Development of e-Resto Innovation To Strengthen Cross-Sectoral Collaboration Commitment In Efforts To Control Child Wasting

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ARTICLE INFO	ABSTRACT
	Wasting among children remains a major global public health problem. Strengthening cross-sector collaboration is considered an effective approach to address this issue. This study aimed to analyze the development of the e-RESTO Balita innovation in strengthening cross-sector collaboration commitment in efforts to control wasting. This study employed a quantitative pre–post test design involving 20 participants representing cross-sector stakeholders in the Banyuanyar Community Health Center work area. Data were collected using questionnaires measuring application development and cross-sector collaboration commitment, supported by interviews. Statistical analysis was performed using the Wilcoxon test. The findings showed that the development of the e-RESTO Balita application significantly improved and strengthened cross-sector collaboration commitment in efforts to control wasting (p < 0.05). The development of the e-RESTO Balita innovation was effective in enhancing cross-sector collaboration in the management of child malnutrition. Future development of the system is recommended through the integration of a more user-friendly Android-based application to facilitate faster and easier access for stakeholders.

1. **INTRODUCTION**

Child wasting is a form of acute malnutrition characterized by low weight-for-height, indicating that a child is too thin for their height due to recent and severe weight loss or inadequate nutritional intake. The condition is commonly assessed using the weight-for-height index (Thurstans et al., 2022). Globally, an estimated 45.4 million children, or approximately 8% of all children under five, are affected by wasting (Mertens et al., 2023). At the local level, the prevalence of child wasting in the Banyuanyar Community Health Center area increased from 4.28% in 2021 to 6.31% in 2022 (e-PPGBM, 2022). This issue requires urgent attention because child wasting not only affects children's immediate health but also impairs growth and increases the risk of morbidity and mortality (Headey & Ruel, 2022). Malnutrition, including wasting and stunting, is a complex public health problem that cannot be addressed by a single sector or institution alone (Chiavacci, 2022). Cross-sector collaboration has been recognized as an effective strategy for addressing child malnutrition in Indonesia (Goi et al., 2025). By involving multiple stakeholders, prevention and intervention programs targeting wasting and stunting can be implemented in a more holistic and integrated manner (Sadler et al., 2022). However, the e-Resto Balita innovation—an electronic collaboration system between health workers and cross-sector stakeholders for preventing child nutritional problems—has not yet been fully effective in controlling these conditions and therefore requires further development. The lack of cross-sectoral roles and insufficient monitoring highlight the need to strengthen this innovation. The proposed development of e-Resto Balita involves a digital platform in the form of a Google Spreadsheet dashboard that records the identity and nutritional status of undernourished children. This system facilitates cross-sector access to data, enabling stakeholders to identify affected children, track the year of diagnosis and treatment, and coordinate cross-sector interventions within the service area (Giuffrè & Shung, 2023).

However, the current implementation of the e-Resto Balita application remains limited in its effectiveness facilitating optimal cross-sector involvement in the management of malnourished children. Although the application has been introduced to support collaboration among health workers and related sectors, its use has not yet fully supported coordinated interventions. Therefore, improvements to the e-Resto Balita system are necessary to enhance its functionality in managing cases of child malnutrition in the Banyuanyar Community Health Center work area. One proposed improvement is the integration of information notification features that alert stakeholders when new data are entered or updated in the system. In addition, clearer descriptions of cross-sector roles and responsibilities within the application are needed so that each sector can understand the tasks they are expected to perform and monitor the extent of their participation in addressing child malnutrition (Karim & Ariatmanto, 2024). Accordingly, this study aims to strengthen cross-sector commitment in the management of malnourished children through the development of the e-Resto Balita application, as well as to identify implementation barriers and clarify the respective roles of each sector involved in addressing child malnutrition within the working area of the Banyuanyar Community Health Center.

2. METHODS

2.1 Research design

This study used analytical observational research with pre- and post-test methods (Suhron, 2024).

2.2 Setting and Sample/Participants

The population were 20 representatives from Cross Sectors in the Banyuanyar Community Health Center. The determined sample size met the inclusion criteria. The inclusion criteria were: (1) cross-sector representatives with authority related to sub-district level policies, (2) knowledge of the e-Resto Balita innovation, and (3) the ability to access the e-Resto Balita system. The sampling technique used in this study was purposive sampling, in which researchers selected participants based on specific characteristics relevant to the research objectives (Weyant, 2022). The independent variable in this study was the development of the e-Resto toddler application while the dependent variable was cross-sector collaboration commitment.

2.3 Intervention

Providing intervention with e-RESTO INOVASI to 20 cross-sector stakeholders for 1 month. The pretest for measuring commitment was given when the cross-sector stakeholders had filled out the questionnaire given at the beginning of the month, then the commitment stakeholders were given intervention for 1 month, starting with a 1-week innovation socialization involving village and community components, after which a 3-week innovation trial was conducted for the response and implementation of this innovation, then after exactly 1 month a posttest for measuring commitment was conducted with the same questionnaire to see changes in the pretest and posttest.

2.4 Measurement and Data Collection

Data were collected from cross-sector stakeholders within the Banyuanyar Community Health Center work area. The research instrument was a structured questionnaire designed to obtain information directly from the research respondents which were measured using a five-point Likert scale: 1 = strongly disagree, 2= disagree, 3 = Neither agree nor disagree, 4= agree, 5 = strongly disagree. Univariate analysis was conducted to describe and summarize each variable using descriptive statistics presented in tables or graphs.

Questionnaire Research Instrument Test

Validity testing was used to measure the validity of a research questionnaire. Validity testing was carried out using the Pearson bivariate correlation formula with the SPSS program tool. Validity testing is carried out by comparing r count with> r table. If r count > r table, then the questionnaire was declared as valid, and vice versa, if r count < r table, then the questionnaire was declared as invalid. In this questionnaire, data from 20 respondents were used for the validity test, and in the r table (simple correlation coefficient) with 20 respondents and a significance level of 0.05, the r table is 0.4227. The results of the validity test on this research questionnaire are presented in the following table

Table 1. Results of the Validity Test of the Closed-End Questions of the Independent Variable (Development of the e-Resto Application)

Item	r value	r table (0,05 dan df = N – 2)	Result
B1	0,854	0,4227	Valid
B2	0,763	0,4227	Valid
B3	0,776	0,4227	Valid
C1	0,787	0,4227	Valid
C2	0,841	0,4227	Valid
C3	0,829	0,4227	Valid

In addition to validity testing, reliability testing was conducted to assess the consistency of the questionnaire used in this study. Reliability testing evaluates the extent to which an instrument produces consistent results when measurements are repeated over time. In this study, reliability was assessed using Cronbach's Alpha (α). The results showed that the independent variable, namely the development of the e-Resto Balita application, had a Cronbach's Alpha value of 0.714, while the dependent variable, cross-sector collaboration commitment, had a Cronbach's Alpha value of 0.744. Since both values exceeded the minimum reliability threshold of 0.60, the instruments used in this study were considered reliable.

2.5 Data analysis

Bivariate analysis was performed to determine whether there was a significant difference in cross-sector collaboration commitment before and after the implementation of the e-Resto Balita innovation. the Wilcoxon signed-rank test was applied.

2.6 Ethical considerations

The research was conducted. The ethical feasibility test, with number 2899/KEPK/UNIV-NHM/EC/VIII/2025, was carried out at NHM University in August 2025.

3. RESULTS

Table 2. Characteristics of sample distribution (N=20)

Characteristics (n=20)	N =%
Gender	
Male	17 (85)
Female	3 (15)
Employment	
Full-time/part-time	6 (30)
Unemployed/retired	14 (70)
Education	
Primary	6 (30)

Middle	10 (50)
High	4 (20)
	Mean±SD
	Max-Min
Age (M)	38±12.7
	(38-33)

Table 1 presents that the majority of respondents were male (17 participants, 85%), while most respondents were unemployed or retired (14 participants, 70%), and half of the respondents had a middle-level education (10 participants, 50%). Meanwhile, the mean age of respondents was ± 38±12.7 years.

Bivariate Data Analysis

Table 3. Differences in Development and Commitment (N=20)

Variable	Pre	Post	P-Value
	Mean±SD Max-Min	Mean±SD Max-Min	
Development	13.27±0.41 (12-2)	21.50±1.21 (22-10)	0,001
Commitment to Cross-Sector Collaboration	12.12±0.732 (6-2)	23.21±0.411 (24-12)	0,001
Uji Wilcoxon Test P-Value	0,000		

Source: Pratama Data 2025

Based on the results presented above, before developing innovations in implementing e-Resto for strengthening cross-sector collaboration in wasting control efforts, the mean score for the innovation development indicator was 13.27 ± 0.412, while the mean score for the cross-sector collaboration commitment indicator was 12.12±0.732. After the implementation of the e-Resto Balita innovation, the mean score for the innovation development indicator increased to 21.50 ± 1.421, and the mean score for the commitment indicator increased to 23.21 ± 0.411.

The results of the Wilcoxon signed-rank test showed a p-value of 0.001 (< 0.05), indicating a statistically significant difference in both innovation development and cross-sector collaboration commitment before and after the implementation of the e-Resto Balita innovation in efforts to control child wasting.

4. DISCUSSION

The results of this study showed a significant difference in cross-sector collaboration commitment before and after the development of the e-Resto Balita application innovation. Although the initial version of the e-Resto Balita application had already been implemented to facilitate coordination between cross-sector stakeholders and health workers at the Banyuanyar Community Health Center, the development of the application further improved its effectiveness in supporting collaborative efforts to address child malnutrition. These findings are consistent with previous studies indicating that

innovation and organizational growth are closely related to digital transformation. Organizations increasingly adopt digital technologies as a strategic approach to improve service quality and operational efficiency (Alnasser & Yi, 2023). Furthermore, organizations that successfully implement digital transformation are better positioned to adapt and remain competitive in the digital era, including those in the healthcare sector (Milwan & Sunarya, 2023). The development of the e-Resto Balita application therefore provides an important platform to facilitate cross-sector coordination in managing cases of stunting and wasting within the Banyuanyar Community Health Center work area. Previous research has demonstrated that digital transformation in the health sector can improve service outcomes, enhance cost efficiency in human resources, and promote collaboration between government institutions and the private sector in community empowerment initiatives (Marissa et al., 2024). In addition, policymakers require accurate and timely information to support evidence-based decision-making, making digital transformation in government services increasingly important (Prasetyo et al., 2023). Digital platforms such as the e-Resto Balita system can therefore support more efficient monitoring, coordination, and intervention in addressing child malnutrition. To further enhance the effectiveness of this innovation, several improvements are recommended, including the integration of notification alert features to inform stakeholders when data are updated and broader dissemination of the application through social media or other communication channels. These improvements may strengthen stakeholder engagement and optimize cross-sector collaboration. Overall, digital transformation in the healthcare sector has been shown to improve service delivery, increase efficiency in resource utilization, and strengthen collaboration between governmental and non-governmental stakeholders. Such developments can support a more efficient, responsive, and secure digital health governance system for addressing public health challenges, including child malnutrition (Nathalie et al., 2023).

The results of the cross-sector collaboration commitment pre-test questionnaire were obtained from 20 respondents before the development of the e-Resto Balita application. The questionnaire consisted of three closed-ended questions measured using a Likert scale and two open-ended questions. The responses indicated that the majority of respondents (>50%) expressed neutral or agree responses, suggesting that cross-sector collaboration had already been established prior to the development of the application. However, six respondents (30%) perceived that cross-sector collaboration was still ineffective in addressing malnutrition cases within the Banyuanyar Community Health Center work area. This finding suggests that although collaboration mechanisms existed, their implementation had not yet fully supported effective coordination in managing cases of child malnutrition. Previous research has emphasized that cross-sector commitment in controlling malnutrition involves agreements and active participation among multiple stakeholders outside the health sector, working collaboratively in a coordinated manner to prevent, manage, and monitor malnutrition cases (Akseer et al., 2022). In this context, partnerships refer to collaborative relationships between individuals, groups, and organizations that interact and coordinate with one another to achieve shared goals (Komarulzaman et al., 2023). Furthermore, the involvement of all relevant stakeholders is considered a key strategic factor in supporting efforts to reduce stunting and manage wasting among children. Cross-sector collaboration in meeting children's nutritional needs

requires the participation of various sectors, including health, social services, education, and local government institutions. Such collaboration can improve access to health services and strengthen preventive interventions aimed at addressing child malnutrition and supporting optimal child growth and development (Askar et al., 2023).

The results of the post-test questionnaire on cross-sector collaboration commitment after the e-Resto Balita application showed that all cross-sectors were willing to provide assistance in the form of data and information, human resources, funding, community outreach and education, policy support (sub-district heads and village heads), and social assistance. As for the summary of questions on obstacles faced in cross-sector collaboration related to the e-Resto Balita application; the data has been updated, application errors have been minimized, there is a tutorial on how to use the application, there is a notification after the data is updated, the action plan to be carried out is discussed in the cross-sector group, there are detailed roles and knowing what to do after knowing there is a malnutrition patient. In this case, the division of roles in the partnership is the most important thing so that each partner knows what role or task they must carry out in overcoming the problem, and based on the results of interviews with informants, it was found that each informant knew what their respective roles and functions were (Komarulzaman et al., 2023). by other research that The forms of commitment made by cross-sectors, namely; Allocating funds to accelerate stunting reduction and control of wasting cases, can be in the form of village funds if in the village, Supporting activities/programs with the community, Building collaboration with cadres, and health centers, and Facilitating and providing infrastructure to support activities or programs to control wasting cases in their area (Kurniawan, 2024). Cross-sectoral collaboration is essential in order to improve the quality of health services. Because cross-sectoral involvement allows for better monitoring of various health service activities and the quality of public health services (Siswati et al., 2022). Therefore, this is crucial as a strategic step to improve service quality. This research is in line with the statement that the program to accelerate stunting reduction does not only rely on the role of the local government, but also provides room for movement to other sectors (Amalia et al., 2022) .

5. CONCLUSION

The development of the e Resto Balita innovation application can facilitate cross-sector coordination in handling stunting and wasting cases in the Banyuanyar Community Health Center work area. The commitment to cross-sector collaboration has been more effective since the e-restaurant application for children was developed to handle cases of malnutrition in the Banyuanyar Community Health Center work area. Development of the e-Resto application for children can increase and strengthen the commitment to cross-sector collaboration.

6. ACKNOWLEDGMENTS

7. REFERENCES

Akseer, N., Tasic, H., Nnachebe Onah, M., Wigle, J., Rajakumar, R., Sanchez-Hernandez, D., Akuoku, J., Black, R. E., Horta, B. L., Nwuneli, N., Shine, R., Wazny, K., Japra, N., Shekar, M., & Hoddinott, J. (2022). Economic costs of childhood stunting to the private sector in low- and middle-income countries. *EClinicalMedicine*, *45*, 101320. https://doi.org/10.1016/j.eclinm.2022.101320

Alnasser, N. S., & Yi, L. J. (2023). Strategies applied by different arts and cultural organizations for their audience development: A comparative review. *Heliyon*, *9*(5), e15835. https://doi.org/10.1016/j.heliyon.2023.e15835

Amalia, R., Setiarsih, D., Putri, F. K., & Viantry, P. (2022). Factors to accelerate the reduction of stunting cases in Jombang regency, with optimal convergence actions and cross sectoral effort. *Bali Medical Journal*, *11*(3), 45–57.

Askar, Ramli, A. N. A., Rahman, N., & Niswaty, R. (2023). The Implementation of Cross-Sectoral Activities Convergence Action in Stunting Handling in Sinjai District. *Sosiohumaniora*, *25*(2), 246–256. http://journal.unpad.ac.id/sosiohumaniora/article/view/46182/20575

Chiavacci, S. J. (2022). The economic costs of chronic wasting disease in the United States. *PLOS ONE*, *17*(12), e0278366. https://doi.org/10.1371/journal.pone.0278366

e-PPGBM. (2022). *Prevalence of wasting among children in Banyuanyar Community Health Center*.

Giuffrè, M., & Shung, D. L. (2023). Harnessing the power of synthetic data in healthcare: innovation, application, and privacy. *Npj Digital Medicine*, *6*(1), 186. https://doi.org/10.1038/s41746-023-00927-3

Goi, M., Salmah, A. U., Jafar, N., Ilham, A. A., Stang, S., Safar, M., & Mallongi, A. (2025). Cross- Sector Collaboration in Addressing Stunting in Indonesia. *Pharmacognosy Journal*, *16*(6), 1424–1430. https://doi.org/10.5530/pj.2024.16.229

Headey, D. D., & Ruel, M. T. (2022). Economic shocks predict increases in child wasting prevalence. *Nature Communications*, *13*(1), 2157. https://doi.org/10.1038/s41467-022-29755-x

Karim, H., & Ariatmanto, D. (2024). Methods for Development Mobile Stunting Application: A Systematic Literature Review. *Sinkron*, *9*(1), 244–257. https://doi.org/10.33395/sinkron.v9i1.13123

Komarulzaman, A., Andoyo, R., Anna, Z., Ghina, A. A., Halim, P. R., Napitupulu, H., ... & Andriani, A. (2023). (2023). Achieving zero stunting: A sustainable development goal interlinkage approach at district level. , 15(11), 8890. *Sustainability*, *15*(11), 8890–8900.

Komarulzaman, A., Andoyo, R., Anna, Z., Ghina, A. A., Halim, P. R., Napitupulu, H., Karunia, M. R., & Andriani, A. (2023). Achieving Zero Stunting: A Sustainable Development Goal Interlinkage Approach at District Level. *Sustainability*, *15*(11), 8890. https://doi.org/10.3390/su15118890

Kurniawan, F. (2024). The Influence of Essential Health Efforts on the Success of the Stunting Program through the Work Commitment of Health Workers at the Kendari City Health

Center. *Frontiers in Health Informatics*, *13*(3), 17–28.

Marissa Marissa, Okki Adittio Ricatd Leviya, Arzaq Fikrian Zahrawan, Meta Mukhsinina Purnama, Purwadhi Purwadhi, & Rian Andriani. (2024). Hospital Management on Stunting Intervention for Economic Growth Acceleration Toward the Golden

Indonesia 2045. *The 2nd International Conference on Economic Issues (ICONES 2024)*, *1*(1), 269–296.

Mertens, A., Benjamin-Chung, J., Colford, J. M., Hubbard, A. E., van der Laan, M. J., Coyle, J., Sofrygin, O., Cai, W., Jilek, W., Rosete, S., Nguyen, A., Pokpongkiat, N. N., Djajadi, S., Seth, A., Jung, E., Chung, E. O., Malenica, I., Hejazi, N., Li, H., … Yori, P. P. (2023). Child wasting and concurrent stunting in low- and middle-income countries. *Nature*, *621*(7979), 558–567. https://doi.org/10.1038/s41586-023-06480-z

Milwan, & Sunarya, A. (2023). Stunting Reduction in Indonesia: Challenges and Opportunities. *International Journal of Sustainable Development and Planning*, *18*(7), 2223–2231. https://doi.org/10.18280/ijsdp.180727

Nathalie, C. V., Gunawan, C., Febrianne, F., Christiawan, H., Lukmarda, J. W., Azzahra, K., ... & Andryani, N. A. C. (2023). Digital Innovation Approach for Stunting Knowledge and Awareness Development in Society. *In 2023 5th International Conference on Cybernetics and Intelligent System (ICORIS) IEEE*, *3*(4), 1–8.

Prasetyo, A., Noviana, N., Rosdiana, W., Anwar, M. A., Hartiningsih, Hendrixon, Harwijayanti, B. P., & Fahlevi, M. (2023). Stunting Convergence Management Framework through System Integration Based on Regional Service Governance. *Sustainability*, *15*(3), 1821. https://doi.org/10.3390/su15031821

Sadler, K., James, P. T., Bhutta, Z. A., Briend, A., Isanaka, S., Mertens, A., ... & Wells, J. C. (2022). How can nutrition research better reflect the relationship between wasting and stunting in children? Learnings from the Wasting and Stunting project. *The Journal of Nutrition*, *152*(22), 2645–2651.

Siswati, T., Iskandar, S., Pramestuti, N., Raharjo, J., Rubaya, A. K., & Wiratama, B. S. (2022). Drivers of Stunting Reduction in Yogyakarta, Indonesia: A Case Study. *International Journal of Environmental Research and Public Health*, *19*(24), 16497. https://doi.org/10.3390/ijerph192416497

Suhron, M. (2024). *Public Health Epidemiology Research Book*.

Thurstans, S., Sessions, N., Dolan, C., Sadler, K., Cichon, B., Isanaka, S., Roberfroid, D., Stobaugh, H., Webb, P., & Khara, T. (2022). The relationship between wasting and stunting in young children: A systematic review. *Maternal & Child Nutrition*, *18*(1). https://doi.org/10.1111/mcn.13246

Tidd, J. (2023). Managing innovation. *IEEE Technology and Engineering Management Society Body of Knowledge (TEMSBOK)TEMSBOK*, *3*(23), 95-108.

Weyant, E. (2022). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th Edition. *Journal of Electronic Resources in Medical Libraries*, *19*(1–2), 54–55. https://doi.org/10.1080/15424065.2022.2046231.