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FORMATION OF FAMILY EDUCATORS AS AN EFFORT TO REDUCE HOUSEHOLD FOOD WASTE AMONG POSYANDU CADRE GROUPS IN NAMBO DISTRICT KENDARI CITY

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Abstract

Food waste represents one of the most pressing global challenges, with significant implications for the environment, the economy, and social well-being. One of the key measures that communities can adopt to address household food waste is by transforming perceptions and practices surrounding food waste—viewing it not as waste to be discarded but as an alternative resource. The primary objective of this initiative is to enhance the role of Posyandu (integrated health post) cadres as family educators in providing community education. These educators are expected to explain the negative impacts of food waste on the environment and food security while offering practical guidance on sustainable practices, such as mindful shopping, proper food storage, and repurposing food leftovers into valuable products like eco-enzyme solutions. The training commenced with a pre-test to assess participants' baseline knowledge, involving 55 participants, including Posyandu cadres, representatives from public health centers (Puskesmas), sub-district officials, and the program team. The content delivered by the facilitators ranged from the selection of hygienic food ingredients to the practical steps for producing eco-enzymes from food waste. Practical modules were distributed to help participants easily implement the knowledge acquired during the sessions. Post-test results indicated a significant improvement in participants' understanding, coupled with high levels of enthusiasm during the discussion sessions. As a follow-up, program evaluations and additional training sessions will be conducted to ensure the sustainability of these efforts. This initiative is expected to support public health and environmental preservation through the prudent management of food and food waste.

Keywords: Food Waste, Family Educators, Sustainable Practices

INTRODUCTION

Food waste, defined as the discarding of edible food at various stages of the supply chain, is one of the most pressing global challenges, exerting profound environmental, economic, and social impacts (Caldeira et al., 2019). According to the Food and Agriculture Organization of the United Nations (FAO, 2020), approximately one-third of all food

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produced worldwide—equivalent to 1.3 billion tons annually—goes to waste during processing and consumption stages. This issue spans multiple phases of the supply chain, from production and distribution to consumption. In developing countries, food waste primarily occurs during post-harvest and distribution stages due to inadequate infrastructure, such as limited cold storage facilities and poor transportation networks (Morone et al., 2019). Conversely, in developed nations, food waste predominantly arises at the consumer level, driven by excessive purchasing, oversized portions, and misunderstandings of expiration labels (Bajželj et al., 2020; Mokrane et al., 2023).

Food waste has become a critical issue that demands global attention. The United Nations Environment Programme (UNEP) estimates that approximately 17% of all globally produced food is wasted or left unconsumed. In 2019, global food waste averaged 121 kilograms per capita annually, amounting to 931 million tons discarded by retailers and consumers. Of this total, 61% (equivalent to 74 kilograms per capita annually) originated from households, 26% from food service institutions, and 13% from retailers (United Nations Environment Programme, 2021). The Food Waste Index (FWI) Report (2019) highlights that household food waste levels are nearly uniform across countries, regardless of income levels. In Indonesia, studies on food loss and waste (FLW) reveal that between 2000 and 2019, food waste ranged from 39% to 55% of the total food supply chain, averaging 44%, or approximately 5–19 million tons annually. Around 80% of this food waste originates from households, with 44% of it still being edible.

According to the Economist Intelligence Unit (EIU), there is a rising trend in food waste generation globally. Indonesia ranks second, following Saudi Arabia, as the world's largest producer of food waste, with an estimated 300 kilograms of food waste generated per individual annually (Kementan RI, 2019). This situation is exacerbated by the fact that 13.5% of Indonesia’s population of 269 million suffers from hunger (BPS, 2019). This paradox highlights a critical issue: despite high levels of hunger, Indonesia's food waste remains alarmingly substantial, positioning the country as the second-largest global contributor to food waste (Yulia, 2019).

In the Nambo subdistrict of Kendari City, food waste production reaches 2.5 tons per day. On average, each individual generates 0.36 kilograms of food waste daily, with the total waste volume in Tobimeita and Nambo Villages amounting to 0.85 liters per person per day. Population growth in these villages has further contributed to the increasing volume of food waste (BPS).

The environmental consequences of food waste are extensive, as wasted food represents not only the misuse of resources such as water, land, and energy but also the significant greenhouse gas emissions generated as it decomposes in landfills (Fan et al., 2022; Niu et al., 2022). Estimates suggest that if global food waste were a country, it would rank as the third-largest emitter of greenhouse gases after the United States and China. Additionally, agricultural land used for producing food that ultimately goes to waste contributes to deforestation and biodiversity loss, further exacerbating the global environmental crisis (de Almeida Oroski & da Silva, 2023).

From a socioeconomic perspective, food waste reflects deep inequalities, as millions of people globally continue to suffer from hunger and malnutrition. Ironically, the amount of food wasted in developed nations alone is sufficient to feed the world’s hungry population.

Furthermore, food waste imposes significant economic losses, as resources invested in food production fail to deliver their intended value (Al-Obadi et al., 2022; Read & Muth, 2021; Schanes et al., 2018).

A key approach to mitigating household food waste involves shifting perceptions of food waste from being viewed as disposable to being considered an alternative resource (Abu et al., 2024; Selan et al., 2024; Vitaliati et al., 2024). This transformation can be achieved through various programs, including educational campaigns, training sessions, and community assistance, particularly targeting groups such as family health volunteers (posyandu cadres).

Educational outreach programs play a critical role in motivating behavioral changes at individual, group, and community levels, equipping people with the knowledge, awareness, and skills necessary to address food waste. Preventive measures include meticulous meal planning, the adoption of preservation technologies, redistributing surplus food, and raising awareness about converting waste into valuable products such as eco-enzymes.

Family health volunteers (posyandu cadres), who serve as community educators, hold a strategic position in raising public awareness about food waste. They are expected to educate households on the negative environmental, economic, and food security impacts of food waste while providing practical guidance on responsible shopping, proper food storage, and repurposing leftovers into useful products such as eco-enzyme solutions. Additionally, these volunteers act as facilitators, assisting families in cultivating positive habits to minimize food waste. For example, they may conduct simple training on creating shopping lists or utilizing leftovers, thereby fostering responsible consumption patterns, enhancing household waste management capabilities, and contributing to broader environmental and food security efforts.

Beyond food waste management, these volunteers are trained to promote eco-enzymes as an environmentally friendly solution. This multipurpose liquid, made from fermenting organic waste, sugar, and water, offers substantial benefits, such as reducing organic waste, replacing chemical household products, and improving environmental quality. Volunteers educate families on how to produce eco-enzymes using readily available materials at home, guiding them through the fermentation process and practical applications in daily life.

Overall, the role of family health volunteers as educators not only enhances environmental awareness but also empowers households to become active participants in addressing waste management challenges and fostering environmental sustainability.

IMPLEMENTATION METHOD

The preliminary activities undertaken as the initial steps in this community engagement initiative involved coordination with partner organizations, which included conducting a site survey at the partner's location and engaging in discussions to address issues within the community, particularly within the working area of the Nambo Community Health Center (Puskesmas Nambo), in collaboration with the Subdistrict Head (Camat) and the Head of the Nambo Community Health Center. Following the discussions on the challenges faced, a problem prioritization process was carried out in partnership with the stakeholders. The formulation of proposed solutions was then conducted based on the prioritized issues, ensuring that the outcomes would be effective, well-targeted, and aligned with the mutually agreed

objectives.

The subsequent stage involved preparatory steps, including drafting a proposal for the Community Service Program based on the findings from the initial discussions and site surveys. The next phase of the Community Service initiative, titled “The Formation of Family Educators as an Effort to Reduce Household Food Waste among Posyandu Cadre Groups in Nambo Subdistrict, Kendari City, Southeast Sulawesi Province”, was implemented. This program was conducted using a combination of lectures, role-playing methods, and discussion sessions to achieve its objectives.

RESULTS AND DISCUSSION

The Community Service Program-the core responsibilities of higher education institutions in Indonesia. This initiative provides a platform for educators to transfer their knowledge to the wider community. Through PKM, the principle of "working with the community," a mandate for contemporary universities, is realized. Community service acts as a tangible contribution from universities toward fostering development, particularly in health and environmental sectors. The specific goal of this activity was to enhance the understanding and skills of community members in managing healthy and environmentally friendly food resources. The program targeted Posyandu (Integrated Healthcare Post) cadres, healthcare professionals, and district officials, who were expected to become agents of change, raising public awareness about the importance of prudent food and waste management.

The program commenced at 9:00 AM local time in the assembly hall of the Nambo Subdistrict Office. The opening session created a conducive and enthusiastic atmosphere for participants to focus on the activities. Upon arrival, participants registered their attendance, with a total of 55 attendees recorded: 45 Posyandu cadres, five representatives from Nambo Health Center (Puskesmas), three subdistrict officials, and seven team members (comprising five lecturers and two students). Following registration, the organizing team introduced themselves to the participants. The team consisted of lecturers with expertise in public health—spanning environmental health, nutrition, epidemiology, and biostatistics—alongside students who supported the program’s implementation. This introduction familiarized the participants with the facilitators who would guide them throughout the program.

The session began with remarks from Mr. Syahmat, S.IP, the Subdistrict Secretary of Nambo. In his speech, he expressed his appreciation to the PKM team for organizing this educational program. He emphasized the importance of knowledge on food management and food waste processing in promoting public health and environmental sustainability. After his remarks, Mr. Syahmat formally opened the community service program with a message of gratitude and hope for the program’s positive impact.

Following the opening ceremony, participants took a pre-test designed to measure their initial knowledge of food management and food waste processing. The results of this assessment served as a benchmark for comparison with the post-test outcomes, enabling the team to evaluate the program’s effectiveness. Each participant was then provided with a training module prepared by the organizing team. The module contained practical guidelines on selecting, cleaning, and preparing food (*food preparation*), as well as step-by-step instructions for processing food waste into eco-enzymes. Written in a clear and accessible

format, the module ensured participants could easily replicate the demonstrated techniques.

Figure 1. Opening Remarks by the Secretary of Nambo Subdistrict

Figure 2. Atmosphere During the Opening Session

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Figure 3. Family Educators Training Module

The core activities began with presentations by two subject-matter experts. The first speaker, Dr. Nurnashriana Jufri, S.KM., M.Kes., delivered a session on the importance of selecting high-quality, hygienic food and proper *food preparation* methods. Her presentation covered practical steps, from choosing fresh ingredients at the market to proper storage techniques to preserve nutritional value. Dr. Jufri's interactive approach included real-life examples and practical tips.

The second speaker, Nurmaladewi, S.KM., M.P.H., who also served as the team leader, discussed techniques for transforming food waste into eco-enzymes. She outlined the benefits of eco-enzymes as a sustainable solution for managing organic waste, and provided practical steps for creating them using simple, readily available household materials. Participants were encouraged to view food waste management as a vital step in mitigating the negative environmental impacts of household waste.

After the presentations, a lively discussion and Q&A session ensued, reflecting the participants' high level of enthusiasm. Among the questions raised were: (1) How can one ensure that the selected food ingredients are genuinely fresh and safe for consumption? (2) What are the best materials for producing eco-enzymes? (3) How can food waste management be applied in the Posyandu environment? These questions were addressed in detail, providing participants with actionable insights.

Figure 4. Presentation Delivered by the First Speaker

Figure 5. Presentation Delivered by the Second Speaker

Figure 6. Discussion Session

The program concluded successfully, with participants expressing their appreciation for the valuable information and practical training they had received. Post-test results indicated a significant improvement in participants' understanding of the topics discussed. Positive responses were also evident in the participants' eagerness to apply the knowledge and skills gained during the training. The distributed modules are expected to serve as a lasting reference, enabling participants to implement the techniques in their respective communities-both to enhance family health and to reduce the environmental impact of household waste. To ensure the sustainability of the program's impact, follow-up activities have been planned. These include evaluations of Posyandu cadres to monitor the implementation of the knowledge and skills imparted, as well as advanced training sessions focusing on eco-enzymes to further strengthen participants' competencies.

Figure 7. Photo of Participants and Team

CONCLUSION

The Community Service Program (PKM) exemplifies the practical application of the *Tri Dharma Perguruan Tinggi* by facilitating the transfer of academic knowledge to society in support of sustainable development, particularly in health and environmental domains. This program focused on training 55 participants—comprising *Posyandu* cadres, health center representatives, and subdistrict officials—as Family Educators to minimize household food waste through the adoption of hygienic food preparation practices and eco-enzyme processing techniques. Guided by expert facilitators, the program emphasized interactive education, practical applications, and the provision of user-friendly modules. Post-test results demonstrated a significant increase in participants' knowledge, while their positive feedback underscored their motivation to apply the acquired skills. Moving forward, follow-up evaluations and advanced training are anticipated to further enhance the program's long-term impact.

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