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The Following Variables Are Linked to the Prevalence of Chronic Energy Deficiency in Expectant Mothers

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ABSTRACT

Women who are expecting and who have chronic energy deficiency (CED) are at risk for significant nutritional problem because it contributes to high maternal morbidity and mortality rates as well as fetal growth disorders. This study aims to analyze the relationship between knowledge level, economic status, and the prevalence of CED in expectant mothers at Puskesmas Balai Selasa Pesisir Selatan Regency in equal measure. The study used a cross-sectional analytical design. A sample of 66 pregnant women in the second and third trimesters was obtained using accidental sampling techniques. Data were collected through questionnaires and measurements of the Upper Arm Circumference (MUAC), then examined using the chi-square test both univariately and bivariately. The findings indicated that 42.4% of pregnant women experienced CED. There was a significant relationship between knowledge level (p = 0.000), economic status (p = 0.000), and parity (p = 0.001) with the incidence of CED. It can be concluded that these three variables are risk factors for CED. It is anticipated that healthcare professionals will strengthen nutritional education and interventions that focus on high-risk groups.

***Keywords**: CED, Pregnant Women, Knowledge, Economy, Parity*

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INTRODUCTION

Indonesia and other underdeveloped countries have the dietary problems of pregnant women remain a serious public health concern. Among the most prevalent nutritional issues is Chronic Energy Deficiency (CED), a disease in which pregnant women have a persistently low energy intake that can affect both the growth of the fetus and the health of the mother. Pregnancy-related CED is closely associated with an increased risk of maternal morbidity and death as well as the birth of low birth weight (LBW) newborns, according to the World Health Organization (WHO, 2025). Worldwide, CED in pregnant women reaches 41%. In Asia, the proportion of CED in pregnant women in Thailand is around 15.3%, and in Thanzania, 19% of pregnant adolescent mothers aged 15-19 years experience CED (Sulistianingsih et al., 2024) .

Nutrition is the biggest issue in Indonesia. Among the dietary issues pregnant women face is chronic energy deficit, or CED. Pregnant women with CED suffer from persistent (chronic) dietary insufficiencies, which can lead to a number of health issues. One of the populations most at risk for malnutrition is pregnant women because of the increased dietary requirements for both the mother and the fetus. Pregnant women can experience nutritional problems and fetal growth problems if they gain less weight (Rahayu & Sagita, 2019) .

Recording to the Riskesdas 2021 report Indonesia have 16.4% pregnant women with CED. This condition varies between regions, and higher prevalence is found in areas with low socioeconomic levels. In West Sumatra Province, the number of pregnant women with CED reached 14.7%, and one of the areas with the highest CED rate is Pesisir Selatan Regency, with a figure reaching 24.5% using information from the local Health Office in 2022(Kemenkes,2022).

CED during pregnancy can have short-term and long-term consequences. Short-term risks include impaired fetal growth, prolonged labor, postpartum hemorrhage, and premature birth, while long-term impacts include stunting in children and increased risk of non-communicable diseases in adulthood (Bhutta et al., 2020) . A pregnant woman is at risk of developing chronic energy insufficiency if her upper arm circumference (MUAC) is less than 23.5 cm or if there is a red area of the MUAC band (Hasyim et al., 2023) . Therefore, tracking pregnant women's nutritional status, especially through measuring the Upper Arm Circumference (MUAC), is an important indicator in early detection of CED.

Several previous studies have shown that factors such as maternal nutritional knowledge level, socioeconomic status, and parity play a significant role in influencing the incidence of CED (Ervinawati et al., 2019) . Low nutritional literacy causes mothers to not understand nutritional needs during pregnancy, while economic constraints limit access to nutritious food. High parity also contributes to the risk of CED due to the body's nutritional reserves being continuously depleted during pregnancy and repeated breastfeeding (Setiana Andarwulan, 2020) .

With these facts in mind, it is critical to enhance maternal health services' promotion and prevention efforts by conducting research to identify the variables linked to the incidence of CED. At the Balai Selasa Health Center in the Pesisir Selatan Regency, this study is to examine the association between the prevalence of CED among pregnant women and their degree of awareness,

economic standing, and parity. It is anticipated that municipal policies will be based on the study's findings to improve nutritional education and treatments for pregnant women who are at high risk.

METHODS

This kind of study uses a cross-sectional design and is analytical in nature. The study was conducted at the Balai Selasa Health Center in March–June 2020. The study population was all pregnant women in the second and third trimesters totaling 190 people, with a sample of 66 people using the *accidental sampling*. The dependent variable is the incidence of CED as measured by MUAC <23.5 cm. The independent variables are the level of knowledge, economic status, and parity. Questionnaires and interviews were used to gather data, and the chi-square test ($\alpha = 0.05$) was used for analysis.

RESULTS

A. Correlation Between Knowledge Level and Chronic Energy Deficiency (CED) in Pregnant Women

This study's bivariate analysis concluded the importance of the link between two variables using the chi-square statistical test results. Pregnant women with CED had a lower degree of knowledge (70.6%) than those without CED (29.4%), according to the data. The p-value, as determined by the chi-square test findings, is 0.000 (p-value > 0.05). This can be interpreted into three categories with the following results:

Table 1. Correlation Between Knowledge Level and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women at the Puskesmas Balai Selasa Pesisir Selatan Regency

Level of Knowledge	CED Events				
	CED		No CED		p-value
Low risk	24	70.6%	10	29.4%	0,000
High risk	4	12.5%	28	87.5%	
Total	28	42.4%	25	100%	

B. Correlation Between Economic Status and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women

The findings indicated that compared to pregnant women without CED (26.7%), CED was higher among 30 pregnant women from poor socioeconomic backgrounds (73.3%). The prevalence of chronic energy deficiency (CED) in pregnant women at the Puskesmas Balai Selasa Pesisir Selatan Regency is correlated with economic level, according to the results of the chi-square test, with a p-value of 0.000 (p-value> 0.05).

Table 2. Correlation between Economic Status and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women at the Puskesmas Balai Selasa Pesisir Selatan Regency

	Economic Status	CED				
		CED		No CED		p-value
a.	Low risk	22	73.3%	9	26.7%	0,000
b.	High risk	6	16.7%	30	83.3%	
Total		10	100%	25	100%	

C. The Correlation Between Parity and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women

Pregnant women at risk of parity had higher rates of CED (70.8%) than pregnant women without CED (29.2%). According to Chi-square test results, there is a correlation between pregnancy-related parity and the prevalence of chronic energy deficit (CED) at Puskesmas Balai SelasaPesisir Selatan Regency (p-value = 0.000; p-value > 0.05).

Table 3. Correlation Between Parity and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women at the Puskesmas Balai Selasa Pesisir Selatan Regency

Parity of Pregnant Women	CED Events				
	CED		No CED		p-value
Low risk	17	70.8%	7	29.2%	0.001
High risk	11	26.2%	31	73.8%	
Total	10	100%	25	100%	

DISCUSSION

A. Correlationn Between Knowledge Level and Chronic Energy Deficiency (CED) in Pregnant Women

Considering the research's findings that has been conducted, it was found that the level of low knowledge was as many as 70.6% who experienced CED, higher than pregnant women who did not have CED as many as 29.4%. Based on the results of the chi-square test, the p-value = 0.000 (p-value> 0.05).

According to studies (Hapsari et al., 2023), Pregnant women with CED were more knowledgeable about their nutritional status and the need of maintaining a balanced diet during their pregnancy. In another study by (Rika Fitri Diningsih et al., 2021) showed that most of the knowledge of pregnant women was in the good category. Knowledge about nutrition for pregnant women is very necessary in order to overcome problems that arise due to nutritional consumption, especially mothers as people who are responsible for food consumption for the family.

Since knowledge is the primary factor in forming maternal behavior, the researcher hypothesized that there would be a correlation between the incidence of CED and the level of

maternal knowledge. Pregnant women who meet their nutritional intake will be less likely to develop CED. Pregnant women who have low nutritional knowledge will behave by choosing foods that appeal to the five senses and do not make choices based on the nutritional value of the food. They should have high knowledge and tend to use more rationality and knowledge about the nutritional value of the food.

One of the things that contributes to pregnant women experiencing CED is their level of nutrition understanding. To maintain proper nutrition during pregnancy, it is crucial to have knowledge about pregnancy nutrition. Pregnant women have nutritional needs for both the fetus they are carrying and for themselves.

B. Correlation Between Economic Status and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women

The findings indicated that compared to pregnant women without CED (26.7%), CED was higher among 30 pregnant women from poor socioeconomic backgrounds (73.3%). The prevalence of chronic energy deficiency (CED) in pregnant women at the Puskesmas Balai SelasaPesisir Selatan Regency is correlated with economic level, according to the results of the chi-square test, with a p-value of 0.000 (p-value> 0.05).

Research by (Fahri et al., 2025) in Central Lombok showed that pregnant women with low economic status have a 4.5 times higher risk of experiencing CED. Meanwhile, a study by (Tarisca Rahmatika, 2024) concluded that economic status plays a direct role in the availability and quality of food consumed by pregnant women, thus contributing to the mother's nutritional status. However, a p-value of 0.063 indicated that there was no correlation between pregnant women's family income and the incidence of CED, in contrast to research by (Hikmah & Istioningsih, 2022).

The researcher hypothesized that because pregnant women's daily food intake is directly correlated with its nutritional value, There is a correlation between economic level and the occurrence of chronic energy deficiency (CED) among pregnant women. Pregnant women who have a low economy tend to buy food according to their finances, so that the nutritional content in food cannot be guaranteed for maternal nutrition during pregnancy. The mother's family income is related to the incidence of CED in pregnant women because it determines the fulfillment of the quality and quantity of food dishes for family members.

The mother's limited family income greatly affects the condition of a family, including the health status of all family members, one of which is in fulfilling the need for food that has nutritional value in sufficient quantities.

C. Correlation Between Parity and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women

Considering the study's findings, it was shown that 24 pregnant women who had a risk of parity, 70.8% experienced higher CED compared to Women who were pregnant but did not suffer from CED, 29.2%.According to the results of the chi-square test, parity and the prevalence of chronic

energy deficiency (CED) in pregnant women in the Puskesmas Balai SelasaPesisir Selatan Regency are related, as indicated by the p-value = 0.000 (p-value> 0.05).

According to research (Hikmah & Istioningsih, 2022) it states that the high parity rate that is not balanced with adequate pregnancy spacing causes the mother's nutritional reserves to deplete quickly, thereby increasing the chances of CED. This contrasts with studies (Nugraha et al., 2019) that indicated that Since 18 out of 34 pregnant women who were multiparous had CED (10 people and 8 non-KE), and 16 pregnant women who were primiparous had CED (9 people and 7 non-KE) with a P value of 0.968, the incidence of CED in pregnant women was not impacted by the number of parities A.

CONCLUSIONS

Pregnancy related CED incidence is substantially correlated with parity, economic status, and knowledge level. Health professionals must take preventative and promotional measures to raise awareness and enhance pregnant women's nutrition, particularly for high-risk populations.

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