Yoghurt making training for stunting management in Jatisari Hamlet

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Abstract
Stunting is a health issue that remains a concern in Jatisari Hamlet, Playen Village, Gunungkidul Regency. Stunting occurs due to chronic malnutrition from pregnancy until the age of two, which results in increased morbidity and infant mortality, as well as suboptimal physical growth in adulthood. Stunting prevention must focus on the First 1,000 Days of Life by ensuring balanced nutrition, particularly animal protein. One alternative solution is yoghurt, a fermented milk product rich in protein, calcium, vitamins, and probiotics, and safe for those with lactose intolerance. This community service activity aims to increase public awareness about stunting and provide practical yoghurt-making skills as a preventative measure. Implementation methods included observation, outreach, counselling, and yoghurt-making training directly involving mothers of toddlers. Results showed increased participants' understanding of the importance of balanced nutrition and skills in independently producing yoghurt at home. Thus, this activity not only contributes to improving family health but also has the potential to open productive economic opportunities for the community.

Keywords: balanced nutrition; probiotic; stunting; training; yoghurt

1. Introduction

Stunting remains a concern in Jatisari Hamlet, Playen Village, Playen District, Gunungkidul Regency. Based on available data, stunting prevention efforts are ongoing, from the village to the district level. An effective strategy is ensuring adequate nutritional intake for pregnant women and children, especially during the first 1,000 days of life.

Stunting is a condition of chronic malnutrition that occurs due to insufficient nutritional intake over a long period, usually due to a diet that does not meet a child's dietary needs. This growth disorder can begin during the fetal period, and symptoms only become apparent when the child is around two years old. Malnutrition in early life can increase the risk of infant and child mortality, make the body susceptible to disease, and lead to suboptimal body posture in adulthood. Factors causing stunting include inadequate consumption of nutritious food by pregnant women, inappropriate parenting patterns, low energy and protein intake in toddlers, failure to achieve exclusive breastfeeding, infectious diseases, family economic conditions, child gender, and other factors (Rusdianto et al., 2022).

Stunting prevention during the first 1,000 days of life can be achieved through balanced nutritional intake, particularly protein-rich foods, according to daily needs. Protein requirements for infants and children vary according to age: approximately 12 grams per day for children 0–6 months, 26 grams per day for children 1–3 years, 35 grams per day for children 4–6 years, and 49 grams per day for children 7–9 years. Milk is a good source of high-protein food for pregnant women and toddlers. However, the lactose content in milk can cause lactose intolerance due to a lack of the lactase enzyme in the body. Therefore, alternative sources of high-protein food are needed that are safe, low in or even almost lactose-free, and easy to prepare at home. Yoghurt can be an option, as it is a fermented milk product produced by the bacteria Lactobacillus bulgaricus and Streptococcus thermophilus, which are generally safe for consumption by individuals with lactose intolerance (Kartika et al., 2025).

One potential source of nutrition is processed livestock products, including yoghurt. Yoghurt is a fermented milk product containing various nutrients and probiotics. The fermentation process, which takes place with the help of lactic acid bacteria (LAB) at a temperature of 37–45°C, converts lactose into lactic acid, resulting in a thick, semi-solid texture with a refreshing, sour taste (Kurniawan Sio et al., 2023).

Yoghurt is a fermented milk drink produced by bacteria that break down lactose into lactic acid. Lactic acid compounds play a role in preserving food because their relatively low pH can inhibit the growth of pathogenic and spoilage microorganisms and help kill harmful microbes. In addition, the probiotic bacteria in yoghurt maintain digestive health by suppressing the growth of harmful bacteria (Nuroddin et al., 2023). Biotechnology is the use of microorganisms to produce products that can be consumed by the public, one of which is yoghurt. Yoghurt is a popular drink, not only in Indonesia but also in various countries around the world. Its popularity is supported by its high nutritional content and positive benefits for the body. Yoghurt contains probiotic bacteria that play a role in improving the digestive process through the presence of healthy microflora, while also helping inhibit the growth of pathogenic bacteria in the digestive tract (Putri et al., 2023). However, among people who are not yet aware of the benefits of yoghurt, consumption levels and patterns are still relatively low. The main process in making this drink is fermentation by lactic acid bacteria. This fermentation is influenced by various factors, one of which is the resulting taste and aroma (Hayati et al., 2023).

Therefore, this community service activity will focus on yoghurt-making education and training for the community in Dukuh Jatisari. This activity aims to provide practical knowledge about the benefits of yoghurt as part of stunting prevention efforts and skills that can create new business opportunities. Thus, it is hoped that the community will be able to improve their family's health independently and their economic well-being.

2. Method

Activities carried out in this community service include:

2.1. Preparation Stage

This stage begins with site observation, outreach, coordination with group leaders, obtaining activity permits, and purchasing and designing training equipment. Making yoghurt requires the following tools and materials:

2.1.1. Tools used in yoghurt making include:

1) Milk heating pan for pasteurisation
2) Plastic jar
3) Strainer
4) Stirrer
5) Incubator
6) 250 ml bottles
7) Ice box
8) Refrigerator

2.1.2. Ingredients used in making cow's milk yoghurt:

1) Full Cream Milk
2) Plain yoghurt starter

2.2. Activity Implementation Stage

The implementation stage of the activity involved outreach and training on yoghurt making with mothers of toddlers. The activity began with an education about stunting (definition, causes, and impacts on children), followed by an explanation of the benefits of yoghurt as a source of animal protein, probiotics, and a low-lactose milk alternative. This was followed by hands-on yoghurt-making practice using liquid full-cream milk and plain yoghurt starter. The mothers were directly involved in the filtering, pasteurisation, cooling, adding yoghurt starter, incubation, and packaging of the yoghurt. To enhance the atmosphere, the activity included interactive Q&A sessions.

2.3. Training Stage

First, liquid full-cream milk is heated for approximately 15 minutes, avoiding boiling (pasteurisation) in a heating pan. After pasteurisation, the milk is cooled to 40–45°C by immersing the pan in cold water. Next, add 200g (approximately 4 tbsp) of plain yoghurt starter to the milk and stir until evenly mixed. The milk and yoghurt starter mixture is incubated at 40–45°C for 5–6 hours or left at room temperature for approximately 12 hours using a closed container/simple incubator. After incubation, the yoghurt is packaged into 250ml plastic bottles, stored in the refrigerator, and is ready to consume without added sugar or essence. The flow of community service activities can be seen in Figure 1. In its implementation, participants are given pre-tests and post-tests to determine the level of knowledge absorption.

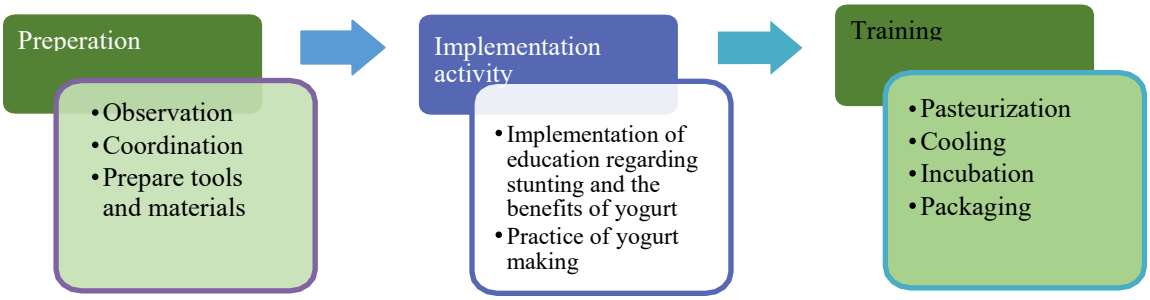

Figure 1. Activity Flow

3. Result and Discussion

The yoghurt-making outreach program was conducted offline using leaflets and live demonstrations. The outreach program was conducted face-to-face after discussions and coordination with partners, namely the integrated health service post (Posyandu) cadres and the PKK (Pemberdayaan Kesejahteraan Keluarga) women from Jatisari Hamlet, Playen Village, Gunungkidul Regency. The activity began with an initial observation on Friday, August 15, 2025.

The community service team interviewed Posyandu cadres and local community leaders during the initial observation. The interviews aimed to explore issues in Jatisari Hamlet, particularly among mothers with toddlers. The interviews concluded that one of the most common issues was a lack of knowledge about meeting toddler nutritional needs and the inadequate use of nutritious, easily prepared foods at home. This problem arose from insufficient training or outreach on processing milk into healthier, toddler-friendly products.

After conducting initial observations and discussions with partners and identifying community service issues, community service activities were formulated, including stunting awareness campaigns and yoghurt-making training. The activity began with the search and compilation of materials on stunting, the benefits of animal protein, and yoghurt as a nutrient-rich fermented food. The materials were presented in leaflet format for ease of understanding. The delivery method was chosen based on adult education theory (andragogy), which suggests that participants will better absorb the material through practical, visual methods, and hands-on practice.

The activity consisted of two main stages: material delivery and a yoghurt-making demonstration. In the first stage, the presenter explained stunting, the importance of meeting nutritional needs, especially with animal protein, and the health benefits of yoghurt for pregnant women, breastfeeding mothers, and toddlers. In the second stage, hands-on yoghurt-making practice was conducted using liquid full-cream milk and plain yoghurt starter. The mothers were actively involved in every step of the process, from heating the milk, cooling it, adding the starter, incubating it, and bottling it.

During the presentation, participants were given a break in the form of yoghurt-making to make the event more interactive. Yoghurt-making was chosen to lighten the mood and maintain participant enthusiasm. According to the Cambridge Dictionary, yoghurt-making is a game or activity designed to lighten the mood and introduce participants to each other at an event, helping them feel more relaxed. The implementation of activities can be seen in Figures 2, 3, 4, and 5.

Figure 2. Material Delivery

Figure 3. Making Yoghurt

Figure 4. The Results of Making Yoghurt That Has Been Created with Fruit

Figure 5. Documentation of Activities

Table 1. Result Pre-Test and Post-Test

Question	Pre-test		Post-test	
	Correct	Wrong	Correct	Wrong
What is stunting?	89%	11%	95%	5%
What are the main factors causing stunting?	78%	22%	95%	5%
Yoghurt is a processed product made from?	72%	28%	95%	5%
What are the benefits of yogurt for children's health?	89%	11%	95%	5%
What good bacteria are used in making yogurt?	67%	33%	84%	16%
Why can yoghurt help prevent stunting?	83%	17%	95%	5%
In the process of making yoghurt, milk is pre-fermented using?	44%	56%	83%	17%
One of the right ways to give yogurt to toddlers is?	95%	5%	95%	5%

Community service activities were evaluated through pre- and post-tests.

a) Correct answers to the question "What is stunting?" increased from 89% to 95%.
b) Understanding of "Main factors causing stunting" increased from 78% to 95%.
c) Knowledge that yoghurt is a dairy product increased from 72% to 95%.
d) Understanding of the health benefits of yoghurt for children increased from 89% to 95%.
e) Knowledge of the beneficial bacteria used in yoghurt production increased from 67% to 84%.
f) Understanding why yoghurt can help prevent stunting increased from 83% to 95%.
g) Knowledge of the process of making yoghurt through milk fermentation increased significantly from 44% to 83%.
h) Knowledge of the correct way to give yoghurt to toddlers remained high, at 95% in both the pre- and post-tests.

Overall, there was an increase in participants' understanding, especially in the technical aspects of making yoghurt (milk fermentation), with an increase of 39%.

Pre- and post-test results showed increased community knowledge about stunting and the benefits of yoghurt as a preventative measure. The largest increase was seen in understanding the yoghurt-making process (44% to 83%), indicating that before the training, community knowledge regarding technical aspects was minimal. Still, after the training, this knowledge significantly improved.

Furthermore, the increased knowledge regarding the causes of stunting and the benefits of yoghurt indicates that participants increasingly understand the relationship between nutritional needs and prevention. This aligns with previous research, which suggests that yoghurt, as a fermented milk product, contains probiotics, protein, calcium, and vitamins that can support child growth and prevent chronic nutritional disorders.

Although most indicators showed improvement, knowledge regarding the beneficial bacteria (probiotics) in yoghurt remained lower than in other aspects (84%). This indicates the need for greater emphasis on outreach regarding the microorganisms involved in fermentation to foster a more comprehensive public understanding.

Overall, this activity proved effective in increasing mothers' knowledge of toddlers and integrated health post (Posyandu) cadres regarding the importance of nutrition and how to utilise yoghurt as a strategy for stunting prevention. The participants' enthusiasm also demonstrated that participatory training methods can be an appropriate approach for nutrition education in rural communities.

4. Conclusion

A community service activity, including stunting awareness raising and yoghurt-making training in Jatisari Hamlet, Playen Village, Gunungkidul Regency, yielded positive results and received high enthusiasm from mothers of toddlers and integrated health post (Posyandu) cadres. This training successfully increased community awareness of the importance of stunting prevention through nutritional support, particularly animal protein.

Yoghurt, a fermented milk product rich in protein, calcium, vitamins, and probiotics, has proven to be a healthy alternative source of nutrition, friendly to those with lactose intolerance, and easy to produce at home. With direct community involvement in yoghurt-making, this activity broadens nutritional knowledge and provides practical skills that can improve family health and open up productive economic opportunities.

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