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Article

Community Education Program on Household Food Storage and Logistics Management to Support Stunting Prevention

**Rahmi M Nur^{1✉}, Yovita Yulia M. Zai², Rini Syahfitri³, Inang Suryani², Refki Riyantori⁵
Anisa Jasmiarlita Muluk**

Program Studi S1 Logistik, Fakultas Sosial dan Bisnis, Universitas Mercubaktijaya^{1,2,3,4,5}

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✉ Corresponding author:
[rahmimnur@mercubaktijaya.ac.id]

Article Info	Abstrak
Volume 5 Issue 1 Received: 29 January 2026 Accepted: 20 Maret 2026 Publish Online: 30 Maret 2026 Online: at https://jestm.org/index.php/jestmc	Stunting masih menjadi salah satu permasalahan kesehatan masyarakat di Indonesia yang dipengaruhi oleh berbagai faktor, termasuk praktik pengelolaan pangan rumah tangga. Selain kecukupan asupan gizi, pengelolaan logistik pangan yang meliputi perencanaan, penyimpanan, dan penggunaan bahan pangan secara tepat berperan dalam menjaga keamanan pangan dan mengurangi kehilangan pangan di tingkat rumah tangga. Kegiatan pengabdian kepada masyarakat ini bertujuan memberikan edukasi mengenai manajemen penyimpanan dan pengelolaan makanan untuk mendukung upaya pencegahan stunting. Kegiatan dilaksanakan pada 25 Februari 2025 di Puskesmas Pakan Rabaa, Kabupaten Lima Puluh Kota, Sumatera Barat dengan melibatkan 50 peserta yang terdiri atas 19 ibu menyusui, 16 ibu hamil, dan 15 balita, dan kader kesehatan. Metode pelaksanaan meliputi penyuluhan interaktif, demonstrasi penyimpanan pangan rumah tangga berdasarkan prinsip First In First Out (FIFO), diskusi, dan sesi tanya jawab. Evaluasi dilakukan secara deskriptif melalui observasi terhadap partisipasi peserta selama kegiatan, keterlibatan dalam diskusi, serta umpan balik yang disampaikan pada akhir kegiatan. Hasil pelaksanaan menunjukkan bahwa peserta mengikuti seluruh rangkaian kegiatan secara aktif, terlibat dalam diskusi, dan menunjukkan pemahaman terhadap materi yang disampaikan berdasarkan respons selama sesi edukasi. Program ini menunjukkan bahwa edukasi berbasis manajemen logistik pangan rumah tangga dapat diterapkan sebagai salah satu pendekatan promotif

KATA KUNCI

Manajemen logistik pangan;
Pengelolaan pangan rumah tangga;
Stunting;
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untuk meningkatkan kesadaran masyarakat mengenai penyimpanan pangan yang aman sebagai bagian dari upaya pencegahan stunting.

Abstract

Stunting remains a major public health challenge in Indonesia and is influenced by multiple factors, including household food management practices. In addition to adequate nutritional intake, effective household food logistics management, encompassing food planning, storage, and utilization, contributes to food safety and reduces food loss at the household level. This community service program aimed to provide education on household food storage and food management practices to support stunting prevention efforts. The program was conducted on 25 February 2025 at Pakan Rabaa Community Health Center, Lima Puluh Kota Regency, West Sumatra, Indonesia, involving 50 participants consisting of 19 breastfeeding mothers, 16 pregnant women, and 15 children under five years of age and . The program consisted of interactive lectures, demonstrations of household food storage based on the First In, First Out (FIFO) principle, group discussions, and question-and-answer sessions. Program evaluation was conducted descriptively through observations of participant engagement during activities, participation in discussions, and feedback collected at the end of the session. The results indicated that participants actively attended the activities, engaged in discussions, and demonstrated an understanding of the educational materials through their responses during the sessions. These findings suggest that household food logistics education can be implemented as a promotive approach to enhance community awareness of safe food storage practices as part of stunting prevention efforts.

1. INTRODUCTION

Stunting remains a major public health challenge worldwide because of its long-term consequences for children's physical growth, cognitive development, educational achievement, productivity, and overall human capital. According to the World Health Organization (WHO) Child Growth Standards, stunting is defined as impaired linear growth in children whose height-for-age is more than two standard deviations below the WHO Child Growth Standards median (height-for-age Z-score < -2 SD), reflecting chronic undernutrition and repeated exposure to infection during the first 1,000 days of life (the period from conception to a child's second birthday) (World Health Organization [WHO], 2006). Because growth faltering during this critical developmental window may have lifelong consequences, preventing stunting has become a global public health priority requiring integrated nutrition-specific and nutrition-sensitive interventions (WHO, 2021; Food and Agriculture Organization of the United Nations [FAO], 2023b).

Indonesia has made substantial progress in reducing childhood stunting through multisectoral interventions involving maternal and child health services, nutrition programs, sanitation improvement, and household food security initiatives (Kementerian Kesehatan Republik Indonesia, 2024). According to the 2024

Indonesian Nutritional Status Survey (SSGI 2024), the national prevalence of stunting among children under five years of age decreased to 19.8%, compared with 21.5% in 2023 (Ministry of Health of the Republic of Indonesia, 2025). Nevertheless, considerable disparities persist across provinces and districts. In West Sumatra Province, the prevalence of stunting remains higher than the national average, while in Lima Puluh Kota Regency the prevalence reached 26.6% (7.2% severely stunted and 19.4% stunted) (Ministry of Health of the Republic of Indonesia, 2025). These findings indicate that strengthening community-based nutrition-sensitive interventions remains necessary, particularly in districts where the burden of stunting is still substantial (WHO, 2021).

Household food security is a fundamental determinant of nutritional well-being because it encompasses not only the availability of food but also its accessibility, safe utilization, and stability over time (FAO, 2023b). Within this framework, the way households manage food resources influences whether nutritious foods remain available and safe for consumption throughout the household. Inefficient food management may increase food loss, reduce dietary diversity, and compromise food quality due to inappropriate storage practices (Jagtap et al., 2021; Principato et al., 2021). Consequently, strengthening household food management should be viewed as a nutrition-sensitive strategy that supports food security and creates conditions conducive to adequate dietary intake, rather than as a direct intervention for reducing stunting. This perspective is consistent with previous studies demonstrating that household food security contributes to improved nutritional outcomes through enhanced food availability, utilization, and dietary quality (Dewi et al., 2024; FAO, 2023a).

From a logistics perspective, household food management represents the application of basic logistics management principles within the household environment. These principles contribute to maintaining food availability, preserving food quality, minimizing household food waste, and supporting nutrition-sensitive interventions for stunting prevention through more efficient management of household food resources (Jagtap et al., 2021; Zai, 2025). Food planning involves estimating household food needs according to family composition and nutritional requirements, while procurement refers to purchasing food based on planned needs to minimize unnecessary expenditure and waste. Inventory control ensures that available food items are monitored and consumed in an appropriate sequence, whereas storage focuses on maintaining suitable environmental conditions to preserve food safety and nutritional quality. Food utilization concerns the preparation and consumption of foods according to household nutritional needs, while waste management aims to minimize avoidable food loss through proper handling and reuse of edible food whenever appropriate (Principato et al., 2021; Ntai et al., 2025). Collectively, these interconnected functions contribute to more efficient household food management and support sustainable household food security.

One practical component of household inventory management is the implementation of stock rotation principles. The First In, First Out (FIFO) principle recommends that food items received or purchased first should be used first, making it particularly appropriate for products with similar shelf lives, such as rice, flour, cooking oil, and other staple foods. In contrast, First Expired, First Out (FEFO) prioritizes food products according to their expiration dates and is therefore more appropriate for packaged foods, infant formula, dairy products, and other items with clearly defined expiry dates. Applying these inventory management principles can reduce household food waste, improve food safety, and help ensure that nutritious foods remain available for family consumption (Jagtap et al., 2021; Ntai et al., 2025; FAO, 2023a).

Previous studies consistently demonstrate that stunting is a multifactorial condition requiring coordinated nutrition-specific and nutrition-sensitive interventions. Evidence from Indonesia indicates that inadequate dietary intake, poor maternal nutrition, low birth weight, household socioeconomic conditions, parenting practices, and food insecurity are among the major determinants associated with childhood stunting (Nugroho et al., 2021; Dewi et al., 2024). Community-based educational interventions have also been shown to improve caregivers' understanding of balanced nutrition, infant and young child feeding, and maternal health practices (Mbakaya et al., 2022; Wali et al., 2023; Has et al., 2022; Kalsum et al., 2022). Nevertheless, these studies primarily emphasize nutrition knowledge, feeding practices, or maternal and child health services, whereas the practical management of household food resources has received comparatively limited attention.

Although household food management is frequently discussed within broader nutrition education programs, explicit integration of household logistics management principles remains uncommon in community-based stunting prevention initiatives in Indonesia. Existing educational programs generally encourage healthy eating behaviors, complementary feeding, and balanced nutrition but provide limited guidance on practical logistics activities, such as household food planning, needs-based purchasing, inventory monitoring, stock rotation, appropriate storage according to product characteristics, and food waste reduction. Consequently, families may understand nutritional recommendations while still experiencing difficulties in organizing household food resources efficiently. Addressing this implementation gap requires educational approaches that

combine nutrition messages with practical household logistics principles, thereby enabling families to translate nutritional knowledge into everyday food management practices (Jagtap et al., 2021; Ntai et al., 2025).

In response to this gap, the Undergraduate Logistics Study Program of Universitas Mercubaktijaya implemented a community service program entitled "*Educational Program on Food Storage and Household Food Management for Stunting Prevention and Control*" in the working area of Pakan Rabaa Community Health Center, Lima Puluh Kota Regency, West Sumatra. Rather than claiming methodological novelty, the program offers a context-specific innovation by integrating fundamental household logistics management principles including food planning, procurement, inventory management, storage management, and stock rotation into community-based nutrition education. Such integration reflects the broader role of logistics in strengthening food availability, food safety, and nutrition-sensitive interventions for stunting prevention (Zai, 2025). This integration complements existing nutrition promotion activities by providing participants with practical strategies for organizing household food resources more efficiently while supporting food safety, reducing avoidable food waste, and strengthening household food security (FAO, 2023a; Principato et al., 2021). Accordingly, the program contributes a practical educational model that may complement existing community-based stunting prevention initiatives in similar settings.

Based on the considerations described above, this community service program aimed to deliver education on household food storage and logistics management for pregnant women, breastfeeding mothers, families with children under five years of age, and community health volunteers in the working area of Pakan Rabaa Community Health Center, Lima Puluh Kota Regency. The program introduced practical household logistics principles, including food planning, procurement, inventory management, appropriate food storage, and stock rotation, as complementary strategies to support household food security within broader community-based stunting prevention efforts. Program implementation was evaluated descriptively through participant attendance, engagement during educational sessions and discussions, participation in practical demonstrations, and participant feedback collected at the end of the activity. Accordingly, the program sought to document the feasibility of implementing household food logistics education as a community-based educational approach and to provide a context-specific model that may complement existing nutrition promotion initiatives in similar settings.

2. METHODS

This community service program was conducted on 25 February 2025 in the working area of Pakan Rabaa Community Health Center, Lima Puluh Kota Regency, West Sumatra Province, Indonesia, as part of the Nagari Emas (NGE) Stunting Reduction Acceleration Program. The program employed a participatory educational approach based on the principles of community empowerment, emphasizing collaboration between the community service team, healthcare professionals, community health volunteers (kader), and local government throughout the planning, implementation, and evaluation stages (World Health Organization, 2021; Nutbeam, 2021).

Participants were recruited through the Pakan Rabaa Community Health Center in collaboration with community health volunteers, who invited eligible community members during routine maternal and child health activities and community outreach. The target participants included 16 pregnant women, 19 breastfeeding mothers, and 15 caregivers accompanying children under five years of age, resulting in 50 registered participants. Participation was voluntary, and all invited participants who attended the activity completed the educational program. To protect participants' privacy, no personally identifiable information is reported in this manuscript.

Community participation was incorporated throughout the program. During the preparation stage, healthcare professionals and community health volunteers identified priority issues related to household food management and nutrition within the community, which informed the development of the educational materials. During implementation, participants were encouraged to actively engage in discussions, ask questions, share their household food management experiences, and participate in practical demonstrations. Feedback provided by participants at the end of the activity was used to evaluate the implementation process and identify recommendations for future community-based educational programs (World Health Organization, 2021).

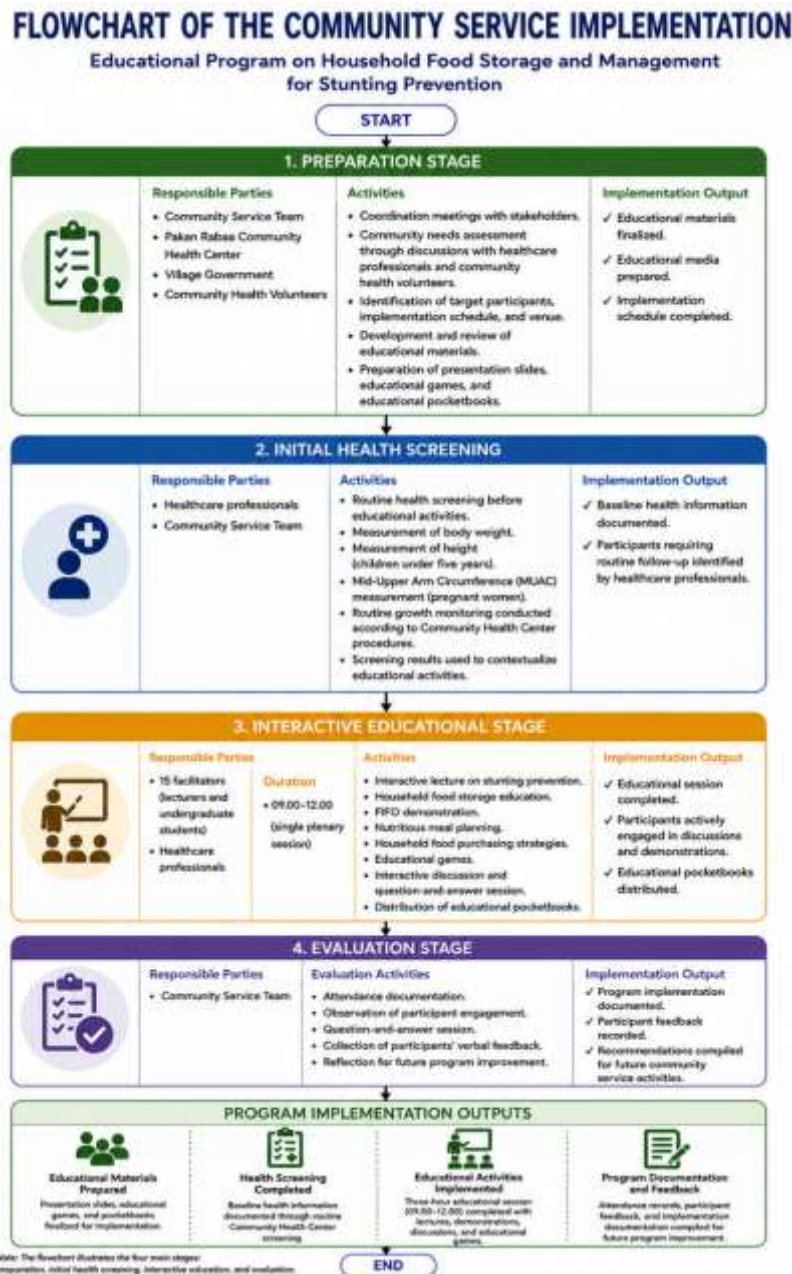


Figure 1. Flow Diagram of the Community Service Program

a. Preparation Stage

The preparation stage began with coordination meetings involving the community service team from the Undergraduate Logistics Study Program, Universitas Mercubaktijaya, healthcare professionals from Pakan Rabaa Community Health Center, community health volunteers (kader), and representatives of the village government to determine the implementation schedule, venue, participant recruitment strategy, and operational procedures for the community education program.

As part of the preparation process, a community needs assessment was conducted through informal group discussions with healthcare professionals and community health volunteers who routinely assisted maternal and child health services in the study area. The discussions explored common nutritional problems among pregnant women, breastfeeding mothers, and families with children under five years of age, household food storage practices, food purchasing and utilization habits, and educational topics considered most relevant by the local healthcare providers. Field notes were documented during the discussions and reviewed by the community service team to identify priority educational needs. The assessment indicated that participants required practical guidance on proper household food storage, implementation of the First In, First Out (FIFO) principle, nutritious meal planning using locally available foods, and efficient household

food purchasing to reduce food waste while supporting family nutritional adequacy (Jagtap et al., 2021; Ntai et al., 2025).

Based on these findings, educational materials were developed to address the identified community needs. The educational package consisted of presentation slides, demonstration materials, educational games, and a pocketbook containing practical guidance on stunting prevention, appropriate food storage according to food characteristics, implementation of the First In, First Out (FIFO) principle, nutritious meal planning, and household food purchasing strategies. The educational content integrated concepts of household food logistics management with maternal and child nutrition to ensure that participants received practical and contextually relevant information applicable to their daily household practices (Jagtap et al., 2021; Wali et al., 2023).

Before implementation, the educational materials were reviewed jointly with healthcare professionals from Pakan Rabaa Community Health Center to ensure consistency with current maternal and child nutrition recommendations and community health education practices. Feedback from the reviewers was incorporated into the final version of the educational materials prior to program implementation.

b. Initial Health Screening Stage

Prior to the educational sessions, an initial health screening was conducted as part of the routine maternal and child health services organized by Pakan Rabaa Community Health Center. The screening aimed to provide baseline health information and to assist healthcare professionals in tailoring the educational messages to participants' health and nutritional conditions rather than to establish research-based nutritional diagnoses.

The screening was performed by qualified healthcare personnel from Pakan Rabaa Community Health Center, including maternal and child health staff, with logistical assistance provided by the community service team. Anthropometric measurements were carried out using the standard equipment routinely employed by the Community Health Center, following the measurement procedures applied during regular maternal and child health services. Body weight and height were measured for children under five years of age, while body weight and mid-upper arm circumference (MUAC) were measured for pregnant women to identify the risk of Chronic Energy Deficiency (CED) (Kementerian Kesehatan Republik Indonesia, 2023). Breastfeeding mothers underwent routine measurements in accordance with local health service procedures.

The screening results were interpreted by authorized healthcare personnel using the applicable Indonesian Ministry of Health guidelines and routine maternal and child health assessment procedures (Kementerian Kesehatan Republik Indonesia, 2023). For children under five years of age, the anthropometric measurements were intended for routine growth monitoring. The community service team did not calculate height for age z-scores (HAZ) or classify children as stunted for research purposes because age and sex specific anthropometric analysis formed part of the routine clinical assessment conducted by the Community Health Center (WHO, 2006).. Accordingly, the screening data were not analyzed as research outcome measures but were used solely to provide context for the educational activities and to facilitate discussions relevant to participants' nutritional needs.

Participants identified by healthcare professionals as requiring further nutritional assessment or follow-up received recommendations in accordance with the routine referral procedures of Pakan Rabaa Community Health Center. Individual health information remained confidential and was not reported in identifiable form in this manuscript.

c. Interactive Educational Stage

The interactive educational stage constituted the core component of the community service program and was designed to improve participants' understanding of household food storage and logistics management as a practical strategy to support family nutrition and stunting prevention. The educational activities were conducted in a single plenary session from 09:00 to 12:00 and were facilitated by 15 facilitators, consisting of lecturers and undergraduate students from the Logistics Study Program, Universitas Mercubaktijaya, with support from healthcare professionals from Pakan Rabaa Community Health Center. All participants attended the educational activities together in one group to encourage collective learning and discussion.

The educational session followed a structured sequence. It began with an introduction to stunting prevention and the importance of adequate nutrition during the First 1,000 Days of Life, followed by presentations on household food storage practices, implementation of the First In, First Out (FIFO) principle for household food inventory management, nutritious meal planning using locally available food resources, and practical food purchasing strategies to minimize household food loss and waste (Jagtap et al., 2021).

Educational materials were delivered through presentations supported by visual media, interactive discussions, and practical examples related to participants' daily household food management practices.

To promote active participation, participants were encouraged to ask questions, share their experiences in managing household food supplies, and discuss challenges encountered in maintaining nutritious diets for their families. The facilitators guided discussions by relating the educational content to participants' household conditions and encouraging participants to identify practical solutions that could be implemented within their own families. This participatory approach allowed participants to contribute their experiences while enabling facilitators to clarify misconceptions and reinforce key educational messages (WHO, 2021; Nutbeam, 2021).

Practical demonstrations and simple simulations were incorporated throughout the educational session to strengthen participants' understanding of appropriate household food management practices (Principato et al., 2021; Ntai et al., 2025). Demonstration activities included examples of proper food storage according to food characteristics and simulation of the First In, First Out (FIFO) principle by arranging food items according to their purchase dates. Participants were invited to discuss the rationale for appropriate storage practices and to identify common household mistakes that could contribute to food spoilage and nutrient loss. Educational games and question-and-answer activities were also conducted to reinforce participants' comprehension and maintain engagement throughout the three-hour session.

At the conclusion of the educational activities, each participant received a pocketbook summarizing the key educational materials, including stunting prevention, household food storage techniques, FIFO implementation, nutritious meal planning, and household food purchasing strategies. The pocketbook served as a practical reference to facilitate continued application of the knowledge gained during the program and to support dissemination of the information to other family members.

d. Evaluation Stage

The evaluation stage focused on documenting the implementation process and participants' engagement throughout the community service program. Because the primary objective of this activity was community education rather than experimental research, no structured pre-test or post-test was administered to measure changes in participants' knowledge or skills.

Program implementation was evaluated through direct observation by the facilitators, documentation of participant attendance, monitoring of participant engagement during discussions and demonstration activities, and collection of verbal feedback at the end of the educational session. The facilitators observed participants' involvement in question-and-answer sessions, willingness to share household food management experiences, participation in practical demonstrations of household food storage and FIFO implementation, and responsiveness during educational games and interactive discussions.

At the conclusion of the program, participants were invited to provide verbal feedback regarding the relevance, clarity, and usefulness of the educational materials and activities. Feedback obtained during this session was documented in field notes by the community service team and was used to identify strengths of the program and areas requiring improvement for future community education activities. The evaluation findings were intended to assess program implementation and participant satisfaction rather than to determine changes in knowledge, behaviour, or health outcomes.

Accordingly, the outcomes reported in this study are limited to implementation indicators, including program delivery, participant attendance, educational material dissemination, and participant engagement during the educational activities. No claims regarding improvement in knowledge, behavioural change, or reduction in stunting prevalence were made because these outcomes require validated measurement instruments and longitudinal follow-up.

Table 1. Stages of Community Service Activities

STAGE	MAIN ACTIVITIES	OUTPUTS/ DELIVERABLES
Preparation	Coordination with the community health center, village government, and community health volunteers; community needs assessment; development and review of educational materials and learning media	Educational materials, learning media, implementation schedule, and educational pocketbook prepared prior to program implementation
Initial Health Screening	Measurement of body weight, height, and mid-upper arm circumference (MUAC) as part of	Baseline health information collected to support educational activities and identify participants requiring routine

	routine health screening conducted by healthcare personnel	follow-up by the Community Health Center
Interactive Education	Interactive lectures, participatory discussions, practical demonstrations of household food storage and FIFO implementation, educational games, and pocketbook distribution	Educational sessions completed, participants actively engaged in discussions and demonstrations, and educational pocketbooks distributed to participants
Evaluation	Observation of program implementation, documentation of attendance, participant engagement during educational activities, and collection of verbal feedback	Documentation of program implementation, participant participation, and feedback for future improvement of community education activities

3. RESULT AND DISCUSSION

The community service program was conducted on 25 February 2025 in the service area of Pakan Rabaa Community Health Center (Puskesmas Pakan Rabaa), Lima Puluh Kota Regency, West Sumatra Province, as part of the Nagari Emas (NGE) Stunting Reduction Acceleration Program. A total of 50 adult participants attended the educational program from the beginning until the completion of all activities. The participants included pregnant women, breastfeeding mothers, mothers with children under five years of age, and community health volunteers. In addition, 15 toddlers accompanied by their caregivers participated in the routine health screening activities. The program was implemented collaboratively by 10 lecturers and 6 undergraduate students from Universitas Mercubaktijaya in collaboration with local stakeholders, including the Community Health Center, village government, and community health volunteers.

Table 2. Characteristics of Participants in the Community Service Program

PARTICIPANT CATEGORY	NUMBER (N)
Pregnant women	16
Breastfeeding mothers	19
Mothers with toddlers	13
Toddlers (health screening)	15
Community health volunteers (cadres)	8
Lecturers (facilitators)	10
Undergraduate students (facilitators)	6

Note: Participant categories are not mutually exclusive because some breastfeeding mothers were also mothers of children under five years of age. Therefore, the category totals exceed the total number of adult participants (n = 50).

All 50 adult participants completed the educational activities until the end of the program. Routine health screening was conducted for all eligible participants, including 16 pregnant women who underwent MUAC measurement and 15 toddlers who received body weight and height measurements.

The program was implemented according to the planned stages, comprising program orientation, routine health screening, interactive education on household food storage and management, practical demonstrations of the First In, First Out (FIFO) principle, educational games, and distribution of educational pocketbooks. A total of 56 educational pocketbooks were distributed to participants and community health volunteers to facilitate continued access to the educational materials after the activity. In addition, **10 prizes** were awarded during the educational games as participation incentives to encourage engagement throughout the learning activities.

a. Program Implementation and Participant Characteristics

The community service program was conducted on 25 February 2025 at Pakan Rabaa Community Health Center, Solok Selatan Regency, West Sumatra, Indonesia, as part of the Nagari Emas (NGE) Stunting Reduction Acceleration Program. The activity was implemented collaboratively by Universitas Mercubaktijaya, Pakan Rabaa Community Health Center, the village government, and community health volunteers. The educational activities were facilitated by 10 lecturers and 6 undergraduate students from the Logistics Study Program, Universitas Mercubaktijaya.

A total of 50 adult participants attended and completed the educational program. The participants included 16 pregnant women, 19 breastfeeding mothers, 13 mothers with children under five years of age,

and 8 community health volunteers. Because some participants belonged to more than one category (e.g., breastfeeding mothers who also had children under five years of age), these categories were not mutually exclusive and therefore should not be summed. In addition, 15 toddlers accompanied by their caregivers participated in the routine health screening activities conducted before the educational session.

The program was implemented according to the planned stages, including routine health screening, interactive education on household food storage and management, practical demonstrations of the First In, First Out (FIFO) principle, educational games, distribution of educational pocketbooks, and participant feedback collection. Attendance records indicated that all registered participants remained until the completion of the educational activities.



Figure 2. Opening Ceremony of the Community Service Program

b. Initial Health Screening Results,

Prior to the educational activities, routine health screening was conducted to provide baseline health information for participants and to support individualized nutrition education. The screening activities were carried out by healthcare personnel from Pakan Rabaa Community Health Center in accordance with routine maternal and child health service procedures (Kementerian Kesehatan Republik Indonesia, 2023).

A total of 16 pregnant women underwent mid-upper arm circumference (MUAC) measurement to identify maternal nutritional risk, while 15 toddlers received body weight and height measurements as part of routine child growth monitoring. The screening activities were completed before the educational session and served as an opportunity for participants to discuss their nutritional condition with healthcare personnel.

The anthropometric measurements collected during the screening were part of routine health services provided by the Community Health Center and were not collected as research outcome data for this community service program. Consequently, individual measurement results and nutritional classifications are not reported in this article. Participants requiring further nutritional assessment or follow-up were managed according to the standard referral and follow-up procedures of the Community Health Center (Kementerian Kesehatan Republik Indonesia, 2023).

Table 3. Summary of Initial Health Screening Activities

SCREENING ACTIVITY	PARTICIPANTS SCREENED (N)
Pregnant women receiving MUAC measurement	16
Toddlers receiving body weight measurement	15
Toddlers receiving height measurement	15

Note: Anthropometric measurements were conducted as part of routine maternal and child health services at Pakan Rabaa Community Health Center. Individual screening results were not collected as research data and therefore are not presented in this article.



Figure 3. Routine health screening activities conducted before the educational session, including anthropometric measurements of toddlers and MUAC assessment of pregnant women by healthcare personnel from Pakan Rabaa Community Health Center

c. Interactive Education on Household Food Storage and Management

Following the health screening activities, participants attended a three-hour interactive educational session (09.00–12.00) focusing on household food storage and management as a strategy to support stunting prevention. The session was facilitated by 10 lecturers and 6 undergraduate students from Mercubaktijaya University and delivered in a single plenary group. Educational materials addressed the importance of nutrition during the first 1,000 days of life, principles of household food storage according to food characteristics, application of the First In, First Out (FIFO) principle, nutritious meal planning, and household food purchasing strategies (Kementerian Kesehatan Republik Indonesia, 2024; Jagtap et al., 2021).

To encourage active participation, the facilitators incorporated interactive discussions, question-and-answer sessions, demonstrations, and educational games throughout the session. Participants were invited to share their household experiences related to food purchasing, storage, and meal preparation, which were then discussed collectively with the facilitators. Participant engagement was documented through attendance records, facilitator observations, and field notes recorded during the implementation of the program. These observations indicated that participants actively contributed questions and shared practical experiences during the discussions; however, no structured knowledge assessment or performance scoring was conducted.

A practical demonstration of the First In, First Out (FIFO) principle was conducted using examples of packaged household food products. Participants observed how food items should be arranged according to their expiration dates so that products with the earliest expiration dates would be used first. The demonstration was followed by a guided discussion on the application of FIFO principles in daily household food storage to reduce food waste and maintain food quality (Principato et al., 2021; Ntai et al., 2025). This finding is consistent with previous literature indicating that logistics principles, including inventory management, storage management, and efficient distribution of food resources, may complement nutrition-sensitive interventions by strengthening household food security and supporting community-based stunting prevention initiatives (Jagtap et al., 2021; Zai, 2025).

Educational games were used as reinforcement activities following the educational session. The games consisted of facilitator-led quizzes covering key topics presented during the session, including appropriate household food storage, FIFO implementation, nutritious food selection, and meal planning. Participants voluntarily answered questions individually in the plenary session, and 10 prizes were provided as appreciation for participation and correct responses. Because the games were intended as learning reinforcement rather than formal evaluation, participant performance was not scored and no quantitative assessment of learning outcomes was conducted. The educational games concluded with the presentation of small prizes to participants who voluntarily answered questions correctly. The prizes were intended to encourage active participation and create an engaging learning environment rather than to assess participants' knowledge.



Figure 4. Interactive educational activities, including lectures, educational games, and prize distribution to participants during the learning session.

d. Distribution of Educational Pocketbooks and Supporting Materials

To reinforce the educational messages delivered during the interactive session, a total of 56 educational pocketbooks were distributed at the end of the program to participants and community health volunteers. The number of pocketbooks exceeded the number of adult participants because additional copies were provided to community health volunteers to facilitate continued community education following the activity. The pocketbook was developed by the community service team based on the educational materials presented during the program and served as a practical reference for independent learning after the completion of the educational activities.

The pocketbook was written in simple and accessible language and complemented with illustrations, figures, and practical tables to facilitate understanding. The content included essential information on stunting prevention, nutritional requirements during the First 1,000 Days of Life, appropriate food storage according to food characteristics, application of the First In, First Out (FIFO) principle, efficient household food purchasing strategies, and examples of nutritious meal planning using locally available food resources. These topics were selected based on the needs assessment conducted prior to program implementation and were intended to support participants in applying the educational messages within their household food management practices (Kementerian Kesehatan Republik Indonesia, 2024; Jagtap et al., 2021).

In addition to the educational pocketbooks, 10 prizes were distributed to participants who voluntarily answered questions during the educational games. These prizes were provided solely as participation incentives to encourage active involvement throughout the learning activities and were not intended as rewards for measured knowledge achievement or indicators of educational effectiveness.

The distribution of educational materials was documented as part of the implementation of the community service program. During the closing discussion, participants expressed that the pocketbook was useful as a practical reminder of the topics presented during the educational session and could serve as a reference for future household food management activities. These observations were derived from verbal feedback documented in facilitator field notes and were intended to describe participants' immediate perceptions rather than to evaluate sustained learning outcomes.

The findings are consistent with the concept of health literacy, which emphasizes that accessible educational materials can complement face-to-face education by providing practical information that individuals may review independently after an educational activity (Nutbeam, 2021). Likewise, practical educational resources related to household food management may strengthen community capacity to organize food resources more effectively, support household food security, and reduce avoidable household food waste (Food and Agriculture Organization of the United Nations, 2023; Jagtap et al., 2021; Ntai et al., 2025; Principato et al., 2021).

However, this community service program did not include post-intervention follow-up to evaluate participants continued use of the pocketbook or subsequent changes in household food storage practices. Therefore, the pocketbook should be regarded as a supporting educational resource with the potential to facilitate continued learning beyond the intervention rather than as evidence of sustained behavioural change or improved household practices (Nutbeam, 2021).



Figure 5. Distribution of Educational Pocketbooks as Supporting Learning Materials

4. CONCLUSION

The community service program on household food storage and management for stunting prevention was implemented successfully through collaboration between Universitas Mercubaktijaya, Pakan Rabaa Community Health Center, the village government, and community health volunteers. The program involved routine health screening, interactive educational sessions, practical demonstrations of household food storage using the First In, First Out (FIFO) principle, educational games, and the distribution of educational pocketbooks as supporting learning resources.

The implementation demonstrated that community-based nutrition education could be integrated into existing maternal and child health activities and successfully reached pregnant women, breastfeeding mothers, mothers of children under five years of age, and community health volunteers. The educational pocketbook provides a practical reference that participants may use after the activity to reinforce key messages regarding household food storage and nutrition.

This community service program was designed to support community education rather than to evaluate intervention effectiveness. Because no structured knowledge assessment or post-intervention follow-up was conducted, the present study does not draw conclusions regarding improvements in participants' knowledge, behavioural changes, or reductions in stunting. Future community service programs are recommended to incorporate validated pre- and post-intervention assessments and longitudinal follow-up to evaluate learning outcomes, behavioural changes in household food management, and potential contributions to nutrition-sensitive community interventions (World Health Organization, 2021; Mbakaya et al., 2022).

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