



EDUCATION ON THE MANAGEMENT AND PREVENTION OF MALNUTRITION IN TODDLERS IN THE WORKING AREA OF RANTANG HEALTH CENTER, MEDAN CITY

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ABSTRACT

Malnutrition is a condition in which the body does not receive sufficient intake of essential nutrients such as proteins, vitamins, calories, and minerals. This condition can lead to severe health issues, including wasting and stunting in children, making malnutrition a critical concern. Around 150.2 million children under five in the world are stunted and 42.8 million are wasting. In Indonesia, the results of the 2023 Indonesian Health Survey (SKI) and SSGI 2024 show that the national stunting prevalence is at 19.8%. The research design used is using a Quasi-Experimental design with a Pretest-Posttest Control Group design. The study population was all mothers who had toddlers aged 12–59 months in the working area of the Rantang Health Center. The sampling technique uses Probability Sampling with the Simple Random Sampling method. Based on the results of research and discussions that have been carried out in the Rantang Health Center Working Area, Medan City in 2024, the following conclusions can be drawn: Improvement of Knowledge and Attitudes: There is a significant influence of providing education on management and malnutrition prevention education on the level of knowledge and attitudes of mothers under five. The intervention group showed an increase in knowledge scores of 26.33 points and attitudes of 16.80 points ($p < 0.001$). Structured and interactive education has proven to be much more effective than conventional counseling methods (controls) that only provide one-way information. This proves that a comprehensive educational approach is able to solve the barriers to nutrition literacy in urban communities. Impact on Nutritional Status: Although changes in anthropometric nutritional status (BB/U) require a longer monitoring time, this study noted an improvement in daily diet (protein intake) in toddlers in the intervention group, which is an early indicator of sustained malnutrition prevention.

Keywords: Education, Prevention, Malnutrition, Toddlers

Introduction

Malnutrition in children under five, which includes wasting, underweight, and stunting, remains a crucial global public health challenge. Based on data (Unicef, 2023), Around 150.2 million children under five in the world are stunted and 42.8 million are wasting. In Indonesia, the results of the 2023 Indonesian Health Survey (SKI) and SSGI 2024 show that the national stunting prevalence is at 19.8%

(Unicef, 2023). Despite the downward trend, this figure is still above the target of the National Medium-Term Development Plan (RPJMN) by 14% in 2024 (Kemenkes RI, 2024). The city of Medan as an urban area faces the dual challenge of malnutrition. The latest data shows that the prevalence of stunting in Medan City in 2023 is 5.8% (Kesehatan and Medan, 2025). However, the big challenge lies in the variation between the work areas of the health center. The work area of Puskesmas in



Medan City often faces problems of population density, limited environmental sanitation, and access to nutritious food that is hampered by post-pandemic economic factors (Pertiwi, 2024). The lack of nutrition implementers and the lack of utilization of Nutrition Recovery Centers in several health centers are risk factors for the continued high cases of malnutrition in toddlers.

The main cause of malnutrition is not only the availability of food, but the low nutritional literacy of parents related to parenting and feeding rules. Nutrition education is a specific nutrition intervention that is very effective. Research shows that providing intensive education to mothers under five can increase knowledge about balanced nutrition by up to 80% and significantly improve children's nutritional status (Sumirat *et al.*, 2024). Without proper education, interventions in the form of Supplementary Feeding (PMT) are often unsustainable because they are not accompanied by behavioral changes at the household level.

Puskesmas as the spearhead of primary health services has a strategic role in early detection. However, the phenomenon in the field shows that there is still a gap between the information provided by health workers and real practices in families. Research in the work area of Puskesmas in Medan City in 2024 will be very relevant to evaluate the effectiveness of the latest educational methods (such as the use of digital media or family approaches) in reducing malnutrition rates in urban areas (Marpiani dkk, 2025).

Given its impact, improving nutritional status is vital to national development goals. Malnutrition increases infant mortality (IMR) and compromises the quality of future human resources. Effective nutritional intake especially exclusive breastfeeding and colostrum feeding plays a crucial role in lowering IMR and promoting development. (Ribur Sinaga, 2022)

Several factors contribute to child malnutrition: low birth weight, infections, parental knowledge gaps, economic limitations, and inadequate parenting. National strategies

require a multisectoral approach, including clean water access, environmental health, and improved parental knowledge. In 2021, Indonesia's malnutrition prevalence rose to 13.9%, and in North Sumatra, it reached 12%, with 10.8% in Medan alone (Zalukhu, 2022).

A survey at Rantang Health Center identified seven malnourished toddlers. The major causes were poor parental knowledge of balanced diets, low education, weak economic conditions, and lack of communication with healthcare providers. This community service project aims to demonstrate that early intervention and consistent support through Posyandu visits and supplementary food—can effectively prevent and manage malnutrition.

Research Method

The research design used is using a Quasi-Experimental design with a Pretest-Posttest Control Group design. The Intervention Group was given education on the management and prevention of malnutrition using media. The Control Group was given standard (conventional) education from the Health Center (Sugiyono, 2013).

The research location was carried out in the Rantang Health Center Working Area, Medan City in 2024. The study population was all mothers who had toddlers aged 12–59 months in the working area of the Rantang Health Center. The sampling technique uses Probability Sampling with the Simple Random Sampling method (Priyoto, 2019).

This study was conducted in May 2024 in the Rantang Health Center area. Initial data were collected from monthly Posyandu and health center reports, which showed seven toddlers with malnutrition. The target audience included pregnant women and mothers of toddlers within the service area.

Result

1. Demographic Characteristics of Respondents

The study was conducted with a total of 60 mothers of toddlers. Based on the collected data, the majority of respondents in both groups were aged between 26–35 years (60%), worked

as housewives (70%), and had completed secondary education (65%). ($p>0,05$) ensuring a fair comparison.

2. Analysis of Maternal Knowledge and Attitudes

The primary outcome of the education program was measured by comparing pre-test and post-test scores. The intervention group received structured education on malnutrition management, while the control group received standard leaflets. Homogeneity tests (Levene's test) showed no significant demographic differences between the intervention and control groups at the baseline.

The educational sessions were well-received, with full participation from all invited mothers (100% attendance). Sessions were supported by health professionals, including a nutritionist from the health center, who explained key topics and answered questions. Special follow-up support was arranged for families with malnourished toddlers, ensuring ongoing education and dietary assistance. This consistent interaction led to improved knowledge, behavior changes in parental feeding practices, and heightened community awareness of toddler nutrition.

Table 1. Distribution of Knowledge and Attitude Scores Before and After Intervention (N=60)

Variables	Group	Pre-test	Post-test	Improvement	p-value
Nutritional Knowledge	Intervention (n=30)	63.17-5.42	89.50-4.12	+26.33	<0.001
	Control (n=30)	62.83-5.15	66.40- 4.88	+3.57	0.064
Maternal Attitude	Intervention (n=30)	68.40-6.10	85.20-3.95	+16.80	<0.001
	Control (n=30)	67.90-5.85	70.15-5.20	+2.25	0.112

The table demonstrates a significant increase in the knowledge scores of the intervention group, rising from 63.17 to 89.50 ($p < 0.001$). In contrast, the control group showed a negligible increase (3.57 points) which was not statistically significant.

Similarly, maternal attitudes toward malnutrition prevention improved significantly in the intervention group, suggesting that the education provided at Rantang Health Center effectively shifted the mothers' perspectives on toddler feeding practice.

3. Comparison of Post-Test Results Between Groups

To determine the effectiveness of the education program, an Independent T-Test was performed on the post-test scores of both groups.

Table 2. Independent T-Test Results of Knowledge and Attitude Post-Intervention

Dependent Variable	Intervention Mean	Control Mean	Mean Difference	p-value
Post-test Knowledge	89.50	66.40	23.10	<0.001
Post-test Attitude	85.20	70.15	15.05	<0.001

Table 2 shows a significant mean difference between the intervention and control groups ($p < 0.001$). The intervention group outperformed the control group by 23.10 points in knowledge and 15.05 points in attitude. This

confirms that the specific education modules on malnutrition management are far more effective than the conventional methods currently used in the Rantang Health Center area.

Discussion

The results of this study demonstrate that structured education on the management and prevention of malnutrition significantly enhances maternal knowledge and attitudes in the working area of Rantang Health Center. With a sample size of 60 respondents, the data clearly indicates that targeted intervention outperforms conventional health promotion methods.

1. The Transformation of Maternal Knowledge

The significant increase in knowledge scores within the intervention group ($p < 0.001$) suggests that the educational modules effectively addressed the cognitive gaps among mothers in Rantang. Prior to the intervention, many mothers equated "healthy eating" simply with "satiety," often overlooking the importance of macronutrient balance and micronutrient density.

According to the Health Belief Model, when individuals are provided with clear information about the perceived threats of malnutrition and the benefits of proper feeding, they are more likely to adopt preventive behaviors (Notoatmodjo, 2018). In the urban context of Rantang, where fast food and low-nutrient snacks are highly accessible, this knowledge acts as a critical filter for mothers in making better dietary choices for their toddlers.

2. Shifting Attitudes Toward Malnutrition Prevention

Knowledge alone is often insufficient to change behavior; however, this study found a parallel improvement in maternal attitudes ($p < 0.001$). The intervention group showed a more positive reception toward regular growth monitoring at *Posyandu* and the introduction of diverse local proteins (such as fish and eggs).

This shift is crucial because the Rantang area, characterized by a busy urban lifestyle, often leads to a reliance on "instant" feeding patterns. The education program successfully deconstructed the myth that nutritious food is expensive, emphasizing that local resources available in Medan's traditional markets can

effectively prevent wasting and stunting (Marpiani dkk, 2025)

3. Comparison with Control Group and Standard Care

The control group, which received only standard leaflets, showed no significant improvement in knowledge or attitude. This disparity highlights that passive information delivery is less effective than active/participatory education. At Rantang Health Center, health workers are often overwhelmed by the high volume of patients, leading to brief and non-interactive counseling. This research proves that structured, repetitive, and interactive sessions are necessary to break the cycle of malnutrition in urban settings. The "Mean Difference" of 23.10 in knowledge between the two groups (Table 2) serves as strong evidence that the Puskesmas should adopt more engaging educational strategies.

4. Implications for Malnutrition Management in 2024

The year 2024 marks a critical deadline for Indonesia's national stunting reduction targets (14%). The findings in Rantang suggest that even in urban areas with relatively better infrastructure, nutritional illiteracy remains a hidden barrier. Management of malnutrition must move beyond just providing supplementary food (PMT); it must prioritize maternal empowerment. When a mother understands the "Feeding Rules" and "Sanitation Protocols," the risk of recurrent infections and nutrient deficiencies in toddlers decreases significantly (Nasution, 2023).

Conclusion and Suggestion

Based on the results of research and discussions that have been carried out in the Rantang Health Center Working Area, Medan City in 2024, the following conclusions can be drawn: Improvement of Knowledge and Attitudes: There is a significant influence of providing education on management and malnutrition prevention education on the level of knowledge and attitudes of mothers under five. The intervention group showed an

increase in knowledge scores of 26.33 points and attitudes of 16.80 points ($p < 0.001$).

Structured and interactive education has proven to be much more effective than conventional counseling methods (controls) that only provide one-way information. This proves that a comprehensive educational approach is able to solve the barriers to nutrition literacy in urban communities. (Rita Mustika Ayu, 2024)

Impact on Nutritional Status: Although changes in anthropometric nutritional status (BB/U) require a longer monitoring time, this study noted an improvement in daily diet (protein intake) in toddlers in the intervention group, which is an early indicator of sustained malnutrition prevention.

It is recommended that health workers at the Rantang Health Center start using more varied educational media (such as short videos or cooking demonstrations/cooking classes) instead of relying solely on leaflets/brochures. Mothers are expected to implement feeding patterns according to the "Fill My Plate" guidelines by utilizing affordable local foods around the Rantang area (such as fish, eggs, and nuts) to meet the protein needs of toddlers.

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