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Balanced Nutrition Education with a Four-Star Menu Made from Local Food to Prevent Stunting in Children

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Abstract

Stunting remains a significant nutritional issue at both national and regional levels, particularly in Jember Regency. One contributing factor is the provision of low-nutrition complementary feeding (MPASI), often based solely on filling the child's stomach or continuously offering only specific foods the child prefers. In Karangrejo Village, it was found that many mothers lacked knowledge about preparing nutritious MPASI with a balanced menu, which includes the four essential components: carbohydrates, animal protein, vegetable protein, and fiber. To address this issue, a community service program was conducted, involving health education on balanced nutrition through a four-star menu and hands-on simulations of preparing MPASI using local ingredients. The program was attended by 50 mothers with children under five years. As a result, there was a significant improvement in the mothers' understanding of preparing MPASI that meets balanced nutrition standards, reflected in a 30.2-point increase in their knowledge scores. Continuous implementation of such health education across Jember Regency is essential to help reduce stunting rates. Moreover, similar programs should incorporate monitoring mechanisms to evaluate whether the daily provision of MPASI aligns with the principles of balanced nutrition.

Keywords: Balanced nutrition, education, four-star menu, local food, stunting

Introduction

Stunting remains a significant health issue affecting children both globally and nationally, and it persists as an unresolved challenge. This condition is characterized by impaired growth and development caused by chronic malnutrition, resulting in a child's height being shorter than expected for their age. A child is classified as stunted if their height-for-age falls below -2 standard deviations (SD) from the median of the WHO z-score growth curve for children of the same age and gender (Huang et al., 2022). Stunting in children has alarming consequences, as it can undermine the quality of human resources and threat the well-being of Indonesia's future generations if not tackled promptly. Stunting has short-term and long-term detrimental impacts such as increased morbidity and mortality rates, low learning capacity, increased risk of infection and non-communicable diseases, increased insulin resistance, and increased risk of hypertension and diabetes mellitus in adulthood (Soliman et al., 2021; WHO, 2015).

There were 22% or 149.2 million children worldwide who suffered from stunting in 2020 and more than 50% of them came from ASIA (UNICEF, 2021). The prevalence of stunting in Indonesia currently ranks second highest in Southeast Asia after Timor Leste. The results of the RISKESDAS 2019 showed that the incidence of stunting in Indonesia in 2013 was 37.2%,

then experienced a fairly high decline of 6.4% in 2018 to 30.8%, and continued to decline by 3.1% in 2019 to 27.67%. Although there has been a significant decline, this prevalence rate is still far from the WHO standard value which should be below 20% (Ministry of Health, 2022; Statistics Indonesia, 2019). Jember is among the five districts in East Java with the highest number of children experiencing stunting and severe stunting, alongside Bondowoso, Probolinggo, Lamongan, and Sumenep (Ministry of Health, 2018). The number of stunting cases in Jember Regency rose from 17,344 in 2018 to 19,870 in 2019 (Ulfah & Nugroho, 2020).

Stunting in children is primarily caused by factors such as malnutrition, improper feeding practices, poor sanitation, insufficient quality nutrition, and limited access to high-quality services (Muleta et al., 2021). Low parental knowledge about nutrition is indirectly linked to stunting (Salman et al., 2020), as parents with a poor understanding of nutrition are more likely to provide unhealthy food to their children (Sastre et al., 2019). According to Omaghomi Jemide et al. (2016), malnutrition in children can still occur if a mother lacks sufficient knowledge about nutrition and fails to provide adequate food, even when the family has a high income and practices good hygiene. Conversely, proper feeding practices for infants and children play a crucial role in enhancing their survival and supporting optimal growth and development, particularly during the golden period from birth to two years of age (Mohammed et al., 2022).

Addressing stunting requires collaboration from multiple stakeholders, including healthcare centers and active community involvement, particularly from health cadres and parents, who play a direct role in childcare and ensuring adequate nutrition for children. One effective approach to tackling stunting is enhancing mothers' knowledge about nutrition, enabling them to adopt better feeding practices for their children (Margawati & Astuti, 2018). Several studies have shown that knowledge about nutrition is significantly related to the incidence of stunting, where children whose mothers have low knowledge about nutrition are 1.9 times more at risk of experiencing stunting (Phyo & Aung, 2021; Yuliantini, 2023).

Providing nutritious food for children remains a challenge, as many segments of society still associate nutritious food with high costs (Liputo et al., 2022). Furthermore, many Indonesians face limitations in accessing nutritious food due to low family income and limited availability of food for individuals and families (Rahayu et al., 2018). Using locally available food ingredients from our surroundings can serve as an alternative for meeting nutritional needs,

particularly for individuals with limited access to food. Research has shown that local food ingredients grown in home gardens can help address food insecurity and malnutrition in rural communities, especially those with lower-middle economic status (Sutyawan et al., 2022). Given the background mentioned, the researchers are interested in increasing parents' understanding of balanced nutrition for children in Karangrejo Village, Jember Regency, using a menu prepared from local food ingredients.

Identification of Problems

Preliminary interviews with local posyandu cadres in Karangrejo Village showed that there was a lack of information and knowledge among parents about balanced nutritional menus for children. Many mothers still introduce complementary foods to infants before they reach six months of age. Additionally, most mothers opt for instant porridge as complementary food due to its convenience and low cost.

Many mothers do not fully understand the importance of providing adequate macronutrients and micronutrients for children, often believing that the primary goal of complementary feeding is to fill the child up and satisfy their taste preferences, rather than focusing on the nutritional value. Some mothers also tend to offer only certain foods, such as crackers with soy sauce everyday. For some parents, preparing and serving meals for children can be challenging due to various factors, such as the belief that nutritious food is always expensive. Additionally, some children are picky eaters and only want specific foods at each meal.

Implementation Methodology

The community service activity involved 50 mothers with children under five years old from the Karangrejo Village area and was carried out in one meeting in September 2024. This community service activity was provided in the form of education about balanced nutrition that fulfills the elements of a four-star menu or the four main nutrients needed by children, namely carbohydrates, animal protein, vegetable protein, and fiber. It was then followed by a demonstration on how to prepare meals that meet these nutritional requirements using local food ingredients with the aim of making children interested in consuming the food.

Preparation Stage

This community service activity began with obtaining permission from the village head of Karangrejo. After receiving approval from the village head, we coordinated with the integrated health post cadres regarding the objectives and stages of implementing the community service activities. Information on the implementation of the community service activities was provided by the cadres door to door to the mothers' homes. Mothers with under five years children who were willing to participate in the community service activities received a written invitation to attend on the specified day and time at the Karangrejo Village office.

At this stage, a questionnaire was prepared to measure the level of mothers' knowledge about stunting and balanced nutrition consisting of 20 multiple-choice questions. At this preparation stage, a media for community service activities in the form of a power point was also prepared to explain stunting and balanced nutrition with a four-star menu made from local food.

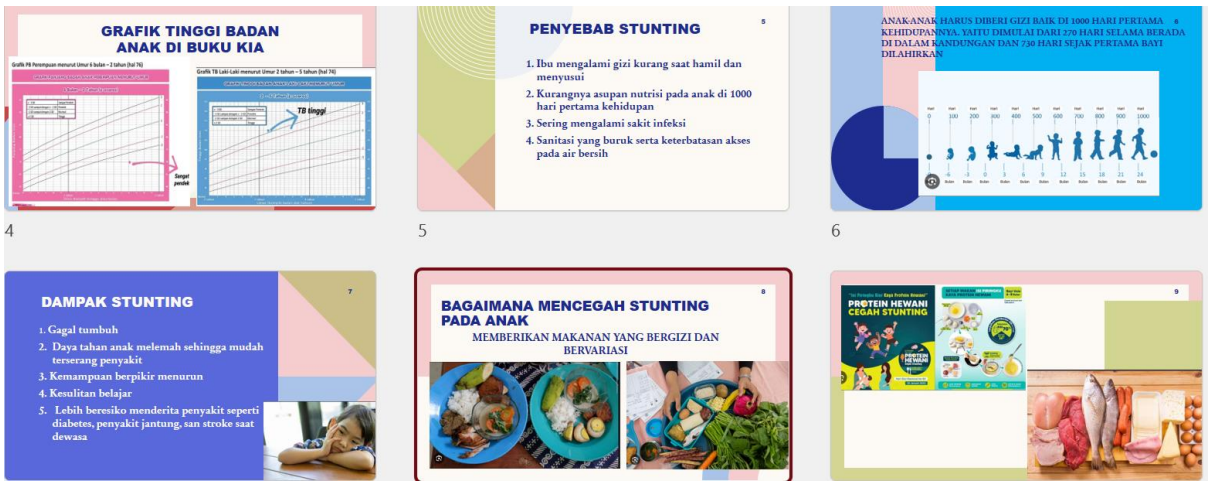

Figure 1. Community Service Material

Implementation stage

This community service program is organized into several sessions, including:

a. Pretest

   This step involves providing participants with written questions to assess the level of understanding among mothers regarding the stunting and balanced nutrition containing four-star for children. A time allocation of 20 minutes is provided for this activity

b. Delivery of Material

   The materials provided were stunting, stunting prevention and balanced nutritional elements needed by children, examples of how to process food containing balanced

nutritional elements using local food ingredients. The time allocation given is 20 minutes, followed by a question-and-answer session.

c. Role play and simulation

The speaker provided examples of food ingredients rich in essential nutrients for children, which are both affordable and easily accessible within the community. These included ingredients containing carbohydrates, plant-based proteins, animal proteins, and fiber. Additionally, the speaker demonstrated to the participants how to prepare and serve complementary foods for children meals, covering steps such as washing the food and processing them in ways that preserve their nutritional value.

A 4-star food menu, which includes four essential components, should be prepared and served in a single meal for children with the following elements:

1. Star 1 (30%): carbohydrates, can be rice, bread, sweet potatoes, cassava, potatoes, corn, taro, etc.
2. Star 2 (10%): vegetable protein, such as tofu, tempeh, green beans, soybeans, red beans, mushrooms, etc.
3. Star 3 (30%): animal protein, can use eggs, chicken, fish, beef, liver, etc.
4. Star 4 (25%): fiber that can be obtained from vegetables and fruits such as spinach, carrots, mustard greens, kale, bananas, papaya, oranges, avocados, etc.

   The examples of food sources above are food that are easily obtained in the Jember area at prices that are relatively affordable for the community. Role play and simulation last for 30 minutes. It is hoped that after participating in this activity, participants can have an idea of the creation of nutritious food for children that is obtained at a low price and sourced from local food ingredients. After observing the presenter simulating how to present a four-star menu, participants had the opportunity to demonstrate again how to present a four-star menu according to the participants' creations.

d. Postest

This activity was carried out at the end of the session, following the presentation, discussion, or simulation. It involves providing written questions to assess whether there has been an improvement in participants' skills and to evaluate the mothers' understanding of the balanced nutrition required for toddlers.

Figure 2. Documentation of Implementation of Community Service Activities

Statistical Analysis

The statistical analysis for this community service program involved univariate and bivariate analysis. Univariate analysis was utilized to describe the frequency distribution of maternal demographic characteristics, such as age, educational background, and occupation. Bivariate analysis was conducted to assess changes in maternal knowledge regarding stunting and balanced nutrition with four-star elements before and after the community service activities, using a chi square.

Results and Discussion

Table 1. Demographic Characteristics of Participants

No.	Characteristics	Frequency (%)
1	Age (year)	
	20-25	12 (24)
	25-30	18 (36)
	30-35	12 (24)
	>35	8 (16)
2.	Educational background	
	Elementary school	10 (20)
	Junior High School	14 (28)
	Senior High School	26 (52)
3.	Occupation	
	Working	12 (24)
	Not working	38 (76)

Most of the respondents in this study were 25-30 years old, had a junior high school education, and were unemployed.

Table 2. Pretest and Postest of Knowledge Level among Mothers

Variable	Pretest (Mean±SD)	Posttest (Mean±SD)	P Value
Knowledge about balanced nutrition with a four-star food menu	60,2±8.2	90,4±8.5	<.001

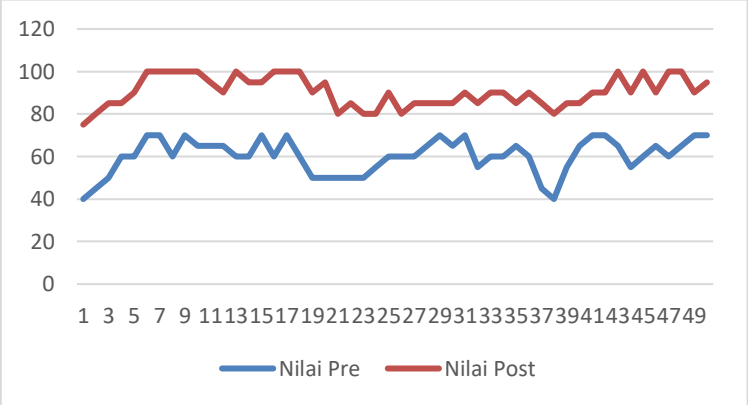

Figure 3. Distribution of Pretest and Postest Score of Mothers

Table 2 presents the pretest and posttest scores of the mothers, showing that before the balanced nutrition education activity, the average pretest score was 60.2. After the health education session, the average posttest score increased to 90.4, reflecting a 30.2-point improvement. Some mothers answered all posttest questions correctly, while the lowest posttest score was 80, indicating that at least 16 questions were answered correctly. A paired t-test analysis revealed a significant impact of the health education activity on the mothers' knowledge levels.

Discussion

This educational activity on balanced nutrition positively influences mothers' knowledge about the four-star menu, which plays a crucial role in preventing stunting. Similarly, educational initiatives focused on diversifying homemade complementary foods based on the four-star menu have demonstrated effectiveness in ensuring appropriate age-specific feeding practices. These activities also help mothers become more skilled and self-reliant in preparing four-star complementary foods (MPASI) using locally sourced, nutrient-rich ingredients (Rahmuniyati & Khasana, 2020).

The complementary feeding period is an important opportunity to prevent all forms of malnutrition in children, including stunted, underweight, micronutrient deficiencies, overweight, obesity, and diet-related noncommunicable diseases. In addition, complementary feeding from childhood is important because it can influence lifelong food preferences, tastes, and habits. Therefore, complementary feeding must be given appropriately. Children who are given the right foods, in the right way, at the right time in their development in sufficient quantities, are more likely to survive, grow, thrive, and learn. They are better prepared to thrive, even when faced with disease, disaster, or crisis (UNICEF, 2020).

The WHO suggests starting the first 14 days of complementary feeding (MPASI) with a single-ingredient menu, followed by a four-star menu (IDAI, 2018). The purpose of introducing a four-star MPASI menu is to ensure children receive adequate macro and micronutrients, helping to prevent stunting. Using local ingredients for MPASI offers several benefits, including enhancing mothers' understanding and skills in preparing MPASI that aligns with local traditions and socio-cultural practices. This enables mothers to provide local MPASI independently while also contributing to increased community income through the sale of locally produced agricultural goods (Putri et al., 2021; St. Nurbaya et al., 2022).

Conclusion

Educational community service activities on preparing four-star MPASI menus using local food ingredients, conducted in Karangrejo Village, have proven effective in enhancing parents' knowledge of creating four-star MPASI menus to prevent stunting in children. It is anticipated that similar initiatives can be implemented in other regions as part of broader efforts to reduce stunting rates in Jember Regency.

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References

Huang, S., Chen, Z., Chen, R., Zhang, Z., Sun, J., & Chen, H. (2022). Analysis of risk factors and construction of a prediction model for short stature in children. *Frontiers in Pediatrics*, *10*(December), 1–10. https://doi.org/10.3389/fped.2022.1006011

IDAI. (2018). *Pemberian Makanan Pendamping Air Susu Ibu (MPASI)*. https://www.idai.or.id/artikel/klinik/asi/pemberian-makanan-pendamping-air-susu-ibu-mpasi?utm_source=newsletter&utm_medium=email&utm_campaign=idai-newsletter&utm_content=Booklet+Pemberian+Makanan+Pendamping+Air+Susu+Ibu+%28MPASI%29

Liputo, S. A., Dahlan, S. A., Adam, B., Ladjiku, I., & Indonesia, D. (2022). Penyuluhan Mpasi Sehat Homemade 4 Bintang Berbahan Pangan Lokal Untuk Pencegahan Stunting Di Desa Moutong Kecamatan Tilongkabila. *Jurnal Pengabdian Masyarakat*, *1*(2), 89–93.

Margawati, A., & Astuti, A. M. (2018). Pengetahuan ibu, pola makan dan status gizi pada anak stunting usia 1-5 tahun di Kelurahan Bangetayu, Kecamatan Genuk, Semarang. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *6*(2), 82–89. https://doi.org/10.14710/jgi.6.2.82-89

Ministry of Health. (2018). *Hasil Utama RISKESDAS 2018 Provinsi Jawa Timur*. https://dinkes.kedirikab.go.id/konten/uu/22033-hasil-riskesdas-jatim-2018.pdf

Ministry of Health. (2022). *Buku Saku Hasil Studi Status Gizi Indonesia (SSGI) 2022*. https://kesmas.kemkes.go.id/assets/uploads/contents/attachments/09fb5b8ccfdf088080f2521ff0b4374f.pdf

Mohammed, E. A. I., Taha, Z., Eldam, A. A. A. G., Shommo, S. A. M., & El hidai, M. M. (2022). Effectiveness of a Nutrition Education Program in Improving Mothers' Knowledge and Feeding Practices of Infants and Young Children in Sudan. *Open Access Macedonian Journal of Medical Sciences*, *10*(E), 776–782. https://doi.org/10.3889/oamjms.2022.8842

Muleta, A., Hailu, D., Stoecker, B. J., & Belachew, T. (2021). Camel milk consumption is

associated with less childhood stunting and underweight than bovine milk in rural pastoral districts of Somali, Ethiopia: A cross-sectional study. *Journal of Nutritional Science*, *10*, 1–8. https://doi.org/10.1017/jns.2021.75

Omaghomi Jemide, J., Nkechi Ene-Obong, H., Effiong Edet, E., Emmanuel Udoh, E., & Julie Omaghomi Jemide, C. (2016). Association of maternal nutrition knowledge and child feeding practices with nutritional status of children in Calabar South Local Government Area, Cross River State, Nigeria. *~ 293 ~ International Journal of Home Science*, *2*(1), 293–298. www.homesciencejournal.com

Phyo, W. Y., & Aung, M. H. (2021). Mothers' Nutritional Knowledge, Self-efficacy, and Practice of Meal Preparation for School-age Children in Yangon, Myanmar. *Makara Journal of Health Research*, *25*(1). https://doi.org/10.7454/msk.v25i1.1262

Putri, S., Indriyani, R., & Novika, Y. (2021). Pelatihan Pembuatan MPASI Lokal Dengan Bahan Dasar Singkong Untuk Batita Pada Kader Posyandu Di Wilayah Kerja Puskesmas Hajimena Lampung Selatan. *Jurnal Pengabdian Kesehatan Beguai Jejama*, *2*(2), 29–36. https://doi.org/10.26630/jpk.v2i2.93

Rahayu, A., Yulidasari, F., Putri, A., & Anggraini, L. (2018). *Study Guide-Stunting dan Upaya Pencegahannya*. CV Mine.

Rahmuniyati, M. E., & Khasana, T. M. (2020). Edukasi Penganekaragaman Menu 4 Bintang (4*) Mp-Asi Homemade Sebagai Upaya Meningkatkan Status Gizi Balita. *Community Development Journal : Jurnal Pengabdian Masyarakat*, *1*(3), 410–415. https://doi.org/10.31004/cdj.v1i3.1099

Salman, Y., Santi, N. R. W., & Libri, O. (2020). Pengaruh Pendidikan Gizi Terhadap Pengetahuan dan Perilaku Ibu Tentang Gizi Seimbang Balita. *Jurnal Kesehatan Indonesia (The Indonesian Journal of Health)*, *X*(3), 122–127.

Sastre, L. R., Matson, S., Gruber, K. J., & Haldeman, L. (2019). A qualitative study examining medical provider advice, barriers, and perceived effectiveness in addressing childhood obesity to patients and families from a low-income community health clinic. *SAGE Open Medicine*, *7*, 1–9. https://doi.org/10.1177/2050312119834117

Soliman, A., De Sanctis, V., Alaaraj, N., Ahmed, S., Alyafei, F., Hamed, N., & Soliman, N. (2021). Early and long-term consequences of nutritional stunting: From childhood to adulthood. *Acta Biomedica*, *92*(1), 1–12. https://doi.org/10.23750/abm.v92i1.11346

St. Nurbaya, Hamdiyah, H., Nur Laela, Rosmawaty, R., & Resmawati, R. (2022). Pemanfaatan Bahan Lokal dalam Pembuatan Mp-Asi Sebagai Upaya Pencegahan Stunting di Desa Cenrana Kabupaten Sidrap. *ABDIKAN: Jurnal Pengabdian Masyarakat Bidang Sains*

Dan Teknologi, *1*(4), 436–441. https://doi.org/10.55123/abdikan.v1i4.900

Statistics Indonesia. (2019). *Laporan Pelaksanaan Integrasi Susenas Maret 2019 dan SSGBI Tahun 2019.* file:///C:/Users/acer/Downloads/Laporan-Pelaksanaan-Integrasi-Susenas-Maret-2019-dan-SSGBI-Tahun-2019.pdf

Sutyawan, Novidiyanto, & Wicaksono, A. (2022). Optimization the Utilization of Local Food that is Safe and Nutritious in Stunting Prevention Efforts in Ibul Village, West Bangka Regency. *Jurnal Pengabdian Kepada Masyarakat*, *6*(3), 566. http://journal.unhas.ac.id/index.php/panritaabdi

Ulfah, I. F., & Nugroho, A. B. (2020). Menilik Tantangan Pembangunan Kesehatan di Indonesia: Faktor Penyebab Stunting di Kabupaten Jember. *Jurnal Sosial Politik*, *6*(2), 201–213. https://doi.org/10.22219/sospol.v6i2.12899

UNICEF. (2020). *Improving Young Children's Diets During the Complementary Feeding Period*. https://www.unicef.org/media/93981/file/Complementary-Feeding-Guidance-2020.pdf

UNICEF. (2021). *Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2021 edition*. https://www.who.int/publications/i/item/9789240025257

WHO. (2015). *Stunting in a nutshell*. https://www.who.int/news/ item/19-11-2015-stunting-in-a-nutshell

Yuliantini, E. (2023). the Linkage Between Mother ' S Knowledge. *Star Shine Medical Journal*, *3*(January), 111–117.