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Tempeh Croquettes (Stecu), a Delicious and Nutritious Snack, as a Traditional Healthy Food to Prevent Stunting

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Abstract

Background: Toddlers are prone to nutritional problems. For toddlers, the fulfillment of nutritional needs that are provided properly can help in the process of growth and development. Stunting is a condition of chronic malnutrition and recurrent infections in children, such as height below the average standard. Child stunting is a serious problem, as it is associated with a greater risk of morbidity and mortality, obesity, non-communicable diseases, poor cognitive development, and low productivity and income. One way to prevent and treat stunting is through supplementary feeding (PMT). PMT utilizing local resources, which are cheap and full of nutrients, such as tempeh, is recommended. **Purpose**: This community service was carried out to overcome the priority problem found in the TPMB Aquirini area. **Method:** The method used in this community service involves lectures, discussions, and demonstrations. The study targeted mothers who have toddlers and cadres who are active in posyandu. **Result:** The results of this community service, toddler mothers understand, and so do the staff of Posyandu, related counseling and complementary therapy "STECU" which can be applied to overcome stunting. **Conclusion**: Based on the evaluation conducted after the provision of counseling and the provision of additional food tempeh croquettes "STECU" during community service, the intervention provided went well and effectively, with the results of mothers who had toddlers, and also cadres were able to answer questions and could find out how to prevent and manage stunting in children

Keywords: stunting, tempeh, nutrition education, parent role

Introduction

Toddler are a prone to nutritional problems. For toddlers, the fulfillment of

nutritional needs that are provided properly can help in the process of growth and development. Stunting refers to a condition characterized by chronic malnutrition and recurrent infections in children, typically indicated by height-for-age measurements that fall below the standard average. This condition represents a significant public health concern, as it is closely linked to increased risks of morbidity and mortality, a higher likelihood of obesity and non-communicable diseases, reduced adult stature, impaired cognitive development, and diminished productivity and earning potential (Carolin et al., 2021). According to the 2019 Indonesian Toddler Nutritional Status Survey (SSGBI), Jakarta ranks 2nd with the lowest stunting rate after Bali province (Mirza & Putra, 2020). The 2021 Basic Health Research (Riskesdas) data shows that the stunting rate in DKI Jakarta has reached 22.0%, which is higher than the national average of 21.6%. At TPMB Aquarini located in Palmerah-West Jakarta, 8 cases of stunting were found in 2024 out of 75 toddlers.

Stunting can be prevented and mitigated by consuming balanced and nutritious diet. The Indonesia government has prioritized human capital development by accelerating stunting reduction programs. The Stunting Prevention Acceleration Team (Tim Percepatan Pencegahan Anak Kerdil/TP2AK) supports various multisectoral initiatives at the national, local, and international levels. One such initiative is the provision of supplementary feed (Pemberian Makanan Tambahan/PMT). PMT is a targeted nutritional intervention aimed at children under five years of age suffering from undernutrition. The primary objective is to improve the nutritional status of these children and meet their nutritional needs, thereby enabling them to attain optimal growth and development in accordance with their age. It is essential to emphasize that PMT for children aged 6 to 59 months functions solely as a supplement and is not intended to replace their daily primary meals. The PMT program utilizes locally available food ingredients and incorporates region-specific menus adapted to the local context and cultural practices (Atasasih et al., 2023). Empirical studies have shown that supplementary feeding significantly contributes to weight gain among malnourished toddlers (Ayunani et al., 2023).

The majority of Indonesian people are already very familiar with local food called tempeh. Tempeh is a staple fermented food , widely recognized for its health benefits and culinary versatility. Tempeh produced by fermenting cooked soybeans with

Rhizopus molds, has been extensively studied due to its ability to enhance nutrient bioavailability and improve digestibility compared to unfermented soy products. Soybeans, which serve as the primary raw material for tempeh, are a rich source of plant-based protein and essential nutrients required during periods of growth and for the regeneration of damaged cells. The nutritional components of soybeans include proteins, carbohydrates, vitamin C, vitamin B1, minerals, calcium, vitamin D, dietary fiber, essential fatty acids, folate, and isoflavones. To prevent and overcome stunting, collaboration among health workers, parents, and integrated health posyandu cadres is essential.

Method

This community engagement activity employs the Focus Group Discussion (FGD) method to identify potential solutions to the issue of stunting. The program included an educational lecture that addressed the topic of stunting, including its signs and symptoms, preventive strategies, and intervention approaches. taste evaluations of the tempeh croquettes, and share any challenges encountered during.

Results

As part of the educational content, the discussion also highlights tempeh as a local, nutrient-dense food. It covers the nutritional value of tempeh and presents an innovative approach to food processing, specifically transforming tempeh into croquettes to enhance its appeal to children and prevent food monotony. The session continueds with the screening of an educational video, distribution of informational leaflets, and a live demonstration outlining the step-by-step process of preparing nutritious tempeh-based croquettes intended as supplementary food for children. At the conclusion of the activity, participants were invited to provide feedback on the presented materials, offer the preparation process.

Discussion

Complementary therapy based on evidence-based practice for stunting prevention at TPMB Aquairini, Jakarata. The complementary therapy implemented during community service activities at TPMB Aquirini is grounded in evidence-based practice regarding the effectiveness of tempeh in preventing stunting. This approach is

supported by findings from a study titled “The Effect of Tempeh Milk and modiscop pudding administration on weight gain in children to prevent stunting,” conducted at the Clinic of Midwife Ninda Harni Manurung in Kisaran in 2020.This study employed a purposive sampling technique and involved 20 toddlers who exhibited a lack of appetite. The primary variable measured was body weight before and after the nutritional intervention, which consisted of tempeh milk and Modisco pudding. Data analysis was performed using paired sample t-test. The results indicated that the mean body weight of the children before the intervention was 11.22 kg, which increased to 11.50 kg post-intervention—yielding an average weight gain of 0.28 kg. The highest observed weight gain was 0.8 kg, while the lowest was 0.10 kg. Statistical analysis revealed a t-value of 7.277 with a p-value of 0.000 ($p < 0.05$), indicating a significant difference in body weight before and after the intervention. These results demonstrate that the administration of tempeh milk and modisco pudding significantly contributed to weight gain among toddlers. Therefore, this nutritional intervention can be considered an effective complementary strategy to prevent of stunting in early childhood, particularly in clinical and community health settings.

Conclusion

This community service program was successfully implemented with active participation from cross-sectoral stakeholders, including the head of RW 04 Kemanggisan, West Jakarta - Indonesia, and local posyandu (integrated health post) cadres. Participants, comprising mothers of stunted toddlers and health cadres, engaged attentively with the presented material. They demonstrated a high level of enthusiasm, actively asked questions, and clearly understood of the benefits of STECU (a nutritious and palatable tempeh croquette designed to prevent childhood stunting). The toddlers who attended expressed liking for the taste of the tempeh croquette. Midwife Aquarini, the owner of the local clinic, expressed her appreciation for the program, as it provided valuable education to community members within her service area regarding nutrition, early signs of stunting, and strategies for both prevention and intervention utilizing affordable, locally available food sources

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Conflict of Interest

The authors declare no conflicts of interest regarding this manuscript.

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