



THE EFFECT OF NUTRITION COUNSELING ON DIETARY CHANGES IN PREGNANT WOMEN IN STUNTING AREAS

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ABSTRACT

Stunting is a priority nutritional problem in Indonesia and is associated with long-term negative impacts on growth, cognitive abilities, and intellectual development. One of the main factors causing stunting is inadequate nutritional intake during pregnancy. Optimal maternal nutrition requires appropriate dietary practices throughout pregnancy, as maternal knowledge significantly influences the child's nutritional status. However, pregnant women living in stunting-prone areas often have limited understanding of proper nutrition and healthy eating patterns. Lack of education and guidance makes behavioral changes in eating habits more difficult to achieve. Nutrition counseling plays a crucial role in improving knowledge, understanding, and implementation of healthy nutrition in the daily lives of pregnant women. This study aimed to determine the effect of nutrition counseling on changes in maternal dietary patterns. A quantitative approach with a one-group pre-test post-test pre-experimental design was used. The instruments consisted of a Food Frequency Questionnaire (FFQ) and an observation sheet, both of which were validated through content validity testing (CVI 0.86) and reliability testing (Cronbach's Alpha 0.82). Data were analyzed using the Wilcoxon Signed Rank Test to assess changes before and after counseling. The results showed an improvement in dietary patterns after the intervention, with a significant difference between pre-test and post-test scores ($p = 0.000$). These findings indicate that nutritional counseling effectively improves the dietary practices of pregnant women in stunting areas.

Keywords: counseling; nutrition; pregnant; stunting

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INTRODUCTION

Stunting is a condition in which children fail to thrive or experience delayed growth due to chronic malnutrition that begins in the womb during the first 1,000 days of life and continues until 23 months of age (Vinci et al., 2022). Stunting is a priority nutritional problem in Tangerang Regency. Based on data from the 2022 Indonesian Nutritional Status Survey (SSGI), the prevalence of stunting in Indonesia was 21.6%, and in Tangerang Regency it was 21.1% (Kementerian Kesehatan RI, 2022). Stunting has negative impacts, including delayed growth and intellectual cognitive problems (Lestari et al., 2024). In the long term, it will affect the quality of health during the productive period, increasing the incidence of chronic degenerative diseases (Banjarmasin & Asuh, 2021), recurrent infections (Sumanri & Mansoer, 2024) and a weakened immune system (A & , Sayekti Suindyah Dwiningwarni, 2025). Stunted growth begins in the womb and persists for the first two years after birth (Mustakim et al., 2022). Salah satu faktor utama penyebab stunting adalah rendahnya pengetahuan (Prawesti et al., 2024) One of the main factors causing stunting is low knowledge (8) and poor nutritional intake during pregnancy (Desie, Getenet, Jinhu Li, Son Nghiem, 2025). This results in inadequate nutrition for the fetus in the womb. This malnutrition will inhibit fetal growth and can continue after birth and cause stunting in children (Maulana et al., 2024).

The nutritional status of pregnant women greatly affects the health and development of the fetus (Arsyati, 2019). Energy and nutrient needs increase during pregnancy (Delima et al., 2023). If the nutritional status of pregnant women is lacking, it can affect fetal growth and maternal health

(Ariani et al., 2024), causing miscarriage, stillbirth, congenital defects and low birth weight (Padjadjaran, 2025) which then puts them at risk of stunting (Wulandari et al., 2021). To obtain better results, it is necessary to pay attention to the diet of pregnant women, namely more quantity, better quality, and the menu must also be balanced (Pebrina et al., 2021). A mother's knowledge impacts her child's nutritional status (Amalia et al., 2021). Unfortunately, knowledge about nutrition and healthy eating patterns among pregnant women in areas prone to stunting is still limited. The lack of education and support makes changing nutritional behavior difficult to achieve. Providing counseling can increase pregnant women's knowledge and understanding of nutrition and enable them to apply it in their daily lives (Hapsari et al., 2023)(Fadilah et al., 2024). However, research on nutrition counseling specifically for changing the eating patterns of pregnant women in areas prone to stunting is still limited, particularly in Tangerang Regency. Therefore, this study is important to determine the effect of nutrition counseling on changing eating patterns among pregnant women in areas prone to stunting. The aim of this study was to determine changes in the eating patterns of pregnant women before and after being given nutritional counseling.

METHOD

The research method used was quantitative, employing a pre-experimental design with a one-group pre-test and post-test approach. This design was used to examine changes in dietary patterns before and after the provision of nutritional counseling interventions to pregnant women. The study was conducted over a six-month period, from preparation to reporting. The population consisted of all pregnant women in stunting-prone areas. Researchers selected three regions in Tangerang Regency: Sepatan, Mauk, and Sindang Jaya. A purposive sampling method was used to select 30 pregnant women from each region. The nutrition counseling intervention was conducted twice in each region. The instruments used included a Food Frequency Questionnaire (FFQ) and an observation sheet, which were found to be valid through validity testing (CVI 0.86) and reliability testing with a Cronbach's Alpha value of 0.82. Data were analyzed using the Shapiro-Wilk normality test and the Wilcoxon signed-rank test.

RESULT

Table 1.
Frequency Distribution of Respondent Characteristics

Characteristic	f	%
Maternal Age		
Healthy Reproductive Age (20-35)	70	77,8
Older Reproductive Age (36-49)	20	22,2
Gestational Age		
Trimester I	29	32,2
Trimester II	39	43,3
Trimester III	22	24,4

Table 1 shows that the majority of respondents were of healthy reproductive age (20-35 years), namely 70 respondents (77.8%). Based on gestational age, the majority of respondents were in the second trimester, namely 39 respondents (43.3%).

Table 2.
Distribution of Pregnant Women's Dietary Patterns Before and After Nutrition Counseling

Pregnancy Women's Dietary	Before		After	
	f	%	f	%
Poor	73	81.1	20	22,2
Fair	17	28.9	64	71,1
Good	0	0	6	6,7
Total	90	100	90	100

Table 2 shows that before nutrition counseling, the majority of respondents had poor dietary patterns, amounting to 73 respondents (81.1%), while 17 respondents (28.9%) had adequate dietary patterns. After nutrition counseling, there was a significant change, with the number of respondents with good dietary patterns increasing to 6 respondents (6.7%), respondents with adequate dietary

patterns increasing to 64 respondents (71.1%), and respondents with inadequate dietary patterns decreasing to 20 respondents (22.2%).

Table 3.
Results of the Wilcoxon Signed Rank Test

Variabel	N	Median (minimum-maksimum)	Mean	p-value
Eating Pattern before counseling	90	1 (1-2)	27,00	0,000
Eating Pattern after counseling	90	2 (1-2)	29,04	

Based on table 3, the median eating pattern among pregnant women before nutritional counseling was 1 with an average of 27.00, while after nutritional counseling, the median increased to 2 with an average of 29.04. The Wilcoxon Signed Rank Test results showed a p-value of 0.000 ($p < 0.05$), indicating a significant difference between the eating patterns of pregnant women before and after nutritional counseling.

DISCUSSION

Pregnancy is a physiological process so a mother needs to plan her pregnancy by considering various factors that can affect the health of the mother and fetus, including age (Sari et al., 2021). The results of the study showed that respondents had a healthy reproductive age (20-35 years), namely 70 respondents (77.8%) and an older reproductive age (36-49), namely 20 respondents (22.2%). Maternal age will affect various aspects such as pregnancy conditions, childbirth, postpartum conditions, and neonatal outcomes (Handayani, 2022). Global studies show that pregnancy in adolescents (< 20 years) is often associated with a high risk of various pregnancy complications such as anemia, malnutrition, premature birth, and low birth weight (Fitri et al., 2022).

The results of the study showed that most respondents were in the second trimester of pregnancy, namely 39 people (43.3%), the first trimester was 29 people (32.2%), the third trimester was 22 people (24.4%). This distribution illustrates that the majority of pregnant women in this study were in the middle phase of pregnancy, where nutritional needs begin to increase along with the increasingly rapid growth of the fetus. According to the Indonesian Ministry of Health (2023), the second trimester is a critical period because there is accelerated fetal growth, the formation of vital organs, and an increase in maternal blood volume. Therefore, pregnant women in this phase require more optimal nutritional intake, especially energy, protein, iron, folic acid, and calcium to support fetal development and prevent complications such as anemia and intrauterine growth retardation (Kemenkes, 2023). Research by Sholikah et al. (2023) shows that pregnant women in the second trimester are more susceptible to nutritional problems, especially iron deficiency anemia, compared to other trimesters. This is caused by increased iron needs due to increased blood plasma volume and rapid fetal development. Thus, nutritional counseling in the second trimester is very strategic in improving maternal nutritional status and supporting fetal growth (Rohmah, 2023). Furthermore, recent research by Arifin & Susanti (2024) confirmed that nutritional interventions administered starting in the second trimester are more effective in improving the quality of pregnant women's diets and nutritional status than those administered in the third trimester. This is because pregnant women in the second trimester tend to have passed the phase of excessive nausea and vomiting (hyperemesis gravidarum) that commonly occurs in the first trimester, resulting in better food acceptance (*JCRBE (Journal of Current Research in Business and Economics) Volume 4, No. 1, Pp. 1142-1160 <https://Jcrbe.Org>, n.d.*).

The results of the study showed that before being given nutritional counseling, the majority of pregnant women had poor eating habits, namely 73 respondents (81.1%), while those who had sufficient eating patterns were 17 respondents (18.9%). After nutritional counseling, there was a significant change, where respondents with good eating patterns increased to 6 people (6.7%), sufficient to 64 people (71.1%), and those who were still lacking were 20 people (22.2%) (Padila, 2020). This change is in line with the results of the Wilcoxon test which showed a p-value of 0.000 ($p < 0.05$), which means there is a significant difference between the dietary patterns of pregnant

women before and after nutritional counseling. These results prove that nutritional counseling plays an important role in increasing awareness and eating behavior of pregnant women. According to Rahman et al. (2023), nutritional counseling conducted repeatedly and based on the needs of pregnant women can improve the quality of dietary patterns, because a good diet in pregnant women is directly related to maternal nutritional status and fetal growth. Furthermore, research by Wulandari & Putri (2023) confirmed that nutritional counseling interventions can improve compliance of pregnant women in meeting balanced nutrition recommendations. The impact is not only on dietary patterns, but also on increasing hemoglobin levels and reducing the risk of anemia (Hapsari et al., 2023). These findings are in line with the literature stating that nutritional counseling can improve the quality of dietary intake of pregnant women. Furthermore, research in Ethiopia by Wakwoya et al. (2023) found that intensive nutritional education and counseling based on the Health Belief Model accompanied by weekly reminders can improve the nutritional status of pregnant women, with a decrease in the prevalence of malnutrition by 11% in the intervention group. This emphasizes the importance of repeated and interactive counseling, not just one-way information delivery (Wakwoya et al., 2023). Research in Iran by Zare et al. (2025) also showed that nutritional counseling was effective in helping pregnant women achieve recommended weight gain, although it did not always have a significant impact on neonatal outcomes such as birth weight (Zare et al., 2025). This is in line with the findings of this study, which assessed diet as the primary outcome.

Nutritional counseling for pregnant women is a health education effort aimed at improving mothers' knowledge, attitudes, and practices in meeting nutritional needs during pregnancy. According to Almatsier (2019), pregnant women's energy and nutrient needs increase with increasing gestational age, particularly iron, protein, calcium, and folic acid. Malnutrition during this period can impact fetal growth, increase the risk of low birth weight (LBW), and cause pregnancy complications. Therefore, nutritional counseling is crucial to help mothers understand their nutritional needs and how to meet them through a balanced diet (Wityadarda & Astuti, 2023). Furthermore, Arisman (2020) explains that pregnant women's eating patterns are often influenced by cultural, social, economic, and psychological factors, so counseling interventions must be tailored to the needs and conditions of each mother. The results of this study, which showed improvements in eating patterns after counseling, reinforce the view that providing interactive nutritional information can lead to healthier eating behaviors (Kehidupan, 2024). This is relevant to this study, where pregnant women who previously tended to neglect their consumption of vegetables, fruit, and protein sources began to improve their consumption after receiving counseling. Therefore, the results of this study align with existing literature that nutritional counseling can improve pregnant women's diets, which ultimately contributes to maternal health, fetal growth, and the prevention of nutritional problems in children, including stunting.

CONCLUSION

The results of the research analysis showed that after respondents were given intervention, there was a significant difference between the eating patterns of pregnant women before and after nutritional counseling.

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