An Idea Health Journal
ISSN (Online) 2797-0604
Volume 5, Issue 03, 2025

Strengthening Primary Health Services for Child Nutrition Interventions in Limited Access Area: A Cross-Sectional Study at Seko Health Center

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A R T I C L E I N F O

Article History:
Received :25-04-2025
Revised :25-05-2025
Accepted :10-06-2025

Keywords :
Limited Access Area,Primary Health Care,Child Nutrition

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A B S T R A C T

Background: One of the government's policies to address nutritional problems is the strengthening of primary health services through the Integrated Health Service Post (*Posyandu*) program. This study aims to to analyze the strengthening of primary health services in the implementation of child nutrition interventions in the limited-access area of the Seko Health Center.Method: A quantitative research design with a cross-sectional approach was employed. The study sample consisted of 73 mothers of toddlers, selected using a simple random sampling technique. Data were collected using a structured questionnaire, and bivariate analysis was performed to examine the strengthening of primary health services for child nutrition interventions. The results showed that the variables of tangible evidence, reliability, responsiveness, and empathy collectively influenced the strengthening of nutrition interventions in primary health services, with a coefficient of determination (R^2) of 45.9%. Conclusion: Strengthening primary health services requires enhancing the role of health cadres by improving training programs to increase their competence and knowledge—particularly for newly recruited cadres.

INTRODUCTION

There is limited evidence on how primary health services influence the effectiveness of nutrition interventions in remote areas of Indonesia. Various challenges such as poor coordination, a shortage of health workers, and limited healthcare facilities and services hinder the reach and impact of primary healthcare delivery (1–3). Primary health services are designed to address public health issues, including nutritional problems that often remain neglected, particularly in geographically isolated areas. To tackle these nutritional challenges, one of the government's key policies is to strengthen primary health services through the Integrated Health Service Post (*Posyandu*) program. This program includes a series of activities such as registration, weighing, completing the child's health card (*Kartu Menu Sehat* or KMS), counseling, and health services. *Posyandu* serves not only as a platform for disseminating health information to the community but also as a mechanism to integrate health center programs into rural villages (4–6).

Malnutrition in children remains a serious public health issue in many countries, including Indonesia. Data indicate that more than 36.8% of children fall into the stunted and severely stunted categories. To address this issue, the government has implemented various policies, one of which is the Integrated Health Service Post (*Posyandu*) program, which focuses on delivering interventions to combat child malnutrition. *Posyandu* is operated by trained health cadres whose responsibilities include data collection, weighing, and recording children's growth using the Healthy Menu Card (*Kartu Menu Sehat*, KMS). However, weak information flow and poor coordination between health workers and cadres have contributed to the low coverage of children attending *Posyandu* services (7,8).

Primary health services in most low-income and rural areas often face a shortage of healthcare workers. To address this issue, the involvement of *Posyandu* cadres as the main actors in *Posyandu* activities has proven beneficial in ensuring the implementation of health programs. These include toddler data collection, weighing and recording in the Healthy Menu Card (KMS), provision of supplementary food, vitamin A distribution, and nutrition counseling (9,3).Health cadres serve as vital extensions of primary health services, especially for populations that cannot easily access health centers. Through community engagement, cadres facilitate the delivery of healthcare needs and serve as a bridge between the community and formal health systems. The activities of integrated health posts occur in three stages: before, during, and after the designated *Posyandu* day (10,11).According to data from the Seko Health Center's Nutrition Program in 2023, six toddlers (2.6%) were categorized as undernourished, 28

(12.3%) were stunted, and 15 (6.6%) were underweight. The highest number of undernourished toddlers was recorded in Padang Raya Village (3 children), while the most stunted toddlers were in Lodang and Hono Villages (7 children each). The highest number of underweight toddlers was again found in Padang Raya Village (7 children) (12).There are currently 15 integrated health posts within the Seko Health Center service area, yet 3 of these posts operate without any health cadres. In total, 120 cadres are distributed across 6 villages. Geographical barriers remain a major issue, as many roads leading to the Seko Health Center are steep, rocky, and riddled with large potholes. Transportation is limited to motorbike taxis and small aircraft (*susi air*), and travel times can double during the rainy season. These access constraints significantly hinder the community's ability to utilize health services.The findings of this study underscore the urgency of strengthening primary health services to support effective child nutrition interventions in geographically isolated areas. These results also offer critical insights for policymakers in improving the reach and equity of health services, particularly for communities in remote villages within the Seko Health Center's catchment area. Strengthening these services is essential to ensure that all populations regardless of access barriers can receive health services fairly and sustainably.

METHODS

This study employed a quantitative research design, utilizing linear regression analysis to assess the strength of influence of each variable. Data were collected through structured questionnaires. The research was conducted in Seko District, North Luwu Regency, South Sulawesi, Indonesia. A simple random sampling technique was used to recruit participants. The study population consisted of 274 mothers of toddlers who had visited integrated health service posts (*Posyandu*) within the previous month. The final sample comprised 73 mothers of toddlers residing in Seko District. The data collection instrument was a questionnaire distributed directly to respondents. It included items measuring independent variables namely the five dimensions of service quality: tangible (physical evidence), responsiveness, reliability, assurance, and empathy as well as the dependent variable, which was the implementation of nutritional interventions in primary healthcare. Data were analyzed using linear regression. Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Muslim Indonesia.

RESULT AND DISCUSSION

RESULT

Distribution of Respondents' Characteristics

This study was conducted in the service area of the Seko Health Center, Seko District, North Luwu Regency, involving a research sample of 73 respondents, all of whom were mothers of toddlers residing within the Seko Health Center's coverage area. The collected data were analyzed using linear regression with the assistance of the SPSS software. The results of the study are presented as follows:

Table 1.Respondent Characteristics in Seko District, North Luwu Regency

Variables	n (%)
Age	
≤ 25 Years	28 (38.4)
26-30 Years	39 (53.4)
≥ 31 Years	6 (8.2)
Education	1 (1.4)
Elementary School	9 (12.3)
Junior High School	48 (65.8)
Senior High School	15 (20.5)
Bachelor	
Employment Status	23 (31.5)
Working not working yet	50 (68.5)

Source: Primary Data 2024

Table 1 presents the distribution of respondents based on age, education level, and employment status in Seko District, North Luwu Regency. The majority of respondents, who were mothers of toddlers, were aged 26–30 years, accounting for 39 individuals (53.4%). Most respondents had completed senior high school education,

totaling 48 individuals (65.8%). Regarding employment status, 50 respondents (68.5%) were not employed, while 23 (31.5%) were engaged in some form of employment.

Linear Regression Analysis

Coefficient Analysis

The coefficient of determination (R^2) derived from the multiple linear regression analysis indicates the extent to which the dependent variable implementation of nutrition interventions in primary health services is influenced by the independent variables, namely tangibles (direct evidence), reliability, responsiveness, empathy, and assurance**.**The results of the R^2 analysis are presented in the table below and demonstrate the proportion of variance in the implementation of nutrition interventions that can be explained by the aforementioned independent variables.

Table 2.Determination Test Results Model Summary

Model	R	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	,677[a]	,459	,418	1,153

Source: Primary Data 2024

The analysis yielded a coefficient of determination (R^2) of 0.459, indicating that 45.9% of the variation in the implementation of nutrition interventions in primary health services can be explained by the independent variables: tangibles (direct evidence), reliability, responsiveness, empathy, and assurance. In other words, these five service quality dimensions contribute to 45.9% of the implementation outcomes. The remaining 54.1% is influenced by other factors not included in this research model.

F-Test

The F test was conducted to determine whether the independent variables tangibles (direct evidence), reliability, responsiveness, empathy, and assurance jointly have a significant influence on the dependent variable, namely the implementation of nutrition interventions in primary health services**.** The results of the F test are presented in the table below and are used to assess the overall significance of the regression model.

Table 3. F Test Results

ANOVA[a]

Model		*Sum of Squares*	df	*Mean Square*	F	Sig.
1	*Regression*	75,406	5	15,081	11,351	0,000[b]
	Residual	89,017	67	1,329		
	Total	164,423	72			

Source: Primary Data 2024

Based on the ANOVA results presented in the table above, the F-value was 11.351 with a significance level of $p < 0.05$ (0.000). Therefore, the alternative hypothesis (Ha) is accepted, and the null hypothesis (H_0) is rejected. These findings indicate that the independent variables tangibles (direct evidence), reliability, responsiveness, empathy, and assurance collectively have a statistically significant influence on the implementation of nutrition interventions in primary health services.

T-Test

Table 4. T Test Results

Coefficients[a]

Model		*Unstandardized Coefficients*		*Standardized Coefficients*		
		B	Std. Error	Beta	t	Sig
1	(Constant)	71,729	5,864		12,232	0,000
	Tangibles	0,264	0,089	0,279	2,978	0,004
	(*Reliability*)	-0,391	0,147	-0,247	-2,656	0,010
	(*Responsiveness*)	0,996	0,235	0,517	4,237	0,000
	(*Assurance*)	0,025	0,242	0,013	0,105	0,917
	(*Emphaty*)	-1,038	0,286	-0,331	-3,625	0,001

Source: Primary Data 2024

The results of the statistical tests revealed that the direct evidence (tangibles) variable had a significant influence on the implementation of nutrition interventions in primary health services, with a *p*-value of 0.004. Similarly, the reliability variable showed a significant effect with a *p*-value of 0.010, and the responsiveness variable had a *p*-value of 0.000. The empathy variable also demonstrated a statistically significant effect with a *p*-value of 0.001. Since all *p*-values are less than 0.05, it can be concluded that these four variables significantly influence the implementation of nutrition interventions in primary healthcare settings. In other words, the higher the levels of tangibles, reliability, responsiveness**,** and empathy, the greater the effectiveness of the implementation of nutrition interventions in primary health services.

DISCUSSION

Primary health care is a comprehensive public health approach that aims to achieve and sustain optimal levels of health and well-being, along with equity. This approach emphasizes addressing the needs of individuals and communities across all life stages from health promotion and disease prevention to treatment, rehabilitation, and palliative care while remaining as close as possible to people's everyday environments. In the context of strengthening primary health services, the measurement of service quality becomes crucial. This can be evaluated using five key dimensions: reliability, responsiveness, assurance, empathy, and tangibles**.**

Tangibles (Physical Evidence) in Primary Health Care

The results of this study indicate that the **tangibles** dimension has a statistically significant effect on the implementation of child nutrition interventions in primary health services, with a *p*-value of 0.004. In efforts to strengthen primary healthcare, elements such as professional appearance during *posyandu* (integrated health post) activities, the availability of complete facilities, and cleanliness of the service environment play vital roles in enhancing service quality. Community members who visit *posyandu* expect to receive services that are not only effective but also comfortable and safe.

These findings are supported by previous research indicating that evaluations of primary health services from the perspective of physical evidence include the availability of medical personnel as well as well-maintained and properly organized facilities and infrastructure. Furthermore, the physical appearance of health workers being neat, clean, and professionally dressed is also an important consideration in public perception of service quality (13). From this dimension, quality is judged based on what can be directly observed and experienced by service users, such as comfort within the facility and the adequacy of available infrastructure (14).

Reliability Dimension in Primary Health Care

Findings of this study indicate that the reliability dimension significantly influences the implementation of child nutrition interventions in primary health services, with a *p*-value of 0.010. Reliability refers to the ability of healthcare services to be delivered consistently, accurately, and satisfactorily. Within the context of *posyandu* operations, this dimension is reflected in the ability of health cadres to carry out their tasks in a systematic and structured manner. This includes the sequence of activities before, during, and after *posyandu* sessions, such as preparation, registration, data collection, weighing, and service provision.These findings are supported by several studies showing that reliability in primary health services is closely linked to the dependability of health personnel in delivering services from the moment clients arrive until the session concludes. This includes timely registration without undue complexity, prompt service delivery, and the readiness and attentiveness of healthcare providers. Such practices demonstrate a tangible commitment to delivering high-quality, community-centered primary care services (10,14).

Responsiveness Dimension in Primary Health Services

The findings of this study demonstrate that the responsiveness dimension significantly influences the implementation of child nutrition interventions in primary health services, with a *p*-value of 0.000. Responsiveness refers to the ability to deliver health services promptly and accurately. A rapid response not only enhances public trust especially in primary healthcare services that are often underestimated but also ensures the effectiveness of promotive and preventive interventions.This study highlights that *posyandu* activities in primary healthcare are carried out swiftly and precisely. Feedback, complaints, or suggestions from the community are addressed in a timely manner. Furthermore, *posyandu* organizers provide equitable services to all participants without

discrimination based on familial or social relationships.These findings are supported by previous research indicating that responsiveness in primary health services is closely related to the ability of health workers to provide clear, honest information and to create space for patients to express questions and concerns. Health providers are also expected to be attentive to the diverse needs of their patients (13). Timeliness in service provision is a critical factor in ensuring that promotive and preventive interventions are not only effective but also reliable sources of health information and support (14).

Assurance Dimension in Primary Health Services

The results of the study revealed that the assurance dimension did not significantly influence the implementation of child nutrition interventions in primary health services, with a *p*-value of 0.917. These findings suggest that, from the perspective of mothers with toddlers, the assurance provided by health workers did not instill a sense of comfort. Many participants reported feeling disrespected or inadequately informed. Additionally, they expressed a lack of confidence in the guarantees offered, perceiving them as unrealistic or irrelevant to their actual needs. Assurance in health services refers to the ability of health workers to instill trust and ensure safety throughout the care process, thereby minimizing the potential for errors. In the context of primary health services, this dimension relates to the trustworthiness of health workers in maintaining confidentiality, displaying professionalism, and providing a sense of safety and comfort. While this theoretically contributes to service satisfaction, the results of this study indicate that assurance was not a prominent factor influencing the effectiveness of nutrition intervention delivery in the observed setting (13).

Empathy Dimension in Primary Health Services

In contrast, the empathy dimension was found to have a statistically significant influence on the implementation of child nutrition interventions, with a *p*-value of 0.001. Empathy is defined as the ability to understand and share the feelings of others, enabling health workers to respond to patients' needs with compassion and attentiveness. In the context of *posyandu* activities, this involves showing care and concern for mothers and their toddlers, recognizing that these children represent the future generation.Empathy in primary healthcare is reflected in the quality of interaction and communication between health workers and service recipients, including the capacity to express sympathy, attentiveness, and interpersonal warmth (13). It serves as the foundation for building stronger connections with the community. Through integrated health posts, primary healthcare not only acts as a bridge between providers and recipients but also fosters a deeper understanding of and responsiveness to community needs. Health workers must demonstrate an attitude of inclusivity and respect toward all individuals seeking care, regardless of their socioeconomic status, ethnicity, religion, or background. Such attitudes help create a perception of equitable and high-quality service provision, contributing to greater satisfaction and community trust (14,15).

CONCLUSION

The findings of this study indicate that the variables of tangibles (direct evidence), reliability, responsiveness, and empathy collectively influence the effectiveness of implementing nutritional interventions in primary health services. The role of health cadres in delivering nutrition education during *posyandu* activities is essential. Although aspects such as reliability, responsiveness, and empathy are generally rated positively, their consistent implementation remains a challenge in practice.Therefore, efforts to strengthen primary health services should focus on enhancing the capacity and role of health cadres. This can be achieved by improving training programs aimed at increasing the competence and knowledge of cadres articularly for newly recruited health cadres to ensure the delivery of high-quality, community-based nutritional interventions.

ACKNOWLEDGEMENT

All authors would like to express their sincere gratitude to Universitas Muslim Indonesia for providing financial support for this research. Appreciation is also extended to the Seko Sub-District Health Center for their assistance and cooperation during the data collection process. We are deeply thankful to all parties both individuals and institutions who contributed to this study, whether directly or indirectly. Their support was instrumental in the successful completion of this research.

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