ABSTRACT

Background: Indonesia faces a persistent triple burden of child malnutrition, including undernutrition, micronutrient deficiencies, and obesity. Despite substantial government investment, progress in reducing stunting and other forms of malnutrition remains limited. Challenges in caregiver education, fragmented reporting systems, weak monitoring, and frequent loss to follow up at Community Health Center (CHC) undermine early detection and timely intervention. The CHC Integrated Child Health Screening Services (ICHSS), offers a platform for early identification of growth and developmental problems. However, implementation gaps remain, particularly the absence of standardized procedures, limited follow up mechanisms, and weak coordination across service levels.

Objectives: This study aims to develop, implement and evaluate a Rapid Response System (RRS) for the prevention and management of malnutrition among children under five at primary care and community levels through the co-redesign of the ICHSS.

Methods: A Hybrid Type III design was conducted at Sentolo I CHC, Kulon Progo District, Yogyakarta Province. The participatory process consisted of three phases: pre-implementation, implementation, and post implementation, involving CHC staff, community health workers, District Health Office representatives, and caregivers as clients. Stakeholder experiences, barriers, and facilitators were identified from 62 participants (4 focus group discussions, 4 group interviews and 3 interviews) and 4 non-participant observations. RRS was co-designed and integrated into the ICHSS workflow supported by care pathway, standardised operating procedures, client-mobile health and provider-dashboard as change package. Redesigned service was implemented sequentially across three clusters and 58 infants were recruited. Quantitative data on mhealth utilisation, attendance, follow-up, caregiver knowledge, feeding practices, and child nutritional status were collected over 12 weeks, complemented by qualitative assessment of implementation fidelity.

Results: During the pre-implementation phase, after identifying facilitators, gaps and needs within CHC services. Implementers agreed to redesign ICHSS as an entry point to embedding RRS and established a change package along with the implementation strategies. Throughout the implementation phase, fidelity varied across clusters. Attendance coverage improved, and the implementation process contributed to a perceived shift toward more structured service delivery, learning process, and a focused platform for addressing child malnutrition supported by mobile health and dashboard. Clients also perceived the service and mobile health as useful tools for monitoring their infant's growth and development. In the post-implementation phase. The proportion of infants meeting the Minimum Weight Gain Standard declined across the intervention period from 71.4% at baseline to 28.6% at month two, with statistically significant differences between time points (Friedman test, $p < 0.001$). The majority of infants with weight faltering showed improvement (66.7%), though not statistically significant (Fisher's Exact Test, $p = 0.526$). Parental caregiving knowledge showed a positive but non-significant trend ($p = 0.056$).

Conclusion: Embedding a RRS within the ICHSS in a rural CHC setting was feasible and acceptable. Stakeholders perceive tangible benefit and positive experience in service delivery suggests early promise, though a longer implementation period with a larger sample is needed to confirm further effectiveness in child nutritional status.

Keywords: Implementation Research, Rapid Response System, Child Malnutrition, Community Health Center, Process Redesign