



# Development of local food source products in improving the health of mother and toddler children in Jaharun B Village, Galang District, Deli Serdang District

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## ABSTRACT

Maternal and child health encompasses comprehensive efforts to maintain optimal health at every life stage, from pre-conception to menopause. Midwifery services play a crucial role in this system, focusing on women's reproductive health throughout their life cycle, as well as the health of infants and toddlers. Food and nutrition are essential for development and serve as key indicators of overall health. However, many children still experience nutritional deficiencies, often due to a lack of interest in protein-rich and vegetable-based foods. The aim of this Community Service initiative was to educate cadre groups and mothers of children under five on utilizing local food ingredients to create nutritious snacks. The program introduced innovative ways to process red bean flour, oyster mushrooms, and catfish into nuggets and meatballs, providing a protein-rich alternative for young children. The service was conducted in Jaharun B Village, Galang District, Deli Serdang Regency. Results indicated that participating mothers gained valuable knowledge about protein sources and acquired skills to prepare nutritious snacks from local ingredients. These efforts are expected to improve the nutritional intake of children under five, contributing to better community health outcomes.

**Keyword:** Catfish, Meatballs, Oyster Mushrooms, Nuggets, Red Bean Flour

## ABSTRAK

Kesehatan ibu dan anak mencakup upaya menyeluruh untuk menjaga kesehatan optimal di setiap tahap kehidupan, mulai dari pra-konsepsi hingga menopause. Layanan kebidanan memainkan peran penting dalam sistem ini, dengan fokus pada kesehatan reproduksi wanita sepanjang siklus hidup, serta kesehatan bayi dan balita. Makanan dan gizi merupakan komponen penting bagi pembangunan dan menjadi indikator utama kesehatan. Namun, masih banyak anak yang mengalami masalah gizi, sering kali karena kurangnya minat pada makanan yang kaya protein dan sayuran. Tujuan dari kegiatan Pengabdian kepada Masyarakat ini adalah memberikan edukasi kepada kelompok kader dan ibu-ibu yang memiliki anak balita mengenai pemanfaatan bahan pangan lokal untuk menciptakan camilan bergizi. Program ini memperkenalkan cara inovatif untuk mengolah tepung kacang merah, jamur tiram, dan ikan lele menjadi nugget dan bakso sebagai alternatif sumber protein untuk anak-anak. Kegiatan ini dilaksanakan di Desa Jaharun B, Kecamatan Galang, Kabupaten Deli Serdang. Hasilnya menunjukkan bahwa ibu-ibu peserta kegiatan memperoleh pengetahuan berharga tentang sumber protein dan keterampilan untuk membuat camilan bergizi dari bahan lokal. Upaya ini diharapkan dapat meningkatkan asupan gizi anak-anak balita dan berkontribusi pada peningkatan kesehatan masyarakat.

**Keyword:** Bakso, Ikan Lele, Jamur Tiram, Nugget, Tepung Kacang Merah



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## 1. Introduction

Maternal and child health encompasses comprehensive efforts to maintain optimal health across all life stages, from pre-conception to menopause [1]. In Indonesia, improving maternal and child health is a priority due to its ongoing challenges in the healthcare sector. According to UNICEF, every three minutes, a child under five dies, and every hour, a woman loses her life due to pregnancy or childbirth-related complications [2]. The

WHO emphasizes reducing maternal and child mortality rates through enhanced service quality and referral systems [3].

Despite progress, Indonesia's maternal mortality rate in 2015 remained above the MDG target, though it showed improvement. Neonatal deaths remain a significant challenge, often caused by infections and diseases like diarrhea. These deaths hinder optimal physical and cognitive development in children, exacerbated by imbalanced nutrition, particularly low protein and vegetable intake [4, 5]. Addressing this requires food diversification using affordable and locally available ingredients.

Red bean flour, oyster mushrooms, and catfish are viable alternatives as they are protein-rich and nutrient-dense. Red bean flour is durable, nutritious, and versatile [7]. Oyster mushrooms contain essential amino acids and minerals like potassium and calcium but are prone to spoilage due to high water content [8]. Catfish is a widely available, affordable source of protein and amino acids, making it ideal for food diversification [9]. These ingredients can be processed into nuggets and meatballs, which are popular among children and adults [10, 11].

This community service highlighting the nutritional value of red beans, oyster mushrooms, catfish, and other local ingredients for combating stunting and improving child health. The goal is to educate mothers and community cadres on utilizing these ingredients to prepare nutritious snacks [12, 13].

## 2. Methods

This community service initiative involved collaboration with key stakeholders, including the village head and female community cadres, as the primary participants. The activity was supported by four 5th-semester students who had previously studied nutrition consultation and food technology.

### 2.1. Pre-Community service stage

The preparatory phase included two key activities:

#### 2.1.1. Preliminary coordination and laboratory work

The community service team conducted initial coordination with the village head and cadres in Jaharun B Village to schedule the event. After that, the team prepared for the cooking demonstrations at the Food Technology Laboratory, Nutrition Department, Lubuk Pakam. During this session, the team processed red bean flour-based nuggets and meatballs, with formulations designed to incorporate oyster mushrooms and catfish as protein sources.

#### 2.1.2. Making nuggets and meatballs from oyster mushroom and catfish

Ingredients in making nuggets were red bean flour and oyster mushrooms combined with seasonings, molded, steamed, breaded, and fried. While ingredients in making meatballs were red bean flour and catfish and blended with seasonings, shaped, boiled, and fried. Both formulations emphasized the nutritional benefits of combining plant-based and animal-based protein sources.

### 2.2. Implementation phase

The participant of this community service activities were 25 mothers of toddlers and community cadres from Jaharun B Village and conduct in head village office. The event consisted of the following stages:

#### 2.2.1 Opening and pre-test

The program began with an opening speech by the Village Secretary, followed by a pre-test (Figure 1). Participants completed a 30-minute questionnaire assessing their knowledge, attitudes, and practices regarding local food products and toddler health.



Figure 1 Opening and welcoming remarks delivered by village secretary.

### 2.2.2 Educational session

A 45-minute session provided information on the nutritional benefits of red bean flour, oyster mushrooms, and catfish. The session included discussions on processing methods for local food ingredients, such as tofu dregs and catfish, emphasizing their role in improving maternal and toddler health (Figure 2).



Figure 2 Providing materials and giving a question and answer session.

### 2.2.3 Cooking demonstration

The cooking demonstration showcased the preparation of nuggets and meatballs using the formulated recipes. Participants, divided into three groups, actively participated in processing the ingredients under guidance (Figure 3). The hands-on approach ensured that mothers could replicate the techniques at home.



Figure 3 Doing a cooking demo.

### 2.2.4 Post-Test and evaluation

After the demonstration, participants completed a post-test to evaluate the effectiveness of the training (Figure 4). Results indicated a preference for red bean flour nuggets with oyster mushrooms in terms of color, aroma, taste, and texture.



Figure 4 Filling in the attendance list and completing the pre-test and post-test.

### 3. Results and Discussion

A total of 25 participants attended the community service program, including mothers of toddlers, cadre mothers, the village head, and the village secretary. The participants successfully demonstrated the preparation of red bean flour nuggets and meatballs, incorporating oyster mushrooms and catfish. According to a sensory evaluation conducted by the participants, the red bean flour nuggets with oyster mushrooms were the most preferred due to their delicious taste, crunchy texture, ease of cutting, and fresher aroma.

#### 3.1. Community service materials according to the needs of partners/participants

Participants underwent a pre-test to assess their initial knowledge before receiving education and training on food processing, followed by a post-test after the cooking demonstrations. Table 1 showed that the average knowledge score of the pre-test was 18.2, with scores ranging from 5 to 25. After training, the average score increased to 22, with a range of 15 to 25. The proportion of participants categorized as having "good" knowledge increased from 64% before training to 88% afterward (Table 2). This improvement highlights the effectiveness of the educational and training activities in enhancing knowledge.

Table 1. Mother's pre-test and post-test knowledge.

Knowledge	N	Mean	Min	Max
Before Training	25	18.2	5	25
After Training	25	22	15	25

Table 2. Categories of mother's knowledge scores in the pre-test and post-test

Knowledge	Category	n	%
Before Training	Not enough	4	16
	Enough	5	20
	Good	16	64
	Total	25	100
After Training	Not enough	0	0
	Enough	3	12
	Good	22	88
	Total	25	100

#### 3.2. Partners get direct benefits from the community service activities carried out

The participants demonstrated enthusiasm and positive attitudes throughout the community service activities. As shown in Table 3, the average attitude score slightly increased from 11.4 in the pre-test to 11.56 in the post-test, with all participants consistently falling into the "good" category (100%) both before and after the training (Table 4). This consistent positive attitude suggests that the participants were motivated and receptive to the training.

Table 3. Attitudes of pre-test and post-test mothers.

Knowledge	N	Mean	Min	Max
Before Training	25	11.4	8	14

After Training	25	11.56	9	15
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Table 4. Categories of mothers' attitude scores for pre-test and post-test.

Knowledge	Category	n	%
Before Training	Not enough	0	0
	Good	25	100
	Total	25	100
After Training	Not enough	0	0
	Good	25	100
	Total	25	100

### 3.3. Pre and Post Test Actions

Table 5 show that the average action score rose from 22 in the pre-test to 22.2 in the post-test, with all participants maintaining a "good" action category (100%) throughout (Table 6). Participants actively engaged in activities such as completing attendance lists, pre-tests, question-and-answer sessions, and cooking demonstrations, showing enthusiasm and commitment to the program.

Table 5. Pre -Test and post-test actions of mothers.

Knowledge	N	Mean	Min	Max
Before Training	25	22	15	25
After Training	25	22.2	15	25

Table 6. Categories of mothers' pre-test and post-test action scores.

Knowledge	Category	n	%
Before Training	Not enough	0	0
	Good	25	100
	Total	25	100
After Training	Not enough	0	0
	Good	25	100
	Total	25	100

### 3.4. The Effect of training on knowledge, attitudes and actions

Statistical analysis using a dependent T-test revealed a significant improvement in knowledge ( $p=0.005$ ), attitudes ( $p=0.000$ ), and actions ( $p=0.001$ ) after the training (Table 7). These results demonstrate the positive impact of the program on participants' understanding and application of food processing techniques.

Table 7. Effect of Counseling and Training on Respondents' Knowledge, Attitudes and Actions.

Variable	N	Elementary school	P Value
Knowledge Before Training	25	5,930	0.005
Knowledge After Training	25	3,536	
Attitude Before Training	25	1,732	0.000
Post-Training Attitude	25	1,972	
Actions Before Training	25	4,082	0.001
Actions After Training	25	3,841	

### 3.5. Follow up plans

Based on the outcomes of the community service activities, the follow-up plans proposed are developing a village business and health and nutrition counselling. Continuing the production of red bean flour nuggets and



meatballs with oyster mushrooms and catfish to establish a sustainable business in Jaharun B Village. Organizing bi-monthly counselling sessions to address child growth, reduce stunting, and improve maternal and child health in the community. These follow-up plans aim to ensure the sustainability and long-term impact of the community service initiatives while fostering improved health and economic opportunities within Jaharun B Village.

#### 4. Conclusions

The participants, consisting of mothers with children under five and working mothers, successfully developed their skills in processing local food ingredients to address nutritional issues. They demonstrated the ability to make nuggets and meatballs using red bean flour, oyster mushrooms, and catfish, showcasing their expertise through hands-on practice and documentation that can be implemented within the community to improve public health. Nuggets made from 25 g of red bean flour with oyster mushrooms provide 57.8 kcal of energy, 5.5 g of protein, 14.2 g of carbohydrates, 0.64 g of fat, and 6.2 g of fiber, along with essential minerals such as calcium (10.5 mg), iron (2 mg), and zinc (0.2 mg). Meanwhile, meatballs containing 25 grams of red bean flour and catfish offer 19 kcal of energy, 2.1 grams of protein, 2.1 grams of carbohydrates, 0.3 grams of fat, 0.5 grams of fiber, calcium (3.6 mg), iron (0.2 mg), and zinc (0.2 mg). It is anticipated that participants will sustain and expand these activities, further developing them into household and village-level businesses to enhance community nutrition and economic opportunities.

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