



Strengthening the Role of Community Health Volunteers Through a Behaviour Change Intervention to Improve Complementary Feeding Practices

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ABSTRACT

Appropriate complementary feeding (CF) is essential for promoting optimal child growth and development while preventing malnutrition, stunting, and other long-term health problems. However, mothers often encounter challenges in providing appropriate complementary foods, partly due to limited access to accurate nutrition information. Community health volunteers (cadres) play a strategic role in delivering health education to families. This community engagement program aimed to strengthen the capacity of community health volunteers as behaviour change agents through an integrated intervention consisting of cadre training, complementary feeding education, cooking demonstrations, and household mentoring. Eight cadres from Korong Gadang Integrated Health Posts, Kuranji Health Center, Padang, participated in a structured training program consisting of lectures, focus group discussions, and cooking demonstrations on complementary feeding. Cadres' knowledge was assessed before and after the training using a 10-item questionnaire. Following the training, cadres provided health education to mothers in their respective communities. The findings indicate that the training effectively improved cadres' knowledge and strengthened their capacity to provide complementary feeding education. In addition, education delivered by trained cadres contributed to improved maternal knowledge regarding optimal complementary feeding practices. This community engagement program demonstrated that strengthening community health volunteers through behaviour change intervention improved cadres' knowledge and enhanced their capacity to provide complementary feeding education. Furthermore, cadre-led education contributed to improved maternal knowledge regarding optimal complementary feeding practices. Empowering community health volunteers represents a feasible community-based strategy to increase access to evidence-based complementary feeding information.

Keywords: infants, cadre, training and socialization, complementary feedings, stunting

INTRODUCTION

Stunting is a growth disorder characterized by a child's height being below the standard for their age (United Nations Children's Fund (UNICEF), World Health Organization, & International Bank for Reconstruction and Development/ The World Bank, 2021). This condition is primarily caused by chronic undernutrition and may result in long-term consequences, including impaired physical growth, delayed cognitive development, poor health outcomes, and reduced functional capacity (Dewey & Begum, 2011;

Kementrian Kesehatan Republik Indonesia (Kemenkes RI), 2018; Woldehanna et al., 2017). Maternal nutritional status during pregnancy and appropriate complementary feeding (CF) practices are among the key determinants associated with childhood stunting (United Nations Children's Fund (UNICEF), World Health Organization, & Bank, 2021).

In 2023, a study involving 132 mothers with infants aged 6–23 months in Korong Gadang, Padang, Indonesia, found that although complementary feeding practices were generally satisfactory, several key indicators remained below the recommended standards, particularly minimum meal frequency (MMF) and minimum acceptable diet (MAD) (Hermalinda. Herman et al., 2023). Only 53.9% of children met the MMF criterion, while 45.1% achieved the MAD indicator. These findings are of concern because inadequate complementary feeding during the critical period of child growth may compromise nutritional status and increase the risk of stunting.

Several barriers may hinder appropriate infant and young child feeding practices, including limited knowledge and feeding experience, inconsistent sources of nutrition information, inadequate social support, and low maternal self-efficacy (Athavale et al., 2020). In Korong Gadang, previous research demonstrated that most mothers had good knowledge (90.5%) and positive attitudes (95.9%) toward complementary feeding, with a significant association between knowledge and attitudes (Hermalinda. Herman et al., 2023). Nevertheless, important knowledge gaps remained regarding the recommended feeding frequency and the rationale for introducing complementary foods. In addition, a small proportion of mothers still believed that infants did not require green vegetables (3.1%), indicating persistent misconceptions about appropriate feeding practices.

A focus group discussion (FGD) conducted on October 25, 2024, with mothers of children aged 6–23 months in Korong Gadang further revealed that complementary feeding practices were not yet optimal. Some mothers delayed the introduction of complementary foods even after their infants had reached six months of age. Food diversity was also limited, with complementary foods mainly consisting of porridge or soft rice accompanied by fish, chicken, or eggs. Many mothers believed that these meals adequately fulfilled their children's nutritional requirements. Family members, particularly grandparents and husbands, also influenced mothers' decisions regarding complementary feeding. Such practices may result in inadequate nutrient intake and consequently increase the risk of malnutrition and stunting (Anin et al., 2020). These findings highlight the need to strengthen mothers' understanding of evidence-based complementary feeding recommendations while reinforcing family support.

Interviews with the coordinator of community health services in Korong Gadang indicated that the Kuranji Primary Health Center had implemented a "Mother and Toddler Class" program at each integrated health post (Posyandu). However, the program had not been fully optimized, as activities primarily focused on providing supplementary food rather than delivering nutrition education or counselling. This limitation was largely attributed to the heavy workload and insufficient number of healthcare professionals. Although community health volunteers (cadres) actively supported Posyandu activities, their responsibilities were mainly limited to growth monitoring and food distribution. Their role as health educators remained underutilized due to limited knowledge and skills related to complementary feeding.

Strengthening community-based nutrition education requires an approach that goes beyond providing information alone. Behaviour change interventions are structured strategies designed to facilitate sustainable health behaviours by addressing individual capability, motivation, and environmental support. In the context of complementary feeding, these interventions involve the delivery of evidence-based behavioural messages, development of appropriate educational materials, improvement of communication skills,

and continuous interpersonal support to enable caregivers to adopt recommended feeding practices (Sanghvi et al., 2017; Sanghvi et al., 2025).

The implementation of behaviour change interventions is supported by Social Cognitive Theory, which explains that behavioural changes occur through reciprocal interactions between personal factors, behavioural capability, and environmental influences (Bandura, 1986). Based on this perspective, improving complementary feeding practices requires not only increasing caregivers' knowledge but also strengthening self-efficacy, communication processes, and social support systems. Community health volunteers are strategically positioned as behaviour change agents because they have close relationships with families and can provide continuous support within the community setting.

Previous studies have demonstrated that community-based behaviour change interventions delivered through interpersonal communication, community mobilization, and trained community actors can improve complementary feeding practices and contribute to child nutritional improvement (Kim et al., 2019; Ayalew & Belachew, 2021). However, the effectiveness of such interventions depends on the capacity of community actors to deliver accurate information and facilitate behavioural changes.

In Korong Gadang, the local situational assessment identified that although community health volunteers were actively involved in Posyandu activities, their role as complementary feeding educators had not been fully optimized. Cadres were primarily involved in child growth monitoring and supplementary food distribution, while limited knowledge, communication skills, and educational resources restricted their capacity to provide evidence-based complementary feeding counselling. Therefore, strengthening cadre capacity represents an appropriate community-based strategy to improve access to accurate complementary feeding information.

The novelty of this community engagement program lies in transforming community health volunteers from routine Posyandu supporters into active behaviour change agents through an integrated intervention consisting of cadre training, complementary feeding education, cooking demonstrations, communication skill development, and household mentoring. This approach aims to establish a sustainable community-based model for improving complementary feeding education among mothers and families.

Therefore, this community engagement program aimed to strengthen the role of community health volunteers through a behaviour change intervention to improve complementary feeding practices and support childhood stunting prevention.

METHOD

The challenges faced by the community partners could be addressed by leveraging existing local resources, including community health volunteers (cadres), healthcare professionals, integrated health posts (Posyandu), and ongoing community health services. Most participating mothers in the Korong Gadang Posyandu were homemakers, providing them with greater flexibility to participate in the program activities and engage actively throughout the intervention. In addition, most mothers had completed senior high school education, which facilitated their ability to understand and apply health-related information. The selected community health volunteers were active cadres with at least a secondary education and had previously participated in several training programs organized by the Kuranji Primary Health Center and the Padang City Health Office. Their active involvement and prior experience provided a strong foundation for ensuring the sustainability of the program beyond the intervention period.

This community engagement program was designed to address two key aspects: (1) strengthening human resource capacity from a management perspective and (2) improving community knowledge of appropriate complementary feeding practices from a social perspective. The program consisted of several sequential phases, including a preliminary assessment, program socialization, training, technology implementation, mentoring, and evaluation.

Preliminary Assessment

The preliminary phase involved focus group discussions (FGDs) with community partners, interviews with the area coordinator, observations of existing conditions, and a situational analysis to identify the priority issues encountered by the community partners (Figure 1).



Figure 1. Focus Group Discussion (FGD) with community partners to identify priority issues

Program Preparation and Orientation

The community engagement program was initiated with a structured preparation phase to ensure that all activities were implemented according to the program objectives and the needs of the community partners. The implementation team first established a task force through a coordination meeting to determine the activity workflow, assign roles and responsibilities, and prepare operational requirements. During this stage, a detailed implementation plan was developed, including the assignment of responsibilities for training materials, logistics, documentation, and program evaluation.

Subsequently, the principal investigator obtained official approval by submitting the program proposal to the Head of the Kuranji Primary Health Center, Padang. After approval was granted, the team conducted a program orientation with the health promotion coordinator responsible for Posyandu activities and coordinated the selection of community health volunteers based on predetermined eligibility criteria. A total of eight cadres from four Posyandu (RW 05, RW 08, RW 09, and RW 10) were recruited, with each Posyandu assigning two eligible cadres. The implementation team explained the objectives of the program, participants' roles, expected contributions, and implementation procedures before obtaining their informed agreement to participate. The activities were conducted at the Taruko Auxiliary Primary Health Center (Puskesmas Pembantu Taruko), as agreed upon by both the health center and the implementation team, and were scheduled for November 9 and December 5–8, 2025.

Following the confirmation of the venue and schedule, the team developed the intervention package, which consisted of seminar and training materials as the core components of the program. The materials were developed based on complementary feeding guidelines, food hygiene and sanitation principles, and effective health education communication strategies for community health volunteers. The contents were designed to

be concise, evidence-based, easy to understand, and relevant to the local community context. The draft materials were reviewed during team meetings to ensure content consistency, appropriate terminology, alignment with the program objectives, and feasibility for implementation in both Posyandu and household settings. Educational media, including a training handbook, posters, and leaflets, were subsequently developed to facilitate learning. These materials were designed to be practical, visually appealing, and reusable by cadres when providing education and follow-up support to mothers and their families.

Cadre Training

The cadre training program constituted the capacity-building component of the community engagement program and was designed to strengthen the role of community health volunteers as educators and facilitators for mothers and families in complementary feeding practices. The first training session was conducted on Sunday, November 9, 2025, at the Taruko Auxiliary Primary Health Center in Korong Gadang, Kuranji District. Eight community health volunteers from the Korong Gadang Posyandu participated in the training. The activity also involved the implementation team, the area coordinator from the Kuranji Primary Health Center, the media team, two nursing students, and the program administrative staff. The training was conducted from 08:00 to 12:30.

To assess learning outcomes, participants completed a pre-test to evaluate their baseline knowledge of complementary feeding guidelines. The training was officially opened by the principal investigator and the representative of the Kuranji Primary Health Center, Ms. Evi Novita, A.Md.KG. The program consisted of three main training sessions: complementary feeding guidelines presented by Ns. Hermalinda, M.Kep., Sp.Kep.An., Ph.D.; food hygiene and sanitation presented by Trisfa Augia, S.Si., Apt., M.Sc.; and effective health communication techniques presented by Ns. Yanti Puspita Sari, M.Kep., Ph.D. Each participant received a training package consisting of a handbook, leaflets, posters, and a complementary feeding recipe book as educational resources. Upon completion of the training sessions, a post-test was administered to evaluate improvements in the cadres' knowledge. The training concluded with closing remarks from the principal investigator, who also introduced the follow-up plan for the second cadre training session scheduled for December 2025 (Figure 2).



Figure 2. Training of community health volunteers on complementary feeding.
Source: Community engagement program team, 2025

The second training session was conducted on Friday, December 5, 2025, at the same venue as the first training. This session focused on developing the cadres' practical skills in preparing complementary foods through cooking demonstrations. Participants practiced preparing complementary feeding menus based on standardized recipes provided in the complementary feeding recipe book (Figures 3 and 4).



Figure 3. Community health volunteer training on complementary food preparation.
Source: Community engagement program team, 2025



Figure 4. Demonstration of complementary food preparation and cooking.
Source: Community engagement program team, 2025

Following the second training session, the implementation team assessed the cadres' readiness by evaluating their knowledge, attitudes, practical skills, communication skills, and ability to demonstrate complementary food preparation. Cadres who did not meet the expected competency standards received additional coaching and mentoring until they were considered competent to perform their roles as trainers.

Technology Application

The intervention consisted of two main activities:

a. Group Training for Mothers and Their Families Led by Community Health Volunteers

The group training sessions were conducted on Saturday, December 6, 2025. Each community health volunteer (cadre) was assigned to educate two to three mothers and their family members. The training materials were adapted from the cadre training curriculum and delivered using the educational media developed for the program. To enhance participants' understanding and engagement, the sessions were conducted using culturally appropriate approaches and language that was easily understood by the local community.

The one-day training emphasized the principles of appropriate complementary feeding, key indicators of optimal complementary feeding practices, common challenges encountered by mothers, and practical strategies to address these challenges. Interactive group discussions were also conducted to identify barriers experienced by the participating mothers. Whenever cadres encountered difficulties that they were unable to resolve, they consulted with the implementation team to obtain appropriate recommendations and solutions (Figure 5). Mothers' knowledge of complementary feeding was assessed before and after the training using a structured complementary feeding knowledge questionnaire.



Figure 5. Group discussion with mothers on challenges in complementary feeding practices.
Source: community engagement program team, 2025.

b. Home Visits and Monitoring

The implementation team and community health volunteers conducted home visits to assess behavioural changes at the household level and reinforce the complementary feeding practices introduced during the training sessions. During the visits, the team provided individualized mentoring, observed mothers' complementary feeding practices, repeated cooking demonstrations when necessary, corrected inappropriate feeding

practices, and provided constructive feedback to promote optimal complementary feeding practices. The home visits and mentoring sessions were conducted on Sunday, December 7, 2025 (Figure 6).



Figure 6. Home visit and mentoring conducted by the community engagement team and community health volunteers. Source: Community engagement program team, 2025

Monitoring dan Evaluation

1. Monitoring

Monitoring was conducted as part of the mentoring process to ensure that the program was implemented according to the planned activities. The implementation team monitored the activities carried out by the community health volunteers (cadres) and documented any challenges encountered during the training sessions and home visits with mothers and their families. Monitoring was conducted through face-to-face meetings and regular communication via a WhatsApp group. Challenges reported by the cadres were followed up with constructive feedback, recommendations for improvement, and practical solutions. In addition, the implementation team conducted home visits to participating mothers to ensure that they received accurate information and correctly understood the key messages related to appropriate complementary feeding practices.

2. Evaluation

- a. Program evaluation was conducted to assess the achievement of the predetermined performance indicators and to determine the extent to which the program objectives had been accomplished. The evaluation was carried out after the completion of all program activities by the implementation task force.
- b. The implementation team also evaluated the program's impact on participants' knowledge, attitudes, and practical skills related to complementary feeding practices. Depending on their assigned responsibilities, the assessments were conducted by either the trained community health volunteers or members of the implementation task force.

RESULTS AND DISCUSSION

Strengthening the Capacity of Community Health Volunteers Through Behaviour Change Intervention

The community engagement program successfully strengthened the capacity of community health volunteers (cadres) as providers of complementary feeding education. A total of eight cadres from four Posyandu in Korong Gadang participated in a structured training program consisting of complementary feeding education, food hygiene and sanitation, communication skills training, and practical cooking demonstrations. The training was designed not only to increase cadres' knowledge but also to improve their confidence and ability to deliver evidence-based complementary feeding messages to mothers and families.

Following the training intervention, all participating cadres (100%) were able to perform their role in providing complementary feeding education to mothers and families. Evaluation of cadre knowledge demonstrated a significant improvement after the intervention. The mean knowledge score increased from 71.25 before training to 92.50 after training, with a mean difference of 21.25 points ($t = 6.065$; $p = 0.001$). These findings indicate that structured capacity-building activities were effective in improving cadres' understanding of appropriate complementary feeding practices.

The improvement in cadre knowledge may be explained by the integrated learning approach applied in this program. The training combined interactive lectures, discussion sessions, educational materials, and cooking demonstrations. According to Social Cognitive Theory, behavioural capability is an important prerequisite for behavioural change because individuals need sufficient knowledge and skills to perform targeted behaviours (Bandura, 1986). In this program, improving cadres' knowledge and practical skills represented an important initial step to enable them to function as community-based behaviour change agents.

Community health volunteers have an important role in primary healthcare settings because they are trusted community members who maintain close interactions with families. Previous studies have demonstrated that behaviour change interventions delivered through community-based actors can improve complementary feeding practices by increasing access to accurate information, strengthening caregiver support, and promoting positive feeding behaviours (Sanghvi et al., 2017; Ayalew & Belachew, 2021). Therefore, strengthening cadre capacity may contribute to improving the sustainability of complementary feeding education at the community level.

Improvement in Maternal Knowledge Through Cadre-Led Education

After completing cadre training, the trained cadres conducted education sessions for mothers and families with children aged 6–23 months. A total of 23 mothers/caregivers participated in the community education component. The education sessions focused on appropriate complementary feeding practices, including feeding frequency, dietary diversity, food preparation, and strategies to overcome common feeding challenges.

Evaluation of maternal knowledge showed significant improvement after the intervention. The proportion of mothers demonstrating adequate knowledge regarding optimal complementary feeding increased by 20%, from 70% before the intervention to 90% after the intervention. Statistical analysis using the Wilcoxon Signed Rank test demonstrated a significant difference between maternal knowledge before and after receiving education from trained cadres ($z = 3.586$; $p < 0.0001$).

The improvement in maternal knowledge suggests that strengthening cadres' capacity can improve the availability of complementary feeding information at the household level. This finding is consistent with previous evidence indicating that nutrition

education and behaviour change interventions delivered through interpersonal communication can improve caregivers' knowledge and feeding practices (Kim et al., 2019; Tariku et al., 2015).

The role of cadres as local educators may also enhance the effectiveness of health communication because information is delivered by individuals who understand the local context, language, and challenges experienced by families. In addition, the use of practical demonstrations and household mentoring may facilitate better understanding by allowing mothers to observe and discuss appropriate food preparation practices directly.

Contribution of the Behaviour Change Intervention Model

The main contribution of this community engagement program was the development of an integrated cadre empowerment approach that combined knowledge improvement, skill development, communication training, cooking demonstrations, and household mentoring. Unlike conventional Posyandu activities that commonly focus on growth monitoring and supplementary food distribution, this program expanded the role of cadres as active facilitators of complementary feeding education.

The intervention reflected key components of behaviour change approaches, including providing clear behavioural messages, strengthening individual capability, improving communication between educators and caregivers, and creating supportive environments for behaviour adoption (Sanghvi et al., 2017; Sanghvi et al., 2025). Through this approach, cadres were not only recipients of training but also became facilitators who transferred knowledge and supported mothers in implementing recommended complementary feeding practices.

However, this program has several limitations. First, the evaluation focused primarily on knowledge improvement among cadres and mothers, while long-term changes in actual feeding practices and child nutritional outcomes were not assessed. Second, the number of participating cadres and mothers was limited because this activity was implemented as a community engagement program within a specific local setting. Future programs should include longer follow-up periods and evaluate behavioural outcomes using standardized complementary feeding indicators.

CONCLUSION

Appropriate complementary feeding plays a crucial role in supporting children's growth and development. During the age of 6–24 months, children require adequate and high-quality nutrition to promote optimal physical and cognitive development while reducing the risk of long-term nutritional problems, including stunting and obesity. Health education delivered through a structured behaviour change intervention can help mothers adopt appropriate complementary feeding practices in accordance with recommended guidelines. Implementing optimal complementary feeding practices has the potential to improve children's nutritional and health status and contribute to stunting prevention.

To ensure the sustainability of the program, future activities will focus on expanding the training and educational outreach to mothers in the remaining 12 integrated health posts (Posyandu) in Korong Gadang Village. In addition, an e-health-based educational platform will be developed to provide accessible complementary feeding information for mothers of children aged 6–23 months. Strengthening cross-sectoral collaboration among healthcare providers, community stakeholders, and local government is also planned to facilitate the integration and long-term sustainability of the program at the primary healthcare level.

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