INPLASY

The Effectiveness of Dietary Intervention on Stunting in Children Under Five Living in Indonesia: A Scoping Review

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ADMINISTRATIVE INFORMATION

Support - LPDP.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 August 2024 and was last updated on 23 August 2024.

INTRODUCTION

Review question / Objective 1. How effective are dietary intervention in reducing stunting among children under five years old in Indonesia? 2. What factors influence the effectiveness of dietary intervention in reducing stunting among Indonesian children under five?

Background A serious public health concern that mostly affects low- and middle-income nations is childhood stunting. Globally, an estimated 165 million children under five years old are stunted. The problem is most severe in South Asia, where 34.4% of children are affected, closely followed by Eastern and Southern Africa with a prevalence of 33.6%, while North America has the lowest prevalence (2.6%). Indonesia, which is located in Southeast Asia, faces a significant challenge with one in three children under five being stunted. Additionally, the country also struggles with micronutrient deficiencies. This enduring issue worsens the stunting condition, which remains a significant concern. Both stunting and micronutrient deficiencies can impair physical growth and cognitive abilities in children. Additionally, they increase a child's susceptibility to various infections.. The combined effects can lead to enduring consequences on a child's overall well-being and prospects. Stunting in children is a complicated problem with inherited causes. The process begins even before conception, as a mother's nutritional deficiencies can adversely affect her future children. Defined as chronic undernutrition that impedes linear growth, A child's stunting is evaluated by comparing their height for age to the World Health Organization's (WHO) guidelines. When a child's height is much below the average for their age—more precisely, when it is more than two standard deviations below the WHO median—they are deemed stunted. Studies across multiple regions indicate that HAZ deficits typically stabilize after 24 months of age and remain relatively constant until age five. Monitoring growth during these first five years provides crucial insights into children's physical development

trajectories. Preventing stunting is crucial within the first two years of life as reversing growth faltering becomes increasingly challenging after this critical period In less developed regions of Southeast Asia, such as Indonesia, children's growth patterns are concerning. Indonesian infants are often born shorter than global standards, with a height-for-age z-score (HAZ) of about -0.5. During the first two years, their HAZ rapidly declines by approximately 1.5 points before plateauing until at least age five. Stunting has wide-ranging and severe consequences for affected children These includes increased susceptibility to illness and disease, impaired cognitive and physical development, higher risk of chronic and degenerative diseases later in life, reduced productivity in adulthood and poor academic performance.

Rationale The countrywide prevalence of stunting was 21.6%, according to the Indonesian Nutritional Status Survey conducted in 2022. According to a 2020 World Bank assessment, Indonesia lags behind its regional neighbours and fellow economic powers in the eradication of stunting. This widespread stunting could potentially halve the future generation's productivity due to its negative impact on children's cognitive development. Regional disparities in stunting rates across Indonesia were revealed by the 2022 national nutritional status survey. Bali Island had the lowest prevalence in 2022 at 8.0%, whereas East Nusa Tenggara has the highest at 35.3%. Eastern provinces, generally behind in various development indicators, show higher stunting rates. The varying prevalence of stunting across Indonesia highlights differences in exposure to risk factors and emphasizes the need for targeted, tailored interventions for vulnerable populations. Multiple factors contribute to stunting in Indonesia, with diet playing a crucial role, including lack of dietary diversity and inadequate amounts of intake in diet rich in energy, protein, and micronutrients. Dietary diversity strongly correlates with sufficient energy, protein, and micronutrient intake. After 6 months of age, breastfeeding alone cannot meet a child's nutritional needs, making adequate complementary feeding essential for healthy growth. Recent studies on Indonesian children between 2 and 5 years old has uncover alarming nutritional deficiencies, the consumption of protein (35.8%) and calories (60.5%) was insufficient. The ratios of micronutrients including calcium, iron, vitamin C, and vitamin A at risk of inadequate intake were even higher, at 80.9%, 83.5%, 84.3%, and 79.1%, respectively.

METHODS

Strategy of data synthesis Data extraction from each study covered a comprehensive range of methodological and outcome variables. These included author information, year of publication, study design, age range of participants, and total sample size. Information about type and components of intervention as well as its duration was also collected. The extraction process captured significant findings, study limitations, and outcomes related to stunting. Two reviewers independently completed the documents identification, screening, and validity checking procedures. The screening process occurred in two stages. First, the titles and abstracts of all identified records were reviewed to select studies that met the inclusion criteria. The second stage involved a full-paper review of these initially selected studies to verify their eligibility. This comprehensive approach ensured a thorough review of all relevant information from the selected studies, facilitating a robust scoping review.

Eligibility criteria Studies that concentrated on Indonesian children under the age of five had to be included. The research needed to examine dietary interventions, specifically those using fortified foods or oral nutrition supplements, aimed at improving stunting outcomes. The review included peer-reviewed original research of all designs, from qualitative studies to systematic reviews. The included studies needed to feature recent interventions with follow-up, lasting for a minimum of one month, and be published in English.

Source of evidence screening and selection A systematic literature was conducted using five major databases, including PubMed, Scopus, Cochrane, Embase, and MEDLINE from inception until June 24, 2024. To ensure a robust search strategy, a research librarian was consulted during the protocol development phase, providing guidance on database selection and search term formulation. The search strategy was built around the PICOS framework (Participants, Intervention, Comparison, Outcomes, and Study design), guided the search strategy. For the study population, terms like "children" and "infant" in Indonesia were used. Intervention-related keywords included "dietary intervention", "nutrition intervention", "food intervention", "diet therapy", and "nutrition therapy". Outcome-related terms encompassed "stunting", "growth disorder", "linear growth", and "child linear growth". For a detailed breakdown of the search strategies used for each database, readers were directed to the supplementary materials.

Data management The duplicate data entries were manually eliminated in EndNote 21 after search results were exported. Following that, data extraction was done on studies that satisfied the qualifying requirements and uploaded into the Rayyan online application for review. After screening and get the included studies, we opted to include a quality assessment phase. The Quality Criteria Checklist for Primary Research (QCCPR) will be used to assess study quality, validity, and potential biases.

Reporting results / Analysis of the evidence A narrative review containing the author, study design, participant age group, sample size, and study limitations will be used to present this outcome for general information. The primary focus of the dietary intervention, its duration, and the height-for-age-z-score (HAZ) before and after the intervention—along with the p-value and the noteworthy results—will also be examined.

Presentation of the results

1. Figure 1 present anthropometric mean z-scores in relation to the WHO standard for 54 studies conducted in low- and middle-income countries.
2. Figure 2 present map highlighting stunting prevalence with highest and lowest rates in Indonesia based on Indonesian Nutritional Status Survey 2022
3. Figure 3 present Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of the literature search and study selection for scoping review
4. Table 1 summarise about PICOS (Participants, Intervention, Comparison, Outcomes, and Study design) criteria for inclusion and exclusion of studies.
5. Table 2 summarise key characteristics of studies included in the scoping review like the author, study design, participant age group, sample size, and study limitations.
6. Table 3 summarise type of dietary intervention in different studies, outcomes of the studies through Height-for-Age Z-score (HAZ) and key findings.

Language restriction English.

Country(ies) involved England.

Keywords Dietary Intervention; Stunting; Height-for-Age-Z-scores; Children Under Five; Indonesia.

Dissemination plans This scoping review is expected to publish in the Nutrients journal.

Contributions of each author

Author 1 - Yuga Putri Pramesti - Author 1, the lead author, is responsible for conceptualising and designing the review, developing the search strategy, conducting the literature search, and performing the initial screening of titles and abstracts. Also take the lead in full-text review, data extraction, analysis, and drafting the manuscript.
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Author 2 - Anastasia Z Kalea - Author 2 contribute in assisting with protocol development, validating the search strategy, and independently screening a portion of the articles to ensure reliability. Also contribute to data analysis, provide critical feedback on the manuscript, and often bring subject matter expertise to the project.
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