

Demonstration of Moringa Leaf Utilization for Micronutrient Sufficiency in Stunting Prevention in Limbangan Wetan Village, Brebes Regency

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Abstrak

Kegiatan ini dilatarbelakangi oleh tingginya angka stunting di Kelurahan Limbangan Wetan. Demonstrasi Pemanfaatan Daun Kelor Sebagai Sumber Gizi Mikro Dalam Upaya Pencegahan Stunting dilakukan di Kelurahan Limbangan Wetan, Kabupaten Brebes. Selain itu, mahasiswa juga memberikan panduan pengolahan daun kelor dengan susu. Kegiatan Demonstrasi Susu Kelor dilaksanakan di kantor Kelurahan Limbangan Wetan, Kecamatan Brebes, Kabupaten Brebes, Provinsi Jawa Tengah. Metode yang diterapkan yaitu penyampaian materi dan demonstrasi pembuatan susu kelor yang disampaikan oleh mahasiswa Program Studi Gizi dan Kebidanan Universitas Alma Ata serta di bantu dengan teman-teman dari Prodi lain dan disertai sesi tanya jawab antara mahasiswa dan ibu hamil dan kader posyandu. Dalam demonstrasi ini, mahasiswa Gizi dan Kebidanan Universitas Alma Ata memaparkan materi berisi: definisi stunting, perbedaan stunting dan gizi buruk, ciri-ciri stunting, penyebab stunting, dampak stunting, cara mencegah stunting, dan asupan bernutrisi cegah stunting. Kegiatan demonstrasi menunjukkan hasil yang positif, terlihat dari antusiasme dan partisipasi aktif ibu hamil di Desa Limbangan Wetan. Temuan ini menunjukkan bahwa intervensi berbasis komunitas yang berfokus pada edukasi gizi dan pencegahan stunting dapat secara efektif melibatkan kelompok sasaran, menekankan pentingnya upaya berkelanjutan dalam mendukung kesehatan ibu dan anak di daerah pedesaan.

Kata Kunci: *stunting; demonstrasi; gizi seimbang; brebes*

Abstract

This activity was motivated by the high rate of stunting in Limbangan Wetan Village. In addition, students also provided a way to process moringa leaves using milk. Demonstration of the Utilization of Moringa Leaves as Micronutrient Adequacy in Stunting Prevention Efforts in Limbangan Wetan Village, Brebes Regency. The Moringa Milk Demonstration activity was carried out at the Limbangan Wetan Village office, Brebes District, Brebes Regency, Central Java Province. The method applied was the delivery of material and demonstration of making moringa milk delivered by students of the Nutrition and Midwifery Study Program, Alma Ata University and assisted by friends from other study programs and accompanied by a question and answer session between students and pregnant women and posyandu cadres. In this demonstration, students of Nutrition and Midwifery, Alma Ata University presented material containing: definition of stunting, differences between stunting and

malnutrition, characteristics of stunting, causes of stunting, impacts of stunting, how to prevent stunting, and nutritious intake to prevent stunting. The demonstration activities yielded positive outcomes, as evidenced by the high level of enthusiasm and active participation from pregnant women in Limbangan Wetan Village. These findings suggest that community-based interventions focusing on nutrition education and stunting prevention can effectively engage target groups, highlighting the importance of continued efforts to support maternal and child health in rural areas.

Keywords: *stunting; demonstration; balanced nutrition; brebes*

1. INTRODUCTION

Stunting is a growth disorder caused by prolonged nutritional deficiencies, where essential nutrients fall below the needs of a child over an extended period. This condition is identified by a child's height-for-age z-score (TB/U) below -2 Standard Deviations (SD). According to the Indonesian Ministry of Health, stunting often begins with underweight conditions or chronic energy deficiency. Without timely intervention, this can progress to stunting, emphasizing the need for adequate energy intake for affected children [2].

Stunting is most evident by the age of two, as this period is critical for a child's growth and development. During these first two years, health checks typically include measurements of height and weight, which help health professionals assess a child's growth against WHO standards. In addition to physical growth, developmental milestones in motor and cognitive functions also become clearer at this age. Children with stunting may experience delays in milestones like walking or speaking (1).

Stunting can be caused by direct factors, such as low birth weight and maternal height, as well as indirect factors, including education levels, knowledge, and parenting practices. Inadequate maternal nutrition during pregnancy, poor breastfeeding practices, and infections like diarrhea in early childhood further contribute to stunting. Socioeconomic factors, including limited access to healthcare and proper sanitation, also play a crucial role.

Beyond physical growth impairments, stunting affects brain development, leading to lower IQ levels and weakened immune systems. Stunted children are more prone to infections, slower in motor development, and may struggle academically. The long-term effects extend into adulthood, potentially reducing productivity and overall quality of life, which can impact national economic growth [8]. As a result, addressing stunting is a national priority in Indonesia, with the RPJMN 2020-2024 targeting a reduction to 11.8% by 2024. The focus is on targeted nutritional interventions during the first 1000 days of life (4).

Globally, the Sustainable Development Goals (SDGs) emphasize ending hunger and malnutrition while promoting sustainable agriculture. By 2030, the SDGs aim to achieve safe and nutritious food access for all, with a goal of reducing child malnutrition rates. In Indonesia, 37.2% of children experience stunting, with 12.1% suffering from wasting and 19.6% being overweight. Local data, such as that from Brebes Regency, show a gradual decline in stunting rates from 22.1% in 2010 to 17.14% in 2013, indicating the impact of targeted interventions (6).

Moringa oleifera, a plant rich in nutrients, has gained attention as a potential supplement to combat stunting. Found in dry tropical regions, its leaves are packed with protein and micronutrients, making them valuable for enhancing children's nutrition. Studies suggest that Moringa extract can improve nutritional status, such as increasing Body Mass Index (BMI) in undernourished children (7). Given its potential, initiatives like the "Demonstration of Moringa Leaves for Micronutrient Sufficiency" by KKN-T students at Universitas Alma Ata aim to raise awareness among pregnant women in Limbangan Wetan on the importance of stunting prevention.

2. METHOD

The demonstration of Moringa (Kelor) milk took place at the Limbangan Wetan Village Office, Brebes District, Central Java Province. The participants included 14 pregnant women and 3 community health workers (posyandu cadres). The demonstration was led by students from the Nutrition and Midwifery Programs of Universitas Alma Ata, with support from students of other study programs.

The method involved delivering health education and a practical demonstration of how to make Moringa milk. The sessions included a presentation of materials followed by a question-and-answer session between the students and the pregnant women, as well as the posyandu cadres.

The activities were carried out in two main stages:

I. Preparation Stage:

- a) Coordinated with village officials to identify the target audience for the education session, schedule, venue, and necessary equipment.
- b) Arranged logistical support, including materials and tools needed for the demonstration.

II. Implementation Stage:

- a) Prepared attendance lists, facilities, and other support materials.
- b) Conducted a lecture on stunting prevention using Moringa leaves, covering topics such as:
 - The definition of stunting and differences from malnutrition.
 - Signs and causes of stunting.
 - Impact of stunting on child development.
 - Nutritional strategies for stunting prevention.
- c) Demonstrated the process of making Moringa milk as a practical example of a nutritious supplement.
- d) Held an interactive Q&A session to address participants' questions and concerns.

3. RESULTS AND DISCUSSION

a. RESULTS

The Demonstration of Moringa Leaves Utilization as a Source of Micronutrients for Stunting Prevention took place in Limbangan Wetan Village, Brebes District, Central Java Province (Figure 1). This event was attended by 14 pregnant women and 3 posyandu (community health post) cadres,

demonstrating the local interest and community engagement in nutritional education.

The event commenced with opening remarks by a representative of the village leadership, highlighting the importance of local health initiatives in addressing stunting. This was followed by a welcome address from the group leader, who emphasized the role of community-based interventions in improving maternal and child health outcomes. The students from the Nutrition and Midwifery programs at Universitas Alma Ata presented detailed information covering several crucial aspects of stunting prevention on Table 1.



Figure 1. Demonstration of moringa leaves utilization as a source of micronutrients for stunting prevention

Table 1. Crucial Aspects for Demonstrating Key Topics

Topic	Material
Definition of Stunting	Stunting is a form of chronic malnutrition that hinders physical and cognitive growth in children. It was clarified in the presentation that stunting is different from wasting and underweight
Causes of Stunting	Multiple factors contribute to stunting, including inadequate maternal nutrition, low birth weight, poor feeding practices, and recurrent infections. Emphasis was placed on the link between maternal health and child development
Impact on Child Development	Long-term effects include reduced cognitive ability, increased susceptibility to illness, and diminished productivity in adulthood. The presentation underscored the urgency of prevention
Strategies for Prevention	Practical steps for mothers include maintaining a balanced diet during pregnancy and ensuring diverse food intake for children. Micronutrients like iron, calcium, and vitamins were highlighted, along with Moringa as a valuable nutritional source
Local Health Data	Local health data showed that approximately 19 children in the community suffer from malnutrition, putting them at risk for stunting. The data supports the need for targeted interventions

The presentation session revealed that, based on local health data, approximately 19 children in the community suffer from malnutrition, which makes them vulnerable to stunting. This data

underscores the need for targeted interventions like the demonstration to address both immediate and underlying causes of stunting.

Demonstration of Moringa Leaf Milk Preparation

After the theoretical session, the students conducted a hands-on demonstration on preparing Moringa leaf milk, showcasing a practical application of the nutritional information provided. The process included the following steps:

1. **Boiling Moringa Leaves:** Water was brought to a boil, after which Moringa leaves were added and allowed to steep until the mixture cooled. This process helps to retain the leaves' nutrient content while ensuring that the milk is safe for consumption.
2. **Blending and Straining:** The cooled leaves were blended and strained to obtain a concentrated Moringa extract. This step was demonstrated to ensure that participants could produce a smooth mixture suitable for mixing with other ingredients.
3. **Mixing with Nutrijel and Sweeteners:** Sugar and Nutrijel were combined with the Moringa extract in a pan and stirred until boiling. This process enhances the flavor and texture of the milk, making it more appealing for children.
4. **Cooling with Crushed Ice:** The hot mixture was poured over crushed ice to cool it quickly, ensuring that the jelly-like consistency formed correctly.
5. **Adding Milk:** Sweetened condensed milk and evaporated milk were added to enhance the flavor and caloric content, creating a rich and nutritious beverage



Figure 2. Moringa Leaf Milk

Outcomes and Feedback from Participants

The demonstration provided an opportunity for the participants to ask questions and clarify doubts, fostering an interactive learning environment. Many of the pregnant women expressed appreciation for the practical tips on how to incorporate Moringa into their diets. Some participants shared that they were previously unaware of the nutritional benefits of Moringa, especially its potential to supplement their diets with essential micronutrients during pregnancy.

Feedback gathered after the session indicated that the hands-on nature of the demonstration

made it easier for participants to understand and apply the information in their daily lives. The posyandu cadres, who play a key role in community health monitoring, highlighted that the demonstration provided them with new tools to educate other mothers in the village about affordable and accessible ways to prevent stunting (Figure 2).

b. DISCUSSION

The success of this demonstration highlights the importance of community-based educational initiatives in tackling public health challenges like stunting. By focusing on practical solutions such as using locally available resources like Moringa leaves, this program aligns with sustainable development goals (SDGs) to reduce hunger and improve child nutrition.

Moringa oleifera, known for its rich content of iron, calcium, and vitamins, serves as a cost-effective supplement to traditional diets, especially in rural areas where access to diverse foods might be limited. The practical approach demonstrated in this program can be replicated in similar settings across Indonesia, helping to address the micronutrient deficiencies that contribute to stunting. Moreover, the engagement of university students in this initiative not only enhanced the knowledge of the participants but also provided valuable field experience for the students.

Such collaborations between academic institutions and local communities are critical for building sustainable health programs that have long-term impacts. When compared with other stunting prevention initiatives, such as the provision of fortified foods or supplements, the use of Moringa leaves offers several advantages. It promotes self-sufficiency by teaching communities to utilize available resources and fosters a sense of ownership over their health. However, challenges such as ensuring consistent access to Moringa leaves and maintaining interest in dietary changes remain and should be addressed through follow-up sessions and ongoing support from local health workers.

Given the positive reception and the practicality of the demonstration, there is potential to scale up this initiative. Future programs could include workshops on cultivating Moringa at home, thereby ensuring a continuous supply of fresh leaves for families. Additionally, partnerships with local governments and health agencies could support broader dissemination of similar nutritional education programs.

4. CONCLUSION

The demonstration of Moringa leaf milk preparation in Limbangan Wetan Village serves as a model for community-based nutritional education aimed at preventing stunting. By integrating educational content with practical demonstrations, this program has effectively raised awareness and equipped participants with knowledge they can apply to improve their families' health. The active participation of local community members and the potential for scalability suggest that such initiatives could play a vital role in achieving national stunting reduction targets and contributing to better health outcomes for future generations.

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