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Stunting Prevention through the Hexahelix Collaboration Model: A Constitutional Justice Perspective

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Abstract

Child stunting in Indonesia is not merely a public health problem but also reflects challenges of constitutional justice and social inequality, particularly in ensuring children's rights to health, growth, and development. This study aims to analyze how the Hexahelix Collaboration Model contributes to stunting prevention through the dimensions of social, distributive, procedural, and substantive justice. This study employed a qualitative approach using a descriptive case study design in Rancakalong District, Sumedang Regency. Primary and secondary data were collected through non-participant observation, in-depth interviews, three focus group discussions, and document analysis. Informants were selected purposively from local government institutions, village and subdistrict governments, health workers, academics, and community actors involved in stunting prevention. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña through data reduction, data display, and conclusion drawing and verification. The findings show that the decline in stunting prevalence from 27.61 % in 2017 to 7.59 % in 2025 was accompanied by coordinated collaboration among the Hexahelix actors in promoting procedural, social, distributive, and substantive justice. The novelty of this study lies in integrating the Hexahelix Collaboration Model with multidimensional justice analysis to explain how collaborative governance can operationalize constitutional obligations in stunting prevention. This framework demonstrates that effective stunting prevention requires not only health interventions but also institutionalized collaboration, equitable resource distribution, community participation, and accountability.

Keywords: Collaborative Governance; Constitutional Justice; Hexahelix Collaboration Model; Social Inequality; Stunting Prevention.

1. INTRODUCTION

Child stunting remains a multidimensional challenge in Indonesia because its consequences extend beyond nutritional deficiency to children's physical development, cognitive capacity, quality of life, and future socioeconomic opportunities. Chronic undernutrition during the early stages of life can impair children's physical and cognitive development and generate long-term social and economic consequences.[1] From a legal

[1]Huguette Abi Khalil, Mariam Hawi, and Maha Hoteit, "Feeding Patterns, Mother-Child Dietary Diversity and Prevalence of Malnutrition Among Under-Five Children in Lebanon: A Cross-Sectional Study Based on Retrospective Recall," *Frontiers in Nutrition* 9 (2022): 1–10, doi: 10.3389/fnut.2022.815000; Mark E. McGovern et al., "A Review of the Evidence Linking Child Stunting to Economic Outcomes," *International Journal of Epidemiology* 46, no. 4 (2017): 1171–91, doi: 10.1093/ije/dyx017.

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and justice perspective, stunting is particularly significant because the Indonesian constitutional framework guarantees every child's right to survival, growth, and development, as well as the right to health services and a healthy living environment. Previous legal research has therefore positioned stunting not merely as a nutritional or public health concern but also as an issue concerning the protection and fulfillment of children's fundamental rights.[2] Recent legal scholarship on child protection similarly emphasizes the need to understand children's well-being within the broader framework of human rights and state responsibility.[3]

The persistence of stunting is closely associated with structural inequalities in access to adequate nutrition, healthcare, sanitation, clean water, education, and socioeconomic resources. Widyaningsih et al. demonstrate that socioeconomic conditions and rural–urban disparities significantly shape differences in stunting outcomes in Indonesia.[4] Studies on the implementation of stunting prevention programs have also identified challenges related to fragmented interventions, institutional capacity, community participation, and coordination among implementing actors.[5] These inequalities are consistent with the concept of health justice, which emphasizes that health disparities cannot be addressed solely through interventions aimed at individual behavior but also require structural responses, access to resources, legal protection, collective action, and meaningful community engagement.[6] Consequently, effective stunting prevention requires not only sectoral health interventions but also institutional arrangements capable of addressing the structural and social determinants underlying unequal health outcomes.

Recent evidence illustrates both the progress and continuing relevance of stunting prevention in West Java. The 2024 Indonesian Nutritional Status Survey (SSGI) reported that stunting prevalence in West Java declined from 21.7% in 2023 to 15.9% in 2024, representing a decrease of 5.8 percentage points and the most significant provincial reduction reported nationally.[7] This substantial decline makes West Java an important context for examining the institutional processes through which stunting-reduction policies are implemented. Within this provincial context, Rancakalong District in Sumedang Regency was selected as the empirical case because Sumedang had previously demonstrated a substantial reduction in stunting prevalence, from 32.27% in 2018 to 8.27% in 2022, accompanied by the development of integrated governance and digital monitoring mechanisms, including the Sistem Informasi Penanganan Stunting Terintegrasi (SIMPATI).[8] Rancakalong therefore provides a relevant bounded case for examining how multi-actor collaboration operates at the local level and how such institutional arrangements contribute to justice in stunting prevention.

[2]The 1945 Constitution of the Republic of Indonesia, arts. 28B(2) and 28H(1); Rizka Rizka et al., "Children and Stunting Phenomenon in Indonesia: Legal Perspective," *Indian Journal of Forensic Medicine & Toxicology* 15, no. 2 (2021): 3319–22, doi: 10.37506/ijfmt.v15i2.14888.

[3]Erfaniah Zuhriah et al., "Dimensions of the Islamic Law and Human Rights in the Protection of Children from Convicted Parents," *De Jure: Jurnal Hukum dan Syar'iah* 16, no. 2 (2024): 432–55, doi: 10.18860/j-fsh.v16i2.25150.

[4]Vitri Widyaningsih et al., "Determinants of Socioeconomic and Rural-Urban Disparities in Stunting: Evidence from Indonesia," *Rural and Remote Health* 22, no. 1 (2022): 1–9, doi: 10.22605/RRH7082.

[5]Rahmi Fitri Juita, Najla Huljannah, and Thinni Nurul Rochmah, "Program Pencegahan Stunting di Indonesia: A Systematic Review," *Media Gizi Indonesia* 17, no. 3 (2022): 281–92.

[6]M Riadhussyah et al., "Forming International Instrument Through One Health Approach for Health Justice," *Jurnal IUS Kajian Hukum dan Keadilan* 11, no. 3 (2023): 492–511, doi: 10.29303/ius.v11i3.1246.

[7]Badan Kebijakan Pembangunan Kesehatan, Kementerian Kesehatan Republik Indonesia, "Capaian SSGI 2024 Ungkap Tren Positif," May 27, 2025.

[8]Sekretariat Kabinet Republik Indonesia, "Intensifkan Pemanfaatan SPBE, Sumedang Berhasil Turunkan Stunting Hingga 8,27 Persen," January 2, 2023.

This condition is particularly relevant from the perspective of justice. Social justice requires that children have meaningful access to health and nutritional services regardless of their socioeconomic or geographical background, while distributive justice concerns the allocation of public resources according to different levels of social need and vulnerability.[9] Procedural justice emphasizes fairness, participation, transparency, and accountability in the processes through which policies are formulated, implemented, and evaluated.[10] Substantive justice goes further by requiring public interventions to generate genuine improvements in people's conditions rather than merely satisfying administrative procedures or quantitative targets. From a health-justice perspective, equitable outcomes therefore require attention not only to healthcare services but also to the structural conditions influencing people's capacity to attain health.[11]

Recent legal scholarship also demonstrates that the fulfillment of children's rights requires more than the formal existence of laws and regulations. Effective child protection depends on the implementation of legal safeguards through institutional mechanisms, preventive measures, accessible services, and the involvement of relevant actors. Rahayu et al., for example, demonstrate the importance of strengthening legal and institutional mechanisms in protecting children.[12] Aprilianda et al. further conceptualize children as rights holders whose interests and experiences should receive meaningful consideration in legal procedures affecting them.[13] From a preventive perspective, Nugroho et al. show that protecting children's rights and well-being requires not only legal rules but also stronger policies, education, public awareness, and preventive institutional action.[14] These studies reinforce the argument that the realization of children's rights is both a legal and an institutional process.

Previous studies on stunting have examined the problem from several complementary perspectives. Juita, Huljannah, and Rochmah, through a systematic review of stunting prevention programs in Indonesia, highlight the importance of integrated interventions in addressing stunting.[15] Widyaningsih et al. focus on socioeconomic and rural–urban inequalities affecting stunting prevalence.[16] From a policy perspective, Partadisastra and Octaria examine the alignment between national and regional policies for accelerating stunting reduction and demonstrate the importance of consistency between levels of government.[17] Herawati et al. further emphasize policy advocacy as an important

[9]Ronald Bayer et al., eds., *Public Health Ethics: Theory, Policy, and Practice* (New York: Oxford University Press, 2006).

[10]Aarif Mohd Waza and Ekambaker P. K., "Analysis of the Impact of Justice Theory in Public Administration," *International Journal of Integrative Research* 2, no. 2 (2024): 145–56, doi: 10.59890/ijir.v2i2.1363.

[11]Riadhussyah et al., "Forming International Instrument," 492–511.

[12]Sri Rahayu, Monalisa, Yulia Monita, and Melyana Sugiharto, "Legal Protection for Children in Cases of Online Sexual Abuse: A Comparative Study," *Jambe Law Journal* 5, no. 1 (2022): 81–122, doi: 10.22437/jlj.5.1.81-122.

[13]Nurini Aprilianda, Febrianika Maharani, Nadhilah A. Kadir, Ardi Ferdian, and Solehuddin, "Re-conceptualizing Child Victim Rights: A Normative and Comparative Analysis of Victim Impact Statement in Indonesia's Juvenile Justice System," *Jambura Law Review* 7, no. 2 (2025): 442–67, doi: 10.33756/jlr.v7i2.30132.

[14]Irzak Yuliardy Nugroho, Mufidah Cholil, Suwandi, and Abd Rouf, "The Sadd Al-Dzari'ah Approach in Preventing Child Marriage: A Case Study in Probolinggo Regency," *LITIGASI* 26, no. 1 (2025): 67–101, doi: 10.23969/litigasi.v26i1.19478.

[15]Juita, Huljannah, and Rochmah, "Program Pencegahan Stunting di Indonesia," 281–92.

[16]Widyaningsih et al., "Determinants of Socioeconomic and Rural-Urban Disparities in Stunting," 1–9.

[17]Amanda Mirasherly Partadisastra and Yessi Crosita Octaria, "Analisis Keselarasan Kebijakan Nasional dan Kebijakan Daerah Terkait Percepatan Penurunan Stunting di Kabupaten Bulungan," *Jurnal Kebijakan Kesehatan Indonesia* 12, no. 4 (2023): 214, doi: 10.22146/jkki.90281.

component of stunting prevention.[18] These studies collectively demonstrate that health, socioeconomic, institutional, and policy factors interact to shape stunting.

Another strand of scholarship emphasizes collaborative governance as an approach to complex public problems involving multiple actors. Ansell and Gash conceptualize collaborative governance as a governing arrangement in which public agencies directly engage non-state stakeholders in collective decision-making processes.[19] In the context of stunting, Ibrahim, Leus, and Dewi demonstrate that collaborative governance can provide an innovative strategy for coordinating stakeholders involved in stunting reduction.[20] More broadly, recent legal scholarship demonstrates that fragmented legal frameworks and weak institutional coordination can generate policy inconsistency and reinforce inequality, whereas inclusive governance requires institutional coordination, participation, and accountability.[21] Legal scholarship concerning child protection likewise indicates the importance of integrating legal, technological, and societal dimensions through collaborative, preventive, and sustainable institutional arrangements.[22] These perspectives indicate that complex social and public-health problems require interaction among actors possessing different forms of authority, knowledge, resources, technology, communication capacity, and social legitimacy.

The development of the Helix framework provides a theoretical basis for understanding such multi-actor collaboration. The Triple Helix model initially emphasized interaction among universities, industry, and government in knowledge-based development.[23] Subsequent Helix models broadened the framework by incorporating societal and environmental dimensions; in particular, the Quadruple Helix introduced media-based and culture-based public and civil society, while the Quintuple Helix further incorporated the natural environment.[24] This theoretical development demonstrates that increasingly complex societal problems require broader interaction among actors with different forms of knowledge, authority, resources, and social capacity.

The Hexahelix Collaboration Model is particularly relevant to this study because stunting constitutes a complex and cross-sectoral public problem whose determinants extend beyond nutrition to healthcare, sanitation, education, socioeconomic conditions, and community behavior. Effective prevention therefore requires the integration of actors possessing distinct but complementary capacities. Conceptually, government provides policy direction, public authority, coordination, resource allocation, and service capacity; the community contributes participation, collective action, community

[18]Augustin Rina Herawati et al., "Policy Advocacy for Stunting Prevention in Indonesia," *International Journal of Innovative Research and Scientific Studies* 8, no. 4 (2025): 1398–1408, doi: 10.53894/ijirss.v8i4.8091.

[19]Chris Ansell and Alison Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory* 18, no. 4 (2008): 543–71, doi: 10.1093/jopart/mum032.

[20]Siti Noor Khatija Ibrahim, Jeronimo Da Cruz Neno Leus, and Maya Puspita Dewi, "Collaborative Governance Sebagai Strategi Inovatif dalam Mengatasi Stunting di Kabupaten Flores Timur," *Jurnal Kebijakan Kesehatan Indonesia* 13, no. 2 (2024): 64–73, doi: 10.22146/jkki.92992.

[21]Bayu Dwi Anggono, Rofi Wahanisa, Aulia Oktarizka Vivi Puspita Sari A.P., and Septhian Eka Adiyatma, "Interrogating the Legal Foundations of Digital Transformation: Balancing Economic Growth and Social Welfare in the Era of Disruption," *Volksgeist: Jurnal Ilmu Hukum dan Konstitusi* 8, no. 1 (2025): 191–211, doi: 10.24090/volksgeist.v8i1.12211.

[22]Rd. Dewi Asri Yustia, Faris Fachrizal Jodi, and Firdaus Arifin, "Society, Technology, and Child Protection: Synergy in Monitoring Former Perpetrators of Sexual Offenses," *Jurnal IUS Kajian Hukum dan Keadilan* 14, no. 1 (2026): 182–200, doi: 10.29303/ius.v14i1.1854.

[23]Henry Etzkowitz and Loet Leydesdorff, "The Triple Helix—University-Industry-Government Relations: A Laboratory for Knowledge Based Economic Development," *EASST Review* 14, no. 1 (1995): 14–19.

[24]Elias G. Carayannis, Thorsten D. Barth, and David F. J. Campbell, "The Quintuple Helix Innovation Model: Global Warming as a Challenge and Driver for Innovation," *Journal of Innovation and Entrepreneurship* 1, no. 1 (2012): 2, doi: 10.1186/2192-5372-1-2.

engagement, and the implementation of interventions at the social level; the private sector contributes financial and material resources, infrastructure, managerial capacity, and other forms of program support; academics contribute scientific evidence, research, innovation, education, training, and evaluation; while media facilitates information dissemination, public awareness, communication, and behavioral change. The importance of the Hexahelix model therefore lies not merely in the presence of multiple actors but in the complementary interaction of their different resources, capacities, and networks within an integrated collaborative system.[25]

The composition of a hexahelix model, however, is not necessarily identical across different fields of application. In this study, policy is positioned as the sixth and foundational helix. This conceptual choice represents an adaptation of Hexahelix scholarship in which the Pentahelix framework is extended through the addition of law and regulation as a sixth component. Zakaria et al. explicitly conceptualize the Hexahelix as a development of the Pentahelix through the addition of the role of law and regulation.[26] In the present study, policy operationalizes this legal-regulatory dimension at a broader institutional level and is understood as the structure that establishes legal authority, distributes responsibilities, defines procedures, provides institutional continuity, and structures interaction among government, community, private sector, academics, and media. This interpretation is further strengthened by Giddens' theory of structuration, in which rules and resources constitute structures that both enable and constrain social action while being continuously reproduced through the practices of actors.[27] Accordingly, policy is not treated merely as an output of government action but as the institutional structure within which the other five helices interact.

Despite these developments, the studies reviewed above have not sufficiently connected the Hexahelix Collaboration Model with a multidimensional analysis of justice in stunting prevention. Studies of stunting have predominantly focused on nutritional interventions, socioeconomic determinants, implementation effectiveness, policy alignment, or collaborative governance, while legal studies have generally emphasized children's rights, legal protection, regulatory frameworks, and constitutional obligations. Likewise, Helix-based studies predominantly examine stakeholder composition and interaction rather than whether such collaboration contributes simultaneously to social, distributive, procedural, and substantive justice. This study addresses this gap by integrating the Hexahelix Collaboration Model with a multidimensional justice framework to examine collaborative stunting prevention as an institutional mechanism for realizing children's constitutional rights.

Accordingly, this study addresses two research questions: first, how do the six actors of the Hexahelix Collaboration Model interact in the implementation of stunting prevention; and second, how does this collaboration contribute to the realization of social, distributive, procedural, and substantive justice? Based on these questions, the study aims to analyze the roles and interactions of government, community, private

[25]Afrijal Afrijal, Nasywa Alifya, Syalsabilla Nafa Adam Pinata, Herizal Herizal, and Soraya Agustina, "The Hexa Helix Collaboration Model for Stunting Reduction: A Collaborative Governance Perspective on Public Health Improvement," *JIIP: Jurnal Ilmiah Ilmu Pemerintahan* 11, no. 1 (2026): 90–104, doi: 10.14710/jiip.v11i1.29402.

[26]Zufialdi Zakaria, R. I. Sophian, Budi Muljana, Nurul Gusriani, and Saifullah Zakaria, "The Hexa-Helix Concept for Supporting Sustainable Regional Development (Case Study: Citatah Area, Padalarang Subdistrict, West Java, Indonesia)," *IOP Conference Series: Earth and Environmental Science* 396 (2019): 012040, doi: 10.1088/1755-1315/396/1/012040.

[27]Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Berkeley: University of California Press, 1984).

sector, academics, media, and policy in stunting prevention and to evaluate their contributions to the realization of constitutional justice. The novelty of this research lies in positioning Hexahelix collaboration not merely as an administrative coordination model but as an institutional mechanism through which multidimensional justice and children's constitutional rights may be operationalized in public health governance.

This empirical research employed a qualitative approach with a descriptive case study design. The research was conducted in Rancakalong District, Sumedang Regency, West Java. The location was purposively selected as a bounded empirical case because it enabled an in-depth examination of local multi-actor collaboration within a regency that had experienced a substantial reduction in stunting prevalence. The study used both primary and secondary data. Primary data were collected through non-participant observation, in-depth interviews, and three focus group discussions, while secondary data were obtained from government documents and publications, institutional records, books, journal articles, and other relevant literature. Informants were selected purposively based on their knowledge of and direct involvement in stunting prevention and included representatives of local government, subdistrict and village governments, health workers, academics, and community actors.

The collected data were analyzed using the interactive analysis model of Miles, Huberman, and Saldaña, consisting of data reduction, data display, and conclusion drawing and verification.[28] Empirical findings were first categorized according to the roles and interactions of the six Hexahelix actors and subsequently interpreted through the dimensions of social, distributive, procedural, and substantive justice. This analytical procedure enabled the study to connect empirical patterns of multi-actor collaboration with their implications for the realization of justice in stunting prevention.

2. ANALYSIS AND DISCUSSION

2.1. Hexahelix Collaboration in Stunting Prevention

Stunting prevention in Rancakalong operates through a multi-actor collaborative arrangement involving government, community, private sector, academics, media, and policy. These components contribute different forms of authority, knowledge, resources, participation, and communication, while policy provides the institutional framework for their coordination. This pattern reflects collaborative governance, where interdependence between governmental and non-governmental actors addresses complex public problems. [29]

Rancakalong Health Center data show that district-level stunting prevalence declined from 27.61% in 2017 to 8.10% in 2023 and 7.59% in 2025.[30] However, village-level trends were not uniform; some villages continued to decline between 2023 and 2025 while others recorded modest increases. The prevalence data, therefore, provide the empirical context for examining collaborative practices and should not be interpreted as direct causal evidence of the Hexahelix model.

Field findings identify three principal mechanisms connecting the Hexahelix components. First, *rembug stunting* brings together village government, health workers,

[28]Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed. (Thousand Oaks, CA: SAGE Publications, 2014).

[29]Chris Ansell and Alison Gash, "Collaborative Governance in Theory and Practice," *Journal of Public Administration Research and Theory* 18, no. 4 (2008): 543–571, https://doi.org/10.1093/jopart/mum032.

[30]Rancakalong Health Center, "Stunting Recapitulation Data, 2017, 2023, and 2025," unpublished institutional data, Rancakalong District, Sumedang Regency.

cadres, KPM, community representatives, and other stakeholders to discuss data and establish intervention priorities.[31] Second, SIMPATI connects Posyandu measurement, community-level data input, health validation, and institutional monitoring, thereby supporting data-informed intervention.[32] Third, community organizations translate formal programs into household-level activities, while academic and private actors provide complementary knowledge, innovation, material resources, and technological support.

The findings also demonstrate that the six components are not equally institutionalized. Government, Community, and Policy have relatively continuous roles, whereas the Private Sector, Academics, and particularly Media participate with varying intensity across villages. Thus, the significance of the Hexahelix arrangement lies not in equal participation by six components but in their capacity to connect differentiated resources and functions through coordination, information sharing, and locally adapted implementation.[33]

2.1.1. Government: Coordination, Public Services, and Data-Based Governance

The Government Helix functions primarily as the coordinator and facilitator of stunting prevention in Rancakalong. Its authority operates within a multilevel institutional framework established by Presidential Regulation No. 72 of 2021 and Regent Regulation of Sumedang No. 82 of 2019.[34] These regulations provide the policy basis for multisectoral action, while subdistrict and village governments translate them into local budgeting, service coordination, and intervention arrangements. Government is therefore distinguished from policy: Policy provides the legal-institutional structure, whereas government consists of the public actors that operationalize it.

At the village level, governmental coordination is most visible through *rembug stunting*, where village officials, health workers, cadres, KPM, and community representatives discuss stunting conditions and determine intervention priorities.[35] Government also mobilizes public and non-public resources. In Rancakalong Village, for example, village authorities combined local budgeting with stakeholder contributions through *Rancakalong Berbagi* and locally adapted initiatives such as BUSER.[36] These practices show that governmental action extends beyond formal administration to resource mobilization and adaptation of programs to local needs.

Data-based governance further strengthens governmental capacity. Posyandu growth data are incorporated into systems such as SIMPATI and EPPGBM and used by health and government actors to support monitoring and intervention decisions.[37] Overall, the government helix performs four closely related functions: coordination, resource mobilization, public-service facilitation, and data-informed governance. Its

[31]Interview with Mrs. S. A., Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025.

[32]Interview with Mrs. Y, Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

[33]Siti Noor Khatija Ibrahim, Jeronimo Da Cruz Neno Leus, and Maya Puspita Dewi, "Collaborative Governance Sebagai Strategi Inovatif dalam Mengatasi Stunting di Kabupaten Flores Timur," *Jurnal Kebijakan Kesehatan Indonesia* 13, no. 2 (2024): 64–73, https://doi.org/10.22146/jkki.92992.

[34]Republic of Indonesia, *Presidential Regulation No. 72 of 2021 concerning the Acceleration of Stunting Reduction* (Jakarta, 2021); Sumedang Regency Government, *Regulation of the Regent of Sumedang No. 82 of 2019 concerning the Acceleration of Integrated Stunting Reduction and Prevention* (Sumedang, 2019).

[35]Interview with Mrs. S. A., Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025.

[36]Interview with Mr. H. W. S., Head of Rancakalong Village, and Yusuf, Secretary of Rancakalong Village, April 23, 2025.

[37]Interview with Mrs. Y, Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

effectiveness depends on interaction with health professionals, community actors, private resources, academic knowledge, and the institutional framework established by policy.

2.1.2. Community: Participation and Community-Based Intervention

The community helix connects formal stunting-prevention programs with everyday household practices. In Rancakalong, this function is performed through Posyandu cadres, Human Development Cadres (KPM), PKK, Women Farmers Groups (KWT), families, and other local groups. These actors support child-growth monitoring, nutritional education, supplementary feeding, household outreach, and the adaptation of interventions to local social conditions.[38] Community actors therefore function not merely as beneficiaries but as implementing and mediating partners between public institutions and households.

Household outreach is particularly visible in the JELITA PERINDU initiative in Sukamaju Village, where cadres visit children who do not attend Posyandu so that growth monitoring and relevant health services can continue.[39] This mechanism extends service coverage beyond families who routinely attend formal health activities and illustrates how community participation can reduce practical barriers to access. Community-based food initiatives provide another form of participation. In Cibunar, KWT activities under the *Pekarangan Pangan Lestari* (P2L) program combined vegetable production, poultry, and maggot cultivation to support locally available nutritional resources.[40]

The findings also reveal limitations. Household participation is uneven, and some families remain reluctant to accept intervention because of feeding preferences, perceptions of economic status, or stigma associated with the stunting label.[41] Thus, the principal contribution of the community helix lies in household outreach, participatory implementation, and the adaptation of health interventions to local conditions. Its effectiveness, nevertheless, depends on continuing support from government, health professionals, policy, and other Hexahelix components.

2.1.3. Private Sector: Strategic Resources and Technological Support

The private sector helix plays a complementary rather than dominant role in stunting prevention in Rancakalong by providing additional financial, material, and technological resources. This function is consistent with the Hexahelix perspective, in which private actors supplement capacities that may not be fully available within government and community institutions.[42]

At the local level, this contribution is visible through partnerships with entrepreneurs. In Rancakalong Village, *Rancakalong Berbagi* mobilizes financial and material contributions from local stakeholders, while in Cibungur, KPM developed voluntary arrangements with local entrepreneurs to support supplementary feeding

[38]Interview with Mrs. S. A., Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025; Interview with Isar, Human Development Cadre (KPM), Cibungur Village, April 30, 2025.
[39]Interview with Mrs. H, Village Midwife, Sukamaju Village, May 5, 2025.
[40]Interview with Mrs. E., Women Farmers Group (KWT), Cibunar Village, April 25, 2025.
[41]Interview with Mrs. H., Village Midwife, Sukamaju Village, May 5, 2025.
[42]Afrijal Afrijal, Nasywa Alifya, Syalsabilla Nafa Adam Pinata, Herizal Herizal, and Soraya Agustina, "The Hexa Helix Collaboration Model for Stunting Reduction: A Collaborative Governance Perspective on Public Health Improvement," *JIIP: Jurnal Ilmiah Ilmu Pemerintahan* 11, no. 1 (2026): 90–104, https://doi.org/10.14710/jiip.v11i1.29402.

activities.[43] These mechanisms show that connecting private resources with community implementation and health guidance enhances their usefulness, as opposed to operating independently.

Private-sector participation also contributed to technological capacity through the early involvement of Telkomsel in SIMPATI, including support for application development and mobile devices used for Posyandu data entry.[44] However, private participation was uneven across villages; some areas continued to depend primarily on village funds and community mechanisms.[45] Thus, the private sector helix contributes mainly through resource supplementation, local partnerships, and technological support, but its strength depends on local networks and institutional capacity to connect private resources with public health objectives.

2.1.4. Academics: Knowledge, Training, Innovation, and Evaluation

The academics helix contributes primarily through knowledge transfer, training, research, and locally adapted innovation. In Cibunar Village, for example, the Women Farmers Group (KWT) received equipment and food-processing training from the Bandung Institute of Technology (ITB), complemented by research and community-service activities related to nutrition and breastfeeding.[46] Therefore, academic engagement strengthens community capacity by translating scientific and technical knowledge into locally applicable practices.

Academic knowledge is also reflected in locally adapted food innovation. In Pangadegan Village, a thematic KKN program developed fish-based products, including *abon ikan*, which were subsequently used in supplementary feeding activities.[47] This example demonstrates how academic involvement can connect innovation with locally available resources rather than remaining limited to research or classroom-based activities.

However, academic participation is not uniformly continuous. Field evidence differentiates longer-term mentoring, especially that offered by ITB, from university activities typically conducted through temporary KKN, research, or community-service programs.[48] The evidence also provides limited support for universities acting as formal and continuous independent evaluators of the overall stunting program. Accordingly, the academics helix is best understood as contributing through knowledge transfer, capacity building, innovation, and research-based learning, while sustained mentoring and institutionalized evaluation remain areas for further strengthening.

2.1.5. Media: Information, Public Awareness, and Accountability

The media helix contributes mainly to information dissemination and public awareness, although it is less institutionalized than government, community, or academics. In Rancakalong, WhatsApp groups and other community-based channels commonly circulate information about Posyandu schedules and stunting-prevention

[43]Interview with Mr. H. W. S., Head of Rancakalong Village, and Yusuf, Secretary of Rancakalong Village, April 23, 2025; Interview with Isar, Human Development Cadre (KPM), Cibungur Village, April 30, 2025.

[44]Interview with Mrs. Y., Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025

[45]Interview with Mrs. N, Human Development Cadre (KPM), Sukamaju Village, May 3, 2025.

[46]Interview with Mrs. E, Women Farmers Group (KWT), Cibunar Village, April 25, 2025.

[47]Interview with Mrs. A, Secretary of Pangadegan Village, April 25, 2025.

[48]Interview with Mrs. Y, Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

activities.[49] These mechanisms provide accessible communication between health actors, cadres, and families, even though they do not represent sustained engagement by professional mass-media institutions.

Communication also supports public understanding of stunting. Field evidence indicates that some families initially associated stunting merely with being short or thin or reacted negatively to the label. Health workers, cadres, and village actors therefore used repeated and simplified communication to explain nutritional risks and preventive practices.[50] In this sense, the media function overlaps with government and community because health information is circulated through interpersonal, digital, and community networks rather than exclusively through formal media organizations.

The accountability function, however, remains comparatively weak. Field evidence indicates that coverage of stunting activities was primarily local, with limited evidence of systematic media scrutiny of budgets, service performance, intervention coverage, or disparities between villages.[51] Accordingly, the media helix is best characterized as stronger in information dissemination and public awareness than in independent accountability, making it one of the less institutionalized components of the Rancakalong Hexahelix arrangement.

2.1.6. Policy: Legal and Institutional Foundation of Collaboration

The Policy helix differs from the other hexahelix components because it is not an organizational actor but the legal and institutional structure that defines authority, responsibilities, procedures, and continuity in collaborative action. This interpretation is consistent with Hexahelix scholarship that extends the Pentahelix through the addition of law and regulation as a sixth component.[52] Policy is therefore analytically distinct from government:government Government refers to public actors exercising authority, whereas Policy structures and legitimizes that authority.

In stunting prevention, this function is expressed through Presidential Regulation No. 72 of 2021 and Regent Regulation of Sumedang No. 82 of 2019, which establish multisectoral and integrated approaches to stunting reduction.[53] At the local level, these frameworks are operationalized through coordinating arrangements such as TPPS and *rembug stunting*, which connect government, health institutions, cadres, community representatives, and other stakeholders in planning and intervention.[54] Policy not only grants legal legitimacy but also establishes institutional procedures for organizing responsibilities and collaborative decisions.

The findings nevertheless show that formal regulation does not automatically produce uniform implementation. Villages adapt interventions according to local needs, resources, and institutional capacity, while participation by the community,

[49]Interview with Mrs. H, Village Midwife, and Wiwit, Nutritionist at Rancakalong Health Center, Sukamaju Village, May 5, 2025.

[50]Interview with Mrs. S. A., Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025; Interview with Hera, Village Midwife, Rancakalong Village, April 24, 2025.

[51]Interview with Mrs. Y., Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

[52]Zufialdi Zakaria, R. I. Sophian, Budi Muljana, Nurul Gusriani, and Saifullah Zakaria, "The Hexa-Helix Concept for Supporting Sustainable Regional Development (Case Study: Citatah Area, Padalarang Subdistrict, West Java, Indonesia)," *IOP Conference Series: Earth and Environmental Science* 396 (2019): 012040, https://doi.org/10.1088/1755-1315/396/1/012040.

[53]Republic of Indonesia, *Presidential Regulation No. 72 of 2021 concerning the Acceleration of Stunting Reduction* (Jakarta, 2021); Sumedang Regency Government, *Regulation of the Regent of Sumedang No. 82 of 2019 concerning the Acceleration of Integrated Stunting Reduction and Prevention* (Sumedang, 2019).

[54]Sumedang Regency Government, *Regulation of the Regent of Sumedang No. 82 of 2019*; field data concerning the operation of the Stunting Reduction Acceleration Team (TPPS) and *rembug stunting* in Rancakalong District.

private sector, academics, and media varies across localities. Accordingly, the Policy helix performs three principal functions: legal legitimation, institutional coordination, and continuity of collaborative governance. Its foundational role lies in creating the institutional space within which the other Hexahelix components can interact, rather than directly implementing all stunting-prevention activities.

2.1.7. Interaction among the Six Hexahelix Components

The findings demonstrate that the six Hexahelix components operate through functional interdependence rather than as separate or equally powerful entities. Policy provides the legal and institutional framework; government coordinates actors and public resources; community connects interventions with households; private sector supplements resources and technology; academics contribute knowledge and innovation; and media supports information dissemination and public awareness. The Hexahelix model was used here as an analytical framework for interpreting these relationships rather than as a data-collection instrument.

Two mechanisms are particularly important in connecting the components. First, *rembug stunting* provides an institutional forum in which government, health workers, cadres, KPM, and community representatives combine administrative, health, and household information to determine intervention priorities.[55] Second, SIMPATI supports data integration by linking Posyandu measurement and cadre data entry with KPM monitoring, health validation, and information used by authorized village and subdistrict actors.[56] The technology does not itself reduce stunting; its collaborative value lies in making information available for planning, intervention, and subsequent monitoring.

Interaction also occurs through resource and knowledge mobilization. Government and community actors connect public resources with local business support, while academic training and innovation are incorporated into community-based nutritional activities. Communication networks then circulate information to families and communities. These relationships show that the contribution of one component frequently depends on another: private resources require community and health mechanisms for implementation, while academic knowledge requires local adoption to generate practical value.

The interaction is therefore recursive, asymmetric, and adaptive. Government, Community, and Policy are relatively institutionalized, whereas Private Sector, Academics, and particularly Media vary in continuity and intensity across villages. Accordingly, the first research question is answered by showing that the Hexahelix components interact through policy authorization, governmental coordination, community participation, data integration, resource mobilization, knowledge transfer, communication, and monitoring. These mechanisms create a collaborative pathway that connects differentiated capacities, enabling the translation of stunting-prevention policies into local interventions.

2.2. Hexahelix Collaboration and the Realization of Constitutional Justice

Hexahelix collaboration does not automatically constitute justice; its significance depends on whether collaborative arrangements improve access, allocate resources according to need, enable participatory and accountable decision-making, and produce

[55]Interview with Mrs. H. W. S., Head of Rancakalong Village, April 23, 2025; Interview with Siti Aidah, Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025.

[56]Interview with Mrs. Y., Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

meaningful improvements in children's health and development. These dimensions correspond to social, distributive, procedural, and substantive justice and are linked to the constitutional protection of children's rights to survival, growth, development, health services, and a healthy living environment under Articles 28B(2) and 28H(1) of the 1945 Constitution.[57]

2.2.1. Social Justice: Reducing Inequalities in Access

Social justice in stunting prevention concerns whether children and families can obtain health, nutritional, and preventive services despite socioeconomic and geographical differences. Indonesian evidence indicates that socioeconomic conditions and rural–urban disparities affect stunting outcomes, demonstrating that formal service availability does not necessarily ensure equitable access.[58]

In Rancakalong, community-based mechanisms help address practical barriers to access. Posyandu, village midwives, KPM, and cadres bring monitoring and nutritional services closer to households. A clear example is JELITA PERINDU in Sukamaju, where cadres visit children who do not attend Posyandu because of barriers such as parental work or distance.[59] This outreach enables children who might otherwise be missed to remain within growth-monitoring and preventive services.

Collaboration also allows interventions to respond to local social conditions through nutritional education, household outreach, and locally available foods. However, stigma, differences in parental understanding, and uneven household practices remain barriers. Thus, the Hexahelix arrangement contributes to social justice by moving from formally equal service provision toward responsive and context-sensitive access while recognizing that inequalities cannot be considered fully resolved.[60]

2.2.2. Distributive Justice: Allocating Resources According to Need

Distributive justice concerns the allocation of limited public-health resources according to differences in need and vulnerability. In stunting prevention, equitable distribution does not necessarily mean providing identical assistance to every child; differentiated allocation may be required where nutritional risks and household conditions differ.[61]

This principle is evident in Cibungur Village, where available resources were insufficient to provide long-duration supplementary feeding (PMT) to all identified children. Village and health actors therefore prioritized children with more serious nutritional conditions rather than distributing limited assistance equally among all beneficiaries.[62] Local entrepreneurs also provided recurring voluntary contributions to supplement PMT resources, with community actors coordinating their use.[63]

[57]Constitution of the Republic of Indonesia of 1945, arts. 28B(2) and 28H(1); Rizka Rizka et al., "Children and Stunting Phenomenon in Indonesia: Legal Perspective," *Indian Journal of Forensic Medicine & Toxicology* 15, no. 2 (2021): 3319–3322, https://doi.org/10.37506/ijfmt.v15i2.14888.

[58]Vitri Widyaningsih et al., "Determinants of Socioeconomic and Rural-Urban Disparities in Stunting: Evidence from Indonesia," *Rural and Remote Health* 22, no. 1 (2022): 1–9, https://doi.org/10.22605/RRH7082; Karen Hayes, Kristy Coxon, and Rosalind A. Bye, "Rural and Remote Health Care: The Case for Spatial Justice," *Rural and Remote Health* 25, no. 1 (2025): 1–9, https://doi.org/10.22605/RRH8580.

[59]Interview with Mrs. H., Village Midwife, and Wiwit, Nutritionist at Rancakalong Health Center, Sukamaju Village, May 5, 2025.

[60]Melissa S. Creary, "Bounded Justice and the Limits of Health Equity," *Journal of Law, Medicine & Ethics* 49, no. 2 (2021): 241–256, https://doi.org/10.1017/jme.2021.34.

[61]Ronald Bayer et al., eds., *Public Health Ethics: Theory, Policy, and Practice* (New York: Oxford University Press, 2006); Melissa S. Creary, "Bounded Justice and the Limits of Health Equity," *Journal of Law, Medicine & Ethics* 49, no. 2 (2021): 241–256, https://doi.org/10.1017/jme.2021.34.

[62]Interview with Mr. Y, Secretary of Cibungur Village, April 30, 2025.

[63]Interview with Mr. I, Human Development Cadre (KPM), Cibungur Village, April 30, 2025.

These findings demonstrate a shift from equal distribution toward needs-responsive allocation. Government and Policy mobilize public resources. Community and health actors identify differentiated needs, and private sector contributions may supplement resource constraints. However, limited budgets and uneven external support mean that distributive justice remains incomplete. The Hexahelix arrangement therefore contributes to distributive justice insofar as scarce resources are directed according to identified nutritional vulnerability rather than distributed mechanically and equally.

2.2.3. Procedural Justice: Participation, Transparency, and Accountability

Procedural justice concerns whether public decisions are made through participatory, informed, and accountable processes. In stunting prevention, the approach requires opportunities for relevant stakeholders to contribute to decision-making and access to information that can support monitoring and evaluation.[64]

In Rancakalong, *rembug stunting* provides the clearest participatory mechanism. Government officials, cadres, village midwives, Puskesmas personnel, KPM, and other local actors discuss stunting data and intervention priorities rather than leaving decisions solely to village government.[65] This forum combines administrative authority, health expertise, and community-level information in the decision-making process. SIMPATI helps ensure fair processes by making it easier to track information through community data entry, KPM monitoring, health checks, and access for approved village and subdistrict officials.[66]

These mechanisms contribute to participatory deliberation, information sharing, and institutional monitoring, but they do not amount to complete transparency or accountability. Participation varies among actors, detailed information is not fully accessible to the public, and independent media oversight remains limited. Accordingly, the Hexahelix arrangement contributes to procedural justice by making decision-making more participatory and evidence-based, while important accountability gaps remain.

2.2.4. Substantive Justice: Realizing Children's Right to Health and Development

Substantive justice requires stunting-prevention policies to generate meaningful improvements in children's health and development rather than merely fulfill administrative procedures. From a constitutional perspective, collaborative governance acquires substantive value when regulations, resources, monitoring, and participation are translated into effective interventions that support children's rights to survival, growth, development, and health.

In Rancakalong, collaboration connects growth monitoring with concrete interventions, including supplementary feeding, nutritional education, household outreach, and follow-up by cadres and health professionals. Field evidence records children completing nutritional interventions through combinations of food assistance, education, and local health support.[67] The district-level decline in stunting reported earlier provides a relevant contextual indicator of improvement, but it cannot be interpreted as direct causal evidence that Hexahelix collaboration alone produced the decline.

[64] Aarif Mohd Waza and Ekambaker P. K., "Analysis of the Impact of Justice Theory in Public Administration," *International Journal of Integrative Research* 2, no. 2 (2024): 145–156, https://doi.org/10.59890/ijir.v2i2.1363.

[65] Interview with Mr. H. W. S., Head of Rancakalong Village, and Yusuf, Secretary of Rancakalong Village, April 23, 2025; Interview with Siti Aidah, Head of the Welfare Section (*Kasi Kesra*), Cibungur Village, April 30, 2025.

[66] Interview with Mrs. Y, Rancakalong Area Supervisor; Hera, Village Midwife; Witresna, Nutritionist; and Dina, Human Development Cadre (KPM), Rancakalong Village, April 24, 2025.

Substantive justice is also reflected in the movement from short-term assistance toward integrated prevention involving nutrition, parental knowledge, growth monitoring, and preventive health services.[68] Nevertheless, household behavior, stigma, resource constraints, and variation in local implementation remain challenges. The Hexahelix arrangement therefore contributes to substantive justice by connecting constitutional commitments with concrete preventive and nutritional interventions, while the actual realization of children's rights must ultimately be assessed through sustained improvements in health and development rather than administrative compliance alone.

Overall, the findings demonstrate that constitutional justice does not result from a one-to-one relationship between individual Hexahelix components and particular dimensions of justice. Rather, it emerges from their complementary interaction. Government and Policy provide authority and institutional structure; community connects interventions with households; the private sector and academics supplement resources and knowledge; and media facilitates communication and public awareness. The contribution of these components is also asymmetric: Government, Community, and Policy are relatively institutionalized, whereas the Private Sector, Academics, and particularly the Media vary in intensity and continuity. Thus, the value of the Hexahelix model lies in integrating differentiated resources and responsibilities into a collaborative system rather than requiring equal participation by all six components.

3. CONCLUSION

This study demonstrates that stunting prevention in Rancakalong operates through an interconnected and asymmetric hexalix arrangement involving government, community, private sector, academics, media, and policy. The six components do not contribute equally or independently. Government, Community, and Policy are relatively more institutionalized, while the Private Sector, Academics, and Media contribute complementary resources, knowledge, technology, and communication with different levels of continuity across villages. Their interaction occurs through policy authorization, governmental coordination, community participation, data-informed monitoring, resource mobilization, knowledge transfer, communication, and follow-up interventions. Policy occupies a distinctive position as the legal-institutional foundation that authorizes, structures, and sustains interaction among the other components. The effectiveness of the Hexahelix arrangement therefore depends less on the equal presence of six components than on the institutional connectivity among their differentiated functions and resources.

The findings further show that Hexahelix collaboration contributes to the realization of constitutional justice through four interconnected dimensions. Community-based outreach reduces practical barriers to accessing health and nutritional services, reflecting social justice. Distributive justice is evident where limited resources are allocated according to identified nutritional needs and vulnerability rather than distributed uniformly. Procedural justice is supported through participatory mechanisms such as *rembug stunting* and data-informed coordination, supported by SIMPATI, although public transparency and independent external oversight remain limited. Substantive justice is pursued when these institutional arrangements are translated into concrete nutritional, preventive, educational, and household-level interventions that support children's health, growth, and development. These dimensions demonstrate that

the constitutional protection of children requires more than the formal existence of regulations; it depends on their translation into accessible services, equitable resource allocation, participatory governance, and meaningful outcomes.

The study contributes theoretically by integrating the Hexahelix Collaboration Model with a multidimensional justice framework and by conceptualizing Policy as the legal and institutional foundation of collaborative governance. Practically, the findings suggest the need to strengthen continuity in private-sector participation, sustained academic engagement, and independent media involvement while maintaining community-based outreach, local adaptation, and data-informed coordination. Greater attention is also required to differences in institutional capacity between villages so that collaboration does not reproduce inequalities in access or implementation. Because this research is based on a qualitative case study, however, the findings should be understood as an analytical explanation of collaborative mechanisms rather than as evidence that Hexahelix collaboration alone caused the decline in stunting prevalence or as a model that can automatically be generalized to other regions. Future assessment should therefore examine whether collaborative arrangements generate sustained improvements in access, equity, participation, health, and child development over time.

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