

Research Article

The Effect of Supplementary Feeding (PMT) for Fifty-Six (56) Days on Weight Gain Among Underweight Toddlers in the Working Area of Blang Kuta Community Health Center

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Abstract: Lack of access to nutritious food is a major obstacle to health development worldwide, but this problem is particularly acute in areas such as Pidie Jaya Regency, where children often suffer from malnutrition. The Supplementary Feeding Program (PMT) is one way to ensure that malnourished toddlers receive the nutrition they need, including higher intakes of calories and protein. This research intends to evaluate the impact of providing PMT for 56 days on the weight gain of undernourished toddlers within the area served by the Blang Kuta Community Health Center in the Bandar Dua District of Pidie Jaya Regency. This study employed a quantitative descriptive-analytical approach combined with a single-group pre-experimental design (pretest-posttest). Total sampling from the community was used to determine the study sample size, which consisted of 26 malnourished children who received PMT for 56 days. A significance level of 0.05 was used to evaluate the data using the Paired Sample t-Test. The study findings showed a significant change in body weight before and after PMT administration, with an average increase of 0.281 kg ($p = 0.005$). These findings indicate that the body weight of malnourished toddlers increased significantly after receiving PMT prepared from local food ingredients. In summary, the PMT program, when applied consistently and sustainably, plays a crucial role in improving the nutritional status of children and aids in efforts to lower malnutrition rates at the community health center level.

Keywords: Effectiveness; Malnutrition; Supplementary Feeding; Toddlers; Weight.

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1. Introduction

One of the most serious public health problems is malnutrition among children under five. Because they are in a period of rapid growth, children under five are highly vulnerable to malnutrition. Nutritional imbalances during this stage can lead to various health problems, such as low body weight, wasting, and stunting, which have long-term impacts on brain development, learning ability, and human resource potential (UNICEF, 2024). An increased risk of non-communicable diseases, such as diabetes and heart disease, in adulthood is associated with malnutrition during childhood (Ministry of Health of the Republic of Indonesia, 2024). Therefore, improving the nutritional status of children under five has become a primary focus of the national health development plan.

The problem of malnutrition among children under five remains quite common in Indonesia. The 2023 Indonesian Nutritional Status Survey (SSGI) found that 7.7% of children experienced wasting and 12.5% were underweight (Ministry of Health of the Republic of Indonesia, 2023). Although these figures represent an improvement compared to 2021, they have not yet met the 2025 National Medium-Term Development Plan (RPJMN) target of

reducing the underweight prevalence to below 10%. Aceh Province is still among the regions with significant nutritional problems, with an underweight prevalence of 17.1% and a wasting prevalence of 7.7% in 2022 (Aceh Provincial Health Office, 2023). This condition indicates that nutrition intervention efforts in the region need to be continuously strengthened in order to align with national targets and the second goal of the Sustainable Development Goals (SDGs), namely ending hunger and improving community nutrition.

Pidie Jaya Regency is one of the regions in Aceh facing similar nutritional challenges. This area is characterised by rural conditions with limited access to nutritious food and healthcare services. Based on nutritional monitoring in the Blang Kuta Community Health Centre (Puskesmas) service area, cases of undernourished children under five are still reported every year. The contributing factors vary, ranging from family economic limitations and monotonous dietary patterns to mothers' low level of knowledge about balanced nutrition. According to Nurlina and Wati (2022), a mother's ability to provide healthy and balanced meals for her child is closely related to her level of education and understanding of nutrition. Conversely, a lack of knowledge regarding nutritional requirements may result in insufficient energy and protein intake, leading to suboptimal weight gain in children.

Similar results were reported by Rahayu (2025) in Yogyakarta, where the provision of locally sourced supplementary feeding (PMT) for 56 days increased the average body weight by 0.6 kg, with a p-value of 0.001. A study by Sunarti et al. (2025) also confirmed that body weight, height, and mid-upper arm circumference can be measured and improved through locally sourced PMT combined with nutrition education for toddlers. However, other studies have shown variations in effectiveness across different regions. Nurwahyuni (2025) reported that in the Kedungkandang Community Health Centre (Puskesmas) area, Malang, although there was a clinically observed increase in body weight after PMT was provided, the results were not statistically significant. These differences are thought to be influenced by the duration of the intervention, adherence to consumption, and the quality of the food ingredients used.

These findings indicate that the effectiveness of PMT is highly dependent on the implementation context in each region. Therefore, evaluations based on local data are needed to determine the extent to which the PMT programme truly contributes to improving the nutritional status of toddlers. In the working area of the Blang Kuta Community Health Centre (Puskesmas), the PMT programme has been routinely implemented as part of community nutrition services. However, there have been few studies specifically analysing the effect of PMT on weight gain among undernourished toddlers using local empirical data. Such studies are essential as evaluation materials and as a basis for improving nutrition policies at both the community health centre and district levels.

Conceptually, based on nutritional theory, weight gain in toddlers is largely influenced by the balance between the amount of energy consumed and the body's metabolic requirements. When a child's daily intake is insufficient to meet their energy and protein needs, the PMT programme is implemented to provide additional nutritional support. Therefore, in theory, it should be able to improve nutritional status within a certain period (Almatsier, 2020). Although current theory predicts that PMT will help children gain weight, empirical findings indicate that this is not always the case.

Various research findings in Indonesia have shown differences in the success rates of the Supplementary Feeding Programme (PMT). Several studies have demonstrated that PMT can help undernourished children under five gain weight significantly (Chairunnisa et al., 2018; Rahayu, 2025; Sunarti et al., 2025). However, in other regions, weight gain following PMT did not show a statistically significant difference (Nurwahyuni, 2025). These differing results indicate that although PMT is theoretically an effective nutritional intervention, its effectiveness depends heavily on various contextual factors, such as the quality of food ingredients, the duration of the programme, compliance with consumption, and the socio-economic conditions of beneficiary families.

In the context of Aceh Province, particularly Pidie Jaya Regency, the PMT programme has been implemented as one of the efforts to address undernutrition among children under five. However, data from the Aceh Health Office (2023) show that the prevalence of underweight in this area still stands at 17.1%, indicating that no significant reduction has occurred despite the routine implementation of the PMT intervention. This phenomenon suggests a gap between nutritional theory, which emphasises the effectiveness of PMT, and the empirical reality in the field, which demonstrates varying outcomes.

This gap is important to analyse because it can illustrate the extent to which the local PMT programme truly functions as an effective nutritional intervention in areas with specific socio-economic and cultural characteristics. Scientifically, this condition indicates an implementation gap—that is, the discrepancy between the theory-based programme design and its actual implementation in the field. In the theory of community nutrition interventions, programme effectiveness is largely determined by the alignment between the needs of the target population, the food ingredients used, and the support mechanisms provided during implementation (Ministry of Health of the Republic of Indonesia, 2022a). If any one of these components is not optimal, the programme outcomes will not fully reflect the expected theoretical results.

In the service area of Blang Kuta Community Health Centre (Puskesmas Blang Kuta), the PMT programme is implemented using locally sourced food ingredients processed by the local community. Although conceptually this approach supports programme sustainability and acceptance, the effectiveness of locally produced PMT in promoting weight gain among undernourished children has not yet been empirically tested. This raises a scientific question regarding the extent to which PMT implementation at the community health centre level is able to produce outcomes consistent with nutrition theory and national nutrition policy. Therefore, the main issue addressed in this study lies in the lack of consistent empirical evidence regarding the effectiveness of PMT provision in increasing body weight among undernourished children under five, particularly within the service area of Blang Kuta Community Health Centre, Pidie Jaya Regency.

This study focuses on undernourished children under five in the service area of Blang Kuta Community Health Centre, Pidie Jaya Regency, examining the impact of the 56-day Supplementary Feeding Program (PMT) on weight gain. The purpose of this study is to determine how effective the local PMT Program is in improving the nutritional status of these children under five.

2. Literature Review

Indirect causes also play a major role in the occurrence of undernutrition. Maternal education and knowledge are among the important factors. According to Nurlina and Wati (2022), mothers who have strong knowledge of nutrition and have completed their education are generally better able to monitor their children's eating habits and ensure that they receive a balanced diet. In contrast, a lack of nutritional knowledge may lead mothers to make poor food choices, such as providing foods that are high in carbohydrates but low in protein and micronutrients. The family's socioeconomic condition also greatly determines the adequacy of a child's nutritional intake. According to Hardinsyah and Supariasa (2017), families with low income have limited purchasing power for food, resulting in less diverse diets. In rural areas such as Pidie Jaya Regency, most people rely on agricultural or local fisheries products to meet their food needs. When harvest yields decline or food prices increase, families are at greater risk of reducing their consumption of nutritious foods.

In addition to economic factors, access to healthcare services and environmental sanitation also influences children's nutritional status. According to the Indonesian Ministry of Health (2022), children living in environments with poor sanitation are more likely to suffer from gastrointestinal infections, which can interfere with nutrient absorption. Limited access to healthcare services also delays the early detection of nutritional disorders. Growth monitoring programmes at *posyandu* (integrated community health posts) play an important role in identifying children at risk of undernutrition so that they can promptly receive interventions such as supplementary feeding (*Pemberian Makanan Tambahan* [PMT]) or nutrition counselling.

Cultural factors and dietary habits within communities also affect children's eating patterns. In some regions, there is still a belief that young children should not consume animal-based foods such as fish or eggs because they are considered difficult to digest. In fact, animal-based foods are important sources of protein and iron that are essential for growth (Rahayu, 2025). Most toddlers at risk of malnutrition at Blang Kuta Community Health Centre come from low-income families whose mothers have limited formal education. Food availability is only one factor in improving their nutritional status; raising families' awareness of nutrition and changing their habits are equally important. Therefore, efforts to improve the nutritional status of toddlers must be comprehensive and include both direct and indirect nutritional interventions, such as supplementary feeding programmes (PMT), nutrition education, and better access to healthcare services and quality sanitation.

3. Proposed Method

This study employed a pre-experimental design using a one-group pretest-posttest design and was quantitative and descriptive in nature. Without a control group, the study compared body weight measurements before and after the intervention in a group of undernourished toddlers to determine the effect of the supplementary feeding programme (PMT) on their weight gain. The one-group pretest-posttest design allows the researcher to evaluate changes that occur after the intervention within the same group of subjects, thereby demonstrating the direct effect of the treatment (Sugiyono, 2019). This method is appropriate when the researcher has only one sample group and the data used are secondary data obtained from the Community Health Centre (Puskesmas) nutrition programme records (Notoatmodjo, 2018). The bivariate Paired Sample T-test was used to analyse the data and determine whether there was a significant change in body weight between the periods before and after PMT (Dahlan, 2014). This method was chosen because it is capable of assessing the average change between two paired measurements within the same group.

Thus, this study employed a descriptive analytical quantitative pre-experimental research design, with the aim of utilising data collected from healthcare institutions to determine the effectiveness of PMT therapy in reducing body weight among children experiencing undernutrition. This study was conducted within the service area of Blang Kuta Community Health Centre (Puskesmas), Bandar Dua District, Pidie Jaya Regency, Aceh Province. This health centre was selected as the study site because it actively implements the PMT Programme for children with severe malnutrition every year. In addition, Blang Kuta Community Health Centre has comprehensive and integrated nutritional monitoring data, making it easier for the researchers to obtain the secondary data required for the analysis.

Toddlers experiencing undernutrition and enrolled in the nutrition programme in 2025 constituted the study population. They resided within the service area of Blang Kuta Community Health Centre (Puskesmas Blang Kuta), Bandar Dua Subdistrict, Pidie Jaya Regency. Based on secondary data obtained from the supplementary feeding programme (PMT) activity reports at Blang Kuta Community Health Centre, the total number of undernourished toddlers targeted by the programme was 26. In this study, the researchers employed a total sampling method, which involved collecting data from the entire study population. Therefore, all 26 undernourished toddlers who participated in the supplementary feeding programme (PMT) in 2025 at Blang Kuta Community Health Centre were included as the study sample.

4. Results and Discussion

The authors in Pidie Jaya Regency used data from 26 children who experienced malnutrition in 2025 and participated in the Supplementary Feeding Program (PMT) at Blang Kuta Community Health Centre (Puskesmas). For 56 consecutive days, all participants took part in a PMT programme based on locally sourced food ingredients. Body weight measurements before and after the intervention served as the basis for the analysis. The research findings are presented descriptively in the univariate analysis as follows:

Figures and Tables



Figure 1 and 2. Measurement of height/length of children under five years.

Table 1. Frequency Distribution of Toddler Characteristics by Gender and Age.

variabel	mean	t	df	Sig. (2-tailed)
BB sebelum diberi PMT-BB sesudah diberi PMT	-.28077	-3.103	25	.005

Table 2. Difference in body weight before and after receiving supplementary feeding (PMT).

Variabel	n	%
Jenis Kelamin		
Laki-Laki	16	61.5%
Perempuan	10	38.5%
Total	26	100%
Usia		
12-24 Bulan	14	53.8%
25-36 Bulan	10	38.5%
37-46 Bulan	2	77%
Total	26	100%

5. Comparison

The Sig. (2-tailed) value of 0.005 is smaller than the α value of 0.05, as shown in Table 2. Based on these results, there is a significant difference in the body weight of toddlers before and after undergoing the PMT intervention for 56 days. The mean difference of -0.281 kg indicates that body weight after receiving PMT increased by an average of 0.281 kg compared with before the intervention. The calculated t-value of -3.103 with 25 degrees of freedom (df) also supports that this difference is statistically significant. The increase in body weight among undernourished children in the working area of Blang Kuta Community Health Centre was significantly influenced by the provision of PMT for 56 days. These findings indicate that PMT can improve the nutritional status of toddlers by producing a measurable increase in body weight.

Among undernourished toddlers in the working area of Blang Kuta Community Health Centre, this study found that PMT administered for 56 days had a significant effect on weight gain. During the intervention period, the children's nutritional status improved significantly, as demonstrated by an average weight gain of 0.281 kg and a p-value of 0.005 ($p < 0.05$). These findings reinforce the evidence that PMT programmes based on locally available food sources are effective in improving nutritional intake and promoting the growth of young children. Physiologically, weight gain reflects that a child's daily energy and protein requirements have been met. Supplementary feeding functions to compensate for nutritional deficiencies from the main diet, enabling the body to obtain sufficient energy and building nutrients to support metabolic processes and tissue formation (Almatsier, 2020). In the context of this study, the supplementary food provided was made from local food sources such as fish, eggs, tempeh, and vegetables, which are rich in protein and easily digested, thereby contributing to weight gain among toddlers.

These findings are consistent with the study by Rahayu (2025) at Gedangsari I Community Health Centre, Yogyakarta, which reported an average weight gain of 0.6 kg after 56 days of local supplementary feeding. A similar study by Sunarti, Susianto, and Iswarawanti (2025) also demonstrated that the combination of local supplementary feeding and nutrition education significantly improved both body weight and mid-upper arm circumference.

Furthermore, a study by Sari and Wulandari (2020) reported an average weight gain of 0.45 kg among toddlers after a 60-day supplementary feeding intervention, with statistically significant results. The consistency of these findings strengthens the evidence that supplementary feeding is effective when provided at an appropriate frequency and duration and prepared using nutritionally balanced food ingredients.

Programmatically, the findings of this study indicate that the implementation of the Supplementary Feeding Programme (PMT) in the working area of Blang Kuta Community Health Centre (Puskesmas) has been effective in increasing the body weight of toddlers. Nevertheless, these findings also provide an important basis for healthcare workers to continue monitoring the quality of food ingredients, the duration of the intervention, and family support throughout the programme to ensure its impact can be further optimised. Based on this empirical evidence, the local PMT programme has been proven to contribute to improving children's nutritional status and to support the achievement of the target of reducing undernutrition in Pidie Jaya Regency.

6. Conclusions

Toddlers in the service area of Blang Kuta Community Health Centre (Puskesmas), Pidie Jaya Regency, who were malnourished at the time of the study experienced a significant increase in body weight after participating in the Supplementary Feeding Programme (PMT) for 56 days. With a p-value of 0.005, the average weight gain of 0.281 kg indicates that nutrition interventions using locally sourced foods can significantly improve the nutritional status of toddlers. Empirically, these findings demonstrate that the PMT programme can function effectively when implemented consistently, using nutritionally balanced foods, and provided to children in the age group undergoing rapid growth. These findings reinforce the importance of implementing local food-based nutrition programmes as a strategic effort to reduce the prevalence of undernutrition among toddlers at both the community health centre and district levels.

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