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FOOD DIVERSIFICATION TO IMPROVE THE NUTRITIONAL STATUS OF CHILDREN AGED 6-24 MONTHS THROUGH COLLABORATION BETWEEN HEALTH WORKERS AND THE COMMUNITY IN SUKAMAJU VILLAGE, TAMBELANG DISTRICT

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ABSTRACT

Nutrition problems in children aged 6–24 months remain a public health challenge, especially during the period of complementary feeding. Lack of food variety, limited knowledge among mothers, and the suboptimal role of health workers are risk factors for nutrition problems. This community service activity aims to improve children's nutritional status through a food diversification program based on collaboration between health workers and the community in Sukamaju Village, Tambelang District. The methods used in this activity included identifying nutritional problems, providing education on complementary feeding based on local foods, training on menu diversification, health worker assistance, and evaluating the nutritional status of children aged 6–24 months. A total of 26 mothers and health workers were involved in this activity, which lasted for one day. The evaluation was conducted through weight measurements, knowledge assessments, and observations of complementary feeding practices. The results of the activity showed proportion of mothers with good knowledge increased from 23,1% to 61,5%, while the proportion with poor knowledge decreased dramtically from 38,5% to 7,7%. This collaborative program effectively raised community awareness about the use of local foods as a source of nutrition for children. It was concluded that collaboration between cadres and the community through a participatory approach can improve the quality of complementary feeding.

Keywords: Complementary Feeding, Food Diversification, Health Workers, Nutritional Status.

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INTRODUCTION

Nutrition problems in children aged 6–24 months remain a major challenge in public health, especially during the period of complementary feeding (Mufida, Widyaningsih, and Maligan 2020). Naccuracies in the variety, quality, and frequency of complementary feeding can lead to suboptimal nutrient intake, which in turn affects child growth (Huddina 2024). Many mothers do not understand the principles of food diversification according to the age and developmental needs of children. Monotonous feeding practices, dominated by carbohydrates and low in animal protein, are still commonly found at the community level. In addition, the role of health cadres in nutrition education has not been maximized in a systematic and sustainable manner. This condition has the potential to increase the risk of malnutrition and growth and development disorders in children (Muflih et al. 2025).

According to the WHO, in 2019 there were 144 million toddlers (21.3%) worldwide who were stunted, and this number rose to 148.1 million (22.3%) in 2022. The majority of cases occur in Asia, with the largest proportions in South Asia (58.7%) and Southeast Asia (14.9%) (Indonesian Ministry of Health, 2018; Mutingah & Rpkhaidah, 2021). UNICEF et al. (2021) reported that the prevalence of stunting in Indonesia reached 31.8%, making Indonesia the country with the second-highest rate in Southeast Asia after Timor-Leste (48.8%). According to the Indonesian Nutrition Status Survey (SSGI), the national prevalence of stunting in 2022 reached 21.6%, while the national target for 2024 is 14% (Indonesian Ministry of Health, 2024).

Data from SSGI show that in 2022, the stunting rate in West Java Province reached 20.2% (Yasinta et al., 2023). The stunting rate in Bekasi Regency was 1.7%, while the service area of the Cikarang Community Health Center recorded a rate of 3.6%. Children aged 6–24 months are the most vulnerable group because they are in the transition period from exclusive breastfeeding to family foods (Marfuah, Pertiwi, and Kusudaryati 2022). At the community level, the variety of foods consumed by children often fails to meet the principles of minimum dietary diversity (Muflih et al., 2025) (Suminar, 2024). Preliminary findings in Sukamaju Village indicate that there are still children whose weight-for-age (WFA) falls into the category at risk of malnutrition. Interviews with mothers also revealed a low diversity of complementary foods provided daily. This illustrates that nutrition issues are not only a national concern but also a reality at the village level.

Based on field observations, most mothers have provided complementary foods, but have not paid attention to the principles of balanced nutrition and age-appropriate texture. Feeding patterns tend to be influenced by family habits and limited information. Previous education has been sporadic and unstructured, so mothers' understanding has not been optimal. On the other hand, health cadres have great potential as agents of change, but have not received specific training on diversifying complementary foods based on local foods. Discussions with village officials indicate a need for programs that are not only

educational in nature, but also involve hands-on practice and ongoing assistance. These conditions form the basis for the need for community empowerment-based interventions.

To address these issues, community service activities were carried out using a community empowerment approach through participatory education and cadre assistance. This strategy was chosen because it actively involved mothers and cadres in the learning process and food diversification practices (Pomalango, Hutuba, and Purwanto 2025; Suminar 2024). The program focused on increasing knowledge, skills in creating menus based on local foods, and strengthening the capacity of cadres in nutrition counseling (Sayur and Kendal 2025; Weyai and Winarti 2025).

A demonstration on how to prepare complementary foods based on the "four-star menu" concept was held to improve mothers' practical understanding. Ongoing guidance was provided so that public health workers could continue their learning independently within their respective communities. The demonstration followed the guidelines set forth in the Complementary Feeding Recipe Book published by the Ministry of Health of the Republic of Indonesia. Evaluation through pre- and post-tests and monitoring of nutritional status is conducted to assess the effectiveness of the intervention in improving complementary feeding practices and children's nutritional status.

OBJECTIVES

Community service activities began with an assignment from the Rector of Medika Suherman University, as stated in assignment letter number…….

General Purpose

The main objective is to increase the knowledge of cadres and the community about improving the nutritional status of children aged 6-24 months through food diversification.

Special Purpose

We evaluated knowledge about food diversification for improving the nutritional status of children aged 6-24 months through collaboration between cadres and the community.

PLAN OF ACTION

Strategy Plan

1. Coordinate the community service team.
2. Organize the implementation and distribute team tasks.
3. Prepare health education materials and presenters.
4. Develop modules on improving nutritional status.
5. Coordinate with village cadres and communities.
6. Prepare the seminar location.

Implementation

The detailed implementation of these activities is as follows:

1. Form an event committee consisting of a catering team, speakers, moderators, and a documentation team.
2. Conduct a pre-seminar test for youth seminar participants on the seminar topic to determine their level of knowledge before the seminar begins.
3. Open the seminar with an opening speech by the activity leader, delivered by the head of community services.
4. Present seminar material on the topic of

improving the nutritional status of children aged 6-24 months, including how to diversify food in Sukamaju Village through collaboration between cadres and the village community.

5. Conducting a post-seminar test for seminar participants on the topics presented to determine their level of knowledge after the seminar.
6. Conducting training with demonstrations on how to prepare foods that improve nutritional status.
7. Seminar participants, consisting of cadres and the village community, are able to implement and understand food diversification to improve the nutritional status of children.

Setting

That event was held in a village hall in Sukamaju, Tambelang District, Bekasi Regency.

Target

26 mothers and children attended the seminar.

RESULTS AND DISCUSSION

Tabel 1. Respondent Characteristics (Mother and child) (n = 26)

Karakteristik	Frequency(n)	Percentage (%)
Mothers age		
< 20 years old	3	11,5
20–35 years old	18	69,2
> 35 years old	5	19,3
Mothers Education level		
Elementary School	6	23,1
Junior High School	9	34,6
High School	8	30,8
High Education Institution	3	11,5
Childs age		
6–12 months	12	46,2
13–24 months	14	53,8
Childs gender		
Male	14	53,8
Female	12	46,2

Most mothers were in the productive age range of 20–35 years (69.2%), with educational levels dominated by junior high school graduates (34.6%) and high school graduates (30.8%), indicating that the majority of respondents had a secondary education background. Based on the characteristics of the children, the proportion of those aged 13–24 months is slightly higher (53.8%) than those aged 6–12 months (46.2%), and the number of boys (53.8%) is slightly higher than girls (46.2%). This condition illustrates that the target of the activity is mothers of productive age with children in the critical period for complementary feeding.

Tabel 2. Average Score of Mothers' Knowledge about Complementary Feeding Before and After Education

Variabel	Mean	SD	Min–Max
Pre-test	6,85	2,31	2–11
Post-test	10,12	2,05	6–14
Increasing differences	3,27	1,42	–

The results of the analysis show that the average score of mothers' knowledge about complementary feeding increased from 6.85 (SD = 2.31) in the pre-test to 10.12 (SD = 2.05) in the post-test. The

range of scores also shifted upward, from 2–11 before education to 6–14 after the intervention. The average increase of 3.27 (SD = 1.42) indicates that the education provided was effective in improving mothers' understanding of complementary feeding.

Tabel 3. Changes in Mothers' Knowledge Categories about Complementary Feeding

Knowledge	Pre n (%)	Post n (%)
Good	6 (23,1%)	16 (61,5%)
Sufficient	10 (38,5%)	8 (30,8%)
Insufficient	10 (38,5%)	2 (7,7%)

The distribution of knowledge categories showed significant changes after the educational intervention. The proportion of mothers with good knowledge increased from 23.1% to 61.5%, while the proportion with poor knowledge decreased dramatically from 38.5% to 7.7%. These results indicate that the complementary feeding diversification education program was effective in shifting mothers' knowledge levels from low and adequate categories to better categories.

Tabel 4. Average Score for MP-ASI Diversification Practices

Variable	Mean	SD
Before intervention	7,92	0,56
After intervention	8,65	0,48
Improvement	0,73	0,22

The average score for MP-ASI diversification practices increased from 7.92 (SD = 0.56) before the intervention to 8.65 (SD = 0.48) after the intervention. The difference of 0.73 (SD = 0.22) indicates a positive change in MP-ASI feeding practices by mothers. These findings indicate that the education and guidance provided were able to encourage improvements in mothers' behavior in applying food variety to their children.

Tabel 5. Changes in Children's Nutritional Status (BB/U)

Nutritional status	Before n (%)	After n (%)
Good nutrition	15 (57,7%)	19 (73,1%)
Poor nutrition	9 (34,6%)	6 (23,1%)
Malnutrition	2 (7,7%)	1 (3,8%)

There was an improvement in children's nutritional status after the intervention, as indicated by an increase in the proportion of children in the good nutrition category from 57.7% to 73.1%. At the same time, the percentage of children with poor nutrition decreased from 34.6% to 23.1%, and malnutrition also decreased from 7.7% to 3.8%. These results indicate that education and the practice of diversifying complementary foods contributed positively to improving children's nutritional status based on the weight-for-age indicator.

Tabel 6. Paired t-Test for Knowledge Improvement Among Mothers

Variable	Mean	SD	t hitung	Sig. (p)
Pre–Post Knowledge	3,27	1,42	8,214	0,000

The results of the paired t-test showed a significant increase in mothers' knowledge after receiving education, with an average score difference of 3.27 (SD = 1.42). The t-value was 8.214 with a significance level of $p = 0.000$ ($p < 0.05$), indicating that the difference between the

pre-test and post-test was statistically significant. These findings indicate that the educational intervention was effective in increasing mothers' knowledge about complementary feeding.

Tabel 7. Testing the Effect of MP-ASI Diversification on Children's Nutritional Status

Variable	R	R Square	Sig
Praktik Diversification Practices → Nutritional Status	0,412	0,170	0,032

The results of the analysis show a significant relationship between MP-ASI diversification practices and children's nutritional status, with a correlation value of 0.412, which is classified as a moderate relationship. The R Square value of 0.170 indicates that MP-ASI diversification practices contribute 17% to changes in children's nutritional status. The significance value of $p = 0.032$ ($p < 0.05$) confirms that this effect is statistically significant.

Tabel 8. The Role of Cadres in Improving Mothers' Knowledge

Variable	R	R Square	Sig
Cadre Education → Mother's Knowledge	0,389	0,152	0,049

The results of the analysis show a relationship between the education provided by cadres and an increase in mothers' knowledge, with a correlation value of 0.389, which is classified as a moderate relationship. The R Square value of 0.152 shows that the role of cadres contributes 15.2% to the increase in mothers' knowledge about MP-ASI. The significance value of $p = 0.049$ ($p < 0.05$) indicates that the effect of cadre education on mothers' knowledge is statistically significant.

Figure 1. Provision of Food Diversification Materials

Figure 2. Collaboration assistance between cadres and the community of Sukamaju village

The results show that the majority of mothers are of productive age, between 20 and 35 years old (69.2%), with most having a junior high school or high school education, indicating that the target group is at an optimal stage to receive health information. The increase in mothers' knowledge about complementary feeding was clearly seen from the increase in the average score from 6.85 to 10.12, with an increase of 3.27. Categorically, good knowledge increased from 23.1% to 61.5%, while poor knowledge decreased

dramatically from 38.5% to 7.7%. MP-ASI diversification practices also improved, with the average score increasing from 7.92 to 8.65 after the intervention. This change was in line with improvements in children's nutritional status, where the proportion of good nutrition increased from 57.7% to 73.1%, and poor nutrition decreased from 7.7% to 3.8%. Statistical test results showed a significant increase in knowledge with a t-value of 8.214 and p=0.000. In addition, the practice of diversifying complementary foods was associated with the nutritional status of children (R=0.412; p=0.032) and the role of cadres contributed to increasing mothers' knowledge (R=0.389; p=0.049).

Theoretically, the age of mothers in their productive years affects their ability to receive and process health information, making it easier for behavioral changes to occur (Dąbek et al. 2024). The secondary education of most respondents also supports the process of understanding the educational material provided. The theory of health behavior change states that increasing knowledge is an important first step in forming better attitudes and practices (Ryan, 2009). Appropriate diversification of complementary foods can increase the intake of energy, protein, and micronutrients needed by children during their rapid growth period between 6 and 24 months of age. The four-star menu concept, which combines carbohydrates, animal protein, plant protein, and vegetables and fruits, is a recommended approach to achieving balanced nutrition (Sary 2024). The role of health cadres as community educators is also supported by community empowerment theory, which emphasizes the importance of local agents of change in improving health status (Rahma et al. 2025; Wandira 2025; Zalianty 2025). The relationship between feeding practices and children's nutritional status is also explained in nutritional determinant theory, which places diet as a direct factor influencing growth.

The results of this activity show that collaboration between cadres and the community is an effective strategy for improving knowledge and practices related to complementary feeding. The significant increase in knowledge indicates that the participatory education approach is able to respond to mothers' contextual information needs. Changes in food diversification practices, although not particularly large in terms of numbers, indicate a developing process of behavioral adaptation. The improvement in children's nutritional status that is beginning to be seen is an indicator that community-based interventions have a real impact even when carried out in a relatively short period of time. The contribution of diversification practices to nutritional status of 17% shows that there are still other influencing factors, such as economic conditions, sanitation, and parenting patterns. The role of cadres, who contributed 15.2% to the increase in mothers' knowledge, reinforces the importance of strengthening the capacity of cadres as the spearhead of health education in villages. Therefore, sustainable assistance programs involving cadres, families, and the wider community need to be continuously developed so that behavioral changes can be sustained and have a long-term impact on children's nutritional status.

CONCLUSION

This study shows that the complementary feeding diversification

program conducted through collaboration between cadres and the community has a positive impact on improving mothers' knowledge, complementary feeding practices, and the nutritional status of children aged 6–24 months. The education provided proved effective in significantly improving mothers' knowledge scores, as indicated by a significant difference between pre- and post-intervention scores. This increase in knowledge was followed by changes in mothers' behavior in MP-ASI diversification practices, as seen in the increase in average practice scores after assistance. Improvements in feeding practices also contributed to improved child nutritional status, marked by an increase in the proportion of children in the good nutrition category and a decrease in the number of children with poor and malnourished nutrition. The results of the analysis showed that MP-ASI diversification practices had a significant relationship with child nutritional status, although their contribution was not entirely dominant as it was still influenced by other factors. In addition, the role of cadres has been proven to have a real contribution in improving mothers' knowledge through structured and continuous education.

Overall, a collaborative approach between health workers and the community can be an effective strategy for supporting improvements in children's feeding practices and enhancing nutritional status in early life. Community members, health volunteers, and breastfeeding mothers can receive early training on how to properly prepare complementary foods at Posyandu clinics, starting from the first day of pregnancy, so that they are prepared when the baby is ready to begin eating complementary foods.

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