

Midwifery care for pregnant women with chronic energy deficiency (CED)

Rima Fitri Ramadana¹, Dwi Estuning Rahayu¹, Ira Titisari¹, Indah Rahmaningtyas¹

¹Midwifery Professional Education, Malang Health Polytechnic, Indonesia

Corresponding Author: Rima Fitri Ramadana; rimafttramadana12@gmail.com

Abstract:

Maternal health is an important indicator in determining the quality of future generations. One of the nutritional problems often faced by pregnant women is chronic energy deficiency (CED), which is a nutritional problem caused by long-term malnutrition characterized by a mid-upper arm circumference (MUAC) of less than 23.5 cm. This study aims to provide midwifery care for pregnancies with cases of chronic energy deficiency (CED). The study design is a case study with data collected through interviews, observations, physical examinations, and documentation. The results of the case study show that the patient is at risk of mild CED based on UAC, while other indicators are still normal and the pregnancy care provided is running smoothly according to the prevention plan.

Keywords

midwifery care; pregnant women; chronic energy deficiency (CED)

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INTRODUCTION

Maternal health is an important indicator in determining the quality of future generations. One of the nutritional problems often faced by pregnant women is chronic energy deficiency (CED), which arises as a result of long-term malnutrition and is characterized by a decrease in upper arm circumference (UAC) to below 23.5 cm (Wati et al., 2024). Inadequate nutrition, in terms of both quality and quantity, during pregnancy can lead to health problems for both the mother and her baby. Malnutrition is a significant factor contributing to maternal and fetal mortality (Putri et al., 2023).

According to the World Health Organization (WHO), globally, the prevalence of pregnant women with CED ranges from 35% to 75%, with the highest burden in developing countries (Agustianov et al., 2024). In Africa, the prevalence of CED in pregnant women is reported to be around 23%, with some countries recording figures above 15% (Tafara et al., 2023). Based on data from Riskesdas (2018), the prevalence of CED among women of childbearing age is 14.1%, while among pregnant women, it is 17.3% (Kemenkes RI, 2023). Meanwhile, data from the Indonesian Ministry of Health (Kemenkes RI) in 2023 shows that the prevalence of CED among pregnant women

is 16.9% (Kemenkes, 2023). This figure indicates that nearly 1 in 5 pregnant women in Indonesia experience chronic nutritional problems that can affect pregnancy and childbirth. This high prevalence is closely related to the lack of consumption of nutritious foods during pregnancy, as well as the lack of knowledge among mothers about healthy eating patterns to maintain adequate nutrition during pregnancy (Marshall et al., 2022).

Several factors contribute to the incidence of CED in pregnant women, including age, parity, body mass index (BMI), level of knowledge, consumption patterns, and socioeconomic status. In addition, poor eating habits, such as infrequent eating and consumption of an unbalanced diet, also affect the nutritional status of pregnant women (Wahab et al., 2024).

Adequate nutritional intake during pregnancy is an important factor in ensuring that the nutritional needs of pregnant women are met. Pregnant women with CED are at risk of reduced muscle strength, which supports the delivery process, and this can lead to prolonged labor, postpartum hemorrhage, and even maternal mortality (Kemenkes RI, 2023). Poor maternal nutrition directly or indirectly causes approximately 3.5 million female deaths in developing countries. In developing countries, it is estimated that poor nutritional status during pregnancy contributes to 14% of fetuses with IUGR (intrauterine growth restriction), and maternal stunting contributes to a further 18.5% (Tafara et al., 2023). In Indonesia, CED in pregnant women remains a significant public health problem. Data show that KEK can cause various complications, including anemia, premature birth, and low birth weight (LBW) (Harismayanti & Syukur, 2021) (Safira et al., 2023).

Although CED is often associated with LBW, in some cases, it has been found that pregnant women with CED can still give birth to babies with normal birth weight, indicating that other factors, such as additional nutritional support, adherence to antenatal checkups, and genetics, also play a role. Therefore, further studies are needed to evaluate how CED affects pregnancy outcomes on an individual basis. Prevention and management of CED should be a priority in maternal health services. Nutrition education, monitoring of nutritional status, and interventions such as providing supplementary food or iron and folic acid supplements should be carried out in an integrated manner. This will help achieve healthy pregnancies and reduce maternal and infant morbidity and mortality rates.

METHODS

The research design employed was a case study, with data collection conducted through interviews, observations, physical examinations, and documentary studies. This case study was conducted from November 11, 2024, to March 22, 2025. The research sample was Mrs. N.S., a

pregnant woman in her third trimester with a gestational age of 36 weeks, with indications of mild chronic energy deficiency (CED).

RESULTS

The examination results for Mrs. N.S., who is in her third trimester of pregnancy, show an upper arm circumference (UAC) of 23 cm, which is slightly below the normal range. However, her body mass index (BMI) is within the normal range (19.8 kg/m²), and the estimated fetal weight (EFW) indicates that the fetus is growing in accordance with the gestational age. According to the Ministry of Health, pregnant women at risk of CED have an Upper Arm Circumference (UAC) below 23.5 cm or a Body Mass Index (BMI) before pregnancy or in the first trimester (gestational age ≤ 12 weeks) below 18.5 kg/m² (underweight) (Ministry of Health, 2023). This condition indicates that although there are indications of mild CED risk based on UAC, other nutritional status indicators, such as BMI, which indicates normal nutritional status, and FGA, also indicate good fetal growth according to gestational age. This means that the mother is at risk of CED, and the condition is still within physiological limits, but has not yet experienced significant clinical effects.

DISCUSSION

These findings align with research conducted by Nurhanifah et al. (2023), which indicates that there is no relationship between UAC and fetal weight. The results of statistical tests using the Chi-Square test yielded a P-value of 0.525 ($p > 0.05$). Additionally, another study states that there is no relationship between UAC and Fetal Weight, with a statistical test yielding a p-value of 0.0555 (Kurdanti et al., 2020). No relationship was found between estimated fetal weight and upper arm circumference. This may be due to internal factors of pregnant women, other than UAC, such as maternal age, number of previous births, and genetic factors present in pregnant women. External factors such as the lifestyle of pregnant women, characteristics of antenatal care, and the socioeconomic situation of the family (Saputro & Lestari, 2022).

Additionally, factors that can influence UAC size include occupation and physical activity. Lifestyle in a region affects physical activity. The more developed a region is, the less physical activity is done. This factor arises due to modernization, which tends to make life easier for individuals, resulting in reduced activity and an increase in fat mass because energy from food is stored as fat reserves. Fat formation contributes to an increase in the size of UAC. Domestic activities are almost

entirely dependent on hand (arm) muscle strength, which can also affect arm muscle mass and contribute to an increase in UAC size (Iriani et al., 2022).

Although Estimated Fetal Weight (EFW) is not directly related to UAC, it is worth noting that untreated CED can reduce fetal nutrient intake, which may lead to fetal growth disorders such as Intrauterine Growth Restriction (IUGR) and low birth weight (LBW) in the future (Hotimah et al., 2024). Additionally, pregnant women with KEK are at risk of decreased muscle strength during labor, which can lead to prolonged labor, postpartum hemorrhage, and even maternal death. Besides the mother, babies born to pregnant women with CED also face risks that can cause fetal death (miscarriage), birth defects, prematurity, low birth weight (LBW), and even death. Pregnant women with CED can affect fetal growth, including physical growth (stunting), brain development, and metabolism, which can lead to non-communicable diseases in adulthood (Putri et al., 2023).

To prevent these problems, care is provided to monitor regularly because they are at risk of CED. Care is provided to monitor fetal growth, and nutrition education and fulfillment of macro- and micro-nutritional needs are still carried out to prevent CED from developing. Monitoring of pregnant women with CED involves observing the development of pregnant women who have chronic energy deficiency. Monitoring of pregnant women with CED is conducted by assessing the general condition of the pregnant woman and measuring vital signs, including blood pressure, pulse, respiration, and temperature, as well as weight, TFU, and UAC (Sari et al., 2023). Findings from a study conducted by Fikayanti et al. 2024 state that there is a significant relationship between the regularity of antenatal care and the incidence of CED in pregnant women in the third trimester, and the Chi-square test results show a p-value of 0.008, which means that the p-value is < 0.05 (Fikayanti et al., 2024).

During antenatal visits, pregnant women are educated about balanced nutrition to prevent malnutrition. Optimal nutrition during pregnancy not only plays a role in maintaining the health of the mother but also supports normal fetal growth and development. By fulfilling nutritional needs, the risk of complications during the antenatal and intrapartum periods can be minimized, including low birth weight (LBW) and premature birth. The education provided to pregnant women during antenatal visits focuses on nutritional intake during pregnancy to prevent CED, so that the fetus in the womb can also develop healthily. A balanced nutritional intake during pregnancy can prevent complications in both the fetus and the mother, including those during the antenatal and intrapartum periods, as well as low birth weight and prematurity (Kulsum & Wulandari, 2022). This is in line with research stating that nutritional counseling influences increasing knowledge and upper arm circumference in pregnant women with CED, with a p-value $(0.000) < 0.05$ for pregnant women's knowledge and a p-value $(0.034) < 0.05$ for pregnant women's UAC (Nabila et al., 2024). Additionally, this is supported by research indicating that nutrition education, implemented through the Local Food-Based

Balanced Nutrition Guidelines, can improve the nutritional knowledge of pregnant women. This study also shows a decrease in the risk of CED in pregnant women from 17.4% to 4.3% (Ginting et al., 2021).

CONCLUSION

Based on the midwifery care provided to Mrs. N.S. during her pregnancy, it can be concluded that although the mother showed mild risk indicators for CED based on a UAC slightly below normal, her overall nutritional status was assessed as good with a normal BMI and fetal growth appropriate for her gestational age.

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CONFLICT OF INTEREST

There is no conflict of interest in this article.

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