

Article

Formulating A Framework Toward Stunting Reduction Strategy: A Case Study of the Sidoarjo Regency Health Department, Indonesia

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Abstract: Stunting is a disorder of child growth that is caused by a mother's nutritional status during pregnancy, suboptimal breastfeeding practices, and dietary patterns that do not meet nutritional needs. One of the regions implementing the stunting reduction policy is Sidoarjo Regency under its Health Department. However, less research specifically analyzing how the Health Department integrates organizational, program, resource support, and institutional strategies as the leading sector for accelerating stunting reduction. Therefore, this study aims to analyze the strategies of the Sidoarjo Regency Health Department to hasten the reduction of stunting and explain how integrating these four strategic dimensions contributes to achieving this goal. This study employed a qualitative method, and the research informants included officials from the Sidoarjo District Health Department, health workers, Posyandu cadres, and other stakeholders involved in the program's implementation. The results show that accelerating the reduction of stunting requires integrating Corporate Strategy, Program Strategy, Resource Support Strategy, and Institutional Strategy into a mutually supportive governance system. Corporate Strategy provides direction for policy and organizational governance; Program Strategy translates policy into integrated interventions; Resource Support Strategy ensures the availability of resources; and Institutional Strategy strengthens cross-sectoral collaboration. Therefore, the effectiveness of implementation is determined by the integration of all four dimensions through mechanisms of coordination, monitoring and evaluation, organizational learning, and continuous feedback. The proposed conceptual model expands on Kooten's strategic perspective by positioning strategic integration as the foundation of adaptive governance in accelerating the reduction of stunting.

Keywords: Framework, Health, Kooten, Sidoarjo, Stunting

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1. Introduction

Stunting is a disorder of child growth and development caused by chronic malnutrition. This condition is characterized by a child's height being below the standard for their age and impacts cognitive development, learning ability, productivity, and quality of life well into adulthood. According to the World Health Organization (WHO), in 2024, an estimated 150.2 million children under the age of five, or about 23.2%, will be stunted worldwide [1]. In Indonesia, the prevalence of stunting has shown a downward trend, as indicated by the Indonesian Toddler Nutrition Status Survey (SSGBI), dropping from 37.2% in 2013 to 30.8% in 2018, 27.7% in 2019. It is projected to decrease further to 24.4% in 2021. Nevertheless, these figures still indicate that stunting remains a public health challenge that requires sustained attention and efforts [2].

Various factors contribute to stunting, including the mother's nutritional status during pregnancy, suboptimal breastfeeding practices, and dietary patterns that do not meet nutritional needs. Stunting is also caused by recurrent infectious diseases, inadequate sanitation, and limited access to health services [3]. The complexity of these determinants indicates that addressing stunting requires a comprehensive approach through a holistic, integrative, thematic, and spatial (HITS) strategy, involving various sectors in a coordinated manner [4].

One of the regions implementing stunting reduction is Sidoarjo Regency through Sidoarjo Regent Regulation No. 89 of 2021 on the Acceleration of Integrated Stunting Reduction and Sidoarjo Regent Regulation No. 90 of 2021 on the Role of Villages in Accelerating Stunting Reduction. Based on these regulations, the Sidoarjo Regency Health Department, as the leading sector, is implementing various strategies, including nutritional interventions, strengthening maternal and child health services, building the capacity of health workers and village health cadres, and strengthening collaboration with village governments and other stakeholders. These strategies aim to increase the coverage of both specific and sensitive interventions while strengthening implementation governance through cross-sectoral coordination, institutional strengthening, and resource optimization [5]. This phenomenon highlights the importance of identifying both the factors supporting success and the challenges in program execution. Therefore, an evaluation of how organizational strategies are designed, implemented, and integrated is essential to provide a more comprehensive explanation of the achievements and challenges in accelerating the reduction of stunting [6].

Various studies indicate that a range of strategic factors influences the success of policy implementation efforts to hasten the reduction of stunting. A study explained that organizational commitment, human resource capacity, cross-sectoral coordination, and leadership are key factors in implementing convergence actions at the local level [7]. Another study found that stakeholder acceptance of the policies determines the effectiveness of convergence policies, intersectoral collaboration, resource adequacy, and the sustainability of program implementation at the district, subdistrict, and village levels [6]. Meanwhile, the effectiveness of organizational strategies, resource support, community participation, and parental awareness influences the success of stunting prevention programs at the village level [8]. Other research findings also confirm that the effectiveness of policy implementation, human resource capacity building, and cross-sectoral collaboration through a convergence approach are key factors in accelerating the reduction of stunting in local areas [9].

Although previous research has made important contributions to explaining policy implementation, cross-sectoral convergence, and factors that hasten stunting reduction, existing studies still largely focus on specific factors or sectors in isolation. Research specifically analyzing how the Health Department integrates organizational, program, resource support, and institutional strategies as the leading sector for accelerating stunting reduction at the district level remains relatively limited. Consequently, a knowledge gap remains regarding how these four strategic dimensions interact within a governance system to support the achievement of stunting-reduction goals within local health organizations.

Based on this gap, this study employs the strategic framework proposed by Kooten, comprising Corporate Strategy, Program Strategy, Resources Support Strategy, and Institutional Strategy. Therefore, this study aims to analyze the strategies of the Sidoarjo Regency Health Department to hasten the reduction of stunting and explain how integrating these four strategic dimensions contributes to achieving this goal. The results of this study are expected to contribute to the development of public sector strategy research while also serving as input for local governments and stakeholders in formulating

policies to hasten stunting reduction that are more effective, integrated, adaptive, and sustainable.

2. Materials and Methods

This study employed a qualitative case study design. This approach was chosen because it allows the researcher to gain an in-depth and holistic understanding of the strategies employed by the Sidoarjo District Health Department to hasten the reduction of stunting as a phenomenon examined in a real-world context [10]. The research analyzed how strategies are formulated, implemented, resource-supported, and integrated through institutional collaboration to hasten the reduction of stunting.

Informants were selected using purposive sampling based on their experience, involvement, and knowledge of the implementation of the program to hasten the reduction of stunting [11]. Research informants included officials from the Sidoarjo District Health Department, health workers, Integrated Service Post or Integrated Health Post (Posyandu) cadres, and other stakeholders involved in the program's implementation. The number of informants was determined until data saturation was reached, that is, the point at which additional interviews no longer yielded new information relevant to the research focus.

Data collection was conducted through interviews, observations, and documentation to obtain complementary information and verify the research findings. Interviews were conducted using a semi-structured approach based on guidelines derived from the four dimensions of Kooten's strategy, ensuring that informants could provide explanations aligned with the research focus [12]. Secondary data were obtained from relevant documents, including national and regional regulations, program implementation reports, monitoring and evaluation documents, Indonesia Health System (IHS) data, e-PPGBM reports, and other supporting documents related to efforts to hasten the reduction of stunting. These various documents were used to enrich the research information, provide an overview of policies and program implementation, and support the verification process for primary data obtained through interviews and observations [13].

Data analysis in this study employed thematic analysis to identify patterns and themes in the collected data. These themes were analyzed using Kooten's strategic framework, comprising Corporate Strategy, Program Strategy, Resource Support Strategy, and Institutional Strategy. These four dimensions served as the analytical framework for examining the Sidoarjo District Health Department's strategy to hasten the reduction of stunting [8].

To ensure the credibility of the findings, the study employed source triangulation and methodological triangulation throughout the entire research process. Source triangulation was conducted by comparing information obtained from various informants, while methodological triangulation was carried out by comparing the results of interviews, observations, and documentation. The application of these two techniques aimed to enhance data validity and ensure that the resulting interpretations were consistent with the empirical evidence obtained [14]. The outcome of this process was the identification of strategies employed by the Sidoarjo District Health Department to hasten the reduction of stunting, which were subsequently synthesized into a conceptual model for the study.

3. Results

Corporate strategies

The Sidoarjo Regency Health Department's corporate strategy for accelerating the reduction of stunting focuses on strengthening institutional commitment, cross-sectoral governance, and data-driven decision-making as the foundation for policy

implementation. This approach is realized through the formulation of regulations, the establishment of coordination mechanisms, and an evaluation system that integrates the roles of various stakeholders in supporting the acceleration of stunting reduction [15]. These findings indicate that the Corporate Strategy serves as a policy direction while also integrating actors, resources, and decision-making in the hastened reduction of stunting

Institutional commitment is demonstrated through the issuance of Sidoarjo Regent Regulation as the foundation for implementing the convergence approach by clarifying the division of roles among local governments, village governments, health care facilities, and local government agencies in the implementation of specific and sensitive interventions [16]. In addition to serving as the basis for policy integration, these regulations also reinforce the roles of each stakeholder, thereby supporting cross-sectoral coordination, reducing program overlap, and improving the consistency of implementation across all levels of government [17].

Cross-sectoral coordination has been strengthened through the establishment of the Sidoarjo Regency Stunting Reduction Acceleration Team (TPPS) pursuant to Regent's Decree No. 188/197/438.1.13/2022. The TPPS serves as a coordination forum that aligns the planning, implementation, monitoring, and evaluation of the stunting reduction acceleration program [18]. The Health Department serves as the leading sector, coordinating the implementation of convergence actions through a structured division of roles, ensuring that each local government agency contributes in accordance with its authority and the established targets [19]. Results indicate that variations in capacity and commitment among local government agencies have led to the implementation of certain activities, particularly during the monitoring phase, and to the failure to fully integrate follow-up on evaluation results. This situation demonstrates that the effectiveness of organizational strategies depends on coordination supported by the commitment and capacity of each organization.

An evaluation mechanism also supports the implementation of the Corporate Strategy by establishing a Stunting Case Audit Team pursuant to Regent's Decree No. 188/357/438.1.13/2022. The results indicate that case audits are used not only to identify the factors causing stunting but also to evaluate the effectiveness of interventions and generate recommendations to improve program implementation at both the regency and village levels. Thus, case audits serve as a mechanism for organizational learning, providing feedback to continuously refine policies and implement interventions, enabling the Corporate Strategy to continue evolving adaptively.

Decision-making in strategy implementation is based on health reporting systems, data on toddlers' nutritional status, and the results of stunting case audits. This information is used to set priority targets, evaluate program achievements, and adjust strategies in accordance with on-the-ground conditions [20]. This data-driven approach strengthens the effectiveness of intersectoral coordination while ensuring that interventions are implemented in a more adaptive and targeted manner [21].

Furthermore, the Corporate Strategy of the Sidoarjo District Health Department serves as the foundation for governance to hasten the reduction of stunting by integrating regulations, organizational leadership, cross-sectoral coordination, evaluation mechanisms, and data-driven decision-making. The integration of these various components strengthens the consistency of policy implementation, enhances collaboration among stakeholders, and supports the adaptive and sustainable implementation of efforts to hasten the reduction of stunting [22].

Program Strategies

The Sidoarjo Regency Health Department's program strategy focuses on implementing integrated programs to ensure that every intervention aimed at accelerating the reduction of stunting is appropriately targeted to meet the needs of priority groups. This strategy translates the organization's policy direction into operational programs that

integrate health, nutrition, and basic service interventions through a convergence approach, so that each activity supports the others in achieving the goal of accelerating the reduction of stunting [23].

The convergence action guides the program's implementation to hasten the reduction of stunting and serves as the implementation framework from the district to the village level. This framework is designed to improve the quality of basic service delivery in an integrated manner by addressing stunting as a multidimensional issue influenced by various health, nutrition, and environmental factors [24]. Therefore, the program's targets not only focus on toddlers but also include adolescent girls, prospective brides, pregnant women, breastfeeding mothers, and children aged 0–59 months as priority groups requiring interventions throughout the life cycle [25].

However, research findings indicate that the implementation of several interventions still faces challenges in terms of aligning implementation timelines, dividing responsibilities among agencies, and ensuring the continuity of support for target groups; thus, program integration still needs to be strengthened, and the success of program implementation depends on consistent coordination across all involved sectors.

The program is implemented through a combination of specific and sensitive interventions tailored to the characteristics of each target group. These interventions include maternal and child health services; monitoring the growth and nutritional status of toddlers; providing iron supplements to adolescent girls and pregnant women; promoting exclusive breastfeeding; providing complementary foods; providing nutritional supplementation; delivering behavior change education; and supporting at-risk groups. Program implementation is also supported by strengthened coordination among local government agencies, enabling more effective integration of health services, nutrition improvement, sanitation, food security, and community empowerment to meet the needs of target groups.

The success of program implementation is further supported by capacity building for implementers, strengthening health workers' competencies, and institutional development down to the village level. This capacity-building aims to improve the quality of health and nutrition services while ensuring that each intervention is implemented consistently and sustainably. Additionally, institutional capacity development supports the program's sustainability by enhancing villages' ability to implement interventions in accordance with the characteristics of their respective regions [26].

The effectiveness of the Program Strategies is maintained through monitoring and evaluation of the implementation of each convergence action to ensure alignment between program targets, the needs of target groups, and intervention outcomes [21]. Evaluation results are used as the basis for refining program priorities, adjusting the implementation of activities, and improving service quality so that program implementation can adapt to the changing needs of the community [27].

The Program Strategies demonstrate that accelerating the reduction of stunting depends not only on the number of programs implemented but also on the integration of program design, the accuracy of targeting, the quality of intervention implementation, and the strengthening of implementers' capacity. The integration of these various components forms a more comprehensive health and nutrition service system capable of supporting the sustainable acceleration of stunting reduction in Sidoarjo Regency [28].

Resource support strategies

The Sidoarjo Regency Health Department's Resource Support Strategy for accelerating the reduction of stunting focuses on strengthening resource support to ensure that every program can be implemented effectively and sustainably. This support includes funding management, human resource development, the provision of health facilities and

infrastructure, the use of information technology, and the strengthening of referral systems that support the implementation of interventions at all levels of care [29].

Program funding is directed toward supporting the implementation of priority interventions by optimizing various funding sources, including the Health Operational Assistance, the Regional Revenue and Expenditure Budget (APBD), and cross-sectoral funding, in accordance with indicators for accelerating the reduction of stunting. This integration of funding enables more targeted resource allocation while strengthening inter-agency collaboration to support program implementation.

Human resource strengthening is carried out by building the capacity of health workers as the primary implementers of the program in the field. Competency development focuses on improving skills in nutrition services, growth monitoring, early detection of stunting risks, and support for target groups [30]. In addition, strengthening institutional capacity at the village level is a crucial component for improving the quality of basic services and supporting the sustainability of program implementation [31]. Several informants noted that human resource capacity and the utilization of health information systems still vary across regions, meaning the quality of program implementation is not yet fully uniform. This implies that the success of program implementation depends on the equitable distribution of capacity and competencies among implementers across all regions.

Resource support is also provided by strengthening health facilities, infrastructure, and service systems. Service optimization at *Puskesmas* and *Posyandu* is achieved by strengthening the referral system for cases of weight faltering and stunting, ensuring that children requiring further treatment can promptly receive services tailored to their needs [32]. These efforts are supported by the digitization of measurement tools and the use of health information systems to improve data accuracy, expedite reporting, and provide more reliable information to support decision-making in program implementation [33].

The Resource Support Strategy indicates that the success of efforts to hasten the reduction of stunting is determined not only by the quality of the programs designed but also by the availability of resources to support their implementation [34]. The integration of funding, strengthening of human resource capacity, provision of service infrastructure, and utilization of information technology form a support system that enables interventions to be carried out more effectively, adaptively, and sustainably [35].

Institutional strategies

The Sidoarjo Regency Health Department's institutional strategy for accelerating the reduction of stunting is implemented by strengthening partnerships and cross-sectoral collaborative networks among the government, health care facilities, community organizations, educational institutions, and the public. This strategy positions inter-institutional collaboration as a mechanism for integrating the resources, expertise, and roles of each stakeholder, enabling more comprehensive and sustainable efforts to hasten the reduction of stunting [36]. Although collaborative networks have been established, interview results indicate that the effectiveness of communication and coordination among actors still depends on meeting frequency and each institution's commitment; consequently, follow-up on coordination outcomes has been inconsistent. This situation underscores the importance of strengthening shared commitment within the Institutional Strategy to ensure continuous inter-institutional coordination [37].

Institutional collaboration involves various local government agencies, including the Health Department, the National Population and Family Planning Board (BKKBN), the Education Department, the Social Affairs Department, village governments, and other government partners, in accordance with their respective roles and functions. This collaboration enables the integrated implementation of interventions in health, education, social protection, and community empowerment, so that each institution contributes to achieving the target for accelerating the reduction of stunting [38].

Partnerships are also strengthened through the involvement of academics, civil society organizations, the Family Welfare Empowerment (PKK) Mobilization Team, Integrated Service Post or Integrated Health Post (Posyandu) cadres, and the community as implementing partners at the community level. Academics contribute by providing scientific studies and strengthening the evidence-based foundation for program development, while civil society organizations, the PKK, and Posyandu cadres play a role in education, family counseling, monitoring the growth of toddlers, and increasing community participation in the implementation of interventions [39]. The involvement of these various actors expands the reach of services while strengthening program acceptance at the community level [40].

Strengthening institutional networks is also achieved through coordination and communication forums among stakeholders to align program implementation across all levels. These forums serve as a platform for exchanging information, resolving implementation issues, and collaboratively developing follow-up actions so that each institution can carry out its role in a complementary manner to support the hastened reduction of stunting [41].

This Institutional Strategy demonstrates that accelerating stunting reduction depends not only on an organization's internal capacity but also on its ability to build effective partnerships with various institutions and community groups [37]. Cross-sectoral collaboration, supported by a clear division of roles, continuous communication, and active stakeholder participation, forms a collaborative governance framework that strengthens the implementation of hastening stunting reduction [42].

4. Discussion

The strategy for accelerating the reduction of stunting implemented by the Sidoarjo District Health Department shows that successful implementation is determined not only by the effectiveness of program execution but also by the ability to integrate policy direction and intervention implementation. The strategy needs resource support and institutional collaboration into a single, mutually supportive implementation system. These findings indicate that organizational strategies play a crucial role in uniting various actors and resources to ensure that interventions are carried out in a focused and sustainable manner [43].

This study identifies various challenges that continue to affect the effectiveness of implementing the strategy to hasten the reduction of stunting, including program fragmentation, weak cross-sectoral coordination, limited resource capacity, and suboptimal monitoring and evaluation mechanisms. These challenges are interrelated and influence the effectiveness of implementation: resource capacity affects program execution; cross-sectoral coordination supports the integration of interventions; and monitoring and evaluation form the basis for refining strategies. Therefore, effective implementation requires integrating all strategic dimensions so that each component can support the others in achieving a hastened and sustainable reduction in stunting [44].

Further research findings indicate that each strategic dimension serves a distinct yet complementary function. Corporate Strategy plays a role in providing policy direction and strengthening organizational governance. Program Strategy ensures that interventions are carried out in accordance with the characteristics of the target groups; Resource Support Strategy guarantees the availability of resources to support implementation, while Institutional Strategy strengthens cross-sectoral coordination and collaboration [45]. Nevertheless, the effectiveness of implementation does not depend on the dominance of any single dimension, but rather on the ability to integrate all strategies into a sustainable implementation mechanism [46]. The summaries of each strategy are shown in Table 1 and Figure 1.

Table 1. Summary of Strategic Dimensions in Stunting Reduction

Strategy	Focus	Strengths	Challenges
Corporate	Governance, regulation, data-driven decision-making	Strengthening coordination and policy direction	Commitment among government agencies remains uneven
Program	Convergence intervention	Better targeted programs	Coordination and support are not yet optimal
Resource Support	Funding, human resources, facilities, information systems	Ensuring readiness for implementation	Human resource capacity and digitalization are not yet evenly distributed
Institutional	Cross-sector partnerships	Strengthening collaboration	Coordination still depends on the commitment of the various stakeholders

(Source: Data analysis)

The proposed conceptual model shows that accelerating the reduction of stunting is a dynamic implementation process that involves integrating strategies, coordinated implementation, monitoring and evaluation, and continuous learning [47]. The relationships among these components form an implementation cycle that allows each stage to influence and reinforce the others, ensuring that implementation does not stop at program execution but continues to evolve through evaluation and refinement [48].

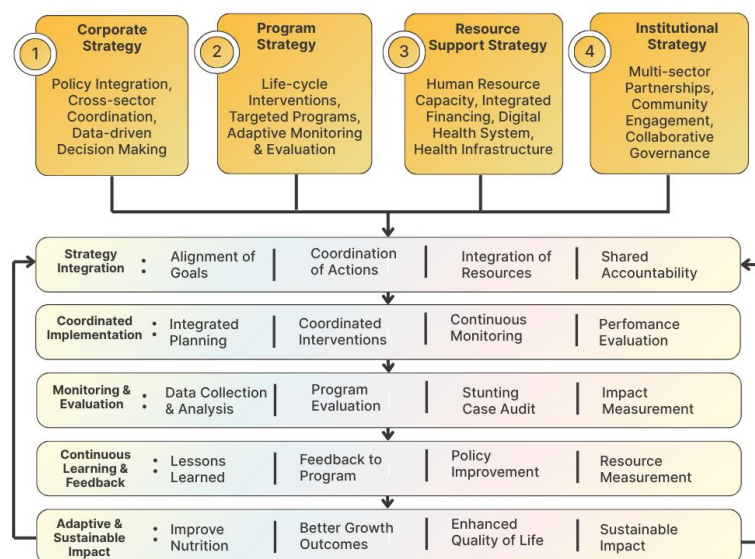
**Figure 1.** Integrated Strategic Framework for Accelerating Stunting Reduction

Figure 1 shows that monitoring and evaluation serve not only as performance measurement tools but also as a source of organizational learning that generates feedback for policy refinement, program implementation adjustments, optimization of resource support, and strengthening of inter-agency coordinations [49]. This feedback mechanism enables local governments to continuously adjust their strategies in line with the dynamics of stunting, regional characteristics, institutional capacity, and community needs, thereby making implementation more adaptive and responsive [50].

Conceptually, the proposed model demonstrates that accelerating the reduction of stunting requires not only program convergence but also strategic convergence within an integrated governance framework [51]. The relationship among Corporate Strategy, Program Strategy, Resource Support Strategy, and Institutional Strategy is not linear; rather, it constitutes a mechanism for continuous improvement through a cycle of integration, implementation, evaluation, learning, and feedback. Thus, the success of implementation is determined more by the interaction among these strategic dimensions than by the separate optimization of each dimension [52].

The findings of this study expand on Kooten's strategic perspective by demonstrating that the effectiveness of public policy implementation is influenced not only by the clarity of strategic direction but also by an organization's ability to establish interconnections among strategies within an adaptive governance system. The resulting model complements the stunting convergence approach, which has traditionally emphasized integrating interventions, by demonstrating that integrating organizational strategies is a critical prerequisite for successful implementation. Therefore, the proposed conceptual framework not only contributes to the development of public-sector strategy research but also serves as a guide for local governments to strengthen governance and hasten the reduction of stunting in a more effective, adaptive, and sustainable manner.

Furthermore, the proposed conceptual framework needs to be tested across regions with varying characteristics to establish greater validity and to identify the impact of each strategic dimension on the effectiveness of hastening stunting reduction. In addition, future research should develop more measurable implementation indicators and integrate health information systems and digital governance as part of evidence-based decision-making to support the sustainability of strategy implementation at the local government level [53].

5. Conclusion

This study confirms that accelerating the reduction of stunting requires integrating Corporate Strategy, Program Strategy, Resource Support Strategy, and Institutional Strategy into a mutually supportive governance system. Corporate Strategy provides direction for policy and organizational governance; Program Strategy translates policy into integrated interventions; Resource Support Strategy ensures the availability of resources; and Institutional Strategy strengthens cross-sectoral collaboration. The study's findings indicate that the effectiveness of implementation is not determined by any single strategic dimension in isolation, but rather by the integration of all four dimensions through mechanisms of coordination, monitoring and evaluation, organizational learning, and continuous feedback. The proposed conceptual model expands on Kooten's strategic perspective by positioning strategic integration as the foundation of adaptive governance in accelerating the reduction of stunting.

However, this research is limited to a case study of the Sidoarjo Regency Health Department; therefore, the findings and the resulting conceptual model do not fully represent the characteristics of other regions. Future studies can test this conceptual model across various local government contexts, develop more measurable implementation indicators, and integrate digital governance and health information systems to more comprehensively evaluate how each strategic dimension contributes to the effectiveness of efforts to reduce stunting.

REFERENCES

- [1] N. A. Escher, G. C. Andrade, S. Ghosh-Jerath, C. Millett, and P. Seferidi, "The effect of nutrition-specific and nutrition-sensitive interventions on the double burden of malnutrition in low-income and middle-income countries: a systematic review," *Lancet Glob. Heal.*, vol. 12, no. 3, pp. e419–e432, 2024, doi: 10.1016/S2214-109X(23)00562-4.
- [2] T. Yudianta, "Strategies for Strengthening Human Resources to Accelerate the Reduction of Stunting in the Riau Islands Province," *J. Good Gov.*, 2022, doi: 10.32834/gg.v18i2.495.
- [3] T. Mulyaningsih, I. Mohanty, V. Widyaningsih, T. A. Gebremedhin, R. Miranti, and V. H. Wiyono, "Beyond personal factors: Multilevel determinants of childhood stunting in Indonesia," *PLoS One*, vol. 16, no. 11 November, pp. 1–19, 2021, doi: 10.1371/journal.pone.0260265.
- [4] D. W. Putri, "Determinants and Integrated Strategies for Reducing Stunting in Indonesia: A Systematic Review," *J. Ilmu Kesehat. Masy.*, pp. 417–428, 2026.
- [5] R. Firmansyah Aji and R. Novaria, "Analysis of the Implementation of the Integrated Program to Accelerate the Reduction of Stunting in Sidoarjo Regency," *J. Pendidik. Indones.*, vol. 6, no. 3, pp. 274–287, 2025, doi: 10.59141/japendi.v6i3.7255.
- [6] S. Sufri *et al.*, "Implementation outcomes of convergence action policy to accelerate stunting reduction in Pidie district, Aceh province, Indonesia: a qualitative study," *BMJ Open*, vol. 14, no. 11, 2024, doi: 10.1136/bmjopen-2024-087432.
- [7] D. M. D. Herawati and D. K. Sunjaya, "Implementation Outcomes of National Convergence Action Policy to Accelerate Stunting Prevention and Reduction at the Local Level in Indonesia: A Qualitative Study," *Int. J. Environ. Res. Public Health*, vol. 19, no. 20, 2022, doi: 10.3390/ijerph192013591.
- [8] R. Raesalat and M. D. Alawiyah, "The Village Government's Strategy for Preventing Stunting Through the TOSS Supplementary Feeding Program (PMT) in Jangkurang Village, Leles Subdistrict," *J. Pembang. dan Kebijak. Publik*, vol. 15, no. 1, pp. 1–13, 2024.
- [9] Y. Permanasari *et al.*, "Challenges in Implementing Convergence in Stunting Prevention Programs in Priority Districts," *Media Penelit. dan Pengemb. Kesehat.*, vol. 30, no. 4, pp. 315–328, 2020.
- [10] S. L. Sibbald, S. Paciocco, M. Fournie, R. Van Asseldonk, and T. Scurr, "Continuing to enhance the quality of case study methodology in health services research," *Healthc. Manag. Forum*, vol. 34, no. 5, pp. 291–296, 2021, doi: 10.1177/08404704211028857.
- [11] S. Campbell, M. Greenwood, S. Prior, K. Walkem, S. Young, and D. Bywaters, "Purposive sampling : complex or simple ? Research case examples," 2020, doi: 10.1177/1744987120927206.
- [12] N. Nurhaeni *et al.*, "Exploring the strategies and components of interventions to build adolescent awareness about stunting prevention in West Java: A qualitative study," *PLoS One*, vol. 19, no. 12 December, pp. 1–22, 2024, doi: 10.1371/journal.pone.0314651.
- [13] F. Maulana, M. S. Silitonga, and Asropi, "Interventions by the Ministry of Villages, Disadvantaged Regions, and Transmigration in the Implementation of Policies to Accelerate the Reduction of Stunting in Villages," *J. Publicuho*, vol. 6, no. 4, pp. 1393–1410, 2023, doi: 10.35817/publicuho.v6i4.281.
- [14] K. da S. Santos, M. C. Ribeiro, D. E. U. de Queiroga, I. A. P. da Silva, and S. M. S. Ferreira, "The use of multiple triangulations as a validation strategy in a qualitative study," *Cienc. e Saude Coletiva*, vol. 25, no. 2, pp. 655–664, 2020, doi: 10.1590/1413-81232020252.12302018.
- [15] G. Motta Zanin, E. Gentile, A. Parisi, and D. Spasiano, "A preliminary evaluation of the public risk perception related to the covid-19 health emergency in Italy," *Int. J. Environ. Res. Public Health*, vol. 17, no. 9, 2020, doi: 10.3390/ijerph17093024.
- [16] A. Imron *et al.*, "Cross-Sectoral Collaboration to Accelerate the Reduction of Stunting in Nganjuk Regency, East Java," *Media Gizi Indones.*, vol. 17, no. 1SP, pp. 239–243, 2022, doi: 10.20473/mgi.v17i1sp.239-243.
- [17] A. Supriyanto and L. M. Jannah, "Analysis of Policy Integration in Efforts to Converge Programs for Accelerating the Reduction of Stunting in Lebak Regency," *Sosio Konsepsia*, vol. 11, no. 2, pp. 349–363, 2022, doi: 10.33007/ska.v11i2.3080.
- [18] Q. Hidayasa, F. Kurnianingsih, and A. Hendrayady, "Collaborative Governance dalam Percepatan

- Penurunan Stunting di Kabupaten Bintan," *J. Adm. Polit. dan Sos.*, vol. 4, no. 2, pp. 83–90, 2023, doi: 10.46730/japs.v4i2.107.
- [19] E. P. Lattu and A. Y. S. Rahayu, "Integration of Regional Policies and Collaborative Governance in Acceleration of Stunting Reduction: Case Study of Bekasi City," *J. Bina Praja*, vol. 16, no. 3, pp. 589–597, 2024, doi: 10.21787/jbp.16.2024.589-597.
- [20] B. Tilahun, A. Teklu, A. Mancuso, B. F. Endehabtu, K. D. Gashu, and Z. A. Mekonnen, "Using health data for decision-making at each level of the health system to achieve universal health coverage in Ethiopia: the case of an immunization programme in a low-resource setting," *Heal. Res. Policy Syst.*, vol. 19, no. Suppl 2, pp. 1–8, 2021, doi: 10.1186/s12961-021-00694-1.
- [21] B. I. Avan, M. Dubale, G. Taye, T. Marchant, L. Å. Persson, and J. Schellenberg, "Data-driven decision-making for district health management: a cluster-randomised study in 24 districts of Ethiopia," *BMJ Glob. Heal.*, vol. 9, no. 2, pp. 1–10, 2024, doi: 10.1136/bmjgh-2023-014140.
- [22] A. Kwamie, S. Ha, and A. Ghaffar, "Applied systems thinking: unlocking theory, evidence and practice for health policy and systems research," *Health Policy Plan.*, vol. 36, no. 10, pp. 1715–1717, 2021, doi: 10.1093/heapol/czab062.
- [23] A. Laillou, L. Gauthier, F. Wieringa, J. Berger, S. Chea, and E. Poirot, "Reducing malnutrition in Cambodia. A modeling exercise to prioritize multisectoral interventions," *Matern. Child Nutr.*, vol. 16, no. S2, pp. 1–11, 2020, doi: 10.1111/mcn.12770.
- [24] T. Beal, A. Tumilowicz, A. Sutrisna, D. Izwardy, and L. M. Neufeld, "A review of child stunting determinants in Indonesia," *Matern. Child Nutr.*, vol. 14, no. 4, pp. 1–10, 2018, doi: 10.1111/mcn.12617.
- [25] K. Hou, M. Green, S. Chum, C. Kim, A. Stormer, and G. Mundy, "Pilot implementation of a monitoring and enforcement system for the International Code of Marketing of Breast-milk Substitutes in Cambodia," *Matern. Child Nutr.*, vol. 15, no. S4, pp. 1–10, 2019, doi: 10.1111/mcn.12795.
- [26] D. Luo *et al.*, "The associations of economic growth and anaemia for school-aged children in China," *Matern. Child Nutr.*, vol. 16, no. 2, pp. 1–9, 2020, doi: 10.1111/mcn.12936.
- [27] S. Nordhagen, J. Nielsen, T. van Mourik, E. Smith, and R. Klemm, "Fostering CHANGE: Lessons from implementing a multi-country, multi-sector nutrition-sensitive agriculture project," *Eval. Program Plann.*, vol. 77, no. March, p. 101695, 2019, doi: 10.1016/j.evalprogplan.2019.101695.
- [28] K. L. Dickin, K. Litvin, J. K. Mccann, and F. M. Coleman, "Exploring the Influence of Social Norms on Complementary Feeding: A Scoping Review of Observational, Intervention, and Effectiveness Studies," *Curr. Dev. Nutr.*, vol. 5, no. 2, p. nzab001, 2021, doi: 10.1093/cdn/nzab001.
- [29] R. C. Stewart *et al.*, "Associations between antenatal depression and neonatal outcomes in Malawi," *Matern. Child Nutr.*, vol. 15, no. 2, pp. 1–8, 2019, doi: 10.1111/mcn.12709.
- [30] G. G. C. Kuhnle, "Take My Breath Away: Measuring Sugar Intake in Exhaled Air," *J. Nutr.*, vol. 151, no. 3, pp. 457–458, 2021, doi: 10.1093/jn/nxaa390.
- [31] M. S. Mia Rachmi Widyaningrum, Pipit Festi Wiliyanarti, "Village Capacity Building Strategy in Efforts to Prevent Stunting in Pandeglang," vol. 2, no. April, pp. 306–312, 2024.
- [32] A. V. Miranda *et al.*, "Towards stunting eradication in Indonesia: Time to invest in community health workers," *Public Heal. Challenges*, vol. 2, no. 3, pp. 1–6, 2023, doi: 10.1002/puh2.108.
- [33] T. Tamrat *et al.*, "Digitalization of routine health information systems: Bangladesh, Indonesia, Pakistan," *Bull. World Health Organ.*, vol. 100, no. 10, pp. 590–600, 2022, doi: 10.2471/BLT.22.287816.
- [34] P. A. McQuide, A. N. Brown, K. Diallo, and A. Siyam, "The transition of human resources for health information systems from the MDGs into the SDGs and the post-pandemic era: reviewing the evidence from 2000 to 2022," *Hum. Resour. Health*, vol. 21, no. 1, pp. 1–15, 2023, doi: 10.1186/s12960-023-00880-y.
- [35] P. Aivalli, B. Gilmore, P. N. Srinivas, and A. De Brún, "Navigating intersectoral collaboration in nutrition programming: implementors' perspectives from Assam, India," *Arch. Public Heal.*, vol. 82, no. 1, pp. 1–15, 2024, doi: 10.1186/s13690-024-01312-6.
- [36] S. Lewin, U. Lehmann, and H. B. Perry, "Community health workers at the dawn of a new era: 3. Programme governance," *Heal. Res. Policy Syst.*, vol. 19, no. 3, pp. 1–13, 2021, doi: 10.1186/s12961-021-00749-3.

- [37] M. N. Afandi, E. Tri Anomsari, A. Novira, and S. Sudartini, "Collaborative governance in a mandated setting: shifting collaboration in stunting interventions at local level," *Dev. Stud. Res.*, vol. 10, no. 1, 2023, doi: 10.1080/21665095.2023.2212868.
- [38] M. Palmieri *et al.*, "Experiences and Lessons Learned in Developing and Implementing a Population-Based Nutrition and Health Surveillance System in Guatemala 2011-2021," *Curr. Dev. Nutr.*, vol. 6, no. 4, p. nzac027, 2022, doi: 10.1093/cdn/nzac027.
- [39] R. N. Faizah, I. Ismail, and N. D. Kurniasari, "The Role of Posyandu Volunteers in Reducing Stunting Rates," *As-Syar'i J. Bimbing. Konseling Kel.*, vol. 6, no. 1, pp. 87–96, 2023, doi: 10.47467/as.v6i1.5738.
- [40] Y. Y. Xu, T. Sawadogo-Lewis, S. E. King, A. Mitchell, and T. Robertson, "Integrating nutrition into the education sector in low- and middle-income countries: A framework for a win-win collaboration," *Matern. Child Nutr.*, vol. 17, no. 3, pp. 1–13, 2021, doi: 10.1111/mcn.13156.
- [41] M. N. Sitaresmi, T. Arjuna, S. Helmyati, B. Santosa, and S. Supriyati, "Engaging stakeholders to strengthen the local actions for stunting prevention and control in Lombok Barat," *J. Community Empower. Heal.*, vol. 6, no. 1, p. 52, 2023, doi: 10.22146/jcoemph.80762.
- [42] A. Hendra and M. R. Hasan, "Multi-Actor Governance in Stunting Reduction A Qualitative Study with Contextual Validation in East Jakarta," *Publica*, vol. 18, no. 1, p. 124, 2026, doi: 10.15575/jpan.v18i1.
- [43] T. Suyanti, D. Maryani, and P. Polyando, "Collaborative Governance for Stunting Reduction: A Qualitative Case Study from Bangka Regency, Indonesia," *Contag. Sci. Period. J. Public Heal. Coast. Heal.*, vol. 7, no. 2, p. 12, 2025, doi: 10.30829/contagion.v7i2.24139.
- [44] M. Mediyana Sofyan, G. Fauziyah, and R. Rahardian, "Collaborative Governance on Handling Stunting in West Java Province of Indonesia," pp. 674–689, 2024.
- [45] C. R. Titaley, I. Ariawan, D. Hapsari, A. Muasyaroh, and M. J. Dibley, "Determinants of the stunting of children under two years old in Indonesia: A multilevel analysis of the 2013 Indonesia basic health survey," *Nutrients*, vol. 11, no. 5, 2019, doi: 10.3390/nu11051106.
- [46] P. Menon, D. Headey, R. Avula, and P. H. Nguyen, "Understanding the geographical burden of stunting in India: A regression-decomposition analysis of district-level data from 2015–16," *Matern. Child Nutr.*, vol. 14, no. 4, pp. 1–10, 2018, doi: 10.1111/mcn.12620.
- [47] E. A. Eboime, O. Idika, K. Omitiran, O. Eboime, and L. Ibisomi, "Primary healthcare planning, bottleneck analysis and performance improvement: An evaluation of processes and outcomes in a Nigerian context," *Eval. Program Plann.*, vol. 77, no. September, p. 101712, 2019, doi: 10.1016/j.evalprogplan.2019.101712.
- [48] N. Shah, S. Mathew, A. Pereira, A. Nakaima, and S. Sridharan, "The role of evaluation in iterative learning and implementation of quality of care interventions," *Glob. Health Action*, vol. 14, no. 1, 2021, doi: 10.1080/16549716.2021.1882182.
- [49] R. D. Stelmach, E. Fitch, M. Chen, M. Meekins, R. M. Flueckiger, and R. Colaço, "An Integrated MERLA (Monitoring, Evaluation, Research, Learning, and Adapting) Framework for Evidence-Based Program Improvement," *Am. J. Eval.*, vol. 43, no. 4, pp. 504–514, 2022, doi: 10.1177/10982140211018751.
- [50] M. Sievert, "The limited impact of reference groups' symbolic gender representation on willingness to coproduce," *Public Adm. Rev.*, vol. 83, no. 3, pp. 587–602, 2023, doi: 10.1111/puar.13619.
- [51] B. Jiang, R. Jing Zhou, and X. Lin Feng, "Erratum to: The impact of the reference pricing policy in China on drug procurement and cost," *Health Policy Plan.*, vol. 37, no. 1, p. 168, 2022, doi: 10.1093/heapol/czab152.
- [52] L. R. Ellis, S. Zulfiqar, M. Holmes, L. Marshall, L. Dye, and C. Boesch, "A systematic review and meta-analysis of the effects of Hibiscus sabdariffa on blood pressure and cardiometabolic markers," *Nutr. Rev.*, vol. 80, no. 6, pp. 1723–1737, 2022, doi: 10.1093/nutrit/nuab104.
- [53] Aulia Desy Nur Utomo, Anggi Zafia, and Yoso Adi Setyoko, "The Implementation of Decision-Making Systems to Help Early Detection of Android-Based Child Stunting," *J. E-Komtek*, vol. 6, no. 1, pp. 58–69, 2022, doi: 10.37339/e-komtek.v6i1.872.