

## Maternal food literacy among posyandu cadres: A community-based assessment in rural South Sulawesi, Indonesia

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### ABSTRACT

Food literacy has increasingly been recognized as an important determinant of healthy dietary behavior, yet limited evidence is available on food literacy among mothers serving as Posyandu cadres in rural stunting-locus communities, particularly within interventions integrating nutrition education and practical growth-monitoring skills. This study aimed to assess the food-literacy level of Posyandu cadres and strengthen their capacity through balanced-nutrition education based on the Indonesian Isi Piringku guideline, healthy-lifestyle promotion, and practical child anthropometric measurement. A descriptive community-based intervention using an educational-participatory approach was conducted in Lampenai Village, Luwu Timur Regency, South Sulawesi, Indonesia, involving 20 Posyandu cadres. Food literacy was assessed before training using a 19-item questionnaire adapted from the Eating and Food Literacy Behaviors Questionnaire. Training was delivered through interactive lectures, discussions, case studies, healthy-menu planning, and demonstrations of standardized weight and height measurement. The findings showed that 14 cadres (70%) had good food literacy, whereas six cadres (30%) had moderate food literacy. These findings indicate that most cadres possessed an adequate foundation for applying food-related information, although additional capacity strengthening remains necessary for some participants. Integrating food-literacy education, practical nutrition skills, and anthropometric competencies within Posyandu activities may strengthen cadres' roles as community nutrition agents and support sustainable village-level stunting-prevention strategies.

### ABSTRAK

Literasi pangan semakin diakui sebagai salah satu determinan penting dalam pembentukan perilaku makan yang sehat. Namun, bukti mengenai literasi pangan pada ibu yang berperan sebagai kader Posyandu di wilayah pedesaan yang menjadi lokus stunting masih terbatas, khususnya dalam intervensi yang mengintegrasikan edukasi gizi dengan keterampilan praktis pemantauan pertumbuhan anak. Kegiatan ini bertujuan untuk menilai tingkat literasi pangan kader Posyandu sekaligus memperkuat kapasitas mereka melalui edukasi gizi seimbang berdasarkan pedoman Isi Piringku, promosi gaya hidup sehat, serta praktik pengukuran antropometri anak. Intervensi berbasis masyarakat dengan desain deskriptif dan pendekatan edukatif-partisipatif ini dilaksanakan di Desa Lampenai, Kabupaten Luwu Timur, Sulawesi Selatan, Indonesia, dengan melibatkan 20 kader Posyandu. Literasi pangan dinilai sebelum pelatihan menggunakan kuesioner 19 butir yang diadaptasi dari Eating and Food Literacy Behaviors Questionnaire. Pelatihan dilaksanakan melalui ceramah interaktif, diskusi, studi kasus, perencanaan menu sehat, serta demonstrasi pengukuran berat dan tinggi badan sesuai standar. Hasil menunjukkan bahwa 14 kader (70%) memiliki tingkat literasi pangan yang baik, sedangkan enam kader (30%) memiliki tingkat literasi pangan sedang. Temuan ini menunjukkan bahwa sebagian besar kader telah memiliki dasar yang memadai dalam memahami dan menerapkan informasi terkait pangan, meskipun penguatan kapasitas lebih lanjut masih diperlukan bagi sebagian peserta. Integrasi edukasi literasi pangan, keterampilan praktis gizi, dan kompetensi antropometri dalam kegiatan Posyandu berpotensi memperkuat peran kader sebagai agen gizi di masyarakat serta mendukung strategi pencegahan stunting yang berkelanjutan di tingkat desa.

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## INTRODUCTION

Child growth is internationally recognized as an important indicator of nutritional status and health. Stunting remains a major public health concern because it may limit children's physical and cognitive potential. Early childhood is a critical period of rapid growth and brain development, making adequate nutrition, stimulation, and responsive caregiving essential. Parents and early-childhood educators play important roles in shaping children's dietary behavior and healthy energy balance (Indonesia, 2014; Lo et al., 2015; Dev et al., 2017). Consistency between household practices and nutrition policies in preschool settings is therefore important for supporting healthy growth (van de Kolk et al., 2018). Adequate intake of protein, fats, carbohydrates, vitamins, minerals, and water is also essential for optimal brain development and neurological function (Roberts et al., 2022; Puri et al., 2023).

In Indonesia, balanced nutrition is promoted through the Regulation of the Minister of Health Number 41 of 2014 and operationalized through *Isi Piringku*, which emphasizes appropriate portions of staple foods, protein sources, vegetables, fruits, adequate water intake, physical activity, and handwashing (Menteri Kesehatan Republik Indonesia, 2014). Nevertheless, stunting remains a significant challenge. The 2024 Indonesian Nutritional Status Survey reported a national prevalence of 19.8%. In South Sulawesi, regional disparities persist, including in Luwu Timur, where 24.98% of 46,390 targeted families were classified as being at risk of stunting. Stunting prevalence in Tana Toraja, Luwu, and Luwu Timur also increased during 2021–2023 (Sulawesi Selatan, 2024).

An important challenge in stunting prevention is the gap between access to nutrition information and caregivers' ability to apply it in food selection, preparation, feeding, hygiene, and growth monitoring. Mothers frequently serve as primary household food decision-makers and therefore influence children's dietary quality (Patterson et al., 2013). Maternal food literacy—the ability to access, understand, evaluate, select, prepare, and appropriately use food-related information—may bridge nutritional knowledge and feeding practices. Maternal education, nutrition counseling, breastfeeding, complementary feeding, and food-preparation skills have been identified as important components of stunting prevention in Indonesia (Hanifah & Syahrizal, 2024).

Nutrition education is more effective when knowledge is combined with practical competencies. Kindergarten-based nutrition education has been associated with improved children's health behaviors and parental dietary attitudes (Hu et al., 2010). Similarly, maternal food-literacy interventions can strengthen food selection, meal preparation, portioning, responsive feeding, and healthy household routines. An Indonesian randomized controlled study demonstrated the potential of maternal nutrition-literacy interventions in supporting stunting prevention (Sirajuddin et al., 2021). In this context, *Isi Piringku* provides a practical framework for teaching balanced portions, local food selection, and household meal planning.

Community implementation through *Posyandu* can strengthen the reach and sustainability of nutrition interventions. *Posyandu* cadres contribute to nutrition counseling, health promotion, growth monitoring, and anthropometric measurement. Training has been shown to improve cadres' knowledge and skills related to stunting prevention (Siswati et al., 2022). However, intervention effectiveness depends on adaptation to local culture, language, food availability, and household conditions. Culture-based education in South Sulawesi significantly improved stunting-related health literacy (Asriadi et al., 2023), while traditional beliefs, stigma, nutritional misconceptions, gender factors, and economic constraints may hinder the implementation of formal recommendations (Pasaribu & Pardosi, 2026).

Previous studies have demonstrated the importance of maternal knowledge, feeding practices, nutrition literacy, and culturally appropriate education in stunting prevention (Hanifah & Syahrizal, 2024; Sirajuddin et al., 2021; Asriadi et al., 2023). However, limited attention has been given to mothers who simultaneously serve as *Posyandu* cadres. This group has a dual role: their food literacy influences both household feeding decisions and the nutrition counseling provided to other families. Furthermore, cadres require practical competence in standardized child weight and height measurement. Assessing and strengthening food literacy among these cadres is therefore particularly

relevant in stunting-locus communities.

The novelty of this study lies in positioning maternal food literacy as both a household capability and a community health-intervention capacity among mothers serving as Posyandu cadres. The intervention integrates balanced-nutrition education based on *Isi Piringku*, healthy-lifestyle practices, and hands-on anthropometric measurement. This approach connects nutritional knowledge with practical competencies in meal planning, health promotion, growth monitoring, and early identification of growth problems. Accordingly, this study aims to assess food literacy among mothers serving as Posyandu cadres in stunting-locus areas and strengthen their capacity through integrated nutrition and anthropometric training.

## METHODS

### Study Design and Approach

This study used a community-based descriptive intervention with an educational-participatory approach. It combined an initial assessment of food literacy among Posyandu cadres with capacity-building activities on balanced nutrition, healthy dietary practices, and standardized child anthropometric measurement. The approach aimed to describe cadres' baseline food-literacy profiles and strengthen practical competencies relevant to community-based stunting prevention.

### Study Period and Location

The activity was conducted on 30 July 2025 in Lampenai Village, Luwu Timur Regency, South Sulawesi, Indonesia. The village was selected because it was one of 21 stunting-locus areas targeted by the Nutrition Assistance Program within the Aksi Stop Stunting initiative (Lutim, 2025). Posyandu cadres in these areas play an important role in nutrition education, growth monitoring, and dissemination of health information to mothers and caregivers.

### Population, Sample, and Sampling Technique

The target population consisted of active Posyandu cadres in Lampenai Village. A total of 20 cadres participated, representing all eligible cadres attending the activity. Participants were included if they: (1) were active Posyandu cadres; (2) participated in community health or nutrition education; (3) were willing to complete the activity; and (4) completed the food-literacy questionnaire before training. Participants who did not complete the questionnaire or core training activities were excluded from the analysis.

### Food-Literacy Measurement

Food literacy was assessed before the intervention using a questionnaire adapted from the Eating and Food Literacy Behaviors Questionnaire developed by Murphrey, Cater, and Carr (2023). The instrument assessed food selection, meal planning, purchasing, preparation, cooking, nutritional consideration, and consumption behaviors through 19 statements (see [Table 1](#)). Participants completed the questionnaire independently before receiving educational materials to minimize intervention influence. Responses were scored according to the procedure applied in the study and classified into food-literacy categories.

### Intervention Procedures

The intervention was conducted in four stages. First, coordination was undertaken with the village government, local Puskesmas personnel, and Posyandu leadership regarding participants, venue, equipment, and educational materials. Second, participants completed the food-literacy questionnaire to assess existing behaviors related to food selection, planning, purchasing, preparation, and healthy eating. Third, participants received balanced-nutrition training based on the Indonesian Balanced Nutrition Guidelines and *Isi Piringku* framework (Menteri Kesehatan Republik Indonesia, 2014). Materials included carbohydrates, animal and plant proteins, fats, vegetables, fruits, water, food-exchange options, dietary diversity, healthy food selection, meal planning, and appropriate food preparation.

**Table 1**

*Food-Literacy Measurement Guide*

| No. | Statement                                              |
|-----|--------------------------------------------------------|
| 1   | I choose foods that taste good to me.                  |
| 2   | I decide what I am going to eat before eating.         |
| 3   | I purchase healthy foods.                              |
| 4   | I follow recipes when preparing food.                  |
| 5   | I accurately measure liquid ingredients when cooking.  |
| 6   | I choose foods that provide balanced nutrition.        |
| 7   | I eat foods that taste good to me.                     |
| 8   | I eat convenient or ready-to-eat foods.                |
| 9   | I prepare healthy foods.                               |
| 10  | I plan the foods that I will consume.                  |
| 11  | I accurately measure dry ingredients when cooking.     |
| 12  | I choose healthy foods.                                |
| 13  | I eat foods that I have previously planned to consume. |
| 14  | I prepare foods that can be cooked quickly.            |
| 15  | I consume a nutritionally balanced diet.               |
| 16  | I consume healthy foods.                               |
| 17  | I purchase foods that taste good to me.                |
| 18  | I purchase foods based on convenience or practicality. |
| 19  | I read nutrition information before purchasing foods.  |

Note: Adapted from Murphrey, Cater, and Carr (2023).

Training was conducted through lectures, discussions, case studies, practical examples, and healthy-menu preparation using locally available foods. Fourth, participants received demonstrations and practical training in measuring child weight and height. Body weight was measured using a digital scale placed on a flat surface and set to zero before use. The child stood without footwear and in light clothing, and weight was recorded to the nearest 0.1 kg.

Height was measured using a stadiometer with the child standing upright, knees straight, and head positioned in the Frankfurt plane. The headpiece was lowered to the highest point of the head, and height was recorded to the nearest 0.1 cm according to standardized procedures (Indonesia, 2020). Cadres were given opportunities to observe and practice these techniques.

## Data Analysis

Questionnaire data were analyzed descriptively. Participant age was summarized to characterize the study population, while food-literacy categories were presented as frequencies and percentages. No inferential analysis of intervention effectiveness was performed because the study included only a single-group baseline assessment without a control group or post-intervention food-literacy measurement. Therefore, the findings were interpreted as descriptive evidence of cadres' food-literacy profiles and implementation of the capacity-building intervention rather than causal evidence of training effectiveness. Quantitative findings were presented in tables using frequencies, percentages, and descriptive characteristics. Intervention activities, including healthy-menu preparation and anthropometric demonstrations, were described narratively and supported by figures.

## Ethical Considerations and Informed Consent

Participants were informed about the objectives, procedures, food-literacy assessment, educational activities, and intended use of the data. Participation was voluntary, and informed consent was obtained before questionnaire administration and training. Confidentiality was

maintained by reporting aggregate data and participant codes rather than personal identifiers. Photographic documentation was conducted with consideration for participant privacy and consent.

## RESULTS AND DISCUSSION

The findings indicate that most mothers serving as Posyandu cadres in the stunting-locus area had good food literacy, while a smaller proportion demonstrated moderate literacy. The intervention included balanced-nutrition training based on *Isi Piringku*, healthy menu planning, healthy-lifestyle education, and practical anthropometric measurement. These activities addressed the study objective by identifying cadres' food-literacy profiles while strengthening competencies relevant to community-based stunting prevention.

### Balanced Nutrition Training and Healthy Menu Planning

The first activity consisted of training on basic nutrition principles and healthy behaviors based on the Indonesian Balanced Nutrition Guidelines. Referring to the Regulation of the Minister of Health of the Republic of Indonesia Number 41 of 2014, balanced nutrition is defined as a daily dietary pattern containing nutrients in appropriate types and quantities while considering dietary diversity, physical activity, clean and healthy living behaviors, and regular body-weight monitoring (Menteri Kesehatan Republik Indonesia, 2014). The training emphasized appropriate combinations of staple foods, protein sources, vegetables, fruits, fats, and adequate water intake.

Particular attention was given to selecting higher-quality carbohydrate sources with relatively lower glycemic responses and adequate dietary fiber. Dietary fiber supports glucose regulation, while antioxidant-containing foods may help protect against oxidative processes (Yen, 2021). Participants were also introduced to food-exchange options according to local availability, such as substituting rice with potatoes, sweet potatoes, or corn, and varying protein sources with fish, eggs, skinless chicken, tofu, or tempeh.

The training also encouraged cadres to distinguish healthier sources of fat and consider both food quantity and nutritional quality (Menteri Kesehatan Republik Indonesia, 2014). Interactive methods included explanations, case discussions, group learning, and healthy-menu preparation. These activities helped participants translate nutrition concepts into practical household food choices.

The practical nutrition training is consistent with the concept of food literacy, which includes not only nutritional knowledge but also the ability to plan, select, prepare, and consume healthy foods. Krause, Sommerhalder, Beer-Borst, and Abel (2016) emphasized that food literacy is closely related to health literacy but focuses specifically on food-related decisions and the capacity to apply and evaluate information in personal and community contexts.

Parental food knowledge and practical competencies are also important determinants of children's dietary environments. Tartaglia, McIntosh, Jancey, Scott, and Begley (2021) reported that parents of children aged 0–5 years often have positive intentions toward healthy food but experience difficulties translating these intentions into appropriate food provision and feeding practices. This is particularly relevant to stunting prevention because nutrition information alone may be insufficient without practical skills in meal planning, food substitution, and preparation.

The present intervention translates national dietary guidance into household-level practices through *Isi Piringku*, food-exchange options, locally applicable food choices, and direct menu preparation. This approach is particularly relevant to Posyandu cadres, who are expected to understand nutrition information and communicate practical recommendations to families in their communities.

The findings highlight the importance of combining knowledge-based and skill-based approaches in community nutrition interventions. Nutrition recommendations become more applicable when participants can relate them to food availability, household purchasing, preparation, and child feeding. Parents have a fundamental role in shaping children's food preferences and dietary practices, making parental food literacy an important target for intervention (Tartaglia et al., 2024).

This approach is particularly relevant during early childhood, when nutrition supports physical, cognitive, language, motor, and socio-emotional development. The period from conception through the first five years of life therefore represents an important opportunity for improving development through adequate nutrition and supportive environments (Skouteris et al., 2021).

Strengthening cadres' nutrition competencies may support the dissemination of balanced-nutrition messages at village level. However, because the present findings describe training implementation rather than pre- and post-intervention changes, sustained improvements in knowledge or behavior cannot be established. Future evaluations should incorporate pre-post assessments and follow-up observations to determine whether knowledge is translated into improved dietary practices and counseling performance.

## Demonstration and Practice of Child Weight and Height Measurement

The second activity focused on strengthening cadres' practical skills in child anthropometric measurement. Demonstrations of body-weight and height measurement were conducted using a digital weighing scale and stadiometer, with an approximately six-year-old child used to demonstrate standardized positioning, equipment preparation, measurement, and recording.

For weight measurement, the scale was placed on a flat surface and set to zero. The child stood upright at the center of the scale without footwear and with minimal clothing, and the result was recorded to at least 0.1 kg. For height measurement, the child stood upright with straight legs and appropriate foot positioning, with the head aligned according to the Frankfurt plane. The stadiometer headpiece was lowered to the highest point of the head, and height was recorded to at least 0.1 cm (Indonesia, 2020).

The demonstration was followed by direct practice, enabling cadres to apply the measurement procedures themselves. [Figures 1](#) illustrate the weight- and height-measurement sessions. This component complemented nutrition education by connecting food-literacy competencies with child-growth monitoring.

**Figure 1.**  
*Demonstration of Child Body-Weight and Height Measurement*



Anthropometric practice strengthens the intervention because community-based stunting prevention requires both appropriate feeding and accurate identification of child-growth problems. Adequate nutrition supports growth, while accurate measurements enable growth problems to be recognized and monitored.

Costarelli et al. (2022) emphasized the close relationship between parenting and child-feeding practices. Community interventions should therefore integrate caregiver behavior with objective growth indicators. Food-related knowledge without monitoring may delay recognition of

growth faltering, while anthropometric monitoring without nutrition counseling may identify problems without addressing their behavioral determinants.

The present study combines food-literacy education with practical growth-monitoring skills, placing nutrition knowledge within the broader preventive role of Posyandu cadres. This integrated approach is relevant in stunting-locus areas, where cadres support nutrition counseling, routine growth monitoring, identification of children requiring attention, and communication between families and health professionals.

Accurate anthropometric measurement is important because errors in weight or height measurement may lead to incorrect interpretation of child-growth status. Standardized positioning, appropriate equipment, calibration, and precise recording are therefore essential (Indonesia, 2020). Strengthening these competencies may improve the quality of routine growth-monitoring data at Posyandu level.

Cadre training should therefore integrate nutrition knowledge, food literacy, communication, healthy-lifestyle promotion, and standardized anthropometry. This enables cadres to link dietary counseling with observable child-growth outcomes. Nevertheless, the demonstration did not establish standardized competency among all cadres because no inter-observer reliability assessment or formal competency score was available. Future research should assess measurement accuracy before and after training and compare cadre measurements with those of trained health professionals.

## Food-Literacy Level of Posyandu Cadres

The principal quantitative finding was that food literacy among mothers serving as Posyandu cadres was predominantly classified as good. Twenty cadres participated, ranging from 26 to 68 years of age, with a mean age of 41.2 years. Fourteen cadres (70%) had good food literacy, while six (30%) had moderate food literacy. No participants were classified as having poor food literacy (see [Table 2](#)).

**Table 2**

*Food-Literacy Levels of Posyandu Cadres*

| Respondent | Age (years) | Food-literacy level |
|------------|-------------|---------------------|
| Mother 1   | 43          | Moderate            |
| Mother 2   | 68          | Good                |
| Mother 3   | 60          | Good                |
| Mother 4   | 48          | Good                |
| Mother 5   | 30          | Good                |
| Mother 6   | 33          | Moderate            |
| Mother 7   | 39          | Good                |
| Mother 8   | 41          | Moderate            |
| Mother 9   | 32          | Good                |
| Mother 10  | 53          | Good                |
| Mother 11  | 34          | Good                |
| Mother 12  | 30          | Good                |
| Mother 13  | 48          | Good                |
| Mother 14  | 43          | Good                |
| Mother 15  | 52          | Good                |
| Mother 16  | 26          | Moderate            |
| Mother 17  | 27          | Good                |
| Mother 18  | 37          | Moderate            |
| Mother 19  | 40          | Moderate            |
| Mother 20  | 40          | Good                |

The results indicate that most cadres already possessed a relatively strong foundation for understanding and applying food-related information. However, the 30% with moderate literacy demonstrate that competence was not uniform and that some cadres require additional support to translate nutrition information into practical recommendations.

The predominance of good food literacy supports previous evidence regarding the importance of food literacy among individuals responsible for household dietary decisions. Wijayaratne, Reid, Westberg, Worsley, and Mavondo (2018) reported that food literacy among household food gatekeepers can help overcome barriers to healthy eating. This is particularly relevant to mothers serving as Posyandu cadres because they influence dietary practices both within their households and communities.

Food literacy extends beyond factual nutritional knowledge. Krause et al. (2016) indicated that it includes obtaining, understanding, applying, and critically evaluating food-related information. Therefore, although 70% of cadres were classified as having good food literacy, this classification should not automatically indicate mastery of practical food preparation, budgeting, critical appraisal, culturally appropriate food selection, or nutrition communication.

Parents also strongly influence children's food preferences and dietary patterns. Tartaglia et al. (2024) emphasized the importance of parental food-literacy skills, while Tartaglia et al. (2021) found that positive motivation toward healthy feeding does not always translate into effective feeding practices. This may help explain why some cadres remained in the moderate category despite their involvement in community health activities.

Broader socioeconomic and educational determinants should also be considered. Ahmadi and Karamitanha (2023) reported associations between lower nutrition literacy and factors such as lower educational attainment, rural residence, and maternal occupational status. These factors are relevant in rural and stunting-locus settings, where access to health information, educational resources, diverse foods, and economic opportunities may be limited.

An important contribution of the present study is its focus on mothers serving specifically as Posyandu cadres rather than parents in general. Their food literacy may influence both household and community nutrition. Consequently, improvements in cadre knowledge and skills may potentially benefit numerous mothers and caregivers participating in Posyandu activities.

## **Importance, Scientific Implications, and Practical Implications**

The finding that 70% of cadres demonstrated good food literacy suggests that Posyandu cadres are potentially valuable human resources for community-based nutrition interventions. However, the 30% with moderate literacy indicate that cadre status does not guarantee uniformly high competence. This variation may influence the effectiveness of nutrition communication within communities.

Strengthening parental food literacy is particularly important during early childhood because parents influence food availability, preparation, feeding interactions, and children's dietary patterns (Tartaglia et al., 2021; Tartaglia et al., 2024). Adequate nutrition during early childhood supports physical and cognitive development, particularly during the period from conception to approximately five years of age (Skouteris et al., 2021).

From a practical perspective, cadres with moderate food literacy may require more intensive mentoring, repeated practical sessions, simplified communication materials, and contextualized menu-planning activities. Cadres with good literacy may benefit from advanced competencies such as counseling, critical evaluation of nutrition information, problem-solving for resource-limited households, and mentoring other cadres.

The integration of *Isi Piringku*-based nutrition education, healthy-lifestyle promotion, menu planning, and standardized anthropometric practice represents a practical contribution of this study. Food literacy is therefore positioned not merely as individual knowledge but as a functional competency relevant to community-based stunting prevention.

Overall, the study objective was achieved by identifying the food-literacy level of Posyandu cadres and implementing complementary training in balanced nutrition and child-growth monitoring.

Although most cadres demonstrated good food literacy, nearly one-third remained at a moderate level, indicating the need for targeted capacity strengthening. Because the study involved only 20 cadres and lacked a control group, pre-post measurement, and longitudinal follow-up, the findings cannot establish that the training caused improvements in food literacy or child nutritional status. Future studies should evaluate changes in food-literacy scores, retention of practical skills, accuracy of anthropometric measurements, and whether improved cadre competencies translate into better household feeding practices and child-growth outcomes.

## CONCLUSION

This community-based activity showed that strengthening Posyandu cadres' food literacy through balanced-nutrition education and practical training is relevant to village-level stunting prevention. Among 20 participating cadres, 70% had good food literacy and 30% had moderate food literacy, indicating that most participants had an adequate foundation for understanding and applying nutrition information. The participatory training integrated *Isi Piringku*, healthy-lifestyle practices, menu planning, and practical measurement of children's weight and height.

The findings highlight the role of Posyandu cadres in translating nutrition recommendations into household practices through nutrition education, appropriate feeding promotion, and routine growth monitoring. However, because food literacy was assessed only before training and no control group was included, the study cannot establish the effectiveness of the intervention in improving food literacy or child nutritional outcomes. Future programs should provide continuous training focused on practical nutrition skills, anthropometric measurement, counseling, and the use of affordable local foods. Further studies should employ pre-post assessments, larger samples, longer follow-up, and evaluation of household feeding practices and child growth outcomes. Integrating food literacy, local food resources, and community growth monitoring may strengthen sustainable village-level nutrition resilience in stunting-locus areas.

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## AUTHORS' CONTRIBUTION

Rifa'ah Mahmudah Bulu conceptualized the activity, coordinated its implementation, contributed to data collection and analysis, and prepared the original manuscript. Devy Febrianti contributed to the development of the activity methods, participant engagement, and interpretation of the findings. Rusda Ananda contributed to data processing, interpretation of the results, and critical revision of the manuscript. All authors read and approved the final version of the manuscript.

## COMPETING INTEREST

The author(s) declare no potential conflict of interest with respect to the research, authorship, or publication

## REFERENCES

- Ahmadi, F., & Karamitanha, F. (2023). Health literacy and nutrition literacy among mother with preschool children: What factors are effective? *Preventive Medicine Reports*, 35(July), 102323. <https://doi.org/10.1016/j.pmedr.2023.102323>
- Amal., A. A. (2023). *Culture-Based Education on Health Literacy About Stunting in Communities in South Sulawesi, Indonesia*. Gaceta Médica De Caracas, 131(1). <https://doi.org/10.47307/gmc.2023.131.1.4>
- Costarelli, V., Michou, M., Panagiotakos, D. B., & Lionis, C. (2022). Parental health literacy and nutrition literacy affect child feeding practices: A cross-sectional study. *Nutrition and Health*, 28(1), 59–68. <https://doi.org/10.1177/02601060211001489>

- Dev, D. A., Byrd-Williams, C., Ramsay, S., McBride, B., Srivastava, D., Murriel, A., Adachi-Mejia, A. M. (2017). Engaging parents to promote children's nutrition and health: Providers' barriers and strategies in head start and child care centers. *American Journal of Health Promotion*, 31(2), 153–162. <https://doi.org/10.1177/0890117116685426>
- Hanifah, F. D., & Syahrizal. (2024). Implementation of Stunting Prevention Program in Indonesia: Literature Review. *Media Publikasi Promosi Kesehatan Indonesia (Mppki)*, 7(5), 1183–1191. <https://doi.org/10.56338/mparki.v7i5.5205>
- Hu, C., Ye, D., Li, Y., Huang, Y., Li, L., Gao, Y., & Wang, S. (2010). Evaluation of a kindergarten-based nutrition education intervention for pre-school children in China. *Public Health Nutrition*, 13(2), 253–260. <https://doi.org/10.1017/S1368980009990814>
- Indonesia, K. P. dan K. R. Permendikbud Nomor 146 Tahun 2014 (2014).
- Indonesia, K. K. R. (2020). Standar Antropometri Anak. *Menteri Kesehatan Republik Indonesia*.
- Krause, C., Sommerhalder, K., Beer-Borst, S., & Abel, T. (2016). Just a subtle difference? Findings from a systematic review on definitions of nutrition literacy and food literacy. *Health Promotion International*, 33(3), 378–389. <https://doi.org/10.1093/heapro/daw084>
- Lo, K., Cheung, C., Lee, A., Tam, W. W. S., & Keung, V. (2015). Associations between parental feeding styles and Childhood eating habits: A survey of Hong Kong pre-school children. *PLoS ONE*, 10(4), 1–11. <https://doi.org/10.1371/journal.pone.0124753>
- Menteri Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2014 Tentang Pedoman Gizi Seimbang, 1 § (2014).
- Miguel, P. M., Pereira, L. O., Silveira, P. P., & Meaney, M. J. (2019). Early environmental influences on the development of children's brain structure and function. *Developmental Medicine and Child Neurology*, 61(10), 1127–1133. <https://doi.org/10.1111/dmcn.14182>
- Murphrey, T. R., Cater, M. W., & Carr, I. J. (2023). The Eating and Food Literacy Behaviors Questionnaire Has the Capacity to Distinguish Between Food Literacy Scores of Students Enrolled in Senior-Level Nutrition Classes Compared With Those Students Registered in Other Academic Courses Attending a University. *Journal of the Academy of Nutrition and Dietetics*, 124(6), 740–746. Retrieved from [https://www.jandonline.org/article/S2212-2672\(23\)01688-X/abstract](https://www.jandonline.org/article/S2212-2672(23)01688-X/abstract)
- Pasaribu, R. D., & Pardosi, M. (2026). Unpacking Sociocultural Barriers to Stunting Prevention: A Phenomenological Inquiry into Policy and Community Challenges. *Portuguese Journal of Public Health*, 44(1), 4–17. <https://doi.org/10.1159/000549813>
- Patterson, T. L., Sallis, J. F., Nader, P. R., Kaplan, R. M., Rupp, J. W., Atkins, C. J., & Senn, K. L. (2013). Familial similarities of changes in cognitive, behavioral, and physiological variables in a cardiovascular health promotion program. *Family Issues in Pediatric Psychology*, 14(2), 215–230. <https://doi.org/10.4324/9780203763063>
- Puri, S., Shaheen, M., & Grover, B. (2023). Nutrition and cognitive health: A life course approach. *Frontiers in Public Health*, 11(March), 1–11. <https://doi.org/10.3389/fpubh.2023.1023907>
- Roberts, M., Tolar-Peterson, T., Reynolds, A., Wall, C., Reeder, N., & Rico Mendez, G. (2022). The Effects of Nutritional Interventions on the Cognitive Development of Preschool-Age Children: A Systematic Review. *Nutrients*, 14(3), 1–15. <https://doi.org/10.3390/nu14030532>
- Skouteris, H., Bergmeier, H. J., Berns, S. D., Betancourt, J., Boynton-Jarrett, R., Davis, M. B., ... Story, M. (2021). Reframing the early childhood obesity prevention narrative through an equitable nurturing approach. *Maternal and Child Nutrition*, 17(1), 1–6. <https://doi.org/10.1111/mcn.13094>
- Sulawesi Selatan, P. (2024). *Laporan Semester 1 Tim Percepatan Penurunan Stunting Provinsi Sulawesi-Selatan*.
- Tartaglia, J., Jancey, J., Scott, J. A., Dhaliwal, S. S., & Begley, A. (2024). Effectiveness of a food literacy and positive feeding practices program for parents of 0 to 5 years olds in Western Australia. *Health Promotion Journal of Australia*, 35(2), 263–275. <https://doi.org/10.1002/hpja.742>
- Tartaglia, J., McIntosh, M., Jancey, J., Scott, J., & Begley, A. (2021). Exploring feeding practices and food literacy in parents with young children from disadvantaged areas. *International Journal of Environmental Research and Public Health*, 18(4), 1–18. <https://doi.org/10.3390/ijerph18041496>
- van de Kolk, I., Goossens, A. J. M., Gerards, S. M. P. L., Kremers, S. P. J., Manders, R. M. P., & Gubbels, J. S. (2018). Healthy nutrition and physical activity in childcare: Views from childcare managers, childcare workers and parents on influential factors. *International Journal of Environmental Research and Public Health*, 15(12), 1–17. <https://doi.org/10.3390/ijerph15122909>
- Wijayarathne, S. P., Reid, M., Westberg, K., Worsley, A., & Mavondo, F. (2018). Food literacy, healthy eating barriers and household diet. *European Journal of Marketing*, 52(12), 2449–2477. <https://doi.org/10.1108/EJM-10-2017-0760>
- Yen, S. T. (2021). *Saya Pilih Sehat dan Sembuh (Revisi Das)*. Jakarta: PT Gramedia Pustaka Utama.