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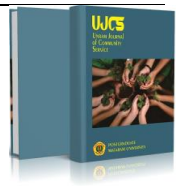

# Preventing Stunting by Improving Nutrition Through the Provision of Animal Protein (Eggs)

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**Abstract:** Stunting remains a significant public health problem in Indonesia, with long-term consequences for child development and human capital quality. One of the underlying causes is the low intake of animal-source protein, which plays a crucial role in supporting children's growth and cognitive development. This community service program aimed to prevent stunting by providing nutrition education and distributing eggs as an affordable, accessible, and nutrient-dense source of animal protein. The method applied was Participatory Action Research (PAR), consisting of stages such as socialization, nutrition education, egg distribution to families with toddlers, and monitoring of both egg consumption and parental nutrition knowledge. The results indicated an improvement in parental understanding of the importance of animal protein, an increase in the frequency of egg consumption among toddlers, and active involvement of local health cadres in nutrition monitoring. The discussion links local findings with recent evidence highlighting the role of eggs in improving child nutrition, while emphasizing that sustained interventions are needed for significant impacts on linear growth. This program contributes to the national target of stunting reduction and strengthens household nutrition resilience in the partner village.

**Keywords:** Animal Source Protein, Community Service, Eggs, Nutrition, Stunting.

## Introduction

Stunting remains a serious health problem in Indonesia because it impacts the quality of human resources in the future (Angelina et al., 2024; Mu'tafi et al., 2024). The Indonesian Nutritional Status Survey (SSGI) data shows that the prevalence of stunting in 2023 is still at 21.5%, although it decreased to 19.8% in 2024 (KEMENKES, 2025). This figure is still far from the 2029 RPJMN target of 14.2%, necessitating effective cross-sectoral interventions. Stunting has long-term implications for cognitive growth, productivity, and national competitiveness (BKKBN, 2023).

One of the key factors in preventing stunting is ensuring balanced nutrition, especially during the first 1,000 days of life. Animal protein intake is an important component in supporting linear growth and brain development (WHO, 2023). WHO, through its latest 2023 guidelines, emphasizes the importance of animal-source foods (ASF) such as meat, fish, and eggs in the diets of children aged 6–23 months. Unfortunately, animal protein consumption in some rural areas of Indonesia remains low due to limited access, inadequate knowledge, and traditional habits (Syitra et al., 2025).

Eggs are a relatively inexpensive and easily accessible source of animal protein, and they contain complete nutrients for children's growth (Ernawati et al., 2024; Mustafa et al., 2024). Recent scientific evidence suggests that egg supplementation interventions have the potential to improve the growth of young children. Research in Bangladesh found that daily egg consumption improved children's weight status,

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although it did not significantly impact linear growth (Pasqualino et al., 2024). Meanwhile, a study in Honduras reported that egg-based interventions increased nutritional intake and supported children's health (Palacios et al., 2024). This strengthens the position of eggs as a practical solution in community stunting prevention programs.

In Ngadiluwih Village, as a partner village, the lack of nutritional knowledge and minimal consumption of animal protein are obstacles in efforts to reduce stunting. The majority of families still rely on carbohydrate-based staple foods without a balanced intake of quality protein (Asyfiradayati et al., 2024; Hamidah et al., 2021). This condition puts young children at risk of malnutrition, which impacts their long-term growth and health. Therefore, a service program is needed that synergizes nutrition education with the regular provision of eggs as a form of tangible intervention.

This community service program aims to increase families' understanding of the importance of animal protein and encourage increased egg consumption in toddlers. Through educational activities, egg distribution, and regular monitoring, it is hoped that the local village community can sustainably adopt a balanced and nutritious diet. Thus, this program not only supports the achievement of national targets for reducing stunting but also contributes to improving the quality of life for future generations.

## Method

This community service activity was carried out using the Participatory Action Research (PAR) approach, which emphasizes the active participation of the community from problem identification to results evaluation. This approach was chosen because the stunting problem in Ngadiluwih Village can only be addressed sustainably if the community is positioned as the primary agent of change, not merely as recipients of the program (KEMENKES, 2025; Syitra et al., 2025).

The initial phase of the program began with field observations and coordination with village officials, Posyandu cadres, and community leaders. This step is aimed at mapping the nutritional status of families, particularly households with young children, while also obtaining local institutional support. Next, a Focus Group Discussion (FGD) was held, bringing together parents of young children, Posyandu cadres, community leaders, and student mentors. The forum resulted in agreements regarding the form of intervention, the schedule for egg distribution, and mechanisms for monitoring consumption (WHO, 2023).

The main target of the activity is families with children aged 6–23 months because this group is in a period vulnerable to stunting. The total number of participants involved was 40 families, consisting of 35 families with toddlers and five pregnant or breastfeeding mothers. The target number was determined based on the results of the Posyandu cadre data collection, resource capacity, and considerations of relevance to program goals (BKKBN, 2023).

The next stage includes socialization and nutrition education focused on the role of animal protein in child growth. Parents received materials on the nutritional needs of toddlers, the dangers of stunted growth, and simple ways to incorporate eggs into a daily menu. After that, 5–7 tablets per week per child under five were distributed during the activity period. Every family is required to record their child's consumption through a simple food diary to facilitate monitoring (Pasqualino et al., 2024).

Monitoring is conducted routinely by Posyandu cadres and students through home visits. This activity aims to evaluate adherence to consumption, improve nutritional knowledge, and assess children's responses to the program. At the end of the activity, a reflection forum was held with all participants to review successes, obstacles, and strategies for sustainability. Through the implementation of PAR (Azami et al., 2025), this activity is expected not only to increase animal protein consumption but also to build collective community awareness in efforts to prevent stunting (Iannotti et al., 2017; Palacios et al., 2024).

## Result and Discussion

The stunting prevention program, which included providing eggs and nutrition education, was successfully implemented with the full support of the partner village community. Out of the 40 target families, the participation rate reached 95% throughout the series of activities. This high attendance indicates that the community is aware of and interested in participating in programs directly related to their children's health. Cross-group participation, encompassing housewives, pregnant women, and Posyandu cadres, fosters collaboration among community actors within the village. This finding supports previous research results indicating that community involvement is a key factor in the success of nutrition interventions (Dulkiah et al., 2023).

**Figure 1**. Discussion process with the PKK Chairperson

Egg distribution is conducted on a schedule, with 5–7 eggs provided to each toddler per week through the program. Based on food diary records, consumption adherence reached 82%, with diverse egg preparation methods such as boiled, scrambled, and mixed with vegetables. This finding is relevant to the research by Caswell et al. (2021), which confirms that variations in egg processing can increase children's acceptance of nutritious foods. Additionally, field monitoring results indicate an increase in animal protein intake among target families. Posyandu cadres who served as companions also successfully maintained the consistency of distribution and ensured families understood the program's objectives.

**Figure 2.** Data Collection and Distribution Process for Animal Protein (Eggs)

The final evaluation through a reflection forum showed an increase in parents' knowledge regarding the importance of animal protein. The average pre-test and post-test scores show a simple increase of approximately 30% in understanding the concept of balanced nutrition. This result aligns with the findings of Lowe et al. (2024), who reported that community-based educational interventions can significantly enhance nutrition literacy and improve child feeding practices. Additionally, parents reported feeling more confident in planning their children's daily menus by including eggs as a primary protein source.

**Figure 3.** Preparation for Handover of Animal Protein (Eggs)

The results of this activity demonstrate that a simple intervention, consisting of nutrition education and egg provision, can increase the practice of consuming animal protein among toddlers. This supports the WHO (2023) Recommendation, which emphasizes the importance of animal-source foods (ASF) in preventing stunting during the first 1,000 days of life. The increased egg consumption among toddlers found in this program demonstrates the potential for affordable and sustainable local food interventions.

**Figure 4.** Acceptance of Animal Protein (Eggs) by Children

Global research also supports the effectiveness of egg-based interventions. A randomized study in Ecuador (the Lulun Project) found that daily egg consumption for six months was able to reduce the prevalence of stunting by 47% in children aged 6–9 months (Iannotti et al., 2017). Although the findings in Bangladesh (Pasqualino et al., 2024) only showed

improvements in weight gain, evidence from Honduras (Palacios et al., 2024) demonstrated a positive impact on the overall family eating patterns. This shows that program outcomes can vary depending on the local social, economic, and cultural context.

Besides the consumption aspect, the increased nutritional knowledge among parents is also an important achievement. Good nutritional literacy is directly related to the quality of child feeding. A study by Tahreem et al. (2025) in South Asia, researchers found that mothers with a higher level of nutritional understanding were more likely to feed their children nutritious foods more frequently. In this program, education conducted through socialization and FGD plays an important role in building collective awareness. This participatory approach is consistent with the findings of Nichols (2021), who emphasized the importance of community involvement in designing nutrition interventions.

**Figure 5**. Nutrition Monitoring Activities

However, the impact of this short-term intervention remains limited to increased consumption and improved nutritional understanding. The effect on linear growth takes longer and requires integration with other factors, such as sanitation, maternal health, and access to basic healthcare services (Headey et al., 2020). Therefore, the sustainability of the program, achieved through synergy with Posyandu cadres, village governments, and cross-sectoral support, is essential. This program has great potential when combined with national initiatives, such as the Free Nutritious Meals Program, which was recently launched in 2024 to reduce the prevalence of stunting.

Thus, this program not only provides direct benefits in increasing animal protein consumption but also serves as a community-based collaboration model that can be replicated in other regions. This simple egg intervention is capable of making a real impact in supporting the stunting reduction target, while also strengthening family nutritional resilience in Ngadiluwih Village.

**Figure 6.** With the Managers of the Posyandu Drivers

## Conclusion

The community service program through nutrition education and the provision of eggs as an animal protein source proved effective in improving family nutrition understanding and practices in partner villages. The active participation of families, Posyandu cadres, and the support of the village government demonstrate that a participatory approach can create a sense of ownership and promote program sustainability.

From the implementation results, there was a regular increase in egg consumption among toddlers, supported by increased parental knowledge about the importance of animal protein. This suggests that good nutrition literacy can lead to changes in family consumption behavior. Although the impact on children's linear growth cannot be directly measured in the short term, this program provides an important foundation for establishing healthy eating habits that could potentially influence long-term growth.

Based on the success achieved, it can be concluded that the egg-based stunting prevention program is not only relevant but also has the potential to be replicated in other regions. To maximize impact, a collective commitment is needed to expand the target scope, extend the intervention duration, and integrate other aspects such as environmental sanitation and maternal health. With a comprehensive and sustainable approach, the ideal of reducing stunting prevalence in Indonesia is not just a target, but a necessity that can be achieved.

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