

Determinants of stunting among children under five years of age in Indonesia: A narrative review of indexed evidence published in 2025-2026

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Abstract

Stunting in Indonesia has declined, but the remaining burden is still large and unevenly distributed. This review was prepared to re-examine recent indexed evidence on determinants of stunting among children under five years of age in Indonesia, with attention to studies published in 2025-2026 and accessible through SINTA-accredited or internationally indexed sources. A narrative review design was used. Sources were identified from official national and global reports, SINTA journal records, and open-access nutrition or public health journals. The synthesis grouped determinants into birth and early-life factors, feeding and dietary factors, maternal and household factors, socioeconomic vulnerability, environmental health, service access, and geographic context. Recent evidence shows that stunting is rarely explained by one exposure. Low birth weight, short birth length, maternal and birth history, non-exclusive breastfeeding, inappropriate complementary feeding, poor dietary diversity, low intake or low bioavailability of key nutrients, food insecurity, poverty, low parental education, sanitation problems, helminth-related environmental risks, incomplete service contact, and rural-urban inequalities appear repeatedly across studies. Evidence from 2025-2026 also underlines a practical point: determinants differ by setting. Rural areas require stronger food-security, and service-access strategies, whereas urban and peri-urban settings need closer attention to household purchasing power, caregiver decision-making, and the quality of foods actually consumed. Indonesia therefore needs district-level stunting prevention that is specific to local risk profiles rather than a single uniform package.

Keywords: Stunting; Children Under Five; Indonesia; Determinants; Narrative Review

1. Introduction

Indonesia is now at a critical stage in its efforts to reduce stunting. The 2024 Indonesian Nutritional Status Survey reported that the national prevalence of stunting had reached 19.8%, showing that progress has been made, but also that nearly one in five children under five still experiences impaired linear growth [1]. This number should not be seen merely as a national statistic. Behind it are children and families living in very different local realities, where poverty, food access, caregiving practices, sanitation, infection, and health service use often overlap in complex ways.

At the global level, stunting also remains one of the most persistent forms of child undernutrition. The 2025 Joint Child Malnutrition Estimates indicate that millions of children under five are still affected, with progress occurring unevenly across countries and population groups [2]. Indonesia reflects this same pattern. While the national trend may be improving, many children in poor households, rural communities, food-insecure families, and areas with inadequate sanitation continue to grow up in environments that make healthy growth difficult to achieve.

The WHO conceptual framework on childhood stunting provides a useful lens for understanding this problem. It reminds us that stunting is not simply the result of inadequate food intake. Rather, it develops through the interaction

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of feeding practices, infection, household food security, caregiving, water and sanitation conditions, maternal health, health services, education, and broader social and economic circumstances [3]. This perspective helps explain why a child may still become stunted even when one factor appears adequate, for example when a family has access to health services but still faces poor sanitation, limited dietary diversity, or unstable household income.

Indonesia has responded to this challenge through a multisectoral policy approach, particularly through Presidential Regulation Number 72 of 2021, which frames stunting reduction as a shared responsibility across health, social protection, food systems, sanitation, education, and local governance [4]. Therefore, the main issue is no longer whether stunting requires cross-sector collaboration. The more pressing question is how recent evidence from Indonesian studies can be translated into practical, locally relevant intervention strategies.

For this reason, this review focuses on accessible indexed articles published in 2025–2026. Priority was given to peer-reviewed sources from SINTA-accredited journals, especially *Jurnal Gizi Indonesia* and *Media Gizi Indonesia*, both of which are recorded as SINTA 2 journals, as well as international indexed open-access articles relevant to Indonesian children under five [5,6]. By synthesizing these recent studies, this review aims to provide a clear and carefully referenced overview that can support manuscript development, thesis discussion, and policy-oriented academic writing.

2. Research methodology

2.1. Review design

This article used a narrative review design. A narrative approach was selected because the literature from 2025-2026 is diverse in design, including cross-sectional analyses, case-control studies, qualitative studies, secondary survey analyses, systematic reviews, intervention evaluations, and food-product development studies. Rather than pooling effect sizes, the review mapped consistent determinant pathways and compared how these pathways appear across different Indonesian settings.

2.2. Sources and eligibility criteria

Sources were considered eligible when they addressed stunting, linear growth, nutritional status, feeding practice, household or environmental risk, service utilization, or stunting-related intervention among Indonesian children under five. The main time window for journal articles was 2025-2026. Older official documents were retained only when they were needed to define the national policy context or the conceptual framework. Reports and article pages had to be publicly accessible, and journal status was checked against SINTA records or international indexing when available.

2.3. Data extraction and synthesis

Information extracted from each source included publication year, study setting, design, child age group, major determinants, and policy relevance. Determinants were then grouped into seven domains: birth and early-life conditions, infant and young child feeding, dietary intake and nutrient quality, maternal and household factors, socioeconomic vulnerability, environmental health and infection, and health-service or spatial context. After synthesis, the reference list was audited so that in-text citation numbering begins with reference 1, follows first appearance, and every cited source is represented in the final reference list.

3. Results and discussion

3.1. Profile of recent indexed evidence

Recent Indonesian publications are not limited to one region or one analytic frame. Studies from *Media Gizi Indonesia* examined determinants in Central Java and maternal-birth history patterns in Demak, giving useful evidence on how survey-based and local case-control findings can complement each other [7,8]. Articles in *AcTion: Aceh Nutrition Journal* added household food security, dietary diversity, qualitative family perspective, urban-rural differences, case-control evidence from Banda Aceh, environmental health in North Aceh, and secondary data analysis from Aceh as important pieces of the same puzzle [9,10,11,12,13,14].

Internationally indexed studies strengthened the picture. Urban modeling work and analysis of poor Indonesian households highlighted the role of socioeconomic position, household context, and urban-specific risks [15,16]. A national cross-sectional study in *JMIR Pediatrics and Parenting* placed social and environmental determinants at the

center of the Indonesian problem [17]. Other international articles emphasized low birth weight, historical and household determinants from national datasets, and ecological differences between agricultural and nonagricultural households in South Lampung [18,19,20].

Nutrition-focused studies from Jurnal Gizi Indonesia and related SINTA-accredited sources brought the synthesis closer to daily feeding practice. They described complementary feeding in Natuna, prebiotic-source consumption in Bogor, Posyandu and low birth weight records in Semarang, nutrient intake differences in Cirebon, development of animal-source food products, and supplementary feeding experience in Musi Banyuasin [21,22,23,24,25,26]. Media Gizi Indonesia and Amerta Nutrition also contributed evidence on micronutrient bioavailability, health-sector social financing, nutrient consumption in the Tengger community, and first-1000-day nutrition intervention in Trenggalek [27,28,29,30].

Table 1 Synthesis of determinant domains from indexed Indonesian evidence published in 2025-2026

Determinant domain	Main pattern in recent evidence	Practical implication
Birth and early-life factors	Low birth weight, birth length, maternal and birth history, and early growth vulnerability are repeatedly linked with stunting.	Use antenatal, delivery, and postnatal data to identify children who need intensified growth monitoring.
Feeding and dietary practice	Suboptimal breastfeeding, complementary feeding confidence, dietary diversity, and household food availability shape child growth.	Move from general counselling to practical menus, affordable animal-source foods, and caregiver support.
Nutrient quality and bioavailability	Macro- and micronutrient adequacy, prebiotic-source consumption, and iron, zinc, and calcium bioavailability influence linear growth.	Strengthen local nutrient-dense food development and assess whether nutrients are absorbable, not merely present.
Household and socioeconomic factors	Food insecurity, poverty, low parental education, and limited health information reduce families' capacity to act.	Combine nutrition education with social protection, food security support, and household-level follow-up.
Environmental health and infection	Clean water, latrines, waste management, and helminth-related contamination are associated with stunting risk.	Treat WASH as a core nutrition intervention and integrate sanitation follow-up with child growth monitoring.
Urban-rural and regional context	Rural settings show stronger structural and service-access barriers; urban settings show dietary and household behavior constraints.	Use district-level risk profiling rather than one uniform national message.

3.2. Birth and early-life determinants

Birth history remained one of the clearest pathways across the reviewed literature. Low birth weight, short birth length, poor maternal condition, and suboptimal pregnancy-related care are not only early measurements; they represent fetal growth restriction, maternal nutrition problems, and antenatal service gaps that may continue after birth. Evidence from Central Java and Demak suggests that birth-related risks should not be treated as background variables that disappear after delivery. They identify children who require closer growth monitoring and more assertive nutrition support during infancy and toddlerhood [7,8].

The national-survey evidence on low birth weight is especially important because it confirms a familiar clinical finding at population scale: children who start life with a biological disadvantage are more likely to enter the growth faltering pathway when feeding, infection control, and household resources are also weak [18]. In practical terms, a stunting program that waits until the child is already short has missed part of the prevention window. Birth weight, birth length, maternal anemia risk, antenatal care quality, and postnatal growth velocity should be connected in the same surveillance chain.

3.3 Feeding practice, dietary diversity, and nutrient quality

Feeding practice is repeatedly described in Indonesian studies, but the more useful lesson is not simply that mothers should feed children better. The reviewed studies show why better feeding is often difficult. In Natuna, complementary

feeding practice differed between stunted and non-stunted children in ways that involved maternal confidence, attitudes, and the practical ability to prepare age-appropriate meals [21]. In urban at-risk families, caregivers often understood the idea of nutritious food but faced economic limitations, household habits, and sanitation constraints that narrowed their choices [10].

Dietary diversity and nutrient quality also emerged as concrete issues. Household food security and dietary diversity in West Bandung were linked to toddler stunting, indicating that food availability at the household level still shapes linear growth [9]. Studies on prebiotic sources, macronutrients, vitamins, and minerals suggest that the quality of what children eat matters as much as the frequency of meals [22,24]. Bioavailability studies from East Nusa Tenggara add another layer: even when food ingredients are present, the usable iron, zinc, and calcium content may be limited unless local complementary foods are deliberately designed to improve nutrient absorption [27].

This evidence supports a shift from advice-based nutrition education to food-environment support. Families need affordable animal-source foods, locally acceptable nutrient-dense products, and practical menus that can be repeated at home. Product-development and supplementary feeding studies, such as catfish-duck egg sausage development and the Musi Banyuasin supplementary feeding program, should be read as part of a wider strategy to make nutrient-dense foods easier for families to access, not as stand-alone solutions [25,26].

3.4. Maternal, household, and socioeconomic determinants

Maternal education, household poverty, and family decision-making repeatedly appeared in the reviewed studies. Poor households are not simply households with less money; they often experience limited food choice, unstable access to services, crowded living conditions, and lower bargaining power in decisions about child feeding and health care [16,17]. In Aceh, food security and access to health information were among the factors associated with stunting, while rural residence and suboptimal breastfeeding-related practices added to the risk [14].

The reviewed qualitative evidence is useful because it prevents a narrow interpretation of caregiver behavior. A family may know the recommended practice but still be unable to apply it because of food prices, work demands, housing conditions, or the feeding preferences of other household members [10]. This is why stunting prevention needs both nutrition education and an enabling household environment. Education without purchasing power, sanitation, and social support is unlikely to be sufficient.

Social financing and community-based support may help close this gap when they are designed with measurable outcomes. The Desa Bebas Stunting social return on investment study shows that non-state financing mechanisms, including zakat, infaq, and alms, can be analyzed as health investments when they contribute to stunting-related services and household support [28]. For districts with persistent poverty, such approaches may complement, but should not replace, publicly funded nutrition-sensitive protection.

3.5. Environmental health, infection, and service contact

The environmental pathway was strong in the 2025-2026 evidence. The North Aceh study found significant associations between stunting and clean water availability, latrine availability, waste management, household waste disposal, and helminth eggs in feces, with inadequate waste management emerging as a particularly strong environmental determinant [13]. These findings are consistent with the WHO framework: repeated exposure to fecal contamination and infection can reduce nutrient absorption, increase inflammatory burden, and make dietary improvement less effective [3].

Service contact also matters. Posyandu attendance, routine growth monitoring, immunization, and the use of electronic community-based nutrition reporting systems can identify children before severe faltering becomes entrenched [23]. However, service contact is not only a question of attendance. The quality of counseling, accuracy of anthropometric measurement, follow-up of children with low birth weight, and continuity of household visits determine whether service data become meaningful action.

3.6. Urban-rural and regional patterning

Urban and rural stunting should not be treated as the same problem wearing different labels. The 2025 systematic review of urban and rural determinants concluded that rural stunting is more closely associated with structural and service-related limitations, including sanitation, maternal education, and health-service access, while urban stunting is often linked with behavioral and household-level constraints, including unhealthy dietary practices [11]. This does not

mean that rural families lack behavior problems or that urban families lack structural barriers; rather, it means that the dominant entry point for intervention may differ by setting.

The urban modeling study and poor-household analysis support this setting-specific reading [15,16]. In urban areas, cash income may coexist with poor diet quality, high snack exposure, caregiver work constraints, and limited time for responsive feeding. In rural or agricultural settings, household livelihoods, food seasonality, sanitation infrastructure, and distance from services may be more visible. The South Lampung study adds that ecological and livelihood differences can shape the severity of stunting, reinforcing the need for district-level targeting rather than generic national messaging [20].

3.7. Programmatic implications for Indonesia

Three program implications can be drawn from this review. First, stunting prevention must begin before the child is identified as short. Pregnancy nutrition, antenatal care, birth weight, birth length, exclusive breastfeeding, and early complementary feeding should be managed as one continuum [4,8,18]. Second, food-based interventions need to move beyond calorie addition. The evidence points to dietary diversity, animal-source foods, prebiotic-rich foods, micronutrient bioavailability, and locally acceptable nutrient-dense products as practical areas for improvement [21,22,24,25,27,29].

Third, WASH and socioeconomic protection must be treated as core stunting interventions, not supporting activities. Environmental risks can blunt the benefit of improved intake, while poverty and food insecurity limit whether caregivers can translate knowledge into practice [9,13,16,17]. Indonesia already has a multisectoral policy basis; the next challenge is tighter targeting, better local data use, and follow-up that reaches the household rather than stopping at program coverage statistics [4,23,28,30].

Limitations

This review has limitations. It is narrative rather than meta-analytic, so it does not estimate pooled effect sizes. The review prioritized accessible indexed sources from 2025-2026, meaning that some relevant local reports, theses, or non-indexed studies may have been excluded. Differences in design and measurement also limit direct comparison between studies. Nevertheless, the reviewed sources provide a useful picture of current Indonesian evidence and identify determinant domains that are consistent with both national policy and global conceptual frameworks.

4. Conclusion

Recent indexed evidence confirms that stunting among Indonesian children under five years of age remains a multidimensional problem. The strongest message from the 2025-2026 literature is that determinants operate together: birth history, feeding practice, dietary diversity, nutrient quality, maternal education, poverty, food security, environmental sanitation, infection exposure, service access, and geographic context shape each other. A single intervention is therefore unlikely to produce durable reduction. Indonesia needs prevention that starts during pregnancy, protects infants in the first 1,000 days, improves the quality and affordability of child diets, strengthens WASH, and uses local data to decide which determinants matter most in each district.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

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