Nutra: Jurnal Gizi Dan Kesehatan
https://saintifypublish.com/index.php/nutra
Volume 03 | Number 01| July |2025
e-ISSN: 3025-9886

The Relationship between Nutritional Status and Nutritional Knowledge among Pregnant Women

Dinda Karenia Putri[1*], Irma Susan Paramita[2], Yola Humaroh[3], Dewi Rahayu [4]
[1]Associate Degree Nutritionist Study Program, Poltekkes Kemenkes Riau, Indonesia
***Corresponding author email address: dindakareniaputri@gmail.com**

Article History
Received 01 July 2025
Accepted 31 July 2025

Keyword
Knowledge
Nutritional status
Pregnant women

DOI
10.69632/jgkk.v3i01.59

Abstract
Background: Chronic Energy Deficiency (CED) in pregnant women remains a public health issue that increases the risk of maternal complications and poor birth outcomes. Nutritional knowledge is considered a key determinant of maternal nutrition, yet its effectiveness may be influenced by other socio-economic and cultural factors. **Objective**: This study aimed to examine the relationship between nutritional knowledge and nutritional status among pregnant women in Pekanbaru City in 2024. **Methods**: This research was a descriptive cross-sectional study using secondary data from the Nutrition Growth Monitoring (PPG) survey conducted by the Pekanbaru Health Office at 21 public health centers. A total of 402 pregnant women in their second and third trimesters were included using total sampling. Nutritional status was determined based on Mid-Upper Arm Circumference (MUAC), and knowledge was assessed using a validated questionnaire. Data were analyzed using univariate and chi-square bivariate analysis. **Results**: The study found that 17.2% of pregnant women were categorized as having CED, and 41.8% had poor nutritional knowledge. A significant relationship was found between nutritional knowledge and nutritional status (p = 0.004). Notably, 15.9% of pregnant women with good nutritional knowledge still experienced CED, indicating the influence of other contributing factors beyond knowledge. **Conclusion**: Nutritional knowledge is significantly associated with the nutritional status of pregnant women. However, knowledge alone is insufficient to prevent CED. Integrated strategies that combine nutrition education with improved access to food, quality health services, and culturally sensitive interventions are needed to effectively address maternal undernutrition.

Introduction

Chronic Energy Deficiency (CED), defined as an Upper Arm Circumference (MUAC) of less than 23.5 cm, is a significant global health problem among pregnant women. CED increases the risk of Low Birth Weight (LBW) and affects both maternal health and fetal development (1). Globally, the prevalence of CED increased from 30.1% in 2019 to 35% in 2020, and its contribution to maternal deaths in developing countries is nearly 40%,

highlighting the urgency of this issue. In Pekanbaru, data from the Riau Health Office in 2022 recorded that 1.31% of pregnant women experienced CED out of 21,574 cases.

CED in pregnant women results from a combination of insufficient energy intake (2), micronutrient deficiencies (3), and socio-economic factors that limit access to adequate nutrition (4). Research indicates a significant relationship among energy intake, nutritional knowledge, and the incidence of CED in pregnant women (5). Eating habits contributing to CED include a lack of dietary diversity, insufficient meal frequency and portion sizes, and certain food taboos. In the context of Indonesia and Southeast Asia, during pregnancy, food taboos can lead to incidences of chronic energy deficiency. The reasons given for avoiding fish, eggs, and shrimp are that pregnant women fear the baby will be born with a fishy smell. They avoid red meat due to fear of bleeding, miscarriage, and potential adverse effects on the baby. However, fish, meat, eggs, and shrimp are excellent sources of protein crucial for the adequate nutritional intake of pregnant women (6) . In a study by Siregar et al (2021),the results of the Chi-square test showed a p value of 0.000, indicating a relationship between income and the occurrence of chronic energy deficiency in pregnant women in the Batunadua Community Health Center service area. However, the study by Qomariyah et al (2025) found no relationship between food taboo beliefs and the incidence of CED in pregnant women, with a p value of 0.210 and an OR of 2.143.

Nutritional knowledge during pregnancy is essential, as proper nutritional intake has a positive impact on maternal health and fetal development. However, pregnant women often have insufficient nutritional knowledge, leading to poor dietary practices and inadequate nutrient intake. Although Mamuroh et al (2019) of found that 69% of pregnant women had good nutritional knowledge, this implies that 31% still lack knowledge. Differences in demographic, social, and economic contexts between regions make it important to understand specific knowledge gaps and their correlation in Pekanbaru. Increasing nutritional knowledge through antenatal education has proven to significantly improve positive dietary practices (9). Although the government has made efforts to improve the knowledge and nutritional status of pregnant women, in reality, many still experience CED due to nonadherence to healthy eating guidelines, economic constraints, and lack of knowledge. This shows that current interventions may not be fully effective or might not address multifaceted barriers. Therefore, a more nuanced understanding of the relationship between nutritional knowledge and nutritional status in local contexts, such as Pekanbaru City, is necessary for more effective public health strategies.

Based on this background, the researchers are interested in examining the relationship between nutritional status and knowledge among pregnant women in Pekanbaru City in 2024. The results of this study will provide valuable evidence for the literature on maternal nutrition, particularly in urban Southeast Asia, and serve as a basis for policymakers and health practitioners in Pekanbaru to develop more targeted, culturally sensitive, and

effective nutrition education and intervention programs to reduce the prevalence of CED and improve the health of mothers and infants in the region.

Materials and Methods

This study uses a descriptive method with a cross-sectional design aimed at providing an overview of the nutritional status and nutrition knowledge of pregnant women in Pekanbaru City in 2024. The study utilizes secondary data sourced from the Nutrition Growth Monitoring (PPG) survey conducted by the Pekanbaru City Health Office at 21 Community Health Centers from January to March 2024. Access to the data was granted to the researchers through official permission and cooperation with the Health Office. The population in this study consists of all pregnant women recorded in the PPG survey during that period. The sampling technique used is total sampling, and a total of 402 pregnant women who met the inclusion criteria were analyzed. The inclusion criteria include pregnant women in their second or third trimester who have complete data on Upper Arm Circumference (LiLA) and nutrition knowledge. The exclusion criteria include incomplete data or pregnant women with medical complications not covered in the data.

Nutritional status is determined based on LiLA measurement, with the classification of Chronic Energy Deficiency (KEK) if LiLA < 23.5 cm, and non-KEK if LiLA ≥ 23.5 cm. Nutrition knowledge was measured using a structured questionnaire prepared by the PPG survey team, consisting of 20 multiple-choice questions related to nutrition during pregnancy. Each correct answer was given a score of 1 and each incorrect answer a score of 0. The total score was classified into three categories: good (≥15), moderate (10–14), and poor (<10). This questionnaire instrument has been tested for validity and reliability by the Health Office, with a Cronbach's Alpha value of 0.82. Data analysis was carried out using SPSS version 26 software. Univariate analysis was performed to describe respondents' characteristics, nutritional status, and level of nutrition knowledge in the form of frequency and percentage distribution. Bivariate analysis used the Chi-Square test to determine the relationship between nutrition knowledge and the nutritional status of pregnant women, with a significance level of $p < 0.05$.

Results

Table 1. Characteristics of pregnant women's distribution

Characteristics	n	%
Age		
<20 years	7	1.7
21-35 years	337	83.8
>35 years	58	14.4
Education		
No School	5	1.2
Elementary school	60	14.9

Nutra: Jurnal Gizi Dan Kesehatan
https://saintifypublish.com/index.php/nutra
Volume 03 | Number 01| July |2025
e-ISSN: 3025-9886

Junior High School	53	13.2
Senior High School	230	57.2
College	54	13.4
Occupation		
Private employee	21	5.2
Self-employed	30	7.5
Shopkeeper	29	7.2
Housewife	301	74.9
Other	21	5.2
Gestational age		
Trimesters 1	64	15.9
Trimesters 2	161	40.0
Trimesters 3	177	44.1
Total	**402**	**100**

*Others include farmer, fisherman, livestockman, civil servants, and other unspecified jobs with ≤ 1% representation each.

Table 1 presents the characteristics of pregnant women. The majority of pregnant women (83.8%) were aged 21–35 years, and over half (57.2%) had a senior high school education. Most respondents (74.9%) were housewives. The gestational age distribution showed the highest proportion in the third trimester (44.1%), likely due to the timing of data collection which coincided with late-stage antenatal visits.

Table 2. Characteristics of knowledge and nutritional status

Characteristics	n	%
Mother's knowledge		
Good	46	11.4
Moderate	188	46.8
Poor	164	41.8
Nutritional status		
Chronic Energy Deficiency	69	17.2
NonChronic Energy Deficiency	333	82.8
Total	**402**	**100**

Table 2 shows that nearly half of respondents (46.8%) had moderate nutritional knowledge, and 41.8% were classified as having poor knowledge. Regarding nutritional status, 17.2% of pregnant women were classified as having Chronic Energy Deficiency (CED), while the remaining 82.8% were classified as not having CED.

Nutra: Jurnal Gizi Dan Kesehatan
https://saintifypublish.com/index.php/nutra
Volume 03 | Number 01| July |2025
e-ISSN: 3025-9886

Table 3. The relationship between nutritional status and nutritional knowledge of pregnant women

Knowledge	Nutritional status						*p value*
	CED		Non-CED		Total		
	n	%	n	%	n	%	
Good	11	15.9	35	10.5	46	11.4	**0.004**
Moderate	23	33.3	165	49.5	168	46.8	
Poor	35	50.7	133	39.9	188	41.8	

Based on the results in Table 3, a significant association was found between the nutritional status of pregnant women and their nutritional knowledge, as supported by a chi-square test with a p-value of 0.004 ($p < 0.05$).

DISCUSSION

The findings of this study revealed a significant relationship between the nutritional knowledge and nutritional status of pregnant women. Among respondents categorized as having Chronic Energy Deficiency (CED), 50.7% had poor nutritional knowledge. This finding is consistent with previous studies, such as Mamuroh et al (2019), which emphasized that insufficient knowledge can lead to poor dietary practices and increased nutritional risk during pregnancy. Poor nutritional knowledge may result in failure to meet increased nutritional demands, which are essential for both maternal health and fetal development (10). Interestingly, the data also showed that 15.9% of pregnant women who had good nutritional knowledge were still categorized as CED. This suggests that while knowledge is a critical factor, it is not the sole determinant of nutritional status. Several non-cognitive factors may contribute to this condition. Limited access to diverse and nutritious foods, economic constraints, food taboos, and poor-quality health services can hinder optimal nutritional outcomes even among those who are well-informed. As noted in the introduction, cultural practices such as food restrictions during pregnancy can reduce nutrient intake despite good awareness (11). Moreover, socioeconomic status has been widely recognized as a key determinant in maternal nutrition (12), where low income may limit food purchasing power regardless of knowledge level.

These results underline that nutrition education alone is insufficient to address maternal undernutrition. While increased knowledge contributes to better health behaviors, effective improvement in nutritional status requires a supportive environment. This includes ensuring food availability and affordability, strengthening health services, and addressing social and cultural barriers. Therefore, a multi-sectoral intervention strategy is necessary. For example, Posyandu cadres can play a crucial role in providing not only education but also real-time monitoring and home visits for at-risk pregnant women. Local governments can support nutrition-sensitive programs, such as food subsidies or home

gardening, and improve the distribution of iron and energy supplements through community health centers. Collaborative efforts should involve specific stakeholders including public health officials, midwives, nutritionists, community leaders, local NGOs, and family members of pregnant women. Each has a strategic role: health workers in education and screening, local leaders in promoting supportive norms, and family members in ensuring dietary compliance at home. These integrated efforts align with recommendations from Teweldemedhin et al (2021) and Olloqui-Mundet et al (2025), who emphasized that contextualized, community-based interventions are more effective in improving maternal nutrition than education alone.

This study contributes to the existing literature by reinforcing the importance of combining nutrition knowledge with enabling environments to reduce CED among pregnant women. However, there are limitations to be acknowledged. First, the cross-sectional nature of the study does not allow for causal inferences between knowledge and nutritional status. Second, the use of secondary data from the PPG survey may limit the depth of variables available for analysis, such as household income, food security, or dietary diversity, which could have provided a more comprehensive understanding.

Future research should consider longitudinal or mixed-method approaches to better explore causal pathways and underlying contextual factors. Additionally, intervention studies that combine education with material support and cultural counseling are recommended to address both knowledge and systemic barriers simultaneously.

Conclusion

This study found a significant relationship between nutritional knowledge and the nutritional status of pregnant women. Although higher nutritional knowledge tends to be associated with better nutritional status, a portion of pregnant women with good knowledge still experienced Chronic Energy Deficiency (CED), indicating that knowledge alone is not sufficient. These findings highlight the need for integrated efforts that combine nutrition education with broader support such as improved food access, health services, and community-based interventions to reduce maternal undernutrition.

Reference

1. Hardiati RH, Thasliyah D. Kekurangan Energi Kronis (KEK) sebagai Faktor Risiko Bayi Berat Lahir Rendah (BBLR): Literature Review. Medika: Jurnal Ilmiah Kesehatan. 2022 Sept 16;2(2):6–11.
2. de Kok B, Argaw A, Hanley-Cook G, Celine Toe L, Ouédraogo M, Dailey-Chwalibóg T, et al. Fortified Balanced Energy-Protein Supplements Increase Nutrient Adequacy without Displacing Food Intake in Pregnant Women in Rural Burkina Faso. The Journal of Nutrition. 2021 Dec 1;151(12):3831–40.

3. Kiely ME, McCarthy EK, Hennessy Á. Iron, iodine and vitamin D deficiencies during pregnancy: epidemiology, risk factors and developmental impacts. Proceedings of the Nutrition Society. 2021 Aug;80(3):290–302.
4. Dipasquale V, Cucinotta U, Romano C. Acute Malnutrition in Children: Pathophysiology, Clinical Effects and Treatment. Nutrients. 2020 Aug;12(8):2413.
5. Mahendika D, Yuliani M, Minarti M, Supriatin S, Ivantarina D. Hubungan Asupan Energi Dan Pengetahuan Gizi Dengan Kejadian Kurang Energi Kronis (Kek) Pada Ibu Hamil. Health Sciences Journal. 2023 Oct 31;7(2):102–11.
6. Qamariyah NW, Ni Ketut Kariani, Nurdiana Nurdiana. Kepercayaan Pantangan Makanan dan Keragaman Pangan dengan Kejadian KEK pada Ibu Hamil di Wilayah Kerja Puskesmas Talise. Antigen. 2025;3(2):262–75.
7. Siregar N, Harefa MA, Siregar R. Faktor Yang Berhubungan Dengan Kejadian Kekurangan Energi Kronis Pada Ibu Hamil Di Wilayah Kerja Puskesmas Batunadua. 2023;(1).
8. Mamuroh L, Sukmawati S, Widiasih R. Pengetahuan Ibu Hamil tentang Gizi Selama Kehamilan pada Salah Satu Desa di Kabupaten Garut. Jurnal Ilmiah Keperawatan Sai Betik. 2019 July 29;15(1):66–70.
9. Teweldemedhin LG, Amanuel HG, Berhe SA, Gebreyohans G, Tsige Z, Habte E. Effect of nutrition education by health professionals on pregnancy-specific nutrition knowledge and healthy dietary practice among pregnant women in Asmara, Eritrea: a quasi-experimental study. BMJNPH [Internet]. 2021 June 30 [cited 2025 June 18];4(1). Available from: https://nutrition.bmj.com/content/4/1/181
10. Ballestín SS, Giménez Campos MI, Ballestín Ballestín J, Luesma Bartolomé MJ. Is Supplementation with Micronutrients Still Necessary during Pregnancy? A Review. Nutrients. 2021 Sept;13(9):3134.
11. Tela FG, Gebremariam LW, Beyene SA. Food taboos and related misperceptions during pregnancy in Mekelle city, Tigray, Northern Ethiopia. PLOS ONE. 2020 Oct 13;15(10):e0239451.
12. Heri R, Malqvist M, Yahya-Malima KI, Mselle LT. Dietary diversity and associated factors among women attending antenatal clinics in the coast region of Tanzania. BMC Nutrition. 2024 Jan 22;10(1):16.
13. Olloqui-Mundet MJ, Palma-Morales M, Cantarell-González MC, Cavia MM, Alonso-Torre SR, Ocón-Hernández O, et al. Dietary Habits of Pregnant Women in Spain: The Role of Nutrition Education in Midwife Consultations. Nutrients. 2025 Jan;17(1):120.