Fetus: Journal of Midwifery (FeJOM)

The Relevance of CED (Chronic Energy Deficiency) Pregnant Women History with The Growth of Toddlers Aged 2-5 Years in Jelbuk

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Submited:15 September 2023
Accepted:12 Oktober 2023

Kata Kunci:
Ibu Hamil, CED, Balita, Pertumbuhan, Stunting

ABSTRAK

Stunting adalah kondisi gagal tumbuh pada balita akibat kekurangan gizi kronis sejak dalam kandungan. Di Kabupaten Jember pada tahun 2022, sebanyak 20.506 dari 174.616 balita mengalami stunting. Dengan prevalensi stunting di Kecamatan Jelbuk 17,55%, dan Desa Suko Jember 155 dari 465 balita mengalami stunting. Salah satunya disebabkan oleh ibu hamil yang mengalami KEK dan merupakan faktor risiko terjadinya stunting. Stunting mengakibatkan pertumbuhan fisik, perkembangan otak, kecerdasan, dan sistem kekebalan tubuh menurun. Penelitian ini menggunakan jenis penelitian analitik observasional dengan desain korelasional dengan pendekatan cross sectional. Pengambilan sampel menggunakan simple random sampling. Dari populasi sebanyak 263 balita, didapatkan sampel sebanyak 160 balita. Ibu hamil yang memiliki riwayat KEK dengan pertumbuhan tidak normal sebanyak 17 responden (15,5%). Hasil uji Chi Square diperoleh nilai p-value 0,571 > α = 0,05, dan OR 0,813. Tidak ada hubungan antara riwayat KEK ibu hamil dengan pertumbuhan balita usia 2-5 tahun di Desa Suko Jember Kec. Jelbuk. Diharapkan bidan wilayah mendeteksi ibu hamil yang mengalami KEK sejak dini dan memberikan edukasi bahwa asupan gizi ibu hamil sangat mempengaruhi kondisi anak yang akan dilahirkan.

Keywords:
Pregnant Women, CED, Toddlers, Growth, Stunting

ABSTARCT

Stunting is a condition of growth failure in toddlers due to chronic malnutrition since the womb. In Jember Regency in 2022, 20.506 from 174,616 toddlers were stunted. With the prevalence of stunting in Jelbuk sub-district 17.55%, and Suko Jember village 155 from 465 toddlers were stunted. One of them is caused by pregnant women with CED and is a risk factor for stunting. Stunting results in decreased physical growth, brain development, intelligence, and the immune system. This study used observational analytic research with a correlational design with a cross sectional approach. Sampling using simple random sampling. From a population of 263 toddlers, a sample of 160 toddlers was obtained. Pregnant women who have a history of CED with abnormal growth were 17 respondents (15.5%). Chi Square test results obtained p-value is 0.571 > a = 0.05, and OR 0.813. There is no relationship between the history of CED of pregnant women and the growth of toddlers aged 2-5 years in Suko Jember Village, Kec. Jelbuk. It is expected that regional midwives detect pregnant women who experience CED early and provide education that the nutritional intake of pregnant women greatly affects the condition of the child who will be born.

Introduction

Toddlers are children under the age of five (0-59 months) with a very rapid growth and development process that requires nutritional intake in larger quantities with high quality (Ariani, 2017). If nutritional intake is insufficient, it can result in malnutrition, and growth and development disorders so that growth is not optimal, decreased levels of intelligence and academic achievement, underweight, and decreased endurance so that it can be susceptible to disease (stunting) (Ariani, 2017).

Stunting is a failure of growth in toddlers (under five years of age) due to chronic malnutrition that causes children to grow too short for their age. Malnutrition in toddlers occurs since the womb (fetus) and in the early days after the baby is born, but stunting will only be seen after the toddler is 2 years old. Stunting according to the Ministry of Health (Kemenkes) is a child under five with a z-score value ≤ -2 SD (short or stunted) and ≤ -3SD (very short or severely stunted) (Tim Nasional Percepatan Penanggulangan Kemiskinan, 2017).

In 2022, in Indonesia as many as 1,321,295 toddlers were stunted out of 15,798,153 toddlers (8.4%). In East Java in 2022, 190,128 toddlers were stunted out of 2,008,487 toddlers (9.5%). In Jember District in 2022, 20,506 under-fives were stunted out of 174,616 under-fives (11.7%) (DITJEN Bina Pembangunan Daerah - Kementerian Dalam Negeri, 2022). There are 11 Puskesmas in Jember District with stunting prevalence above 10%, Jelbuk Puskesmas has the second highest stunting prevalence rate at 17.55% after Sumberjambe Puskesmas at 19.98% (DINKES, 2022). In 2022, Suko Jember village, which is under the Jelbuk Health Center, was the second highest stunting village with 155 stunted children out of 465 children under five (33.3%) after Panduman village (33.5%, 170 stunted children out of 507) (DITJEN Bina Pembangunan Daerah - Kementerian Dalam Negeri, 2022). And based on the Jember Regent Decree in 2022, Suko Jember Village (Kec. Jelbuk) became one of the villages as a stunting focus location.

Disease factors and nutrient intake in children under five are the two direct causes of stunting according to the UNICEF framework. And have a relationship with parenting factors, access to food, access to health services and environmental sanitation (Rahayu *et*

al., 2018). Stunting is not only caused by malnutrition experienced by pregnant women and children under five, but also by multi-dimensional factors (Tim Nasional Percepatan Penanggulangan Kemiskinan, 2017). Chronic malnutrition, especially during the first 1,000 days of a child's life, also leads to stunting (Trihono *et al.*, 2015). Pregnant women who experience CED either before pregnancy or during early pregnancy will have an impact on the development and growth of the fetus which is hampered so that it becomes a risk factor for stunting (Astutik, Rosita and Sayekti, 2019) (Apriliani *et al.*, 2023). Based on the results of research by (Trisnawati, E., Veronica, S. Y., Isnaini, M., & Wulandari, 2022) stated that there is a relationship between CED and the incidence of stunting. Chronic energy deficiency that occurs in pregnant women affects the nutritional intake received by the fetus, because nutritional intake is the main supporting factor in the process of fetal growth and development.

There are short and long term impacts of stunting on children. Short-term impacts include impaired physical growth, brain development, intelligence, and metabolism. And long-term impacts, namely decreased cognitive ability and learning achievement, decreased immunity so that children get sick easily, and a high risk of diabetes, obesity, heart and vascular disease, cancer, stroke, and disability in old age (Rahayu *et al.*, 2018).

The efforts that have been made in reducing stunting in East Java are related to improving nutrition in the first 1000 days of life (FDL), including the intensification of exclusive breastfeeding socialization, nutrition education for pregnant women and providing supplementary feeding (SF) for pregnant women with CED as a way to increase maternal nutritional intake, providing blood supplement tablets (BST) for pregnant women, early breastfeeding intiation (EBI), Infant and Young Child Feeding (IYCF) and providing supplementary feeding to toddlers for 90 days, providing micro nutrients (taburia), and improving environmental health programs (Dinas Kesehatan Provinsi Jawa Timur, 2021).

Method

This study used observational analytic research with a correlational design with a cross sectional approach. The population in this study were all children aged 2-5 years in Suko Jember

Village, Jelbuk as many as 263 toddlers by using simple random sampling technique. Determining the number of samples using the slovin formula obtained a sample of 159 toddlers. Samples were taken from each posyandu (integrated service post) and the number was adjusted to the number of toddlers aged 2-5 years in the posyandu (integrated service post), so that a total sample of 160 toddlers was obtained. Data collection using secondary data, by taking data on the mother's upper arm circumference (UAC) history during pregnancy from the mother and child health (MCH) book and / or pregnant women's cohort book, and the size of the toddler's height and age of the toddler from the MCH book and / or toddler weighing register book in Suko Jember Village. Data analysis using chi square test using SPSS.

Result

1. General data

1.1 Characteristics of Respondents Based on Mother's Job Suko Jember Village Kec. Jelbuk 2023

Table 1.1 Distribution Respondents Based on Mother's Job in Suko Jember Village Kec. Jelbuk 2023

NO	Mother's Job	Frequency (f)	Presentation (%)
1	Not working	95	59,4%
2	Factory employees	43	26,9%
3	Farmers	22	13,8%
	Total	160	100%

Source: primary data 2023

Table 1.1 show that most mothers do not work or as housewives as amny as 95 respondents (59,4%).

1.2 Characteristics of Respondents Based on Husband's Job Suko Jember Village Kec. Jelbuk 2023

Table 1.2 Distribution Respondents Based on Husband's Job in Suko Jember Village Kec. Jelbuk 2023

NO	Husband's Job	Frequency (f)	Presentation (%)
1	Factory employees	37	23,1%
2	Farmers	96	60,0%
3	Traders	10	6,3%
4	Drivers	6	3,8%
5	Others	11	6,9%
	Total	160	100%

Source: primary data 2023

Based on Table 1.2, it shows that most of the husbands' jobs are farmers as many as 96 respondents (60%).

1.3 Characteristics of Respondents Based on Mother's Education in Suko Jember Village Kec. Jelbuk 2023

Table 1.3 Distribution Respondents Based on Mother's Education in Suko Jember Village Kec. Jelbuk 2023

NO	Pendidikan Ibu	Frequency (f)	Presentation (%)
1	Elementary school	43	26,9%
2	Junior high school	70	43,8%
3	High school / vacational school	43	26,9%
4	College	4	2,5%
	Total	160	100%

Source: primary data 2023

Table 1.3 shows that almost half of the mothers' education is junior high school as many as 70 respondents, 43.8%.

2. Custom Data

2.1 History of CED (Chronic Energy Deficiency) Pregnant Women in Suko Jember Village Kec. Jelbuk 2023

Table 1.4 Distribution of history of CED (Chronic Energy Deficiency) Pregnant Women in Suko Jember Village Kec. Jelbuk 2023

NO	History of maternal CED	Frequency (f)	Presentation (%)
1	CED	45	28,1%
2	Non CED	115	71,9%
	Total	160	100%

Source: primary data 2023

Based on Table 1.4, it is known that almost half of mothers who have a history of SEZ in their pregnancy are 45 respondents or 28.1%.

2.2 Growth of Toddler Aged 2-5 Years in Suko Jember Village Kec. Jelbuk 2023

Table 1.5 Distribution Growth of Toodler Aged 2-5 Years in Suko Jember Village Kec. Jelbuk 2023

NO	Growth of Toddler	Frequency (f)	Presentation (%)
1	Normal	105	65,6%
2	Abnormal	55	34,4%
	Total	160	100%

Source : primery data 2023

Based on Table 1.5, it is known that almost half of toddlers experience abnormal growth as many as 55 toddlers or 34.4%.

2.3 The Relevance of CED (Chronic Energy Deficiency) History in Pregnant Women with The Growth of Toddlers Aged 2-5 Years in Suko Jember Village Kec. Jelbuk 2023

The following is the relationship between the history of CED (Chronic Energy Deficiency) of pregnant women with the growth of toddlers aged 2-5 years in Suko Jember Village Kec. Jelbuk in 2023.

Table 1.6 The Relevance of CED (Chronic Energy Deficiency) History in Pregnant Women with The Growth of Toddlers Aged 2-5 Years in Suko Jember Village Kec. Jelbuk 2023

Category of CED (Chronic Energy Deficiency) History in Pregnant Women	Growth of Toddlers			
	Normal		Abnormal	
	(n)	(%)	(n)	(%)
CED	28	17,5 %	17	10,6 %
Non CED	77	48,1 %	38	23,8 %

Source: primary data 2023

Based on Table 1.6, the relationship between the history of CED (Chronic Energy Deficiency) of Pregnant Women with the Growth of Toddlers aged 2-5 years in Suko Jember Village Kec. Jelbuk, it is known that a small proportion of pregnant women who have a history of CED with toddlers who experience abnormal growth as many as 17 respondents by 15.5%. The results of the chi square test showed that the p-value (Asymptotic Significance (2-sided)) was 0.571 with α 0.05. The OR result showed that the OR (estimate) value was 0.813.

Discussion

1. **History of CED (Chronic Energy Deficiency) in Pregnant Women**

There were 45 respondents (28.1%) who had a history of CED in Suko Jember Village Kec. Jelbuk. CED results from an imbalance between intake to fulfill energy needs and expenditure, namely calorie and protein deficiencies (malnutrition) that occur for a long time (Simbolon, Jumiyati and Rahmadi, 2018).

Almost half of the respondents had a history of CED during pregnancy. CED is caused by inadequate nutritional intake that occurs over time. Inadequate nutritional intake can be caused by the mother's low socioeconomic status, which can be seen from the family's occupation. Based on the data obtained from pregnant women with CED, most of the mothers did not work (13.8%) and the husbands were farmers (16.9%). Where the main income of the husband as a farmer, and farmers can be said to be one of the jobs with irregular income, because the income of each crop is not the same, there are profits and losses. If the harvest is a loss that makes income decrease, it causes low family purchasing power,

meaning that the mother cannot buy quality food with various types and that can fulfill the mother's nutritional intake. And farming families usually also consume food from their environment with simple food processing and the menu served is also simple and does not have much variety. In accordance with the research results (Andini, 2020) showed that there was a relationship between work and the incidence of Chronic Energy Deficiency (CED) in pregnant women at the Prambontergayang Health Center, Tuban Regency with a p value = 0.008.

2. Growth of Toddlers Aged 2-5 Years

Toddlers aged 2-5 years in Suko Jember Village, Jelbuk Kec. who experienced abnormal growth were 55 toddlers (34.4%). Abnormal growth is when the measurement results are at the threshold or Zscore value> 3 SD and < 2 SD, including high, short (stunting / stunted), and severely stunted (Kemenkes RI, 2020). Stunting is a condition of growth failure in toddlers (under the age of five) due to chronic malnutrition that occurs since the womb so that children are too short for their age. Stunting will only be seen after the toddler is 2 years old.

Almost half of toddlers experience abnormal growth. Stunting is a condition of toddler growth failure due to nutritional deficiencies since before pregnancy and the first 1000 days of life, which is the golden growth period for children. During the golden period, it is recommended that pregnant women consume nutritious food and provide nutritious food for their children to fulfill their nutritional needs. To be able to provide nutritious food requires knowledge about nutritionally balanced food for pregnant women and their children. Maternal knowledge can be seen from the mother's education level. In stunted toddlers, most of the education is junior high school at 15.0%. Where junior high school can be said to be a low level of education. This can also cause mothers to have a low level of knowledge, especially in terms of balanced nutritious food. With mothers having less knowledge about nutritionally balanced foods, it affects the food intake that families consume, especially mothers and their children. Eating foods that do not contain balanced nutrition cannot meet the body's nutritional needs, causing a lack of nutrients and energy in the body. Mothers with low education also lack understanding about optimal child

growth. So that the mother does not know whether her child is experiencing optimal growth or not. And this causes it not to be detected early if there is a disturbance in the growth of their child.

3. The Relevance Relationship of CED (Chronic Energy Deficiency) History of Pregnant Women with The Growth of Toddlers 2-5 Years

Based on the research, it was found that pregnant women who had a history of CED with toddlers who experienced abnormal growth were 17 respondents (15.5%). The relationship between the history of CED (Chronic Energy Deficiency) of pregnant women with the growth of toddlers aged 2-5 years with a p-value is 0.571. This shows that p> 0.05 which means that H_0 is accepted, which means that there is no relationship between the history of CED of pregnant women with the growth of toddlers aged 2-5 years in Suko Jember Village Kec. Jelbuk. The OR result was 0.813, which means that pregnant women with CED have a 0.813 times chance of giving birth to children who experience abnormal growth.

CED is a condition in which the mother experiences calorie and protein deficiency (malnutrition) that occurs for a long time or chronic (chronic) resulting from an imbalance between intake to fulfill energy needs and expenditure. CED interferes with child development, namely physical growth (stunting), brain and metabolism which causes non-communicable diseases in adulthood (Simbolon, Jumiyati and Rahmadi, 2018). Abnormal growth is when the measurement results are at the threshold or Zscore value >3 SD and <-2 SD, including tall, stunted, and severely stunted (Kemenkes RI, 2020). Stein (2010) explains that growth failure occurs during pregnancy (gestation) and in the first 2 years of a child's life or the first 1,000 days of a child's life (Fikawati, Ahmad Syafiq and Arinda Veratamala, 2020). There are various factors that cause stunting, namely maternal factors, including poor nutrition during preconception, pregnancy, and lactation, short maternal height, infection, teenage pregnancy, mental health, IUGR and prematurity, close delivery distance and number of parities, and hypertension. Abnormal growth is also caused by inadequate feeding, such as infrequent feeding with insufficient quantity, poor food quality in terms of quality, nutrient content, and low dietary diversity, poor hygiene, and unsafe food processing, as well as breastfeeding problems. (Fikawati, Ahmad Syafiq and Arinda

Veratamala, 2020). According to (Kemenkes, 2018), the incidence of stunting is also influenced by low income and education of parents, especially mothers. Education can affect a person's knowledge of something so that it can change their behavior in receiving information (Notoatmodjo, 2018). Knowledge of the value of good nutritional needs will affect the decision-making and behavior of mothers in providing food to meet their nutritional needs, both mothers, children, and their families (Irianto, 2014). Based on research (Fauzi Muhamad, Wahyudin, 2020) which shows that there is a significant relationship between maternal education and the incidence of stunting in toddlers with p-value = 0.05. Between maternal education and the incidence of stunting in toddlers with a p-value = 0.013 with an OR of 3.548. But the employment variable shows that there is no significant relationship between occupation and the incidence of stunting with a p-value = 0.635 with an OR of 3.548 p-value = 0.635. Although employment does not affect the incidence of stunting occupation affects a person's income or socio-economics. Where the family's economic situation affects the purchasing power of healthy and nutritious food, which can affect the nutritional status of children.

In this study, it was found that there was no relationship between the history of CED (Chronic Energy Deficiency) of pregnant women with the growth of toddlers aged 2-5 years. There is no relationship between CED and toddler growth because there are other factors that cause abnormal growth in children. Abnormal growth can be caused by low income and education levels. This is in accordance with the results of the study, that stunted toddlers have parents with most mothers not working at 23.8% and husbands as farmers at 18.8%, and the mother's education level is junior high school at 15.0%. Farmers can be said to be one of the jobs that have irregular income, because the income of each crop is not the same, there are profits and losses. If the harvest is a loss, the income decreases and becomes low. Low income levels prevent mothers from buying nutritious food to meet their nutritional needs. So that families only take food ingredients from the surrounding environment, and usually the processing is simple with a variety of menus that are less varied. And mothers who have a low level of education, the mother's knowledge of foods that contain balanced

nutrition is also low so that the mother does not know what foods can meet her nutritional needs. If this continues for a long time, it can cause children to experience chronic malnutrition, resulting in abnormal growth and one of them is stunting. There were 28 respondents (17.5%) of pregnant women with CED who had children who experienced normal growth. This can occur due to the mother's nutritional intake during pregnancy and lactation is adequate and the child gets exclusive breastfeeding and adequate additional food, with the quality and various types of food consumed with balanced nutrients. There are also pregnant women who do not have CED who have children who experience abnormal growth as many as 38 respondents (23.8%). This can be caused by mothers who experience a lack of nutritional intake during pregnancy, mothers do not consume nutritionally balanced foods so that they cannot meet their body's nutritional needs, which will have an impact on fetal growth to be not optimal.

Conclusion

Almost half (28.1%) of mothers had a history of CED during pregnancy in Suko Jember Village Krc. Jelbuk. Almost half (34.4%) of toddlers aged 2-5 years experienced abnormal growth in Suko Jember Village Kec. Jelbuk . There was no association between a history of CED (Chronic Energy Deficiency) in pregnant women and the growth of toddlers under five years of age in Suko Jember Village Kec. Jelbuk.

Abbreviation

BST : Blood Supplement Tablets
CED : Chronic Energy Deficiency
EBI : Early Breastfeeding Initiation
FDL : First Day of Life
IUGR :Intr Uterine Growth Restriction
IYCF : Infant and Young Child Feeding
MCH : Mother and Child Health
OR : Odd Ratio
SD : Standard Deviation
SF : Supplementary Feeding
SPSS : Statistical Program for Social Science
UAC : Upper Arm Circumfenence
UNICEF: United Nations Children's Fund

Ethics Approval and Consent to Participate

The research has been declared ethically feasible by the Research Ethics Commission of Dr. Soebandi University

with the ethical feasibility certificate No.313/KEPK/UDS/V/2023. Because the research used secondary data, researchers also asked permission from the regional midwife to access the cohort of Suko Jember Village, Kec. Jelbuk. Researchers explained to respondents about the research process, respondents who agreed to fill out a letter of consent to become respondents.

Acknowledgment

Thank you to the midwife of Suko Jember Village Kec. Jelbuk for giving me permission to conduct research in the area.

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