e-ISSN 3026-2771
p-ISSN 3026-1554

Blambangan Journal of Community Services (BJCS)
https://blambangan-scholar.com/index.php/BJCS
Vol. 3 No. 1 (2025): June

Optimizing Child Feeding with Bento-Ku to Increase Dietary Variation and Protein Intake of Children Based on Local Foods

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Abstract

Stunting is a chronic nutritional problem in children that can affect their growth and development. The role of nutrition in the first two years of a child's life plays a very important role in preventing nutritional problems, ranging from stunting to other forms of malnutrition. Proper breastfeeding and complementary feeding are one way to reduce the risk of stunting in children, and are also one of the approaches taken by the government in reducing stunting. One of the approaches that can be taken in optimizing the prevention or reduction of stunting or malnutrition is to increase understanding and efforts to change behavior, especially among the elderly. Efforts to overcome stunting can require support from various parties, both from health service centers and from community participation, in this case, parents and posyandu cadres. Good knowledge of posyandu mothers and cadres can play an important role in realizing a better degree of public health, especially in terms of preventing nutritional disorders such as stunting. This health education activity began with mothers and toddlers being measured first for their knowledge through a pre-test. Health education activities are carried out by giving lectures, Bento-making demonstrations, and discussions. After the health education activity, the mother will again measure her knowledge with a post-test. Measurement. This community service is to increase the knowledge and practice of mothers' complementary foods through a health education approach and increase the variety of children's food with the local food-based bento demonstration method. Before health education activities and Bento making demonstrations, mothers had low knowledge of 32 people, mothers who had moderate knowledge of 12 people, and those who had high knowledge of 8 people. After health education activities and Bento making demonstrations, there were 40 (76%) mothers with a moderate level of knowledge and 12 (24%) others with a high level of knowledge. With health education and demonstrations, mothers' knowledge about stunting and the variety of children's diets increased.

Keywords: Bento; Complementary feeding ; Food variety ; Stunting.

Introduction

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). 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 remains the primary concern in Indonesia because the number of stunted children remains high compared to the rest of the world. Stunting becomes an indicator of student grade. Stunted children have a prolonged negative impact on language, mathematics, and average

grade (Haywood & Pienaar, 2021). The problem will not stop in childhood; the failure of growth also has consequences on human, social and capital life in adulthood (Hoddinott et al., 2013). Children's nutrition at an early age must be promoted to increase their quality of life and social growth (González-Fernández et al., 2024). Stunting prevention must be initiated to prevent delayed development, especially in their first 3 years of life (Muhammad R. D. Mustakim et al., 2022).

Education is one of the keys to improving maternal knowledge. Previous research shows that nutrition education can enhance maternal knowledge on stunting (Astuti et al., 2023). Maternal education before giving birth to the children or when they are new moms is an option to increase their complementary feeding knowledge (Lubis et al., 2023). Mother's knowledge eventually related to their complementary feeding practice (Kesehatan et al., 2025). Better complementary feeding practice will increase their children's weight (Nafista et al., 2023). Complementary feeding based on local food has become a choice to increase maternal knowledge on child feeding (Rahmawati et al., 2021). Choosing a better quality of food, which is a direct practice especially for mothers with 6-month-old children, can reduce stunting risk (Sani et al., 2023). Food Art is usually used to increase children's appetite and interest in food. By giving education and practice on food art, children become more interested in food (Safitri et al., 2023). For example, the maternal skill in practicing bento increases by attending the research on bento creation (E. Rachmawati et al., 2020). Given the background mentioned, the researchers are interested in increasing parents' knowledge of food variety and child feeding in Karangrejo Village, Jember Regency, using a menu prepared from local ingredients.

Identification of Problems

Preliminary interviews with local posyandu cadres in Karangrejo Village showed a lack of information and knowledge among parents about children's food variation. The complementary feeding did not contain foods. Most of the mothers used ready-to-eat meals from early feeding. The reason for those feedings was their convenience and low cost.

Most mothers still think that milk is the main food source for children. Mothers tend to choose to give formula milk to their children. Children are also given fast food, such as nuggets and sausages. Children are also introduced to foods such as packaged snacks and other packaged

drinks. This poor eating habit is the reason for children to experience growth problems. Some mothers state that they give only their children's favorite foods because their children are fussy about eating. This is the basis for children's poor diversity of food in this area.

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 food variety for the children. The education consists of a food group of cereal/tubers, animal protein, milk, eggs, beans, vegetables rich in vitamin A, other fruits, other group of vegetables, and fat/oil. It was then followed by a demonstration on how to make a bento box that meets these nutritional requirements using local food ingredients, to make children interested in consuming the food and increasing their food variety. The bento-making process was done by the mother and children together.

Preparation Stage

The implementation of this community service initiative commenced with obtaining official authorization from the Head of Karangrejo Village. Following this approval, coordination efforts were undertaken with the integrated health post (Posyandu) cadres to align on the objectives and procedural stages of the program. Subsequently, the cadres conducted home visits to inform mothers about the initiative. Mothers with children under five who expressed willingness to participate were issued written invitations indicating the scheduled date, time, and venue at the Karangrejo Village Office.

During this phase, a questionnaire was used to evaluate the mothers' knowledge regarding dietary diversity, utilizing the Individual Dietary Diversity Score (IDDS) as the assessment tool. Concurrently, a PowerPoint presentation was developed as an educational medium to support the community service activities, highlighting issues related to stunting and promoting diverse food sources, particularly those based on locally available ingredients. Furthermore, a collaborative activity was conducted with the participating mothers to create various nutritious bento meals tailored for young children.

Implementation stage

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

a. Pretest

This step involves providing participants with written questions to assess mothers' knowledge of food variation. A time allocation of 20 minutes is provided for this activity.

b. Delivery of Material

The materials provided were stunting, stunting prevention, and food variety, showing the example of food in a bento box. And lastly, the benefit of the bento box for children's daily food is using local food. The time allocation given is 20 minutes, followed by a question-and-answer session.

c. Role play and simulation

The speaker introduced affordable, locally available food ingredients rich in essential nutrients for children, including sources of carbohydrates, plant-based and animal proteins, and fiber. A practical demonstration was also conducted, illustrating proper preparation and serving techniques for complementary foods. Emphasis was placed on food hygiene, such as thorough washing, and cooking methods that help retain nutritional value.

Complementary feeding varieties needed to be served and prepared using the following elements:

1. Starchy staples
2. Other vitamin A-rich fruits and vegetables
3. Dark green leafy vegetables
4. Other fruits and vegetables
5. Organ meat
6. Meat and fish
7. Egg
8. Legumes, nuts, and seeds
9. Milk and milk products

The food sources mentioned above consist of ingredients readily available in the Jember area and generally affordable for the local community. A 30-minute role-play session was conducted to simulate preparing a bento meal. This activity aimed to give participants practical insights into creating nutritious meals for children using low-cost, locally sourced ingredients.

Following the demonstration, it was observed that the mothers enjoyed the bento-making process, especially when engaging with their children.

D. Postest

This activity occurred at the session's conclusion, after the presentation, discussion, or simulation. It involved distributing written questions to assess the participants' progress and to evaluate the mothers' understanding of the balanced nutrition needed for toddlers.

Figure 1. 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 complementary feeding and food variety before and after the community service activities, using a chi-square.

Results and Discussion

Prior to the health education sessions and bento-making demonstrations, eight mothers demonstrated a high level of knowledge, 12 exhibited a moderate level, and 32 had a low level of knowledge. Following the interventions, the number of mothers with a high level of knowledge increased to 12, while 40 achieved a moderate level. Statistical analysis using the

Chi-Square test revealed a significant difference in knowledge levels before and after the intervention.

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

Variabel		**Pretest**		**Postest**		
	Value	**n**	**(%)**	**N**	**(%)**	**P- value**
Knowledge Level						**0,000**
High		8	15,5	12	26	
Moderate		12	23	40	74	
Low		32	61.5	0	0	
Total		52	100	30	100	

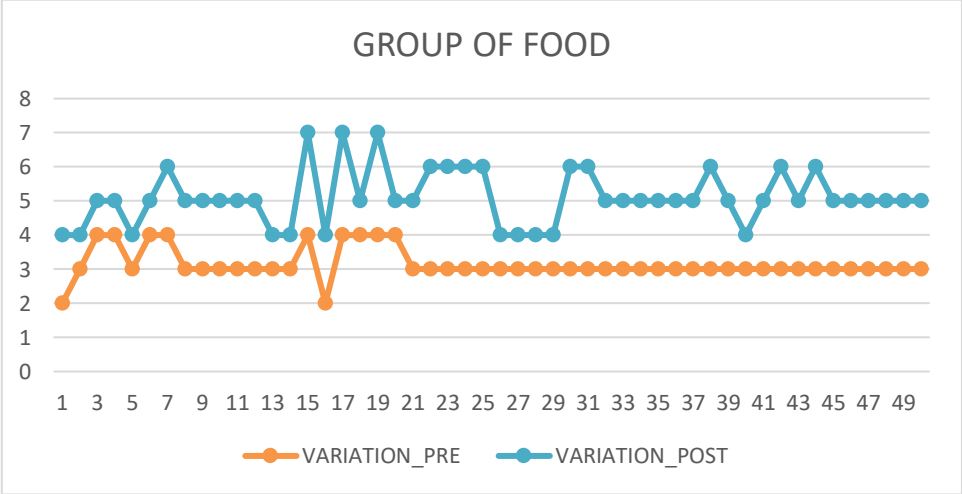

Figure 2. Distribution of Pretest and Postest Score of Mothers

These findings indicate that combining health education, counseling on stunting, and practical bento-making demonstrations effectively enhanced mothers' understanding, particularly regarding dietary diversity for children. The food groups assessed included milk, fats, animal-based protein, legumes, other fruits, rice, vitamin A-rich fruits, eggs, and combinations of five diverse food groups, and other groups such as vegetables and fruit also increased significantly. After the intervention, groups showed increased consumption of milk, fats, legumes, rice, fruits, and vegetables. The average food group knowledge of mothers increases significantly from the given figure. It can be seen that most mothers understand the food they need for their children.

The educational materials used during this community service activity incorporated visual media. Research has shown that learning through illustrated books or pictorial materials can significantly enhance learning engagement and motivation compared to text-only books (Kasmaienezhadfard et al., 2015). Following the delivery of the material, discussions were held between the mothers and the researcher, focusing on food diversity for children and bento preparation. Brainstorming during nutrition education sessions has effectively increased maternal knowledge about complementary feeding (Yanniarti et al., 2022). Nutrition education continues to be a key focus in various regions of Indonesia, as it plays a critical role in shaping dietary habits, influencing behavior change, and ensuring children receive a balanced diet that meets their nutritional requirements (Fa'ni et al., 2020; Fadlina et al., 2020; Widyaningrum et al., 2021; Wiralis et al., 2017). Educational approaches that combine presentations and hands-on demonstrations have been proven to enhance mothers' knowledge and attitudes (Akinrinmade et al., 2019).Moreover, nutrition education promotes the use of diverse local food sources, thereby improving parental feeding practices. Regular Infant and Young Child Feeding (IYCF) education is essential, as many mothers still lack adequate understanding—particularly in selecting appropriate foods—contributing to persistent nutritional problems among children (Widaryanti et al., 2020). Food variety always become part of child feeding indikator to improve their status of health (Nafista et al., 2022).

As demonstrated in Malawi, nutrition education has been shown to enhance dietary diversity among children, including increased consumption of nutrient-rich foods such as eggs and nuts (Kuchenbecker et al., 2017). Feeding the child should be adapted to the child's needs and given at the right time. Feeding children must meet at least five of the eight food groups ranging from

a) breast milk; b) Rice/tubers/food derived from the roots; c) Nuts and seeds; d) Dairy products (formula milk, milk, yogurt, and cheese); e) Meat (beef, fish, animal organs and other animal parts); f) Eggs; g) Vegetables and fruits rich in vitamin A; h) Other vegetables and fruits (WHO, 2021). For example, incorporating eggs into a child's diet can significantly contribute to vitamin A and iron intake, which are essential in preventing malnutrition (Yonar & Özturan Şirin, 2022). Increased maternal knowledge has been strongly associated with improved child-feeding practices(Parvin et al., 2021). Increasing maternal knowledge and attitude will give better feeding for the children (Nafista et al., 2023). Mothers with higher nutritional knowledge are more receptive to adopting new ideas and innovations to enhance child nutrition (Fa'ni et al., 2020). Community-based education initiatives have proven effective in strengthening mothers' child-feeding practices (Forsido et al., 2019).

Bento is one of the solutions that can be done to improve children's eating practices. Mothers' abilities and skills are increased with Bento making training, and improving the quality of children's food appearance can be an alternative to child feeding (Cerdasari et al., 2019). By developing a parenting program for making Bento based on local ingredients, mothers' knowledge increases, so it is one way to prevent stunting in children (Zahra et al., 2024). In this community service, rice decorating activities were also carried out with mothers and children. With this activity, the mother and child seemed more excited, and the same thing happened when the mother decorated the yellow rice. With this activity, mothers and children are increasingly interested in improving children's nutrition in a balanced manner because of the presentation of interesting food with Bento (S. R. Rachmawati & Sri, 2019).

Conclusion

It can be concluded that by educating mothers and practicing child feeding, mothers' knowledge about child feeding and its variations can be increased. Mothers can provide more varied foods and make children interested in eating them. With this community service, it is hoped that mothers can have better knowledge and practices in feeding children to prevent malnutrition.

Acknowledgments

This community service is funded by LPPM dr. Soebandi University Jember.

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