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ANALYSIS OF FACTORS CAUSING KEK (CHRONIC ENERGY DEFICIENCY) IN PREGNANT WOMEN AT PUSKESMAS DARUL FALAH, EAST ACEH DISTRICT IN 2024

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ABSTRACT

This study aims to analyse the factors that cause Chronic Energy Deficiency (CHD) in pregnant women at Darul Falah Health Centre, East Aceh District, in 2024. SEZ in pregnant women is one of the nutritional problems that can cause serious complications, both for the mother and the fetus she is carrying, such as low birth weight babies (LBW), anaemia, and the risk of difficult childbirth. This study used an analytical survey method with a case control approach on 66 respondents selected proportionally with random sampling technique. Data were collected through questionnaires and analysed using the chi-square test. The results showed that maternal age, anaemia, and emesis gravidarum had a significant association with the incidence of SEZ in pregnant women ($p < 0.05$), while the gestational age factor did not show a significant association. Anaemia and emesis gravidarum were the most influential factors for the incidence of SEZ, with a risk of 17.5 times and 10.07 times greater respectively than pregnant women who did not experience these conditions. This study confirms the importance of regular health monitoring of pregnant women, nutrition education, and intervention in the form of supplementary feeding to prevent the occurrence of SEZ and its complications.

Keywords: *Chronic Energy Deficiency, Pregnant Women, Anaemia, Emesis Gravidarum, East Aceh*

INTRODUCTION

Chronic energy deficiency (CHD) in pregnant women is a nutritional problem that can have a serious impact on the health of the mother and the unborn baby. SEZ is characterised by an upper arm circumference (LILA) of less than 23.5 cm, which indicates a long-term lack of energy and protein intake. According to WHO data in 2020, around 17.3% of pregnant women in Indonesia experience SEVERITY, with the risk of complications such as anaemia, LBW, and increased maternal and infant mortality.

Puskesmas Darul Falah, East Aceh District, is one of the health facilities facing this problem. An initial survey showed that 3 out of 8 pregnant women experience SEVERITY, which is caused by various factors, such as lack of knowledge about nutrition, unbalanced diet, and maternal health conditions before and during pregnancy.

The problem of SEZ in pregnant women not only affects the health of the mother during childbirth but also has an impact on the growth and development of the fetus, both during the neonatal period and after birth. Babies born to women with SEZ are at risk of LBW, stunting, and impaired cognitive development. In addition, SEZ can affect the quality of health of future generations, which in turn affects the quality of human resources in the future.

Various factors can influence the incidence of SEZ, including socioeconomic factors, education level, nutrition knowledge, diet, and access to health services.

Pregnant women with low education levels tend to have an inadequate understanding of the importance of nutritional intake during pregnancy. On the other hand, low economic factors may limit the family's ability to provide nutritious food.

In the context of health services at Puskesmas Darul Falah, nutrition counselling and assistance for pregnant women is an important step in preventing SEZ. Increasing the capacity of health workers in providing nutrition education, as well as providing additional food for pregnant women at risk of SEZ, are interventions that need to be optimised.

This study aims to identify factors that contribute to the incidence of SEZ among pregnant women in the region. It is hoped that the results of this study can provide strategic recommendations in efforts to prevent and treat SEZ, as well as increase public awareness about the importance of adequate nutritional intake during pregnancy.

MATERIALS AND METHODS

This study used an analytical survey method with a case control approach. Respondents were selected using proportional random sampling technique as many as 66 pregnant women registered at the Darul Falah Community Health Centre, East Aceh District, in 2024. Primary data were collected through a questionnaire containing questions related to nutritional knowledge, diet, and other risk factors for SEZ. Secondary data were obtained from health records at the health centre.

Data processing was done through editing, coding, entry, and tabulation. Data were analysed univariately to describe the frequency distribution of each variable, bivariately to determine the relationship between variables using the chi-square test, and multivariately to determine the most dominant factors affecting the incidence of SEZ. All analyses were performed using statistical software and a significance level of 0.05. This study adhered to the ethical principles of research, including informed consent from respondents and confidentiality of their personal data.

RESULTS

1. Univariate Analysis

Univariate analysis was used to obtain the frequency distribution of independent and dependent variables (Chronic Energy Deficiency (CHD) incidence table, age, gestational age, anaemia, emesis gravidarum). The results of the analysis can be seen in the following table:

Table 4.1 Frequency distribution of independent and dependent variables (incidence of Chronic Energy Deficiency (CHD), age, anaemia, gestational age, emesis gravidarum)

Variables	Frequency (f)	Percentage %
(Independent) Chronic Energy Deficiency	33	50,0
SEZ (Case)		
No SEZ (Control)	33	50,0
(Dependent) Age	17	25,8
At risk (< 20 and> 35)		

Not at Risk (20 - 35)	49	74,2
(Dependent) Anaemia Anaemia	30	25,8
Not anaemic	36	74,2
(Dependent) Pregnancy Age At risk (TM I and TM III)	27	40,9
Not at Risk (TM II)	39	59,1
(Dependent) Emesis Gravidarum Emesis	15	22,7
No Emesis	51	77,3
Total Respondents	66	100,0

Based on table 4.1 explains that of the 66 respondents it is known that half of the respondents (50%) experience SEZ. Of the 66 respondents, most respondents (74.2%) did not have an age at risk (20-35 years). Of the 66 respondents, most respondents (74.2%) were not anaemic. Of the 66 respondents, most respondents (59.1%) did have an at-risk gestational age (TM II). Of the 66 respondents, almost all respondents (77.3%) did not experience emesis gravidarum.

2. Bivariate Analysis

Table 4.2 Relationship between Maternal Age and the Incidence of SEZ in Pregnant Women at Darul Falah Health Centre, East Aceh District, 2024

Mum's age	**SEZZ**					***P***	***C OR***	
	SEZ		**No SE**		**Total**			
	F	%	F	%	%			
At Risk	16	48,5	1	3,0	25,8	0,000	0,461	30,118
Not at Risk	17	51,5	32	97,0	74,2			
Total	33	100,0	33	100,0	100,0			

From the results of the *chi-square* test with performed the *Continuity* test *correction x* =15.529 with a *p* value of= 0.000< P= 0.05. This showed that there was a relationship between maternal age and the incidence of Chronic Energy Deficiency (CHD) in pregnant women at the Darul Falah Community Health Centre, East Aceh Regency in 2024.

The contingency coefficient test results obtained a value of C = 0.461 with P = 0.000 <0.05 means significant. The value is compared to=0.652, this value is located in the interval 0.50-0.79, so the relationship category is close.

The results of the *Risk Estimate* test showed that the OR value was 30.118, meaning that mothers at risk (<20 or >35 years old) were 30.118 times more likely to experience SEZ than mothers who were not at risk (20-35 years old).

Table 4.3 Relationship between Anaemia and the Incidence of SEZ in Pregnant Women at Puskesmas Darul Falah, East Aceh District, 2024

Anaemia	**SEZ**						**P**	**C**	**OR**
	SEZ		**No SEZ**		**Total**				
	F	%	F	%	F	%			
Anaemia	25	75,8	5	15,2	30	45,5	0,000	0,520	17.500
Not anaemic	8	24,2	28	84,8	36	54,5			
Total	33	100,0	33	100,0	66	100,0			

From the results of the chi-square test with performed test Continuity correction x^2=22.061 with a p value of= 0.000 <□=0.05. The results of the contingency coefficient test showed that there was a relationship between anaemia and the incidence of Chronic Energy Deficiency (CHD) in pregnant women at Puskesmas Darul Falah, East Aceh Regency in 2024. The contingency coefficient test results obtained a value of C = 0.520 with P = 0.000 <0.05 means significant. The value is compared to=0.735, this value is located in the interval 0.50-0.79, so the relationship category is close.

The results of the Risk Estimate test showed that the OR value was 17.500, meaning that anaemic mothers were 17.500 times more likely to experience SEZ than non-anaemic mothers.

Table 4.4 Relationship between Age of Pregnancy and the Incidence of SEZ in Pregnant Women at Darul Falah Community Health Centre, East Aceh Regency, 2024

Pregnancy Age	SEZ						P
	SEZ		No SEZ		Total		
	F	%	F	%	F	%	
At Risk	17	51,5	10	30,3	27	40,9	0,133
Not at Risk	16	48,5	23	69,7	39	59,1	
Total	33	100,0	33	100,0	66	100,0	

From the test results chi-square with the Continuity test performedcorrection x^2=2.256 with a p value of= 0.133 >□=0.05. Thisshowed that there was no association between gestational age and the incidence of Chronic Energy Deficiency (CHD) in pregnant women at the Darul Falah Community Health Centre, East Aceh Regency in 2024.

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Table 4.5 Relationship between Emesis Gravidarum and the Incidence of SEVERITY in Pregnant Women at Darul Falah Health Centre, East Aceh Regency, 2024

Emesis Gravidarum	SEZ						P	C	OR
	SEZ		No SEZ		Total				
	F	%	F	%	F	%			
Emesis Gravidarum	13	39,4	2	6,1	15	22,7	0,003	0,370	10.075
No Emesis Gravidarum	20	60,6	31	93,9	51	77,3			
Total	33	100,0	33	100,0	66	100,0			

From the results test chi-square test with Continuity correction x^2 = 8.627 with p value = 0.003 < □ = 0.05. This shows that there is a relationship between emesis gravidarum with incidence of Chronic Energy Deficiency (CHD) among pregnant women at Darul Falah Community Health Centre, East Aceh District, 2024.

The contingency coefficient test results obtained a value of C = 0.370 with P = 0.000 <0.05 means significant. The value is compared to=0.523, this value is located in the interval 0.50-0.79, so the relationship category is close.

The results of the *Risk Estimate* test showed that the OR value was 10.075, meaning that mothers who experienced emesis gravidarum were 10.075 times more likely to experience SEZ than mothers who did not experience emesis gravidarum.

3. Multivariate Analysis

Table 4.7. Relationship between the dependent variable (maternal age, gestational age, anaemia, emesis gravidarum) and the dependent variable (incidence of chronic energy deficiency in pregnant women at the Darul Falah health centre, East Aceh district, 2024).

Variables	B	S.E.	Sig.	Exp(B)	95%CI	
					Upper	Lower
Anaemia	-2.485	0.813	0.002	0.083	0.447	0.644
Emesis gravidarum	-2.803	1.105	0.011	0.061	0.677	0.869
Constant	1.861	0.573	0.001	6.432		

Based on the table above, it can be concluded that from the results of multivariate analysis that has the most influence on SEZ, namely anaemia and emesis gravidarum with a p-value = 0.002 and 0.011 <0.05, while the variables of maternal age and gestational age were excluded from the analysis because it does not have a relationship p-value=0.167 and 0.828>0.05.

The magnitude of the effect is indicated by the Exp (B) value or also called the ODDS RATIO (OR). Anaemia variable with OR = 0.083 (CI 95% 0.447-0.644) then respondents who are anaemic are at risk of anaemia by 0.083 times when compared to respondents who are not anaemic. Variable emesis gravidarum with OR = 0.061 (CI 95% 0.677- 0.869) then respondents who experience emesis gravidarum are more at risk of experiencing SEZ by 0.061 times compared to respondents who do not

experience emesis gravidarum. From the results of logistic regression, it is known that anaemia and emesis gravidarum simultaneously have an effect on the incidence of chronic energy deficiency in pregnant women at Puskesmas Darul Falah, East Aceh Regency in 2024.

DISCUSSION

The results showed that 50% of respondents experienced SEZ, which was influenced by nutritional factors, anaemia, and emesis gravidarum. Maternal age at risk (<20 or >35 years) had a significant association with SEZ, with young and older mothers more prone to nutritional deficiencies due to higher nutritional requirements and less optimal physiological conditions. Anaemia is also a major contributing factor to SEZ, with anaemic pregnant women 17.5 times more at risk than non-anaemic ones. Sustained iron deficiency can lead to reduced red blood cell production, reduced oxygen supply for both mother and foetus, and increased risk of pregnancy complications.

Although no significant association was found between gestational age and SEZ, the first and third trimesters are more likely to experience the condition. In the first trimester, excessive nausea and vomiting symptoms can drastically reduce nutrient intake, while in the third trimester, increased energy requirements cannot always be met properly. Emesis gravidarum is a significant factor in the incidence of SEZ, with a 10-fold increased risk due to reduced food intake from prolonged nausea and vomiting. This suggests that attention to the health of pregnant women should be increased early on to prevent SEZ and its adverse effects on the foetus.

To address SEA, a holistic approach is needed that includes nutrition education to pregnant women on the importance of a balanced diet, regular iron supplementation to prevent and treat anaemia, and more intensive health monitoring for mothers with high risk factors. In addition, the management of emesis gravidarum needs to be done with the right medical and nutritional approach so that it does not lead to malnutrition. Public health policy-based interventions are also needed, including the provision of supplementary food for at-risk pregnant women and improved access to quality maternal health services. With the right efforts, it is hoped that the SEZ rate can be reduced so that the health of the mother and foetus is better maintained, supporting successful pregnancy, and reducing maternal and infant mortality due to complications associated with SEZ.

CONCLUSION

Based on the results of research and discussion of factors associated with the incidence of Chronic Energy Deficiency (CHD) in pregnant women at the Darul Falah Health Centre, East Aceh Regency in 2024, the following conclusions can be made:

1. Of the 66 respondents, it is known that half (50%) experienced SEZ, a small proportion (25.8%) had an age at risk (<20 or 35 years), almost half (45.5%) experienced anaemia, almost half (40.9%) had a risky gestational age (TM I and III) and a small proportion (22.7%) experienced emesis gravidarum.
2. There is a relationship between maternal age and the incidence of Chronic Energy Deficiency (CHD) in pregnant women, the relationship category is close and mothers who are at risk (<20 or >35 years) are 30.118 times more at risk of experiencing CHD than mothers who are not at risk (20-35 years).

3. There is no relationship between gestational age and the incidence of Chronic Energy Deficiency (CHD) in pregnant women at the Darul Falah Community Health Centre, East Aceh Regency in 2024.
4. There is a relationship between emesis gravidarum and the incidence of Chronic Energy Deficiency (CHD) in Pregnant Women, with a close relationship category and mothers who experience emesis gravidarum are 10.075 times more at risk of experiencing CHD than mothers who do not experience emesis gravidarum.
5. From the results of logistic regression, it is known that anaemia and emesis gravidarum simultaneously have an influence on the incidence of chronic energy deficiency in pregnant women at Puskesmas Darul Falah, East Aceh Regency in 2024.

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