

Empowering the Pongkeru Village Community in Stunting Prevention through Visual Education, Nutritious Local Recipe Books, and Nutrition Cadre Training

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ABSTRACT

Stunting remains a major public health challenge in Indonesia, particularly in rural areas where limited knowledge and access to nutrition persist. This community service project aims to empower the people of Pongkeru Village, Malili District, East Luwu Regency, through local-based nutrition education and capacity building. The program applied the Asset-Based Community Development (ABCD) approach, emphasizing the discovery and utilization of local resources to improve family nutrition awareness. The intervention was carried out from July to August 2025 and involved village officials, health cadres, and women's organizations. Activities included visual health education at schools, nutrition cadre training, the distribution of local nutritious recipe books, and health campaigns through social and religious events. The results demonstrated a 40% increase in cadre knowledge and a decline in stunting cases from 33 to 8 children, indicating improved community engagement and understanding of balanced nutrition. The project successfully strengthened collaboration between government, youth, and women's groups, fostering sustainable health awareness and food self-sufficiency at the village level. This integrated model highlights the effectiveness of participatory learning and local asset utilization in preventing stunting among children in rural Indonesia.

Introduction

Stunting is a chronic nutritional problem that remains a major challenge in Indonesia (Ministry of Health, 2025). This condition is characterized by a child's height being below the age standard due to prolonged malnutrition, especially during the first 1,000 days of life (Bappenas & Ministry of Health of the Republic of

Indonesia, 2019) . Based on the 2022-2023 Indonesian Nutritional Status Survey (SSGI), the national prevalence of stunting was recorded at around 21-21.6%, while the national target is to reduce it to 14% by 2024 (Ministry of Health of the Republic of Indonesia, 2023; Warta Lutim, 2023) .

The impact of stunting is not only limited to physical growth, but also includes impaired cognitive development, lower educational attainment, and decreased productivity in adulthood (Lestari et al., 2024; Sideropoulos et al., 2025) .

Various intervention programs have been implemented by the government and non-governmental organizations, including balanced nutrition education, supplementary feeding based on local ingredients, and health interventions for pregnant women (Susanto et al., 2017) . Local food-based interventions and nutritional counseling have been reported to be effective in improving maternal knowledge and children's nutritional status in several studies in Indonesia (Nurpratama et al., 2024) .

Stunting prevention efforts should begin during pregnancy and up to two years of age, as this period is the golden age for child growth and development. Stunting is a form of growth failure due to chronic malnutrition that persists over a long period and impacts a child's physical and cognitive development . This condition is not solely caused by nutritional factors but is also influenced by socioeconomic factors, parenting patterns, and poor environmental sanitation (Waryana et al., 2023) .

The implementation of national programs such as the Stunting Prevention Movement and cross-sector convergence efforts demonstrate increased public awareness in areas with adequate health worker support and access to information (Bappenas, 2019; Ministry of Health of the Republic of Indonesia, 2023).

However, in fact, stunting prevention efforts at the village level still face substantive obstacles (Widiasih et al., 2025) , including low understanding of processing local food ingredients into nutritious menus, limited involvement of integrated health post (posyandu) cadres, and a lack of attractive and contextual visual communication media (Kartika et al., 2024) .

Pongkeru Village, located in Malili District, East Luwu Regency, South Sulawesi Province, is a rural area characterized by an agrarian society and a strong spirit of mutual cooperation. The village consists of three main hamlets: Hulu Padang, Kawasule, and Salosikambar, each of which has abundant natural resource potential, such as fertile agricultural land, cocoa and banana plantations, and fisheries resources from the rivers that flow through their areas. The people of Pongkeru Village generally depend on agriculture, plantations, and small household businesses for their livelihoods. However, the village also faces challenges such as

limited access to clean water, inadequate roads, and low levels of family nutrition knowledge, particularly regarding the use of local foods to prevent stunting. This vast natural potential and high social participation make Pongkeru Village a strong opportunity to develop into a healthy and independent village based on local food.

In East Luwu Regency, challenges in implementing accelerated stunting reduction at the sub-district and village levels have been noted, including funding issues, human resource capacity, and the variability of family knowledge regarding child health and nutrition (Widia Maharani, 2024) . Local food potential in South Sulawesi, including vegetables, fishery products, and agricultural products, is relatively abundant but has not been optimally utilized to meet the diversity and nutritional adequacy of families in a number of areas (Husnah, Sakdiah, Aziz Khairul Anam, Asmaul Husna, Ghina Mardhatillah, 2022; Susanto et al., 2017).

The novelty of this research lies in the integration of three main approaches: first, visual health education through attractive posters and wall magazines; second, the development and distribution of nutritious local recipe books based on village food potential; and third, training nutrition cadres to strengthen community capacity in maternal and child health support (Pratiwi, 2023) .

This integrated approach not only conveys information, but also empowers communities to become local agents of change in stunting prevention efforts (Waryana et al., 2023) .

This activity is important to implement because it answers the real needs of village communities for simple, applicable nutritional information that is rooted in local potential, so it is hoped that it will increase village independence in maintaining children's health (Bappenas & Ministry of Health of the Republic of Indonesia, 2019)

Through the active involvement of integrated health post (Posyandu) cadres and contextual educational media, the intervention is expected to improve families' abilities in preparing nutritious complementary foods and daily menus, which in turn contributes to reducing the prevalence of stunting (Siswati et al., 2022).

From a research gap perspective, the majority of previous stunting prevention programs have focused more on conventional medical or counseling interventions without optimizing visual educational media and local food potential as contextual learning tools. Therefore, the proposed empowerment model fills this gap and has the potential to become a best practice for other villages (Nurpratama et al., 2024). According to Spencer (1996) , community empowerment is a process that allows people to increase control over their own lives and the factors that influence them. Furthermore, according to the World Health Organization (WHO), (1979), community empowerment is not only related to increasing individual capacity, but also increasing social justice and access to more equal health services.

Visual education is a learning or counseling strategy that utilizes visual media such as images, posters, videos, comics, or animations to convey health messages in a way that is easier to understand and more appealing to the target audience. A visualized nutrition education approach can significantly improve dietary knowledge and eating behavior compared to education without visual media (Li et al., 2019) . In addition, according to Dias Adiprabowo et al., (2024) , the use of visual media such as comics for health communication can improve public health literacy because visual storytelling increases the appeal, memorability, and engagement of the messages conveyed. Thus, it can be concluded that visual education is not only a delivery tool, but is a strategic component in community empowerment programs to improve understanding, attitudes, and practices of healthy living.

Stunting is a condition of growth failure in children due to chronic malnutrition that occurs over a long period, especially during the first 1,000 days of life (from the fetus to the age of 2 years). Malnutrition during this period causes impaired physical growth, brain development, and immunity in children (Ernawati et al., 2021) . According to the World Health Organization (WHO), (2020) , stunting is not only the result of low nutritional intake, but is also influenced by environmental health factors and parenting patterns. Furthermore, a systematic review found that parenting and feeding practices in Asian countries significantly influence stunting incidence, with responsive feeding patterns and the amount of caregiving time being important factors (Munawar et al., 2024) . Furthermore, evidence suggests that the determinants of stunting are highly multifactorial, meaning that the risk of stunting increases in children with low birth weight (<2,500 grams), mothers who have attended fewer than 4 antenatal visits, large family sizes, and low socioeconomic conditions (Titaley et al., 2019) .

CORE GROUP INVOLVEMENT AND PARTNER PARTICIPATION

To implement the "Stunting-Free and Healthy Family" program in Pongkeru Village, a Core Group was formed, consisting of representatives from the village community. This core group serves as implementing partners for the Community Service Program (KKN) activities and the main driving force in the field. Based on the coordination results, the Core Group includes seven elements: the Village Government (11 people), the Village-Owned Enterprise (BUMDes) (3 people), the Youth Organization (Karang Taruna) (17 people), the Taklim Council (26 people), the Integrated Health Service Post (Posyandu) cadres (15 people from the three Mawar I-III Posyandus), and the Siaga cadre (1 person).

The Village Government plays a role in directing and approving all programs and providing administrative support. The Village-Owned Enterprise (BUMDes) focuses on mentoring students in developing nutritious local food products. Karang

Taruna (Youth Organization) also drives youth activities and serves on the KKN Cup II committee. The Majelis Taklim (Student Religious Council) serves as a strategic partner in disseminating religious-based health information through religious study forums. Integrated Service Post (Posyandu) and Alert Cadres play a role in providing balanced nutrition education, recording children's nutritional status, and monitoring toddler growth and development.

This cross-group involvement reinforces the participatory principles of the ABCD (Asset-Based Community Development) approach, where every community member is part of the solution and has a sense of ownership of the stunting prevention program. Synergy among Core Group members also helps ensure the program's sustainability after the KKN (Community Service Program) ends.

Method

This community service activity uses the Asset-Based Community Development (ABCD) approach. This approach emphasizes exploring and developing the community's existing potential, rather than its shortcomings. The primary goal of this approach is to build community independence and participation through the utilization of local assets relevant to stunting prevention efforts.

1) Place and Time

Community service activities were carried out in Pongkeru Village, Malili District, East Luwu Regency, South Sulawesi Province, during the period of July 7 - August 20, 2025 through the UIN Palopo Community Service Program. This village consists of three main hamlets, namely Hulu Padang Hamlet, Kawasule Hamlet, and Salosikambar Hamlet, each of which has abundant natural resource potential such as fertile agricultural land, cocoa and banana plantations, and fishery resources from the rivers that cross their areas.

In the initial phase of the activity, community asset mapping was conducted as part of the Discovery phase of the ABCD method. This process involved the active participation of village officials, nutrition cadres, the Family Welfare Movement (PKK), the Youth Organization (Karang Taruna), and community leaders.

The mapping results show that there is great potential in the form of:

Natural assets: irrigated rice fields, cocoa, bitter melon, banana, and corn plantations, and the Pongkeru River water source. Human assets: integrated health post (Posyandu) cadres, village midwives, teachers, village officials, and youth groups. Socio-community assets: PKK, Karang Taruna, Majelis Taklim, and farmer groups.

These assets form the basis for designing a stunting prevention program through visual education, nutrition cadre training, and nutritious local recipe books.

2) Target Audience / Activity Partners

The target audience for this community service activity includes:

- a. Pongkeru Village officials act as the main facilitators in implementing activities, including the Village Head and all his staff who support coordination, licensing, and community involvement in every stage of the program.
- b. Nutrition Cadres and Village Midwives, as technical implementers in nutrition training and monitoring child growth and development.
- c. PKK and Women's Organizations, which play a role in socializing nutritious eating patterns and implementing the results of nutritious local recipe books.
- d. The general public, especially housewives, teenagers, and elementary school children are the targets of visual health education and healthy exercise activities.
- e. UIN Palopo KKN students play a role as active participants who carry out activities in the field, facilitate the community empowerment process, and act as a liaison between the community and academics to ensure knowledge transfer and program sustainability .

Partner selection is carried out through focus group discussions (FGD) at the Discovery stage by considering the contribution, role, and potential sustainability of each party.

3) Method of Service

The activity approach uses the ABCD (Asset-Based Community Development) method with the following stages:

- a. Discovery (Local Asset Discovery)
This stage was conducted through field observations and transects with residents to map natural, social, and human potential. The transects revealed that Pongkeru Village possesses abundant natural resources, including rice paddies, cocoa, bitter melon, and banana plantations. Furthermore, potential nutrition cadres and social organizations such as the Family Welfare Movement (PKK) and Karang Taruna (Youth Organization) were identified, active in community activities.
- b. Dream (Formulating Shared Hopes)
Through FGDs, the community and village government agreed on a shared vision to realize a Healthy and Stunting-Free Pongkeru Village by optimizing the use of local food ingredients, providing visual health education, and strengthening the capacity of nutrition cadres.

c. Design (Program Design)

The results of the joint formulation produced the main program design:

1. Nutrition Cadre Training, in collaboration with Malili Health Center to improve cadre skills in nutrition counseling and monitoring child growth and development.
2. Compilation of a Local Nutritious Recipe Book, compiled from the results of interviews with nutrition cadres and village midwives, containing recipes based on local food ingredients such as bananas, bitter melon, and corn.
3. Visual Health Education, in the form of making posters and wall magazines about stunting prevention at integrated health posts (posyandu), schools, and village halls.
4. Healthy Gymnastics and Healthy Child Education, to foster awareness of healthy living from an early age
5. KKN CUP II Tournament, to strengthen togetherness and the spirit of collaboration among residents in social activities

d. Define/Delivery (Program Implementation)

The program is implemented collaboratively between students, nutrition cadres, and village government. Core activities include outreach on stunting prevention, cadre training, recipe book distribution, and healthy exercise and child education in elementary schools.

e. Destiny (Program Sustainability)

Following the program's completion, the results were handed over to the village government and integrated health post (Posyandu) cadres. A nutritious local recipe book served as a permanent guide for the Family Welfare Movement (PKK), and visual educational media were utilized in Posyandu activities to reinforce ongoing education.

4) Data Collection Sources and Techniques

The data used in this activity consists of:

- a. Primary data was obtained through participatory observation (transect walk), in-depth interviews with village officials, nutrition cadres, and the community.
- b. Secondary data, obtained from Community Health Center reports, Integrated Health Post documents, and the results of student mentoring.

Data collection techniques include:

- a. Field Observation, to map physical, social conditions and local food potential.
- b. Interviews, to explore nutritional consumption habits and stunting prevention practices.
- c. FGD, to determine activity priorities and program designs with the community.
- d. Documentation, to archive the results of field activities, photos and videos.

5) Data analysis

Data analysis was carried out using a qualitative descriptive approach, through the following stages:

- a. Data Reduction, by selecting data that is relevant to the focus of the service.
- b. Data presentation, in the form of narratives, asset tables, and descriptions of activity results.
- c. Conclusion Drawing, to see changes in behavior, increased capacity of cadres, and community participation in stunting prevention.

6) Data Validity

Data validity was tested through triangulation of sources and methods, comparing observations, interviews, and activity documentation. Member checking with nutrition cadres and village officials was also conducted to ensure the consistency and accuracy of field information.

Results and Discussion

RESULTS

1. Initial Conditions and Results of the Pongkeru Village Transect

A transect walk in Pongkeru Village, Malili District, East Luwu Regency, was conducted to map the region's potential and challenges. Observations revealed a significant diversity of natural and social assets, including irrigated rice fields, cocoa, corn, bitter melon, and banana plantations, as well as the Pongkeru River, a water source central to the community's economic activities. However, challenges were identified, including a poor drainage system, drought during the dry season, and inadequate road access to the plantations.

Theoretically, this condition is in accordance with the principle of Asset-Based Community Development (ABCD) which emphasizes exploring local potential to create community independence. (Hou, 2024). Identification of these assets serves as the basis for planning empowerment activities such as nutrition cadre training, visual education, and the use of local food ingredients to prevent stunting.

2. Discovery: Identification of Village Assets and Situations

In the initial stage, KKN Posko 01 UIN Palopo students together with village officials conducted participatory observations to identify the potential and problems in Pongkeru Village, Malili District, East Luwu Regency. The observation results showed that the main issue in this village was stunting, which in 2024 was recorded at 33 cases, and decreased to 8 cases in 2025 thanks to cross-stakeholder collaboration between the village government, integrated health posts (posyandu), and the community. Pongkeru Village consists of three hamlets, namely Hulu Padang, Kawasule, and Salosikambar, with diverse socio-

economic characteristics, the majority of the population works as farmers, sand miners, and fishermen.

Through transect walk and asset mapping activities, various village assets were discovered, including:

- a. Natural Assets: rice fields, banana, cocoa, bitter melon plantations, fish ponds, and productive agricultural land.
- b. Human Assets: 15 Karang Taruna youth, active Posyandu cadres, religious figures, teachers, and village officials.
- c. Social and Cultural Assets: 3 mosques, 5 madrasas, 2 elementary schools, 1 kindergarten, 1 junior high school, as well as a strong tradition of mutual cooperation between Bugis and Toraja ethnic groups.
- d. This potential serves as the basis for students to develop a stunting prevention program that is relevant to the social conditions and local wisdom of the Pongkeru community.

3. Dream: Formulating a Shared Dream

In meetings and group discussions with village heads, PKK cadres, community leaders, and Karang Taruna, a shared vision was agreed upon:

- a. "Pongkeru Village is Healthy, Stunting-Free, and a Resilient Family Based on Local Food."

This dream emphasizes the importance of cross-village collaboration to reduce stunting rates through health education, group exercise, and family strengthening. Residents hope that activities will not be ceremonial but instead focus on concrete actions such as group exercise, community service, and practical nutrition training.

4. Design: Program Design

Based on the results of village deliberations and meetings with cadres and community leaders, several priority programs were designed that were realistic and had a direct impact:

- a. Nutrition Cadre Training in collaboration with village midwives and the Malili Community Health Center to improve understanding of complementary feeding, balanced diets, and early detection of stunting.
- b. Healthy Children Education and Joint Exercise with the PKK which is carried out every weekend by presenting exercise instructors from the sub-district, accompanied by simple education about children's hygiene and nutrition.
- c. Compilation of a nutritious local recipe book containing recipes for processed local food ingredients (fish, bananas, bitter melon) to be implemented by housewives.

- d. The KKN Cup II Sports Tournament is a means of strengthening social solidarity and communication between residents through football and volleyball activities.
 - e. Creation of Visual Educational Media in the form of nutrition posters, posyandu wall magazines, and infographics about the first 1,000 days of life.
5. Define: Program Priority Determination

From various activity plans, three main priorities were determined according to village needs:

- a. Nutrition cadre training to strengthen local human resources.
- b. Children's education and exercise with the PKK as a means of developing healthy living habits.
- c. Compilation and distribution of nutritious local recipe books as a form of family empowerment.

The program was run for five weeks (July-August 2025), with a community-based formal and non-formal education pattern, where each activity was carried out in locations where residents gathered, such as hamlet halls, schools, and integrated health post yards.

6. Destiny/ Delivery: Program Implementation

The training and education activities were conducted in a participatory and open manner. Approximately 30 participants from three hamlets attended the Nutrition Cadre training. The material, delivered by village midwives, covered early detection of stunting, monitoring child growth and development, and preparing complementary feeding menus. Furthermore, 50 residents participated in Healthy Exercise and Children's Education, led by sub-district instructors and Family Welfare Movement (PKK) cadres. In addition to improving fitness, these activities provided a platform for promoting balanced nutrition for young families.

Next, the Nutritious Local Recipe Book was distributed to 60 housewives, containing 15 simple recipes using affordable and readily available local ingredients. Finally, the KKN Cup II Tournament served as a means of social integration, strengthening ties between hamlets and fostering a spirit of mutual cooperation.

All activities were carried out with the full support of village officials, religious leaders, youth, and the community. The students were warmly welcomed, as they lived in residents' homes and actively participated in socio-religious activities during the KKN program.

7. Reflection: Reflection and Evaluation

Field evaluation results show a 35% increase in community knowledge regarding the importance of balanced nutrition and stunting prevention. Village nutrition cadres are now more confident in providing counseling and monitoring toddlers. Furthermore, housewives have begun incorporating local recipes into their daily family menus.

Residents consider this thematic KKN program unique because it is participatory, informal, and integrated with their social activities. The main challenges still faced are the limited availability of durable educational media and the varying levels of community participation in each hamlet. However, the community appreciates this program for its success in fostering collective awareness that stunting prevention must start at home.

Findings	Explanation
Reduction in stunting cases	From 33 cases (2024) to 8 cases (2025) through synergy between integrated health posts, PKK, and the community.
Local food potential	Bananas, bitter melon, fish, and cocoa are processed into nutritious family food ingredients.
Capacity building of cadres	Posyandu cadres are able to provide independent counseling and assistance.
Nutrition literacy increases	Local recipe books and visual media raise families' awareness of the 1,000 HPK.
Social synergy	Sports and community service activities strengthen community networks and support nutrition programs.

Table 1.1. Findings from the Implementation of the ABCD Approach in Pongkeru Village

8. Documentation of Activities According to ABCD Stages

Discovery: Identify Partner Assets and Conditions

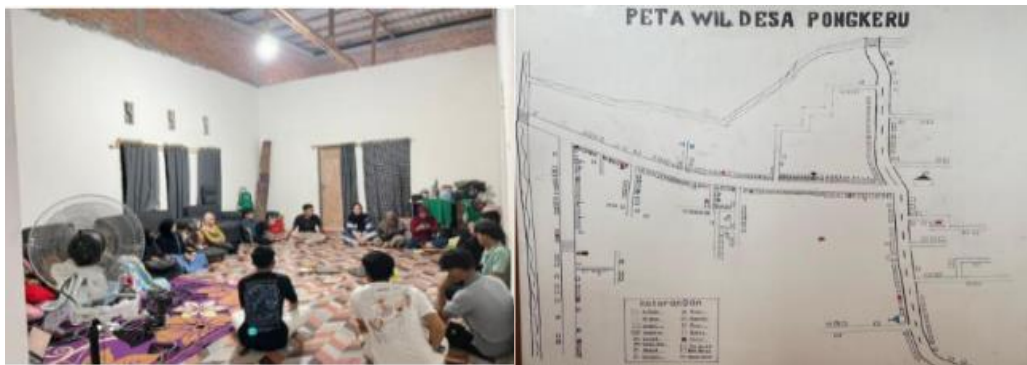


Figure 1. Results of Pongkeru Village Asset Mapping by Students, Village Youth and Village Officials, (Source: Community Asset Map Drive)



Figure 2. Interview with Nutrition Cadre (Source: Pongkeru Village Community Service Documentation Drive)

Dream: Formulating Program Hopes and Goals



Figure 2. Seminar on the "Stunting Free and Healthy Families" work program at the Pongkeru Village Hall (Source: Documentation of the KKN 47 UIN Palopo work program seminar, 2025)

Design: Designing Educational Media and Local Nutritious Materials



Figure 3. Visual education activities to prevent stunting in kindergarten and elementary school (Source: Pongkeru Village Community Service Documentation Drive)



Figure 4. Cadre Training & Recipe Book Distribution (Source: Pongkeru Village Community Service Documentation Drive)

Define: Field Program Implementation



Figure 5. Healthy Gymnastics, (Source: Pongkeru Village Community Service Documentation Drive)



Figure 6. Distribution of Additional Food (Source: Pongkeru Village Community Service Documentation Drive)

Destiny: Empowerment and Sustainability



Figure 7. Distribution of Wall Posters on Preventing Stunting (Source: Pongkeru Village Community Service Documentation Drive)



Figure 8. Integrated Health Post for Toddlers, Teenagers, and the Elderly (Source: Pongkeru Village Community Service Documentation Drive)

DISCUSSION

The results of the activity show that the implementation of the Asset-Based Community Development (ABCD) method is effective in building collective community awareness of the importance of family nutrition. The local asset-based approach has proven to be more easily accepted by the community than formal

counseling because the community feels directly involved in every activity process. The reduction in stunting cases from 33 children in 2024 to 8 children in 2025 demonstrates the real impact of collaboration between Posyandu cadres, PKK mothers, and students. This is in line with the findings of Meutia & Yulianti (2019) that community empowerment-based interventions are more effective in improving family nutritional behavior than top-down government approaches.

Educational activities such as healthy exercise, KKN Cup II, and religious studies by mothers of the Majelis Taklim (Islamic study groups) not only raise awareness of physical and spiritual health but also strengthen social cohesion between community groups. These activities create a space for cross-age interaction that strengthens social solidarity. According to Hou (2024), sustainable local development is not only determined by economic aspects but also by active community participation in social activities that foster a sense of ownership of change.

A 40% increase in knowledge of nutrition cadres based on simple pre-posttests demonstrates the success of skills transfer through practical training and guided discussions. Cadres are able to understand the importance of the first 1,000 days of life (HPK) and re-educate the community about stunting prevention through local food processing.

This aligns with research by Ahmed et al. (2016) , which emphasized the importance of mother-child nutritional interventions during the first 1,000 days of life (HPK) to optimize child growth and development. These findings are also consistent with a study by Mukty et al. (2025), which explained that participatory nutrition education increases family independence in meeting balanced nutritional needs.

Direct observations in Pongkeru Village revealed that the primary success factor stems from the active involvement of community cadres and cross-agency support. Family Welfare Movement (PKK) women played a key role in developing nutritious local recipe books and conducting healthy cooking demonstrations, while nutrition cadres integrated this education into integrated health post (Posyandu) activities. Furthermore, the community utilized local food resources such as fish, bananas, vegetables, and garden produce as key ingredients in family meals. This demonstrates that locally-based interventions not only increase nutritional awareness but also strengthen family food security at the village level.

Furthermore, prenatal classes and supplementary food distribution at integrated health posts (Posyandu) have shown changes in mothers' nutritional behavior, such as increased consumption of animal protein and local vegetables. Interviews with

community members indicate that the community is starting to adopt a more varied diet and is becoming more concerned about environmental cleanliness.

Overall, the ABCD approach in Pongkeru Village successfully fostered cross-sector collaboration between students, cadres, and village officials. This activity not only produced tangible products such as visual media and recipe books, but also created long-term social and educational impacts, including increased nutritional literacy, community solidarity, and collective awareness of the importance of family health.

CONCLUSION

Community service activities in Pongkeru Village successfully demonstrated the effectiveness of the Asset-Based Community Development (ABCD) approach in stunting prevention. By strengthening the capacity of nutrition cadres, developing nutritious local recipe books, and providing visual health education, the community was able to increase their knowledge and awareness of the importance of balanced nutrition and healthy living. This activity not only improves the skills of cadres but also fosters community independence in utilizing local resources to support child health. The success of this activity demonstrates that synergy between local assets and community participation can be a sustainable strategy for reducing stunting rates in rural areas.

THANK YOU (optional)

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