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Empowering Kelompok Perempuan Pesisir Indonesia (Kppi) To Modify Moringa Leaf Fish Balls To Overcome Stunting In Bagan Deli Village

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Abstract. Stunting is a condition in which children experience impaired growth, so that their height is not appropriate for their age due to chronic nutritional problems. In Bagan Deli urban village, Medan Belawan sub-district, stunting in children under five is a public health problem. The proportion of stunted children in Bagan Deli Village is 10.37%, and children with poor nutrition (below the red line) is 2.9%. The service activity was carried out on Friday, July 26, 2024 in Bagan Deli Village with participants as many as 10 members of the Indonesian Coastal Women's Group (KPPI) partners and 10 pregnant women and mothers who have toddlers. The purpose of the service activity is to increase participants' understanding and knowledge, especially related to stunting and skills in processing moringa leaf meatballs made from fish. The service method was carried out by conducting socialization / training on stunting and cooking demonstrations as well as pre-test and post-test to measure participants' understanding and knowledge before and after the material was delivered. The results showed an increase in knowledge before and after the training. Of the 20 training participants, the average increase in respondents' knowledge was 1.7, which showed that this increase was statistically significant.

Keywords: Stunting, KPPI, Knowledge.
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1. Introduction

The Indonesian government has established a stunting management program as a national priority program to reduce the increase in cases, as stunting is still a major problem that requires serious handling from all parties [1].

Stunting is one of the most serious public health problems in Indonesia, especially among children. Stunting is a condition in which children experience impaired growth, so that their height is not in accordance with their age due to chronic nutritional problems, namely malnutrition that lasts for a long time.

Based on data from the Medan City Government, the number of stunting cases in Medan Belawan Sub-district is 60 toddlers and families at risk of stunting is 6,305 families [2]. In Bagan Deli Village, Medan Belawan Sub-district, stunting in children under five is one of the public health problems. The proportion of stunted children in Bagan Deli Village is 10.37%, and children with poor nutrition (below the red line) is 2.9% [3].

Factors that cause stunting include unhealthy complementary foods, including low food quality, inadequate administration methods, and food and beverage safety. Low food quality consists of low micronutrient quality, diversity of types of food consumed and low animal food sources, foods that do not contain nutrients, and complementary foods containing low energy [4].

Research conducted by Rusyantia, 2018 [5] shows that animal protein consumption habits are significantly related to the incidence of stunting in toddlers. Research conducted by Asrari, Husna, & Khairi, 2022 [6] that there is a relationship between the way fish is processed (cooked) with the prevalence of stunting.

Furthermore, research conducted by Fatmawati, Zulfiana, & Julianti, 2023 [7] showed that Moringa leaves (Moringa oleifera) have a significant effect on the prevention of stunting. According to research conducted by Basri et al., 2021[8] that consistent moringa leaf intervention in children aged 0 to 24 months does not cause stunting.

Most of the Bagan Deli community residents work as fishermen, every day the fishermen will get fish catches from the sea. There is actually no reason why people in fishing villages still find stunted children. This condition is assumed to be related to the habits of the community who do not manage their fish catch for the nutritional needs of pregnant women and their children. In addition, it is also thought to be related to the mother's knowledge about stunting, not utilizing local potential such as small fish that are not worth selling to be processed into preferred foods in an effort to improve nutrition for pregnant women and children. For this reason, in this service, counseling is carried out about stunting, causes, risk factors, efforts to overcome based on local potential, balanced nutritional composition, easy, cheap and popular with children and adults, namely through modification of Moringa Leaf Fish Meatballs food. The fish used in this service is jackfruit seed red fish which has a fairly high protein, a lot of production, and the price is relatively cheap in the market. Moringa leaves contain protein and iron which are needed by pregnant women and toddlers in overcoming stunting. Moringa leaves are also easy to obtain, relatively cheap, and in great demand by the community.

Kelompok Perempuan Pesisir Indonesia (KPPI) Medan, is a forum for empowering fishermen communities with work programs focusing on the health sector, including: child assistance, stunting and reproductive health, sanitation and environmental waste. However, KPPI has not conducted many activities related to stunting. For this reason, KPPI needs to be empowered in processing fish-based food to overcome stunting, and then it will play a role as a social institution for community empowerment in the community, especially fishermen in a sustainable manner.

For this reason, it is necessary to carry out community service which aims to increase the understanding and knowledge of KPPI members and mothers, especially related to stunting and skills in processing moringa leaf meatballs made from fish.

2. Method

The method of service carried out by conducting socialization/training on stunting and cooking demonstrations to members of the Medan Branch of Fisherwomen (KPPI) who became partners. Increase knowledge related to stunting and procedures for processing food modifications in pregnant women and children that can prevent stunting made from fish. The series of implementation of this service activity are as follows:

1. **Preparation**

Processing of Moringa Leaf Fish Meatballs

Moringa Leaf Fish Meatball Processing was carried out from July 12 to July 18, 2024 at the Nutrition Laboratory of the Faculty of Public Health. Before processing, the service team prepared the tools and materials to make moringa leaf fish balls.

The reason the service team processed meatballs made from jackfruit seed red fish is because the fish contains quite high protein. In line with Subagio et al., (2004) reported that jackfruit seed fish has a fairly high protein content of around 16.85% and a low fat content of around 2.2%. In addition, jackfruit seed fish is relatively cheap in the market and widely found.

Moringa leaves are easily obtained in the community at a low price. In addition, moringa leaves contain protein and iron which are needed by pregnant women and toddlers in overcoming stunting. In-depth studies on the nutrient content of moringa leaves show that moringa leaves can be used as a food additive for various purposes, such as increasing protein, fatty acids, minerals, and vitamins in food [9]. One of the most abundant nutrients found in Moringa leaves is calcium and iron. According to the Indonesian Ministry of Health, 2018 [10] Moringa leaves contain many important nutrients for children's growth and development, including calcium 1,077 mg, protein 5.1 grams, and phosphorus 76 mg per 100 grams. Dried Moringa leaves contain more than 40 natural antioxidants, 26.2 grams of protein, 2,095 mg of calcium, 27.1 mg of iron, and 16800 mg of ß-carotene. Due to its high micronutrient and protein content, Moringa leaves can be used to overcome malnutrition in toddlers, pregnant women, and nursing mothers [9].

This Meatball Processing activity aims to get 2 recipes of Moringa Leaf Fish Meatballs with different compositions (jackfruit seed red fish, flour, moringa leaves, and spices). Two types of moringa leaf fish balls were obtained. Code A1 is sliced moringa leaf fish balls and Code A2 is chopped moringa leaf fish balls. This recipe will then be used for organoleptic testing.

Fig 1. Processing of moringa fish balls.

Organoleptic Test

On July 19, 2024, an organoleptic test was carried out for FKM USU students in the organoleptic test room of the Nutrition Lab of FKM USU. Meatballs that have been processed will be used as test material to assess the level of liking for Moringa Leaf Fish Meatballs. Indicators of liking are tested from the taste, color, aroma, and texture found in moringa leaf fish balls. This Organoleptic test was carried out by 30 panelists. In this test panelists use the five senses and give a score. The score level consists of (1 = dislike, 2 = less like, and 3 = like). This Organoleptic Test activity lasted for 3 hours.

Fig 2. Organoleptic Test with 30 panelists.

Site Preparation

Site preparation was carried out on Tuesday, July 23, 2024 in Bagan Deli Village. This activity aims to find out the condition of the place that will be used as a location to carry out community service. In addition, this activity also prepares the equipment needed during community service.

Fig 3. Discussion related to the preparation of the place and equipment that will be used for community service.

2. **Implementation**

This activity was carried out on Friday, July 26, 2024 at the KPPI Secretariat with 20 participants, consisting of 10 members (KPPI) and 10 pregnant women and mothers with toddlers. The head of this group is expected to spread this experience to other residents so that they get the same experience.

The service program began with an opening ceremony. Furthermore, the head of the service team gave a speech by conveying the aims and objectives of community service based on the problem of stunting and low economy in the Bagan Deli Village area. For this reason, it is hoped that through this service the USU Service Team can contribute their thoughts and ideas to overcome the stunting problem in Bagan Deli Village. For this reason, the Service Team delivered material related to stunting and how to prevent it through fish-based preparations, namely “Moringa Leaf Fish Meatball Pompoms”.

Furthermore, the chairman of KPPI and the Head of the Village gave remarks, in his remarks he was very grateful that they received training and provided tools to make it easier for the community to process moringa leaf fish meatballs. After remarks by the head of the fisherwomen (KPPI) and the Head of Village, the handover of goods was carried out in the form of 1 (one) chopper unit by the head of the service team to the head of the fisherwomen (KPPI).

Before conducting training on stunting and how to prevent it through fish-based preparations, namely “Moringa Leaf Fish Meatball Pompoms”, the service team gave a pre-test to see the participants' knowledge related to stunting.

After the pre-test, the material was delivered about stunting and how to prevent it through fish-based preparations, namely “Moringa Leaf Fish Meatballs”. This activity was carried out using the lecture and discussion method so that participants could understand more easily. In this activity, participants also discussed and asked questions with the speaker about the problems experienced, what ingredients are contained in moringa leaves and how moringa leaves are related to the problem of stunting. Participants were very enthusiastic in listening to what was conveyed by the speaker. This training is expected to form an attitude and desire to be fully involved in service activities, with the aim that participants understand the material presented and can practice making Moringa Leaf Fish Meatballs in everyday life.

Fig 4. Delivery of material on stunting.

The next activity is filling out the post-test. This post-test was conducted to measure the participants' understanding and knowledge after the material was delivered.

After conducting the post-test, the practice of food modification of moringa leaf fish balls to overcome stunting in Bagan Deli Village was carried out. This activity aims to enable participants to process moringa leaf fish balls and will then be implemented in the family. In addition, for KPPI, this activity can be implemented in the community in a sustainable manner. The implementation of this practical activity was carried out by all members of the service team.

Fig 5. Food modification practice of Moringa Leaf Fish Meatballs.

Fig 6. Documentation of community service activities.

3. **Evaluation**

At the evaluation stage, the trainees provided feedback related to the delivery of the material in the form of pre-test and post-test. This type of test is one of the assessment methods used to determine understanding of the material that has been given. As the name implies, the pretest is conducted before the delivery of the material begins. The goal is to gain initial understanding. Pretest is important, to remember that pretest results are a prerequisite for further acquisition of new knowledge. Post-test is an assessment conducted after the material is delivered. The goal is to get an overview of the material. In this type of evaluation, the service team compares the results before and after the training activities to see the progress of participants' understanding of the training activities.

Questions are presented in true or false form. Participants rated their statements according to whether they were true or false. This activity involved making 20 statements where participants had to know about the truth of the statements related to stunting.

3. Results And Discussion

Result

The service activity was carried out on Friday, July 26, 2024 in Bagan Deli Village with 20 participants, consisting of 10 KPPI members and 10 pregnant women and mothers who have toddlers. This service activity aims to increase understanding related to stunting and processing Moringa Leaf Fish Meatballs. Furthermore, to measure the success of the training implementation, pre-test and post-test measurements were taken to the participants. The results of statistical analysis of pre-test and post-test measurements are presented in table 1 below.

Table 1. Differences in Participants' Knowledge Before and After Materials Related to Stunting

Variabel	n	Mean	SD	95% CI	*p*
Pre-test	20	15,2	1,473	-2,29 – (-1,11)	0,001
Post-test	20	16,9	1,334		

With the t-test, a value of p=0.001 ($p < 0.05$) was obtained, the t-test showed that there was a significant difference between before and after the test. The average increase in respondents' knowledge was 1.7, indicating that this increase was statistically significant.

Discussion

The increase in knowledge of trainees in this community service activity shows that the educational strategy delivered is able to increase the understanding/knowledge of mothers about the problem of stunting in children. This is in line with research conducted by [11] that counseling activities on stunting have proven to be very important in stunting prevention initiatives. In addition, according to [12] providing nutrition education to mothers significantly increases their knowledge about stunting prevention. Furthermore, research Mistry et al., 2019 [13] that stunting-related counseling to mothers can reduce stunting rates in children and improve feeding practices and emphasize the importance of counseling interventions.

One of the indirect factors affecting the incidence of stunting is the level of maternal knowledge. Mothers have a very important role in the growth and development of their children. One of the main responsibilities of housewives is to ensure that all household members get the food they need. Therefore, the higher the level of knowledge of housewives, the greater their ability to make decisions about what their family should consume, especially to meet the nutritional needs of all family members [14].

In line with Wong's research (1995) in Natalina et al., 2015 [15] said that in providing nutrition to children, mothers have a role in determining food variations and identifying nutritional needs required by their family members [15]. According to Astari (2008) in Mustamin (2018), mothers who have good nutritional knowledge are expected to be able to provide food with the right type and amount so that children can grow and develop optimally [16].

Food is a basic human need that must be met at all times and requires correct and proper management so that the body gets the benefits. The food consumed must also fulfill what is needed by the body. To support the growth and development of toddlers, the World Health Organization (WHO) suggests 10% to 15% of energy intake comes from protein. Consuming more than one source of animal protein will reduce the risk of stunting [17]. Consumption of animal protein is related to child growth because protein contains amino acids that can help children's growth and development.

Hirvonen argues that animal protein consumption reduces the risk of stunting, based on research [18]. Toddlers aged 18 to 23 months who consumed 1 type of animal protein daily had a 3.7% lower percentage of stunting than toddlers who did not consume animal protein. Toddlers who consume 2-3 types of protein daily also have a 5.7-6.1% lower percentage of stunting than toddlers who do not consume animal protein. Common sources of animal protein are chicken, meat, processed meat, and fish.

The highest source of animal protein is fish protein, with a contribution of around 57.2%. Fish protein functions as a building, regulating, and burning agent in the body, forming new tissues to support growth, replacing damaged tissues, and supporting the reproductive process. In addition, the amino acid pattern of fish protein is almost the same as that in the human body and is easily digested by the body [19]. Fish food is highly nutritious because it contains protein for growth, omega 3 and 6 fatty acids that promote maternal health and brain development, and vitamins and minerals that are good for both mother and fetus. It is very easy to digest because it has no connective tissue and has a biological value of 90 percent [20].

The provision of demonstrations of Moringa Leaf Fish Meatballs cooking aims to increase the mother's knowledge about how to provide toddlers with adequate nutritious food. In addition, it is hoped that parents of toddlers can process local foods that are high in protein into nutritious foods for pregnant women and toddlers to help the growth and development of toddlers in preventing stunting. This is in accordance with research conducted by (Yasin & Oktavianisya, 2021) [21] which states that the mother's ability to manage food for stunted toddlers has increased after receiving education through the demonstration method.

Moringa leaf fish meatballs are intended for pregnant women and mothers with toddlers. Meatballs play an important role in the spread of animal protein so that people can consume nutritious food [22]. High animal protein is a complete source of amino acids needed by the toddler's body to activate enzymes and growth hormones that stimulate bone growth, this cooking demo utilizes animal protein base ingredients. Based on research (Rarastiti et al., 2023) [23] Protein performs important tasks to support growth, regulate the work of enzymes in the body, and also functions as a regulatory substance. The enthusiasmkp[; of the mothers in participating in the Moringa Leaf Fish Meatball Demo activity was very good, they said that the Moringa Leaf Fish Meatballs turned out to be delicious and they would also try to make Moringa leaf fish meatballs in the future.

4. Conclusion

From the activities that have been carried out, it can be concluded that the training conducted for KPPI mothers has achieved its objectives in increasing community knowledge related to stunting and also increasing community skills in processing children's food that can prevent stunting. The results of the service showed that there was an increase in knowledge before and after the training. Of the 20

training participants, the average increase in respondents' knowledge was 1.7, indicating that this increase was statistically significant.

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