

Stunting reduction acceleration program implementation in a high-performing Indonesian city: a qualitative Logic Model-based evaluation in Tomohon, Indonesia

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Abstract

Background

Indonesia has designated the acceleration of stunting reduction as a national priority delivered through a multisectoral convergence policy. However, most subnational evaluations concentrate on the final prevalence figure and rarely describe the implementation process in a structured way, so the relationships among the resources used, the activities carried out, and the outputs produced remain poorly captured. This study explored how the stunting reduction acceleration program is implemented in Tomohon City, North Sulawesi, a region that has already surpassed the national prevalence target, in order to derive a Logic Model-based implementation-evaluation framework grounded in the experience of program holders.

Methods

This was the qualitative phase of an exploratory sequential mixed-methods design, reported in accordance with the COREQ guideline. Fifteen key informants from regional government agencies responsible for planning, implementing, coordinating, and evaluating the program were selected purposively and interviewed in depth. Verbatim transcripts were analyzed using qualitative content analysis across five phases, combining holistic, provisional, and hypothesis coding and supported by Microsoft Excel and NVivo 15. Field findings were mapped against a Logic Model conceptual framework to confirm, reconstruct, or extend its components.

Results

Program implementation was understood as an interrelated system of six components needs, assumptions, input, activity/process, output, and outcome elaborated into 16 sub-components, 31 indicators, and 174 statement items. Program success was attributed to leadership commitment, cross-sector collaboration, multi-stakeholder partnership, and the local Mapalus culture of mutual cooperation as social capital; persistent constraints included limited human resources and funding, uneven cross-sector evaluation coordination, the absence of a dedicated stunting community institution, and the low achievement of behavior-dependent interventions such as adolescent iron-folic-acid supplementation and exclusive breastfeeding. Three contextual components not represented in the standard Logic Model were identified: the Mapalus culture, cross-sector convergence action, and digital transformation. Leadership commitment was repositioned from an input to a need, and specific and sensitive interventions from inputs to processes.

Conclusions

Even in a high-performing region, a favorable prevalence figure does not signify an implementation process without gaps. Framing implementation through a context-enriched Logic Model exposes where a program remains fragile and clarifies what a locally adaptive evaluation should measure. The resulting framework offers a transferable basis for evaluating multisectoral stunting programs at the subnational level and lays the foundation for the subsequent instrument-development and digital-evaluation phase.

BACKGROUND

Stunting continues to constitute one of the most intractable public health challenges confronting low- and middle-income countries, given that it reflects not merely impaired linear growth but also the convergence of multiple health, social, economic, and environmental determinants (1–3). Poverty, limited parental education, inadequate sanitation, and constrained access to basic services collectively shape a child's nutritional trajectory, underscoring the premise that undernutrition cannot be resolved through health-sector interventions alone (4, 5). Given the multidimensionality of these determinants, program effectiveness hinges less on the specific intervention deployed than on the capacity of the local system to translate that intervention into contextually appropriate action responsive to the needs of the target population (1). The implementation of a stunting reduction program should therefore be conceptualized as a chain of interrelated activities encompassing diverse resources, implementers, cross-sectoral coordination, and outputs oriented toward a shared objective.

The Government of Indonesia has designated the acceleration of stunting reduction as a national development priority, operationalized through integrated specific and sensitive nutrition interventions alongside a convergence policy anchored in Presidential Regulation No. 72 of 2021 (6, 7). This convergence policy is designed to align the planning, implementation, monitoring, and evaluation of activities across regional government agencies whose mandates intersect with the determinants of stunting (8). Yet the presence of a robust regulatory framework does not, in itself, guarantee optimal implementation across every tier of government. Empirical studies of convergence implementation in Indonesia indicate that outcomes remain markedly uneven across regions, owing to disparities in coordination, institutional capacity, resource distribution, and data systems; where commitment and implementer capacity are limited, responsibility for stunting reduction tends to devolve onto the health sector alone (9, 10). This disjuncture between policy design and local practice underscores the need to examine how the program is actually enacted at the implementer level (11).

Implementation research argues that program success cannot be judged solely from final results. Whether a program is accepted, adopted, delivered with fidelity, feasible, and sustained is at least as informative as the endpoint it eventually reaches (12, 13). Acceptability, fidelity, feasibility, adoption, and appropriateness are among the most widely used implementation outcomes (14, 15), yet the relationships between implementation strategies and these outcomes remain under-tested (13). Running a program requires human resources, financing, facilities, regulations, data, and organizational support, which are then converted into interventions, coordination, family assistance, growth monitoring, education, and monitoring and evaluation (16, 17). An evaluation that examines only the change in

prevalence cannot explain why a program does or does not succeed; it must instead trace the links among the resources used, the activities carried out, and the outputs produced (18). Although many implementation theories, models, and frameworks exist, a scoping review of 143 such frameworks found that most are used to identify barriers and facilitators, with limited attention to usability and to testing the relationships among their elements (18). This reinforces the value of a framework capable of describing the logical relationships among program components in a systematic and testable way (19).

The Logic Model provides precisely such a framework. A scoping review of logic-model applications in stunting-prevention evaluation identified a predominant input–process–output–outcome structure (20), and logic models have been widely employed to depict the connections among resources, activities, outputs, and anticipated results (21, 22). Within implementation research, the Implementation Research Logic Model (IRLM) was developed to enhance the clarity, transparency, and reproducibility of implementation projects by rendering causal relationships explicit and testable, and it can serve as a roadmap for elucidating how a program is enacted and how its constituent components interrelate (19). Beyond delineating program structure, a logic model can function as an analytical tool for identifying the critical junctures that shape implementation success (23), a feature of particular relevance to complex, multi-organizational programs such as stunting reduction acceleration (24). Concurrently, digital approaches to stunting including risk classification, prediction, and data clustering continue to advance (25); however, the availability of such technology does not, in itself, elucidate how a program is operationalized or what determines its success, and a grounded understanding of implementation must precede the design of any digital evaluation system.

Tomohon City, North Sulawesi, Indonesia, has continuously implemented the program through specific and sensitive interventions delivered by relevant regional agencies, in conjunction with cross-sectoral coordination and a program reporting system. According to the 2024 Indonesian Nutrition Status Survey (SSGI), stunting prevalence in Tomohon stood at 10.8%, positioning the city among the best performers in the province and below the national target of 14% (26, 27). This high-performing status renders Tomohon an informative case: a favorable prevalence figure is frequently interpreted as evidence of a well-functioning program, yet much of the local evaluation continues to center on reporting and administrative compliance, leaving the relationships among resources, processes, and outputs largely uncaptured within a structured analytical framework (28). Research on stunting has predominantly concentrated on risk factors, intervention effectiveness, and prevalence trends (29–32), whereas studies tracing program resources, implementation activities, and outputs from the perspective of program holders within a specific local context remain scarce; this lack of clarity regarding the linkages among these elements constrains the explanatory power of any evaluation (13, 19). In this study, we examined the implementation of the stunting reduction acceleration program in Tomohon City through a Logic Model lens, focusing on input, activity/process, and output components, to generate a comprehensive account of implementation, identify supporting and hindering factors, and derive a locally grounded evaluation framework. By examining a positive-deviant region, this study also addresses a broader question of relevance: whether favorable headline outcomes obscure implementation gaps that a purely outcome-focused evaluation would fail to detect.

METHODS

Study design and setting

This study constituted the qualitative phase of an exploratory sequential mixed-methods design, in which qualitative exploration precedes and informs a subsequent quantitative phase (33). The qualitative phase reported here was conducted to address the first research question how program holders perceive the implementation of the stunting reduction acceleration program in Tomohon City and to derive candidate components, indicators, and statement items for the subsequent instrument-development phase. Reporting adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (34). The study was conducted in Tomohon City, a small urban municipality in North Sulawesi Province, Indonesia, that implemented the national stunting reduction acceleration program through cross-sectoral convergence and recorded a stunting prevalence below the national target at the time of the study (26). The study adopted an interpretivist stance, treating the implementation of the program as a social reality constructed through the experiences, perceptions, and interactions of the officials who plan and deliver it. From this position, understanding implementation requires exploring how program holders interpret the policy, resource, and coordination processes within their institutional context, and the analysis aimed at context-grounded interpretation rather than statistically generalizable conclusions.

Informants and sampling

Informants were selected using purposive sampling, that is, the deliberate selection of participants on the basis of knowledge, experience, authority, and direct involvement relevant to the research objectives (33). Eligible informants were officials engaged in the planning, implementation, coordination, monitoring, or evaluation of the stunting reduction acceleration program in Tomohon City. The final sample comprised 15 key informants drawn from the regional work units (Satuan Kerja Perangkat Daerah, SKPD) associated with the program, including the Regional Secretariat; the Health Office; the Population Control and Family Planning Office; the Social Affairs Office; the Regional Planning, Research, and Development Agency; the Food Office; the Public Works and Spatial Planning Office; the Housing and Settlement Areas Office; the Agriculture and Fisheries Office; the Education and Culture Office; the Communication and Informatics Office; and members of the district Stunting Reduction Acceleration Team (Tim Percepatan Penurunan Stunting, TPPS). These informants held strategic roles across the sectors involved in convergence and were positioned to provide information-rich, cross-sector perspectives on implementation.

Data collection instrument

Data were collected using a semi-structured in-depth interview guide (supplementary file) developed from the Logic Model conceptual framework and adapted to local conditions. The guide was organized

around four domains preliminary information, input, process, and output and comprised open-ended questions with follow-up probes (9 items for preliminary information, 8 for input, 15 for process, and 8 for output). Supporting tools included a voice recorder, a notebook, a mobile phone for documentation, and field notes (35). Written informed consent to participate was obtained from each informant prior to the interview.

Data collection

The first author obtained research permission from the Government of Tomohon City through the Regional Secretariat and subsequently coordinated with the relevant agencies. Following initial communication to explain the study aims and to arrange a mutually convenient and private time and place, each informant participated in a single face-to-face, semi-structured in-depth interview. Interviews were conducted in Indonesian and lasted approximately 90 minutes each. With the informant's consent, interviews were audio-recorded and supplemented with field notes documenting contextual observations; recordings were subsequently transcribed verbatim to form the basis for analysis.

Data analysis

Transcripts were analyzed using qualitative content analysis following the five-phase process described by Bingham, combined with the coding techniques of Saldaña (35) specifically, holistic, provisional, and hypothesis coding. Analysis was conducted manually in Microsoft Excel as the primary medium for organizing and coding the data, then synchronized into NVivo 15 to support visualization through mind maps and project maps. In Phase 1 (organizing the data), each informant was assigned a code ranging from I1 to I15, and transcripts were separated into four worksheets corresponding to the interview domains to establish data traceability. In Phase 2 (sorting into relevant categories), transcripts were read repeatedly, and holistic codes (HC) capturing the general meaning of each data segment were assigned deductively in line with the interview questions and numbered sequentially within each domain to preserve traceability. In Phase 3 (understanding meaning), holistic codes with similar meaning were grouped into provisional codes (PC), each accompanied by an operational definition and its constituent holistic codes within a codebook. In Phase 4 (identifying content, patterns, and findings), conceptually related categories were integrated into main content aligned with the logic-model domains, and hypothesis coding was applied to compare field findings with the conceptual framework, distinguishing components supported by the data, components not yet identified, and new components absent from the initial model; results were recorded in a conceptual-framework validation matrix. In Phase 5 (presenting the findings), results were presented as matrices, content narratives, a conceptual model, and NVivo visualizations linking the empirical findings to the components of needs, assumptions, input, activity/process, output, and outcome (36, 37).

Trustworthiness

Trustworthiness was supported by an audit trail of coding decisions (the sequential HC/PC numbering and the codebook), by hypothesis coding that rendered the comparison between data and the conceptual framework explicit, and by triangulation across informants from different sectors, which enabled convergent and divergent accounts of the same processes to be compared. NVivo mind maps and project maps were used to render the derivation of content from codes transparent. Because the study aimed at context-grounded interpretation, the analysis emphasized conceptual coherence and recurrence across informants rather than code frequency, and coding coverage was treated as a descriptive indicator of thematic prominence rather than a measure of importance or effect.

Use of generative artificial intelligence

In accordance with the journal's policy, the authors disclose that a generative artificial intelligence tool was used to assist with language editing and manuscript formatting. It was not used to generate, analyze, or interpret the research data or to produce the study's findings. All content was reviewed, verified, and approved by the authors, who take full responsibility for the integrity and accuracy of the work.

RESULTS

Informant characteristics

Fifteen key informants participated. Most were men (11 of 15), reflecting the composition of senior decision-making positions across the agencies interviewed. Informants ranged from 48 to 58 years of age (mean 54 years); ten held a master's degree, three a bachelor's degree, and two a doctorate; and length of service ranged from 17 to 37 years (mean 25 years). This profile indicates that the data were obtained from officials with strategic responsibility, extensive administrative experience, and a relatively high level of education, supporting a cross-sector account of program implementation (Table 1).

Table 1
Characteristics of the key informants (n = 15)

Code	Position / field of work	Age (y)	Education	Service (y)
I1	Assistant I for Government and Community Welfare Affairs	52	Master's	25
I2	Regional Secretary	55	Master's	28
I3	Head, Public Works and Spatial Planning Office	48	Master's	21
I4	Head, Housing and Settlement Areas Office	53	Master's	29
I5	Head, Communication and Informatics Office	52	Master's	26
I6	Head, Social Affairs Office	54	Master's	21
I7	Head, Agriculture and Fisheries Office	58	Doctorate	37
I8	Head, Nutrition Division, Health Office	53	Master's	20
I9	Head, Population Control and Family Planning Office	57	Bachelor's	17
I10	Stunting Reduction Acceleration Team (BKKBD)	51	Bachelor's	25
I11	Head, Health Office	55	Master's	25
I12	Head of Division, Regional Planning, Research and Development Agency	54	Bachelor's	23
I13	Head, Food Office	57	Master's	30
I14	Head, Regional Planning, Research and Development Agency	52	Master's	19
I15	Education and Culture Office	57	Doctorate	35

M, male; F, female; Y, years. Codes I1–I15 are used to attribute quotations while preserving confidentiality.

1. Six interrelated components of program implementation

Program holders described implementation not as a set of isolated activities but as a system in which needs and assumptions establish the initial conditions, inputs supply the resources, processes convert those resources into interventions, and outputs and outcomes represent the results. Content analysis yielded six main content categories needs, assumptions, input, activity/process, output, and outcome elaborated into 16 sub-contents, 31 indicators, and 174 statement items (Table 2). Against the Logic Model conceptual framework, some components were confirmed, some were repositioned, and three new contextual components emerged: the Mapalus culture, cross-sector convergence action, and digital transformation.

• Needs: policy, commitment, and the Mapalus culture

Informants located the program's founding conditions in policy, leadership commitment, and local culture. Presidential Regulation No. 72 of 2021 was repeatedly cited as the formal trigger for integrated implementation, yet several informants stressed that sectoral activities relevant to stunting had been running well before 2021 as part of routine agency tasks. The regulation was thus understood less as a starting point than as an instrument that reinforced, integrated, and directed pre-existing sectoral programs toward convergence:

This program began in 2021 when Presidential Regulation No. 72 was issued... but its realization only started running in 2022. (I12)

"...this stunting program has actually been running since 2021..." (I14)

"...this program has been in effect since Presidential Decree 72 of 2021 was enacted..." (I18)

"...the program has been flowing directly from the central government to the regions since 2021..." (I19).

The Food Office is also part of the Stunting Reduction Acceleration Team... it has been running since 2018 and continues alongside that regulation. (I13)

Leadership commitment expressed through establishing stunting as a regional priority, policy support, budget provision, and cross-sector coordination was described as a strategic precondition rather than a mere resource:

If there is no intention or commitment, then the effort will not succeed... the most fundamental thing is our own commitment and willingness in accordance with the tasks being carried out. (I12)

"...stunting has begun to become a priority for local governments post-pandemic..." (I2).

"The commitment to implementing the accelerated stunting reduction program has essentially been clearly formulated through policies outlined in the Regional Action Plan" (I18).

"...the commitment is to establish stunting as a regional priority through policies and planning, as regulations exist and are included in the regional work plan." (I10)

"...without intention or commitment, these efforts will not be successful...the most important thing is our own commitment and willingness to fulfill the tasks we undertake." (I12).

Informants also identified the Mapalus culture a Minahasan tradition of mutual cooperation (gotong royong) as social capital that mobilizes voluntary community participation in support of families at risk of stunting. Because commitment behaved as a contextual condition shaping the direction of implementation rather than as an input, it was repositioned from input to needs, and the Mapalus culture was added as a new component absent from the initial framework.

"...Accelerating the reduction of stunting is carried out through the utilization of local Mapalus wisdom as a form of mutual cooperation...." (I2)

"...from the existence of the Mapalus culture (mutual cooperation) in the Tomohon community which can help overcome stunting." (I3)

• **Assumptions: convergence action and collaboration**

Informants held shared, forward-looking beliefs that the program would succeed if the eight convergence actions were carried out, if human resources were mobilized across sectors, and if monitoring and evaluation were integrated and participatory. These assumptions were framed as conditions that had to hold for convergence to function:

Eventually all SKPD will make it a convergence action. (I8)

"... all SKPD will be interconnected in 8 convergence actions" (I11)

The evaluation will succeed with cooperation, especially from health workers, posyandu cadres, and cross-sector support. (I2)

"...program monitoring is carried out in a structured and cross-sectoral manner, and it would be better if it were done through cross-sectoral collaboration" (I1)

"...evaluation will be successful with collaboration, especially from health workers, integrated health post (Posyandu) cadres, and cross-sectoral support..." (I2)

At the same time, some informants voiced a caveat that cross-sector coordination was not yet optimal, signaling a gap between the ideal assumption and the reality of practice. The whole of the assumptions content convergence action, collaboration, and drivers of success was new relative to the initial framework.

• **Input: human resources, facilities, funding, and partners**

Inputs comprised four sub-contents: human resources, facilities and infrastructure, funding, and partners. Human-resource competence was generally regarded as adequate, but quantity and operational capacity were not:

At the Health Office it is already adequate because, in terms of ability, it is fine and many are competent. (I8)

For human resources, we are indeed short of staff, especially technical staff. (I13)

Facilities in health, education, communication, drinking water, and sanitation were largely available but uneven in quality and distribution, with specific gaps such as anthropometric tools requiring calibration and residential environments only partly addressed. Funding was the resource most frequently named

as a constraint: budgets from the regional and central governments and cross-sector programs existed but rarely matched field needs, prompting efficiency measures and reliance on the Mapalus scheme:

There are still budget limitations, so not all program needs can be met optimally... we do it through the Mapalus culture. (I2)

"Because the available budget is insufficient, the quantity of assistance we can provide is not yet adequate, so innovation is carried out through the Mapalus culture" (I6)

Partners; government agencies, community organizations such as the Family Welfare Empowerment movement (PKK), sub-district governments, educational institutions, and the business world through corporate social responsibility (CSR) expanded resources beyond the government budget; informants named companies including Pertamina, Danone-Aqua and Bank as CSR contributors. The input components were confirmed within the framework, with the recurring pattern that adequate competence coexisted with constraints in quantity, funding, and equitable facility distribution.

• **Activity/process: the most dominant domain**

The activity/process domain was the richest, spanning program implementation, coverage and compliance, community involvement, monitoring and evaluation, and digitalization. Specific interventions (for example, iron-folic-acid tablets, immunization, vitamin A, supplementary feeding, and antenatal care) and sensitive interventions (clean water and sanitation, habitable housing, social assistance, and food security) were delivered through a convergence approach with a clear division of roles:

Each regional agency is given the responsibility of implementing interventions according to its respective duties and functions. (I2)

"We continue to coordinate and ensure that the program is accommodated in the Regional Work Plan (RKPD). (I12)

"Each Regional Work Unit (SKPD) is given the responsibility to assist families with stunted children." (I15)

"Program implementation is still proceeding according to the planned direction and targets." (I2)

Because both specific and sensitive interventions were carried out as activities in the field rather than held as resources, they were repositioned from inputs to processes. Program innovation took two salient forms: the culturally grounded Mapalus Action and emerging digital tools:

We already have one innovation, namely Mapalus. (I9)

The evaluation model is being pursued to be faster through a digital system. (I1)

Coverage reached the entire municipality down to the sub-district level and was directed at priority groups across the life cycle (adolescent girls, prospective brides and grooms, pregnant and breastfeeding women, and under-fives), and implementers demonstrated compliance in delivery,

reporting, and tiered monitoring supported by the Web Monitoring (WebMon) application. Community participation was strong through cadres, the PKK, Family Assistance Teams, and the Mapalus spirit, but informants consistently noted that no dedicated, permanently established stunting community had been formed:

There is no specific base or community that has been permanently formed. (I4)

"There is a community base but only in the form of groups of health cadres, family planning cadres" (I10)

Monitoring and evaluation ran in a tiered, periodic manner supported by digital systems (WebMon, Arkas, Mapalus, SIPD), yet cross-sector evaluation remained fragmented:

Evaluation is still carried out separately; there is not yet one comprehensive joint evaluation mechanism. (I7)

"It has not been coordinated and documented well so that each SKPD is found to be egocentric." (I10)

Digital transformation was therefore emerging but incomplete: applications functioned largely as data banks and reporting channels, complemented by simple tools such as WhatsApp groups, while performance dashboards, decision-support features, and operator capacity were not yet in place. Involvement of all agencies, multi-stakeholder collaboration, community empowerment, and the digitalization of monitoring and evaluation were identified as new components within this domain.

• **Output and outcome**

Outputs were expressed as program quality (intervention achievement and target accuracy and timeliness) and program sustainability (program impact and program strengthening). Routine basic-health interventions showed high coverage; informants reported that nutritional-status measurement of under-fives reached full coverage whereas behavior-dependent interventions lagged:

The intervention of providing blood-boosting tablets to adolescents still faces various obstacles. (I8)

Exclusive breastfeeding is still influenced by various factors in the field. (I11)

Sustainability was framed as continuation-with-revision rather than static maintenance, with evaluation results feeding back into program improvement. Outcome was expressed through two dimensions: a substantive dimension (declining prevalence and achievement of the national target) and an administrative dimension (achievement of objectives in line with planning and regulations). The separation of these two dimensions and the newly articulated output indicators extended the initial framework, which had assessed outcome mainly as prevalence decline.

Table 2 synthesizes these six interrelated components needs, assumptions, input, activity/process, output, and outcome together with their constituent sub-components, indicators, and statement items,

indicating for each element whether it was confirmed, repositioned, or newly identified relative to the initial Logic Model framework.

Table 2
Initial Logic Model based evaluation framework derived from the analysis, with conceptual-framework validation

Component	Sub-components (indicators)	Items	Status against the Logic Model framework
Needs	Policy; commitment; Mapalus culture (4 indicators)	10	Confirmed but re-specified; commitment repositioned from input to need; Mapalus culture added as a new component
Assumptions	Stakeholder assumptions: convergence action and collaboration; drivers of success (2 indicators)	9	New sub-content and indicators
Input	Human resources; facilities; funding; partners (6 indicators)	46	Confirmed
Activity / process	Program implementation; coverage and compliance; community involvement; monitoring and evaluation; digitalisation (13 indicators)	76	Confirmed and extended; specific and sensitive interventions repositioned from input to process; convergence action and digital transformation added
Output	Program quality; program sustainability (4 indicators)	28	Confirmed and extended with new indicators
Outcome	Success of the program: substantive and administrative (2 indicators)	5	Confirmed and extended; administrative dimension added

The six components, 16 sub-components, 31 indicators, and 174 statement items form the initial evaluation framework (Fig. 1), which will be tested for construct validity in the subsequent quantitative phase before integration into a web-based evaluation system.

Figure 1 Initial structure of the Logic Model based evaluation framework for the stunting reduction acceleration program in Tomohon City

DISCUSSION

Principal findings and contribution

This study framed the implementation of a multisectoral stunting reduction program through a Logic Model lens and found that program holders understood implementation as an interrelated system of needs, assumptions, input, activity/process, output, and outcome. These components did not stand alone but formed mutually influencing relationships, consistent with the IRLM emphasis on the links

among determinants, strategies, mechanisms, and outcomes (19). Read together, the findings support a central claim: implementation quality, rather than resource availability alone, drives program success, and a favorable prevalence figure in a high-performing region does not signify an implementation process without gaps.

Three contributions to the stunting evaluation model stand out. First, the Mapalus culture emerged as contextual social capital that strengthens collaboration, offsets resource limitations, and mobilizes voluntary community participation. This interpretation aligns with a social-capital reading in which trust, networks, and shared norms enhance community-based health programs (38) and it is consistent with the recurring finding that funding rarely matched field needs, prompting reliance on mutual cooperation. Importantly, Mapalus should be read as a reinforcement of, not a substitute for, the fiscal responsibility of the regional government; a program whose sustainability rests on voluntary mutual aid is fragile unless matched by coordinated fiscal allocation (39). Second, cross-sector convergence action and collaboration appeared both as an assumption and as a determining process, echoing the whole-of-government and whole-of-society logic of the national strategy (40) while also exposing the familiar vulnerability that shallow coordination can return the burden of stunting reduction to the health sector (9). Including assumptions in the evaluation model is therefore not a way to certify these beliefs as true but a way to test whether collaborative assumptions are actually realized in practice. Third, digital transformation was identified as a process component: monitoring and evaluation were increasingly supported by applications such as WebMon, Arkas, Mapalus, and SIPD, yet use remained partial, with data banks and reporting channels in place but performance dashboards, decision support, and operator capacity still absent. This is consistent with the policy direction encouraging information systems for convergence action (41) and with the caution that technology availability does not by itself explain implementation success (25).

Two conceptual repositionings refine the framework. Leadership commitment moved from an input to a need, reflecting its role as a contextual condition that shapes the direction of implementation rather than a resource consumed during delivery; this is consistent with evaluation frameworks that treat organizational support and stakeholder involvement as contextual conditions (29). In addition, specific and sensitive interventions moved from inputs to processes, because the field data showed them to be activities carried out rather than resources held a shift that clarifies the program's logic flow and matches applications of the logic model that position interventions as processes leading to outputs (20, 21). The observation that Presidential Regulation No. 72 of 2021 reinforced rather than initiated sectoral programs further supports treating needs as a contextual precondition: the strength of national regulation does not guarantee uniform implementation, which depends on local commitment, institutional capacity, and coordination (9, 10).

The finding that most warrants careful interpretation is the variation in achievement across interventions. Routine basic-health services showed high coverage, whereas behavior-dependent interventions adolescent iron-folic-acid supplementation and exclusive breastfeeding lagged. This pattern cannot be explained by resource limitations alone; it reflects behavioral, knowledge, and

sociocultural factors at the individual and family levels and points to the need for targeted behavior-change communication rather than additional service provision (41). Community involvement revealed a related paradox: participation was strong through cadres, the PKK, Family Assistance Teams, and the Mapalus spirit, yet no dedicated stunting community institution had been permanently established, leaving involvement situational and attached to existing groups. Strengthening structured community institutions is therefore a concrete lever for improving coordination and sustainability at the sub-district level. Finally, monitoring and evaluation ran in a tiered and periodic manner supported by digital systems, but cross-sector evaluation remained fragmented and prone to sectoral silos, indicating that the mere existence of monitoring mechanisms is insufficient; what matters is the degree of integration and the use of results for decision-making (16).

Taken together, these findings position the evaluation of implementation as an object no less important than the final result (28, 29). For a high-performing region, this reframing is the study's most transferable message: outcome-based evaluation alone would have recorded success, whereas a context-enriched Logic Model exposed fragilities in behavior-dependent coverage, community institutionalization, cross-sector evaluation, and digital maturity that condition whether current gains can be sustained. The resulting framework six components, 16 sub-components, 31 indicators, and 174 statement items, augmented by Mapalus culture, convergence action, and digital transformation offers a locally grounded yet transferable basis for evaluating multisectoral stunting programs at the subnational level.

Strengths and limitations

A strength of this study is its cross-sector informant base: 15 senior officials from the agencies responsible for convergence provided information-rich, triangulated accounts of implementation in a positive-deviant region, a setting seldom examined in depth. The systematic five-phase content analysis, hypothesis coding against an a priori framework, and an auditable codebook support the transparency of the derivation. Several limitations should be acknowledged. First, as a single-city qualitative study, the findings are context-specific and are intended to inform an evaluation framework rather than to support statistical generalization or causal inference. Second, the data reflect the perceptions of program holders; the perspectives of frontline implementers, cadres, and target families were not captured and may differ, and the hierarchical nature of local government may have shaped some accounts. Third, self-reported achievements such as full coverage of nutritional-status measurement were not verified against administrative records or system logs. Fourth, prevalence figures were drawn from survey estimates and were not independently validated. The subsequent quantitative phase, in which the framework will be tested for construct validity through confirmatory factor analysis before integration into a web-based evaluation system, is designed to address several of these limitations.

CONCLUSIONS

Program holders conceptualized the stunting reduction acceleration program in Tomohon City as an interrelated implementation system spanning contextual needs, resource readiness, intervention delivery, and results. Implementation depended not only on Presidential Regulation No. 72 of 2021 but also on

leadership commitment, the Mapalus culture as a form of social capital, cross-sector collaboration, community involvement, tiered monitoring and evaluation, and emerging digital systems. This qualitative exploration yielded a Logic Model–based evaluation framework of six components elaborated into 16 sub-components, 31 indicators, and 174 statement items, and identified three contextual components not accommodated in the standard framework: the Mapalus culture, cross-sector convergence action, and digital transformation. The findings indicate that implementation success is driven more by process quality than by resource availability alone, and that even a region performing below the national prevalence target retains implementation gaps in behavior-dependent interventions, community institutionalization, cross-sector evaluation coordination, and digital maturity that a purely outcome-based evaluation would overlook. This framework offers a transferable basis for locally adaptive evaluation of multisectoral stunting programs and lays the foundation for the subsequent instrument development and digital evaluation phase.

Declarations

Ethics approval and consent to participate

Ethics approval for this study was obtained from the Health Research Ethics Committee, Faculty of Public Health, Hasanuddin University (Approval No.1335/UN4.14.1/TP.01.02/2025). All informants provided written informed consent before participation, and data were de-identified using participant codes (I1–I15). This study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

Authors’ contributions[MYLS] conceptualized and designed the study, collected the data, conducted the analysis, and drafted the manuscript. [AS] and [SR] contributed to the study design and supervised the analysis. [NJ], [RT] and [AAI] contributed to data acquisition and interpretation. All authors critically revised the manuscript and read and approved the final version.

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Data Availability

The datasets generated and/or analysed during the current study are not publicly available because they contain potentially identifying information about a small number of senior officials in a single municipality, but the de-identified interview excerpts, interview guide, and coding framework are available from the corresponding author on reasonable request and subject to institutional approval.

Abbreviations

WHO	World Health Organization
IRLM	Implementation Research Logic Model
SSGI	Survey Status Gizi Indonesia (Indonesian Nutrition Status Survey)
COREQ	Consolidation Criteria for Reporting Qualitative Research
SKPD	Satuan Kerja Perangkat Daerah (Regional Government Unit)
TPPS	Tim Percepatan Penurunan Stunting (Stunting Reduction Acceleration Team)
PKK	Pemberdayaan dan Kesejahteraan Keluarga (Family Welfare Empowerment movement)
CSR	Corporate Social Responsibility
WebMon	Website Monitoring
Arkas	Aplikasi Rencana Kegiatan dan Anggaran Sekolah (School Activity Plan and Budget Application)

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Figures

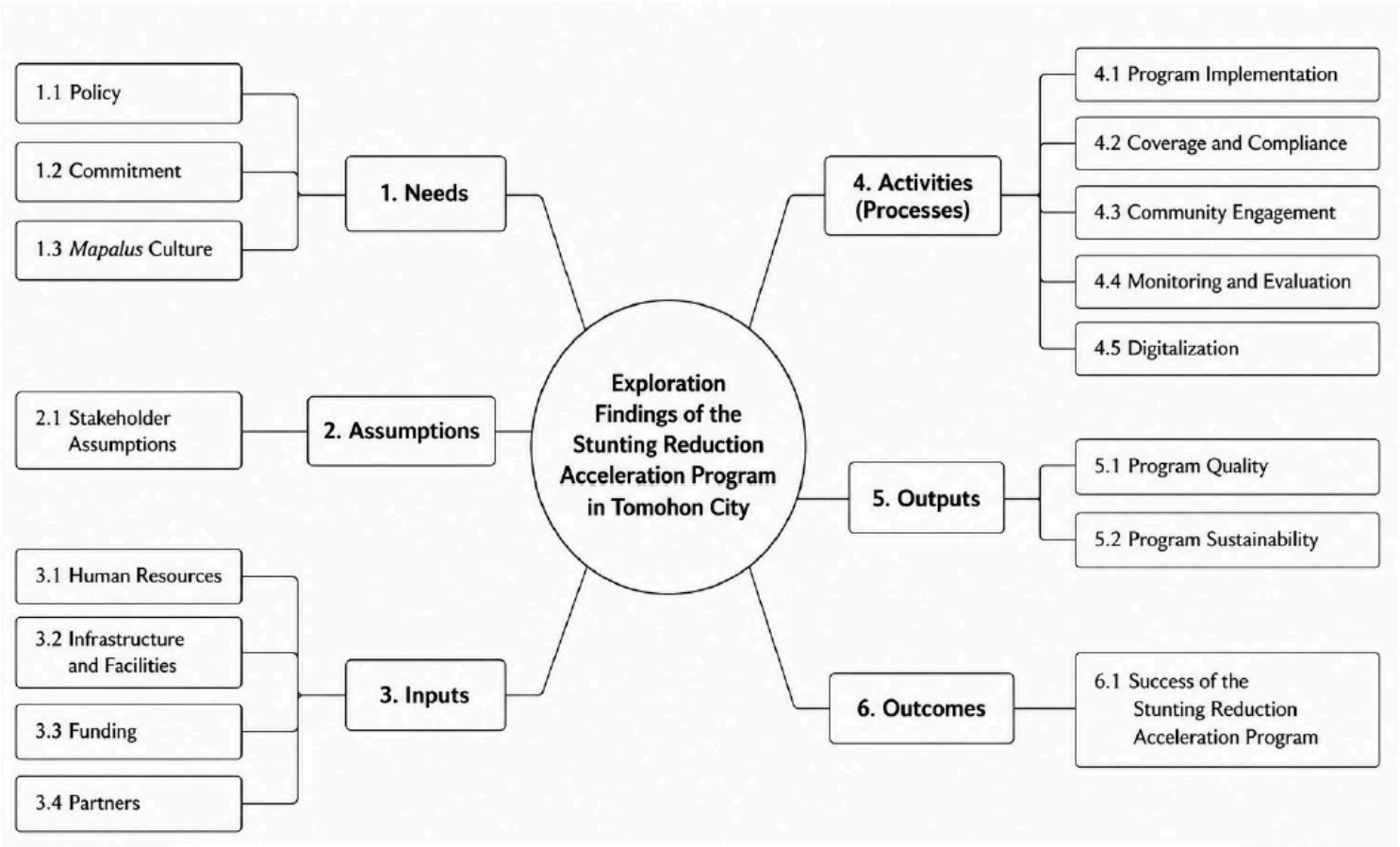


Figure 1

Initial structure of the Logic Model based evaluation framework for the stunting reduction acceleration program in Tomohon City

Supplementary Files

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- [COREQChecklist.pdf](#)
- [BMCIInterviewGuideMareyke.pdf](#)