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Education and Processing Practice of Animal Protein-Based Supplementary Food (PMT) in Kadur Village, Rupat, Bengkalis

Muharni Harahap[1*], Yola Humaroh[2]

[1,2]Polytechnic of Health Ministry of Health Riau
Indonesia
muharni@pkr.ac.id*

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Abstract

Background of study: Nutrition problems among pregnant women and toddlers are key factors in preventing stunting. Animal protein plays a vital role in supporting growth, brain development, and immune function; however, its consumption in rural communities remains low. This community service activity was conducted from October 9– 12, 2025, in Kadur Village, Rupat District, Bengkalis Regency. The program aimed to improve the knowledge and skills of pregnant women and mothers of toddlers in processing local supplementary food (PMT) based on animal protein.

Methods: The methods included nutrition education, cooking demonstrations using local ingredients, and interactive discussions.

Result: The results showed significant knowledge improvement with 94,7% of 46 respondents scoring between 70-100.

Conclusion: This activity has the potential for sustainability through the active role of posyandu cadres in supporting balanced nutrition practices in the community.

A. Introduction

Stunting still being a serious community health problem in Indonesia. Acccording to the 2023 Indonesia Nutritional Status Study (SSGI), the national prevalence reached 21,5%, indicating a significant hurdle in improving child nutrition (Ministry of Health, 2023). It means that nearly one in five Indonesian children condition threatens their physical health, brain development and future productivity. To reach the government's 14% target by 2024, a massive collaboration effort is required across all sectors, especially in high prevalence areas.

In Bengkalis Regency, stunting rates remain stubbornly above national target. Addressing this requires sustaied nutritional intervetions specifically tagetting the most vulnerable groups such mothers and young chldrens. Priority must be given to the 'First 1,000 Days', as nutritional gaps during critical period for child development and long-term growth can lead to irreversible damage to cognitive function and immunity (Pudjirahaj et al, 2025).

A major driver of stunting is the lack of animal protein in the diets of both pregnant mothers and toodlers. Animal protein provides essential amino acids which are critical for growing healthy tissue, fueling brain development, and charging the immune system (Iswara & Syafiq, 2024). The animal protein provide a packed of 'brain boosters' and health defenders like iron, zinc and vitamin B12 (Haryani, Putriana & Hidayati, 2023). Deficeiency in this nutrients weakens a child's immunitycreating a cycle of frequent illness and stunted growth. Consequently, increasing animal protein consumption should be the primary focus of nutritional intervention programs.

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Despite rich coastal resources, Sungai Empang area in Bengkalis Regency has not fully utilized its local harvest to combat malnutrition. While high-quality seafood, including mackerel and various types of fish was a local strength potential for supporting food security and improving the nutritional status of the community (Nirmala & Octavia, 2021). Unfortunately, field observations reveal that a lack of processing skills to transform these raw ingredients into healthy and appealing meals for children. Many mothers find fish products are too expensive, smelly, or difficult to prepare and leading them to reach for the convenience of processed fast food instead (Izah & Desi, 2022). This lack of nutrition education and local food-based cooking skills contributes to low animal protein consumption in families. Therefore, we need more than information, we need a hands on, practical approach that empowers families to turn their local catch into healthy and be able to apply it in their daily lives.

One of the method that effective to improving community understanding and skill is through cooking demonstrations. Cooking demonstration of local animal protein based supplementary food (PMT) in Sungai Empang, Desa Kadur is highly relevant to improve the knowledge and skills of pregnant women and mothers of toddlers, this activity is also part of a coastal community to take full advantage of the natural riches right in their local resources.

Through this initiative, the bounty of Tanjung Medang mackerel is transformed into kid friendly favorites like fish sempol (skewers) and crispy fish balls, two types of PMT that are easy to make, popular with children, and high in animal protein. By empowering Posyandu workers and mothers with these skills, we ensure they not only know how to create healthy menu's, but also understand the nutritional value of each ingredient and how to maintain its quality during processing.

The long-term goal of this program is to foster sustainable dietary changes by increasing knowledge and skills, the community is expected to be able to change their food consumption behavior towards healthier and more nutritious food. Furthermore, this nutrition education program through cooking demonstrations not only serves as a means of improving the nutritional status of the community but also serves as a sustainable socio-economic empowerment effort in coastal areas.

B. Methods

The project followed a structured three-phase approach: an educational briefing on the importance of animal protein, a pre-and-post assessment to measure learning, and a practical cooking demonstration for high-protein local snacks. This hands-on session focused on making fish sempol and mackerel balls, providing participants with tangible skills. The group included local expectant mothers, parents of toddlers, and health volunteers from the Peduli Kasih Posyandu. The procedure of the process is illustrated in Figure 1:

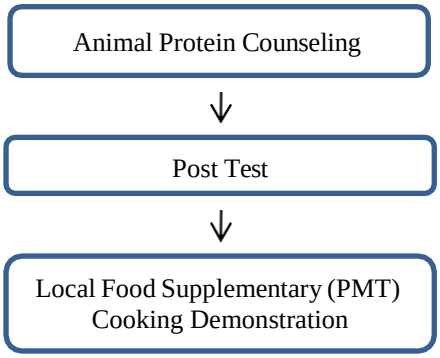

Figure 1. Community Service Activities Procedures

1) Animal Protein Counseling

This step was begin with an outreach activity on the importance of animal protein for pregnant women and toddlers in supporting child growth and development and preventing stunting. The material is delivered interactively so participants understand readily available animal protein sources and how to process them properly.

2) Post Test

After the counseling activity, participants took a post-test to assess their increased knowledge regarding the benefits of animal protein and its application in providing nutritious food for pregnant women and toddlers. The knowledge levels were categorized based on scores: High (70–100), Moderate (60-69), and Low (<60).

3) Local Food Supplementary (PMT) Cooking Demonstration

The final stage was a demonstration of making local animal protein-based supplementary feeding (PMT), namely mackerel fish meatballs and mackerel fish balls. Participants were directly involved in the cooking process, enabling them to apply these skills at home and in the integrated health post (Posyandu) environment.

C. Results and Discussion

This community service activity aims to increase participants' knowledge about the importance of consuming animal protein and their skills in processing it into nutritious foods. The team utilized two key educational tools such a visual flipcharts for clarity during the presentation and a practical recipe book for long-term use at home. The presentation on stunting prevention sparked great enthusiasm, leading to an active Q&A session about sources of animal protein that are easily accessible in the surrounding environment. The session was attended by a total of 46 participants, including 18 mothers of toddlers, one pregnant woman, and 27 community health volunteers. Specifically, 18 respondent (94,7%) achieved high scores, while only one participatn (5,3%) got a low score. This distribution of scores illustrates that the majority of participants had a good level of understanding of the counseling material, while only a small number still needed further assistance.

This outcome reinforces the research by Komala et al. (2023), which highlights that visual-based nutritional education is highly effective in significantly improving a mother's knowledge about animal protein consumption. Overall, nutrition education efforts promoting the idea of animal protein snacks for elementary school children are a new approach backed by solid evidence. Previous studies have shown that this education-based intervention can improve nutritional understanding, change parenting habits, and lower the rates of stunting in Indonesia (Ervina et al., 2025). Research by Naulia et al. (2021) and Mardiyati et al. (2022) has shown that nutrition education for parents and teachers boosts knowledge, which eventually leads to better nutritional intake in children.

Figure 2. The Importance of Animal Protein Counseling

Following the discussion, the program moved into the practical phase with a live cooking demonstration using local animal protein. During demonstration, participants actively prepared mackarel ball and sempol using the provided recipe books, showing an immadiate acquisition of practical skills. The enthusiasm was palpable as participants actively assisted in the preparation and cooking process. Through this activity, participants gained not only theoretical knowledge but also practical skills in preparing nutritious food. These results align with research by Widyastuti et al. (2022), which confirms that combining counseling with cooking demonstrations significantly improves the insight and competency of health volunteers in managing nutritious complementary foods (MP-ASI).

(a) (b)

Figure 3. (a) Local Food Supplementary (PMT) Cooking Demonstration (b) Local Food Supplementary (PMT) Ingredients

The effectiveness of integrating nutritional theory with practical PMT preparation. These results align with research by Bere et al. (2024), which reported a significant increase in knowledge among parents when nutrition education is paired with cooking demonstrations of animal protein menus were conducted on parents of stunted toddlers and the research by Soptiana, H et al., (2024) in Panji Sari Village, Central Lombok. A quasi-experimental study involving 184 mothers of toddlers in Majene, West Sulawesi, further indicated that these interventions enhanced mothers' abilities to prepare local foods aimed at stunting prevention (Evawaty et al., 2025). In Nagari Sulit Air, training sessions focused on processing animal-based foods were positively received by mothers of toddlers and Posyandu cadres. These initiatives contributed to increased knowledge and skills regarding the significance of animal-based foods for child growth and the prevention of stunting (Taufiqa et al., 2025). Overall, this community outreach initiative was executed smoothly and received high marks from participants.

The effectiveness of nutrition interventions is largely determined by their capacity to translate knowledge into actionable behaviors. Interventions that combine interpersonal counseling with practical sessions, such as cooking demonstrations, have been shown to significantly enhance children's dietary diversity scores compared to verbal education alone. Research by Jefania (2025) indicates that intensive nutrition support can increase mothers' self-efficacy in independently preparing complementary foods. This layered learning approach is essential, as counseling establishes motivational foundations, while demonstrations address technical challenges in food processing that frequently hinder implementation at the household level.

In addition, there is a synergy of dialogic and practical methods which encourages more psychologically stable behavior changes. The mothers not only get to know why animal protein is essential, but they are also equipped with the knowledge of how to cook it in a presentable form to their children, thus encouraging them not to reject food. A research by Dita (2025) revealed that there was an increase in knowledge percentage after engaging in the activity. The socialization and mentoring activities for making complementary foods for breastfeeding (MPASI) in Jatisari Village successfully increased knowledge regarding the importance of providing MPASI to prevent stunting among mothers and expectant women.

The combination of theoretical counseling, post-test evaluation, and interactive cooking demonstrations proved to be an effective model for enhancing both knowledge and practical ability. These results also align with research by Islamiati et al. (2024), which emphasizes that practice-based nutrition education is a powerful tool for raising community awareness about the importance of protein consumption for child growth and development.

Figure 4. Posyandu cadres, pregnant women and mothers of toddlers

While this project does not propose new theoretical frameworks, it serves as a vital practical validation. It demonstrates that established nutritional strategies remain highly effective when applied in isolated or 'hard-to-reach' regions. By successfully implementing these theories in an area that seldom receives such interventions, we've confirmed that these methods are robust and adaptable to diverse geographical contexts.

Despite the success of the program, there are certain limitations to consider. The participant group was relatively small,and the evaluation was based solely on a post-intervention test. Consequently, the comprehensive long-term impact on dietary behavior and nutritional status remains to be seen.

For future initiatives, we recommend scaling up to include a larger demographic and implementing a full pre- and post-test framework. This would allow for a more robust evaluation of the program's sustainability and its actual effect on the nutritional health of mothers and toddlers in other coastal regions."

D. Conclusion

This community outreach program in Kadur Village, Bengkalis, successfully enhanced participants' knowledge and practical skills in processing local animal protein to prevent stunting. By integrating education, assessment, and live demonstrations, the program provided expectant mothers and health volunteers with a deep understanding of nutritional needs and easy-to-implement recipes. The project highlights that utilizing local resources, such as mackerel, is a highly effective strategy for improving family nutrition while simultaneously fostering economic empowerment in coastal regions.

E. Acknowledgment

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F. Author Contribution Statement

The author contributed in this publication are MH which took the lead on the project, overseeing everything from the initial research concept and data collection to the analysis and the final writing and revision of the manuscript while YH played a key role in the early stages, contributing significantly to the research design, data collection, and data analysis.

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