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# The Giving Cucurbita Moschata Pudding on Weight Gain Malnourished Toddlers in Jombang, Indonesia

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**ABSTRACT** Malnutrition in early childhood remains a pressing public health issue in Indonesia, contributing significantly to developmental delays and increased morbidity. Inadequate nutritional intake, low socioeconomic status, poor parenting practices, and limited access to nutritious food are among the primary contributing factors. This study aims to investigate the effect of Cucurbita moschata (yellow pumpkin) pudding as a locally sourced, nutrient-rich complementary food on the weight gain of malnourished toddlers in Jombang, Indonesia. A quasi-experimental design with a non-equivalent control group was utilized. A total of 30 toddlers aged 12–24 months with poor nutritional status were selected through purposive sampling. The participants were divided equally into intervention and control groups. The intervention group received Cucurbita moschata pudding daily for four months, while the control group received standard care without supplementation. Weight measurements were collected before and after the intervention using calibrated infant scales. Data were analyzed using the Paired Sample t-Test. Results revealed a statistically significant increase in the mean weight of toddlers in the intervention group (from 8553 g to 8847 g) compared to the control group (from 8527 g to 8540 g), with a p-value of 0.000 ( $p < 0.05$ ). Approximately 93% of the toddlers in the intervention group experienced meaningful weight gain, demonstrating the pudding's effectiveness. This study concludes that Cucurbita moschata pudding can serve as an effective, affordable, and culturally acceptable complementary food to improve weight gain among malnourished toddlers. The findings support the implementation of community-based nutrition recovery programs using local food resources to combat child malnutrition.

**INDEX TERMS** Cucurbita moschata pudding, toddler malnutrition, complementary feeding, weight gain, community-based nutrition.

## I. INTRODUCTION

Malnutrition in early childhood remains a critical public health challenge globally, particularly in developing countries such as Indonesia. The World Health Organization (WHO) and UNICEF recognize malnutrition including stunting, wasting, and underweight as key indicators of health, socio-economic disparities, and food security failures [1]. In Indonesia, the prevalence of malnutrition among children under five continues to be alarmingly high. Based on the 2021 Indonesian Nutrition Status Survey (SSGI), the national stunting rate stood at 24.4%, with the East Java Province contributing significantly to this figure [2].

Malnutrition in toddlers is a multifactorial condition often driven by inadequate dietary intake, recurring infections, poor environmental sanitation, limited access to nutritious foods, and low maternal education levels [3], [4]. During the toddler years (ages 1–3), rapid physical and cognitive development requires higher nutritional intake than at any other stage of life [5]. Failure to meet these requirements can lead to long-term developmental deficits, impaired immune function, and increased susceptibility to

infectious diseases [6]. According to the Ministry of Health of Indonesia, the rate of severe malnutrition in Jombang Regency has risen over three consecutive years, from 2.1% in 2018 to 2.76% in 2020 [7].

Conventional approaches to address malnutrition include the provision of fortified complementary foods and nutritional education. However, such interventions are often financially and logistically inaccessible to rural populations [8]. To overcome this, WHO emphasizes the use of locally available, affordable, and nutrient-dense foods for supplemental feeding [9]. In this context, *Cucurbita moschata*, or yellow pumpkin, emerges as a promising food source due to its high nutritional value. It is rich in beta-carotene (a precursor to vitamin A), vitamin C, fiber, protein, zinc, and other essential micronutrients [10], [11].

Recent studies have shown that yellow pumpkin has positive effects on improving nutritional status among children. For instance, pumpkin seed-enriched biscuits have been reported to significantly increase body weight, appetite, and iron and zinc status among undernourished children [12], [13]. Cucurbita-based complementary foods have also been

associated with improved immune responses and reduced infection rates due to their antioxidant and vitamin content [14]. Despite these promising findings, most existing research has focused on processed food products such as biscuits and porridges, while alternative forms like pudding widely accepted by children for its texture and taste remain underexplored in empirical studies.

This research seeks to address this gap by evaluating the effectiveness of Cucurbita moschata pudding as a local, cost-effective intervention to improve weight gain in malnourished toddlers. The study was conducted in the working area of the Mojoagung Health Center in Jombang Regency, where a quasi-experimental design was implemented over a four-month intervention period. Thirty toddlers aged 12–24 months were divided into intervention and control groups to assess the impact of daily pumpkin pudding consumption on weight gain outcomes.

The aim of this study is to analyze the effect of giving Cucurbita moschata pudding on the body weight of malnourished toddlers. The specific contributions of this study include:

1. Providing scientific evidence regarding the use of yellow pumpkin pudding as an effective complementary food for improving nutritional status in toddlers.
2. Promoting local food-based interventions that are affordable, culturally acceptable, and easy to prepare by families and community health workers.
3. Offering data-driven insights for policymakers to design community-based nutritional recovery programs utilizing local food resources.

## II. METHOD

This study employed a quasi-experimental design using a non-equivalent control group to evaluate the impact of Cucurbita moschata pudding on weight gain in undernourished toddlers. The intervention and control groups underwent initial observations (pretests) to assess baseline conditions, followed by a posttest after a four-month intervention period. The control group did not receive any intervention, allowing for comparative analysis.

### A. STUDY SETTING AND DURATION

The research was conducted from September to December 2022 in the working area of the Mojoagung Health Center, Jombang Regency, Indonesia. This location was selected due to its high prevalence of toddler malnutrition as reported by the local public health office.

### B. POPULATION AND SAMPLE

The target population in this study consisted of undernourished toddlers aged 12 to 24 months who resided within the working area of the Mojoagung Health Center. A total of 48 toddlers were identified as malnourished based on the World Health Organization (WHO) growth standards. These children met the criteria for undernutrition and were considered eligible for further assessment in the study.

From this population, a sample of 30 toddlers was selected using a purposive sampling technique, ensuring that only those who met the inclusion criteria were chosen. The selected toddlers were then evenly divided into two groups:

15 toddlers in the intervention group and 15 in the control group. The sample size was determined based on both eligibility requirements and practical feasibility, such as the availability of participants and resources needed to conduct the intervention effectively.

### C. PARTICIPANTS AND SAMPLING METHOD

The target population consisted of 20 blind students, spanning grades III to VI, enrolled at SLB A YPAB Surabaya. The inclusion criteria mandated students who were physically present during data collection, had no additional disabilities beyond visual impairment, and whose guardians provided informed consent. Exclusion criteria included students with other sensory or cognitive impairments, those absent during the intervention, uncooperative students, and students with health conditions that could interfere with participation. The sampling employed was simple random sampling, ensuring each eligible student had an equal probability of selection. This method minimizes selection bias and enhances the representativeness of the sample relative to the overall population of blind students in these grades. Randomization at this stage is crucial for reducing bias and ensuring that the results are attributable to the intervention rather than confounding variables [26].

### D. POPULATION AND SAMPLE

The target population included undernourished toddlers aged 12 to 24 months within the Mojoagung Health Center's jurisdiction. A total of 48 toddlers were identified as malnourished based on WHO standards. Using a purposive sampling technique, 30 toddlers were selected and divided equally into an intervention group ( $n=15$ ) and a control group ( $n=15$ ). The sample size was determined based on eligibility criteria and feasibility considerations.

### E. INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria consisted of: (1) toddlers aged 12–24 months; (2) residing in the study area; (3) having nutritional status between  $-3$  SD to  $<-2$  SD; (4) healthy without infections that affect weight (e.g., diarrhea, acute respiratory infections); and (5) parental consent and ability to communicate. Exclusion criteria included: (1) allergies to pumpkin; and (2) toddlers consuming supplements or medications.

### F. INTERVENTION MATERIAL

The Cucurbita moschata pudding was formulated using steamed and mashed pumpkin, sugar, milk, and cornstarch, following WHO guidelines for supplementary feeding with energy-dense, locally sourced ingredients. The pudding was prepared under hygienic conditions and administered once daily for 4 months.

### G. INSTRUMENTS AND MEASUREMENTS

The primary instrument was an observation checklist to monitor participation and compliance. Anthropometric measurements, particularly body weight, were taken using calibrated mechanical baby scales before and after the

intervention. Observations and measurements were conducted by trained health workers.

## H. VARIABLES

The independent variable was the provision of Cucurbita moschata pudding. The dependent variable was weight gain, measured in grams over the four-month period.

## I. ETHICAL CONSIDERATIONS

Ethical approval was obtained from the institutional review board. Participants' parents signed informed consent forms. An explanation letter and voluntary participation statement were provided to ensure ethical compliance.

## J. DATA COLLECTION AND ANALYSIS

Data collection involved structured interviews, documentation, and anthropometric assessments. Statistical analysis was conducted using SPSS version 21.0. A Paired Sample t-Test was applied to determine the significance of weight changes between pretest and posttest values in both groups.

This methodical approach enables accurate assessment of the intervention's effect on toddler nutritional status and ensures replicability.

## III. RESULTS

Respondents in this study were 15 malnourished infants aged 12-24 months who received the intervention and 15 malnourished infants aged 12-24 months as the control group in the working area of the Mojoagung Health Center, Jombang Regency in 2022.

**TABLE 1**  
Frequency Distribution by Gender in the Work Area of the Mojoagung Community Health Center, Jombang Regency

| Gender | Intervention group |     | Control Group |     |
|--------|--------------------|-----|---------------|-----|
|        | n                  | %   | n             | %   |
| Man    | 6                  | 40  | 7             | 47  |
| Woman  | 9                  | 60  | 8             | 53  |
| Total  | 15                 | 100 | 15            | 100 |

Source: Primary Data 2022

Based on the **TABLE 1**, it is known that the respondents under five in the Working Area of the Mojoagung Health Center, Jombang Regency in this study were in the intervention group male sex 6 babies (40%) female sex 9 babies (60%) while in the control group male sex 7 babies (47%) and female 8 babies (53%)

**TABLE 2**  
Frequency Distribution by Age in the Work Area of the Mojoagung Community Health Center, Jombang Regency

| Age         | Intervention group |     | Control Group |     |
|-------------|--------------------|-----|---------------|-----|
|             | n                  | %   | n             | %   |
| 12-16 Month | 5                  | 40  | 4             | 47  |
| 17-24 month | 10                 | 60  | 11            | 53  |
| Total       | 15                 | 100 | 15            | 100 |

Source: Primary Data, 2022

Based on the **TABLE 2**, it is known that the respondents under five in the Working Area of the Mojoagung Health Center, Jombang Regency in this study were in the intervention group male sex 6 babies (40% female sex 9

babies (60%) while in the control group male sex 7 babies (47 %) and female 8 babies (53%)

**TABEL 3**  
Weight Gain Before and After the Intervention Group and the Control Group

| Weight                            | Intervention | Control |
|-----------------------------------|--------------|---------|
|                                   | Means        | Means   |
| Weight before administration (gr) | 8553         | 8527    |
| Weight before administration (gr) | 8847         | 8540    |

**TABLE 3** shows that the weight of the babies who were given the intervention before being given Cucurbita moschata pudding reached a mean of 8553 and after being given pudding it reached a mean of 8847 in the 2-week period of the study, so there was an increase of 294 in body weight.

**TABLE 4**  
The Effect of Giving Cucurbita Moschata Pudding on Increasing the Weight of Malnourished Babies

| Weight      | Given |      | Not Given |      | P Value |
|-------------|-------|------|-----------|------|---------|
|             | n     | %    | n         | %    |         |
| Weight Gain | 14    | 93,3 | 1         | 6,7  | 0,000   |
| No          | 1     | 6,7  | 14        | 93,3 |         |
| Total       | 15    | 100  | 15        | 100  |         |

**TABLE 4** shows that, after 6 months of giving Cucurbita moschata pudding, the results obtained were weight gain in 15 babies in the intervention group, 14 babies experienced an increase in body weight if presented an average of 93% of respondents experienced an increase in body weight, and 1 baby with an average of 6.7% who did not experience weight gain reached the normal limits of weight gain at the age of 12 -24 months. The test results using the Paired Sample T-Test showed a significant number between the intervention group and the control group with a significant value (2-tailed)  $p = 0.000 < 0.05$ . The null hypothesis ( $H_0$ ) in this study was rejected and the alternative hypothesis ( $H_a$ ) was accepted where there was a striking difference between the two tests.

## IV. DISCUSSION

### A. INTERPRETATION OF RESULTS

The results of this study indicate a significant increase in the body weight of toddlers who received Cucurbita moschata pudding over a four-month intervention period. The mean weight in the intervention group increased from 8553 grams to 8847 grams, while the control group only experienced a marginal change from 8527 grams to 8540 grams. A paired sample t-test revealed a statistically significant difference ( $p = 0.000$ ), suggesting that the pumpkin-based supplement had a direct impact on improving nutritional status.

This finding supports the hypothesis that locally sourced, energy-dense foods such as Cucurbita moschata can contribute effectively to weight gain in malnourished toddlers. Pumpkin contains essential nutrients such as beta-carotene, zinc, vitamin C, and carbohydrates, which are necessary for growth and immune development [26]. These components are known to enhance appetite, improve gut health, and facilitate better absorption of nutrients, all of which contribute to weight gain [27].

**B. COMPARISON WITH SIMILAR STUDIES**

The results of this study are consistent with previous research demonstrating the nutritional benefits of Cucurbita-based products. For instance, Haq [28] reported that a complementary food formulation using yellow pumpkin significantly improved energy intake and growth parameters in toddlers. Similarly, Irwan et al. [29] confirmed that modifications of local food-based supplementary feeding (PMT) effectively addressed undernutrition among children.

Furthermore, a study by Tono et al. [30] indicated that pumpkin seed supplementation increased serum retinol and zinc levels, which are biomarkers of improved nutritional status. These results corroborate the current study's findings and validate the importance of incorporating local, functional foods into community health interventions.

However, some discrepancies exist in the literature. For example, Nurhayati and Putri [31] found that while local food interventions improved weight, their efficacy varied depending on parental compliance, feeding frequency, and the presence of concurrent illnesses. This emphasizes the importance of caregiver education and monitoring to maximize intervention outcomes.

**C. LIMITATIONS AND IMPLICATIONS**

While the study demonstrated positive outcomes, certain limitations must be acknowledged. First, the small sample size ( $n=30$ ) limits generalizability. Second, the non-randomized design may introduce selection bias, even though purposive sampling was used to control for baseline characteristics. Third, the study duration of four months, although sufficient to observe short-term effects, may not capture long-term sustainability of weight gain.

Moreover, external factors such as household income, hygiene practices, and parental feeding behavior were not controlled, all of which could influence the results. Future research should include a larger, randomized sample and incorporate multi-nutrient interventions for a more holistic evaluation.

Despite these limitations, the findings have important public health implications. The use of Cucurbita moschata pudding presents a viable strategy for addressing malnutrition using locally available and culturally acceptable ingredients. Its affordability and ease of preparation make it suitable for large-scale implementation through community health centers and posyandu (integrated service posts).

This study also underscores the need for capacity-building among caregivers regarding complementary feeding practices. Educational programs focused on nutrition, hygiene, and parenting could significantly enhance the effectiveness of food-based interventions.

**V. CONCLUSION**

This study was conducted to assess the effect of Cucurbita moschata pudding supplementation on the weight gain of malnourished toddlers aged 12 to 24 months in Jombang, Indonesia. The primary objective was to explore a food-based intervention using a locally sourced and culturally acceptable ingredient to improve nutritional outcomes among undernourished children. Given the prevalence of stunting and wasting in the study area, the use of Cucurbita moschata commonly known as yellow pumpkin offered a

viable option due to its rich nutritional composition including beta-carotene (vitamin A), vitamin C, zinc, fiber, and carbohydrates. The study applied a quasi-experimental design with a non-equivalent control group. Toddlers in the intervention group received daily servings of Cucurbita moschata pudding for four consecutive months. Anthropometric measurements were taken before and after the intervention period. Results demonstrated a notable increase in the mean body weight of toddlers in the intervention group, from 8553 grams to 8847 grams, marking a gain of 294 grams. In contrast, the control group only experienced a modest gain from 8527 grams to 8540 grams. Statistical analysis using the paired sample t-test yielded a p-value of 0.000, affirming a significant difference in weight gain between the groups. These findings underscore the importance of integrating food-based strategies into broader nutritional rehabilitation programs, particularly in resource-limited settings. The pudding's palatability and nutritional density make it an ideal candidate for widespread implementation through community health initiatives such as posyandu and integrated nutritional recovery centers. In addition, its preparation process is simple and utilizes ingredients that are easily obtainable by local families. Despite the encouraging outcomes, this study acknowledges several limitations. The small sample size and non-randomized sampling technique may limit the external validity of the findings. Moreover, the study did not measure other indicators of nutritional improvement such as height gain, micronutrient levels, or immune markers. Future research should address these gaps through longitudinal studies with larger, randomized populations and multi-nutrient food formulations. Further exploration into caregiver education, feeding behavior, and home environment factors will also be necessary to support sustainable improvements in child nutrition. Integrating health education with feeding interventions may enhance long-term adherence and dietary diversity. In conclusion, this study contributes practical and evidence-based insights into the potential of Cucurbita moschata pudding as a complementary food to support weight gain in malnourished toddlers, advocating for community-level replication and policy-level adoption.

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**DATA AVAILABILITY**

No datasets were generated or analyzed during the current study.

**AUTHOR CONTRIBUTION**

Henny Sulistyawati conceptualized the study design, led the coordination of data collection, and contributed significantly to manuscript preparation. Nining Mustika Ningrum performed statistical analysis, organized field supervision, and assisted in interpreting the findings. Tri Purwanti facilitated the development of intervention materials, managed ethical documentation, and led the literature review process. All authors collaboratively reviewed, edited, and approved the final manuscript.

**DECLARATIONS****ETHICAL APPROVAL**

The authors declare that there are no conflicts of interest associated with this research. All research activities were conducted in compliance with ethical standards and approved by the appropriate institutional review board. Informed consent was obtained from all participants' legal guardians. The authors affirm that this manuscript represents original work that has not been published or submitted elsewhere for publication.

**CONSENT FOR PUBLICATION PARTICIPANTS.**

Consent for publication was given by all participants

**COMPETING INTERESTS**

The authors declare no competing interests.

**REFERENCE**

- [1] J. Zhang, X. Li, and Y. Wang, "Oral health status and its influencing factors among children with special needs: A systematic review," *Int. J. Environ. Res. Public Health*, vol. 19, no. 5, pp. 2738, 2022.
- [1] UNICEF, *The State of the World's Children 2021: On My Mind – Promoting, Protecting and Caring for Children's Mental Health*, New York, NY, USA: United Nations Children's Fund (UNICEF), 2021.
- [2] Ministry of Health of the Republic of Indonesia and UNICEF, *Rapid Health Assessment Report: Ensuring the Continuity of Children's and Mother's Essential Health Services during the COVID-19 Pandemic in Indonesia*, Jakarta, Indonesia: MoH & UNICEF, 2020. [Online]. Available: <https://covid19.go.id>
- [3] Kementerian Kesehatan Republik Indonesia, *Studi Status Gizi Indonesia (SSGI) 2021*, Jakarta, Indonesia: Kemenkes RI, 2021.
- [4] Y. Podungge and S. Rasyid, "The Effect of Giving Pumpkin Porridge and Chicken Meat on Increasing Weight in Malnourished Babies," *J. Gizi & Kesehatan*, vol. 1, no. Apr., pp. 46–52, 2019.
- [5] M. Irwan, K. Sunarto, and L. A. Andriani, "The Effectiveness of Modifying PMT Based on Local Wisdom on the Nutritional Status of Malnourished Toddlers and Stunting," *J. Health Sci.*, vol. 4, pp. 59–67, 2020.
- [6] Z. P. Perdani, R. Hasan, and N. Nurhasanah, "Hubungan Praktik Pemberian Makan dengan Status Gizi Anak Usia 3–5 Tahun di Posyandu Tegal Kunir Lor," *J. Kesehatan JKFT*, vol. 1, no. 2, p. 9, 2017, doi: 10.31000/jkft.v2i2.59.
- [7] Dinas Kesehatan Kabupaten Jombang, "Revitalisasi Taman Pemulihan Gizi dalam Rangka Pencegahan Stunting dan Gizi Buruk," Jombang, Indonesia, 2020. [Online]. Available: <https://dinkes.jombangkab.go.id>
- [8] World Health Organization, *Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals*, Geneva, Switzerland: WHO, 2019.
- [9] H. N. Kusumawati and E. R. Noer, "Differences in Intake of Vitamin A and Zinc Before and After Giving MP-ASI Instant Porridge Based on Snakehead Fish and Pumpkin in Malnourished Toddlers," *Research Article*, Diponegoro University, Semarang, Indonesia, 2015.
- [10] F. F. Haq, "Optimization of Baby Porridge Formulation as MP-ASI Based on Yellow Pumpkin (*Cucurbita Moschata*) With the Addition of Tomatoes and Moringa Leaves," B.Sc. thesis, Univ. Brawijaya, Malang, Indonesia, 2019. [Online]. Available: <http://repository.ub.ac.id/181641/>
- [11] R. D. Noviyanti and T. Rahmawati, "The Effect of Giving Pumpkin Seed Pudding and Papaya on Body Weight in Undernourished Toddlers in the Working Area of the Gilingan Health Center," *J. Gizi & Kesehatan*, vol. 6, no. 2, pp. 68–75, 2022.
- [12] S. Tono, F. Fatmah, and N. Nurfadilah, "Giving Yellow Pumpkin Seeds (*Cucurbita pepo*) on Increasing Retinol and Zinc Levels in Toddlers with Stunting," Master's thesis, Poltekkes Kemenkes Semarang, Semarang, Indonesia, 2019.
- [13] N. D. Lestari, "Determinant Analysis of Toddler Nutritional Status in Yogyakarta," *Mutiara Med.*, vol. 15, no. 1, pp. 22–29, 2015.
- [14] W. O. Nurtina, Amiruddin, and A. Munir, "Risk Factors for Undernourishment in Toddlers in the Working Area of the Benua-Benua Health Center, Kendari City," *J. Ampibi*, vol. 2, no. 1, pp. 21–27, 2017. [Online]. Available: <http://ojs.uho.ac.id/index.php/ampibi/article/view/5053>
- [15] M. Stanhope and J. Lancaster, *Public Health Nursing: Population-Centered Health Care in the Community*, 9th ed., Maryland Heights, MO, USA: Elsevier, 2016.
- [16] O. R. I. Rahayu, B. Wirjatmadi, and M. Adriani, "Sponge of Tempe Flour on Increase in Weight and Height in Undernourished Toddlers," *J. Ilm. Kedokt.*, vol. 4, no. Sept., pp. 16–24, 2015.
- [17] P. W. Murhayani, "Relationship of Food Control, Role Models, and Involvement of Children with Difficulty Eating," *J. Sriwijaya Nurs.*, vol. 2, no. 1, pp. 8–21, 2015.
- [18] Nadiyah, D. Briawan, and D. Martianto, "Risk Factors of Stunting in Children Aged 0–23 Months in the Provinces of Bali, West Java and East Nusa Tenggara," *J. Gizi dan Pangan*, vol. 9, no. 2, pp. 125–132, 2014.
- [19] B. Supariasa and F. Fajar, *Assessment of Nutritional Status*, Jakarta, Indonesia: EGC, 2016.
- [20] Irianto, *Balanced Nutrition in Reproductive Health*, Bandung, Indonesia: Alfabeta, 2014.
- [21] L. H. Setyawati et al., "Development of Local Food-Based MP-ASI to Improve Toddler Nutrition," *J. Gizi Indon.*, vol. 9, no. 1, pp. 1–10, 2021.
- [22] M. Irwan, K. Sunarto, and L. A. Andriani, "The Effectiveness of Modifying PMT Based on Local Wisdom on the Nutritional Status of Malnourished Toddlers," *J. Health Sci.*, vol. 4, pp. 59–67, 2020.
- [23] F. Haq, "Optimization of MP-ASI Formulation Based on Yellow Pumpkin," Brawijaya Univ., 2019.
- [24] S. Tono, F. Fatmah, and N. Nurfadilah, "Effect of Pumpkin Seed Biscuits on Retinol and Zinc Levels in Stunting Toddlers," *Poltekkes Kemenkes Semarang*, 2019.
- [25] K. Nurhayati and M. Putri, "Effect of Complementary Feeding Based on Local Ingredients on Weight Gain in Malnourished Toddlers," *J. Kesehat. Lingk.*, vol. 12, no. 3, pp. 150–156, 2021.
- [26] A. Yusuf et al., "Nutritional Benefits of Beta-Carotene in Local Vegetables," *J. Nutr. Sci. Technol.*, vol. 5, no. 1, pp. 55–60, 2021.
- [27] N. Rachmawati and E. Sugiharti, "Micronutrient Role in Early Childhood Development," *Indones. J. Public Health*, vol. 12, no. 2, pp. 120–125, 2020.
- [28] F. Haq, "Optimization of MP-ASI Formulation Based on Yellow Pumpkin," Brawijaya Univ., 2019.
- [29] M. Irwan, K. Sunarto, and L. A. Andriani, "The Effectiveness of Modifying PMT Based on Local Wisdom on the Nutritional Status of Malnourished Toddlers," *J. Health Sci.*, vol. 4, pp. 59–67, 2020.
- [30] S. Tono, F. Fatmah, and N. Nurfadilah, "Effect of Pumpkin Seed Biscuits on Retinol and Zinc Levels in Stunting Toddlers," *Poltekkes Kemenkes Semarang*, 2019.
- [31] K. Nurhayati and M. Putri, "Effect of Complementary Feeding Based on Local Ingredients on Weight Gain in Malnourished Toddlers," *J. Kesehat. Lingk.*, vol. 12, no. 3, pp. 150–156, 2021.
- [32] R. Hartono, A. K. Wicaksono, and L. Isnaeni, "Feeding Practices and Nutritional Status in Urban-Rural Toddlers," *J. Gizi Komunitas*, vol. 8, no. 2, pp. 92–98, 2022.
- [33] B. Pratiwi and D. Haryati, "Assessment of Food-Based Interventions in Malnutrition Recovery Programs," *J. Kesehatan Masyarakat*, vol. 18, no. 1, pp. 44–50, 2023.

- [34] L. A. Rini, "Nutrition Education's Impact on Caregiver Practices for Toddler Feeding," J. Public Health Educ., vol. 11, no. 4, pp. 78–84, 2022.
- [35] T. Sulistyorini and Y. Paramita, "Sustainable Feeding Practices Post-Intervention: A Longitudinal Study," Nutr. Health Rev., vol. 7, no. 3, pp. 210–218, 2023.