

Penguatan Ketahanan Pangan Berbasis Partisipasi Masyarakat di Wilayah Rawan Pangan

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Food Security Interventions to Eradicate Extreme Poverty: Case Studies in Food Insecure Areas

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Abstract

Food security remains a significant challenge for vulnerable areas, requiring sustainable interventions to improve community well-being. This community service activity aims to strengthen food security through a participatory approach involving nutrition education, local food diversification training, and program sustainability monitoring. The Participatory Action Research (PAR) method was applied, with data collected through questionnaires, in-depth interviews, and participatory observations. The results showed a significant improvement in household food security, with food insecurity rates dropping from 65% to 30%, alongside positive changes in consumption patterns. However, program sustainability still requires policy support and the involvement of local stakeholders to ensure long-term impact. The conclusion emphasizes that community-based interventions can

be an effective model for enhancing food security, but sustainable strategies are essential to maintain program benefits over time.

Keywords

Food Security, Community Service, Participatory Action Research, Local Food Diversification, Sustainable Development

Abstrak

Ketahanan pangan menjadi tantangan signifikan bagi daerah rentan pangan, yang memerlukan intervensi berkelanjutan untuk meningkatkan kualitas hidup masyarakat. Kegiatan pengabdian masyarakat ini bertujuan untuk memperkuat ketahanan pangan melalui pendekatan partisipatif yang melibatkan edukasi gizi, pelatihan diversifikasi pangan lokal, dan monitoring keberlanjutan program. Metode Participatory Action Research (PAR) diterapkan dengan teknik pengumpulan data berupa kuesioner, wawancara mendalam, dan observasi partisipatif. Hasil kegiatan menunjukkan adanya peningkatan signifikan dalam ketahanan pangan keluarga, dengan penurunan tingkat kerawanan pangan dari 65% menjadi 30%, serta perubahan positif dalam pola konsumsi masyarakat. Meski demikian, aspek keberlanjutan program masih memerlukan dukungan kebijakan dan keterlibatan pemangku kepentingan lokal untuk memastikan dampak jangka panjang. Kesimpulan dari kegiatan ini menegaskan bahwa intervensi berbasis komunitas dapat menjadi model efektif untuk memperkuat ketahanan pangan, namun perlu strategi berkelanjutan agar manfaat program dapat terus dirasakan oleh masyarakat secara luas.

Kata Kunci

Ketahanan Pangan, Pengabdian Kepada Masyarakat, Penelitian Aksi Partisipatif, Diversifikasi Pangan Lokal, Pembangunan Berkelanjutan



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1. Introduction

Food security is one of the most crucial issues, particularly in regions vulnerable to food insecurity and extreme poverty. According to the National Food Agency (2022), several areas in West Kalimantan Province, such as Pontianak City and Kubu Raya Regency, are categorized as regions with high levels of food insecurity. Data from Statistics Indonesia (BPS) also indicate that some villages in these areas still experience significant levels of extreme poverty, with many households living below the poverty line and facing limited access to nutritious food.

Food insecurity not only reflects the inability of communities to meet their basic needs but also serves as an indicator of broader social and economic

instability. This condition is exacerbated by climate change, rapid urbanization, and global economic uncertainty. In this context, food security is understood as defined by the Food and Agriculture Organization (FAO, 2021), namely, a condition in which every individual has sufficient access to safe, nutritious, and adequate food for a healthy and active life.

To ensure that the designed intervention programs truly address community needs, a Community Need Assessment was carried out prior to implementation. This process began with an official request from the local government, followed by village-level deliberations, and the implementation of Focus Group Discussions (FGDs) involving community leaders, women's groups, village officials, and

relevant government agencies. From this process, several urgent community needs were identified, including low levels of nutrition literacy, limited utilization of local food resources, and dependency on external food aid.

Within response to these conditions, this community service program was carried out through collaboration between the National Food Agency and the Institute of Public Administration (IPDN) as a higher education institution. The program focused on strengthening community capacity in managing local food resources, improving food consumption patterns, and enhancing access to quality food. This is in line with the view of Page et al. (2021), who emphasize the importance of local food diversification to reduce dependence on imported food, which is

often expensive and unstable.

The approach adopted in this program is based on the theory of sustainable development, emphasizing the integration of social, economic, and environmental aspects. One of the key pillars of the program is the use of the Participatory Action Research (PAR) method, which actively involves the community in the planning, implementation, and evaluation stages. By providing broad opportunities for participation, the community is not only the beneficiary but also the main actor in building self-reliant and sustainable food security (Matos et al., 2023).

Nevertheless, sustainability challenges remain a critical issue. As stated by Wicaksana (2018), many short-term programs fail to deliver

sustainable impacts due to the limited involvement of communities in the evaluation and maintenance of programs. Therefore, this program also integrates routine monitoring strategies and engages local stakeholders to ensure the sustainability of interventions even after external assistance ends.

Through these various approaches, this community service activity is expected to make a tangible contribution to addressing food insecurity, reducing extreme poverty, and creating an intervention model that can be replicated in other regions. As emphasized by Jatmiko (2024), strong food security will directly improve quality of life, enhance access to basic services, and support the transition toward more inclusive and

sustainable development. Long-term success greatly depends on local capacity for self-reliance in food management, as also emphasized by Gundersen & Ziliak (2015) and Irham Akbar & Rezza Fahlevvi (2023).

2. Method

This community service program employed a Participatory Action Research (PAR) approach to ensure the active involvement of the community throughout all stages of the program. The approach was chosen because it has proven effective in identifying specific community needs and developing sustainable solutions through direct collaboration between residents and local stakeholders (Hartaty & Kurni Menga, 2022).

2.1. Research Design and Approach

The PAR method was applied through three main stages:

1. Problem Identification and Planning - Conducted through village deliberations, official requests from local government, and Focus Group Discussions (FGDs) with the community and local partners to explore food security issues.

2. Intervention Implementation - Covering nutrition education, local food diversification training, and household food garden management.

3. Evaluation and Reflection - Conducted through feedback discussions with the community to assess impacts, challenges, and program sustainability.

During the planning stage, the community was involved from the outset through participatory approaches. Residents were given space to voice their

needs and aspirations for the types of interventions expected. This process strengthened the sense of ownership and commitment of the community toward the program's success.

2.2. Contribution of Partners

The program was also supported by local partners who played strategic roles:

1. Village Government - Mobilizing residents, providing facilities, and acting as facilitators in community activities.

2. Regency Food Agency - Providing technical support, training resource persons, and local food security policy data.

3. Farmer Groups and the Family Welfare Empowerment Movement (PKK) - Serving as the frontline implementers in the field, as well as co-facilitators in knowledge

transfer.

2.3. Field Mentoring

Mechanism

The activities were implemented in two priority villages categorized as food-insecure areas based on data from the National Food Agency (2022). The program ran for six months, with field visits conducted every two weeks. During each visit, the team carried out:

1. Data collection through questionnaires and observation.
2. Facilitation of training and hands-on practice with residents.
3. Group discussions and feedback sessions for participatory program evaluation.

The mentoring process was designed not merely as one-way dissemination, but as a collaborative learning process that enabled the community to evaluate and

co-develop solutions together.

2.4. Capacity Building and Knowledge Transfer

An important aspect of the program was community capacity building through practical training and context-based facilitation. The training materials included:

1. Introduction to local food and balanced nutrition,
2. Techniques for processing and diversifying local food ingredients,
3. Household food garden management based on home yards,
4. Family healthy kitchen management, and
5. Planning for sustainable food consumption.

Knowledge transfer was conducted through learning by doing, healthy cooking simulations, group discussions, and direct mentoring by facilitators and trained community

leaders. By using local languages and culturally sensitive approaches, the training became more inclusive and easier to accept. This approach proved effective in increasing participation, understanding, and community commitment to healthier and more self-reliant food consumption practices.

2.5.Criteria and Data Collection Techniques

Respondents were purposively selected based on the following criteria:

1. Beneficiary households,
2. Community leaders and village officials,
3. Representatives from the Regency Food Agency.

A total of 100 household heads, 10 community leaders, and 5 agency officers were involved in data collection, which was conducted using three main techniques:

1. Structured

questionnaires to measure household food security,

2. In-depth interviews to explore local challenges,
3. Participatory observations to assess community dynamics.

2.6.Data Analysis

Qualitative data were analyzed using a thematic approach, while quantitative data were processed using a paired t-test to examine differences in indicators before and after the program. Source triangulation techniques were applied to maintain the validity and reliability of the findings.

Through this comprehensive PAR approach, the community service program not only generated short-term impacts in improving household food security, but also established the foundations

of self-reliance and sustainability, providing a replicable model of intervention for other regions with similar characteristics.

3. Results and Discussion

3.1. Improvement in

Household Food Security

Based on pre- and post-intervention survey results, household food security showed a significant improvement. Prior to program implementation, 65% of respondents were categorized as food-insecure according to the Household Food Insecurity Access Scale (HFIAS). After the intervention, this figure dropped to 30%, indicating a tangible improvement in food access and availability.



Figure 1. Food Security Intervention

This improvement reflects the success of intervention strategies that emphasized not only food distribution but also capacity building through education and intensive facilitation. In this context, the food security framework by FAO (2021)—which highlights the three pillars of accessibility, availability, and

utilization—proved highly relevant. The participatory design of the intervention (Figure 1) enabled communities to identify and optimize local resources, expand distribution networks, and adopt sustainable agricultural practices to increase independent food availability.

Furthermore, these outcomes reinforce the findings of Rahmawati et al. (2020), which show that community-based interventions can reduce food insecurity by up to 30%. However, this success was inseparable from the synergy between higher education institutions, local governments, and communities. Technical and financial support from stakeholders facilitated local food diversification training and integrated farming practices (Figure 2), gradually reducing dependence on external aid.



Figure 2. Food Distribution Facilitation

Analytically, this success can also be attributed to a holistic approach that integrated nutritional, economic, and social aspects. Nutrition education, coupled with behavioral changes in consumption, improved the quality of household food intake, while strengthening the local economy through food-based enterprises increased community purchasing power. Through continuous monitoring, the program not only delivered short-term benefits but also laid the groundwork for long-term resilience, in line with sustainable development principles that place community self-reliance at

the core.

Thus, the post-intervention improvement in household food security provides concrete evidence that empowerment- and participation-centered approaches can serve as effective solutions for sustainably addressing food insecurity (Fahlevvi et al., 2024). Nevertheless, sustainability challenges remain critical, particularly in ensuring that local innovations emerging from the program continue to develop under supportive policies for community food security.

3.2. Effectiveness of Training in Changing Consumption Patterns

Training programs on local food diversification and balanced nutrition yielded significant positive outcomes in changing community consumption behavior. Before the training, carbohydrate

intake dominated as the primary energy source (75% of total diet), while protein and vegetable consumption remained low. Following the nutrition education, protein intake increased by 40%, and vegetable consumption rose by 35%. These shifts demonstrate the tangible impact of education-based interventions focused on raising nutrition awareness and promoting sustainable food practices.

These results affirm the Health Belief Model (Rosenstock, 1974), which argues that changes in consumption patterns occur when individuals understand both the benefits and risks of their food choices. Once communities recognized the importance of balanced nutrition, they became more motivated to adopt healthier eating habits. This aligns with findings from Setyowati et al. (2021), which show that

community-based nutrition education is effective in enhancing awareness and dietary practices, especially when supported by sustained facilitation and local mentoring.

Beyond education, contextual factors such as local food availability and affordability also played an important role for the success of this training. Edukasi yang dikombinasikan dengan pelatihan pengelolaan sumber daya pangan lokal memungkinkan masyarakat untuk mengakses bahan pangan bergizi secara lebih berkelanjutan, tanpa harus bergantung pada suplai eksternal. This aligns with the FAO (2021) principle of strengthening local food production to enhance community resilience.

In-depth analysis of the success of this program further suggests that

interventions combining knowledge, practice, and social reinforcement are more effective in producing long-term behavioral change.



Figure 3. Group Discussion

For example, group discussions (Figure 3) and collective cooking practices fostered solidarity, encouraging participants to remind and support each other in maintaining healthy eating commitments. This illustrates that behavioral change is not only shaped by individual factors but also by social dynamics that reinforce the application of acquired knowledge.

Accordingly, the effectiveness of this training provides strong evidence that a comprehensive, participatory, and context-sensitive educational approach can serve as a key catalyst for sustainable dietary behavior change. However, sustaining these results requires stronger integration with regional policies, enhanced local capacity, and regular monitoring mechanisms to evaluate and reinforce the program's positive impacts.

3.3. Program Sustainability Evaluation

Program sustainability remains the primary challenge in food security interventions, as short-term achievements are often difficult to sustain without consistent and structured support. While this program successfully

enhanced food security during the intervention period, in-depth interviews revealed that 80% of respondents desired program continuity, particularly in the form of periodic training, technical assistance, and support for food production facilities. This underscores the need for post-intervention strategies to prevent regression into food insecurity once external aid is withdrawn.

In this regard, the concept of sustainability in community development (Widodo et al., 2022) is highly relevant. Sustainability depends not only on technical aspects such as training and facilities but also on strengthening local institutional capacity and integrating programs into regional policies. Studies have shown that sustainable food interventions require synergy among communities,

academics, and governments, with local governments acting as catalysts in coordinating resources and establishing supportive policies.

Moreover, sustainability is closely tied to community economic independence. If training programs include local food enterprise development and agricultural value chain strengthening, communities can build economic resilience to support sustained food access. For example, food cooperatives or farmer groups can serve as platforms for managing production and distribution collectively, thereby reducing dependence on external aid and reinforcing long-term food security.

From an analytical standpoint, sustainability challenges also extend to social and cultural aspects. Shifts in mindset

and behavior require time and continuous processes, which can be facilitated through periodic education and public awareness campaigns. Engaging community leaders and local figures into the program strengthens the legitimacy of interventions and accelerates the adoption of food security practices as part of local culture.

Therefore, ensuring program sustainability requires a comprehensive and integrated approach that addresses technical, economic, social, and institutional aspects. Regular monitoring, data-driven evaluation, and stronger partnership networks with local stakeholders are key to maintaining the momentum of change. With such strategies, food security interventions can evolve beyond temporary solutions into long-term foundations for community resilience in

facing future food challenges.

3.4. Implications and Recommendations

The findings of this study provide important implications for food security policies, particularly in vulnerable areas facing structural and environmental challenges. The improvement in food security achieved through this intervention demonstrates that community-based and participatory approaches can serve as effective strategies. However, sustaining long-term impacts requires consistent and supportive policies. Systematically, implications of this community service activity included aspects of public policies, education and local economic empowerment:

A. Involvement of Local Government in Post-Intervention Facilitation

Local governments must play a more active role not only as facilitators but also as the main drivers of program sustainability. Strengthening the capacity of village officials to guide communities, oversee program implementation, and initiate local food security policies is essential. This aligns with governance principles emphasizing collaboration among governments, communities, and the private sector to achieve sustainable outcomes (Aminudin, 2019).

B. Integration of Nutrition Education into Local School Curricula

Introducing nutrition education from an early age helps establish sustainable healthy eating habits. By incorporating topics such as local food

diversification, balanced nutrition, and food management practices into school curricula, future generations will be better prepared to manage their food resources. Setyowati et al. (2021) highlight that school-based nutrition education can significantly raise family awareness about the importance of healthy dietary patterns.

C. Strengthening Community-Based Food Cooperative Models

Developing local food cooperatives can strengthen food value chains, improve farmers' bargaining power, and facilitate food distribution at the local level. Cooperatives can also serve as training and innovation hubs where communities exchange knowledge on sustainable farming practices and climate adaptation strategies. This bottom-up model has been proven

effective in several developing countries as a grassroots approach to strengthening food security (FAO, 2021).

From a deeper analytical perspective, program success depends not only on technical aspects but also on social and institutional capacity building. Structured monitoring strategies, clear performance indicators, and participatory evaluation mechanisms are needed to ensure long-term effectiveness.

Additionally, integrating the program with national and provincial policies enhances resilience against political and economic shifts.

In summary, while this intervention successfully improved community food security in the short term, ensuring long-term impact requires holistic and adaptive strategies.

Through synergy among communities, governments, and higher education institutions, this program holds the potential to serve as a replicable model for other regions, accelerating the eradication of extreme poverty and strengthening the foundations of national food security.

4. Conclusion

This community service program successfully strengthened household food security in vulnerable areas through participatory approaches, food diversification training, and nutrition education. There was a significant reduction in food insecurity levels alongside positive shifts toward more balanced dietary patterns. Communities have gained a better understanding of nutrition and are now more capable of managing local food resources

independently.

The program's success demonstrates that similar approaches hold potential for replication in other regions facing comparable food security challenges. Active community participation and cross-sector collaboration emerged as key factors in achieving positive outcomes.

Nevertheless, program sustainability remains a challenge. Strengthening partnerships with local governments, establishing community-based institutions such as farmer groups or food cooperatives, and training village cadres to independently continue education and facilitation are essential. With these strategies, communities are expected to maintain sustainable food security in the long term.

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