(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)

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Article Info	ABSTRACT
Keywords: Chronic lack of energy, Pregnant mother, Knowledge, Malnutrition.	Malnutrition, especially energy and protein in the mother Pregnancy that lasts a long time and years can cause Chronic Energy Deficiency (KEK). The aim of this research is to determine the risk factors for CED in pregnant women in the work area of the Sumbawa Unit 1 District Health Center. The method used in this research is an analytical survey with a cross sectional approach. The statistical test used was the Chi-Square test. The population in this study was all 217 pregnant women. The research sample of 46 respondents consisted of 24 respondents who experienced KEK and 24 respondents who did not experience KEK. The sampling technique uses purposive sampling. Data analysis uses univariate and bivariate. Most pregnant women who experience CED (79.2%) have less knowledge, low income (75%), lack family support (87.5%), lack support from health workers (70.8%). The results of statistical tests show that there is a significant relationship between knowledge (p=0.006), income (p=0.006), family support (p=0.014) and support from health workers (p=0.017) with the incidence of CED in pregnant women. There is a significant relationship between knowledge, income, family support and support from health workers with the incidence of CED in pregnant women at the Sumbawa District Health Center Unit 1
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INTRODUCTION

The World Health Organization (WHO) reports that the Maternal Mortality Rate (MMR) is 99% in poor and developing countries. In 2019, it was reported that the MMR in poor and developing countries was 230 per 100,000 live births, while in developed countries it was 16 per 100,000 live births (WHO, 2019). The quality of human resources (HR) determines the success of a nation. One of the factors that influences the quality of human resources is nutritional adequacy. Adequate nutrition is needed for the process of brain development and physical growth. Therefore, fulfilling a person's nutritional adequacy needs to be planned early on during pregnancy. Nutritional needs that are not met early in life can affect the quality of life in the future (Alifariki, 2020). During pregnancy, mothers need adequate nutrition. This is due to increased energy metabolism required for fetal growth and development, increase in the size of the uterine organs, changes in the composition and metabolism of the mother's

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

1 | P a g e

body. Fulfillment of nutrients that are less than the body's needs during pregnancy can cause problems. One of the problems that often occurs is chronic energy deficiency (Mansoben 2022).

Pregnant women are at risk of experiencing nutritional deficiencies during pregnancy, known as Chronic Energy Deficiency (KEK). KEK pregnant women are pregnant women who suffer from a lack of energy and protein for a long time or chronically. This condition not only has a negative impact on the health of the mother but also the fetus she is carrying (Ismawati, Kurniati, and Oktavianto 2021).

Chronic energy deficiency in pregnant women can cause the risk of anemia, bleeding, the mother's weight not gaining normally, exposure to infectious diseases, and be an indirect cause of maternal death, while the effect of chronic energy deficiency on the labor process can result in difficult and long labor, childbirth premature birth (PPI), post partum bleeding, and an increase in caesarean sections. Chronic Energy Deficiency in pregnant women can also cause intrauterine growth retardation (IUGR) or even intrauterine fetal death (IUFD), congenital abnormalities, anemia and birth with low birth weight (LBW) babies with LBW which is a risk factor for stunting (Fajriani et all 2020).

At the beginning of pregnancy in the first trimester, energy requirements are still small and there is a slight increase in the second trimester. In the second trimester, energy is used for additional blood, uterine development, mammary tissue growth, and fat accumulation. In the third trimester, energy is used for fetal and placental growth. Because an increase in the amount of food consumption needs to be increased, especially consumption of food sources of energy to meet the needs of the mother and fetus, consuming less calories will cause malnutrition or what is usually called SEZ (Mukkadas 2021).

This research was conducted at the Sumbawa District Health Center Unit 1. The Sumbawa District Health Center Unit 1 is one of the community health centers where of course many pregnant women visit. Data on pregnant women with KEK for the period January – December 2023 is 24 people with a total of 217 pregnant women visiting. The aim of this research is to determine the frequency distribution of CED events in pregnant women, knowledge, income, family support and support from health workers. And to determine the relationship between knowledge, income, family support and support from health workers with the incidence of CED in pregnant women. Research (Rika Fitri Diningsih et al., 2021) shows that there is a relationship between maternal knowledge and the incidence of chronic energy deficiency. Knowledge can be related to the level of education of pregnant women. The higher the mother's education, the better the ability to absorb information, and vice versa, which shows that there is a relationship between the level of knowledge about nutrition and the incidence of Chronic Energy Deficiency (KEK). Pregnant women can experience CED in all trimesters. Sari & Sapitri's research shows that 55% of pregnant women who experience CED are in the second trimester, 35% in the third trimester, and 10% in the first trimester (Aeni, Natalia, and Sari 2023). Pregnant women's needs will increase, especially in the second trimester.

The research results show a significant relationship between knowledge, income, family support and support from health workers with the incidence of CED in pregnant women at

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

2 | P a g e

the Sumbawa District Health Center Unit 1. Several government programs that have been implemented and need to be improved in order to reduce the incidence of CED include providing food such as biscuit supplementary food program and also health promotion carried out at every visit by pregnant women.

METHODE

This research is an analytical study using a case control design by selecting a case group (pregnant women who experience CED) and a control group (pregnant women who do not experience CED). The population in this study was all pregnant women who made pregnancy visits to the Sumbawa District Health Center Unit 1 per month January-December 2023, namely 217 people and 24 people who experienced CED. The total sample in this study was 48 respondents with a sample division of 24 respondents who experienced KEK as cases and 24 respondents who did not experience KEK as controls.

The sampling method uses purposive sampling technique. This research was carried out at the Sumbawa District Health Center Unit 1. This research used primary data with a research instrument in the form of a questionnaire. The variable for the incidence of CED is determined by pregnant women with CED if LILA <23.5 cm and pregnant women without CED if LILA >23.5 cm. Data analysis uses the Odds Ratio test because the research data is categorical. Variables that have a p-value < 0.05 are considered significant. Data analysis using the SPSS version 16.0 application.

RESULTS AND DISCUSSION

Univariate Analysis Results

Frequency Distribution of CED Occurrences in Pregnant Women

Tabel 4.1. Frequency Distribution of CED Occurrences in Pregnant Women in the working Area of Sumbawa District Health Center Unit 1 in 2023

CED Occurrence	Frequency	Percent (%)
chronic lack of energy	24	11,1%
not lacking chronic energy	193	88,9%
Total	217	100.0

Based on Table 4.1, it can be concluded that 24 pregnant women experienced CED (11.1%) and 193 pregnant women did not experience CED (88.9%).

Frequency Distribution of Respondents' Knowledge

Tabel 4.2. Frequency Distribution of Respondents' Knowledge in the Working Area of Sumbawa District Health Center Unit 1 in 2023

Knowledge	Case		Control		Total	
	f	%	f	%	f	%
Not Enough	19	79,2%	15	62,5%	34	70,8%
Good	5	20,8%	9	37,5%	14	29,2%

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

3 | P a g e

Knowledge	Case		Control		Total	
	f	%	f	%	f	%
Total	24	100%	24	100%	48	100%

Based on Table 4.2, it can be concluded that 19 respondents in the case group had poor knowledge about KEK (79.2%) and 5 people (20.8%) had good knowledge about KEK. Respondents in the control group who had poor knowledge about KEK were 15 people (62.5%) and who had good knowledge about KEK were 9 people (37.5%).

Frequency Distribution of Respondents' Income

Tabel 4.3. Frequency Distribution of Respondents' Income in the Working Area of Sumbawa District Health Center Unit 1 in 2023

Income	Case		Control		Total	
	f	%	f	%	f	%
Low	18	75%	8	33,3%	34	70,8%
Tall	6	25%	16	66,7%	14	29,2%
Total	24	100	24	100	48	100

Based on Table 4.3, it can be concluded that, respondents in the case group who had low income were 18 people (75%) and those who had high income were 6 people (25%). Respondents in the control group who had low income were 8 people (33.3%) and those who had high income were 16 people (66.7%).

Frequency Distribution of Respondents' Family Support

Tabel 4.4. Frequency Distribution of Respondents' Family Support in the Working Area of Sumbawa District Health Center Unit 1 in 2023

Family support	f		Case	Control		Total	
		f	%	f	%	f	%
Not Enough	21		87,5%	12	50%	33	68,8%
Good	3		12,5%	12	50%	15	31,3%
Total	24		100	24	100	48	100

Based on Table 4.4, it can be concluded that, respondents in the case group who received less family support were 21 people (87.5%) and those who received good family support were 3 people (12.5%). There were 12 respondents in the control group who received less family support (50%) and 12 people who received good family support (50%).

Frequency Distribution of Support from Respondent Health Workers

Tabel 4.5. Frequency Distribution of Support for Respondent Health Workers in the Working Area of Sumbawa District Health Center Unit 1 in 2023

Support from health workers	Kasus		Kontrol		Total	
	f	%	f	%	f	%
Not Enough	17	70,8%	8	33,3%	25	52,1%
Good	7	29,2%	16	66,7%	23	47,9%

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

4 | P a g e

Support from health workers	Kasus		Kontrol		Total	
	f	%	f	%	f	%
Total	24	100	24	100	48	100

Based on Table 4.5, it can be concluded that, respondents in the case group who received poor support from health workers were 17 people (70.8%) and those who received good support from health workers were 7 people (29.2%). Respondents in the control group who received poor support from health workers were 8 people (33.3%) and those who received good support from health workers were 16 people (66.7%).

Bivariate Analysis Results
Relationship between knowledge and the incidence of CED in pregnant women
Tabel 4.6 The Relationship between Knowledge and the Occurrence of CED in Pregnant Women in the Working Area of the Unit 1 Sumbawa District Health Center in 2023,

Knowledge	Case		Control		Total	
	f	%	f	%	f	%
Not Enough	19	79,2%	15	62,5%	34	70,8%
Good	5	20,8%	9	37,5%	14	29,2%
Total	24	100%	24	100%	48	100%

Based on Table 4.6, it is known that, of the 24 pregnant women who experienced CED, most of them had poor knowledge about CED, namely 19 people (79.2%) compared to those who had good knowledge about CED, namely 5 people (20.8%). From the results of the chi-square test analysis, the p value = 0.006. Where the p value is smaller than the α value (0.007 < 0.05), which means that there is a significant relationship between knowledge and the incidence of CED in pregnant women in the Sumbawa Unit 1 District Health Center Working Area in 2023. The results of data analysis obtained an OR value (odds ratio) is 5.640, which means that pregnant women who have poor knowledge about CED are 5.649 times more likely to experience CED than pregnant women who have good knowledge about CED.

Hubungan Pendapatan dengan Kejadian KEK pada Ibu Hamil
Table 4.7 Relationship between income and the incidence of CED among pregnant women in the work area of Sumbawa District Health Center Unit 1 in 2023

Income	Case		Control		Total		P Value	P Value
	f	%	f	%	f	%		
Low	18	75%	8	33,3%	34	70,8%	0,006	6,245
Tall	6	25%	16	66,7%	14	29,2%		
Total	24	100%	24		100%	48	100%		

Based on Table 4.7, it is known that, of the 24 pregnant women who experienced CED, most of them had low incomes, namely 18 people (75%) compared to those who had high incomes, namely 6 people (25%). From the results of the chisquare test analysis, the p value = 0.006. Where the p value is smaller than the α value (0.007 < 0.05), which

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

5 | P a g e

means that there is a significant relationship between income and the incidence of KEK in pregnant women in the Unit 1 Sumbawa District Work Area in 2023. The results of data analysis obtained an OR value (odds ratio) of 6.245, which means that pregnant women who have a low income are 6.245 times more likely to experience CED compared to pregnant women who have a high income.

Relationship between family support and the incidence of CED in pregnant women

Table 4.8 The relationship between family support and the incidence of CED among pregnant women in the work area of Sumbawa District Health Center Unit 1 in 2023

Family Support	Case		Control		Total		P Value	OR
	f	%	f	%	f	%		
Low	21	87,5%	12	50%	33	68,8%	0,014	3,165
Good	3	12,5%	12	50%	15	31,3%		
Total	24	100%	24	100%	48	100%		

Based on Table 4.8, it is known that, of the 24 pregnant women who experienced CED, the majority received poor family support, namely 21 people (87.5%) compared to those who received good family support, namely 3 people (12.5%). From the results of the chi-square test analysis, the p value = 0.014. Where the p value is smaller than the α value (0.015 < 0.05), which means that there is a significant relationship between family support and the incidence of CED in pregnant women in the Unit 1 Sumbawa District Health Center Working Area in 2023. The results of data analysis obtained a value The OR (odds ratio) is 3.165, which means that pregnant women who receive less family support are 3.165 times more likely to experience CED compared to pregnant women who receive good family support.

Relationship between support from health workers and the incidence of CED in pregnant women

Table 4.8 The relationship between family support and the incidence of CED among **pregnant** women in the work area of Sumbawa District Health Center Unit 1 in 2023

Family Support	Case		Control		Total		P Value	OR
	f	%	f	%	f			
Low	17	70,8%	8	50%	25	68,8%	0,017	4,214
Good	7	29,2%	16	50%	23	31,3%		
Total	24	100%	24	100%	48	100%		

Based on Table 4.8, it is known that, of the 24 pregnant women who experienced CED, the majority received poor support from health workers, namely 17 people (70.8%) compared to those who received good support from health workers, namely 7 people (29.2%). From the results of the chi-square test analysis, it was obtained that the p value = 0.017, which means that there is a significant relationship between the support of health workers and the incidence of CE in pregnant women in the Working Area of the Unit 1 Sumbawa District Health Center in 2023. The results of the data analysis obtained

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

6 | P a g e

the OR (odds) value. ratio) of 4.214, which means that pregnant women who receive less support from health workers are 4.214 times more likely to experience CED compared to pregnant women who receive good support from health workers.

Relationship between knowledge and the incidence of CED in pregnant women

The results of statistical tests using the chi square test at α = 0.05, obtained a p value = 0.006, which means that there is a significant relationship between knowledge and the incidence of CED in pregnant women in the Working Area of the Sumbawa District Health Center Unit 1 in 2023. Test results The OR (odds ratio) obtained a value of 5.640, meaning that pregnant women who have poor knowledge about CED are 5.640 times more likely to experience CED than pregnant women who have good knowledge about CED. Knowledge is the result of knowledge from the stimulus obtained, and has an impact on individual behavior. The better the mother's knowledge about nutrition, the more information the mother knows about various types of food to meet nutritional needs including energy needs (Mansoben, 2022).

The results of this research are in line with research conducted by Panjaitan, et al (2022) that knowledge regarding the incidence of CED in pregnant women is important because CED can influence individual habits in choosing food or implementing a diet. He also explained that the majority of pregnant women who experience CED have insufficient knowledge, which is influenced by the mother's education which is still relatively low and the lack of information received by pregnant women, which affects the mother's nutritional consumption patterns.

Researchers assume that knowledge is dominant and very important for forming a person's actions based on experience. And basically knowledge or cognitive is a very important domain in shaping a person's actions. Lack of knowledge of pregnant women about nutrition during pregnancy can lead to a lack of nutritious food during pregnancy because basically knowledge about nutrition of pregnant women is very useful for the mother herself, therefore the need for energy and other nutrients greatly increases during pregnancy.

Relationship between income and the incidence of CED in pregnant women

The results of statistical tests using the chi square test at α = 0.05, obtained p value = 0.006, meaning that there is a significant relationship between income and the incidence of KEK in pregnant women in the Working Area of the Sumbawa District Health Center Unit 1 in 2023. OR test results (odds ratio) obtained a value of 6.245, meaning that pregnant women who have a low income are 6.245 times more likely to experience CED than pregnant women who have a high income.

Family income is the total real income of all household members living under one roof and is the responsibility of the head of the household. Family income can determine economic status, economic status can indirectly influence children's nutritional status. For example, families with good economic status can also get better public services, namely education, health services, and so on. A family's purchasing power for nutritious food is influenced by family income because determining the type of food to buy depends on the level of income (Suryani et al. 2021).

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

7 | P a g e

Low family income will result in low purchasing power for food so that mothers cannot meet their food needs and this will lead to a lack of food consumption among mothers. Family income also influences the quality of food consumed so that pregnant women get adequate nutrition during their pregnancy. The low income is also because they do not help their husbands to find additional sources of income, so that the family's income only relies on the husband's income (Hamzah, 2017).

The results of this research are in line with (Rachmawati et al. 2019), showing that income influences KEK with a value (b = -2.38; 95% CI = -6.27 to -0.60; p = 0.017), Adriani & Susilawati's research (2019), shows that income influences KEK (p value= 0.000 OR=13.67), age (p value= 0.005 OR=4.08). This research is in line with Hamzah (2017), shows that the income of pregnant women is classified as below wages. minimum is an influence on experiencing chronic energy deficiency (CED) in pregnant women (p-value 0.208).

Researchers assume that the relationship between income and the incidence of SEZ occurs because the family's ability to buy food depends, among other things, on the size of the family's income, the price of the food itself, and the level of management of land and yard resources. Families with limited income will most likely be less able to meet their food needs, especially to fulfill their body's nutritional needs. Income level can determine eating patterns. Income is the factor that most determines the quality and quantity of dishes. The more money you have, the better the food you get, in other words, the higher your income, the greater the percentage of that income to buy fruit, vegetables and several other types of food.

Relationship between family support and the incidence of CED in pregnant women

The results of statistical tests using the chi square test at α = 0.05, obtained a p value= 0.014, meaning that there is a significant relationship between family support and the incidence of KEK in pregnant women in the Sumbawa Unit 1 District Health Center Working Area in 2023. OR test results (odds ratio) obtained a value of 3.165, which means that pregnant women who receive less family support are 3.165 times more likely to experience CED compared to pregnant women who receive good family support.

The support provided by the family including husbands to pregnant women is by giving more attention, accompanying pregnant women to carry out pregnancy checks, maintaining health by reminding them to consume nutritious food, reminding them to eat regularly, reminding them to take Fe supplements during pregnancy and reminding them to regulate sleep patterns. This can make pregnant women feel comfortable, safe and happy during pregnancy, so that pregnant women are not easily stressed, tired and tired which has an impact on the health of pregnant women which causes CED (Nuryanti and Azzahroh 2022). The results of this research are in line with research by Santina (2019), at the Mandalangan Community Health Center, Proboling Goyang Regency, showing that there is a relationship between family support and the incidence of CED in pregnant women, where the value of p=0.001 was obtained. This happens because family support is something that cannot be ignored in the behavior of pregnant women. Similar results were also shown by research by (Rusmiati et al. 2023), in his research stating that family

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

8 | P a g e

support is closely related to the incidence of CED in pregnant women, with the statistical test results obtained being p=0.019.

Researchers assume that pregnant women really need support from those closest to them, such as family, during their pregnancy. The family is the smallest unit of society consisting of the head of the family and several people who live under one roof in a state of interdependence and it can be said that the health of family members and the quality of family life are closely related. Family participation really helps pregnant women successfully consume Fe tablet supplementation so they don't experience chronic energy deficiencies during pregnancy.

Relationship between support from health workers and the incidence of CED in pregnant women

The results of statistical tests using the chi square test at α = 0.05, obtained a p value= 0.017, meaning that there is a significant relationship between the support of health workers and the incidence of CED in pregnant women in the Working Area of the Sumbawa District Health Center Unit 1 in 2023. Test results The OR (odds ratio) value was 4.214, which means that pregnant women who received less support from health workers were 4.214 times more likely to experience CED compared to pregnant women who received good support from health workers. The role of health workers greatly influences pregnant women in getting the information they need during pregnancy, one of which is information on the nutritional intake needed by pregnant women. Good staff service makes mothers very enthusiastic about having their pregnancy checked so that problems during pregnancy such as a high risk of CED can be addressed early by providing additional food and information to pregnant women (Wahyuni, Rohani, and Fara 2021).

The results of this study are in line with research conducted by (Febriyeni 2017), which showed that there was a significant relationship between support from health workers and the incidence of CED in pregnant women, with a value of p=0.018. Similar results were also shown by Rahmawati (2020), that there was a significant relationship between support from health workers and the incidence of CED in pregnant women, showing a chi square test value of p=0.017.

Researchers assume that respondents who experience CED receive less support from health workers because they do not regularly make pregnancy check-up visits to health services. However, on the other hand, health workers in carrying out pregnancy checks are not accompanied by counseling about the need for supplementation, the benefits and side effects of taking supplements, so that pregnant women lack knowledge about pregnancy nutritional problems. On the other hand, pregnant women who experience CED are not compliant in consuming nutritional supplements due to a lack of awareness and knowledge of the negative impacts of malnutrition during pregnancy. Therefore, interventions for health workers are expected to increase coverage and compliance with nutritional supplementation in pregnant women in order to reduce the incidence of chronic energy deficiency in pregnant women.

(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

9 | P a g e

CONCLUSION

Research results and discussion about relationship between knowledge, income, family support and support from health workers with Chronic energy deficiency can be concluded that there is connection. Therefore, women of childbearing age It is recommended to be able to delay the distance pregnancy at least two years after giving birth, preventing pregnancy if not old enough or already entering age at risk. Apart from that, women of childbearing age too can consume protein, carbohydrates, fat, and sufficient energy, as well as looking for information related to KEK. Health workers it is recommended to improve program providing education to teenagers daughters and pregnant women regarding the importance of consuming a varied diet especially consuming protein and calories sufficient.

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(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

10 | P a g e

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(Analysis of Chronic Energy Deficiency (KEK) in Pregnant Women in the Sumbawa District Health Center Unit 1 Area)—Ana Lestari et.al

11 | P a g e