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The effectiveness of *Bau Peapi* as a local complementary feeding on toddler growth: a quasi-experimental study in Majene

Efektivitas Bau Peapi sebagai MP-ASI lokal terhadap pertumbuhan balita: studi kuasi-eksperimen di Majene

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Abstract

Complementary feeding is essential for preventing malnutrition in toddlers; however, its nutritional quality remains suboptimal in many regions, and scientific evidence on the nutritional composition and effectiveness of Bau Peapi, a traditional Mandar fish-based local food, remains limited. This study assessed the effect of *Bau Peapi* consumption on toddler growth and analyzed its nutritional content. A quasi-experimental pretest–posttest control group study was conducted among 60 undernourished children aged 6–24 months in the Totoli Community Health Center area of Majene. The intervention group received *Bau Peapi* CF and Young Child Feeding (IYCF) education, while the control group received only IYCF education for eight weeks. Anthropometric data were collected at baseline, midline, and endline, and dietary intake was assessed using a 24-hour dietary recall. Data were analyzed using independent t-tests and repeated-measures ANOVA. The results showed that *Bau Peapi* content high protein (23.16%), vitamin C (475.54 ppm), and omega-3 fatty acids (DHA 12.82%; EPA 2.81%). Both groups showed significant weight gain ($p<0.01$), whereas a significant increase in length was only observed in the intervention group ($p=0.003$). In conclusion, Bau Peapi shows potential as a nutrient-dense local food to support child growth, particularly in terms of linear growth.

Keywords: *Bau Peapi*, complementary feeding, local food, body weight and body length

Abstrak

Pemberian Makanan Pendamping ASI (MP-ASI) berperan penting dalam mencegah malnutrisi pada balita, namun kualitas gizinya masih suboptimal di banyak wilayah dan bukti ilmiah mengenai *Bau Peapi*, makanan lokal Mandar berbahan dasar ikan masih terbatas. Penelitian ini bertujuan untuk menilai pengaruh konsumsi Bau Peapi terhadap pertumbuhan balita, serta mengkaji kandungan gizinya. Penelitian kuasi-eksperimen dengan desain pretest–posttest kelompok kontrol dilakukan pada 60 anak gizi kurang usia 6–24 bulan di wilayah kerja Puskesmas Totoli, Majene. Kelompok intervensi mendapat Bau Peapi dan edukasi Pemberian Makanan untuk Bayi dan Anak (PMBA), sedangkan kelompok kontrol hanya mendapat edukasi PMBA selama delapan minggu. Data antropometri dikumpulkan pada saat baseline, midline, dan endline, serta asupan makanan dinilai menggunakan kuesioner recall 24-jam. Analisis data dilakukan menggunakan uji t independen dan repeated measures ANOVA. Hasil menunjukkan Bau Peapi memiliki kandungan protein tinggi (23,16%), vitamin C (475,54 ppm), dan asam lemak omega-3 (DHA 12,82%; EPA 2,81%). Kedua kelompok mengalami peningkatan berat badan signifikan ($p<0,01$), namun peningkatan panjang badan signifikan hanya pada kelompok intervensi ($p=0,003$). Disimpulkan

bahwa Bau Peapi merupakan pangan lokal padat gizi yang berpotensi mendukung pertumbuhan anak, khususnya pertumbuhan linier. Kesimpulannya, Bau Peapi berpotensi sebagai pangan lokal padat gizi untuk mendukung pertumbuhan anak, khususnya pertumbuhan linear.

Kata Kunci: *Bau peapi,* MPASI, pangan lokal, berat badan dan panjang badan

Introduction

Nutritional status has a profound influence on realizing high-quality human resources in the future and is directly related to children's intelligence. The formation of intelligence during early childhood depends on nutrient intake (Kadosh et al., 2021). The lower the nutrient intake, the lower the body weight and length, which in turn affects the child's nutritional status and health. Under- or poor nutrition during infancy and childhood, especially in children under 5 years of age, can lead to impaired physical growth and intelligence (Soni et al., 2021). Evidence further indicates that nutritional knowledge and traditional food practices are positively associated with child growth, highlighting the relevance of local food-based feeding interventions to support optimal nutritional status (Himmah & Kaestria, 2025).

Malnutrition is a significant and complex problem. Globally, it is estimated to contribute to 2.7 million, or approximately 45%, of all child deaths worldwide (WHO, 2023a). According to the Indonesian Health Survey (IHS) 2023, the prevalence of stunting among children aged 0–23 months in West Sulawesi Province was 21.6%, while the prevalence of underweight was 18.9%, positioning West Sulawesi among the provinces with the highest stunting rates in Indonesia. Furthermore, nutritional problems among children under five years of age in Majene Regency, West Sulawesi, remain high, with prevalence rates of 30.5% for stunting, 23.8% for underweight, and 9.1% for wasting (Kementerian Kesehatan RI, 2023).

The high prevalence of nutritional problems among children under five years of age is influenced by several factors, including suboptimal childcare practices, limited access to nutritious foods, and low community knowledge of the importance of nutrients during a child's growth. Monotonous dietary patterns and inadequate animal protein intake also contribute to this issue (Nuradhiani, 2023). Children who consumed at least one type of animal protein daily during the complementary feeding period had a 3.7% lower prevalence of stunting than those who did not consume animal protein (Headey et al., 2018). Prolonged protein deficiency disrupts body regulation and growth hormone activity, potentially leading to nutritional disorders. Children with inadequate protein intake experience growth delay (Fitri & Ernita, 2019).

Providing balanced nutrition for complementary feeding is crucial to prevent malnutrition in young children. However, in many regions, complementary foods fail to meet the required intake of protein, healthy fats, vitamins, and minerals, thereby contributing to suboptimal growth in infants. Complementary feeding practices often overlook nutrient density, largely due to mothers' limited knowledge and skills in preparing and serving nutrient-dense foods (Nurbaya et al., 2022). Using local foods as complementary feeding for children is highly recommended because they are typically nutrient-rich, culturally acceptable, sustainable and economically accessible. Local foods can be tailored to meet the nutritional needs of children during the critical growth period of 6–24 months, supporting healthy development (Harrison et al., 2023). Research on the utilization of local foods for complementary feeding has been widely conducted. Existing research results indicate that the use of various local foods has the potential to positively prevent nutritional problems such as stunting. However, most of these studies are still limited to individual food ingredients or modern processed products, such as nuggets, snack bars, and cookies, and have not extensively investigated traditional whole-formulation foods that are consumed regularly by local communities (Habsari et al., 2025; Luthfiyah, 2020; Putri et al., 2024; Yuniritha et al., 2025).

One of the traditional foods in Majene, namely *Bau Peapi*, made from fish and Mandar coconut oil, which is popular among the Mandar community in Majene, can be a locally based intervention to reduce stunting. The dish

contains great nutritional potential and can be consumed as a complete complementary food for infants and young children. *Bau Peapi* is prepared from marine fish such as tuna, mackerel, or skipjack, cooked with basic red spices, dried mango acid, and mandar coconut oil, resulting in a distinctive flavor(Pranil, 2024). Furthermore, its soft and liquid textures make it suitable for infant consumption.

Based on this background, the present study primarily aimed to evaluate the effectiveness of the traditional Mandar food *Bau Peapi* as a locally based complementary food (CF) in improving body weight (BW) and body length (BL) among children under five. As a secondary objective, this study aimed to characterize the nutritional composition of *Bau Peapi* to provide a scientific basis for its use as a complementary food. This also supports the government's goal in achieving the eighth priority of *Asta Cita*, namely strengthening human resource development and realizing the "Golden Generation 2045."

To date, no studies have specifically examined *Bau Peapi* as a traditional whole-formulation complementary food or evaluated its nutritional composition and effectiveness in improving the nutritional status of children. Therefore, this study aimed to analyze the nutritional composition of Bau Peapi, including macronutrients (protein, fat, and carbohydrates) and selected micronutrients (vitamin C, iron, and omega-3 fatty acids), and to assess its impact on the nutritional status of children under five years of age in Majene. By addressing both aspects, this study positions Bau Peapi as a culturally relevant and evidence-based local-food intervention.

Methods

This study used a quasi-experimental method with a pretest–posttest control group design and was conducted from May to November 2025. Nutrient content analysis of Bau Peapi CF was performed at the FMIPA Laboratory of Hasanuddin University. The nutrient composition of Bau Peapi complementary food was analyzed using a standard proximate analysis method. Carbohydrate content was determined using the difference method, protein content using the Kjeldahl method, fat content using Soxhlet extraction, and dietary fiber content using the enzymatic–gravimetric method. Vitamin C and iron (Fe) levels were analyzed using Atomic Absorption Spectrophotometry (AAS), and omega-3 fatty acids were quantified using Gas Chromatography–Mass Spectrometry (GC–MS).

The study population consisted of children in the working area of Puskesmas Totoli, Majene Regency, aged 6–24 months with underweight nutritional status (weight-for-age Z-score between −3 SD and <−2 SD), determined using anthropometric measurements (digital scale and length board/stadiometer). Mothers of eligible children who provided written informed consent were included as the respondents. Sampling was conducted using probability sampling with a simple random sampling technique using the Research Randomizer application. The participants were allocated to two groups: intervention and control group. Based on the sample size calculation, a minimum of 30 participants per group (total n = 60) was required to detect meaningful differences between the groups.

Data were collected by trained personnel using the standardized procedures. The instruments included a structured questionnaire, anthropometric tools consisting of a calibrated digital baby scale and length board/stadiometer, a quantitative Food Frequency Questionnaire (FFQ), and a 24-hour dietary recall questionnaire. Body weight and length/height were measured twice following the WHO-recommended anthropometric measurement procedures, and the average values were used for analysis. Dietary intake and feeding patterns were assessed using standardized interviews.

The intervention group received both Bau Peapi CF and nutrition education on Infant and Young Child Feeding (IYCF), while the control group received only IYCF education. The Bau Peapi CF was provided three times a week for eight weeks, and IYCF education was conducted once a week during the same period. For infants aged 6–11 months, Bau Peapi was filtered and mixed with rice porridge, and for children aged 12–24 months, it was mixed with cooked rice. Anthropometric measurements and 24-hour dietary recalls were performed at three time points: baseline (week 0), midline (week 4), and endline (week 8). The FFQ was administered before and after the intervention.

Data were processed using the SPSS software. Prior to the analysis, the data distribution was assessed for normality. Independent t-tests were used to compare differences between the intervention and control groups, while repeated-measures ANOVA was applied to assess within-group changes in nutritional status. Chi square analysis was conducted to evaluate the association between Bau Peapi CF consumption and child nutritional status. Ethical approval was obtained from the Health Research Ethics Committee of the IAKMI Southeast Sulawesi Province (No. 169/KEPK-IAKMI/VIII/2025).

Result and Discussion

Characteristics of the Subjects

Table 1. Distribution of subjects based on characteristics

Subject Characteristics	Intervention		Control	
	n=30	(%)	n =30	(%)
Age (months)				
6-11 months	4	13.3	5	16.7
12 – 24 months	26	86.7	25	83.3
Sex				
Male	11	36.7	15	50.0
Female	19	63.3	15	50.0
Birth weight				
<2500 g	7	23.3	2	6.7
≥2500 g	23	76.7	28	93.3
Father's Occupation				
Fisherman	17	56.7	16	53.3
Laborer	9	30.0	3	10.0
Entrepreneur	4	13.3	6	20.0
Employee	0	0.0	2	6.7
Civil Servant	0	0.0	3	10.0
Father's Education				
< Elementary school	2	6.7	2	6.7
Elementary school	16	53.3	16	53.3
Junior high school	4	13.3	4	13.3
Senior high school	8	26.7	8	26.7
University	0	0.0	0	0.0
Mother's Occupation				
Laborer	0	0.0	1	3.3
Entrepreneur	0	0.0	1	3.3
Employee	0	0.0	2	6.7
Civil Servant	0	0.0	1	3.3
Housewife	30	100	25	83.3
Mother's Education				
< Elementary school	1	3.3	1	3.3
Elementary school	5	16.7	12	40.0
Junior high school	12	40.0	2	6.7
Senior high school	11	36.7	11	36.7
University	1	3.3	4	13.3

Nutrient Composition Analysis of *Bau Peapi*

The nutrient composition of *Bau Peapi* was analyzed to determine its macronutrient content and specific micronutrients, including iron, vitamin C, and omega-3 fatty acids. All nutrient parameters were tested in triplicates to ensure the validity and reliability of the data. The results of the analysis per 100 g serving of *Bau Peapi honey* are presented in Table 2.

Table 2. Nutrient composition of *Bau Peapi* from 100 g

Parameter	Measurement Result (Mean ± SD)
Water (%)	71.70 ± 0.51
Ash (%)	1.25 ± 0.16
Crude Protein (%)	23.16 ± 0.80
Crude Fat (%)	2.34 ± 0.17
Crude Fiber (%)	0.06 ± 0.01
BETN (%)	1.48 ± 0.61
Iron (ppm)	9.03 ± 0.81
Vitamin C (ppm)	475.54 ± 37.47
Linolenic Acid C18:3n3 (%)	0.41 ± 0.15
Cis-11,14, 17-Eicosatrienoic acid C20:3n3 (%)	0.10 ± 0.03
Cis-5,8,11,14,17-Eucosapentaenoic acid, C20: 5n3 (%)	2.81 ± 1.08
Cis-4, 7, 10, 13, 16,19-Docosahexaenoic Acid, C22:6n3 (%)	12.82 ± 3.81

The protein content of Bau Peapi was relatively high, reaching 23.16 g from 100 g sample. According to the Indonesian Recommended Dietary Allowance (RDA 2019), children aged 1–2 years require approximately 20 g of protein daily (Kemenkes RI, 2019). Therefore, consuming Bau Peapi two to three times a day in small portions (±30 g/serving) can help meet toddlers' daily protein needs. High-quality protein derived from fish effectively supports optimal growth, as essential amino acids such as lysine and arginine stimulate growth hormone release via the somatotropic axis. Adequate protein intake during early life is positively associated with height and weight at 10 years of age (Uauy et al., 2015). The high-quality protein from fish supports muscle growth and brain development in children, and animal protein has higher protein quality and more complete amino acids than plant-based protein (Jia et al., 2025).

The crude fat content of Bau Peapi (2.34 g/100 g) was higher than that of skipjack tuna (0.7 g/100 g) (Kemenkes RI, 2018). This difference was attributed to the addition of three tablespoons of Mandar oil during cooking. Mandar oil is a locally produced coconut oil obtained through the extraction and heating of coconut meat. In addition, saturated fats (76%) from Mandar coconut oil, particularly lauric acid, along with natural compounds such as polyphenols and medium-chain fatty acids (MCFAs), offer health benefits (Fauziah et al., 2023; Sari et al., 2019). Lauric acid is an efficient energy source that does not contribute to obesity and has antimicrobial properties that may offer protection against infections in young children (Dayrit, 2015).

The analysis revealed that Bau Peapi contained notable levels of EPA and DHA, suggesting its potential as a functional complementary food that supports brain and cognitive development during critical growth periods. The omega-3 fatty acid profile of Bau Peapi includes eicosatrienoic acid, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). DHA and EPA are semi-essential fatty acids that must be obtained from dietary sources because the human body cannot synthesize them sufficiently (Lehner et al., 2021). These fatty acids play vital roles in brain structure, cognitive function, and the nervous system, especially during early childhood (Jia et al., 2025; Schacky, 2021).

Micronutrient analysis also identified substantial amounts of iron and vitamin C. The vitamin C content was 475.54 ppm, equivalent to 47.55 mg per 100 g of the sample. Children aged 1–3 years are recommended to consume 40 mg vitamin C daily (Kemenkes RI, 2019). Ensuring adequate vitamin C intake is essential, as deficiency can negatively impact physical and mental growth and weaken the immune defense.

Overall, these findings highlight Bau Peapi as a nutrient-dense local food rich in high-quality protein, vitamin C, and omega-3 fatty acids (EPA and DHA). These results support the potential use of *Bau Peapi* as a locally sourced, nutritious complementary food that promotes optimal growth and development in young children.

Body Weight (BW) and Body Length (BL) of Children

The average body weight (BW) at baseline in the intervention group was significantly lower than that in the control group ($p = 0.015$). The mean BW in the intervention group was lower than that in the control group from the beginning, showing a significant difference. This condition was one of the limitations that influenced the final results of the intervention. The analysis of BW changes at the three measurement points showed a significant increase in both the intervention ($p = 0.008$) and control groups ($p <$

0.001). Although the delta in BW between the two groups was not statistically significant, the comparable magnitude of weight gain observed in the intervention group remains clinically meaningful, considering that children in this group started with a poorer nutritional status. Previous evidence suggests that even modest but consistent improvements in growth among undernourished children can have important implications for long-term health and developmental outcomes (Benjamin-Chung et al., 2023).

Table 3. BW and BL of Children Before and After the Intervention

Group	Baseline	Endline	Δ Change (Mean ± SD)	p-value (within group)
Body Weight				
Intervention	7.22 ± 0.60	7.82 ± 0.68	0.59 ± 0.45	0.008*
Control	7.67 ± 0.75	8.28 ± 1.05	0.60 ± 0.61	<0.001*
Between-group Δ			p = 0.924	
Body Length				
Intervention	72.05 ± 3.82	73.43 ± 3.82	1.38 ± 0.76	0.003*
Control	74.50 ± 4.64	75.81 ± 4.60	1.31 ± 0.89	0.261
Between-group Δ			p = 0.746	

Similarly, the average body length (BL) of respondents at baseline in the intervention group was lower than that in the control group (p = 0.030). A significant difference was also observed at the midline (p = 0.020) and end lines (p = 0.033). The analysis of BL changes showed a significant increase in the intervention group (p = 0.003) but not in the control group (p = 0.261). Linear growth responds more slowly to nutritional interventions and is widely regarded as a key indicator of long-term nutritional adequacy (WHO, 2023b). Therefore, the observed improvement in BL in the intervention group indicates the potential benefit of *Bau Peapi* as a protein- and fat-rich complementary food in supporting linear growth. These findings are consistent with the results of Izah & Desi (2023), who showed an increase in children's height after protein intervention for 30 days.

From a practical perspective, modest but consistent improvements in body weight and length are important for reducing the risk of persistent under-nutrition. Children age 6-59 months are more likely to be underweight as they grow older (Manoochehri et al., 2024). According to a cohort study, healthy children who were underweight during their first two years of life had a lower BMI z-score by the time they were ten years old (Yue et al., 2022). In Indonesia, children under 5 years of age do not consume sufficient food (Renita, 2022). Mothers and caregivers play an important role in feeding practices for young children (Sihaloho & Sitanggang, 2025). Inappropriate feeding practices and inadequate healthcare for children are caused by cultural influences, ignorance, mothers' lack of autonomy, and poverty (Irawan et al., 2021).

In low- and middle-income countries, children aged 6 to 23 months experience ponderal growth in addition to linear growth, which is influenced to some extent, yet significantly, by nutrition education and supplementary feeding interventions (Panjwani & Heidkamp, 2017). Important interventions to enhance children's nutritional status include vaccinating children, preventing diarrheal illnesses, and encouraging the use of nutritious supplemental feeding in conjunction with access to nutrition education programs (Amoah et al., 2024). Complementary feeding interventions have been shown to significantly improve body weight and overall nutritional status in young children. These interventions typically involve providing nutrient-dense complementary foods and nutrition education for caregivers to enhance feeding practices (Ainun et al., 2024; Twabi et al., 2021).

This study had several limitations. First, significant baseline differences in body weight and length between the intervention and control groups may have influenced the interpretation of the intervention effects. Second, the eight-week intervention period may have been insufficient to observe statistically significant differences in growth outcomes, particularly linear growth, which typically responds more slowly to nutritional interventions than weight growth. Third, the relatively small sample size may limit the statistical power. These limitations should be considered when interpreting the findings, and future studies with longer

intervention periods and more balanced baseline characteristics are needed.

Table 4. Energy and macronutrient intake of subjects before and after the intervention

Nutrition Intake		Group		p-value
		Intervention (mean ± SD)	Control (mean ± SD)	
Energy (Kcal)	Baseline	532.91±295.77	345.17±249.88	0.008[c]
	Midline	596.51±307.56	275.84±196.75	0.001[c]
	Endline	577.20±239.34	260.92±135.24	0.001[c]
	p-value	0.432[a]	0.285[b]	
	Δ (Delta)	44.29±368.74	84.25±235.84	
Protein (g)	Baseline	39.79±33.61	12.09±7.22	0.001[d]
	Midline	27.15±11.87	11.21±10.81	0.191[d]
	Endline	29.90±13.90	14.24±20.86	0.649[d]
	p-value	0.001[a]	0.001[a]	
	Δ (Delta)	-9.89±37.14	2.15±19.96	
Fat (g)	Baseline	11.88±7.61	5.82±3.93	0.001[c]
	Midline	12.03±6.62	4.91±4.58	0.001[c]
	Endline	11.85±6.10	5.72±4.91	0.001[c]
	p-value	0.103[a]	0.032[b]	
	Δ (Delta)	-0.03±8.95	0.10±4.49	
Carbohydrate (g)	Baseline	81.74±55.90	114.17±158.06	0.367[c]
	Midline	100.92±63.05	72.06±97.02	0.001[c]
	Endline	98.21±46.81	76.75±13.78	0.001[c]
	p-value	0.338[a]	0.327[b]	
	Δ (Delta)	16.47±74.83	37.41±155.40	

[a] Uji repeated measure ANOVA; [b] Friedman; [c] Mann whitney; [d] Independent T-test

The results of the study showed a comparison of energy and macronutrient intakes between the groups at three measurement points. As shown in the table above, the mean energy intake in the intervention group was 532.91 kcal at baseline, which increased to 596.51 kcal at the midline. However, it slightly decreased to 577.20 kcal at the endline. This decrease was not substantial because it did not fall below the baseline average.

In the control group, the mean energy intake was lower than that in the intervention group. At baseline, the average energy intake among children was 345.17 kcal, which decreased to 275.84 kcal at the midline and further declined to 260.92 kcal at the endline. This resulted in a significant difference in calorie intake between the intervention and control groups during the complementary-feeding period.

Energy intake in the intervention group increased from 532.91 kcal (baseline) to 596.51 kcal (midline) and slightly declined to 577.20 kcal (endline) but remained significantly higher than that in the control group ($p < 0.001$). Protein intake was also higher in the intervention group, although it showed a slight decrease in the midline measurement. The increase in both energy and protein intake indicates that Bau Peapi was effective in improving the nutrient density of complementary foods, consistent with the WHO (2023b) recommendation, which emphasizes the importance of energy- and protein-dense complementary foods for children aged 6–24 months.

A significant increase in energy intake has positive implications for growth in children. Adequate energy intake ensures that protein is utilized for tissue growth rather than as an energy source (Akmaliya, 2025). The high protein content of Bau Peapi may explain the observed improvement in body weight, despite the relatively short duration of the intervention.

The study results showed good acceptance of Bau Peapi, with most subjects consuming the provided portions well and only one respondent showing low food acceptance. The majority of the children demonstrated good acceptance of the Bau Peapi complementary food, with 96.67%

of them finishing their servings. This indicates that Bau Peapi has a taste profile that is well accepted by young children, an important factor for the success of food supplementation programs in this age group. However, the researchers noted some signs of consumption fatigue among a few children, suggesting the need for menu variation or alternative serving forms to maintain compliance.

The increase in fish consumption is important as it provides high-quality protein, essential amino acids, and omega-3 fatty acids that play vital roles in bone growth and brain development (Yulisamarhan et al., 2025). The involvement of community health centers (puskesmas) and community health volunteers (kaders) in home-based monitoring significantly contributed to the success of the intervention. Support from health personnel facilitated the monitoring of food and nutrient intake. However, challenges such as participant absence during distribution and consumption fatigue highlight the importance of participatory approaches and family based nutrition education (Aulia & Dewi Purnamawati, 2025).

This study underscores the potential of local foods rich in protein and omega-3, such as Bau Peapi, as an alternative complementary food to prevent undernutrition and stunting in infants. Its nutritional superiority, high acceptability, and local availability support the development of Bau Peapi as a commercial product or as part of supplementary feeding programs in the future. These findings align with government policies promoting the utilization of local foods, in accordance with the Balanced Nutrition Guidelines.

Conclusion

Bau Peapi has a favorable nutritional profile, with high protein, vitamin C, and omega-3 fatty acid (EPA and DHA) content, indicating its potential as a local nutrient-dense complementary food for young children. The intervention was associated with improved dietary patterns, particularly increased fish consumption as a source of animal proteins. Both groups showed significant weight gain, whereas a significant increase in body length was observed only in the intervention group. Although no significant differences were found between the groups, the within-group improvement in linear growth suggests a potential contribution of protein- and fat-rich local complementary foods.

Bau Peapi may serve as a culturally acceptable complementary food option in community-based infant and young child feeding programs, especially in resource-limited settings. However, further studies with longer intervention periods and improved baseline comparability are needed to confirm its effectiveness.

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