



Efforts to Alleviate Stunting by Utilizing Digitalization of Media and Additional Food Based on Local Food to Improve Nutritional Status in Integrated KKN Andalas University

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ABSTRACT

Stunting remains a major malnutrition problem in Indonesia. The prevalence of stunting in West Sumatra in 2022 was higher than the national average prevalence (21.6%) which was 25.2%. Nagari Sungai Nyalo Mudiak Aia is one of the Nagari in Pesisir Selatan Regency, - including areas with stunting problems. This community service activity was conducted to address and overcome the issue of stunting through active participation in Posyandu activities. It was carried out from July to August 2024 using monitoring, counseling, and training methods for community health cadres and mothers of toddlers in Nagari Sungai Nyalo Mudiak Aia. Digital monitoring of toddlers' nutritional status revealed that 25 children (32.9%) were stunted, with 20 (26.3%) classified as moderately stunted and 5 (6.6%) as severely stunted. In addition, training was provided on the use of local food sources to meet toddlers' nutritional needs. It is recommended that cadres always innovate in implementing integrated health posts to increase visits and the interest of toddlers' parent in coming to integrated health POSYANDU.

Keywords: local food, media digitalization, prevention and education, stunting

INTRODUCTION

Adequate nutrition in early childhood represents a fundamental determinant of optimal physical growth, neurodevelopment, and cognitive function. The early years, particularly the first 1,000 days of life, constitute a critical window for brain architecture formation and the maturation of vital organ systems. Nutritional adequacy during this period exerts profound and lasting effects on a child's health trajectory and future potential (Ramadityo, 2023). One of the major nutritional deficiencies in Indonesia is the high prevalence of stunting and wasting among toddlers, as well as anemia and chronic energy deficiency (CED) among pregnant women (Fitriani et al., 2022). Stunting is a condition in which children under the age of five fail to grow properly from the womb due to chronic malnutrition, resulting in shorter stature and impaired growth and development. Stunting affects intelligence levels, increases susceptibility to diseases, and reduces productivity, which in turn hampers economic growth, exacerbates poverty, and widens inequality in the future (Direktorat Jenderal Kesehatan Masyarakat, 2021).

According to data from the World Health Organization, the prevalence of stunting in 2022 reached 148.1 million, or 22.3% of children under the age of five worldwide. Globally, nearly all stunted children are in Asia (52%) and Africa (43%). Based on trends from 2012 to 2022, the Annual Average Rate of Reduction (AARR) in global stunting was only 1.65% per year. To achieve the global target of reducing the number of stunted children to 88.9 million (13.5%) by 2030, an annual reduction rate of 6.08% is required (World Health Organization, 2023).

The 2018 (Riskesmas) results showed that the prevalence of stunting in Indonesia reached 30%. Meanwhile, the 2017 Nutritional Status Monitoring (PSG) results indicated that the prevalence of stunting among toddlers remained high at 29.6%, exceeding the threshold set by the World Health Organization (WHO), which is 20%. Additionally, the 2021 Indonesian Nutrition Status Survey (SSGI) reported that 6 million out of a total of 23 million children in Indonesia experienced stunting (Kementerian Kesehatan RI, 2018) (Widiyati, n.d.) In other words, 1 in 3 Indonesian children experiences stunting. The 2022 Indonesian Nutrition Status Survey (SSGI) reported that the prevalence of stunting in Indonesia reached 21.6%, the prevalence of wasting was 7.7%, the prevalence of underweight was 17.1%, and the prevalence of overweight was 3.5% (Supardi et al., 2023).

The stunting prevalence rate in West Sumatra in 2022 remained above the national average (21.6%), reaching 25.2%. This figure also showed an increase from the previous year (2021), when the stunting prevalence rate in West Sumatra was 23.3%, marking a 1.9% rise (Kementerian Kesehatan Republik Indonesia, 2023) In 2023, the stunting prevalence rate in West Sumatra Province decreased to 23.6%. However, it still fell short of the 2023 stunting reduction target of 17%.

Pesisir Selatan Regency experienced an increase in the prevalence of stunting among toddlers from 2021 to 2022. In 2021, the stunting prevalence was 25.2%, which rose to 29.8% in 2022. Nagari Sungai Nyalo Mudiak Aia is located in Koto XI Tarusan District, Pesisir Selatan Regency, West Sumatra Province. Koto XI Tarusan District has a total area of 437.37 km², while Nagari Sungai Nyalo Mudiak Aia covers 21.74 km². It is situated 19 km from the district capital and 55 km from Andalas University, with a population of 919 people (BPS Kabupaten Pesisir Selatan, 2023) Nagari Sungai Nyalo Mudiak Aia also has cases of stunting among toddlers.

Stunting can be caused by multiple factors. Some of the key factors influencing stunting include low birth weight (LBW), suboptimal exclusive breastfeeding, early initiation of breastfeeding (EIB), the timing of complementary feeding (MP-ASI), history of zinc and iron deficiency, history of infectious diseases, and genetic factors. From a socioeconomic perspective, several factors also contribute to stunting, such as family income, maternal education and knowledge, and environmental sanitation conditions (Hardinata et al., 2021; Islamiah & Tallo, 2020).

METHOD

The community service activities were conducted through monitoring, counseling, and training methods for mothers of toddlers and Posyandu (integrated health service post) cadres in Nagari Sungai Nyalo Mudiak Aia from July to August 2024. Respondent selection for nutritional status monitoring was carried out using a total sampling method, involving all toddlers in Nagari Sungai Nyalo Mudiak Aia as participants. The techniques used included recording toddlers who attended the Posyandu and conducting home visits for those who were absent on the day of the Posyandu activity. Nutritional status monitoring was facilitated using the *GiziAnakku* digital application developed by the service team, which is accessible via Android devices. For the counseling sessions, a lecture

method was applied, while the training sessions were conducted through hands-on practice by the service team with mothers and Posyandu cadres. The training materials covered topics such as stunting prevention, stunting management efforts, and food processing techniques using locally sourced ingredients. Following the measurement and weighing of the toddlers, the collected data were analyzed descriptively to determine the nutritional status of the children.

RESULTS AND DISCUSSION

The community service activities have been integrated with the 2024 Unand KKN program. The activities carried out include educational sessions in the form of counseling to enhance the knowledge of pregnant women, mothers of toddlers, and Posyandu cadres on the prevention and management of stunting. Additionally, nutritional status monitoring of toddlers has been conducted, along with training sessions to improve the skills of mothers of stunted and undernourished toddlers in processing local food for stunting prevention.

1. Education to Enhance the Knowledge of Pregnant Women, Mothers of Toddlers, and Posyandu Cadres in the Prevention and Management of Stunting

Nagari Sungai Nyalo Mudiak Aia, as one of the areas with a relatively high stunting rate, requires serious attention in efforts to prevent and manage stunting. Therefore, the role of pregnant women, mothers of toddlers, and Posyandu cadres is crucial in ensuring that children receive adequate and appropriate nutritional intake for their growth and development.

This counseling session aimed to enhance the knowledge and awareness of pregnant women, mothers of toddlers, and Posyandu cadres regarding the importance of balanced nutrition and proper parenting practices in preventing stunting. Additionally, the activity introduced an Android-based application designed to assist in detecting stunting based on children's height and provided education on nutritious meal planning and healthy parenting practices.

Through this counseling session, participants were expected to gain a better understanding of their role in stunting prevention and apply the knowledge acquired in their daily lives. The educational session was conducted on Monday, July 29, 2024, at the Office of the Wali Nagari Sungai Nyalo Mudiak Aia, Pesisir Selatan Regency.

The topics covered in this session included Efforts to Prevent and Manage Stunting, Balanced Nutrition, and an Introduction to the "Gizi Anakku" Application. The event was attended by local government officials, mothers of toddlers, and Posyandu cadres. The session was highly successful, as evidenced by the enthusiastic participation of the mothers and Posyandu cadres, as well as their improved understanding of stunting.

Collaboration among various stakeholders is essential in the prevention and management of stunting. As the frontline healthcare service unit, Posyandu plays a crucial role in addressing stunting, given its direct engagement with the community. The strategies implemented by Posyandu should be more adaptive and innovative, such as through extensive media campaigns, capacity building for healthcare workers and Posyandu cadres, and the revitalization of planning at the nagari government level, focusing on stunting management. By adopting these approaches, stunting prevention efforts can be carried out more effectively and optimally (Kabullah et al., 2021). This community service activity was well received by all Posyandu cadres and the local government. This activity should be institutionalized as a regular agenda within the POSYANDU program and incorporated into the region's priority development agenda. Given the discovery of local food sources with

high potential in preventing stunting—yet still unfamiliar to the community—there is a need for future efforts focused on socialization, development of processing methods, campaign media, and other strategic interventions.



Figure 1. Knowledge enhancement education for pregnant women, mothers of toddlers, and posyandu cadres in stunting prevention and management

2. Monitoring the Nutritional Status of Toddlers

This activity is based on the urgency and challenges in addressing stunting in the community. Stunting, a condition of impaired growth due to chronic malnutrition during the critical early stages of a child's growth and development, remains a serious issue in many regions of Indonesia. The high prevalence of stunting indicates that efforts to prevent and manage child malnutrition have not yet been fully effective.

One of the key strategies in stunting prevention and management is the regular monitoring of child growth and development at Posyandu. The measurement of height, weight, and head circumference conducted by Posyandu cadres and the community service team serves as a crucial initial step in detecting potential stunting cases.



Figure 2. Monitoring the nutritional status of toddlers

The monitoring of toddlers' nutritional status was carried out by actively participating in Posyandu activities. For those who did not attend the Posyandu sessions, the community service team conducted home visits to collect data on toddlers' nutritional status. In this community service activity, a total of 76 toddlers were monitored, with the following results:

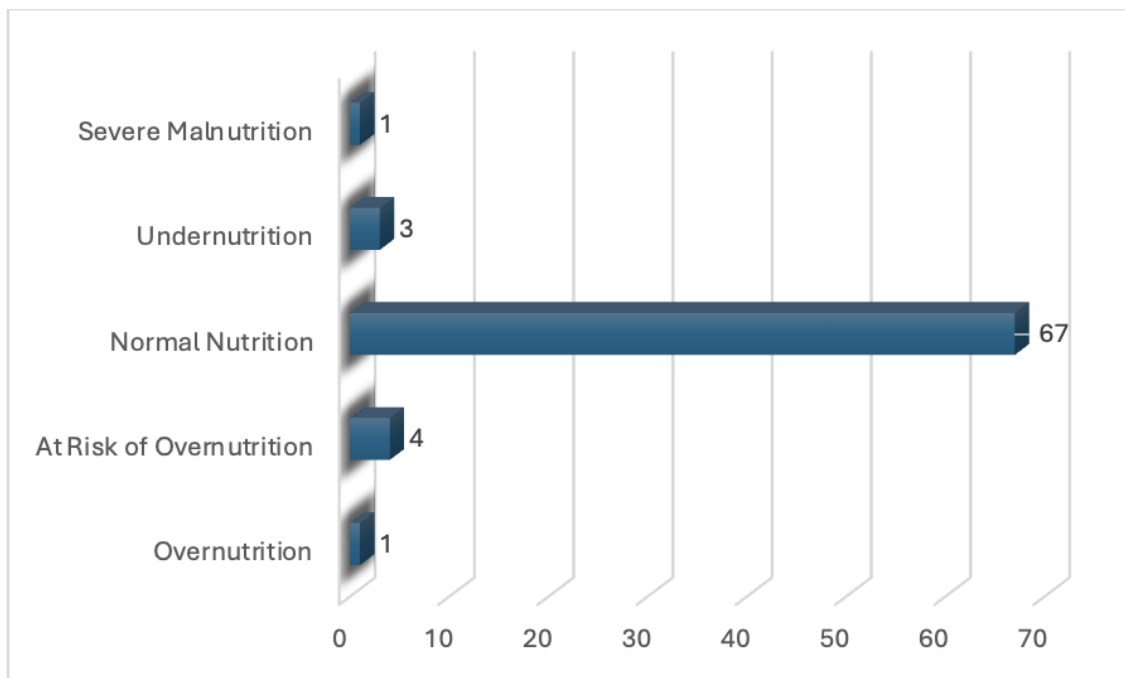


Figure 3. Results of toddler measurements based on BMI-for-Age (BMI/U)

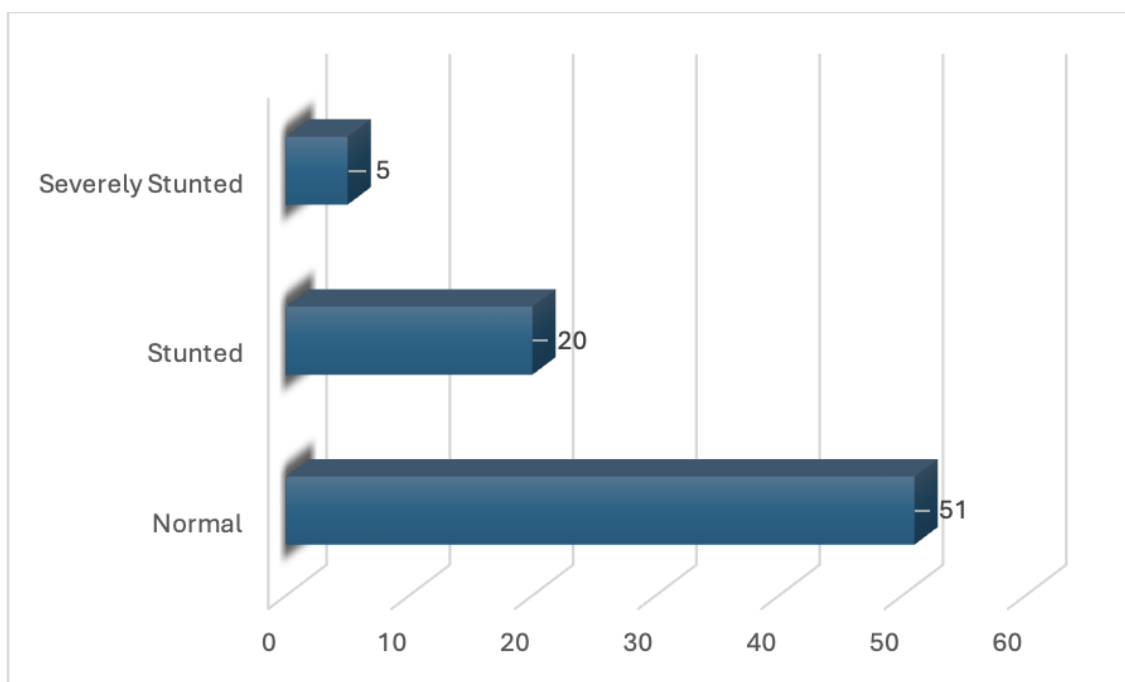


Figure 4. Results of toddler measurements based on height-for-age (H/A) or length-for-age (L/A)

In Figure 4, the nutritional status assessment of 76 monitored toddlers shows that 51 toddlers (67.1%) had a normal nutritional status. Meanwhile, 25 toddlers (32.9%) were classified as stunted, consisting of 20 toddlers (26.3%) with moderate stunting and 5 toddlers (6.6%) with severe stunting.

3. Enhancing the Skills of Mothers of Stunted and Undernourished Toddlers in Processing Local Food for Stunting Prevention

Nagari Sungai Nyalo Mudiak Aia possesses abundant natural resources, particularly in the fisheries sector, with anchovies as one of its primary local commodities. Anchovies

are not only widely consumed but also serve as a highly nutritious food source, rich in protein, calcium, and omega-3, which are essential for child growth and development.

Despite this potential, stunting remains a significant public health issue in many regions, including Nagari Sungai Nyalo Mudiak Aia. Stunting, characterized by low height-for-age, is primarily caused by chronic malnutrition during early childhood. One of the most effective strategies for stunting prevention is ensuring adequate and balanced complementary feeding (MPASI) from an early age, which plays a crucial role in providing essential nutrients to support optimal growth and development.

The downstream processing of natural resources, specifically anchovies, into complementary feeding (MPASI) products is a strategic initiative aimed at optimizing local potential while addressing public health challenges. Downstream processing refers to the transformation of raw materials into higher-value products, and in this context, anchovies are processed into ready-to-consume, nutrient-rich MPASI. Beyond its health benefits, this initiative also creates economic opportunities for the local community. By developing anchovy-based MPASI products, residents can meet children's nutritional needs while simultaneously producing marketable goods with broader commercial potential. This approach not only enhances child nutrition but also contributes to increased household income and overall community well-being in Nagari Sungai Nyalo Mudiak Aia.

Furthermore, this initiative aligns with efforts to preserve local culture and indigenous knowledge, as regional specialty products, such as anchovies, are processed into value-added goods that can be introduced to future generations. This approach not only strengthens local identity but also expands the market reach of traditional products to a broader consumer base. Given this background, the downstream processing of natural resources for anchovy-based complementary feeding (MPASI) contributes not only to improving child health in Nagari Sungai Nyalo Mudiak Aia but also has positive economic and cultural impacts by fostering local economic development and supporting cultural preservation.

The downstream processing of natural resources for anchovy-based complementary feeding (MPASI), as a regional specialty product of Nagari Sungai Nyalo Mudiak Aia, represents a strategic initiative that integrates local resource utilization with improving community nutrition. This program focuses on the processing of anchovies, which are rich in essential nutrients such as protein, calcium, and omega-3, into healthy and highly nutritious MPASI products for toddlers.

Based on the team discussion, it was decided to develop three types of anchovy-based processed products: anchovy sambal, anchovy floss, and anchovy broth. The next step involved formulating recipes for each product. Once the optimal recipes were determined, sensory evaluation was conducted to ensure that the final products met consumer preferences and predefined quality standards. The process was then followed by packaging selection and the design of a product logo to enhance branding and marketability.

The final outcome of this initiative is the development of anchovy-based complementary feeding (MPASI) products, which can be distributed to families in Nagari Sungai Nyalo Mudiak Aia and surrounding areas. These products are expected not only to meet toddlers' nutritional needs but also to contribute to stunting prevention and management in the region. Furthermore, this initiative aims to strengthen local economic growth by creating value-added products that can be marketed at both local and regional levels. The downstream processing approach also emphasizes the principle of sustainability, ensuring that natural resource utilization is conducted responsibly while preserving environmental balance. This approach seeks to maintain the long-term availability of anchovies as a nutritious food source for future generations.

As a framework for limitation and future development, it is necessary to conduct research involving communities and children to assess the acceptability of the product.

Furthermore, future food processing should involve nutritionists to analyze its nutritional content, potential health benefits, and to ensure hygienic preparation practices.



Figure 5. Process and outcomes of local food processing for stunting prevention

Consistent with the community engagement program conducted by Deswita et al. (2019), the training effectively enhanced knowledge and skills related to the management of Posyandu. It also improved the capacity of Posyandu cadres in providing nutrition services and counseling, both within Posyandu facilities and during home visits. Furthermore, the program partners demonstrated an increased understanding of child growth assessment, the administration of Complementary Feeding (MP-ASI), and Supplementary Feeding (PMT) for children experiencing growth faltering or inadequate weight gain. Additionally, the training aimed to strengthen the capacity of community health workers in early detection of stunting risks among toddlers (Deswita et al., 2019).

This initiative has strong potential for continued implementation at the Nagari level. In the long term, the sustained development and utilization of local food products for stunting prevention and management are expected to contribute to addressing stunting issues in the region. Moving forward, the community service team, in collaboration with Nagari officials, can jointly monitor and evaluate the effectiveness of this program on a regular basis to ensure its sustainability and impact.

CONCLUSION

The community service activity was successfully implemented, supported by strong collaboration with local partners, including the Nagari administration, POSYANDU cadres, and families with toddlers. This initiative was also integrated with the 2024 Community Service Program (KKN) of Andalas University in Nagari Sungai Nyalo Mudiak Aia. The activity identified 25 toddlers (32.9%) as experiencing stunting, with 20 (26.3%) classified as moderately stunted and 5 (6.6%) as severely stunted. Through counseling and training sessions, participants were expected to gain a better understanding of their role in stunting prevention and to apply the acquired knowledge in their daily lives. Continuous interventions and serious attention from the nagari government are essential in addressing stunting issues, with active involvement from cross-sector stakeholders. Additionally, it is crucial for POSYANDU cadres to consistently innovate in service delivery to increase attendance and engagement among toddlers and their caregivers, ultimately contributing to the prevention of stunting.

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