and consumption patterns with the incidence of chronic energy deficiency in pregnant women in the work area of the Birayang Health Center, Central Hulu Sungai Regency.

METHODS

The type of this research is analytic observational with the research design being cross-sectional. This research was conducted in the work area of the Birayang Health Center. The population in this study were all pregnant women in the working area of the Birayang Health Center, which amounted to 92 pregnant women. The sample used in the study amounted to 48 pregnant women with data collection techniques, namely *purposive sampling*. Primary data in the form of respondents' characteristics, knowledge of nutrition, family income, consumption patterns, and the incidence of CED were obtained through interviews using questionnaires and Mid Upper Arm Circumference (MUAC) measurements. Data analysis was carried out by testing *spearman rank.*

RESULTS AND DISCUSSION

Bivariate Analysis

a. Relationship between Nutrition Knowledge and Chronic Energy Deficiency (CED) in Pregnant Women

The results showed that there was a relationship between the nutritional knowledge variable and the incidence of CED in pregnant women value of 0.007, where the value < α (Table 1).

Table 1. Distribution of Relationship between Nutrition Knowledge and Chronic Energy Deficiency (CED) in Pregnant Women in the Working Area of the Birayang Health Center in 2022

Nutrition Knowledge	CED Risk				Amount	
	CED		No CED			
	n	%	n	%	n	%
Well	6	18.75	26	81.25	32	100
Enough	7	53.8	6	46.2	13	100
Not Enough	2	66.7	1	33.3	3	100
Amount	15	31.25	33	68.75	48	100

Note: p = 0.007 α= 0.05

b. Relationship of Family Income with Chronic Energy Deficiency (CED) in Pregnant Women

The results showed that there was a relationship between the family income variable and the incidence of KEK in pregnant women. *value* 0.02, where the value < α (Table 2).

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Table 2. Distribution of Relationship between Family Income and Chronic Energy Deficiency (CED) in Pregnant Women in the Working Area of the Birayang Health Center in 2022

Family Income	CED Risk				Amount	
	CED		No CED			
	n	%	n	%	n	%
High	1	7.1	13	92.9	14	100
Low	14	41.2	20	58.8	34	100
Amount	15	31.25	33	68.75	48	100

Note: p = 0.02 α= 0.05

c. Relationship between consumption patterns and the incidence of chronic energy deficiency (CED) in pregnant women

The results of the study indicate that there is a relationship between the variables of consumption patterns with the incidence of KEK in pregnant women the results were a value of 0.002, where the value < α (Table 3).

Table 3. Distribution of Relationship between Pattern Consumption and Chronic Energy Deficiency (CED) in Pregnant Women in the Working Area of the Birayang Health Center in 2022

Pattern Consumption	CED Risk				Amount	
	CED		No CED			
	n	%	n	%	n	%
Well	2	9.1	20	90.9	22	100
Not Enough	13	50	13	50	26	100
Amount	15	31.25	33	68.75	48	100

Note: p = 0.002 α= 0.05

a. Relationship between Nutrition Knowledge and Chronic Energy Deficiency (CED) in Pregnant Women

The results of the study in Table 1 show that most pregnant women who do not have CED have good knowledge (81.25%) while pregnant women who are at risk of CED have less knowledge (66.7%). The statistical test using Spearman Rank shows a relationship between nutritional knowledge and the incidence of CED in pregnant women in the work area of the Birayang Health Center. This is because knowledge of maternal nutrition during pregnancy is one of the factors that cause pregnant women to experience CED. After all, knowledge of pregnancy nutrition is very important for meeting nutritional needs during pregnancy.

The results of interviews with respondents said that there are several things they know about nutrition about CEDs but there are some things they also don't know. Knowledge of pregnant women's nutrition is very much needed by pregnant women to plan healthy and beneficial food menus for their pregnancy so that pregnant women can arrange healthy food menus for consumption (Elfiyah, 2021). Lack of nutritional knowledge affects pregnant women in choosing healthy and beneficial foods for pregnancy so that the nutritional needs of pregnant women are met.

From the results of the study, it was found that most of the respondents knowledge results had good knowledge, so they did not have the risk of CED. This is because pregnant women know and understand the basics of good nutrition for pregnant women so they encourage them to apply what they already know because knowledge is not only obtained from formal education but can also be obtained from non-formal education such as nutrition improvement counseling at the local posyandu and through various media such as television, mobile phones, and other media.

The existence of knowledge of the benefits of something will cause a person to have a positive attitude towards it. In this case, pregnant women who have a positive attitude will apply positive things suggested by health workers, such as paying attention to the consumption of nutritious food to prevent CED.

b. Relationship of Family Income with Chronic Energy Deficiency (CED) in Pregnant Women

The results of the study in Table 2 show that almost all pregnant women who are at risk of CED are low-income (93.3%). The statistical test using Spearman Rank shows a relationship between family income and the incidence of CED in pregnant women in the work area of the Birayang Health Center.

The average monthly income of the respondent's family is < UMK Central Hulu Sungai Regency in 2021, which is Rp. 2,877,448,-/month because most of the respondent's family income is uncertain every day and there is no definite amount of how much income they get. This is because most of the people's livelihoods in the working area of the Birayang Health Center are farmers, gardeners, and housewives whose job apart from helping their husbands work in the fields is taking care of household chores.

Low household income affects the level of household food consumption. However, high-income households also do not guarantee the nutrition of each household. The level of food consumption, both energy, and protein, will be influenced by the knowledge of household members on nutrition, especially in the elderly.

Low income can also cause low purchasing power so that they are unable to buy food with the required quantity and quality, this situation is dangerous for family health and can ultimately hurt the nutritional status of pregnant women, one of which is Chronic Energy Deficiency (CED).

The socio-economic level has been shown to have a significant impact on the physical and psychological health of pregnant women. Pregnant women with higher socioeconomic status will focus more on preparing physically and mentally as a mother. On the other hand, pregnant women with lower economic status will face many difficulties, especially in meeting their primary needs (Usman, 2019).

c. Relationship between consumption patterns and incidence of chronic energy deficiency (CED) in pregnant women

The results of the study in Table 8 show that almost all pregnant women whose consumption patterns are good are not at risk of CED (90.9%). Meanwhile, pregnant women who are at risk of CED have fewer consumption patterns (50%). The results of statistical tests using the test Spearman Rank show that there is a relationship between consumption patterns and the incidence of CED in pregnant women in the work area of the Birayang Health Center. This is because the nutritional state of pregnant women can be influenced by imbalances in the intake of types of food, nutrients, food portions and frequency, beliefs, and acceptance of food such as dietary restrictions and liking or disliking food. This affects how the consumption patterns of pregnant women affect the nutrition of pregnant women. These conditions tend to cause the mother to become deficient in certain nutrients such as CED, so it will be dangerous for pregnant women whose nutritional needs are not met (Rahayu, 2019).

An unbalanced diet will cause an imbalance of nutrients that enter the body and can lead to malnutrition. The results of interviews conducted with pregnant women revealed that some pregnant women who have a bad diet are caused by eating patterns that are not diverse according to type, frequency of eating, and the amount consumed is less. Types that do not vary in diet due to pregnant women rarely consuming vegetables and fruits.

Mothers who have fewer consumption patterns can be indicated that they have the same eating habits as conditions before pregnancy, this can be seen from the results of interviews with pregnant women saying that their food consumption is the same during pregnancy and before pregnancy even though the food needs of pregnant women are more than before. pregnant. Nutritional needs during pregnancy increase in line with an increase in the basal metabolic rate and weight gain which will increase the use of calories during activities. In addition, during pregnancy, the mother requires additional calories for the growth and development of the fetus, breast tissue, placenta, and fat reserves (Candri, 2017).

The food intake of pregnant women still requires relatively large amounts of nutrition and even requires additional nutrition, this is because apart from being used for the growth and development of the mother or herself, nutritional needs must also be shared with the fetus. Therefore, balanced nutrition for pregnant women must meet their nutritional needs themselves and the growth and development of the fetus.

CONCLUSIONS

Based on the results of research conducted in the work area of the Birayang Health Center,

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Central Hulu Sungai Regency, it was found that there was a relationship between nutritional knowledge, family income, and consumption patterns with the incidence of chronic energy deficiency (CED) in pregnant women.

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