

## Relationship of Chronic Energy Lack of Pregnant Women with LBW Incidence

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### ABSTRACT

LBW is the cause of infant death in East Java. This is influenced by KEK which causes babies to be born prematurely. The aim of this study was to determine the relationship between chronic energy deficiency in pregnant women and the incidence of LBW. The analytical research design uses a retrospective cohort using 53 samples calculated by the Slovin formula and total sampling in the technique. The data analysis used was univariate and bivariate chi-square. By getting the results from 16 respondents experiencing LBW as much as 30.2%, and as many as 20 pregnant women respondents experiencing CED 37.7%. Based on the analysis test, it was found that half of the pregnant women with CED had LBW as much as 50.0%. While the results of the bivariate analysis with chi-square obtained a p-value of 0.014 where  $p < \alpha 0.05$  which stated that there was a relationship between pregnant women with CED and the incidence of LBW in PMB Cemandi. The OR value is 4.5 which states that pregnant women with CED have a 4.5 times risk of having a baby with LBW.

**Keywords:** *Low Birth Weight, Pregnant Women, KEK*

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### INTRODUCTION

Maternal and infant mortality is a health index in an area because MMR and IMR are indicators of development and quality of life. According to WHO (2019), the MMR was 23.88 per 1000 live births, but the IMR was 12.41 per 1000 live births. In fact, maternal and infant mortality rates are a parameter in the third objective of the SDGs program, which is the continuation of the MDGs. One of the goals of the SDGs is to reduce maternal mortality to 70 per 100,000 live births by 2030 and also reduce infant mortality to 16 per 1000 live births by 2024. The maternal and infant mortality rate is a success factor, namely from maternal and child health efforts, this is a fundamental thing in imaging the threshold of community welfare and also the quality of presentation of maternal and child health (Ministry of Health, 2020). The infant mortality ratio in the last four years (2017 – 2022) in East Java Province has tended to decrease, in absolute terms the number of infant deaths

in East Java Province is 3,354 babies. In 2021, 73.83% will occur in neonates (0 – 28 days)—the cause of infant death in the province of East Java, namely LBW. One of the triggers for the birth of LBW babies is pregnant women who during their pregnancy are classified as in a state of Chronic Energy Deficiency (KEK) (East Java Province Health Profile, 2022).

Fetal growth and development are affected by consumption during pregnancy (Notoadmodjo, 2010). Lack of consumption of food and supplements as well as lack of Blood Supplementary Tablets (TTD) and Provision of Supplementary Foods (PMT) for pregnant women will affect hemoglobin levels and nutritional status of pregnant women which can cause Anemia and Chronic Energy Deficiency (CED). Usually Low Birth Weight Babies (LBW) which cause death compared to other low birth weight babies are caused by a lack of nutrition in pregnant women (Krisnawati, 2010). According to (Ariyano, 2012) KEK in pregnant women causes miscarriage, infant anemia, abortion, stillbirth, low birth weight birth, stillbirth, and birth defects. Disturbances of oxygen and nutrients that affect the function of the placenta are caused by pregnant women with CED. The function of the placenta decreases, disrupting fetal growth and development (Cunningham, 2014), as well as the high risk of LBW babies (Ayu, 2015).

The East Java Health Office report for 2022 found 18,432 pregnant women experiencing CED. Pregnant women who experience CED can experience one of them, LBW. The reasons for the existence of SEZs for pregnant women are the lack of information related to nutrition that must be fulfilled by mothers during pregnancy, as well as the lack of economic support which is the cause of SEZs. According to Riskesdas 2021 data, the risk of SEZ is 29.8% for pregnant women in East Java and 21.8% for non-pregnant women. Meanwhile, the national number of SEZ cases is said to exceed the national average by 28%, indicating SEZ cases in East Java (Riskesdas, 2021). In 2022, there will be 4,301 cases of KEK pregnant women in Sidoarjo Regency. Also in the same year, 22 cases of CED occurred in pregnant women in the Cemandi area, accounting for 23.61%. The last very significant change has occurred in the last three years, and cases of CED for pregnant women have experienced a very significant transformation, there will be an increase in 2021, namely as much as 22.92% in 2020, 21.54% in 2021, and 23.61 in 2022 ( Cemandi PMB Data 2022). Based on a survey conducted at the Cemandi Independent Midwife Practice (PMB), there were 180 mothers giving birth, 22 of whom had SEZ status, and 9 babies (40%) LBW in January-December 2022.

There are several ways that can be used to understand the baby's health condition during pregnancy, including measuring arm circumference and measuring hemoglobin in the blood. The LILA measurement aims to see someone's KEK risk, if the LILA size is at 23.5 cm or on the red part of the LILA band, it means that the woman has KEK, and gave birth to a baby with LBW.

Prevention of LBW can be done with the efforts of the 1000 HPK Movement under the coordination of the UN Secretary-General under the name Scaling Up-Nutrition (SUN) to seek to reduce nutritional problems in developing countries during the 270 days gestational age and 730 days from birth to 2 years of age in pregnant women, breastfeeding, and children aged 0-23 months. The indicators for the SUN Movement are the decrease in

LBW, short, thin, under-nourished, and over-nourished children (Ministry of Coordinating Ministry, 2013).

Midwives, namely health workers play a role in reducing IMR cases, one of the causes of which is pregnant women with CED while practicing midwifery care in a woman's life cycle. In accordance with Law No. 4 of 2019 which explains midwifery in carrying out midwifery practices according to Midwifery Care Standards.

In accordance with this explanation, the researchers tried to conduct research to find out the relationship between KEK in mothers and LBW babies in PMB Ulpiyah in Cemandi.

## **METHOD**

The study used an analytical research design using a Retrospective Cohort using 53 samples recorded during the period January-December 2022. The sample was divided into two groups, namely the study and control groups.

### Data collection technique

Data collection was carried out using two techniques, namely primary data collection and secondary data collection. Primary data is taken directly by researchers, while secondary data is taken by authorized persons and institutions. The dependent variable and also the independent variable are data that have been collected. Data Processing Techniques

After the data has been collected, editing or editing of the data is carried out to ensure that the resulting data is accurate, that is, everything has been filled in and can be read properly and correctly. This is implemented by examining each questionnaire data sheet sent by the respondents themselves, or those filled in by the researcher. Furthermore, the data is given a code or coding.

KEK pregnant women are coded 1

Pregnant women who are not KEK are given code 2

LBW is coded 1

Not LBW is coded 2

The data that has been obtained will be processed manually in a mental way for each respondent's answer which will then be tabulated simply with the Frequency Distribution. Finally, it is checked so that there are no incorrect data and can proceed to the next stage.

### Data analysis technique

The data analysis used was univariate and bivariate chi-square. Univariate analysis has a goal that can explain the characteristics of each research variable. In general, univariate analysis produces frequency distributions and percentages for each variable.

The formula used is:

$$P = x \ 100\%$$

Information:

P= Percentage

F = Frequency of each alternative answer that becomes the choice

N = Number of samples taken      Bivariate analysis is used to determine the relationship between two variables using statistical tests. The statistical test of this study used Chi-Square ( $\chi^2$ ). Bivariate analysis in this study was to determine the relationship between Chronic Energy Deficiency in pregnant women and the incidence of LBW at PMB Cemandi. The general formula for Chi Square ( $\chi^2$ ) is as follows:

$$\chi^2 = \sum \left[ \frac{(f_o - f_h)^2}{f_h} \right]$$

Where:

$\chi^2$  = Chi-square to look for

$f_o$  = observed frequency

$f_h$  = expected frequency (Sugiyono, 2017).

With the results of statistical tests referring to  $\alpha = 0.05$ , that is, if the value of  $p \leq 0.05$  then  $H_a$  is accepted. So that statistically there is a significant relationship between chronic energy-deficient pregnant women and the incidence of LBW in PMB Cemandi, but if the  $p$  value  $> 0.05$ , then  $H_a$  is rejected so that statistically there is no relationship between chronic energy-deficient pregnant women and LBW at PMB Cemandi.

## FINDING AND DISCUSSION

**Tabel 5. Relationship between KEK Pregnant Women and LBW Incidence at PMB Cemandi**

Pregnant Women	Berat badan bayi lahir				Total		p-value	OR
	LBWB		No LBWB		F	%		
	F	%	f	%				
Chronic lack of energy	10	50,0%	10	50,0%	20	100,0%	0,014	4,5
No Chronic lack of energy	6	18,2%	27	81,8%	33	100,0%		

Based on Table 4.3, it was found that half of pregnant women with CED had a low birth weight of 50.0%. After conducting bivariate analysis using Chi-square, the results obtained were a  $p$ -value of 0.014 where  $p < \alpha 0.05$ . So

it was concluded that the relationship between pregnant women with CED and the incidence of LBW in PMB Cemandi. The OR value is 4.5 which states that pregnant women with CED have a 4.5 times risk of having a baby with LBW.

The results of There were 20 respondents (37.7%) who experienced CED which affected babies with LBW. These conditions cause infants to be vulnerable to malnutrition, death, impaired growth and development of children (Supariasa 2012). In accordance with Krisnawati's research (2010) that there is a relationship between the mother's diet and KEK.

Upper arm circumference with a circumference  $<23.5\text{cm}$  is a feature of pregnant women affected by CED. The circumference of the upper arm gives the impression that the muscle tissue and fat layer are under the skin. So that the LILA examination is carried out at the initial meeting (K1) with an Antenatal Care (ANC) examination which aims to find out the category of pregnant women against Chronic lack of energy. This has shown that the majority of students accept online learning and retrieved positive perceptions on the implementation of this online learning. Based on Qiong (2017) positive perception describes all knowledge (both known and unknown) and the responses conveyed when using it. It continues to accept and support the object actively or sensing, while negative perception describes all knowledge (knowing or not knowing) and reactions that are not oriented to the object of perception.

This can be done by the health authorities and the community. The value of nutritional status of pregnant women is measured by LILA because a lack of nutrition can be seen as edema (Saimin, 2006).

If the nutrition of a pregnant woman is poor, then the fetus in the womb tends to be disrupted in terms of its growth. It tends to be at risk of giving birth to a LBWB baby with several factors such as lack of growth of the fetal brain, anemia in the baby, uncomplicated infection of the baby, abortion, and so on so that they have a risk of giving birth to a baby with LBW. Supariasa, et al. 2013).

Based on the analysis, the lack of nutritional needs in pregnant women causes SEZ. Energy metabolism in the body will increase so that energy and nutrients are needed in pregnant women, so the diet during pregnancy needs to be considered in detail.

In improving maternal and child health, the role of midwives is very influential. So that mothers can motivate themselves to eat healthy and nutritious food. This can be seen from the appropriate weight gain during pregnancy. Based on the research, it was found that half of pregnant women with CED had a low birth weight of 50.0%. After conducting bivariate analysis using chi-square, the results obtained were p-value 0.014 where  $p < \alpha$  0.05. Thus, it can be concluded that there is a relationship between pregnant women with CED and the incidence of LBW at PMB Cemandi. The OR value is 4.5 which states that pregnant women with CED have a 4.5 times the risk of giving birth to babies with LBW.

The results of a study by Ekowati D, et al (2017) said that SEZ can increase the risk of giving birth to a child by 5.6x, 6 times for giving birth to a child with LBW status (AOR = 5.6; 95% CI: 1.41-22.57). In addition, research by Restu et al. (2017) found a significant relationship between CED in pregnant women with LBW with a value of  $p = 0.000$ , CED is a risk factor for LBW with an RR = 4.215 (RR > 1). Fulfillment of nutrition for the fetus is carried out when the mother is during pregnancy. These nutrients must be balanced so that fetal development develops. According to Kristiyanasari (2010) during pregnancy additional nutrients are needed such as vitamins and minerals. Later, if the nutrition is lacking, the baby will have a bad impact.

In addition, body weight is also a reference for the birth of a baby. If pregnant women are underweight, they usually tend to give birth to LBW. Premature birth and LBW

are a health problem. So that the nutrients obtained in pregnant women must be higher than adults (Whitney et al., 2007).

LBW and premature can occur because the body weight of pregnant women is very low so that weight of pregnant women increases or decreases, namely edema, hypertension, and the amount of food that enters the body (Salmah et al., 2006).

Research conducted by Rahma & Muqsith (2015) regarding the relationship between LILA pregnant women and birth weight babies at RSU Cut Meutia, North Aceh District and RS Tk IV IM.07.01 Lhokseumawe obtained a p-value of 0.006.

Consumption of energy and protein that is not strong will cause LBW problems in pregnant women. So that LBW will appear because of the reflection of nutrition during pregnancy, even before pregnancy. Later it will have an impact on death or birth defects because in LBW there is brain blockage, anemia, and infection in infants (Kusumawati & Mutalazimah, 2014).

Usually there are cases of 10 KEK mothers experiencing LBW, 10 KEK mothers who are not experiencing LBW and 6 mothers who are not KEK experiencing LBW. This is because the influence of LBW occurs on maternal nutrition and other factors. In accordance with the opinion of Manuaba (2007), that there are factors that cause LBW including age, occupation, height, parity, and frequency of pregnancy checks. The best age to get pregnant is 20-35 years.

## CONCLUSION

Based on the research that has been done, the following conclusions are obtained.

1. Nearly half of pregnant women at PMB Cemandi experience Chronic Energy Deficiency (CED) as much as 37.7%.
2. Nearly half of PMB Cemandi respondents experienced LBW as much as 30.2%.
3. There is a relationship between pregnant women with CED and LBW in PMB Cemandi which has a p-value of 0.014 ( $p < 0.05$ ).

## REFERENCES

- Ariyani, D.E., Achadi, E.L., Irawati, A. (2012). Validitas lingkaran lengan atas mendeteksi risiko kekurangan energi kronis pada wanita Indonesia. *Kesmas Natl Public Heal J*, 7(2), 83.
- Cunningham. (2014). *Obstetri Williams*. Jakarta : EGC.
- Fajriana, A., Buanasita, A. (2018). Faktor Risiko yang berhubungan dengan kejadian bayi berat lahir rendah di Kecamatan Semampir Surabaya. *Media Gizi Indonesia*, 13(1), 71-85.
- Gant, N. F. (2011). *Dasar-dasar ginekologi & obstetri*. Jakarta: EGC.
- Handayani, C.P. (2015). Faktor-faktor yang berhubungan dengan KEK. *Jurnal Ilmu Keperawatan*, 2(1), 117-121.
- Kemkes RI. (2020). *Profil kesehatan Indonesia 2020*. Jakarta: Kementerian Kesehatan.

- Krisnawati. (2010). Hubungan pola makan ibu dengan kejadian kekurangan energi kronik pada ibu hamil. *Jurnal Kebidanan*, 2(1), 89-91.
- Kristiyanasari, W. (2010). Gizi bagi ibu hamil. Yogyakarta: Nuha Medika.
- Notoatmodjo. (2010). Metode penelitian kesehatan. Jakarta: Rineka Citra.
- Pantiawati, I. (2010). Bayi dengan berat badan lahir rendah. Yogyakarta: Nuha Medika
- Prawirohardjo, Sarwono. (2011). Buku panduan praktis pelayanan kesehatan maternal dan neonatal. Jakarta : Bina Pustaka.
- Proverawati, A., & Misaroh. (2010). Nutrisi janin & ibu hamil. Yogyakarta: Nuha Medika.
- Proverawati, A. & Sulistyorini, C.I. (2010). Berat badan bayi lahir rendah. Yogyakarta: Nuha Medika.
- Rahma, A. & Muqsith,A. (2015). Hubungan LILA ibu hamil dengan BB lahir bayi di RSUD Cut Meutia Kabupaten Aceh Utara dan RS Tk IV IM.07.01 Lhokseumawe. *FK Malikussaleh*; 2(1), 34-67.
- Sugiyono. (2011). Statistika untuk penelitian. Bandung: Alfa Beta.
- Supriasa, I. D. N. (2012). Penilaian status gizi. Jakarta: EGC.
- Mutalazimah, Y. K. (2014). Hubungan pendidikan dan pengetahuan gizi ibu dengan berat bayi lahir di RSUD Dr. Moewardi Surakarta. *Jurnal Since*, 3(2): 48-71.