The Effect Of Supplementary Feeding (Pmt) On The Nutritional Status Of Toddlers Aged 2-5 Years

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Abstract: The nutritional status of toddlers plays a crucial role in determining the health quality and human resources of a nation. Although there has been a decline in stunting rates, nutritional challenges remain high, thus requiring appropriate intervention strategies, including supplementary feeding (PMT). **Objective**: This study aims to examine the effect of supplementary feeding consumption on improving the nutritional status of undernourished toddlers and to measure the success of PMT implementation within community health centers. **Methods**: This study utilized an analytic quasi-experimental design with a cross-sectional approach. Samples were taken using total sampling technique with a total of 12 samples. Inclusion criteria included toddlers with undernutrition status (weight-for-age and height-for-age between -3 SD and less than -2 SD) who received supplementary feeding. Normality tests showed data were normally distributed; therefore, the parametric Paired T-Test was used for statistical analysis. **Result**: The study results showed that among toddlers monitored during PMT consumption, one toddler (8.3%) experienced improvement, while the others remained stable with possible weight gain. **Conclusion**: This study indicates that supplementary feeding (PMT) has a significant effect on improving the nutritional status of undernourished toddlers (*P=0.004*).

1 INTRODUCTION

The nutritional status of toddlers is a primary indicator of child health and development that requires serious attention. Undernutrition and malnutrition remain major challenges globally and nationally, particularly in Indonesia (Haryanti, Wijayanti and Syarifah, 2023). Toddler nutritional status reflects the health and quality of a nation's human resources. The first 1000 days of life in toddlers is a golden period critical to a child's future growth and development (Haq *et al.*, 2023). Despite improvements, child nutrition challenges are still significant globally. According to the 2024 Indonesian Nutritional Status Survey (SSGI), the national stunting prevalence dropped to 19.8% from 21.5% in 2023. This decrease shows progress, though stunting remains a serious issue. The government targets stunting reduction to 18.8% by 2025 and 14.2% by 2029. Some provinces still report prevalences above 30%, such as East Nusa Tenggara, West Sulawesi, and Papua (Ramazana and Alaydrus, 2024). These indicate the need for more targeted and locally appropriate strategies to reduce stunting uniformly across Indonesia. Supplementary feeding (PMT) is among the nutritional intervention strategies

aiming to improve nutrient intake among undernourished toddlers.

The urgency of this study is high to understand how supplementary feeding improves toddler nutritional status. The findings are expected to support policy-making and improve targeted nutritional intervention programs to aid government and health institutions' efforts in reducing undernutrition and improving future human resource quality. Previous studies have examined PMT effects on toddlers' nutritional status. Research by (Ramazana and Alaydrus, 2024) showed PMT significantly increased toddler weight. (Sinaga *et al.*, 2023) and (Suantari, Marhaeni and Lindayani, 2022) also reported positive changes following PMT administration. Conversely, (Khadijah *et al.*, 2025) found no significant difference before and after supplementary feeding, indicating PMT effectiveness may be influenced by factors like dietary patterns, counseling, and family support. Theoretically, this study is based on theories of nutritional needs and child growth linking nutrient intake with nutritional status and development.

Theoretically, this study is based on the theory of nutritional needs and child growth, which explains the relationship between nutrient intake and the nutritional status and development of the child. Additionally, the nutritional intervention theory emphasizes the importance of supplementary feeding as a complement, not a substitute, for the main meal to overcome nutritional deficiencies (Eliyah, Setyaningsih and Wahyani, 2025). The food consumption behavior model is also relevant for understanding the factors influencing the success of the supplementary feeding program (PMT), including the role of the mother and the family environment in supporting the provision of supplementary food (Anggraini, Sirojuddin Ibnu Nur, and Yayuk Widyastuti Herawati, 2024). This study focuses on examining the effect of supplementary feeding consumption on improving the nutritional status of undernourished toddlers and measuring the success of PMT implementation within community health centers.

2 METHOD

This study is a type of analytic quasi-experimental research with a cross-sectional design, which is a method used to observe the relationship between independent and dependent variables through measurements taken at a single point in time. The purpose of this study is to examine the effect of local supplementary feeding on the nutritional status of undernourished toddlers at Sawahan Community Health Center, Surabaya. The study was conducted in April 2025 using secondary data in the form of reports on undernourished toddlers at the health center. Samples were taken using a total sampling technique, totaling 12 samples. Inclusion criteria included toddlers with undernutrition status (weight-for-age and height-for-age between -3 SD and less than -2 SD) and toddlers aged 2-5 years who received supplementary feeding. Control variables included consumption compliance levels and daily recall. Nutritional status indicators were measured through anthropometric measurements of toddler weight and height, as well as through 24-hour recall forms and consumption compliance forms.

Limitations of this study include a small sample size and a relatively short monitoring and intervention period, resulting in data changes that

were not clearly visible. Data were processed and analyzed using IBM SPSS Statistics 25. Univariat analysis was used to describe frequency distribution and variable percentages, including gender, age, and nutritional status before receiving supplementary feeding. Bivariate analysis was conducted to assess the effect of local supplementary feeding on nutritional status after intervention using the Paired T-Test statistical method.

3 RESULT

Based on the research results, a normality test was conducted using the Shapiro-Wilk method, yielding a significance value greater than 0.05. Therefore, it can be concluded that the data are normally distributed and parametric statistical tests can be performed. The information related to the characteristics of the respondents obtained from the study can be seen in the following table.

Table 1. Frequency Distribution of Toddler Sex

Sex	Frequency (n)	Percentage (%)
Male	7	58,3
Female	5	41,7
Total	12	100

Table 2. Frequensy Distribution of Toddler Age

Age (Months)	Frequency (n)	Percentage (%)
24-35	2	16,7
36-47	7	58,3
48-58	3	25
Total	12	100

Based on the data in Table 1, it was found that out of a total of 12 respondents, the majority of the toddlers were male, totaling 7 children (58.3%), while female toddlers numbered 5 children (41.7%). Additionally, Table 2 shows that most toddlers were in the age range of 36–47 months, totaling 7 children (58.3%).

Table 3. Frequency of Nutritional Status of Toddlers Before Receiving Supplementary Feeding (PMT)

Nutritional Status	Frequency (n)	Percentage (%)
Undernourished	12	100
Total	12	100

Based on the data in Table 3, it is known that all toddlers who were respondents, totaling 12 children (100%), had undernutrition status before the PMT intervention.

Table 4. Changes in Nutritional Status of Undernourished Toddlers After Receiving Supplementary Feeding (PMT)

PMT	Nutritional Status	F	(%)	*P* Value
Received PMT	Stable	11	91,7	<0,004
	Improved	1	8,3	
Total		12	100	

Based on the results in Table 4, it can be seen that during the monitoring period of PMT consumption for 2 weeks, one toddler (8.3%) experienced an improvement, while the other 11 toddlers (91.7%) remained in the same nutritional status. This is because the monitoring period was only

2 weeks, which is too short for immediate changes to occur. The Paired T-Test statistical analysis yielded a significant p-value of 0.004. Therefore, the alternative hypothesis (Ha) is accepted, meaning there is a significant effect of supplementary feeding (PMT) on the change in nutritional status of undernourished toddlers in the Sawahan health center area in 2025.

4 DISCUSSION

The results of the study show that the majority of respondents were male toddlers (58.3%) with an age range of 36-47 months (58.3%). This age range is considered optimal and represents a period of active growth that requires higher energy and nutrient intake than other age ranges. During this period, toddlers grow rapidly; however, if energy or other nutrient intake is insufficient, undernutrition or overnutrition can occur. This condition makes toddlers in this vulnerable age group prone to nutritional problems if their needs are not adequately met (Amsah and Sutarno, 2025). These findings reinforce that an intervention program involving supplementary feeding (PMT) is vital to be provided to this age group.

Before the intervention, all respondents, totaling 100%, were categorized as undernourished. This indicates that the nutritional problems in toddlers remain a serious public health concern that urgently needs to be addressed in the Sawahan community health center's working area. This condition not only reflects the local situation but also aligns with national data showing that the prevalence of stunting and undernutrition in Indonesia remains high. The high rate of undernutrition indicates several risk factors influencing toddler nutritional status, such as limited access to nutritious food, low parental knowledge about healthy eating patterns, and socio-economic conditions that are less supportive. The initial condition, where all respondents fall into the undernourished category, further emphasizes the importance of systematic and continuous efforts to improve toddler nutritional status. One crucial effort is the Supplementary Feeding Program (PMT), designed to provide additional nutrients precisely and appropriately.

The types of supplementary feeding (PMT) provided in this intervention program are based on the toddler PMT guidelines, consisting of foods high in carbohydrates and protein, such as milk and egg-based products. The study results showed an improvement in nutritional status, although limited in number. Out of 12 toddlers, one toddler (8.3%) experienced an improvement in nutritional status after receiving PMT, while 11 toddlers (91.7%) remained undernourished. However, the Paired T-Test yielded a p-value of 0.004 (<0.05), indicating that PMT significantly influenced changes in nutritional status. This shows that PMT can help improve toddlers' nutritional status, although significant changes require a longer intervention period.

Several factors are suspected to influence these results. The intervention duration of only two weeks is considered too short to demonstrate visible changes in nutritional status. The intervention duration should ideally range from 1 to 3 months to obtain more accurate results related to supplementary feeding consumption. Additionally, daily household food consumption patterns, toddler adherence to PMT, and family support in ensuring regular feeding play crucial roles in intervention success. Therefore,

the success of PMT programs is not only determined by the provision of supplementary food but also by family behaviors and the environment supporting toddler nutritional intake.

The results of this study are in line with the findings (Zalwa and Rokhaidah, 2024) who also reported improvements in the nutritional status of toddlers after receiving supplementary feeding (PMT). However, different findings were reported by (Khadijah *et al.*, 2025) who did not find a significant difference. The differences in research results may be influenced by the type of PMT used, the length of the intervention, and the socioeconomic conditions of the families. External environmental factors can also be a confounding variable in this study (Wati, 2020). Despite the short monitoring duration and other confounding variables, the provision of supplementary feeding has a considerable effect on child growth and development, indicating the need for continued support.

Overall, this study provides important implications for public health programs. PMT has been proven to positively affect the improvement of toddlers' nutritional status, although its impact may not be immediately visible within a short period. Therefore, PMT programs should be implemented continuously with longer monitoring periods, supported by family education on the importance of balanced nutrition. Collaboration between community health centers, posyandu (integrated health service posts) cadres, and parents is necessary to ensure the success of the intervention in the long term and to support the achievement of national targets for reducing undernutrition and stunting.

5 CONCLUSIONS

Supplementary feeding (PMT) has a significant effect on improving the nutritional status of undernourished toddlers (p=0.004). Continuous intervention with a longer duration is needed to achieve more optimal results. Although the majority of toddlers have not experienced a change in nutritional status within a short time, there is a positive indication that PMT intervention can help improve nutritional conditions if carried out continuously over a long duration and supported by family involvement along with nutrition education to achieve optimal results.

6 REFERENCES

Amsah, A. and Sutarno, M. (2025) "Pengaruh Pemberian Makanan Tambahan terhadap Balita Gizi Kurang di Wilayah Puskesmas Pebayuran Kabupaten Bekasi," *MAHESA : Malahayati Health Student Journal*, 5(2), pp. 563–573. Available at: https://doi.org/10.33024/mahesa.v5i2.16643.

Anggraini, D., Sirojuddin Ibnu Nur, and Yayuk Widyastuti Herawati (2024) "Analisis Program Pemberian Makanan Tambahan Terhadap Status Gizi Balita sebagai Upaya Pencegahan Stunting," *Makkareso: Riset Pengabdian Masyarakat*, 2(1), pp. 32–37. Available at: https://doi.org/10.35905/makkareso.v2i1.9076.

Eliyah, I., Setyaningsih, S. and Wahyani, A.D. (2025) "Hubungan Tingkat Kepatuhan Konsumsi

PMT Lokal dengan Status Gizi Balita Wasting di Puskesmas Bulakamba Brebes," 7(01).

Haq, M.R.F. *et al.* (2023) "Pengaruh Program Pemberian Makanan Tambahan (PMT) terhadap Status Gizi Balita Desa Sumbersuko Kabupaten Probolinggo," *Jurnal Pengabdian kepada Masyarakat Nusantara*, 4(3), pp. 1964–1970. Available at: https://doi.org/10.55338/jpkmn.v4i3.1258.

Haryanti, R.S., Wijayanti, W. and Syarifah, S. (2023) "Analisis Pengetahuan Ibu Tentang Status Gizi dengan Kepatuhan Pemantauan Pertumbuhan Balita," *Profesi (Profesional Islam) : Media Publikasi Penelitian*, 21(1), pp. 68–74. Available at: https://doi.org/10.26576/profesi.v21i1.223.

Khadijah, S. *et al.* (2025) "Pengaruh pemberian makanan tambahan terhadap status gizi balita: The impact of supplementary feeding on toddler nutritional status," *Jurnal Ilmiah Keperawatan (Scientific Journal of Nursing)*, 11(2), pp. 160–165. Available at: https://doi.org/10.33023/jikep.v11i2.2344.

Ramazana, C.V. and Alaydrus, S.Q. (2024) "Pengaruh Pemberian Makanan Tambahan Lokal Terhadap Status Gizi Pada Balita Gizi Kurang Di Puskesmas Simpang Tiga Aceh Besar," 11(11).

Sinaga, E.S. *et al.* (2023) "Pemantauan Konsumsi Pemberian Makanan Tambahan (PMT) Dalam Meningkatkan Berat Badan Balita Dengan Masalah Gizi," *ABDI MOESTOPO: Jurnal Pengabdian Pada Masyarakat*, 6(1), pp. 1–8. Available at: https://doi.org/10.32509/abdimoestopo.v5i2.2236.

Suantari, N., Marhaeni, G. and Lindayani, K. (2022) "Hubungan Pemberian Makanan Tambahan dengan Peningkatan Berat Badan Bayi Usia 6-12 Bulan," *Jurnal Ilmiah Kebidanan (The Journal Of Midwifery)*, 10(2), pp. 101–108. Available at: https://doi.org/10.33992/jik.v10i2.1553.

Wati, N. (2020) "Analisis Program Pemberian Makanan Tambahan (Pmt) Terhadap Status Gizi Anak Di Posyandu Kelurahan Sembungharjo Semarang," *TEMATIK: Jurnal Pemikiran dan Penelitian Pendidikan Anak Usia Dini*, 6(2), p. 94. Available at: https://doi.org/10.26858/tematik.v6i2.15539.

Zalwa, I. and Rokhaidah (2024) "Hubungan Keikutsertaan Pemberian Makanan Tambahan (Pmt) Lokal Dengan Peningkatan Berat Badan Anak."