

Conference Paper

Optimization of Stunting Prevention and Treatment Through Local Food Utilization

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*Corresponding author: E-mail:	ABSTRACT
yunita.sətya.tp@upnjatim.ac.id	Background: Stunting is a condition of failure to thrive in children which is characterized by a lower height than the standard height at a certain age due to chronic malnutrition. Objective: Analyze the incidence of stunting in Indonesia, the government's strategy for overcoming stunting through local food, to analyze the obstacles, advantages, and products resulting from research on the use of local food. Method: Systematic Literature Review (SLR) with PRISMA guidelines from 2017 to 2023, a total of 42 articles out of 104 articles. Results and Discussion: The prevalence of stunting in Indonesia in 2022 will decrease by 21.6%. The government's efforts to reduce the incidence of stunting are included in the strategy starting from the SDGs, RPJMN 2020- 2024, RAN-PASTI 2021-2024, to RAN-PG 2020-2024. One of the obstacles to the use of local food, namely low acceptance, while the benefits can increase the family economy. Research products to prevent and overcome stunting, such as corn milk, TORI meatballs, shredded catfish, and purple sweet potato cake. Conclusion: The prevalence of stunting in Indonesia in 2022 is still relatively high. Currently, the government is using the strategy contained in the RAN-PG by utilizing local food and improving nutrition services. The need for support from various cross-sectors is assisted by the use of technology so that stunting reduction can be implemented. Products resulting from research on the use of local food have emerged, ranging from heavy to light meals (snacks).
	Keywords: Optimization. local food. stunting

Introduction

Malnutrition is one of the causes of increasing child morbidity and mortality in Indonesia. In some developing countries, the incidence of malnutrition includes underweight, stunting, wasting, and micronutrient deficiencies. One of the targets of the Sustainable Development Goals (SDGs) is accelerating the reduction of stunting which is contained in the second goal, namely eliminating hunger and all forms of malnutrition and achieving food security. In 2024, a target is set to reduce the stunting rate by 14%, to achieve this target a stunting reduction of 3.8% per year is required. The results of the Indonesian Nutrition Status Survey (SSGI) show a decrease in the percentage of stunting events by 21.6% in 2022 (Eko & Fariz, 2023). This percentage globally is still relatively high because it is between 20% - <30%.

Stunting is a condition of failure to thrive in children characterized by a lower height than the standard height at a certain age. Stunting reflects the failure to thrive in children under five due to chronic malnutrition which is influenced by the nutritional status of pregnant women, the fetus, infant, and toddler, as well as infectious diseases experienced as toddlers. Apart from this, stunting can also be caused by economic conditions, social culture (Beal et al., 2018), mother's knowledge, environmental sanitation, and health services. If it isn't immediately addressed, it will harm children's cognitive and motor development, and the risk of excess nutrition will increase, in adulthood it will

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increase the risk of degenerative diseases and non-communicable diseases, and reduce productivity as adults.

The main cause of stunting is that at the beginning of the first 1000 days of life (1000 HPK) nutritional intake is not optimally fulfilled (Schwarzenberg & Georgieff, 2018). Higher food prices that are not followed by an increase in family income can lead to limited access to nutritious food consumption for toddlers. Low mother's knowledge of processing nutritious food and sociocultural influences can also cause low consumption of nutritious food for toddlers. Utilization of local food ingredients can be an alternative to overcoming stunting in terms of economic, social, and cultural. Writing this article aims to: 1) analyze the incidence of stunting in Indonesia; 2) find out the government's strategy in overcoming and preventing stunting through the use of local food; 3) analyze the obstacles, advantages, and solutions from using local food, and 4) find out the types of local food research results to overcome and prevent stunting.

Material and Methods

Writing this article using Systematic Literature Review (SLR) with PRISMA guidelines (Fauziah & Krianto, 2022). Systematic Literature Review (SLR) is systematic and clear with a process of identification, analysis, and evaluation obtained through collecting available data using an explicit search method and involving a critical review process in its selection. Scientific sources are obtained from various national and international journals that are published online. The online databases used include Google Scholar, ResearchGate, and ScienceDirect. The time range for selecting articles from 2017 to 2023 with the keywords, "Stunting", "Local Food", "Optimization", and "Prevention and Management". In this article, the identification process is carried out, selecting articles based on titles and abstracts, combining, summarizing, and presenting the results in journals (Khoiriyah & Ismarwati, 2023). The flow of writing this article can be illustrated in Figure 1.



Results and Discussion Stunting conditions in Indonesia

The prevalence of stunting in Indonesia based on the results of the Indonesian Nutrition Status Survey (SSGI) in 2022 is 21.6%. This percentage is still relatively high when referring to WHO standards, which must be below 20%. Stunting events based on the 2019-2021 SSGI data trend, began before birth and then occurred most at the age of 6 months to 12 months by 13.8% and 27.2% respectively. These results show the importance of fulfilling nutrition in pregnant women, nursing mothers, and nutrition in MP-ASI for toddlers (Kemenkes RI, 2023). The malnutrition condition occurs when the baby is in the womb and the early period after the baby is born, but the stunting condition will appear after the baby is 2 years old. The definition of stunting according to the Ministry of Health is children under five with a z-score value less than - 2 SD to -3 SD (stunted) and less than -3 SD (severely stunted). The impact of stunting, namely increasing the risk of morbidity and mortality in children, decreasing the immune system, and increasing the risk of infectious diseases and degenerative diseases. The long-term impact is the failure of children to reach their cognitive potential and physical abilities. It can affect work capacity and socio-economic status in the future.

Stunting, according to the WHO conceptual framework, occurs due to the interaction of various factors, namely low nutritional intake and/or increased nutritional needs. The causes of low nutritional intake can be influenced by socio-economic factors, low education and knowledge regarding how to feed infants and toddlers (exclusive breastfeeding and sufficient breastfeeding), sufficient animal protein in providing complementary foods for breast milk (MPASI), neglect, cultural influences, and availability of local food ingredients. An increase in nutritional intake can be caused by the presence of accompanying chronic diseases that require food for special medical purposes (PKMK), such as congenital heart disease, intolerance to cow's milk, conditions for very low birth weight babies (LBW), congenital metabolic disorders, chronic infections due to poor personal hygiene and environmental sanitation (chronic diarrhea), as well as several diseases that can be prevented through immunization (TB, diphtheria, pertussis, and measles).

Government strategy in overcoming and preventing stunting through local food

Reducing stunting is one of the targets of the Sustainable Development Goals (SDGs) contained in the second goal, namely eliminating hunger and all forms of malnutrition and achieving food security. The target is 14% in 2024 contained in the 2020-2024 National Medium-Term Development Plan (RPJMN) with the establishment of a National Strategy for the Acceleration of Stunting Reduction and the establishment of a Stunting Reduction Team (TPPS) through Presidential Regulation (Perpres) No.72/2021. Five pillars form the basis of the National Strategy to Accelerate the Reduction of Stunting. This strategy links the issue of food security with the fulfillment of nutrition through Pillar 4, which focuses on "Increasing food security and nutrition at the individual, family, and community levels".

In December 2021 the BKKBN issued Regulation No 12/2021 concerning the National Action Plan to Accelerate the Reduction of Indonesia's Stunting Rate (RAN-PASTI) for 2021-2024. In its implementation, the regulation cannot touch the affordability of food security. Therefore, in October 2021 Bappenas issued a National Action Plan for Food and Nutrition (RAN-PG) 2020-2024 which was contained in the Decree of the Head of Bappenas No. 124/2021. One of the government's strategies and actions contained in the RAN-PG in overcoming malnutrition such as stunting is increasing the utilization of food and nutrition services (Kementrian Perencanaan Pembangunan Nasional/ Badan Perencanaan Pembangunan Nasional (Bappenas), 2021). The strategy in question is exclusive breastfeeding (ASI) and the provision and use of local food-based complementary foods (MPASI) with the actions taken, namely fostering districts/cities to establish regulations related to exclusive breastfeeding, increasing the accessibility of local-based complementary foods. Another strategy is the development of a research and development platform in the field of food and nutrition, with one of its

actions, namely developing innovations in the use of local food to improve family nutrition consumption.

These regulations, strategies, and actions are a form of the government's efforts to tackle and prevent stunting so that the goal of accelerating the reduction of stunting can be achieved. However, besides that, the involvement of various cross-sectors is needed, especially the community as the beneficiary. The community can play an active role in assisting the action plan by starting to utilize local food as an alternative to preventing and overcoming stunting. The community can participate by utilizing the yard of the house as a place to grow local food. This utilization has been proven to overcome malnutrition and food insecurity and can be an additional family income (Sutyawan et al., 2022).

Obstacles, benefits, and solutions to utilizing local food as an alternative to overcoming and preventing stunting

Many studies have been conducted on how to overcome and prevent stunting with the results of increasing public knowledge about stunting, empowering mothers of toddlers, helping to create jobs, and generating ideas for processed products made from local food. Some of these studies were carried out based on personal or group research interests (independent research) and research in collaboration with the government. In this article, the findings of research journals related to the use of local food to overcome and prevent stunting are divided into 2, namely independent research and research that correlates with the government. Independent research journals obtained as many as 21 studies, while studies that correlated with the government were as many as 11 studies. This can be illustrated in the Figure 2.



Independent research

Research in collaboration with the goverment

Figure 2. Research journals related to the utilization of local food to overcome and prevent stunting

Obstacle

A study by Aritonang et al. in collaboration with the Samosir District Health Office conducted counseling, demonstrations, providing assistance with tools for making multi-nutrition instant porridge using local foods (sweet potato, corn, sweet potato leaves, banana heart, and tilapia fish), only as far as empowering Posyandu cadres who are expected to later develop into MSMEs so that they can empower mothers in Samosir Regency and increase regional income (Aritonang et al., 2021).

The results of the research that carried out treatments in providing weaning (such as team corn porridge and rice field eel soup/tilapia fish soup) for toddlers, showed that local food had a positive impact on reducing the incidence of stunting (Sofais et al., 2019). However, there are other programs (training on the introduction and processing of local food ingredients) before providing food therapy to under-fives, and control is needed in this program.

Low or insufficient acceptance of local food is also an obstacle (Mustamin et al., 2019). This study tested the acceptability of pia cakes that had been substituted for oyster flour (*Crassostrea gigas*) for stunting toddlers. The results of several studies have shown that most people have implemented the use of local food ingredients in feeding stunted toddlers, but this still needs to be optimized again. The aim of optimizing the use of local food in preventing stunting is to expand the impact and achievement of improving nutritional status (Astani et al., 2023). Another obstacle to this utilization is that there has not been much research on proper processing methods to maintain the nutritional content of local food. The relatively short shelf life is also one of the drawbacks of using local food ingredients for complementary foods as an alternative to preventing and overcoming stunting (Anita & Sutrisno, 2022). In processing local food into food, based on the Minister of Health of the Republic of Indonesia Number 51 of 2016 attention needs to be paid so that the nutritional content is maintained (Menteri Kesehatan, 2016).

Profit

Utilization of local food as a prevention and control of stunting has several advantages, such as guaranteed quality food safety (food safety), easy to obtain, relatively cheap prices or even no cost (economic efficiency), easy to cultivate, good nutritional value, and increased household income (health economic) (Sofais et al., 2019). The nutrients needed for stunting toddlers for growth and development include carbohydrates, proteins, fats, and minerals.

Another positive impact is that the community does not depend on PMT distribution from the government and food distribution from outside the area. Utilization of local food can also have an impact on reducing the amount of rice imported by the government. This is because the staple food is increasingly diverse, not only depending on rice consumption. Then it can help stabilize food prices on the market because in 2022 there will be the highest increase in inflation in 5 years due to increases in food, energy, and unstable weather prices (Alta et al., 2023). In addition, the level of food insecurity has decreased, and it has become easier for the community to access nutritious food, especially for parents with stunting toddlers, and to increase the utilization of the local potential of each region.

Solution

The studies that have been conducted have proven that many local food ingredients are being used as an alternative to preventing and overcoming stunting with several approaches, such as counseling, mentoring, demonstrations on how to process them, and even how to make packaging designs. The prevention and control of stunting should not only focus on introducing food diversification but the need for appropriate communication relationships in the community so that intensive collaboration is established between various sectors (Meher et al., 2023). In addition, the need for support and application of technology so that the reduction of stunting can occur for all members of society, not only those who receive counseling, for example.

Research by Adam et alreported the effectiveness of a massive open online course (MOOC), offering integrated nutrition and cooking instructions, to improve eating behavior and food composition among respondents (Adam et al., 2015). The results of this study concluded that the progressive substitution of processed foods with healthy home-cooked meals has a strong potential to improve eating behavior and food composition. There is a guidebook on how to process and use local food ingredients as an alternative to preventing and overcoming stunting which can be used by local governments through collaboration with various cross-sectors (such as nutritionists, midwives, community leaders, and Posyandu cadres). It is intended that the diversity of ethnic cultures and languages cannot become an obstacle in the process of preventing and overcoming stunting because it has been adapted to communication and the conditions of each region. In addition, it can provide guidelines for correct and appropriate processing and cooking so that the nutritional content is maintained.

Local food research results to overcome and prevent stunting

Alternatives for handling and preventing stunting using local food have been widely applied to several regions in Indonesia that have received counseling and targets from government programs. For example, in Labuapi Village, West Lombok Regency, counseling and demonstrations on the processing of corn milk and corn nuggets were carried out with the target of mothers under five (Nurhayati et al., 2020). Shredded catfish products which are high in protein by the people of Jember Lor Subdistrict, Jember Regency (Nuha & Utami, 2020), research in Batu Kumbung Village, Lingsar District (Rahmiati et al., 2022), Moringa pudding and Nagasari corn in the people of Bon goime Village, Kabupaten Bone Bolango (Claudia et al., 2022), processed moringa leaves (Kelor leaf tofu cakes, Moringa leaf tofu cakes, Moringa leaf tempeh cakes, and Moringa leaf balls) in a study by Fitriyaningsih et al. (2023) in NTT. In addition, there are also tuna fish meal food bar products and mackerel fish meal bar products (Darawati et al., 2021).

The results of the intervention by Nirmala et al. in toddlers aged 1-5 years in South Konawe Regency, Southeast Sulawesi Province by utilizing sago worms as local food, led to many product innovations such as serundeng of sago caterpillars and shredded sago caterpillars which can then be added to snacks for toddlers so that they become a variant of the sago worms snack (Nirmala et al., 2023). The product of Jawak porridge (*Setaria italica*), which is a local food from Papua, has been intervened in stunting toddlers in Lalang Inggar Village and Nyangkom Village, Kayan Hilir District, Sintang Regency (Kurniati & Sunarti, 2020). Tuna meatballs were substituted for anchovy flour (TORI meatballs) for stunting toddlers (Oktafiani et al., 2022). Then there are processed catfish sausages which are a food alternative to increase protein adequacy and prevent stunting (Yunianto et al., 2023). Processed products derived from tubers in Malanuza Village, Ngada Regency such as sweet potato nuggets, purple sweet potato noodles, and cassava cake (Nenu et al., 2022).

Conclusion

- 1) Stunting can be overcome and prevented by regulating the mother's nutrition during pregnancy, breastfeeding, and providing MP-ASI for toddlers.
- 2) 2) The government utilizes local food and nutrition services in overcoming and preventing stunting as stated in the National Action Plan for Food and Nutrition (RAN-PG).
- 3) 3) Obstacles encountered such as uneven research targets, low acceptability, and relatively short shelf life. The advantages are that food quality is maintained, prices are more affordable, easy to cultivate, does not depend on government PMT distribution, and reduces food insecurity rates. 4) Products resulting from research on the use of local food have appeared, starting from milk, meatballs, nuggets, and snacks.

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