

# Optimization of the Integrated Nutrition Program to Reduce the Prevalence of Wasting in Toddlers in Indonesia (*Literatur Review*)

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## Abstract

Wasting in toddlers remains a serious public health problem in Indonesia, with a prevalence of 7.4% in 2024, which is still above the threshold of public health significance according to the WHO. This condition has an impact on morbidity, mortality, growth, and long-term productivity. This study aims to analyze the optimization strategy of integrated nutrition programs in reducing the prevalence of wasting through a synthesis of international literature (2018–2025) and local studies in Indonesia. The method used is a systematic literature review of scientific articles, government reports, and policy documents that meet the inclusion criteria, which are then analyzed narratively. The results show that the determinants of wasting include low energy and fat intake, unbalanced consumption patterns, socioeconomic conditions, maternal nutrition knowledge, and access to health and sanitation services. Specific nutrition interventions such as lipid-based nutrient supplements and fortified blended foods have been proven effective in reducing wasting, while nutrition-sensitive interventions that include sanitation improvements, family empowerment, and local food security strengthen the impact. The implementation of the Integrated Management of Acute Malnutrition approach in Indonesia is considered strategic but still faces limitations in service distribution, human resources, and funding. This study emphasizes that optimizing evidence-based, multisectoral, and locally adaptive integrated nutrition programs is key to reducing the prevalence of wasting and supporting the achievement of the SDGs.

**Keywords:** Toddlers, Wasting, Intervention, Nutrition Management, Local Food

## Introduction

Wasting, or thinness in toddlers, is a form of acute malnutrition characterized by a weight-for-height (WHZ) below -2 SD according to WHO standards (WHO, 2023). This condition remains a serious public health problem in Indonesia. Based on data from the 2024 Indonesian Health Survey (SKI), the prevalence of wasting reached 7.4%, far above the WHO public health threshold of 5% (Kementerian Kesehatan RI, 2024). This shows that despite various nutritional intervention efforts, wasting remains a major challenge in child health development in Indonesia. The impact of wasting is widespread and serious. At the individual level, wasting increases the risk of morbidity and mortality, particularly from infectious diseases such as diarrhea and pneumonia, due to a weakened immune system (Tamir, T. T et al., 2025). In addition, wasting hinders physical growth, cognitive development, and children's learning capacity, which will ultimately have an impact on productivity and the quality of human resources in adulthood (Victora et al., 2021). In a macro context, the high prevalence of wasting also hinders the achievement of national and global development goals, particularly Sustainable Development Goal which is to end all forms of malnutrition by 2030 (Kementerian Kesehatan

RI, 2024).

The causes of wasting are complex and multifactorial, as wasting is caused by inadequate nutritional intake, both in terms of quantity and quality, including low energy and fat intake and an unbalanced diet (FAO, 2021). Indirectly, this condition is influenced by family socioeconomic factors, limited maternal nutritional knowledge, lack of access to health services, clean water, and sanitation, as well as vulnerability to infectious diseases (Patlán-Hernández, A. R, et al, 2024). Regional disparities and the impact of climate change also exacerbate the situation by reducing the availability of nutritious food at the household level (IPCC, 2022).

Various interventions have been proven effective in combating wasting. Specific nutritional interventions such as the provision of lipid-based nutrient supplements, fortified blended foods, promotion of exclusive breastfeeding, and community-based malnutrition management can accelerate the recovery of toddlers' nutritional status (Bhutta et al., 2020). On the other hand, nutrition-sensitive interventions such as improving sanitation and hygiene, empowering families through social protection, and strengthening local food security play an important role in preventing new cases of wasting (Ruel & Alderman, 2018). In Indonesia, the Integrated Management of Acute Malnutrition approach has been implemented as a national strategy, but its implementation still faces various obstacles, including limited service distribution, availability of trained health human resources, and funding sustainability issues (Kementerian Kesehatan RI, 2022).

Given the complexity of these issues, optimizing integrated nutrition programs has become urgent. This approach emphasizes the integration of specific and sensitive interventions that are implemented in a multisectoral, evidence-based, and context-adaptive manner (Tamir, T. T et al., 2025). In addition, the use of local foods in the production of Ready-to-Use Therapeutic Food, the involvement of Posyandu cadres in early detection and nutrition education, and the support of digital innovations in monitoring nutritional status are important strategies for strengthening the effectiveness of the program (Kementerian Kesehatan RI, 2024). This optimization is expected to significantly reduce the prevalence of wasting, accelerate the achievement of WHO targets, and contribute to the realization of a healthy, productive, and competitive Indonesian generation (Daniel, A. I, et al, 2025)

## Methods

This study used a systematic literature review design to analyze strategies for optimizing integrated nutrition programs in reducing the prevalence of wasting among young children in Indonesia. This method was chosen because it provides a comprehensive synthesis of scientific evidence, policy reports, and program implementation experiences. Data sources were obtained from international databases (PubMed, Scopus, Web of Science, Science Direct) and national databases (Google Scholar, Garuda, and DOAJ). In addition, official reports from the Indonesian Ministry of Health, UNICEF, WHO, and FAO were also used as supporting references. Publication Time Range The literature search was conducted between 2018 and 2024 to ensure that the data analyzed was relevant to current conditions.

**Search Keywords** A combination of keywords in English and Indonesian was used, namely: wasting, acute malnutrition, integrated nutrition program, child malnutrition, RUTF, Indonesia, and their Indonesian equivalents: wasting, acute malnutrition, integrated nutrition program, underweight children, locally-based RUTF. The search was conducted using Boolean operators (AND, OR) to broaden and narrow the results. **Inclusion Criteria** Original research articles, systematic reviews, meta-analyses, program reports, and policy documents discussing wasting in toddlers,



specific nutrition interventions, nutrition-sensitive interventions, or the implementation of integrated nutrition programs in Indonesia. Articles in English or Indonesian with full access to the full text. Exclusion Criteria Articles in the form of editorials, opinions, or comments without empirical data, research that is not relevant to the context of toddlers or integrated nutrition programs, publications with unclear methodology or low quality.

The article selection procedure was carried out in four stages in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow: Identification: collecting articles from various databases; Screening: filtering titles and abstracts to eliminate those that were not relevant; Eligibility: reading the full text to ensure compliance with the inclusion criteria; Inclusion: articles that met the criteria were included in the final analysis. Analysis The data obtained was extracted to include: type of intervention, research method, main results, and implementation challenges. The analysis was conducted using thematic narrative analysis, grouping the findings into broad themes, namely: Specific nutrition interventions (exclusive breastfeeding, nutritious complementary foods, micronutrient supplementation, LNS, RUTF), Nutrition-sensitive interventions (sanitation improvement, clean water, social protection, economic empowerment, local food security), Role of systems and communities (Posyandu cadres, service distribution, funding), Innovation (use of local foods, digital technology, multisectoral integration models). Validity and Reliability. To maintain the quality of the review, source triangulation was conducted by comparing results between articles and policy reports, as well as using the PRISMA guidelines in the selection process.

## Results

The results were found from 30 national and international reference sources that have been reviewed. The articles used in this study range from 2018 to 2025. A review of the literature shows that the prevalence of wasting among young children in Indonesia remains quite high at 7.4% in 2024, exceeding the WHO threshold for public health significance (<5%) (Kementerian Kesehatan RI, 2024). Thematic analysis of articles and policy reports reveals that the main determinants of wasting include low energy and fat intake, unbalanced consumption patterns, low socioeconomic status of families, limited nutritional knowledge among mothers, and lack of access to health and sanitation services (Tamir, T. T et al., 2025). Environmental factors such as limited access to clean water and high incidence of infectious diseases further exacerbate the condition (Victora et al., 2021).

The review also found that specific nutritional interventions were proven effective in improving the nutritional status of toddlers (Tamir, T. T et al., 2025). The provision of lipid-based nutrient supplements, fortified blended foods, promotion of exclusive breastfeeding, nutritious complementary foods, and community-based malnutrition management contributed significantly to reducing the prevalence of wasting (Cichon, B et al, 2025). On the other hand nutrition-sensitive interventions such as improving sanitation and hygiene, empowering families through social protection programs, and strengthening local food security play a major role in preventing new cases of wasting and maintaining the sustainability of specific interventions (Ruel, M. T et al, 2025).

In the context of national policy, the implementation of Integrated Management of Acute Malnutrition has become one of the main strategies (Cichon, B et al, 2025). This program is considered strategic because it integrates the treatment of acute malnutrition with community-based primary health care services (Kementerian Kesehatan RI, 2022). However the literature highlights a number of obstacles to its implementation, including limited service distribution in remote areas, a shortage of trained health personnel, limited logistics for locally-based RUTF, and inconsistent funding

(UNICEF, 2021).

In addition, the literature emphasizes that the use of local foods in RUTF production has the potential to increase the effectiveness of interventions while supporting national food self-sufficiency (FAO, 2021). The role of Posyandu cadres has also been found to be very significant in accelerating early detection of wasting, providing nutrition education to mothers of young children, and ensuring the sustainability of interventions at the community level (Kementerian Kesehatan RI, 2022). Digital innovations, such as nutrition status monitoring applications and real-time information systems, further strengthen program effectiveness by accelerating reporting, monitoring, and intervention response processes (UNICEF, 2021).

Overall, the literature review shows that optimizing integrated nutrition programs that combine specific and sensitive interventions, strengthen the role of communities, and are supported by digital technology is the most effective approach to reducing the prevalence of wasting (Black et al., 2018). However, the success of these programs is still hampered by poverty, unequal access to health services, and the impact of climate change on the availability of nutritious food (IPCC, 2022).

## Discussion

The results of this study show that wasting among toddlers in Indonesia remains a serious challenge, despite the implementation of various nutrition programs. The dominant factors causing wasting include low energy and fat intake, unbalanced consumption patterns, limited nutritional knowledge among mothers, vulnerable socioeconomic conditions, and limited access to health and sanitation services (Tamir, T. T et al., 2025). These findings are in line with global literature emphasizing that acute malnutrition is multifactorial and requires a cross-sectoral approach for its management (Victora et al., 2021).

Specific nutritional interventions, such as lipid-based nutrient supplements and fortified blended foods (FBF), have been proven effective in rapidly improving children's nutritional status (Bhutta et al., 2020). However the sustainability of the impact can only be achieved if accompanied by sensitive nutrition interventions, such as improving household food security, improving environmental sanitation, access to clean water, and empowering families in child feeding practices (Ruel, M. T et al, 2025). This emphasizes the importance of synergy between short-term technical interventions and long-term structural approaches (Husna, I., et al, 2024).

The implementation of Integrated Management of Acute Malnutrition in Indonesia is a strategic step, but it still faces challenges in the form of limited service distribution in remote areas, a shortage of trained health workers, and suboptimal funding support (Kementerian Kesehatan RI, 2022). The success of this program is highly dependent on strengthening the health system, inter-sectoral coordination mechanisms, and integration with other development programs such as education, social protection, and local food security (Ruel, M. T et al, 2025).

Thus, this discussion confirms that reducing the prevalence of wasting cannot be achieved through a single intervention, but requires a multisectoral, evidence-based, and adaptive approach to the local context (Daniel, A. I et al, 2025). Optimizing integrated nutrition programs must place families and communities at the center of interventions, strengthen health system capacity, and ensure sustainability through long-term policy and funding support (FAO, 2021). These efforts will contribute significantly to the achievement of the 2030 SDGs, particularly the goal of ending all forms of child malnutrition (UNICEF, 2021).

## Conclusion

Wasting among young children in Indonesia remains at alarming levels, with prevalence above the threshold for public health problems according to the WHO. Analysis of the literature shows that the dominant factors causing wasting are low energy and fat intake, unbalanced consumption patterns, low maternal nutritional knowledge, vulnerable socioeconomic conditions, and limited access to health and sanitation services. Specific nutrition interventions such as LNS and FBF supplementation are effective in reducing the prevalence of wasting but long-term impacts can only be achieved when combined with nutrition-sensitive interventions, including improvements in sanitation, local food security, and family empowerment. The implementation of IMAM in Indonesia has strategic potential, but is still hampered by limitations in services, health workers, and funding. Therefore, optimizing evidence-based, multisectoral, and locally adaptive integrated nutrition programs is key to reducing the prevalence of wasting, improving toddler health, and supporting the achievement of the 2030 SDGs.

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## Author Contribution and Competing Interest

The author played an active role in the entire research process, from formulating the research problem and objectives, developing the methodological design, and conducting a comprehensive literature review. The author was also responsible for data collection and analysis, interpreting the research results, and compiling a discussion relevant to the national and global context. In addition, the author integrated the research findings with existing theories and policies. Thus, this entire research reflects the author's independent contribution, which is expected to provide academic and practical benefits for efforts to combat wasting in Indonesia.

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