AG EDITOR

REVIEW

Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province: Indicators, Validity, and Reliability

Instrumento para la Evaluación de la Colaboración Intersectorial en la Gestión del Retraso del Crecimiento en la Provincia de Gorontalo: Indicadores, Validez y Confiabilidad

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ABSTRACT

Cross-sector collaboration plays a crucial role in addressing stunting by fostering partnerships among organizations from various sectors. This study aimed to develop and validate reliable indicators to evaluate cross-sector collaboration within the stunting reduction program in Gorontalo Province, Indonesia. A questionnaire was formulated following an initial qualitative study and administered to 32 members of the stunting reduction acceleration team. The instrument consisted of 10 domains encompassing 95 items. Validity testing confirmed 93 items as valid, while two were excluded. Reliability analysis using Cronbach's Alpha demonstrated exceptional reliability for the domains of cross-sector role and structure, and cross-sector performance. Six additional domains—including vision and mission, partner profile, resource availability, leadership, communication, and partnership function—showed very good reliability. One domain exhibited good reliability (cross-sector context), and another moderate reliability (need for cross-sector collaboration). The findings offer a comprehensive and validated set of indicators to assess the effectiveness of cross-sector collaboration in stunting management. These indicators serve as a foundation for systematic evaluation, contributing to improved coordination and program outcomes in Gorontalo Province.

Keywords: Cross-Sector Collaboration; Stunting Intervention; Indicator Validation.

RESUMEN

La colaboración intersectorial desempeña un papel crucial en la lucha contra el retraso en el crecimiento, ya que fomenta las alianzas entre organizaciones de diversos sectores. El objetivo de este estudio era desarrollar y validar indicadores fiables para evaluar la colaboración intersectorial en el programa de reducción del

retraso en el crecimiento de la provincia de Gorontalo, Indonesia. Se elaboró un cuestionario tras un estudio cualitativo inicial y se administró a 32 miembros del equipo de aceleración de la reducción del retraso en el crecimiento. El instrumento constaba de 10 dominios que abarcaban 95 ítems. Las pruebas de validez confirmaron la validez de 93 ítems, mientras que dos fueron excluidos. El análisis de fiabilidad utilizando el alfa de Cronbach demostró una fiabilidad excepcional para los ámbitos de función y estructura intersectorial, y rendimiento intersectorial. Seis ámbitos adicionales, entre los que se incluyen la visión y la misión, el perfil de los socios, la disponibilidad de recursos, el liderazgo, la comunicación y la función de asociación, mostraron una fiabilidad muy buena. Un dominio mostró una buena fiabilidad (contexto intersectorial) y otro una fiabilidad moderada (necesidad de colaboración intersectorial). Los resultados ofrecen un conjunto completo y validado de indicadores para evaluar la eficacia de la colaboración intersectorial en la gestión del retraso en el crecimiento. Estos indicadores sirven de base para una evaluación sistemática, lo que contribuye a mejorar la coordinación y los resultados de los programas en la provincia de Gorontalo.

Palabras clave: Colaboración Intersectorial; Intervención contra el Retraso en el Crecimiento; Validación de Indicadores.

INTRODUCTION

Public health challenges often exceed the capacity of the health sector alone, necessitating a comprehensive approach involving multiple government sectors and the community. Complex health issues such as stunting require strong political commitment to foster collaboration among diverse governmental and non-governmental stakeholders, each contributing unique resources and expertise. Cross-sector collaboration is defined as a strategic partnership among organizations from various sectors that coordinate efforts and pool resources to achieve common objectives. Such collaboration is essential to address multifaceted problems influenced by socio-economic, environmental, and healthcare factors. Evidence indicates that effective cross-sector collaboration enhances program sustainability by ensuring integrated policy implementation, resource optimization, and strengthened accountability mechanisms. Furthermore, these partnerships contribute to increased community engagement and innovation in service delivery, which are crucial for achieving long-term health outcomes.[1,2]

Stunting, or impaired growth in children under five years of age, remains a significant public health concern in many developing countries, including Indonesia. According to the 2024 Indonesian Nutrition Status Survey (Survei Status Gizi Indonesia, SGI), the national stunting prevalence was 19,8 %, a decrease from 21,5 % in 2023,[3] yet still above the government's target of 14,2 % by 20293. Stunting not only reflects inadequate nutrition during early life but also has long-term consequences on human resource development, including diminished cognitive capacity and economic productivity.[4,5,6] Despite various government programs involving the health, education, agriculture, and social sectors, the effective implementation of cross-sector collaboration for stunting prevention faces significant barriers. Several studies reveal that centralized government support and insufficient control over resource allocation hinder effective collaboration. Although the government has strong capacity to manage intersectoral dynamics, collaboration weakens due to limited intensive dialogue among stakeholders. Each sector tends to operate within its narrow domain, even though stunting prevention is a complex issue requiring coordinated and substantial resources.[7] This results in weak program synergy, duplication of activities, and poor accountability. Suboptimal coordination and collaboration among sectors contribute to stagnation or even an increase in stunting rates, adversely impacting population quality of life. These effects extend beyond health outcomes to economic and social dimensions such as increased healthcare costs, reduced productivity, and exacerbated social inequalities. Failure to overcome these challenges threatens progress in human resource development and impedes achievement of the Sustainable Development Goals (SDGs) related to child health and well-being.

Recent literature reviews reveal that most studies focus on sector-specific outcomes of stunting intervention programs,[8,9,10] whereas research examining instruments to measure the quality and impact of cross-sector collaboration remains limited.[11] Furthermore, there is an absence of validated tools adapted to the unique socio-cultural and bureaucratic context of regions such as Gorontalo, Indonesia. This gap underscores the need to develop contextually relevant assessment instruments capable of effectively measuring cross-sector collaboration and supporting ongoing program evaluation.

Aligned with the principles of Public Health 3.0, which emphasize modernizing public health goals through enhanced cross-sector collaboration, this study aims to design, validate, and test the reliability of an instrument assessing cross-sector collaboration in stunting reduction programs in Gorontalo Province. Public Health 3.0 advocates for health departments to engage beyond traditional boundaries by partnering with intra-governmental entities and communities to act as strategic facilitators for improving population health. By developing a comprehensive and contextual measurement tool, this research seeks to identify key indicators of

collaboration and assist stakeholders in improving coordination, program effectiveness, and accountability. The findings are expected to contribute empirically and practically to policy formulation and the implementation of integrated and sustainable stunting interventions. [12]

METHOD

This study employed a mixed-methods approach, combining qualitative and quantitative methodologies, with a cross-sectional design. The qualitative phase focused on developing the cross-sector collaboration assessment instrument for stunting management, while the quantitative phase aimed to test the validity and reliability of the developed instrument. Data collection in the qualitative stage involved Focus Group Discussions (FGDs) and in-depth interviews with key informants selected through purposive sampling. Informants included high-ranking officials directly responsible for stunting management in Gorontalo Province, such as representatives from the BKKBN Gorontalo Provincial Office, the Government and Human Development Division of BAPPEDA, the Provincial Stunting Task Force, the Nutrition Section of the Health Service, Heads of Health Centers, and academic personnel engaged in cross-sector stunting interventions.

Following instrument development, a quantitative survey was conducted targeting the Gorontalo Province Stunting Reduction Acceleration Implementation Team, as mandated by Governor's Decree No. 273/28/VII/2023. Thirty-two respondents, representing various cross-sector agencies with active involvement and expertise in stunting reduction collaboration, participated in the validation phase. The research variables encompassed cross-sector needs (X_1), vision and mission (X_2), context (X_3), partner profiles (X_4), resources (X_5), leadership (Y_1), roles and structure (Y_2), communication (Y_3), partnership functions (Y_4), and performance outcomes (Z). Data collection utilized both paper-based and online questionnaires via Google Forms. Ethical approval was granted by the Health Research Ethics Committee of the Faculty of Public Health, Hasanuddin University, and permission to conduct the study was obtained from the Head of the Gorontalo Provincial National Unity and Politics Agency.

RESULTS

The results of the validity and reliability tests of the instruments compiled can be seen in the following table:

Table 1. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Domain I (Need for Cross-Sector Stunting Reduction)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-sector collaboration input to reduce stunting	The need for cross-sectoral stunting reduction	1.	A cross-sector coordination approach is the best way to address the problem of stunting	0,643	0,000	Valid
		2.	There is a perceived need for cross-sector coordination in addressing stunting and complementary capacities.	0,511	0,003	Valid
		3.	The benefits of a cross-sectoral coordination approach to reducing stunting are clear.	0,379	0,032	Valid
		4.	Stunting data is available and coordinated and can be accessed by every sector that carries out convergence.	0,427	0,015	Valid

Table 2. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Domain II (Cross-Sector Vision and Mission for Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-sector collaboration input to reduce stunting	Cross-Sector Vision and Mission to Reduce Stunting	1.	The cross-sectors have the same vision and mission to establish partnerships.	0,554	0,001	Valid

	2.	There is a common understanding regarding the objectives of cross-sector coordination to reduce stunting, and all sectors are committed to these objectives.	0,598	0,000	Valid
	3.	The goal of cross-sector coordination to reduce stunting is realistic for all sectors and can be achieved.	0,551	0,001	Valid
	4.	Cross-sector coordination to reduce stunting has been well planned to suit the local/community culture.	0,559	0,001	Valid
	5.	This cross-sector coordination to reduce stunting is supported by influential policy leaders and decision makers.	0,691	0,000	Valid

Table 3. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Domain III (Cross-Sector Context of Stunting Reduction)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-sector collaboration input to reduce stunting	Cross-Sectoral Context of Stunting Reduction	1.	The context (economic, political, social and cultural) that is outside the cross-sector of stunting reduction but influences its function, has been considered.	0,532	0,002	Valid
		2.	Factors that can support the success of cross-sector coordination to reduce stunting including institutional factors, personal factors, and factors related to cross-sector coordination itself have been considered.	0,493	0,004	Valid
		3.	Factors that may hinder the success of coordination including institutional factors, personal factors, and factors related to cross-sectoral coordination to reduce stunting have been considered.	0,577	0,001	Valid
		4.	There is a satisfactory level of organizational and political commitment to achieve the goal of cross-sectoral coordination to reduce stunting.	0,438	0,012	Valid
		5.	Political policy support in the regions, oriented towards stunting management programs	0,697	0,000	Valid

Table 4. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province Domain IV (Profile of Stunting Reduction Sector Partners)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-sector collaboration input to reduce stunting	Stunting Reduction Sector Partner Profile	1.	All key sectors (individual, organizational, financial) in the stunting reduction team have been identified.	0,478	0,006	Valid
		2.	There is a history of good relationships between the sectors that play a role in reducing stunting.	0,535	0,002	Valid
		3.	Other sectors have the skills and expertise necessary for collaborative action relevant to partnerships on stunting reduction.	0,773	0,000	Valid
		5.	Partners are willing to share their ideas, resources, influence and strength to achieve the goal of reducing stunting.	0,656	0,000	Valid
		6.	The sectors involved in reducing stunting have the same ideology, interests and approaches.	0,444	0,011	Valid
		7.	There is enough variation among members to have a comprehensive understanding of stunting reduction.	0,319	0,075	Invalid
		8.	Cross-sector stunting reduction is committed and ready to carry out cross-sector coordination activities	0,678	0,000	Valid
		9.	All major sectors have the same perspective on carrying out stunting interventions at the village level.	0,497	0,004	Valid

Table 5. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Domain V (Cross-Sector Resources for Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-sector collaboration input to reduce stunting	Cross-Sectoral Resources for Stunting Reduction	1.	There is investment in cross-sector coordination to reduce stunting in the form of time, personnel, materials, and facilities.	0,772	0,000	Valid
		2.	There are resources available from both internal and external sources to continue cross-sector coordination to reduce stunting.	0,591	0,000	Valid
		3.	Cross-sector coordination to reduce stunting has considered local resources relevant to the partnership function.	0,408	0,020	Valid
		4.	Cross-sector coordination to reduce stunting has adequate and consistent funding.	0,573	0,001	Valid
		5.	There is support from the regional government regarding cross-sector coordination as outlined in the Governor's Regulation/Mayor's Regulation/Regional Regulation.	0,500	0,004	Valid

		No	Item	Pearson Correlation	Signification	Information
		6.	There are human resources available and regular capacity building efforts (training, seminars, etc.) in handling stunting cases/problems.	0,435	0,013	Valid
		7.	Involving resources from both the government and the private sector in efforts to address stunting cases/problems	0,600	0,000	Valid
		8.	Cross-sector empowers available resources to carry out roles in accordance with the main tasks and functions in handling stunting.	0,684	0,000	Valid
		9.	Evaluation of the role of available resources in carrying out the duties and functions of reducing stunting has been carried out in accordance with applicable guidelines.	0,674	0,000	Valid

Table 6. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province Domain VI (Cross-Sector Leadership for Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Collaborative Process to Reduce Stunting	Cross-Sector Leadership for Stunting Reduction	1.	Cross-sector coordination to reduce stunting has well-defined leadership (single leader, joint leader, leadership team, leadership organization).	0,712	0,000	Valid
		2.	Sector leaders have the ability to articulate a vision for reducing stunting so that they can reach a common agreement.	0,753	0,000	Valid
		3.	Cross-sector leaders in stunting reduction have the capacity to foster openness, trust, autonomy, and provide respect.	0,570	0,001	Valid
		4.	Cross-sector leaders in stunting reduction have the capacity to bridge differences and facilitate interactions among partners.	0,554	0,001	Valid
		5.	Cross-sector leaders in stunting reduction have the capacity to share power, plan and supervise work.	0,567	0,001	Valid
		6.	Cross-sector leaders in stunting reduction have the capacity to create space for dialogue if there are obstacles in the work implementation process.	0,443	0,011	Valid
		7.	Cross-sector leaders in reducing stunting are able to translate the needs of each unit that carries out the work.	0,343	0,055	Invalid

Table 7. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Domain VII (Cross-Sector Roles and Structures in Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Collaborative Process to Reduce Stunting	Cross-Sectoral Roles and Structures in Reducing Stunting	1.	Roles, responsibilities, and expectations in terms of stunting reduction by cross-sectors are clearly defined.	0,794	0,000	Valid
		2.	Cross-sectoral collaboration to reduce stunting has the capacity to create strategic alliances and collaborative arrangements across organizational boundaries.	0,760	0,000	Valid
		3.	Sectors see efforts to reduce stunting as part of a collaborative, interdependent effort.	0,754	0,000	Valid
		4.	The way in which cross-sectoral formal roles and structures are structured will provide a sense of ownership and accountability in efforts to reduce stunting.	0,816	0,000	Valid
		5.	Some staff have roles that cross traditional boundaries that exist between agencies or divisions in cross-sector collaboration.	0,691	0,000	Valid
		6.	The administrative, communication, and decision-making structures in this cross-sectoral collaboration to reduce stunting are made as simple as possible.	0,658	0,000	Valid
		7.	The sectors have understanding and respect for each other in terms of efforts to reduce stunting.	0,685	0,000	Valid
		8.	A transparent stunting reduction mechanism is available to manage the financial and other resources brought by each sector into cross-sectoral collaboration.	0,694	0,000	Valid
		9.	Each sector carries out collaborative planning in accordance with the authority of the sector it has in terms of reducing stunting.	0,750	0,000	Valid
		10.	Each sector carries out budget collaboration in accordance with activities planned by cross-sectors.	0,571	0,001	Valid

Table 8. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province Domain VIII (Cross-Sector Communication for Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Collaborative Process to Reduce Stunting	Cross-Sector Communication to Reduce Stunting	1.	Sectors and leaders have many opportunities to communicate *face-to-face*	0,728	0,000	Valid
		2.	Partners have a clear mandate to communicate and promote cross-sectoral coordination to reduce stunting within their respective organizations.	0,810	0,000	Valid

		3.	Communication channels, roles, and expectations regarding stunting reduction from other sectors are clear.	0,670	0,000	Valid
		4.	There are regular opportunities for informal and voluntary contact between staff from various agencies and other cross-sector members regarding stunting reduction efforts.	0,783	0,000	Valid
		5.	There is a formal structure planned to share information and resolve disputes relating to the authority of each sector in efforts to reduce stunting.	0,779	0,000	Valid
		6.	There are planned strategies to ensure that alternative views are expressed in cross-sector collaboration.	0,759	0,000	Valid
		7.	Each sector can communicate stunting management data to form the basis for activity planning.	0,697	0,000	Valid

Table 9. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province Domain IX (Cross-Sector Functions and Partnerships for Reducing Stunting)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Collaborative Process to Reduce Stunting	Function of Cross-Sector Partnerships in Reducing Stunting	1.	Sectors related to efforts to reduce stunting have planned a participatory decision-making system that is accountable, responsive and inclusive.	0,713	0,000	Valid
		2.	Cross-sectoral collaboration to reduce stunting has a clear way to address issues of trust and power sharing among sectors.	0,638	0,000	Valid
		3.	Cross-sectoral collaboration to reduce stunting has guidelines for demonstrating or documenting collective work results in terms of efforts to reduce stunting.	0,788	0,000	Valid
		4.	Sectors recognize that such actions provide added value (rather than duplicating services) for communities, clients, or institutions involved in cross-sectoral collaboration to reduce stunting.	0,710	0,000	Valid
		5.	Cross-sectoral collaboration to reduce stunting ensures that there is an opportunity for strong community involvement in the partnership (community members, specific populations, voluntary organizations).	0,687	0,000	Valid
		6.	There are plans to continue monitoring and evaluating cross-sector coordination to reduce stunting so that learning can occur.	0,732	0,000	Valid

		7.	There is regular monitoring and evaluation regarding the achievement of program targets in each sector.	0,857	0,000	Valid
		8.	There are plans to address structural changes, leadership issues, and communication problems.	0,622	0,000	Valid
		9.	The plan is to ensure widespread dissemination of monitoring and review findings among sectors.	0,806	0,000	Valid
		10.	There is a clear and reasonable "exit strategy"	0,737	0,000	Valid

Table 10. Results of Development and Validity Testing of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Results Domain 1 (Situation Analysis)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance Result 1: Situation Analysis	1.	Cross-sectoral recommendations have a list of priority locations (handling focus) resulting from an analysis of the distribution of stunting and the scope of intervention.	0,725	0,000	Valid
		2.	Cross-sectoral recommendations have a list of interventions that require priority handling resulting from analysis of intervention coverage data, intervention outcome indicators and the availability of programs and activities.	0,794	0,000	Valid
		3.	Cross-sector has a list of obstacles faced in service management to target 1000 HPK Households along with key factors and alternative solutions covering 4 aspects: 1. The process of planning, budgeting, monitoring and supervising services 2. Design of intervention implementation/ program implementation 3. Availability and Quality of Human Resources Implementers 4. Obstacles to accessing services from the perspective of beneficiary groups	0,742	0,000	Valid
		4.	Cross-sector has a recommendation matrix that produces at least the following: 1. Improvement of budget allocation management or improvement of intervention location targets according to the distribution of stunting prevalence and gaps in intervention coverage. 2. Improvement of service management to ensure services reach 1000 HPK Households 3. Improvement of coordination between OPDs and between districts/cities and villages 4. Improvement of stunting data management and intervention coverage	0,742	0,000	Valid

Table 11. Results of Development and Validity Testing of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Result Domain 2 (Preparation of Performance Plans)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance result 2: Preparation of Performance Plan	1.	Cross-sector has a matrix of activity recommendations based on the results of problem analysis.	0,787	0,000	Valid

	2.	Cross-sector has an activity plan matrix based on the recommendation matrix	0,883	0,000	Valid
	3.	Cross-sector has a matrix of activity plans for each locus village.	0,668	0,000	Valid
	4.	Cross-sectoral shows progress in implementing recommendations from the results of the situation analysis in the current year.	0,756	0,000	Valid
	5.	Cross-sector integration of Activity Plans into planning and budgeting documents	0,521	0,002	Valid

Table 12. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province Performance Results Domain 3 (Stunting Discussion)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance result 3: Stunting Discussion	1.	Regional leaders and stakeholders demonstrated active participation during the stunting discussion activities, which were outlined in the minutes/ minutes of the results of the discussion and documentation of the activities.	0,624	0,000	Valid
		2.	Stunting Discussion is able to produce agreements/commitments that include 1. Declaration of the District/City Government in reducing stunting 2. Public Commitment to Reducing Stunting 3. Activity Plan Agreement 4. The role of villages and sub-districts to increase the integration of interventions at the village level, (Written in the Minutes/ Minutes of the Results of the Discussion and Attendance List)	0,542	0,001	Valid
		3.	Conducting publication/media socialization of the process and agreements resulting from stunting discussions in districts/cities	0,483	0,005	Valid
		4.	Stunting discussions are carried out systematically and in stages from village level to district level.	0,647	0,000	Valid

Table 13. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Result Domain 4 (Regent/Mayor Regulations on Village/Sub-district Authority)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance result 4: Regent/Mayor Regulation on Village/Sub-district authority	1.	There is a copy of the Regent/Mayor Regulation regarding the role of villages and communities in reducing stunting, which at least regulates: 1. Village authority in implementing nutritional interventions through the Village Budget 2. The role of sub-districts in supporting village government 3. Support for mobilization and provision of incentives for human development cadres	0,556	0,001	Valid

			4. Coordination of the Village Government with related OPDs and program facilitators or assistants 5. The role of community institutions (Posyandu, PAUD, PKK, and others) 6. Support for public campaigns and behavior change communication at the village level			
		2.	Cross-sector has a Report on the Implementation of Socialization Activities/Copy of Minutes and Follow-up Agreement on the Results of Socialization of the Regent's Regulation/Mayor's Regulation on the Role of Villages	0,759	0,000	Valid

Table 14. Results of Development and Validity Testing of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Result Domain 5 (Human Development Cadre Development)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance Result 5: Development of Human Development Cadres	1.	Cross-sector has a report on the coverage of villages/sub-districts that have human development cadres, proven by the Decree of the Village Head/Sub-district Head regarding the Appointment of KPM	0,724	0,000	Valid
		2.	Cross-sector has a village/sub-district coverage report with certainty of operational cost support (Village Head/Sub-district Head Decree regarding KPM operational budget)	0,718	0,000	Valid
		3.	KPM recruitment has been carried out in accordance with the Minister of Village Regulation	0,695	0,000	Valid
		4.	KPM competency is in accordance with its function	0,662	0,000	Valid
		5.	KPM has played a good role in bridging the implementation of interventions by each sector.	0,658	0,000	Valid
		6.	There are evaluation instruments used to capture the KPM performance evaluation.	0,631	0,000	Valid

Table 15. Results of Development and Validity Testing of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Result Domain 6 (Stunting Data Management System)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance result 6: Stunting Data Management System	1.	Cross-sectors have followed up on the list of data that will be prioritized for improvement.	0,782	0,000	Valid
		2.	Cross-sector has a data management system improvement plan based on assessment results	0,816	0,000	Valid
		3.	Stunting data management can be accessed by every sector that plays a convergence role.	0,712	0,000	Valid

Table 16. Results of Development and Validity Test of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Results Domain 7 (Measurement and Publication of Stunting Data)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance result 7: Measurement and Publication of Stunting Data	1.	Cross-sector districts/cities are able to carry out stunting data measurement analysis	0,699	0,000	Valid
		2.	Cross-sector District/City publishes the results of the latest stunting data analysis	0,685	0,000	Valid

Table 17. Results of Development and Validity Testing of Cross-Sector Collaboration Assessment Instruments for Handling Stunting in Gorontalo Province Performance Domain 8 (Annual Performance Review)

Variables	Domain	No	Item	Pearson Correlation	Signification	Information
Cross-Sector Output for Stunting Reduction	Performance outcome 8: Annual Performance Review	1.	Cross-sector districts/cities are able to draw lessons from the implementation of programs/activities in the last year based on the following data/information: 1.regional annual stunting reduction activity plan 2.stunting intervention programs and activities 3.The scope of priority interventions handled in the last year (according to the results of the situation analysis) 4.Assessment of which programs are effective and ineffective along with recommendations for future improvements. 5.Implementation of 8 Integration/Convergence Actions	0,738	0,000	Valid
		2.	Cross-sector districts/cities agree on follow-up actions on performance review results	0,789	0,000	Valid
		3.	Cross-sector districts/cities conduct performance reviews which include: 1.Review of target output/outcome achievements (targets and realization) 2.Review of budget absorption (budget and realization) 3.Review of problems/obstacles faced during the current year, solutions needed to overcome these problems/obstacles, and conclusions regarding the programs/activities reviewed (continued or replaced with other programs/activities)	0,734	0,000	Valid
		4.	Cross-sectoral review of the implementation of follow-up actions on recommendations given in the performance assessment by the province	0,734	0,000	Valid

Table 18. Results of the Reliability Test of the Cross-Sector Collaboration Assessment Instrument for Handling Stunting in Gorontalo Province

No	Domain	Cronbach's Alpha	Reliability
1	The need for cross-sector stunting reduction	0,613	Moderate reliability
2	Cross-Sector Vision and Mission to Reduce Stunting	0,882	Very good reliability
3	Cross-Sectoral Context of Stunting Reduction	0,828	Good Reliability
4	Cross-Sector Partner Profile for Stunting Reduction	0,852	Very good reliability
5	Cross-Sectoral Resources for Stunting Reduction	0,868	Very good reliability
6	Cross-Sector Leadership for Stunting Reduction	0,901	Very good reliability
7	Cross-Sectoral Roles and Structures in Reducing Stunting	0,954	Excellent reliability

8	Cross-Sector Communication to Reduce Stunting	0,940	Very good reliability
9	Function of Cross-Sector Partnerships in Reducing Stunting	0,945	Very good reliability
10	Cross-Sector Performance in Reducing Stunting	0,981	Excellent reliability
	Situation Analysis	0,896	Very good reliability
	Preparation of Activity Plan	0,931	Very good reliability
	Stunting Discussion	0,943	Very good reliability
	Regent/Mayor Regulation on Village/Sub-district Authority	0,817	Very good reliability
	Human Development Cadre Development	0,936	Very good reliability
	Stunting Data Management System	0,927	Very good reliability
	Stunting Data Measurement and Publication	0,971	Excellent reliability
	Annual Performance Review	0,988	Excellent reliability
Average		0,876	Very good reliability

DISCUSSION

This study produces an instrument that can be used to assess the input, process, and output of cross-sector collaboration in handling stunting in Gorontalo Province. In addition, this study identified 10 domains in assessing cross-sector collaboration in handling stunting, namely the need for cross-sector stunting reduction (4 items), cross-sector vision and mission for stunting reduction (5 items), cross-sector context for stunting reduction (5 items), cross-sector partner profile for stunting reduction (8 items), cross-sector resources for stunting reduction (9 items), cross-sector leadership for stunting reduction (7 items), cross-sector roles and structures for stunting reduction (10 items), cross-sector communication for stunting reduction (7 items), cross-sector partnership functions for stunting reduction (10 items), and cross-sector performance for stunting reduction (30 items).

The input variable for cross-sector collaboration in handling stunting consists of 5 domains that are broken down into 31 items. Of the 31 items, 30 items show valid data (p-value <0,05), and there is 1 invalid item, namely in the partner profile domain for the stunting reduction sector, namely the item "there is enough variation among members to have a comprehensive understanding of stunting reduction" (p-value = 0,075). The cross-sector collaboration process variable for handling stunting consists of 4 domains that are broken down into 34 items. Of the 34 items, 33 items are declared valid (p-value <0,05) and 1 item is invalid. The invalid item is part of the cross-sector leadership domain for stunting reduction, namely the item "cross-sector leaders in stunting reduction are able to translate the needs of each unit that does the work" (p value = 0,055). The last variable is the results of cross-sector performance in stunting reduction which consists of 8 domains and 30 items. The results of the validity test show that all items in these 8 domains are declared valid (p-value <0,05). Validity testing in a research is used to measure accuracy. In this research, the instrument built shows accuracy or validity in the process of measuring cross-sector coordination in handling stunting in Gorontalo Province.

In the instrument reliability test, 2 domains showed extraordinary reliability results (>0,9), namely the domain of cross-sector roles and structures for stunting reduction and the domain of cross-sector performance for stunting reduction; 6 domains of very good reliability (0,8-0,9), namely the domain of cross-sector vision and mission for stunting reduction, the domain of cross-sector partner profiles for stunting reduction, the domain of cross-sector resources for stunting reduction, the domain of cross-sector leadership for stunting reduction, the domain of cross-sector communication for stunting reduction, and the domain of cross-sector partnership functions for stunting reduction; 1 domain of good reliability (0,7-0,8), namely the domain of cross-sector context for stunting reduction; and 1 domain of moderate reliability (0,5-0,6), namely the domain of needs for cross-sector stunting reduction. Overall, the reliability value of the cross-sector collaboration assessment instrument for stunting reduction in Gorontalo Province is 0,8764 or very good reliability, which means that the cross-sector collaboration assessment instrument for handling stunting in Gorontalo Province is consistent after being carried out repeatedly on subjects and under the same conditions.

Stunting in infancy is important to prevent. Several studies have linked stunting to developmental delays, low income, and chronic diseases in adulthood.[13,14,15,16,17,18,19] Public health is not only the responsibility of the health sector. Addressing health problems requires political will to involve all government components that contribute to health.[20] The mandate to build cross-sector coordination to address health problems has been agreed upon in the agenda of the 8th Global Conference on Health Promotion in Helsinki, Finland 10-14 June 2013. In the conference, one of the points called for by conference participants to UN member states was that the government strengthen the capacity of the Ministry of Health to involve other government sectors through

leadership, partnership, advocacy, and mediation to achieve better health.[21]

In order to accelerate the reduction of stunting in Indonesia, the government has established a National Strategy for the Acceleration of Stunting Reduction[22] which is strengthened by Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Stunting Reduction.[23] The government has set an intermediate target to be achieved of 14 % (fourteen percent) by 2024. Efforts to reduce stunting have begun since 2011 with Indonesia's joining the Global Scaling Up Nutrition (SUN) movement. Cross-sector coordination in efforts to reduce stunting has generally begun to be seen well under the umbrella of the National Strategy for the Acceleration of Stunting Reduction and Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Stunting Reduction, as seen by the frequent implementation of stunting discussions at all levels, from the center to the village, reviewing the achievements and implementation of the program. Multisectoral collaboration is essential for the successful achievement of the goal of reducing stunting prevalence as has been done by Ethiopia in its efforts to reduce stunting in this case by strengthening multisectoral nutrition coordination to harmonize multisectoral responses and for efficient resource mobilization and utilization.[24] Support from development partners and community mobilization in India, has been shown to contribute to improved programs for health, poverty, and sanitation.[25]

Stunting is a problem caused by multiple factors, so its handling requires cross-sector cooperation/coordination. In Indonesia, cross-sector coordination or partnership programs in handling stunting are one of the strategies to accelerate nutrition improvement, stated in the 2015-2019 RPJMN planning document, point seven, namely strengthening cross-sector roles in the framework of sensitive and specific interventions supported by increasing the capacity of the central, provincial, and district/city governments in implementing food and nutrition action plans. An instrument model used to assess the function of cross-sector partnerships is based on the Bergen Model on collaborative functions as a theoretical framework. This theory is the basis for assessing findings related to the processes that support and hinder the functioning of health promotion partnerships. Based on Bergen's theory, there are nine core elements that form a positive partnership process that can inform best practices, namely (i) developing a shared mission that is aligned with the goals of individual or institutional partners; (ii) involving broad participation from various partners and a balance of human and financial resources; (iii) combining leadership that inspires trust, confidence, and inclusiveness; (iv) monitoring how communication is perceived by partners and adjusting accordingly; (v) balancing formal and informal roles/structures depending on the mission; (vi) building trust among partners from the beginning and throughout the partnership; (vii) ensuring a balance between maintenance and production activities; (viii) considering the impact of political, economic, cultural, social, and organizational contexts; and (ix) evaluating partnerships for continuous improvement.[26] With good cross-sector collaboration, it is hoped that stunting management in Indonesia can be more integrated and run as expected.

CONCLUSIONS

The primary objective of this research was to develop a set of valid and reliable indicators for evaluating cross-sector collaboration within the stunting management program. At present, there is a notable absence of standardized instruments specifically designed to assess the effectiveness of cross-sector coordination in stunting interventions in Gorontalo Province. Through this study, a comprehensive assessment tool comprising ten distinct domains and ninety-five items was systematically constructed. The developed instrument demonstrated strong validity and reliability, ensuring precise and consistent measurement of collaborative efforts across sectors in the context of stunting management. These findings provide a foundational framework that can be utilized as a reference point for future evaluations of cross-sector partnerships in this domain. Nonetheless, it is advisable that subsequent research conducts further testing of the instrument on larger and more diverse populations to enhance its generalizability and robustness. Moreover, the current instrument offers a valuable basis upon which researchers may build more expansive tools tailored to broader applications in assessing multi-sectoral collaboration in health-related programs.

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CONFLICT OF INTEREST

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