

CASE STUDY OF PREGNANT WOMEN WITH CHRONIC ENERGY DEFICIENCY IN THE WORK AREA OF BURNEH COMMUNITY HEALTH CENTER, BANGKALAN REGENCY

Marsyanda Riskia Tristiana¹, Anis Nurlaili², Siti Anisak³

¹²³Ministry of Health Polytechnic of Surabaya, Department of Midwifery, D3 Midwifery Study Program

Bangkalan E-mail:Marsyandariskia@gmail.com

Submitted:07/07/2024 Accepted:16/05/2026 Rise:30/11/2025 Keywords: <i>pregnant women, KEK, risk factors, TFU and TBJ</i>	ABSTRAK Ibu hamil dengan KEK dapat dilihat dari ukuran Lingkar Lengan Atas (Lila) $\leq 23,5$ cm. Studi kasus ini bertujuan untuk mengetahui faktor resiko (usia, pendidikan, asupan nutrisi, paritas, pekerjaan dan pendapatan keluarga), masalah pada ibu hamil dengan KEK (TFU dan TBJ), serta upaya ibu hamil dalam mengatasi KEK. Angka kejadian KEK di Puskesmas Burneh pada tahun 2023 sebanyak 27 jiwa (3,1%) dari total 855 ibu hamil. Desain studi kasus ini yaitu <i>Multiple case design</i> dengan dua responden yang memiliki kriteria yang sama yaitu ibu hamil LILA $\leq 23,5$ cm. Penelitian dilakukan di wilayah kerja Puskesmas Burneh, pada bulan Maret-April 2024. Alat pengumpulan data menggunakan wawancara, observasi dan dokumentasi. Responden pada penelitian ini dari desa Langkap dan desa Binoh. Hasil studi kasus didapatkan bahwa kedua responden memiliki faktor resiko yang sama yaitu penyakit infeksi (Gastritis). Responden 1 dan 2 sama sama memiliki TFU dan TBJ yang tidak sesuai dengan usia kehamilan. Adapun upaya yang dilakukan kedua responden rutin mengkonsumsi tablet FE, pada responden 1 rajin mengikuti kelas ibu hamil sedangkan responden 2 tidak pernah mengikuti kelas ibu hamil. Kejadian KEK pada ibu hamil dapat dicegah jika ibu patuh dalam mengkonsumsi makanan bergizi dan rutin mengkonsumsi tablet Fe. Diharapkan ibu dapat meningkatkan kebutuhan nutrisi nya sehingga cukup untuk ibu maupun janinnya. Kata kunci: <i>ibu hamil, KEK, faktor resiko, TFU dan TBJ</i>
Keywords: <i>pregnant women, KEK, receipt factors</i>	ABSTRACT Pregnant women with KEK can be seen from the size of the upper arm circumference (Lila) ≤ 23.5 cm. This case study aims to determine the risk factors (age, education, nutritional intake, parity, employment and family income), problems in pregnant women with KEK (TFU and TBJ), and efforts of pregnant women in overcoming KEK. The incidence of KEK in Burneh Health Center in 2023 was 27 people (3.1%) out of a total of 855 pregnant women. This case study design is a multiple case design with two respondents who have the same criteria, namely pregnant women with LILA ≤ 23.5 cm. The research was conducted in the Burneh Health Center working area, in March-April 2024. Data collection tools using interviews, observation and documentation. Respondents in this study were from Langkap village and Binoh village. The results of the case study found that both respondents had the same risk factors, namely infectious disease (Gastritis). Respondents 1 and 2 both had TFU and TBJ that were not in accordance with gestational age. The efforts made by both respondents regularly consume FE tablets, respondent 1 diligently attends pregnant women's classes while respondent 2 never attends pregnant women's classes. The incidence of CED in pregnant women can be prevented if mothers are obedient in consuming nutritious foods and regularly taking Fe tablets. It is expected that mothers can increase their nutritional needs so that they are sufficient for both the mother and the fetus.

Keywords: *pregnant women, KEK, receipt factors*

INTRODUCTION

Pregnancy is a natural (normal) process, not pathological. Pregnancy begins from conception to the birth of the fetus. Every woman with normally functioning reproductive organs, who has experienced a menstrual cycle and is involved in sexual activity with a man who has healthy reproductive organs, is very likely to get pregnant, the duration is 280 days / 40 weeks calculated from the first day of the last menstruation / HPHT (Mulyasari & Putriastuti, 2021).

Pregnant women with good and sufficient nutrition can be seen from $lila \geq 23.5$ cm, if during pregnancy the nutrition is lacking or not fulfilled, it will inhibit the optimal growth and development of the fetus. One of the conditions of pregnant women whose nutrition is not fulfilled is called Chronic Energy Deficiency or KEK with $lila \leq 23.5$ cm (Purnamasari & Vitariani (2023). Maternal food intake should include a comprehensive range of nutrients, such as protein, carbohydrates, vitamins, minerals, and fats, to meet the needs of pregnant women and the developing fetus. Richard (2021). Based on the nutritional adequacy rate (AKG) pregnant women need 180 kcal of energy per day, 1g/day protein, 2.3g/day

fat, and 25g/day carbohydrates during the first trimester of pregnancy. While in the second trimester there is an additional 300kcal of energy, 10g/day protein, 2.3g/day fat, and 40g/day carbohydrates and in the third trimester an additional 300kcal of energy, 30g/day protein, 2.3g/day fat, 40g/day carbohydrates (Ministry of Health of the Republic of Indonesia, 2019).

Nationally, the incidence of KEK in Indonesia is 206,074 people (8.43%) of the total number of pregnant women of 2,443,494 people, while the incidence of KEK in East Java is 8.65%. Ministry of Health of the Republic of Indonesia (2023). In Bangkalan Regency with KEK as much as 5.73% Basic Health Research (2018). And the incidence of KEK at the Burneh Health Center in 2023 was 27 people (3.1%) out of a total of 855 pregnant women. From the data above, it can be concluded that pregnant women who experience KEK at the Burneh Health Center are lower due to education factors, and the mother's food intake has been met, from Bangkalan Regency and East Java Province. The problem of pregnant women with KEK is a basic problem that needs to be handled better because pregnant women

with KEK can have an impact on the fetus such as LBW, IUGR, IUFD and can also cause stunting in children.

Pregnant women who experience KEK are influenced by direct and indirect factors. Direct factors include maternal age and maternal intake, while indirect factors consist of gestational age, parity, income of the main household recipient, maternal employment status, and maternal education and awareness levels. The Greatest Showman (2023). In addition to the above factors, according to Sapphire (2023) stated that the dominant causative factors of KEK besides the above factors are age and BMI. Body condition, known as nutritional status, can be seen by examining food and nutrient intake in the body. Determining nutritional status can be achieved through the application of various methods, including the application of LILA, monitoring weight gain during pregnancy, and evaluating body mass index before pregnancy.

Pregnant women with KEK conditions during pregnancy have a higher chance of giving birth to a child with LBW compared to mothers who do not experience KEK. In addition, pregnant women who experience KEK are 4.85 times more likely to produce a child with

stunting. Hery (2022). The short-term impacts of stunting include impaired brain development, impaired intelligence, impaired physical growth, and impaired metabolism in the body. While in the long term, the detrimental effects include decreased cognitive talent and learning performance, decreased immunity that causes susceptibility to disease, and increased likelihood of diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability in old age. Princess (2018). Pregnancies with KEK usually have higher levels of anemia than pregnancies without anemia, the cause of which is improper consumption and absorption of food during pregnancy. Utami et al. (2023). Pregnant women who do not consume enough foods containing iron during pregnancy or do not consume FE tablets can result in anemia. (Kendal, 2021).

Efforts that can be implemented to overcome KEK problems among pregnant women, such as encouraging mothers to routinely attend pregnancy classes and ensuring integrated ANC checks. To improve the nutritional status of pregnant women, efforts that can be made by providing additional food (PMT) that is specifically adjusted for pregnant

women. Nursihhah (2022). in the form of complete ready-to-eat food that is rich in animal protein sources by paying attention to balanced nutrition; using fresh ingredients (without artificial preservatives) and limiting consumption of sugar, salt and fat. (Ministry of Health of the Republic of Indonesia, 2019).

In addition to the above efforts, handling KEK with the use of P4K stickers (Childbirth Planning and Complication Prevention Program). The main emphasis of this program lies in providing care and involving families and communities in initiating early detection measures, thus avoiding health hazards for pregnant women, mothers in labor, neonates, and the postpartum period. In addition, this program encourages the implementation of family planning (contraception) after giving birth (Himalaya & Maryani, 2020).

Through the use of the KIA book, it has been ensured that pregnant women can access information related to nutrition that must be consumed during pregnancy. In addition, the KIA book functions as the only health record that can be taken home, allowing mothers to read and understand its contents during their free time, as well as allowing them to prepare themselves in

advance for potential conditions. Therefore, pregnant women are required to carry the KIA book at all times during routine check-ups. (Ahmad et al., 2022).

In addition to the above efforts, the government is implementing a program to provide blood-boosting iron tablets (FE) to overcome the problem of KEK. Fe tablets are not only for pregnant women with KEK, or KEK with anemia but the provision of Fe tablets for all pregnant women, taken every day during pregnancy and forty days after giving birth. (Yuli Bahriah, 2021).

Research methods

METHOD

The method in this case study uses a multiple case design using two respondents, namely pregnant women with KEK. R1 in Langkap Village and R2 in Binoh Village. Both were visited twice. Data collection methods using interviews and documentation studies. Interviews were conducted by recording using questionnaires covering risk factors (age, education, nutritional intake, occupation, pregnancy spacing, family income, and infectious diseases), maternal efforts in

overcoming KEK. Documentation studies through KIA book records include Pregnancy Health History, ANC visits, TFU and TBJ monitoring. The results of the case study will be analyzed using descriptive in narrative form.

RESULTS

A. Based on the Causal Factors of KEK in Pregnant Women

Age

Based on the age of R1, he is 27 years old while R2 is 21 years old, both are of reproductive age. This data shows that although both respondents are of reproductive age, both are experiencing KEK.

Education

Based on the level of education, R1 has a bachelor's degree while R2 has a junior high school education. R2's education is lower than R1 because it does not meet the criteria of Indonesian National Education. This data shows that both undergraduate and junior high school education experience KEK.

Nutritional Intake

Based on nutritional intake, it was found that R1 and R2 had differences in nutritional patterns. R1, as a teenager, often consumed balanced nutritious foods such as rice, vegetables, fish, and fruit. During

pregnancy, R1's eating habits were not much different from those of a teenager. While R2, as a teenager, often consumed balanced nutritious foods such as rice, vegetables, fish, and fruit. During pregnancy, R2's eating habits were different from those of a teenager. During pregnancy, R2 rarely consumed vegetables and fruit because she felt nauseous when consuming vegetables and fruit. In terms of nutritional intake, both nutritional intakes that were close to balanced nutrition and less balanced nutrition, both respondents experienced KEK.

Pregnancy Spacing

Based on pregnancy spacing, R1 the distance between the current and previous pregnancies is 3 months, while R2 the distance between the current and previous pregnancies is 3 years. These data show that at risky and non-risky pregnancy spacings both experience KEK.

Work

Based on the work, it was found that both respondents worked as housewives. This data shows that even though both respondents worked as housewives, both of them experienced KEK.

Family Income

R1's family income is IDR

2,500,000/month. While R2 only has an income of IDR 2,000,000/month. Based on this data, R1 has an income above the UMR of Bangkalan Regency while R2 has an income below the UMR of Bangkalan Regency. This data shows that both high and low income respondents experience KEK.

Infectious Diseases

Based on infectious diseases, the results of the questionnaire with interviews obtained data that R1 and R2 have a history of digestive tract infections, namely gastritis. These infectious diseases can inhibit the body in the process of absorbing nutrients, resulting in nutritional deficiencies in the body which result in KEK.

Source: 2024 case study

B. TFU and TBJ Problems

Based on observation data on respondent 1 from the first visit to the second visit with a distance of 27 days, the results of the TFU increase were 3 cm, it should be ± 4 cm on 27 days. While in respondent 2, the first and second visits (28 days) the results of the TFU increase were 4 cm (normal). For TBJ, the results of the TBJ increase in respondents from the first and second visits were 310 grams, normally 510 grams.

While in respondent 2, the first and second visits were 465 grams, normally an increase of 900 grams.

Source: 2024 case study

C. Pregnant Women's Efforts to Overcome KEK

Mother's efforts in overcoming KEK in respondent 1 were better in preventing the impact of KEK, because respondent 1 ate fruits and vegetables more often, routinely took blood-boosting tablets, routinely attended pregnancy classes, and spent PMT in the form of a complete menu (rice, side dishes, vegetables and fruit) every time she attended pregnancy classes. While respondent 2 routinely took blood-boosting tablets, consumed milk for pregnant women at 6-7 months of pregnancy, routinely had monthly check-ups, often consumed sweet foods and drinks.

Source: 2024 case study

DISCUSSION

A. Risk Factors for CED in Pregnant Women

In terms of the causal factors, both respondents have different causal factors. In R1, there are risk factors for pregnancy spacing and infectious diseases. Where the pregnancy spacing of R1 is classified as risky because it is ≤ 2 years and infectious

diseases of the digestive tract (gastritis) so that it does not meet the nutritional needs of the fetus. This is in line with research Sri Lestari et al., (2023), pregnancy spacing greatly influences the occurrence of KEK when repeated pregnancies in a short time will drain the mother's nutrient reserves. In addition, mothers who are pregnant less than 2 years after giving birth have a risk of premature birth and for babies will experience low birth weight. Pregnant women are one of the groups that are vulnerable to nutritional problems and have a greater risk of KEK during pregnancy. Another opinion states that women who are pregnant and infected with infectious diseases are at risk of experiencing Chronic Energy Deficiency (KEK) because infectious diseases can prevent the body from absorbing sufficient nutrients from food, so that the food intake of pregnant women cannot meet the needs during pregnancy (Hasyim et al., 2023).

While R2 has risk factors, namely Education, nutritional intake, income, and infectious diseases (gastritis). In terms of Education, R2 has a junior high school education level with a family income of Rp. 2,000,000/month, and during pregnancy the mother rarely consumed fruits and

vegetables because she felt nauseous when she was going to consume them, and had a history of gastritis. Low income education will affect the absorption of information, especially nutrition and also the fulfillment of nutrition during pregnancy. This is in line with income Arif (2020), which states that the level of education affects a person's ability to absorb and understand the information obtained. The higher the education, the easier it is for mothers to receive information, so they will have broader knowledge, especially about nutritious food during pregnancy. In addition, low income will cause financial inability which has an impact on the nutritional needs of pregnant women that are not met, so there is a risk of KEK in pregnant women. In addition, Pregnant women who are infected with infectious diseases are at risk of experiencing KEK disorders because infectious diseases can prevent the body from absorbing sufficient nutrients from food, so that the pregnant woman's food intake cannot meet the needs during pregnancy.

B. TFU and TBJ Problems

In terms of TFU and TBJ, both respondents experienced an increase in TFU less than normal so that TBJ did not

match the gestational age. In the observation data on respondent 1 from the first visit to the second visit with a distance of 27 days, the TFU increase was 3 cm, it should have been ± 4 cm on 27 days. While in respondent 2, the first and second visits (28 days) the TFU increase was 4 cm (normal). For TBJ, the results of the increase in TBJ in respondents at the first and second visits were 310 grams, normally 510 grams. While in respondent 2, the first and second visits were 465 grams, normally an increase of 900 grams.

According to Anwar, (2022) There is a relationship between the weight gain of pregnant women and the estimated weight of the fetus. The weight gain of pregnant women greatly influences the condition of fetal development in the womb because the weight gain of pregnant women can be used as an index to determine the nutritional status of pregnant women where there are similarities in the amount of weight gain during pregnancy for all pregnant women. Underweight or excess weight gain will cause serious problems for the mother and fetus, so more attention needs to be paid to the mother's weight gain during pregnancy, which will also affect the development of the fetus in the womb. A good weight gain

for pregnant women during pregnancy is 10-12.5 kg.

TFU and TBJ of respondents increased but were still not in accordance with normal, which means that both respondents experienced the impact of KEK. KEK is a condition where the mother lacks energy and is chronic where the intake of the mother and fetus is reduced, causing TFU and TBJ not to increase according to normal. TBJ less than normal is related to maternal weight gain during pregnancy.

C. Pregnant Women's Efforts to Overcome KEK

Mother's efforts in overcoming KEK in respondent 1 were better in preventing the impact of KEK, because respondent 1 ate fruits and vegetables more often, routinely took blood-boosting tablets, routinely attended pregnancy classes, and spent PMT in the form of a complete menu (rice, side dishes, vegetables and fruit) every time she attended pregnancy classes. While respondent 2 routinely took blood-boosting tablets, consumed milk for pregnant women at 6-7 months of pregnancy, routinely had monthly check-ups, often consumed sweet foods and drinks.

One of the factors that causes mothers to experience KEK among pregnant women is the lack of awareness of pregnant women about optimal nutrition during pregnancy. Nutritional intake for pregnant women must include important components such as energy, protein, vitamins, minerals, folic acid, iron, and calcium, all of which play an important role in fetal development. Adequate nutritional intake can prevent KEK during pregnancy. (Rika Fitri Diningsih et al., 2021). And according to research Yulianti et al., (2023) Consuming sweet foods can increase the weight of pregnant women who experience KEK, so pregnant women who experience KEK are advised to consume sweet foods.

In this study, respondent 1 had better efforts because respondent 1 received PMT, routinely consumed Fe tablets and ate fruits and vegetables, respondent 2's efforts were also good because respondent 2 consciously consumed milk to gain weight and routinely consumed Fe tablets.

CONCLUSION

Based on the results and discussion of the

case study above, the following conclusions can be drawn:

1. Risk factors consisting of age, education, nutritional intake, occupation, family income are not the cause of KEK in both respondents. The risk factors that occur in both respondents are infectious diseases (gastritis). This could be the main factor in the occurrence of KEK because both have gastritis.
2. The impact of TFU and TBJ on pregnant women was found that respondent 1 experienced an increase in TFU of 3 cm from the first visit, while respondent 2 experienced an increase in TFU of 4 cm from the first visit.
3. Mother's efforts to overcome chronic energy deficiency in respondent 1 routinely consume Fe tablets, consume balanced nutritious food, routinely attend pregnancy classes and complete PMT in the form of a complete menu every time they attend pregnancy classes. While respondent 2 routinely consumes Fe tablets, consumes milk for pregnant women at 6-7 months of pregnancy, routinely undergoes monthly check-ups, often

consumes sweet foods and drinks

REFERENCES

- Afriyanti, D. (2020). Risk Factors Associated with the Incidence of Anemia in Pregnant Women in Bukittinggi City. *Menara Ilmu*, 14(1), 6–23.
- Ahmad, DD, Hendari, R., & Rahmad, I. (2022). The Relationship between the Utilization of KIA Books in Pregnant Women and Mothers' Knowledge of Pregnancy Care in the Work Area of the Penanae Health Center, Bima City, 2021. *Empiricism Journal*, 3(2), 202–206.
<https://doi.org/10.36312/ej.v3i2.1017>
- Anwar, A. (2022). Relationship between Upper Arm Circumference (MUAC) and Weight Gain of Pregnant Women with Estimated Fetal Weight. *Scientific Journal of Health*, 15(1), 23–29.
<https://doi.org/10.48144/jiks.v15i1.668>
- Hasyim, H., Aulia, DG, Agustine, FE, Rava, E., Aprillia, N., & Iswanto, I. (2023). Factors Associated with Chronic Energy Deficiency (CED) in Pregnant Women (Literature Review). *Jik Journal of Health Sciences*, 7(1), 87.
<https://doi.org/10.33757/jik.v7i1.637>
- Heryunanto. (2022). Overview of Chronic Energy Deficiency Conditions in Pregnant Women in Indonesia, Causal Factors, and Impacts. *PREPOTIF: Journal of Public Health*, 6(2), 1792–1805.
<https://doi.org/10.31004/prepotif.v6i2.4627>
- Himalaya, D., & Maryani, D. (2020). Implementation of the Birth Planning and Complication Prevention Program (P4K). *Journal Of Midwifery*, 8(1), 1–10.
<https://doi.org/10.37676/jm.v8i1.1027>
- Ministry of Health of the Republic of Indonesia. (2019). Technical Guidelines for Additional Food for Toddlers and Pregnant Women. Directorate of Community Nutrition, Ministry of Health of the Republic of Indonesia, 6(August), 78–81.
https://kesmas.kemkes.go.id/assets/uploads/contents/others/20230516_Juknis_Tatalaksana_Gizi_V18.pdf
- Ministry of Health of the Republic of Indonesia. (2023). Maternal and Child Health KIA Book. In Ministry of Health of the Republic of Indonesia.
- Kendal, K. (2021). 10.36419/Jki.V12I1.440. 12(1), 78–86.
- Mulyasari, R., & Putriastuti, W. (2021). Comprehensive Midwifery Care for Mrs. “H” G2P1A0 with Pelvic Rocking Intervention in Multigravida. *Midwifery Seminar National Seminar “Strong Midwives Advanced Midwives”*, 1(2), 57–63.
- Nursihhah, M. (2022). Weight gain in pregnant women with chronic energy deficiency (CED) in Bekasi Regency. *Jurnal Medika Utama*, 4(October 1), 3126–3128.
<http://jurnalmedikahutama.com/index.php/JMH/article/view/589>
- Purnamasari, F., & Vitariani, A. (2023). Midwifery Counseling on Balanced Nutrition for Pregnant Women at the Benteng Gajah Village Office, Maros. 1(3), 1–8.
- Putri, TA (2018). Risk Factors for Stunting Incidence in Toddlers Aged 25-59 Months in the Kotagede I Health

- Center Area, Yogyakarta City in 2018. Poltekkes Kemenkes Yogyakarta, 1–89.
- Richard. (2021). Pregnant women's knowledge about chronic energy deficiency in the second trimester. *Angewandte Chemie International Edition*, 6(11), 951–952., 27, 2013–2015.
- Rika Fitri Diningsih, Wiratmo, PA, & Erika Lubis. (2021). Relationship between Level of Knowledge About Nutrition and the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women. *Binawan Student Journal*, 3(3), 8–15. <https://doi.org/10.54771/bsj.v3i3.327>
- Riskesdas. (2018). East Java Province Report Riskesdas 2018. In Ministry of Health of the Republic of Indonesia.
- Safira. (2023). Factors Causing Chronic Energy Deficiency in Pregnant Women in Indonesia. *Jurnal Nusantara*, 1(4), 828–838.
- Sri Lestari, D., Saputra Nasution, A., & Anggie Nauli, H. (2023). Factors Associated with the Incidence of Chronic Energy Deficiency (CED) in Pregnant Women in the North Bogor PUSKESMAS Working Area in 2022. *Promotor*, 6(3), 165–175. <https://doi.org/10.32832/pro.v6i3.241>
- Sugiarto, AJ (2023). *Global Innovation Journal*. 1(1), 26–31.
- Utami, P., Rajab, M. Al, & Munsir, N. (2023). *Journal of health science. Journal of Health Science*, 4(3), 23–31.
- Yuli Bahriah. (2021). Compliance in Consuming Fe Tablets and Anemia Against Chronic Energy Deficiency (KEK) in Pregnant Women in 2020 (Literature Study). *Journal of Midwifery: Journal of Medical Science of Health Sciences*, Budi Mulia Palembang Midwifery Academy, 11(1), 79–91. <https://doi.org/10.35325/kebidanan.v11i1.254>
- Yulianti, I., Noviani, D., Citra, N., & Rahmawati, N. (2023). Tarap Ice Cream Innovation to Increase Pregnant Women's Weight with KEK (Chronic Energy Deficiency) in North Kalimantan. *Journal of Community Care*, 5(1), 173–178. <https://doi.org/10.37287/jpm.v5i1.1593>