Multisectoral Strategies To Address Stunting Among Fisherfolk Children: An Evidence-Based Literature Review

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Abstract: Stunting among children in coastal fishing communities remains a critical public health issue, with prevalence rates often exceeding national averages. This literature review synthesizes findings from 50 peer-reviewed studies focusing on nutritional status, food security, sanitation, and socio-cultural factors contributing to stunting among fisher families. Despite abundant marine resources, children in fishing communities continue to face high risks of undernutrition due to limited economic access to diverse and nutritious food, poor maternal education, inadequate sanitation, and deeply rooted cultural feeding practices. The review highlights that household food insecurity, low dietary diversity, and misconceptions about protein-rich foods (e.g., fish and eggs) significantly affect child growth outcomes. Environmental conditions, such as a lack of clean water and poor waste management, exacerbate infection risks, further impairing nutrition. Effective interventions require a multisectoral approach that integrates community-based nutrition education, promotion of local marine foods, improvement of sanitation infrastructure, and economic empowerment of fisher households. Culturally adapted strategies that involve both mothers and fathers have shown promise in improving child nutrition outcomes. Addressing stunting in coastal communities demands not only technical solutions but also attention to social justice, cultural context, and sustainable livelihoods

1 INTRODUCTION

Stunting is one of the most persistent nutritional problems in many developing countries. This condition is characterized by the failure of linear growth in children due to prolonged nutritional deficiencies, usually beginning from pregnancy until the first two years of life. Its impacts are multidimensional, not only limited to physical aspects such as impaired height but also affecting cognitive development, immune function, and future productivity (Deshpande & Ramachandran, 2021). The World Health Organization (WHO) emphasizes that stunting contributes to the low quality of human resources and hinders sustainable development (WHO, 2018).

Globally, an estimated 148 million children under the age of five were stunted in 2022, with the highest prevalence found in South Asia and Sub-Saharan Africa. Although there has been a downward trend in the past two decades, this figure is still far from the global target set in the *Sustainable Development Goals* (SDGs), which aim to reduce stunting prevalence by 50% by 2030. This indicates that current interventions are not yet fully effective, particularly in communities that remain vulnerable to

malnutrition and structural poverty (Jalaludin et al., 2025).

Indonesia is one of the countries with a high burden of stunting. Data from the *Indonesian Nutritional Status Survey (SSGI)* in 2022 showed a national stunting prevalence of 21.6%, a decrease from 24.4% in 2021. The Indonesian government has set a target to reduce stunting prevalence to 14% by 2024 through a national strategy for stunting prevention. However, significant challenges remain, particularly in coastal, remote, and fishing communities that are often overlooked by mainstream health and nutrition programs (Sekretariat Wakil Presiden RI, 2018).

Fishing communities in coastal areas face unique challenges regarding food security and nutritional status. Despite living in areas rich in marine resources, children from fishing families are often malnourished. This paradox occurs due to limited economic access, fluctuating household income caused by dependence on fishing seasons, and low purchasing power for diverse and nutritious foods. As a result, the consumption of animal-based proteins, including fish that are abundant in their surroundings, is not optimally provided to young children (Mellado et al., 2021).

In addition to economic constraints, other determinants influencing stunting among fisherfolk children include low maternal education, poor environmental sanitation, and unfavorable cultural feeding practices. The delayed introduction of complementary feeding and misconceptions about giving fish and eggs to young children further exacerbate the situation. These factors demonstrate that stunting in coastal areas is not merely a result of food availability but is closely tied to social, cultural, and environmental health aspects (Iqbal et al., 2021).

Although numerous studies on stunting have been conducted in Indonesia, research specifically addressing fisherfolk children remains limited. Most studies focus on the general population or rural communities, leaving the coastal context underexplored. In fact, the socio-economic characteristics of fishing families, household dietary patterns, and ecological challenges in coastal areas differ significantly from other communities. This creates a knowledge gap that must be bridged through more comprehensive literature reviews.

The literature suggests that multisectoral strategies are required to address stunting in fishing communities. Single interventions such as improving nutrient intake alone are insufficient without being accompanied by sanitation improvements, economic empowerment, nutrition education, and the optimal use of local marine resources. Community-based programs that engage both mothers and fathers, while respecting cultural traditions, are more effective in changing dietary behavior and child-feeding practices (Jalaludin et al., 2025).

Based on this background, this study aims to systematically review scientific evidence regarding the determinants of stunting among fisherfolk children in coastal areas. It also explores proven intervention strategies and offers a multisectoral perspective that integrates nutrition, food security, environmental health, education, and socio-cultural dimensions. The findings are expected to provide a foundation for developing more contextual and sustainable policies and programs to reduce stunting prevalence in Indonesian coastal communities.

2 METHOD

The review was conducted by examining research articles available in various academic databases, including Semantic Scholar, PubMed, Scopus, Google Scholar, and other sources. This systematic search process aimed to identify relevant literature on stunting among children of fishing communities, an issue often overlooked in the context of public health. The initial results identified 941 papers, indicating the considerable amount of research that has been carried out in this field.

After the identification stage, a screening process was conducted to ensure that only papers meeting the eligibility criteria would be further analyzed. Of the 941 papers identified, 727 were screened based on relevance and methodological quality. In this process, assessments were carried out on aspects such as study design, sample size, and the reliability of the data presented. Ultimately, 477 papers were deemed eligible for inclusion in this review, indicating that a substantial body of research contributes to the understanding of stunting among children in fishing communities.

After the eligibility assessment, the final stage involved selecting the most relevant papers to be included in this review. Of the 477 papers evaluated, 50 were selected based on strict relevance criteria. This selection considered the contribution of each paper to the understanding of factors influencing stunting, as well as strategies that could be implemented to address the issue. Accordingly, this review focuses on research that provides in-depth insights into effective interventions and applicable policy measures.

A total of 19 unique searches were conducted using a strategy that combined keywords related to stunting, fisherfolk children, coastal areas, nutritional intake, food security, sanitation, and socio-economic factors. This search strategy was designed to ensure that all relevant aspects of the stunting problem among fisherfolk children were comprehensively covered. By integrating multiple keywords, this study sought to explore the complex relationships among the factors influencing the nutritional status of children in coastal communities.

Search Strategy

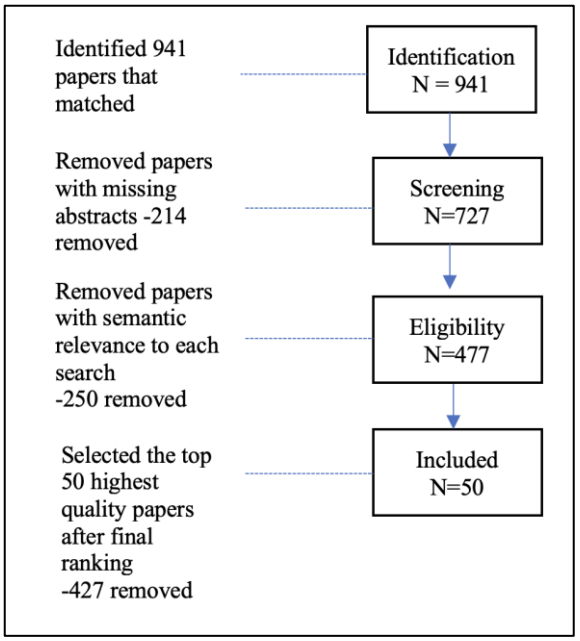

Figure 1 Flowchart of Research Article Selection

3 RESULT

Table 1. Summary of Evidence on Determinants of Stunting in Coastal Fishermen's Households

Claim	Evidence Strength	Reasoning	Papers
The prevalence of stunting among coastal fishermen's children is high (18–35%)	Strong	Survey data and cross-site studies consistently show high rates.	1 Yuliantini, E., Kamsiah, K., Maigoda, T., & Ahmad, A. (2022). Asupan makanan dengan kejadian stunting pada keluarga nelayan di Kota Bengkulu. *AcTion: Aceh Nutrition Journal*. 2 Mabossy-Mobouna, G., & Loubelo, A. (2020). Evaluation of the nutritional status of children under 5 years old from farmers, fishermen and fish farmers in the northern areas of the Republic of Congo. *Research Journal of Food Science and Nutrition.* 3 Akter, S., & Nishu, N. (2025). Malnutrition among under-5 children and its determinants in the southwestern coastal region of Bangladesh: A community-based study. *BMJ Open*, 15. 4 Yuliantini, E., Sukiyono, K., Yuliarso, M., & Sulistyo, B. (2022). Food Security and Stunting Incidences in the Coastal Areas of Indonesia. *Open Access Macedonian Journal of Medical Sciences*. 5 Masthalina, H., Santosa, H., Sudaryat, E., & Zuska, F. (2021). Household Food Insecurity, Level of Nutritional Adequacy, and Nutritional Status of Toddlers in the Coastal Area of Central Tapanuli Regency. *Open Access Macedonian Journal of Medical Sciences.*
Low intake of energy, protein, fat, carbohydrates, and zinc is associated with stunting	Strong	Cross-sectional studies and reviews support a strong association.	1 Yuliantini, E., Kamsiah, K., Maigoda, T., & Ahmad, A. (2022). Asupan makanan dengan kejadian stunting pada keluarga nelayan di Kota Bengkulu. *AcTion: Aceh Nutrition Journal*. 2 Rizal, A., & Haya, M. (2020). Faktor Yang Berhubungan Dengan Anak Balita Stunting Pada Keluarga Nelayan. , 2, 323-332

Claim	Evidence Strength	Reasoning	Papers
			3 Yuliantini, E., Sukiyono, K., Yuliarso, M., & Sulistyo, B. (2022). Food Security and Stunting Incidences in the Coastal Areas of Indonesia. *Open Access Macedonian Journal of Medical Sciences*.
			4 Sumarti, S., Salma, W., & Binekada, M. (2024). Hubungan Asupan Gizi Makro Terhadap Status Gizi Balita Stunting di Wilayah Pesisir Kota Kendari. *Jurnal Gizi Ilmiah*.
			5 Gibson, E., Stacey, N., Sunderland, T., & Adhuri, D. (2020). Dietary diversity and fish consumption of mothers and their children in fisher households in Komodo District, eastern Indonesia. *PLoS ONE*, 15
Low household food security increases the risk of stunting	Strong	SEM and cross-sectional studies show a significant association.	1 Yuliantini, E., Sukiyono, K., Yuliarso, M., & Sulistyo, B. (2022). Food Security and Stunting Incidences in the Coastal Areas of Indonesia. *Open Access Macedonian Journal of Medical Sciences*.
			2 Yuliantini, E., Sukiyono, K., Sulistyo, B., Yuliarso, M., & Martiana, D. (2024). Analysis Of Food Security, Social Health, Environmental And Household Food Security On Stunting Incidence Of Children Aged 12-59 Months In Coastal Households In Bengkulu Province. *Media Gizi Indonesia*.
			3 Masthalina, H., Santosa, H., Sudaryat, E., & Zuska, F. (2021). Household Food Insecurity, Level of Nutritional Adequacy, and Nutritional Status of Toddlers in the Coastal Area of Central Tapanuli Regency. *Open Access Macedonian Journal of Medical Sciences*.
Poor sanitation and low nutritional knowledge exacerbate stunting	Moderate	Qualitative and case-control studies provide supporting evidence.	1 Patty, S., & Nugroho, F. (2020). Kemiskinan Dan Malnutrisi Pada Anak Balita Dalam Keluarga Nelayan di Wilayah Pesisir Kota Serang. , 8, 109-125.
			2 Iriani, I., Humaedi, M., Diniyati, D., Dewayani, W., Isnan, W., Muin, N., Listyawati, A., & Bahri,

Claim	Evidence Strength	Reasoning	Papers
			S. (2024). Regulation of household food needs: Affirmation of socio-cultural resilience in preventing stunting incidents in coastal areas. *Journal of Infrastructure, Policy and Development*. 3 Indirawati, S., Salmah, U., Ashar, T., Panjaitan, A., Situmorang, R., & Lestari, A. (2024). Analysis of Fulfillment of Four Aspects in Drinking Water and Incidence of Stunting in Coastal Areas: Case Study of Paluh Sibaji Village, Pantai Labu Sub-district. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health*. 4 Ikhtiarti, W., Rahfiluddin, M., & Nugraheni, S. (2020). Faktor Determinan Yang Berhubungan Dengan Kejadian Stunting Pada Balita Usia 1 - 3 Tahun Di Wilayah Pesisir Kabupaten Brebes. , 8, 260-271.
Nutrition education interventions and local food innovations are effective in reducing stunting	Moderate	Qualitative and case-control studies provide supporting evidence.	1 Herlina, M., Susilowati, E., Supiadi, E., Urbayatun, S., Wardani, L., Fahrudin, F., Pramono, B., & Fahrudin, A. (2025). Determinants of stunting prevention in coastal fishing families of Bengkulu city. *Journal of Infrastructure, Policy and Development*. 2 Nurmianto, E., Kusuma, S., Soehardjoepri, S., Nadhiroh, S., Rahmaningsih, S., Fauziah, F., & Trikurniawan, G. (2024). Processed Seafood Determination for Fishermen Prosperity Using Macro Ergonomic and Analytical Hierarchy Process. *IOP Conference Series: Earth and Environmental Science*, 1298. 3 Handayani, D., Kusuma, E., Nastiti, A., & Puspitasari, R. (2024). Effectiveness of The Culture-Based Anti-Stunting Education Package on Family Behavioral Changes in Stunting Prevention. *Jurnal Kesehatan dr. Soebandi*. 4 Novi, S., Mahira, C., Suraya, R., & Said, N. (2024). Pemanfaatan Pangan Lokal Dalam Upaya Pencegahan Stunting Pada Anak Di Desa Lorong

Claim	Evidence Strength	Reasoning	Papers
			Pisang. *Journal of Gender and Social Inclusion in Muslim Societies*. 5 Rumbya, L., & Salakory, M. (2024). Outcome of PKM (Community Service Program) on Promoting Vegetable Consumption as a Strategy for Addressing Stunting Risk Groups in Coastal Areas.. *GEOFORUM* 6 Communication, S., Octavia, L., Wirawan, N., Nirmala, I., Sudarma, V., Liman, P., , F., Rahardjo, W., & Nurdiani, R. (2025). Utilizing Local Food Sources in a Sustainable Healthy Diet System and Psychosocial Care to Reduce Malnutrition. *Pediatric Gastroenterology, Hepatology & Nutrition*, 28, 135 - 140. 7 Yuliantini, E., Sukiyono, K., Sulistyo, B., & Yuliarso, Z. (2025). Designing effective stunting prevention strategies for coastal households in Bengkulu Province. *BIO Web of Conferences*. 8 Ayu, A., Utami, Y., Ramadhani, L., Utari, A., Putri, H., Muizza, M., Ramadini, S., & Arrazy, S. (2025). Nutritional Control Of Coastal Communities With Innovative Food Products Of Rebon Shrimp Nuggets In Rantau Panjang Village, Pantai Labu Sub-District. *Journal of Gender and Social Inclusion in Muslim Societies*.
Cultural factors and household consumption priorities influence nutritional status	Moderate	Qualitative and observational studies support this, but the data are limited.	1 Patty, S., & Nugroho, F. (2020). Kemiskinan Dan Malnutrisi Pada Anak Balita Dalam Keluarga Nelayan di Wilayah Pesisir Kota Serang. , 8, 109-125. 2 Iriani, I., Humaedi, M., Diniyati, D., Dewayani, W., Isnan, W., Muin, N., Listyawati, A., & Bahri, S. (2024). Regulation of household food needs: Affirmation of socio-cultural resilience in preventing stunting incidents in coastal areas. *Journal of Infrastructure, Policy and Development*. 3 Gibson, E., Stacey, N., Sunderland, T., & Adhuri, D. (2020). Dietary diversity and fish consumption of mothers and their children in

Claim	Evidence Strength	Reasoning	Papers
			fisher households in Komodo District, eastern Indonesia. *PLoS ONE*, 15

Table 1 suggests that stunting among children in coastal fishermen households is a multifactorial issue, with primary determinants being low nutritional intake and poor household food security. Contributing factors such as inadequate sanitation, limited nutritional knowledge, and sociocultural practices further exacerbate the problem. Meanwhile, nutrition education and local food innovation show potential as effective solutions. Addressing stunting in coastal areas thus requires a multidimensional approach that integrates nutrition, food security, environmental health, education, and sociocultural aspects.

Table 2. Comparison of Key Studies On Stunting In Children of Fishermen In Coastal Areas

Paper	Location/Population	Method	Key Findings
Food intake and stunting incidence among… (Yuliantini et al., 2022, AcTion: Aceh Nutrition Journal)	Bengkulu, Indonesia (74 children)	Cross-sectional	Stunting prevalence 29.4%; energy, protein, fat, carbohydrate, and zinc intake associated with stunting
Determinant factors associated with… (Ikhti et al., 2020)	Brebes, Indonesia (60 children)	Case-control	Stunting prevalence 32.7%; poor sanitation, infectious diseases, low caregiver knowledge, and low energy intake as risk factors
Household Food Insecurity, Level of Nutritional Adequacy… (Masthal et al., 2021, Open Access Macedonian Journal)	Central Tapanuli, Indonesia (59 children)	Cross-sectional	Stunting prevalence 35.6%; low household food security, low energy & protein intake
Food Security and Stunting Incidences in the Coastal… (Yuliantini et al., 2022, Open Access Macedonian Journal)	Indonesia (review)	Literature review	Risk factors: economic status, maternal education, low birth weight, exclusive breastfeeding, macro & micronutrient deficiencies
Dietary diversity and fish consumption of mothers and… (Gibson et al., 2020, PLoS ONE)	Komodo, Indonesia	Mixed-methods	>50% of mother–child pairs did not meet dietary diversity; fish was the main food, but fish introduction to children was delayed

Table 2 summarizes several key studies on stunting among children of fishing families in coastal areas of Indonesia. In general, the prevalence of stunting among children in fishing communities is quite high, ranging from 29.4% to 35.6%. Several consistent contributing factors across the studies include low energy and protein intake, household food insecurity, and poor sanitation and environmental health.

In addition, low caregiver knowledge, infectious diseases, and poor family economic conditions also significantly contribute to the high rate of stunting. A literature review further highlights other determinants such as maternal education, low birth weight,

exclusive breastfeeding practices, and macro- and micronutrient deficiencies that exacerbate children's nutritional problems.

Although fish is the main source of food in coastal areas, research shows that children's fish consumption is often delayed, meaning the potential of fish as a rich source of protein is not optimally utilized. This is further compounded by limited dietary diversity within families, particularly among mothers and children.

Overall, the table highlights that the stunting problem in fishing communities is influenced not only by food availability but also by socioeconomic factors, education, health, and child feeding practices. Therefore, comprehensive interventions are necessary, including improving access to nutritious food, providing nutrition education, enhancing sanitation, and promoting the economic empowerment of fishing families.

The prevalence of stunting among children from fishing families in coastal areas is generally high, ranging from 18% to 35% in various locations in Indonesia and other countries (Mabossy-Mobouna & Loubelo, 2020). In Bengkulu, the prevalence reached 29.4% (Yuliantini, Kamsiah, Maigoda, & Ahmad, 2022), in Central Tapanuli 35.6% (Masthalina, Santosa, Sudaryat, & Zuska, 2021), and in Brebes 32.7% (Ikhtiarti, Rahfiluddin, & Nugraheni, 2020). In Kenya and Bangladesh, stunting rates in coastal communities are also significant, indicating a global problem among fishing communities (Kamau-Mbuthia et al., 2023).

The main factors associated with stunting are inadequate intake of energy, protein, fat, carbohydrates, and zinc. Low household food security, limited family income, and low maternal education are also important determinants (Sumarti, Salma, & Binekada, 2024). A lack of dietary diversity and low consumption of animal-based foods, despite living in areas rich in fish, have also been identified (Yuliantini, Sukiyono, Sulistyo, & Yuliarso, 2023)

Poor environmental sanitation, limited access to clean water, and cultural practices that do not support healthy eating patterns exacerbate the risk of stunting (Iriani et al., 2024). In some fishing families, food consumption is still prioritized for the father, and there are misconceptions regarding the consumption of fish and eggs by children (Patty & Nugroho, 2020). Unhygienic living conditions and a lack of education on the importance of immunization also contribute to the problem (Yuliantini, Sukiyono, Sulistyo, Yuliarso, & Martiana, 2024).

Effective interventions include nutrition education, promotion of local fish consumption, innovation in seafood-based food products, improved sanitation, and economic empowerment of fishing families(Ayu et al., 2025). Culturally tailored education programs and the involvement of fathers in supporting child nutrition have also proven effective (Krisnana, Suryawan, & Muftiyaturrohmah, 2020). Multisectoral collaboration and local food innovations are key to reducing stunting rates in coastal communities(Yuliantini, Sukiyono, Sulistyo, & Yuliarso, 2025)

4 CONCLUSIONS

Stunting among children in coastal fishing communities remains a persistent and multifactorial public health challenge. Evidence from various studies shows that the prevalence of stunting in these areas is considerably high, ranging from 18% to 35%. The primary determinants include inadequate intake

of energy, protein, and essential micronutrients, compounded by household food insecurity, low maternal education, limited family income, and poor sanitation conditions. Cultural feeding practices and delayed introduction of protein-rich foods, such as fish and eggs, further exacerbate the risk. Despite living in areas with abundant marine resources, many fishing households face restricted economic and dietary access to nutritious foods. This paradox underlines the urgency of comprehensive interventions. Evidence highlights that nutrition education, promotion of local marine-based foods, dietary innovations, improved sanitation, and household economic empowerment are effective strategies in reducing stunting prevalence. Culturally tailored programs that actively involve both mothers and fathers also demonstrate positive outcomes. Therefore, addressing stunting in fisherfolk children requires a multisectoral approach that integrates nutrition, food security, environmental health, education, and socio-cultural considerations. Sustainable solutions must be community-based, context-sensitive, and supported by policies that promote social justice and livelihood security for fishing families. Only through collaborative and inclusive strategies can significant progress be achieved in reducing stunting and improving the overall well-being of children in coastal areas.

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