

**EFFECTIVENESS OF INTEGRATED *GROWTH MONITORING* AND
NUTRITIONAL SURVEILLANCE FOR EARLY DETECTION AND
PREVENTION OF MALNUTRITION IN EARLY CHILDHOOD**

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Abstract

Background: Early childhood malnutrition is a significant public health problem, especially in developing countries. Its impact is not only limited to impaired physical growth, but also affects cognitive development, increases susceptibility to disease, and decreases future productivity. Early detection and effective prevention are essential to reduce the long-term impact of malnutrition and improve the quality of human resources. *Growth Monitoring* and *Nutritional Surveillance* are two key strategies in the fight against malnutrition. *Growth Monitoring* involves monitoring children's growth at regular intervals through weight weighing, height measurement, and nutritional status assessment, while *Nutritional Surveillance* focuses on collecting, analyzing, and interpreting nutrition data to monitor the nutritional status of the population and identify risk factors that contribute to nutritional problems.

Objective: To assess the effectiveness of integrated *Growth Monitoring* and *Nutritional Surveillance* in detecting and preventing early childhood malnutrition.

Methods: The method used was a literature review from various sources, including scientific journals, reports from health organizations, and government publications with a boundary of 2018-2024.

Results and Discussion: The results and discussion show that the integration of *Growth Monitoring* and *Nutritional Surveillance* provides a comprehensive and effective approach. *Growth Monitoring* enables early identification of children at risk of growth disorders, while

Nutritional Surveillance provides data on the prevalence, trends, and determinants of malnutrition for targeted interventions.

Conclusion: The integration of *Growth Monitoring* and *Nutritional Surveillance* is essential to improve the effectiveness of early detection and prevention of malnutrition in early childhood.

Keywords: *Growth Monitoring*, *Nutritional Surveillance*, Malnutrition, Early Detection, Prevention, Early Childhood

Introduction

Early childhood malnutrition is a global health problem with serious and long-term consequences. It not only stunts physical growth, but also affects cognitive development, increases susceptibility to infectious diseases, and reduces future productivity. In Indonesia, the prevalence of malnutrition remains a serious concern, despite various efforts. Data from the 2018 Basic Health Research (Riskesdas) showed that the prevalence of stunting (stunted growth) in children under the age of five was 30.8%, indicating a high rate of malnutrition in Indonesia.¹

Growth Monitoring and *Nutritional Surveillance* are two important strategies in the fight against malnutrition. *Growth Monitoring* involves periodic monitoring of child growth, which includes weighing, measuring height, and assessing nutritional status using WHO growth curves. This data is recorded in the Maternal and Child Health (MCH) book and monitored by health workers to detect early growth disorders. *Nutritional Surveillance* focuses on the collection, analysis and interpretation of data on nutritional status and the factors that influence it in a population. This data is collected through various methods, such as nutrition surveys, nutrition program recording and reporting, and health information systems.² The integration of *Growth Monitoring* and *Nutritional Surveillance* is expected to increase the effectiveness of early detection and prevention of malnutrition in early childhood. By combining individual data from *Growth Monitoring* and population data from *Nutritional Surveillance*, health workers and policy makers can obtain a more comprehensive picture of children's nutritional status and the risk factors that contribute to malnutrition. This enables the development of more targeted and effective interventions to prevent and address early childhood malnutrition.²

Methods

The method used in this article is a literature review where analysis is carried out from various literature sources. Literature searches were conducted through google scholar and mendeley sources with a range of years between 2018-2024. The keywords used in the literature search are *Growth Monitoring*; *Nutritional Surveillance*; Malnutrition; Early Detection; Prevention; Early Childhood.

Results And Discussion

Growth monitoring allows health workers to identify children who are experiencing growth disorders or at risk of malnutrition. With regular monitoring, deviations from normal growth patterns can be detected early. A study showed that regular and comprehensive *growth monitoring* is associated with improved child nutritional status. This is possible because *growth monitoring* facilitates early detection of growth disorders, so that interventions can be carried out immediately. Interventions may include nutrition counseling, supplementary feeding, or referral to health facilities if necessary.³

Nutritional surveillance provides information on the nutritional status of a population, including the prevalence of malnutrition, micronutrient deficiencies, and contributing risk factors. This data can be used to plan and evaluate programs targeted nutrition interventions. Effective *nutritional surveillance* can help identify groups of children at high risk of malnutrition, such as children from poor families, children with chronic diseases, and children living in areas with limited access to health services. By identifying high- risk groups, nutrition intervention programs can be focused on these groups to maximize their impact.⁴

The integration of *Growth Monitoring* and *Nutritional Surveillance* provides synergistic benefits in early detection and prevention of malnutrition. Data from *Nutritional Surveillance* can help identify groups of children who require more intensive *Growth Monitoring*. For example, if *Nutritional Surveillance* shows a high prevalence of child malnutrition in a particular area, then health workers can increase the frequency and intensity of *Growth Monitoring* on children in that area.⁵

Conversely, data from *Growth Monitoring* can be used to validate and enrich *Nutritional Surveillance* data. For example, if *Growth Monitoring* data shows an increase in the number of underweight children, this could be an indicator of a population-level nutrition problem that needs to be further investigated through *Nutritional Surveillance*.⁵

Several studies have shown that the integration of *Growth Monitoring* and *Nutritional Surveillance* contributes to reducing the prevalence of early childhood malnutrition. For example, a study in India showed that the integration of both strategies in the Posyandu program reduced the prevalence of malnutrition in children under five by 15%.⁶ The effectiveness of integrating *Growth Monitoring* and *Nutritional Surveillance* is strongly influenced by several important factors. First, the quality of *Growth Monitoring* and *Nutritional Surveillance* data is key to the success of the program. Accurate, complete and up-to-date data are essential for making the right decisions in preventing and controlling malnutrition.

Second, the capacity of health workers also plays an important role. Health workers need to have adequate knowledge and skills in conducting anthropometric measurements, nutritional status assessment, nutrition counseling, and data analysis. Furthermore, the participation of the community, especially parents and families, is very important in ensuring that success of the program. Parents need to understand the importance of *growth monitoring* and bring their children to Posyandu or other health facilities regularly. Finally, government support in providing resources, infrastructure, and supportive policies is needed to ensure the sustainability of the program.⁷

The use of information technology can increase the effectiveness of the integration of *Growth Monitoring* and *Nutritional Surveillance*. An integrated nutrition information system can facilitate the collection, processing, and analysis of nutrition data. In addition, information technology can also be used to improve community access to nutrition information and health services.⁸

Several countries have successfully implemented the integration of *Growth Monitoring* and *Nutritional Surveillance* in public health programs. In Bangladesh, for example, *Growth Monitoring* and *Nutritional Surveillance* programs integrated with women's empowerment programs have significantly reduced the prevalence of malnutrition. In Indonesia, the government has developed a Posyandu information system that is integrated with the national health information system. This system enables electronic recording and reporting of *growth monitoring* data, which facilitates program monitoring and evaluation.⁹

Although the integration of *Growth Monitoring* and *Nutritional Surveillance* has great potential in preventing malnutrition, several challenges need to be overcome. Limited resources, including funds, health workers, and infrastructure, are an obstacle to optimal program implementation, especially in developing countries. Lack of public awareness about the importance of nutrition and child growth monitoring can also hinder the success of the

program. In addition, data gaps between *Growth Monitoring* and *Nutritional Surveillance* make it difficult to analyze and interpret data comprehensively.¹⁰

To overcome these challenges, various efforts are needed. Increased investment in the health sector, especially for the provision of resources, infrastructure and training of health workers, is crucial. Health education and promotion programs need to be intensified to increase public awareness of the importance of nutrition and child growth monitoring. In addition, health information systems need to be developed to facilitate the integration of *Growth Monitoring* and *Nutritional* data. *Surveillance*, thus enabling more comprehensive analysis and more informed decision-making.¹⁰

Conclusion

Based on the literature exposure discussed above, the integration of *Growth Monitoring* and *Nutritional Surveillance* is a very important approach in detecting early and preventing malnutrition in early childhood. *Growth Monitoring* plays a role in identifying children at risk of growth disorders through regular monitoring of weight and height. On the other hand, *Nutritional Surveillance* provides data on the prevalence, trends, and determinants of malnutrition, so that interventions can be targeted.

Regular and comprehensive *growth monitoring* is associated with improved child nutritional status. Meanwhile, effective *Nutritional Surveillance* can help identify groups of children at high risk of malnutrition. The integration of these two strategies provides synergistic benefits in early detection and prevention of malnutrition.

Although promising, the effectiveness of this integration is affected by data quality, health worker capacity, community participation, and government support. The use of information technology can increase the effectiveness of such integration. Therefore, efforts are needed to strengthen the integrated *Growth Monitoring* and *Nutritional Surveillance* system, increase investment in health, increase public awareness, and improve data integration for more effective malnutrition prevention.

Reference

1. Asriani R, Salma WO, Jafriati J. Analysis of Risk Factors for Stunting in Under-five Children (6-24 Months) in the Mowila Health Center Working Area. *Nursing Update: Scientific Journal of Nursing Science* P-ISSN. 2022;2085–5931.
2. Aditianti A, Luciasari E, Permanasari Y, Julianti ED, Permana M. A qualitative study of the implementation of growth monitoring of children under five in posyandu in

- Bandung District. 2018.
3. Ekholuenetale M, Barrow A, Wegbom AI, Arora A. Measuring the Uptake of Growth Monitoring and Nutrition Promotion among under-5 children: findings from the Rwanda Population-Based study. *Children (Basel)*. 2022 Nov 11;9(11):1758
 4. Calcaterra V, Cena H, Verduci E, Bosetti A, Pelizzo G, Zuccotti GV. Nutritional surveillance for the best start in life, promoting health for neonates, infants and children. *Nutrients*. 2020 Nov 20;12(11):3386.
 5. Jahari AB. Nutrition surveillance in handling current nutrition problems. *Persagi National Science Meeting*. 2022;4:101–8.
 6. Rawal V, Bansal V, Bansal P. Prevalence of undernourishment in Indian states. *Econ Polit Wkly*. 2019 Apr 27;54(15):35.
 7. Lufthiani L, Karota E, Siregar CT, Ariga RA, Nasution SZ, Tanjung D, et al. Parents' role in monitoring the children's growth and development. In: *AIP Conference Proceedings*. Vol 2626, No 1. AIP Publishing; 2023. p. 1.
 8. Irache A, Murachpersad R, Caleyachetty R. The development and application of a mobile-based data collection system for a growth monitoring program in selected primary care centers in the Republic of Mauritius. *BMJ Glob Health*. 2019 Dec;4(6):e001928.
 9. Holland C, Rammohan A. Rural women's empowerment and children's food and nutrition security in Bangladesh. *World Dev*. 2019 Dec 1;124:104648.
 10. Shahid M, Cao Y, Ahmed F, Raza S, Guo J, Malik NI. Does mothers' awareness of health and nutrition matter? A case study of child malnutrition in marginalized rural community of Punjab, Pakistan. *Front Public Health*. 2022;10:101.