



ANALYSIS OF FACTORS AFFECTING THE INCIDENCE OF CHRONIC ENERGY DEFICIENCY (CHD) IN PREGNANT WOMEN IN THE BOAWAE HEALTH CENTRE

Lorensia Maria Yustina Itu^{*}, Atika

Faculty of Medicine, Midwifery Study Program, Universitas Airlangga
Campus A, Jl. Prof. DR. Moestopo No.47, Pacar Kembang, Kec. Tambaksari, Surabaya, Jawa Timur 60132,
Indonesia

Email: lorensia257@gmail.com

Abstract

Background: Chronic energy deficiency in pregnant women is a condition where pregnant women experience malnutrition or malnutrition for a long time, which can cause health problems for the mother and fetus. In 2022, the maternal mortality rate reached 207 per 100,000 KH, exceeding the strategic plan target of 190 per 100,000 KH. Direct causes of maternal mortality are bleeding, eclampsia, miscarriage complications, and infection; indirect causes play a major role in complications in pregnant women with chronic energy deficiency. The prevalence of chronic energy deficiency in NTT in 2022 was 36.8%; in Nagekeo Regency, it was 12.6%; and at Boawae Health Center, in 2022, the prevalence of was 13.6%; in 2023, it decreased by 11.5%. This study aims to analyze the factors that cause chronic energy deficiency in pregnant women in the Boawae Health Center area. **Methods:** This study is an observational analysis with a cross-sectional approach. The sampling technique was total sampling. The samples in this study were pregnant women in trimesters 1, 2, and 3 in the Boawae Health Center area. The research variables were knowledge, education, income, and work. The instrument used was a questionnaire. Data analysis using chi-squared with alpha ($\alpha = 0.05$). **Results:** The research sample included as many as 105 pregnant women. Bivariate results showed that the variables knowledge ($p = 0.982$), education ($p = 0.059$), income ($p = 0.08$), and occupation ($p = 0.338$). This indicates that the factors of knowledge, education, income, and occupation do not have a significant relationship with chronic energy deficiency. **Conclusion:** There is no significant relationship between the factors of knowledge, education, income, and employment and the incidence of chronic energy deficiency (CHD) in pregnant women. Efforts to handle pregnant women with chronic energy deficiency include providing additional food to pregnant women, ensuring adequate food availability in the household, providing counseling on the importance of meeting the nutritional needs of pregnancy, and changing habits or eating patterns to the needs of pregnant women.

Keywords: Chronic Energy Deficiency, Pregnant, Women

Introduction

The World Health Organization (WHO) reports that the prevalence of chronic energy deficiency (CHD) in pregnant women globally is around 32–73%, and around 830 women die every day worldwide due to complications of pregnancy or childbirth. In 2022, the maternal mortality rate in Indonesia reached 207 per 100,000 KH, exceeding the strategic plan target of 190 per 100,000 KH (Ministry of Health, 2022). One of the indirect causes of maternal mortality that plays a major role in complications in pregnant women is chronic energy deficiency (CHD) (WHO, 2021). Chronic energy deficiency is a condition that occurs in pregnant women when they experience nutritional deficiencies or malnutrition

that last for years (chronic), which results in symptoms of maternal health problems including body weakness and pale skin due to a lack of adequate nutritional intake (energy and protein) (Arisman, 2008). The prevalence of chronic energy deficiency (CHD) in East Nusa Tenggara Province in 2022 showed a fairly high number of 17.3%. Nagekeo Regency in 2023 was the district with the highest prevalence of chronic energy deficiency (CHD) for the province of NTT, which amounted to 12.6%. Based on the PWS-KIA data for the Nagekeo Regency in 2023, the highest prevalence in the Nagekeo Regency is in the Boawae Health Center area. According to the NTT health profile, nutritional problems are caused by various factors, such as low levels of knowledge, education, income, and employment. Other factors that cause chronic energy deficiency (CHD) include infectious diseases, consumption patterns and nutritional intake, age, pregnancy distance, parity, family support, socio-cultural factors, and psychological factors. Based on the Central Statistical Data of Nagekeo Regency, Boawae District is one of the sub-districts with the largest population and the highest incidence of chronic energy deficiency in Nagekeo Regency compared to other sub-districts. Researchers see a phenomenon that occurs where the Boawae area is sufficient. advanced in terms of economy, education level, business opportunities, employment, and food natural resources such as rice and secondary crops, as well as the largest livestock production for the Nagekeo district area, but the prevalence rate of SEZ incidence is still quite high. Therefore, researchers are interested in further research on the factors that cause chronic energy deficiency (SEZ) in pregnant women, especially the factors of knowledge, education, income, and employment.

Previous research

Research conducted by Herawaty et al. (2024) showed a significant relationship between knowledge, education, and chronic energy deficiency (CHD). In Anggraini's research, Y (2013) showed that there was a relationship between family income and the incidence of chronic energy deficiency (CHD) in the city of Metro, Lampung Province, with $p = 0.001$. According to the results of research by Lubis et al. (2013), which showed a relationship between family income and the incidence of SEZ at the Langsa Lama Health Center in Langsa City in 2015 with a value of $p = 0.001$, Rahmانيar et al. (2013) found a relationship between family income and the incidence of chronic energy deficiency (CHD) in pregnant women. According to Halimah et al. (2021), the incidence of chronic energy deficiency (CHD) in pregnant women is influenced by socio-economics, namely work, and income, because the lower the education, the work will not be good and the income will be low, so that the ability to meet nutritional needs is not fulfilled, so they will be at risk of suffering from chronic energy deficiency (CHD) conditions.

Purpose of Writing

To analyze the influence of knowledge, education, income, and employment factors on the incidence of chronic energy deficiency in pregnant women in the Boawae health centre area.

Research Methods

This type of research is observational-analytic with a cross-sectional approach. The affordable population for this study was all pregnant women who came to check their pregnancy (ANC) at the KIA Poly Boawae health centre in January. The sampling technique used was total sampling because the population was less than 200 pregnant women. The sample size was 105 pregnant women. The tools and materials used were questionnaire sheets, LILA ribbons, digital cameras for documentation, and stationery. The dependent variable is pregnant women with chronic energy deficiency; the dependent variable is the factors of knowledge, education, income, and work. The data collection technique used is primary data obtained directly from respondents (pregnant women). The instruments used are

questionnaire sheets and LiLA tape to measure upper arm circumference in pregnant women. Data processing was analyzed using the Statistics Package for Social Science (SPSS) program. Data analysis is univariate and bivariate. In the bivariate analysis using the Chi-Square (X²) statistical test, the level of significance chosen is alpha (α) = 0.005. Interpretation If $p \geq 0.05$, then there is no meaningful relationship. If the p-value is <0.05 , then there is a meaningful relationship.

Results

Analysis of research results

Table 4.1. Distribution of respondent characteristics based on knowledge, education, income and occupation.

No	Characteristics	CED (n)%	Not CED (n)%
1	Knowledge		
	Less	2 4,1	2 3,5
	Enough	4 8,2	5 8,9
	Good	43 8,7	49 8,7
2	Education		
	Low (TS, DO, SD, SD)	2 4,08	4 7,1
	Middle (SMP, SMA)	28 5,7	30 5,3
	High (D3, D4, S1, S2, S3)	19 3,8	22 3,9
3	Income		
	<rp.2.123.994	27 5,5	48 8,5
	\geq rp.2.123.994	22 4,4	57 9,8
4	Occupation		
	Work	47 9,5	53 9,4
	Not Working	2 4,0	3 5,3
5	Parity		
	< 4 children	44 8,9	48 8,5
	\geq 4 children	5 1,02	8 1,4
6	Pregnancy spacing		
	< 2 years	26 5,3	42 7,5
	\geq 2 years	23 4,6	14 2,5
7	Age		
	At Risk	7 1,4	21 3,7
	Not at risk	42 4,6	35 5,3

8,5 6,2

From the table shows that most of the pregnant women with severity who are well informed are 8.7%, with secondary education 5.7%, family income <rp.2,123,994 the table shows that most of the pregnant women with severity who are well informed are 8.7%, with secondary education 5.7%, family income <rp.2,123,994.

Table 4.2. Tabulation of the relationship between knowledge factors and the incidence of Chronic Energy Deficiency in pregnant women in the Boawae health centre area

Characteristics	CED (n)%	Not CED (n)%	totally	P
Knowledge				
Less	2 50	2 50	4	
Enough	4 44	5 55	9	
Good	43 46	49 53	92	0,98 2

The results of the analysis showed no significant relationship between the knowledge of pregnant women with Chronic Energy Deficiency in pregnant women with a $p > 0.05$ value of 0.982.

Table.4.3. Tabulation of the relationship between educational factors and the incidence of Chronic Energy Deficiency in mothers in the Boawae health centre area

Characteristics	CED (n)%	Not CED (n)%	Total	P
Education				
Low (TS, DO, SD, SD)	4 5,7	3 0,53	7 0,6	
Middle (SMP, SMA)	24 4,8	37 6,6	61 5,8	
High (D3, D4, S1, S2, S3)	21 4,2	14 2,5	30 5	
Totally	49	56	105	0,118

Table.4.3 It shows that most of the pregnant women have secondary education 24 people (4.8%). The results of the analysis showed a p value = 0.118 (> 0.05) meaning that there was no significant relationship between education and the incidence of Chronic Energy Deficiency in pregnant women.

Table 4.4. Tabulation of the relationship between income and the incidence of Chronic Energy Deficiency

Income	CED (n)%	Not CED (n)%	Total (n)%	P
<Rp.2.123.994	27 5,5	21 3,7	48 4,5	
>Rp.2.123.994	22 4,4	35 6,2	57 5,4	
Total	49	56	105	0,071

Table.4.4 It shows that most pregnant women with Chronic Energy Deficiency (CHD) have an income of <Rp.2,123,994 which amounts to 27 people (5.5%). The results of the analysis have an average value of 0.071 ($p>0.05$), meaning that there is no significant relationship between income and the incidence of Chronic Energy Deficiency (CHD).

Table 4.5. Tabulation of the relationship between occupation and the incidence of Chronic Energy Deficiency (CHD) among pregnant women in the Boawae Health Centre UPTD area

Jobs	CED (n)%	Not CED (n)%	Total (n)%	P
Not Work	2 0,40	3 0,53	5 9,5	
Work	47 9,5	53 9,4	100 9,5	
Totally	49	56	105	0,759

Table.4.5. shows that most pregnant women work at 9.5%, with the results of the analysis of p value = 0.759 ($p>0.05$).

Factors causing chronic energy deficiency in pregnant women

The factors that cause chronic energy deficiency in pregnant women are direct and indirect. Direct causes consist of food intake and infectious diseases. Food intake is all the types and drinks that the body consumes every day. A person's nutritional status is determined by the quality and quantity of adequate food intake and

Infectious diseases are caused by biological agents (such as viruses, bacteria, or parasites) and are not caused by physical factors (such as burns, scratches, or the normal functioning of body organs). While infectious diseases are caused by biological agents (such as viruses, bacteria, or parasites) and not by physical factors (such as burns, scratches, or accidental injuries), Infectious diseases that can occur in pregnant women include syphilis, rubella, toxoplasmosis, the citomegako virus, herpes, hepatitis, and tuberculosis (Darmadi, 2008). Infections affect nutritional status, which can cause a lack of appetite, decreased absorption, and the habit of reducing food intake during illness, ultimately leading to malnutrition. In addition, increased fluid or nutrient loss due to diarrhea, nausea, vomiting, and continuous bleeding.

Indirect causes include knowledge, education, income, and occupation. A person's level of knowledge affects attitudes and behavior in food selection, which ultimately affects the nutritional state concerned. How to measure knowledge according to Arikunto (2013) into 3 categories, namely: Good if the subject answers correctly 76–100%; sufficient if the subject can answer correctly 56–75% of all questions; less if the subject can answer correctly 40–50% of all questions. Education is one of the factors that can affect the quality and quantity of food because people with higher education levels are expected to have better knowledge. Family income determines the food consumed by the family. Low income causes people to be unable to buy food in the amount needed, so high and low income affects the family's purchasing power for daily food. Based on the classification based on BPS NTT Province (2021-2023), income is classified into two groups: the high-income group if the average income is > rp 2,123,994 per month, and the moderate income group if the average income is < rp 2,123,994 per month. Work determines family income, which affects purchasing power. The mother's work status is classified into two categories: working and not working. Most of the people in the Boawae sub-district work as farmers and breeders.

Other indirect causal factors are consumption patterns, age, parity, pregnancy spacing, socio-culture, and husband support.

Discussion

This study shows that there is no significant relationship between knowledge factors and the incidence of chronic energy deficiency (CHD) at Boawae health centre, Nagekeo Regency, with an analysis of p -value = 0.982 ($p > 0.05$). This is because respondents have good absorption of nutrition information for pregnant women both through mass media, electronic media, and health workers during ANC and Posyandu. Researchers assume that good knowledge does not guarantee that someone also has adequate access to nutritious food. Living environment, economic status, maternal health conditions, psychology, and access to quality food sources also play an important role, so that even though mothers are well informed, if not supported by the environment and access to nutritious food, pregnant women are not at risk of chronic energy deficiency (CHD). Cultural factors in this research site are also very influential, as the Boawae sub-district adheres to a patriarchal system where the role of a man is very large and gender roles are still often prioritized for men rather than women, especially related to food aspects and daily eating habits. When eating, men are prioritized, and the portion of food that contains protein is higher for men than women. This has an impact on fulfilling the nutritional needs of pregnant women (Apu, 2021).

In the education factor, a high level of education allows a person to more easily gain knowledge from various sources, both from other people and from the mass media. The level of education affects a person's knowledge in terms of absorbing and receiving any health information, especially nutrition information, to fulfill the needs of pregnant women (Febrianti, 2020). Based on the results of the analysis conducted by researchers at Boawae health centre, the value of $p = 0.059$ ($p > 0.05$) means that there is no significant relationship between education and the incidence of chronic energy deficiency (CED). Researchers assume that education level is not always the main determinant of a person's nutritional health. This is related to the ability of individuals to receive information from various sources, including education about nutrition delivered by health workers through various communication activities such as IEC. Environmental factors, career balance, and personal life, as well as the health conditions of pregnant women before and during pregnancy, can also be contributing factors to the occurrence of chronic energy deficiency (CHD) in pregnant women. One of the causes of chronic energy deficiency (CHD) in pregnant women is that their decision-making is still dominated by their husbands and in-laws, especially in terms of financial management. In the household, spending on higher-quality foodstuffs is more limited. This is in line with research conducted by Antarsih and Suwarni (2023), which shows that there is no significant relationship between education and chronic energy deficiency (SEZ). According to him, the higher the level of education, the easier the knowledge he gets, which also affects the fulfillment of balanced nutritional needs (Antarsih and Suwarni, 2023).

The income factor associated with chronic energy deficiency (CHD) is key in influencing nutritional health during pregnancy. Families with stable economic conditions are more able to get regular prenatal care, plan for delivery at health facilities, and make other preparations properly. In this study, after analyzing the results of the chi-square test, the value of $p = 0.080$ (>0.05) shows that there is no significant relationship between family income and the incidence of chronic energy deficiency in pregnant women in the Boawae health centre area. This is because education and good knowledge about the selection of nutritious food to meet the needs of the body also play an important role. If a person's education is low but can process and utilize the available natural resources, the risk of experiencing chronic energy deficiency in pregnant women is reduced. Most pregnant women in the Boawae health centre area work as farmers and breeders. Boawae Sub-district is also an area rich in natural resources, so getting healthy and quality food ingredients does not have to be expensive, and not all have to be spent, but by utilizing the natural resources available from agricultural and livestock products. The results of research conducted by Rahmiani et al. (2016) stated that limited family income limits the family's ability to buy nutritious food ingredients; thus, income levels play a role in determining the nutritional status of pregnant women (Setyaningrum et al., 2020). Research by Kuswardani et al. (2022)

shows that the results of the chi-square test with $p = 0.512$ ($p > 0.05$) mean that there is no relationship between low family income and pregnancy, but pregnant women have good information related to healthy food consumption so that there is a balance between food consumption and healthy intake in the body.

In the work factor, physical activity affects the need for physical nutritional intake, especially in jobs that require a lot of energy, such as agriculture, which requires a lot of energy to support their health and the fetus they are carrying. In the study at Boawae health center, after analyzing the chi-square test value, $p = 0.059$ ($p > 0.05$). In mothers who work or do not work, if they pay attention to nutritious food intake for the body, the workload is not too heavy, there is enough rest, and the work environment is not too heavy and supported by a comfortable work environment, the risk of experiencing chronic energy deficiency (CED) is reduced. In the research of Setyaningrum et al. (2020), the results of the analysis showed a value of $p = 0.642$ ($p > 0.05$), meaning that there was no relationship between work and the incidence of chronic energy deficiency (CED). According to Ernawati (2018), with the knowledge to manage family health, working women can become agents of positive change in improving family welfare.

Conclusion

From the results of the study, it is concluded that the factors of knowledge, education, income, and work have no relationship with the incidence of chronic energy deficiency (CED) in pregnant women.

According to suggestions to health workers, it is expected to further improve the quality of health services through the integration of family health programs, counseling, screening, or health checks, and the expansion of nutrition education not only for pregnant women but also for adolescents and WUS. Puskesmas can also collaborate with cross-sectors to allocate funds for PMT and activities, training, and health screening for adolescents, WUS, and pregnant women, increase knowledge related to chronic energy deficiency in pregnant women, and motivate mothers to continue to seek information about maternal nutrition during pregnancy and consume foods and drinks with nutritional value and calories sufficient for the needs of pregnant women.

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