



The Benefits of Moringa Oleifera to Prevent Stunting Diseases in Mugarsari District, Tasikmalaya

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ABSTRACT

Stunting is a serious health problem in Indonesia, especially in rural areas such as Mugarsari Sub-district, Tasikmalaya. This condition is caused by a lack of adequate nutritional intake during a child's growth period, which can result in impaired physical and cognitive development. This community service aims to increase community awareness and knowledge about the benefits of Moringa oleifera, or Moringa leaves, in stunting prevention. Community service activities include education, training, and mentoring to the community regarding the planting, processing, and consumption of Moringa oleifera as a critical source of nutrition. The results of this program show an increase in community awareness about the importance of balanced nutrition and the potential of Moringa oleifera as a natural solution in overcoming stunting. In addition, the programme also succeeded in encouraging the community to independently utilise Moringa oleifera in their daily diet, which in turn is expected to reduce the stunting rate in this region.

INTRODUCTION

Stunting is still a significant problem in the population order caused by nutritional problems in children under five years of age and is common in developing countries, which is an indicator of chronic malnutrition in children under five years of age (Atamou et al., 2023; Uwiringiyimana et al., 2022). Stunting occurs as a result of a lack of nutritional intake from food that lasts long enough to cause toddlers to become stunted (Syafrawati et al., 2023). The occurrence of stunting in the short term will have a negative impact on toddlers in the form of impaired physical and mental development, as well as decreased intelligence and metabolic problems. Meanwhile, the long-term impact of stunting can be in the form of decreased cognitive abilities and decreased endurance so that the body is susceptible to disease and is at risk of degenerative diseases such as diabetes Mellitus, cardiovascular disease, cancer, stroke, and cannot compete at work which will result in low productivity (Dadras et al., 2024; Ezzat et al., 2019; Tamir et al., 2024).

The prevalence of stunted toddlers in the world is 21.9 per cent, and most of these stunted toddlers come from Asia. Furthermore, data from the Indonesian Toddler Nutrition Status Survey (SSGBI) in 2021 explained that the prevalence of stunting in Indonesia decreased from 2019 to 2021, namely from 27.67 per cent to 24.4 per cent (Samsudin et al., 2023). Handling the incidence of stunting has become one of the national development priorities described in the RPJMN 2020-2024, with a target of reducing the prevalence of stunting to 14 per cent by 2024.

Meanwhile, according to the Ministry of Health's Status of Nutrition Indonesia (SSGI) survey, the prevalence of stunting in West Java reached 20.2 per cent in 2022, ranking 22nd nationally. This figure also decreased by 4.3 points from the previous year. In 2021, the prevalence of stunting in West Java was 24.5 per cent. There are 11 districts/cities with a prevalence of stunting above the provincial average. The remaining 16 districts/cities are below the provincial figure.

The Health Office of Tasikmalaya City, West Java, has recorded an increase in cases of stunting or failure to thrive due to malnutrition during the COVID-19 pandemic. The increase in stunting reached 17.58 per cent during the pandemic period until October 2021. The number of stunting cases in Tasikmalaya City has now reached 5,290 children under five. 'With a total of 5,290 toddlers in 69 urban villages spread across ten sub-districts. The toddlers who experience stunting are mostly due to food intake that does not meet nutritional needs, and most are in Tamansari, Cibeureum, Indihiang and Cipedes sub-districts,' said Head of Tasikmalaya Health Office Uus Supangat.

In connection with this, efforts are needed to fulfil protein adequacy for toddlers, including the use of Moringa plants. The Moringa plant is known as 'The Miracle Tree' because it is naturally proven to be a source of medicinal nutrients that can prevent stunting (Ab et al., 2024; Sharma et al., 2023). Moringa is not only rich in nutrients but also has functional properties because this plant has properties and benefits for human health.

On Earth Day 2008, the National Institutes of Health (NIH) stated that moringa is a plant that has many advantages, including being a source of protein and iron that are not found in other plants. Here is a comparison of moringa plants with other food source plants: 7 times the vitamin C in oranges, four times the calcium in milk and twice the protein in yoghurt. Contains many other vitamins and minerals, such as Vitamin A, zinc, and all essential amino acids. (Mthiyane et al., 2022).

Many names in different countries know Moringa and the Dravidian languages. There are many local names for it, but all are derived from the root 'Morunga'. In English, it is commonly known as the Horseradish tree, Drumstick tree, Never Die tree, West Indian Ben tree, and Radish tree. Moringa is popularly called 'drumstick' because its pods resemble drumsticks. While in the Nile Valley region, Moringa is known by the name 'Shagara al Rauwaq', which means 'purifying tree'. In Pakistan, Moringa is locally known as 'Sohanjna' and is grown and cultivated throughout the country (Mart et al., 2022).

Recently, Moringa has been used successfully in the fight against malnutrition in children and in efforts to boost the immune system in many developing countries (Ponka et al., 2022). Traditional medicine has long used Moringa for the treatment of various diseases, including recovery from liver damage. Moringa is also often used to complement modern medicines in chronically ill patients, including those with AIDS and HIV-related diseases (Aim et al., 2024). Such are the many benefits of the Moringa plant that 14 September has been designated by the International Society for Horticultural Science (ISHS) as Moringa World Day.

In 2021, a collaboration between Siliwangi University (Unsil) and PT MOI was carried out, to be precise, on Monday, December 20, 2021, through the signing of a memorandum of understanding (MOU) between Unsil and PT MOI, which took place in the new building of the Faculty of Agriculture (Faperta) Unsil, Mugarsari location, Tamansari sub-district, Tasikmalaya City.

The cooperation is carried out for activities, namely, Development of Education Research Implementation and Community Service.

The moringa garden managed by the collaboration currently has a population of 10,000 moringa plants, which are divided into several clusters, namely the leaf cluster, flower cluster and seed cluster. The division based on the cluster is in accordance with its purpose. Namely, the leaf cluster is intended to produce leaves, the flower cluster to produce flowers, and the seed cluster to produce seeds. It is in accordance with the purpose of moringa plant management because all parts of the moringa plant can be taken advantage of according to their intended use.

The results of moringa garden management have produced Moringa leaves with good quality and have successfully made various processed products from moringa plants, ranging from moringa tea, moringa noodles, moringa grass jelly, moringa mochi, curos, moringa Bites Rolls and others. The success of Siliwangi University in developing moringa plants needs to be socialised to the community to help deal with various problems in the community, including those related to the prevention and handling of stunting. It is in line with its

duties and functions as a university with its Tri Dharma tasks, especially the third dharma, namely Community Service (PkM).

Noting the statement of the Head of Tasikmalaya City Health Office, Uus Supangat, on Thursday (14/10/2021) described above that Tasikmalaya City is currently facing a population problem, namely stunting, which occurs in three sub-districts, namely Tamansari, Cibeureum, Indihiang and Cipedes sub-districts,. So, PkM activities will be carried out in the form of counselling and training related to the delivery of material on the million benefits of Moringa in preventing and handling stunting problems in Tamansari District, which is the location of Unsil's presence on the new campus.

IMPLEMENTATION AND METHODS

The target community for this PkM activity are mothers who are members of the Saung Kirai Farmer Group and KWT Dahlia in Tamansari District, where the Faculty of Agriculture of Universitas Siliwangi is located. The PkM carried out is a form of Unsil's concern through the Faculty of Agriculture for the community around the campus. The implementation of this activity is expected to bring Unsil closer as a higher education institution with its Tri Dharma to participate in efforts to improve the knowledge and skills of the community around the campus in particular and increase Unsil's participation in helping to deal with problems faced by the Tasikmalaya City government in general.

Furthermore, to support the smooth implementation of PkM activities, the implementation team was divided into tasks, and the target group was visited. This visit is needed to prepare everything, including the activity plan. The next step is to coordinate with the Community Service Institute of Siliwangi University and prepare training modules in accordance with the material presented.

As a guideline for the guidance of all parties involved, a schedule for implementing activities was made to harmonise the availability of time between participants and the implementation team. Other preparations are the preparation of administrative completeness and the preparation of various facilities and infrastructure needed, including monitoring and evaluation.



Figure 1. Community Service Methods

Thus, the methods implemented for this PkM programme are coordination meetings, education, and training, as well as guidance and direction on the benefits of moringa plants in overcoming health problems, especially in handling stunting. The implementation of activities is complemented by discussions and questions and answers with the target group of PkM participants to ensure that the material presented can be understood. Another thing is to carry out practical activities for processing moringa into various processed forms so that it can become a variety of food ingredients that are favoured by various groups of the community, especially toddlers. This activity will end with the preparation of an activity report.

RESULTS AND DISCUSSION

1. Counselling on the benefits of moringa for handling and controlling stunting

The material on the benefits of moringa for handling and controlling stunting was delivered to participants through counselling. This counselling aims to change people's lives for the better from the existing situation.



Figure 2. Counselling Activities on the Benefits of Moringa for Stunting Prevention and Control

The counselling location, as described in the background, is an area where toddlers experience stunting because their food intake does not meet nutritional needs. The extension activity began with the opening of the host, Mr Faqihuddin, SP, MP. It is then continued with a speech from the Professor of Faperta Unsil, Prof. Dr. H. Rudi Priyadi, Ir., MSc., who conveyed the need for awareness always to maintain the health of themselves, families and communities in order to carry out all activities or life activities properly. One of the efforts that can be made is to maintain the intake of healthy and nutritious foods, including Moringa plants.

Moringa plants are known to have a very high nutritional content. Moringa plants are rich in phosphorus, folic acid, β -carotene and glutamic acid. Moringa plants are also a good source of phytosterols such as sitosterol, campesterol and stigmasterol, which can increase estrogen production (Ab et al., 2024). High levels of vitamins A, C and E are present in moringa leaves. Vitamin A plays a crucial role in vision, immunity, cell growth differentiation and reproduction. Vitamin C and Vitamin E help protect against free radicals, thus serving as a good source of antioxidants. In addition, the moringa plant has a high content of terpenoids, anthraquinones and glycosides. Stems, seeds, leaves and flowers contain 30%, 44% and 31% amino acids, respectively. Oleic, linoleic and linolenic acids are present at 76% in moringa seed oil, which is comparable to olive (Mart et al., 2022).

The material was continued by Dr Hj Rina Nuryati, Ir., MP., who explained further the benefits of moringa for stunting prevention and treatment. The material was delivered by first explaining about stunting. Referring to what was conveyed by WHO (2015), stunting is a disorder of growth and development of children due to chronic malnutrition and repeated infections, which is characterised by length or height below the standard. Furthermore, according to WHO (2020), stunting is short or very short based on length/height for age which is less than -2 standard deviations (SD) on the WHO growth curve, which occurs due to irreversible conditions due to inadequate nutritional intake and repeated / chronic infections that occur within 1000 HPK (Sin et al., 2024).

Furthermore, stunting has short-term and long-term implications. Short-term implications are disruption of brain development and intelligence, metabolic disorders, physical growth disorders, and increased health costs. The long-term implications are not optimal cognitive and physical development and decreased immunity, so they are easily sick and are at high risk of degenerative diseases such as diabetes, obesity, heart disease, cancer, stroke and disability in old age.

Given stunting's enormous impact, efforts need to be made to prevent and handle it. Bapenas (2019) explains that handling stunting has become one of the national development priorities described in the 2020-2024 RPJMN. The government's target is to reduce the prevalence of stunting to 14% by 2024.

Prevention of stunting can be done with various efforts, namely providing education to parties involved in preventing stunting, such as cadres, mothers of toddlers, pregnant women, women of childbearing age, or premarital women who are prospective mothers. Education can be done through various methods such as counselling, lectures, and training to empower mothers of children under five; stunting prevention can also be carried out by forming study groups that will be a forum for learning and discussing mothers of children under five independently accompanied by health facilitators. In addition, stunting prevention can be done by providing additional food to toddlers, such as *Moringa oleifera*, where the essential ingredients are easily found in the community environment (Katmawanti et al., 2021).

In an effort to obtain optimal benefits from the nutrients contained in the moringa plant, Mr Dadun Abdul M. SP., MP, continued the material, explaining how to process moringa into various types of food ingredients. Moringa can also be consumed by making moringa tea.

In addition, moringa leaves can also be made into clear vegetables with a mixture of sweet corn or carrots and other vegetables. In the process, sweet corn or carrots are boiled first until soft. Add spices according to taste, wait a few moments until the sweet corn or carrot cooking water cools slightly, then add moringa leaves that have been released from the stalk and have been washed clean. In addition, moringa leaves can also be used as an additional topping on chicken pipes, fish pipes or tofu pipes, including in making egg omelettes, which are not only healthy but also add flavour and beauty to the dishes made.



Figure 3. Sweet corn and moringa clear vegetable

Another way of processing moringa is by making moringa flour. It is very effective because, in addition to being able to be used easily when needed, it can also be stored longer. Moringa leaf flour is made with the following steps: 1) Wash the moringa leaves, then place the leaves on a tray and let them dry for 15 minutes; 2) Spread the moringa leaves thinly on a net, in a well-ventilated room and avoid direct heating in the sun, 3) always try to turn the moringa leaves periodically so that all parts of the leaves dry evenly and completely dry, usually the leaves need a maximum of 4 days, 4) then can be pounded or ground until smooth like powder.

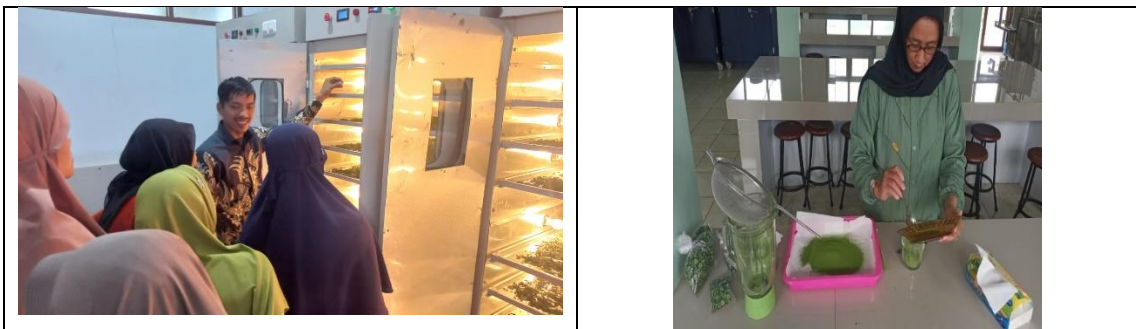




Figure 4. Processing of Moringa Leaves into Moringa Flour



Figure 5. Drying and Grinding of Moringa Leaves





Figure 6 : Various Processed Products of Moringa Plant



Figure 7. Processed Moringa Leaf Flour into Moringa Pudding and Boku

Moringa leaf flour can be used to make various food ingredients, including moringa pudding, moringa boku, moringa sponge cake, moringa noodles, and other preparations.

CONCLUSIONS AND RECOMMENDATIONS

Stunting is a serious health problem in Indonesia, especially in rural areas such as Mugarsari District, Tasikmalaya, which is caused by the lack of adequate nutritional intake. To address this problem, a community service programme was conducted with the aim of increasing community awareness and knowledge about the benefits of Moringa (*Moringa oleifera*) leaves in stunting prevention. The programme involved education, training, and mentoring activities related to planting, processing, and consumption of Moringa leaves as a source of essential nutrients. The results of this programme showed an increase in community awareness about the importance of balanced nutrition and the potential of Moringa leaves as a natural solution to stunting, as well as encouraging the community to utilise Moringa leaves in their daily diet, which is expected to reduce stunting rates in the area.

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