

Case Report: Midwifery Care with Local Food-Based Intervention Improves Nutritional Status in a Primigravida with Chronic Energy Deficiency and Emesis Gravidarum

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ABSTRACT

Pregnancy is a critical period requiring adequate nutrition to maintain maternal and fetal health. Chronic Energy Deficiency (CED) remains a major maternal health problem in Indonesia, often worsened by emesis gravidarum. This case report describes midwifery care in a primigravida woman with CED and persistent emesis gravidarum during the second trimester. A descriptive case report was conducted at Plaosan Primary Health Center, Magetan District, Indonesia, from March 1–15, 2026. The subject was a 23-year-old primigravida at 21 weeks of gestation. Data were collected through interviews, physical examinations, supporting investigations, and documentation review using the SOAP approach. Interventions included nutritional counseling, recommendations for small frequent meals, monitoring of weight and Mid-Upper Arm Circumference (MUAC), supplementation with multiple micronutrients (MMS), and provision of 200 g/day of boiled purple sweet potato for 14 days as a locally sourced supplementary food. The patient's MUAC was 20 cm, confirming CED, while hemoglobin levels were 12 g/dL, indicating no anemia. After two weeks of intervention with three follow-up visits, improvements were observed: reduced frequency of nausea and vomiting, increased appetite, improved dietary patterns, and enhanced nutritional adequacy. Maternal weight gain was achieved, serving as an indicator of improved nutritional status. CED in this case was influenced by irregular pre-pregnancy dietary habits and reduced intake due to prolonged emesis gravidarum. The management strategy was consistent with evidence-based practice, as purple sweet potato supplementation provided essential nutrients and antioxidants that improved maternal nutritional status. The success of care was supported by adherence to nutritional counseling, supplementation compliance, family support, and continuous midwifery monitoring. Comprehensive midwifery care integrating nutritional education, supplementation, local food-based interventions, and ongoing monitoring proved effective in managing CED and emesis gravidarum. This approach improved maternal nutritional status, reduced pregnancy-related complaints, and minimized the risk of complications, supporting maternal and fetal health.

Keywords: Chronic Energy Deficiency, Emesis Gravidarum, Primigravida

INTRODUCTION

Chronic Energy Deficiency (CED) in pregnant women represents a nutritional problem characterized by inadequate body energy reserves, which may adversely affect both maternal and fetal health. In this case report, the primary indicator used was the Mid-Upper Arm Circumference (MUAC), with a measurement of <23.5 cm serving as a marker of CED risk. Maternal nutritional status during pregnancy requires close attention, as energy and nutrient demands increase to support maternal physiological changes and fetal growth. CED is also associated with a heightened risk of anemia, low birth weight (LBW), intrauterine growth restriction, and other pregnancy complications.⁽¹⁻³⁾ Emesis gravidarum, manifested as nausea and vomiting, is a common complaint during pregnancy, particularly in the first trimester. In some women, symptoms may persist into the second trimester. Persistent nausea and vomiting can reduce appetite, decrease meal frequency, and hinder adequate energy and nutrient intake. The relationship between impaired dietary intake, eating patterns, and CED has been documented among pregnant women, including those with a history of hyperemesis or prolonged nausea and vomiting that disrupt nutritional adequacy.⁽⁴⁻⁶⁾ In primigravida, adaptation to physiological and hormonal changes of pregnancy may exacerbate these symptoms.^(7,8)

This issue is particularly relevant at the local level. Case report data indicate that in 2025, 333 pregnant women were registered at the Maternal and Child Health (MCH) Unit of Plaosan Primary Health Center, of whom 65 experienced CED. At the district level, Magetan reported 565 cases of CED among 7,923 pregnant women in 2023. These figures highlight the ongoing need for early detection and monitoring, as well as practical, affordable, and context-appropriate interventions within midwifery services. Management of CED in pregnancy requires

more than simply increasing food quantity; attention must also be given to food quality, maternal tolerance, adherence, and monitoring of nutritional status. Nutritional counseling that emphasizes small, frequent meals may benefit women experiencing persistent nausea. Locally available foods can be utilized as supplementary nutrition, given their accessibility and cultural acceptability. In this case, purple sweet potato was selected as an additional food source, supported by prior research demonstrating improvements in maternal weight and MUAC following its consumption.⁽⁹⁾ This case report describes midwifery care in a primigravida woman with CED and persistent emesis gravidarum during the second trimester.

METHODS

This study employed a descriptive case report design to provide an in-depth account of the midwifery care process in a clinically instructive case: a primigravida woman in her second trimester presenting with Chronic Energy Deficiency (CED) and emesis gravidarum. The care approach was documented using the SOAP format and the midwifery management process, encompassing assessment, analysis, planning, implementation, and evaluation. The subject of this case report was a pregnant woman with nutritional problems and complaints of nausea and vomiting within the catchment area of Plaosan Primary Health Center.

The case involved a single subject, Mrs. I, aged 23 years, G1P00000, at 21 weeks of gestation at the initiation of care, with a MUAC of 20 cm and nausea-vomiting episodes occurring 2–3 times per day. The sample size was limited to one case, as the study aimed to document the care process and clinical changes in detail. Data collection and care provision were conducted between March 1–15, 2026, within the Plaosan Primary Health Center, Magetan District. Care was delivered across three visits: the initial visit on March 1, the second visit on March 8, and the final evaluation visit on March 15.

Observed indicators included the frequency of nausea and vomiting, appetite, dietary patterns and food types, adherence to purple sweet potato and MMS consumption, maternal weight, MUAC, vital signs, fundal height (FH), fetal heart rate (FHR), and hemoglobin levels. Changes in maternal weight were used as an indicator of nutritional status, while MUAC served as a marker of CED risk. Subjective data were obtained through anamnesis regarding chief complaints, obstetric history, dietary habits, activity, rest, elimination, and supplement adherence. Objective data were collected through vital sign measurement, weight, MUAC, obstetric examination, FHR, FH, and available laboratory tests.

Instruments included midwifery assessment forms, the MCH handbook, MUAC tape, weighing scale, Doppler, and sphygmomanometer. Daily observations recorded nausea-vomiting frequency, food intake, consumption of 200 grams of purple sweet potato per day, and MMS intake. Interventions included education on CED and emesis gravidarum, strategies to reduce nausea and vomiting, recommendations for small frequent meals, avoidance of nausea-triggering foods, adoption of a balanced diet, emphasis on animal protein intake, adherence to MMS, routine ANC visits, adequate rest, and recognition of pregnancy danger signs. Additionally, the mother was advised to consume 200 grams (approximately three pieces) of boiled purple sweet potato daily for 14 days as a snack. Monitoring focused on changes in complaints, dietary intake, maternal weight, MUAC, and fetal well-being.

Data were analyzed descriptively by comparing findings from the initial, second, and final visits. Changes in nausea-vomiting frequency, maternal weight, MUAC, dietary patterns, and adherence to interventions were presented narratively, in tables, and in graphs. As the study involved only one subject and multiple interventions were administered simultaneously, the findings were not intended to establish causal relationships or to evaluate the effectiveness of purple sweet potato as an isolated intervention.

RESULTS

Mrs. I, aged 23 years, G1P00000, was at 21 weeks of gestation during the initial visit. She was a primigravida diagnosed with Chronic Energy Deficiency (CED) based on a MUAC of 20 cm. The chief complaints were nausea and vomiting 2–3 times per day accompanied by reduced appetite. At baseline, her weight was 47.25 kg, blood pressure 99/70 mmHg, pulse 86 beats/minute, temperature 36.5°C, respiratory rate 21 breaths/minute, and fetal heart rate (FHR) 138 beats/minute. Previous laboratory examination showed hemoglobin (Hb) 12.3 g/dL. The general condition of both mother and fetus was assessed as good.

Initial Care

On March 1, 2026, the mother received education regarding CED and emesis gravidarum, along with strategies to reduce nausea and vomiting, including eating small frequent meals, choosing tolerable foods, avoiding pungent

or greasy foods, and trying warm beverages. She was advised to improve dietary composition, increase intake of animal and plant protein, consume MMS, attend routine ANC, rest adequately, and avoid strenuous activities. A local food intervention was introduced in the form of 200 grams of boiled purple sweet potato daily as a snack. The mother expressed willingness to comply. Changes at the Second Visit. On March 8, 2026, the mother reported reduced nausea and vomiting (1–2 times/day) and improved appetite. She consumed meals 4–5 times daily in small portions, including staple foods, vegetables, animal/plant protein, fruit, and purple sweet potato. Fluid intake was approximately 7–8 glasses/day, and she consumed maternal milk twice daily. She also reported trying warm ginger or citrus drinks during the first three days, which alleviated nausea. Her weight increased to 48.65 kg, a gain of 1.40 kg from baseline. MUAC remained 20 cm. FHR was 140 beats/minute, and Hb increased to 12.9 g/dL.

Changes at the 14-Day Evaluation

On March 15, 2026, the mother reported no nausea or vomiting. Appetite improved, and meal frequency increased to about five times daily in small portions. Her diet included rice, vegetables, animal and plant protein, fruit, bread, maternal milk, and 200 grams of boiled purple sweet potato daily. Fluid intake rose to 10–12 glasses/day. Weight reached 49.55 kg, reflecting a total gain of 2.30 kg over 14 days. MUAC remained 20 cm. Vital signs were stable, FHR 128 beats/minute, fundal height 18 cm, and Hb 14.3 g/dL. She was advised to maintain her dietary pattern, MMS intake, local food supplementation, ANC, and nutritional monitoring. Compliance and Daily Observation.

Observation records indicated that the mother consumed purple sweet potato and MMS regularly throughout most of the monitoring period. Nausea and vomiting frequency decreased from 2–3 times/day at baseline to 1–2 times/day, and eventually subsided on most days. One record on day 10 noted recurrence of nausea and vomiting, indicating that symptom improvement was not entirely linear. By day 14, complaints were minimal or absent, and compliance was assessed as good.

Summary of Findings

Table 1 presents the main changes, while Figure 1 illustrates weight gain from 47.25 kg to 49.55 kg across three measurements. MUAC remained unchanged throughout the observation period. These findings are significant as they demonstrate relatively rapid weight gain within 14 days, while MUAC did not yet reflect improvement. Continued monitoring is therefore necessary, and weight gain alone should not be considered sufficient evidence that CED has been resolved

Table 1. Clinical and anthropometric changes over 14 days

Indicator	01-03-2026	08-03-2026	15-03-2026	Change	Description
Nausea/vomiting	2–3×/day	1–2×/day	None	Decreased	Symptoms improved
Body weight	47,25 kg	48,65 kg	49,55 kg	+2,30 kg	Increased during monitoring
MUAC	20 cm	20 cm	20 cm	0 cm	No Change
Hemoglobin	12,3 g/dL*	12,9 g/dL	14,3 g/dL	+2,0 g/dL*	Within normal range
FHR	138×/min	140×/min	128×/min	Variable	Within case monitoring range
Nutritional intake	Reduced appetite, irregular meals	4–5 meals/day, small portions, balanced diet, purple sweet potato, maternal milk	5 meals/day, balanced diet with rice, vegetables, protein, fruit, bread, purple sweet potato, maternal milk	Improved	Mother reported increased and more varied intake

DISCUSSION

The case demonstrated that Mrs. I experienced Chronic Energy Deficiency (CED), indicated by a MUAC of 20 cm, accompanied by persistent emesis gravidarum in the second trimester. This condition aligns with the

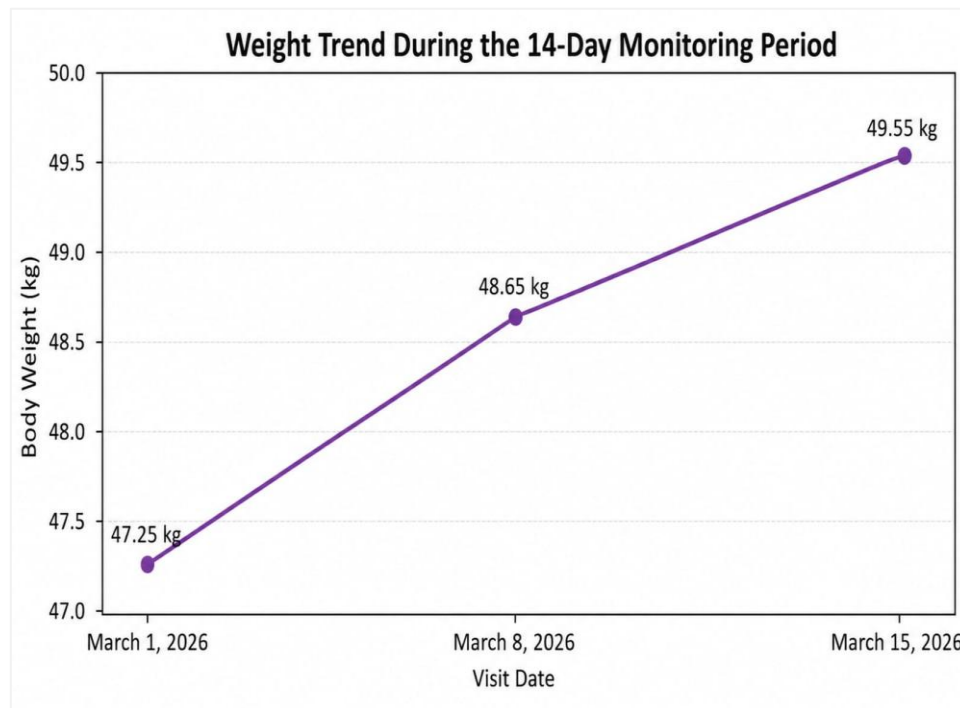


Figure 1. Weight trend during 14-day monitoring. (Note: The graph was constructed from three maternal weight measurements recorded in the case report)

literature, which identifies MUAC <23.5 cm as a marker of CED risk in pregnant women.^(3,10) A history of irregular dietary patterns prior to pregnancy and reduced intake during episodes of nausea and vomiting were relevant contributing factors. Previous studies have also reported that both the quality and quantity of dietary intake are associated with maternal nutritional status.^(11,12) The persistence of nausea and vomiting 2–3 times per day at 21 weeks of gestation was notable, as emesis gravidarum typically improves after the first trimester. Literature cited in this case report indicates that symptoms may persist longer in some women and are more frequently observed in primigravida.^(8,13,14) Persistent nausea and vomiting reduce appetite and meal frequency, exacerbating energy deficits. The association between nausea/vomiting history, dietary patterns, and CED has also been documented.^(4,5)

Mrs. I's MUAC remained 20 cm throughout the 14-day monitoring period, while her weight increased by 2.30 kg. The discrepancy between weight gain and unchanged MUAC highlights the importance of using multiple indicators to assess nutritional recovery. MUAC reflects body tissue reserves and may change more slowly than weight. Thus, weight gain in this case is better interpreted as a positive response to improved intake rather than definitive resolution of CED. Hemoglobin levels increased from 12.3 g/dL to 14.3 g/dL, with no evidence of anemia. This finding illustrates that CED does not always coincide with anemia, although CED is recognized as a risk factor for anemia, underscoring the importance of continued Hb monitoring.^(15,16) Intervention a distinctive feature of this case was the use of 200 g/day of boiled purple sweet potato as a supplementary local food for 14 days. The choice of local food offered advantages in availability, affordability, and cultural acceptability. Previous studies have reported improvements in nutritional indicators following purple sweet potato supplementation in pregnant women.⁽⁹⁾

However, the observed weight gain and symptom improvement cannot be attributed solely to purple sweet potato. The mother also received counseling on small frequent meals, protein intake, MMS, maternal milk, hydration, routine monitoring, and behavioral support. Moreover, emesis gravidarum may physiologically improve with advancing gestational age. Given the case report design, without a comparison group and with multiple simultaneous interventions, the most appropriate conclusion is that the integrated package of care contributed to maternal improvement, rather than attributing causality to a single food item. Clinical Response. The reduction in nausea and vomiting from 2–3 times/day to none at the final visit reflected a favorable clinical response. The mother reported improved appetite and increased meal frequency to approximately five times/day in small portions. The strategy of small frequent meals is logical in cases of nausea and vomiting, as it helps

maintain intake when larger portions are poorly tolerated. Non-pharmacological measures such as warm ginger or citrus drinks were also used, supported by literature on ginger's efficacy in reducing emesis gravidarum.⁽¹⁷⁾

Midwifery Care Implications. This case underscores the importance of integrated assessment, including MUAC, weight, dietary patterns, vomiting frequency, supplement adherence, and fetal condition. Collaboration with nutritionists is relevant when dietary needs cannot be met through routine intake. The care provided combined education, monitoring, and local food supplementation, offering a practical example for primary-level services. Continued monitoring is essential even after symptom resolution. The unchanged MUAC indicates that CED risk cannot be considered resolved solely based on weight gain. The mother should maintain a diverse and balanced diet, consume protein sources, adhere to ANC and supplementation, and continue monitoring weight and MUAC. If nausea/vomiting recurs, intake declines, or signs of dehydration or pregnancy complications emerge, further evaluation and possible referral are warranted. The case involved only one subject, a short monitoring period of 14 days, no comparison group, and multiple simultaneous interventions. Weight changes over two weeks cannot represent long-term recovery from CED. Therefore, the findings are best interpreted as clinical learning and illustration of care application rather than evidence of causal effectiveness of a single food. Future studies should employ larger samples, longer monitoring periods, standardized energy intake measurements, and comparative designs.

CONCLUSION

This case demonstrates that Chronic Energy Deficiency (CED) in a 23-year-old primigravida at 21 weeks of gestation with persistent emesis gravidarum into the second trimester was influenced by a combination of irregular pre-pregnancy dietary habits and reduced nutritional intake due to prolonged nausea and vomiting. The diagnosis was established based on both subjective and objective findings, including a Mid-Upper Arm Circumference (MUAC) of 20 cm indicating CED and a hemoglobin level of 12 g/dL, confirming the absence of anemia. Management consisted of nutritional education, recommendations for small frequent meals, monitoring of nutritional status, administration of multiple micronutrient supplements (MMS), and provision of 200 g/day of boiled purple sweet potato for 14 days as a locally sourced supplementary food. These interventions resulted in positive outcomes, including weight gain, improved dietary patterns, reduced frequency of nausea and vomiting, and enhanced nutritional adequacy. Therefore, the midwifery care provided was effective in controlling CED, as evidenced by improved maternal nutritional status and reduced emesis gravidarum, ultimately supporting maternal and fetal health while minimizing pregnancy-related complications. The continuity of care, maternal adherence to nutritional recommendations, and family support were critical factors contributing to the success of this case management.

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