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The Relationship Between Supplementary Feeding (Pmt) And Nutritional Status of Toddlers in the Working Area of Aik Darek Community Health Center

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Abstract
Background: Undernutrition is a moderate state of nutrient deficiency caused by low energy and protein intake over an extended period, characterized by a weight-for-age (W/A) score between <-2 SD and >-3 SD. According to the World Health Organization (WHO) in 2021, the global prevalence of undernutrition was 28.5%, with 32.2% in developing countries, 30.6% in Asia, and 29.4% in Southeast Asia. In 2021, the undernutrition rate in West Nusa Tenggara Province was 14.09% (NTB Health Office, 2022). Research Objective: To determine the relationship between the provision of Supplementary Feeding (PMT) and the nutritional status of children under five in the working area of the Aik Darek Community Health Center (Puskesmas). Methods: This study employed a correlational analytic design with a cross-sectional approach, using a total sampling technique to select a sample of 44 children aged 2–5 years. Results: Data analysis involved both univariate and bivariate methods. A relationship was found between the provision of supplementary feeding (PMT) and the nutritional status of children aged 2–5 years in the Aik Darek Community Health Center working area. Conclusion: Chi-square analysis yielded a p-value of 0.000 (<0.05). Recommendation: This study is expected to enhance parental understanding and awareness regarding the importance of providing appropriate and sustainable supplementary feeding to improve the nutritional status of children under five.

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1. INTRODUCTION

Undernutrition is a moderate-level nutrient deficiency condition that occurs due to low energy and protein intake over a relatively long period. This condition is characterized by the weight-for-age (W/A) indicator falling within the range of <-2 SD to >-3 SD. Undernutrition has become one of the serious threats to global population health, estimated to be the main cause of 3.1 million child deaths annually (WHO, 2021).

Globally, the prevalence of undernutrition remains at concerning levels. Data shows that the prevalence of undernutrition worldwide reaches 28.5%, with higher figures in developing countries at 32.2%. In the Asian region, prevalence reaches 30.6%, while in Southeast Asia it is recorded at 29.4% (WHO, 2021). UNICEF, together with WHO and the World Bank in the Joint Child Malnutrition Estimates (JME) 2025, reported that in 2024, approximately 42.8 million children under five worldwide were estimated to experience wasting (too thin for height), and around 12.2 million toddlers experienced severe wasting or acute malnutrition, which is the most dangerous form of malnutrition and associated with significantly higher mortality risk if not addressed immediately.

Undernutrition is a malnutrition condition that occurs due to insufficient nutrient intake, both in terms of micronutrients and macronutrients, over a certain period. This condition is vulnerable in toddlers aged 2-5 years, coinciding with changes in eating patterns that begin to resemble family meals and increased physical activity. Undernutrition indicates a deficiency in nutrient intake, both macro and micro, such as protein, carbohydrates, fats, and vitamins needed by the body (Kemenkes RI, 2020; WHO, 2021). The impacts of undernutrition on toddlers include hindering child growth and development by 12.9%, increasing the risk of infectious diseases by 8.2% due to weakened immune systems, and increasing the risk of severe malnutrition (Abadi et al., 2023:154).

The causes of undernutrition can be categorized into two: direct and indirect causes. Direct causes include inadequate food intake in terms of both quantity and quality, as well as increased risk of infectious diseases that impact poor nutrient absorption. Meanwhile, indirect causes include household food security, child-rearing patterns, and access to child health services and environmental sanitation (Kemenkes, 2024). Undernutrition problems impact children's health and development, including growth problems, delayed motor development, and susceptibility to disease. Furthermore, undernutrition occurring in toddlers can affect learning achievement and productivity in the future (Ernawati et al., 2023).

As a mitigation effort, the government has implemented a Supplementary Feeding Program (PMT) for toddlers, so that undernutrition can be addressed and severe malnutrition can be prevented. Supplementary Feeding (PMT) recovery is a program implemented by the government for the toddler age group, intended as a supplement in addition to daily main meals to address nutritional deficiencies (Kemenkes RI, 2022). Toddlers aged 6-59 months with undernutrition and toddlers Below the Red Line (BGM) from poor families are priority targets for receiving PMT recovery. If not addressed, undernutrition can lead to severe malnutrition, where in 2023, based on Indonesian Health Profile data, the prevalence of severe malnutrition among toddlers in Indonesia reached 21.6% (Kemenkes RI, 2024; Khomsan et al., 2023).

At the regional level, West Nusa Tenggara Province recorded wasting rates from the 2018 Riskesdas results at 14.4% and from the 2022 SSGI results at 8.7% (Kemenkes RI, 2022). In 2021, the undernutrition rate in West Nusa Tenggara Province was 14.09% (Dinas Kesehatan NTB, 2022). Meanwhile, based on the 2022 report from the Central Lombok District Health Office, cases of undernourished toddlers from E-PPGBM entry results were 5.12%, where among the 12 existing sub-districts, Pujut Sub-district had the highest undernutrition rate at 7.47% (Dinkes Kab. Lombok Tengah, 2023). Nutritional status in children under 5 years (toddlers) falls into a vulnerable group, where the toddler period is a critical period. If undernutrition is not addressed immediately, it will not only disturb physical development but also affect intelligence levels and productivity in adulthood (Erina Masri, Wulan Kartikasari, 2020).

Based on preliminary study data from UPTD Puskesmas Aik Darek, Central Lombok, it is known that the nutritional status of toddlers based on the Weight-for-Age (W/A) indicator in the Aik Darek Health Center working area, as of December 2025, still showed 44 undernourished toddlers. This condition indicates that there are still nutritional problems in toddlers that require serious attention and handling through growth monitoring, supplementary feeding (PMT), and nutritional education for toddler families.

Scientific Novelty: This study presents novelty by empirically testing the relationship between the implementation of the Supplementary Feeding Program (PMT) and the improvement of toddler nutritional status at the health center level, particularly in areas with the highest prevalence of undernutrition in Central Lombok District. Unlike previous studies that mostly discussed the general impacts of undernutrition or qualitative evaluations

of PMT programs, this research provides quantitative evidence on PMT effectiveness in a specific local context.

Problem Statement: Based on the background described above, the problem that can be formulated in this study is "Is there a relationship between Supplementary Feeding (PMT) and Toddler Nutritional Status in the Aik Darek Health Center working area in 2026?"

Research Objective: The objective of this article is to analyze the relationship between supplementary feeding (PMT) and toddler nutritional status in the Aik Darek Health Center working area, in order to provide evidence-based recommendations for optimizing nutritional intervention programs at the health center level

2. RESEARCH METHODS

This study employs a quantitative approach. According to Sugiyono (2022), quantitative research is a research method used to investigate objects under natural conditions, where the researcher serves as the key instrument. The design applied in this study is Analytical Correlational. As explained by Sugiyono (2019), correlational research is a type of study aimed at determining the relationship or level of association between two or more variables without providing treatment to the variables under investigation. This study utilizes a cross-sectional approach, which is a research design that examines risks and effects through observation, with the objective of collecting data simultaneously or at a single point in time. This approach is used to examine the relationship between the independent variable, namely supplementary feeding (PMT), and the dependent variable, namely the nutritional status of toddlers aged 2-5 years, through observation or data collection conducted simultaneously at one time.

There are two data analyses used in this study: First, Univariate Analysis is used to describe the characteristics of each variable under investigation. For the independent variable, the researcher will present the frequency distribution and percentage regarding the appropriateness or compliance of supplementary feeding (PMT) provision to toddlers. Meanwhile, for the dependent variable, this analysis will describe the nutritional status of toddlers based on the weight-for-age (W/A) indicator and gender, in the working area of Puskesmas Aik Darek.

Second, Bivariate Analysis is conducted to statistically test the existence of a significant relationship between the implementation of the supplementary feeding (PMT) program and the nutritional status of undernourished toddlers in the 2-5 year age group. Since both variables under investigation are categorical, the statistical test technique used is the Chi-Square test with a 95% confidence level ($\alpha = 0.05$). The decision-making criteria in testing the research hypothesis are established as follows: if the p-value is lower than the established significance level ($p < 0.05$), then the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted, which means there is a significant relationship between the implementation of the PMT program and toddler nutritional status. Conversely, if the p-value is greater than or equal to the established significance level ($p \geq 0.05$), then the null hypothesis (H_0) is accepted and the alternative hypothesis (H_a) is rejected, which indicates no significant relationship between the implementation of the PMT program and the nutritional status of undernourished toddlers.

3. RESULTS AND DISCUSSION

3.1.Research Results

3.1.1 Univariate Analysis

Univariate analysis represents the initial stage in the data analysis process, aimed at describing the frequency distribution of each variable and interpreting them in percentage

form. This analysis is used to describe sample characteristics, including age and sex of toddlers, as well as the distribution of supplementary feeding (PMT) compliance and nutritional status of toddlers in the Working Area of Puskesmas Aik Darek in 2026.

Based on the univariate analysis results of toddler respondent characteristics, data revealed that the majority of toddlers were female, totaling 27 children (61.4%), while male toddlers numbered 17 children (38.6%). In terms of age, most toddlers were in the 37-60 months age group, totaling 35 children (79.5%), and the 24-36 months age group totaled 9 children (20.5%). These findings indicate the dominance of female respondents and toddlers older than 3 years in the research sample.

The distribution of supplementary feeding (PMT) compliance among undernourished toddlers showed that the majority of toddlers received complete PMT, totaling 31 children (70.5%), while those who received incomplete PMT numbered 13 children (29.5%). These data indicate that most undernourished toddlers in the study area had received PMT intervention according to the established protocol.

The nutritional status of toddlers after receiving supplementary feeding (PMT) showed that the majority of toddlers had good nutritional status, totaling 31 children (70.5%), and undernourished status totaled 13 children (29.5%). No toddlers were found with severely malnourished status (0%) or overnourished status (0%). These results reflect improvement in nutritional status among most toddlers after receiving PMT intervention.

3.1.2 Bivariate Analysis

Bivariate analysis was conducted by constructing a contingency table between the independent and dependent variables to examine the relationship between supplementary feeding (PMT) provision and toddler nutritional status. Data analysis employed the Chi-Square statistical test with a significance level of $\alpha = 0.05$.

The Chi-Square test results showed a p-value of 0.000, which is smaller than the α value of 0.05. Based on the hypothesis testing criteria, since p-value < 0.05, H0 is rejected and Ha is accepted, indicating that there is a significant relationship between supplementary feeding (PMT) provision and toddler nutritional status in the Working Area of Puskesmas Aik Darek in 2026.

3.2.Discussion

The relationship between Supplementary Feeding (PMT) Administration and Toddler Nutritional Status in the Puskesmas Aik Darek Working Area in 2026

3.2.1 Respondent Characteristics

Toddlers refer to children in the under-five age group. The toddler period represents a critical phase that is crucial in determining child growth and development, as this is when rapid growth and development occur, including physical growth, psychomotor, mental, and social development. If toddlers do not receive appropriate caregiving according to their needs during this period, it may result in growth and development delays. Stunting conditions in toddlers generally become apparent when children reach the age of 2 years (Yuliana & Hakim, 2019). In this study, toddler age was grouped into two categories: 24-36 months and 37-60 months (KPPA, 2021).

According to Widad's (2022) research, at 37-60 months of age, toddlers typically begin to become active consumers, as during this period children start developing the ability to choose and refuse food based on their preferences and desires (Widad, 2022). The findings of this study show that the majority of toddlers were in the 37-60 month age group (79.5%), which is a phase where children's food preferences begin to form and require special attention in providing nutritional intake.

Gender can determine an individual's nutritional needs. This study shows that the majority of toddlers were female (61.4%). According to Darmayanti and Puspitasari

(2021), male toddlers tend to have greater energy and protein requirements than female toddlers. Malnutrition incidents tend to occur more frequently in male toddlers compared to females, which may be caused by male toddlers being more active. Male toddlers are more likely to play outdoors and frequently come into contact with dirty environments while expending more energy, whereas their food intake is unbalanced, potentially leading to stunting. Caregiving patterns for both male and female toddlers are important to consider in supporting children's daily nutritional needs (Darmayanti & Puspitasari, 2021).

3.2.2 Distribution of Supplementary Feeding (PMT) Appropriateness Among Undernourished Toddlers

Supplementary feeding aims to improve nutritional status by fulfilling additional nutrient intake to achieve better nutritional status. This supplementary food can consist of family meals based on local food ingredients, prepared using traditional recipes passed down through generations, compared to processed factory foods, although cooking methods and duration still need attention to preserve nutritional content (Hadju et al., 2023). Based on the distribution of supplementary feeding (PMT) appropriateness among undernourished toddlers in the Puskesmas Aik Darek working area in 2026, the majority received complete PMT, totaling 31 children (70.5%), while incomplete supplementary feeding (PMT) numbered 13 children (29.5%).

The target of supplementary feeding (PMT) using local food ingredients is directed toward toddlers suffering from malnutrition, low body weight, or those whose weight has not increased. The objective is for their body weight to increase properly and according to growth charts. Thus, children's body weight can return to normal and their nutritional status can improve, thereby preventing the risk of stunting or growth and development disorders in toddlers from an early stage (Kemenkes, 2024). Feeding practices for toddlers include food quality and quantity, including exclusive breastfeeding, complementary feeding (MP-ASI), and providing nutritionally adequate food to prevent stunting incidents in toddlers. According to Adha et al. (2021), appropriate feeding for toddlers is highly recommended as it can influence toddlers' nutritional status. Feeding practices for toddlers must align with their needs to support optimal toddler growth (Rahmawati et al., 2019).

3.2.3 Distribution of Toddler Nutritional Status in the Puskesmas Aik Darek Working Area

Toddlers are children under five years of age and are grouped into two major categories: children aged 1-3 years (batita) and preschool children (3-5 years) (Pritasari Damayanti D et al., 2017). Toddlers' nutritional needs increase because they are still in a growth phase and experience increased physical activity. Children aged 2-5 years already have the ability to choose preferred foods. Additionally, toddlers begin to frequently go outside the home, making them vulnerable to infectious diseases (Ernawati Naya et al., 2022). Based on research findings, toddler nutritional status after receiving PMT showed that the majority had good nutritional status (70.5%), and undernourished status (29.5%), with no toddlers found with severe malnutrition or overnutrition.

According to D. A. Lestari & Suryani's (2021) research, during the toddler period, children experience rapid growth and development. This demands balanced and adequate nutritional needs. Toddler nutrition is not only about food but involves essential nutrients absorbed and utilized by the body for various vital functions. Toddler nutrition encompasses intake, absorption, and utilization of nutrients in children aged 0-59 months. These nutrients, such as carbohydrates, proteins, fats, vitamins, and minerals, play important roles in metabolic processes and bodily functions, supporting physical growth, cognitive development, and optimal immune system function (D. A. Lestari & Suryani, 2021). The findings of this study indicate that PMT intervention contributes to the improvement of toddler nutritional status in the study area.

3.2.4 Relationship Between Supplementary Feeding (PMT) and Toddler Nutritional Status

Based on this study's findings, the Chi-Square test analysis results showed a p-value of 0.000 with an alpha value of 0.05. Since the p-value of 0.000 is less than 0.05, Ha is accepted and H0 is rejected, indicating a significant relationship between supplementary feeding (PMT) and toddler nutritional status in the Puskesmas Aik Darek working area in 2026. This finding confirms that the completeness of PMT administration is closely related to improvements in toddler nutritional status.

The results of this study align with previous research conducted by Hartono, L, et al. (2024) entitled "Local Food-Based PMT for Undernourished Toddlers in Kuta Village, Pujut District, Central Lombok Regency, 2023." Statistical test results showed a p-value of 0.002 ($p < 0.05$), indicating an effect of local food-based supplementary feeding (PMT) on weight gain in undernourished children (Hartono, L, et al., 2024). The consistency of this finding strengthens empirical evidence regarding the effectiveness of local food-based PMT in improving toddler nutritional status.

The results of this study also align with previous research conducted by Anggi Septiani, et al. (2026) entitled "Relationship Between Supplementary Feeding (PMT) and Nutritional Status Categories Among Toddlers at Jambe Health Center, Tangerang Regency, 2024." Chi-Square test results showed a p-value of 0.00 (< 0.005), indicating a relationship between supplementary feeding and TB/U nutritional status categories among toddlers. Regarding BB/U nutritional status statistically, Chi-Square test results showed a p-value of 0.035 (< 0.005), indicating a relationship between supplementary feeding and nutritional status categories among toddlers. Bivariate analysis of TB/U nutritional status statistically showed a Chi-Square test p-value of 0.000 (< 0.005), indicating a relationship between supplementary feeding and nutritional status categories among toddlers.

These findings are consistent with Heny Purbaningsih's (2023) research, which showed that local PMT significantly increased toddler body weight within a relatively short intervention period. Similarly, Sunarti et al.'s (2025) research demonstrated that local PMT administration for 56 days was able to increase body weight, height, and upper arm circumference of undernourished toddlers. The consistency of these research findings strengthens the evidence that local PMT is an effective food-based intervention for improving toddler nutritional status across various regions with different geographical and cultural conditions.

Furthermore, these analysis results also support growth theory according to the Ministry of Health of the Republic of Indonesia (2024), which states that regular increases in energy and protein intake significantly influence body weight gain, especially among toddlers with undernourished and severely undernourished nutritional status. In the context of this study, continuously administered local PMT can fulfill toddlers' daily energy and protein deficiencies, thereby optimizing body weight growth. This also aligns with the catch-up growth concept, where children who previously experienced nutritional deficits can catch up on growth delays when provided with adequate nutritional intake consistently.

The results of this study align with previous research conducted by Fajar SA, et al. (2022) entitled "Effectiveness of Supplementary Feeding on Toddler Nutritional Status at Citeras Health Center, Garut Regency." It reported that egg-based PMT administration significantly influenced body weight changes in below-red-line toddlers. Similarly, it showed significant differences in toddler nutritional status before and after PMT implementation. These differing results may be caused by variations in intervention types, PMT duration, subject characteristics, consumption compliance, and program implementation quality at respective research locations. In other words, PMT effectiveness

is highly contextual and influenced by field conditions, so research findings from one area cannot always be generalized to other regions (Fajar SA, et al., 2022).

This study also aligns with previous research conducted by Septiani, et al. (2024) entitled "Nutritional Status Categories Among Toddlers at Jambe Health Center, Tangerang Regency, 2024." Regarding BB/U nutritional status statistically, Chi-Square test results showed a p-value of 0.035 (< 0.005), indicating a relationship between supplementary feeding and nutritional status categories among toddlers. Bivariate analysis of TB/U nutritional status statistically showed a Chi-Square test p-value of 0.000 (< 0.005), indicating a relationship between supplementary feeding and nutritional status categories among toddlers (Septiani, et al., 2024). The accumulation of evidence from various studies strengthens the validity of research findings regarding the significance of the relationship between PMT and toddler nutritional status.

4. CONCLUSION

Based on data analysis and research findings conducted by the researcher at Puskesmas Aik Darek, the following conclusions can be drawn:

1. Based on toddler characteristics regarding gender and age in this study, it was found that the majority of toddlers receiving PMT were dominated by female toddlers, totaling 27 children (61.4%), with the most common age range being 37-60 months.
2. Based on the distribution of supplementary feeding (PMT) appropriateness among undernourished toddlers, the majority received complete PMT, totaling 31 children (70.5%).
3. Based on toddler nutritional status in the Puskesmas Aik Darek working area in 2026, the majority had good nutritional status, totaling 31 children (70.5%).
4. Based on the research findings, a p-value of 0.000 < 0.05 was obtained, indicating a significant relationship between supplementary feeding (PMT) administration and toddler nutritional status in the Puskesmas Aik Darek working area in 2026.

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