

Adaptive Governance and Institutional System Strengthening in Stunting Prevention in Makassar City: Supporting Healthcare Service Accessibility

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Abstract: This study aims to analyze how adaptive governance and institutional strengthening can enhance the effectiveness of stunting prevention policies, particularly in addressing limited access to health services a key contributing factor to the increase in stunting. This study adopted a qualitative approach, collecting data through interviews, observation, documentation, and Focus Group Discussions (FGDs). Data were analyzed using NVivo 12 Plus. The findings indicate that adaptive governance and institutional strengthening in Makassar City play a significant role in improving access to health services for stunting prevention, despite challenges such as incomplete cross-sectoral synergy, low community participation in densely populated and impoverished areas, and uneven distribution of health workers and integrated health post (Posyandu) facilities. Adaptive governance practices are emerging through the use of information technology for data collection on pregnant women and toddlers, multi-stakeholder collaboration forums, and the empowerment of Posyandu cadres. Data-based monitoring systems and cross-sector collaboration support more targeted and innovative interventions. Therefore, the implementation of adaptive governance and institutional strengthening constitutes a key strategy for ensuring more effective, responsive, and inclusive stunting prevention policies for all vulnerable groups in Makassar City.

INTRODUCTION

The background of this study is grounded in the observed increase in the stunting rate in Makassar City, from 18.4% in 2023 to 25.6% in December 2024, a rise of 7.4% (Awi, 2025), indicating that stunting remains a serious challenge in the public health sector (Bigool, 2024). This situation further undermines efforts to achieve the national target of stunting reduction, as mandated by Makassar Mayor Regulation No. 96 of 2023 (Borahim, 2024). One of the contributing factors to this increase is the limited accessibility of health services, particularly for vulnerable groups such as pregnant women and children under five from low-income households (Irwansyah & Ismayanti, 2024). To address this issue, an adaptive governance approach capable of responding flexibly to dynamic challenges, along with institutional system strengthening to ensure the effective implementation of stunting prevention policies, is critically needed. This study aims to analyze how adaptive governance and a robust institutional system can improve health service accessibility in stunting prevention efforts.

Stunting is defined as a condition of linear growth failure in children resulting from sustained inadequate nutritional intake (Brar et al., 2020), particularly during early developmental periods (Muhamad et al., 2023). Contributing factors include inadequate nutrition (T. A. E. Permatasari et al., 2023), chronic infections (Yu et al., 2021), limited access to health services (Unmehopa et al., 2023), poor sanitation (Bagcchi, 2015), and inappropriate feeding practices (Astuti et al., 2024). The risks associated with stunting encompass impaired cognitive and motor development (Handryastuti et al., 2022), reduced immune resistance to disease (Aryastami et al., 2017), and an elevated risk of chronic non-communicable diseases in adulthood (Atlas et al., 2024), which may ultimately compromise individual productivity and quality of life and impose a substantial burden on the health system (Maulina et al., 2024). Improving the

(Sager & Gofen, 2022). The problem-solving strategy formulated encompasses (a) improving multi-stakeholder coordination in the planning and implementation of stunting prevention programs; (b) strengthening the capacity of health workers and health facilities; (c) leveraging technology and data to enhance intervention effectiveness; and (d) empowering communities to support stunting prevention programs through participatory engagement.

The increase in the stunting rate in Makassar City from 18.4% in 2023 to 25.6% in December 2024 reflects persistent challenges in the effectiveness of stunting prevention policies, particularly regarding health service accessibility for vulnerable groups. In this context, an adaptive governance approach and institutional system strengthening are needed to enhance cross-sectoral coordination and policy responsiveness to the dynamic nature of stunting. Accordingly, this study formulates the following research questions: (a) How does adaptive governance support health service accessibility for stunting prevention in Makassar City? (b) To what extent does institutional system strengthening contribute to the effectiveness of stunting prevention interventions for vulnerable groups? The urgency of this study lies in the need to develop a strategy grounded in adaptive governance and institutional strengthening to ensure more inclusive, efficient, and locally responsive stunting prevention interventions, in alignment with the national stunting reduction targets.

RESEARCH METHODS

This study employed a qualitative approach, collecting data through interviews, observation, documentation, and Focus Group Discussions (FGDs). Key informants included representatives from the Makassar City Health Office, the Population Control and Family Planning Agency (DPPKB), sub-district and village-level staff, and health workers from Posyandu and community health centers (Puskesmas) in Makassar City. In-depth interviews were conducted to obtain a thorough understanding of stunting prevention policies and practices, while observations provided direct insight into field-level policy implementation. Documentation was used to gather relevant secondary data, and FGDs served as a platform for discussing key issues and eliciting diverse stakeholder perspectives. Through this approach, the study aims to provide a comprehensive understanding of stunting prevention policies and practices in Makassar City, as well as to generate valuable insights for formulating more effective policy recommendations.

Data obtained from interviews, observations, and FGDs were transcribed in detail and subsequently analyzed using NVivo 12 Plus software. The analytical process involved data triangulation comparing and verifying data from multiple sources to ensure the validity and reliability of the research findings. This approach ensures that the findings are credible and provide a comprehensive account of stunting prevention policies and practices in Makassar City. The processed research results were then analyzed to address the research questions and compiled into a structured report to communicate research progress and outcomes.

RESULTS AND DISCUSSION

The discussion focuses on two main aspects corresponding to the research questions: the role of adaptive governance in supporting health service accessibility, and the contribution of institutional system strengthening to the effectiveness of stunting prevention interventions.

Adaptive Governance in Supporting Health Service Accessibility for Stunting Prevention in Makassar City

The findings indicate that the implementation of adaptive governance in Makassar City continues to face challenges related to cross-sectoral coordination and community participation. Despite the existence of integrated regulations and stunting prevention programs, implementation frequently fails to be fully responsive to field-level dynamics. For instance, limited availability of health workers at the Puskesmas and Posyandu levels results in uneven delivery of nutrition and maternal-child health services, particularly in densely populated areas characterized by high poverty rates.

Nevertheless, there are indications that adaptive governance practices are beginning to emerge, including the use of information technology for data collection on pregnant women and

children under five, as well as cross-sectoral collaboration forums involving the Health Office, Education Office, Women's Empowerment and Child Protection Office, and civil society organizations. This approach facilitates faster responses to emerging issues for example, in the provision of supplementary nutritional services or the management of children at risk of stunting. Accordingly, adaptive governance has demonstrated potential as a framework for strengthening health service accessibility, although it requires further capacity building and institutional commitment.

Table 1. Adaptive Governance in Supporting Health Service Accessibility in Makassar City

Aspect	Research Finding	Implications for Health Service Accessibility
Cross-sectoral coordination	Persistent challenges in inter-agency integration (Health Office, Education Office, Women's Empowerment and Child Protection Office).	Stunting prevention programs have not functioned effectively due to policy fragmentation.
Community participation	Community engagement remains suboptimal, particularly in densely populated areas with high poverty rates.	Nutrition and maternal-child health services are unevenly distributed, limiting access for vulnerable groups.
Utilization of information technology	Digital-based data collection systems for pregnant women and children under five are being implemented.	Enables rapid identification of stunting-risk cases and accelerates intervention.
Multi-stakeholder collaboration forums	Forums have been established involving local government, educational institutions, and civil society organizations.	Serve as platforms for coordination and adaptive response to field-level challenges.
Policy response	Supplementary nutritional interventions and management of at-risk children are being applied more flexibly.	Creates opportunities for improved health service effectiveness, though institutional capacity still requires strengthening.

Source: Compiled from various literature sources, 2025

Cross-sectoral coordination constitutes one of the foundational pillars of adaptive governance (Lira et al., 2025); however, the findings reveal that this dimension faces significant constraints in Makassar City. Policy fragmentation among agencies including the Health Office, Education Office, and Women's Empowerment and Child Protection Office has resulted in suboptimal synergy in stunting prevention program implementation. Yet, the stunting problem demands multisectoral intervention, as its determinants extend beyond nutrition to encompass education, sanitation, and socioeconomic conditions (Goi et al., 2025; Herawati et al., 2025). This lack of integration makes it difficult to achieve stunting reduction targets despite the availability of existing regulations and programs.

Community participation also represents a critical dimension, yet field conditions indicate that outcomes remain suboptimal. Community engagement particularly in densely populated areas with high poverty rates remains low in supporting stunting prevention programs (Gustiawati et al., 2025). This has direct implications for the uneven distribution of nutrition and maternal-child health services, as well as the continued difficulty faced by vulnerable groups in accessing basic care. Within the adaptive governance framework, low community participation signals a gap in government-to-community communication mechanisms, necessitating community empowerment strategies and community-based approaches to ensure more inclusive interventions.

The utilization of information technology is beginning to demonstrate positive progress in supporting health service accessibility. Digital-based data collection systems for pregnant women and children under five, implemented across select areas, serve as important instruments for the rapid identification of stunting-risk groups. The availability of real-time data enables local governments to design more targeted interventions and monitor trends in community health status (Rao et al., 2024; Sartika et al., 2020). Nevertheless, the utilization of this technology still faces obstacles, including limited internet connectivity in certain areas and insufficient digital literacy among Posyandu cadres and the broader community.

In addition, multi-stakeholder collaboration forums involving local government, educational institutions, and civil society organizations have begun to function as important coordination platforms. These forums embody the principles of adaptive governance, namely the engagement of cross-sectoral actors in responding to field-level dynamics. Through these forums, collaborative initiatives have emerged, such as integrated nutrition education programs and supplementary food distribution involving the private sector. Nevertheless, the effectiveness of these forums remains contingent on the consistency of meetings and the availability of budgetary resources.

The policy response to stunting prevention in Makassar City reflects adaptive efforts through the more flexible application of supplementary nutritional interventions and the management of at-risk children in accordance with field needs. This flexibility is essential, given that community conditions are not homogeneous, making uniform approaches often ineffective. For instance, the provision of supplementary food or micronutrient supplementation is not limited to areas with high stunting prevalence but is extended to vulnerable groups in densely populated areas with limited access to health services. Nonetheless, the implementation of these policies continues to face challenges in terms of institutional capacity, including human resource constraints, infrastructural limitations, and cross-sectoral coordination gaps. While adaptive policies have opened opportunities for improved health service effectiveness, their sustainability remains contingent on institutional strengthening that can ensure coordination, sustained financing, and consistent monitoring systems.

Table 2. Empirical Data on Stunting/Stunting-Risk Households (KKRS) in Makassar City

Year/Period	Indicator	Notes
2022	Stunting prevalence among children under five (%)	±4.08%
2021	Stunting prevalence (%)	±5.20%
December 2024 – March 2025	Number of stunting cases	3,049 (Dec 2024) → 2,685 (Mar 2025)
August 2023 – February 2024	Number of stunting cases in Makassar	2,734 (August 2023) → 2,594 (February 2024)
2024 (by sub-district)	Number of Stunting-Risk Households (KKRS) for selected sub-districts	• Bontoala: 11,266 KKRS • Wajo: 6,067 KKRS • Mariso: 10,986 KKRS

Source: Compiled from various literature sources, 2025

Table 2 presents the dynamics of stunting cases and the number of stunting-risk households (KKRS) in Makassar City, which have fluctuated over recent years. The data reveal that stunting prevalence declined from 5.20% in 2021 to 4.08% in 2022, before rising again in 2023–2024, with the total number of cases reaching 3,049 in December 2024 though it subsequently declined to 2,685 by March 2025. A downward trend was also observed between August 2023 and February 2024, with a reduction of 140 cases; however, the KKRS figures in several sub-districts including Bontoala (11,266 KKRS), Wajo (6,067 KKRS), and Mariso (10,986 KKRS) indicate persistently high levels of vulnerability at the household level. These findings are consistent with the preceding discussion, reinforcing the continued need for responsive adaptive governance and robust institutional system strengthening to address the uneven dynamics observed in the field. Although supplementary nutritional interventions and cross-sectoral

collaboration forums have been undertaken, the empirical data affirm that health service accessibility remains suboptimal particularly in densely populated areas characterized by high vulnerability.

Institutional System Strengthening and Its Contribution to the Effectiveness of Stunting Prevention Interventions

This study also found that institutional system strengthening is a key factor in the effectiveness of stunting prevention interventions in Makassar City. Regional regulations such as Makassar Mayor Regulation No. 96 of 2023 provide a binding legal framework; however, their effectiveness is heavily contingent on institutional capacity in implementation. Inter-agency coordination has yet to function optimally, particularly in integrating programs across the health sector and supporting sectors such as sanitation, education, and food security.

Institutional strengthening is also related to human resources and health infrastructure. Disparities in the distribution of health personnel, limitations of Posyandu facilities, and insufficient ongoing monitoring and evaluation mechanisms continue to be identified as primary obstacles in Makassar City. Nevertheless, several positive practices have emerged, including the empowerment of Posyandu cadres who function as frontline providers of basic community health services and collaboration with non-governmental organizations that support the delivery of nutrition education and supplementary interventions. This demonstrates that institutional strengthening is not merely a matter of regulations and formal structures, but also encompasses building a multi-stakeholder cooperative network that is mutually reinforcing in order to enhance the effectiveness of stunting prevention interventions.

This study identifies four principal dimensions of institutional system strengthening and their contribution to the effectiveness of stunting prevention interventions.

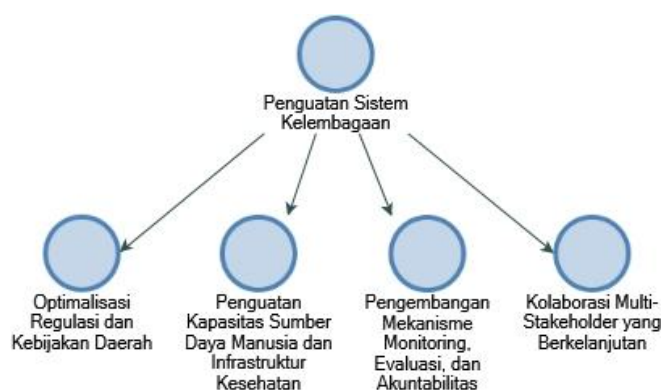


Figure 2. Institutional System Strengthening and Its Contribution to the Effectiveness of Stunting Prevention Interventions

Source: NVivo 12 Plus, 2025

The optimization of local regulations and policies constitutes the initial foundation of stunting prevention efforts. Makassar Mayor Regulation No. 96 of 2023 has established a clear legal framework; however, its effectiveness is highly dependent on the clarity of implementation mechanisms at the field level (Borahim, 2024). Without robust cross-agency coordination, regulations risk remaining at the level of formality. Policies must therefore be adaptive to community conditions, including the formulation of measurable performance indicators and evaluation instruments that permit periodic assessment and improvement based on actual needs.

Strengthening human resource capacity and health infrastructure is an equally critical element in supporting existing policies. Uneven distribution of health workers and limited Posyandu facilities remain primary obstacles in Makassar City. Institutional strengthening must encompass systematic efforts, ranging from the enhancement of health worker competencies through continuous training to the provision of adequate facilities and infrastructure. Furthermore, the utilization of digital technology in health services can help extend coverage, particularly in densely populated or underserved areas.

The development of monitoring, evaluation, and accountability mechanisms is necessary to ensure that stunting prevention programs are implemented coherently and purposefully. Weaknesses in the current monitoring system frequently result in insufficient data to inform evidence-based decision-making. By integrating data-based monitoring, transparent reporting, and community involvement in evaluation processes, interventions can become more measurable and accountable. This will also strengthen public trust that the policies implemented genuinely reach the target groups and produce tangible outcomes.

Finally, multi-stakeholder collaboration must be institutionalized as a sustained strategy rather than a temporary approach. Local governments cannot manage the complexity of stunting alone. The empowerment of Posyandu cadres, the involvement of non-governmental organizations, the private sector, and local communities will strengthen program outreach and catalyze innovation in nutrition and health services. Cross-sectoral synergy across education, sanitation, and food security is equally important to ensure that interventions address not only health aspects but also other determinants that contribute to stunting prevention in a holistic manner.

Institutional system strengthening in stunting prevention in Makassar City reflects the principles of adaptive governance, whereby clear regulations, adequate human resource capacity, integrated monitoring mechanisms, and multi-stakeholder collaboration constitute interrelated elements that enable more flexible and contextually responsive policy responses. Local regulations such as Mayor Regulation No. 96 of 2023 provide the legal framework; however, their effectiveness can only be realized when institutional and health worker capacities are reinforced, Posyandu facilities are made available, and technology is deployed to expand service coverage. Data-based monitoring and community engagement in evaluation processes ensure that adaptive policies can be adjusted to actual field conditions, while cross-sectoral collaboration generates synergies that strengthen program implementation. Institutional strengthening is therefore not merely a matter of formal structures, but of building a governance system that is responsive, accountable, and sustainable capable of improving health service accessibility and effectively reducing stunting risk.

CONCLUSION

The principal findings of this study affirm that the implementation of adaptive governance and institutional system strengthening in Makassar City plays a crucial role in improving health service accessibility for stunting prevention, although implementation continues to face numerous constraints. Cross-sectoral coordination has yet to achieve full synergy; community participation in densely populated, high-poverty areas remains low; and the distribution of health personnel and Posyandu facilities is uneven resulting in supplementary nutritional interventions and maternal-child health programs failing to optimally reach all vulnerable groups. On a positive note, adaptive governance practices are beginning to develop through the use of information technology for data collection on pregnant women and children under five, multi-stakeholder collaboration forums, and the empowerment of Posyandu cadres all of which strengthen community-level interventions. Data- and evidence-based monitoring and evaluation systems are also being introduced to ensure more targeted policy responses, while cross-sectoral collaboration is generating more holistic innovations in nutrition and health services. Based on these findings, future research is recommended to conduct a more in-depth analysis of the effectiveness of digital data-based interventions and community participation mechanisms, including examining models for sustainable institutional capacity building and community empowerment strategies capable of increasing citizen engagement and accelerating stunting rate reductions across all sub-districts. This would ensure that stunting prevention policies are not only adaptive but also inclusive and capable of producing meaningful improvements in the quality of life of children in Makassar City.

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