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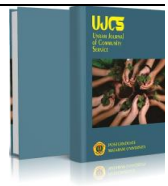

Sanitation and Waste Management Education: Stunting Prevention for Posyandu Cadres and Toddler Mothers in Liliba Village

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Abstract: Stunting is still a public health problem in Indonesia, including in Liliba Village, Kupang City, which has a high stunting incidence rate. One of the main factors contributing to stunting is poor environmental sanitation and suboptimal waste management. This community service activity aims to improve the knowledge and skills of Posyandu cadres and mothers under five in implementing good environmental sanitation and managing waste with the Takakura method. The methods used include education, training, simulation, and evaluation through pre-test and post-test. The results of the activity showed an increase in participants' understanding, which was reflected in the increase in post-test scores compared to pre-test. In addition, participants were able to apply organic waste management skills to compost, which supports family food security and creates a healthier environment. With continuous assistance, it is hoped that behavior change in maintaining environmental cleanliness can contribute to efforts to prevent stunting in the community.

Keywords: Environmental sanitation; Posyandu: Stunting; Takakura method; Waste management

Introduction

Stunting is one of the public health problems that is still a challenge in Indonesia, and currently 26.7% of Indonesian children are stunted. Stunting, which is characterized by a condition of failure to grow due to chronic malnutrition, can have an impact on cognitive development, immunity, and productivity in the future (Daracantika, 2021).

Liliba Village is one of the villages in Kupang City that is still struggling to overcome stunting. The data obtained was that in Liliba Village, there were 185 stunted children, 20 children under five with malnutrition and 70 children with malnutrition. Currently, the village has 12 posyandu with a total of 60 cadres, each posyandu is served by 5 cadres. Based on this data, the incidence of stunting in Liliba Village is still relatively high, yang menunjukkan adanya faktor-faktor environment and behavior that contribute to this condition.

One of the main factors related to the incidence of stunting is poor environmental sanitation and suboptimal waste management (Puspitawati & Sulistyarini, 2018). An unclean environment can be a source of various infectious diseases (Mercer, 2021), such as diarrhea and acute respiratory tract infections (ARI), which can cause impaired nutrient absorption in toddlers (Wahdaniyah et al., 2022) In addition, improper waste management can contaminate water sources and create habitats for disease vectors, such as flies and mosquitoes, which can increase the risk of infectious diseases in children (F. D. Astuti & Rokhmayanti, 2019).

Posyandu cadres and mothers of toddlers have a strategic role in efforts to prevent stunting through the implementation of good environmental sanitation and correct waste management (Pramaningsih et al., 2024).

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Posyandu cadres as agents of change in the community play a role in providing education and guiding mothers in healthy living practices (Susanto, 2017). Meanwhile, mothers of toddlers as the main caregivers of children need to have a good understanding of the importance of maintaining a clean environment and healthy parenting to prevent stunting (Hasni et al., 2024).

The urgency of this problem requires education-based interventions and training for posyandu cadres and mothers of toddlers in improving their knowledge and skills in implementing good environmental sanitation and managing waste effectively (Sa'ban et al., 2020). Through environmental sanitation education programs and waste management training as stunting prevention for posyandu cadres and mothers of toddlers, it is hoped that there will be an increase in awareness and behavior change in maintaining environmental cleanliness (Zubair et al., 2022). This is ultimately expected to contribute to efforts to reduce stunting rates in the region.

Method

The method of implementing community service activities on stunting education and environmental sanitation is carried out through three main stages: preparation, implementation, and monitoring and evaluation. At the preparation stage, coordination is carried out with related parties such as the village government, health centers, and Posyandu cadres to ensure active participation. In addition, educational and training materials are prepared covering environmental sanitation and household-based waste management. Facilities and infrastructure such as training venues, presentation aids, and practice materials are also prepared to support the smooth running of activities.

The implementation stage involves pre-test, education, simulation, and post-test. The pre-test was given to measure participants' initial knowledge before receiving education about environmental health and stunting prevention, including the importance of household hygiene and waste management (Mansur et al., 2023; Melariri et al., 2024). The practical simulation was carried out using the Takakura method, which is a household-based organic waste composting technique. After that, a post-test was conducted to evaluate the improvement of participants' understanding and readiness to apply the knowledge obtained.

Monitoring and evaluation are carried out in the short and long term. During the activity, it was carried out observation and documentation of participant participation. Short-term evaluations include a comparison of pre-test and post-test results and participant feedback. Meanwhile, long-term evaluation involves monitoring Posyandu cadres in disseminating information, changes in the behavior of mothers under five in maintaining environmental sanitation, as well as the impact of activities on children's health and overall environmental conditions.

Result and Discussion

This community service activity aims to support stunting prevention through environmental sanitation education and waste management training in Liliba Village, with the main target of Posyandu cadres and mothers under five. Education emphasizes the relationship between poor sanitation and stunting, household waste management, and the use of organic waste for family food security. In the practical session, participants were trained to make compost from organic materials such as leftover vegetables, fruits, and leaves, in order to improve skills and awareness in managing waste sustainably (Ayilara et al., 2020).

Measuring the effectiveness of the activity, pre-test and post-test were carried out which showed an increase in participants' understanding after education and training. The results of the evaluation showed that this activity succeeded in improving the knowledge and skills of participants in the aspects of sanitation and waste management. The sustainability of the program through future assistance is a strategic step to ensure better behaviour change in maintaining environmental cleanliness and supporting stunting prevention efforts in the community (Astuti et al., 2025; Soviyati et al., 2023).

The results of community service activities for pre-test and post-test related to environmental sanitation education and waste management training as stunting prevention in Liliba Village.

Figure 1. Implementation of Pre-test and Post-test

The results of the pre-test and post-test of community service activities in Liliba Village are as follows in Figure 2.

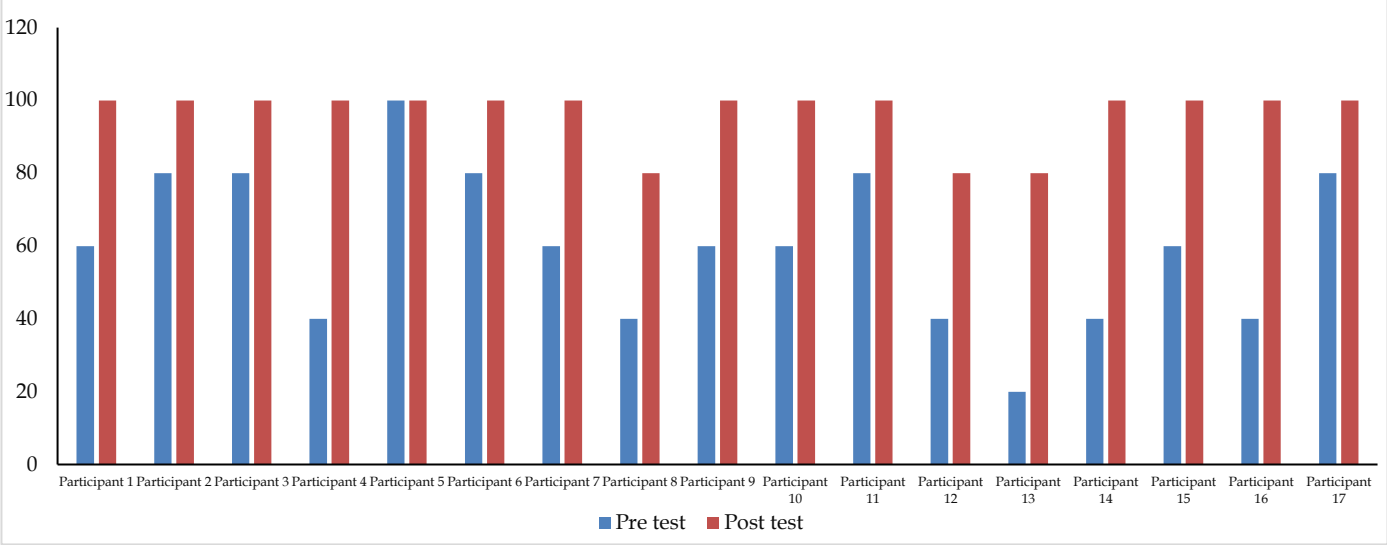

Figure 2. Comparison of Pre-test and Post-test results

The graph in Figure 2 shows that most of the participants showed an increase in scores from pre-test to post-test, which is marked by the post-test line being above the pre-test line. This indicates that the activities carried out have succeeded in improving the understanding or skills of the participants.

Composting Training Using the Takakura Method

As one of the hands-on practices, participants were trained to make compost from organic materials that are easy to find in the surrounding environment, such as vegetable scraps, fruits, and leaves. This training is designed to provide practical skills while increasing awareness of the importance of managing organic waste sustainably (Jaki, 2025).

Figure 3. Documentation of Takakura Composting Training

The implementation of compost making activities involving cadre mothers and toddler mothers of Posyandu Melati 9 Liliba Village through the following stages:

(a)

(b)

Figure 4. Documentation of community service: (a) preparation of Takakura compost making equipment; and (b) compost making process of Takakura

Preparation of Materials and Tools

At this stage, participants were introduced to the basic concept of the Takakura method and the necessary ingredients, such as Takakura baskets, fermentation starters (in the form of microorganisms from bran or

fermentation liquid), and organic waste such as leftover vegetables, fruits, and dried leaves. In addition, tools such as small shovels, mixing containers, and covering cloths are also prepared to support the composting process (Schwarz & Bonhotal, 2011).

Compost Making Process

Participants carried out the steps of making compost, starting with preparing the base layer in the Takakura basket using cloth or cardboard. Next, organic waste is cut into small pieces and mixed with starter fermentation to speed up the decomposition process. This mixture is then put in a basket, stirred evenly, and then covered with a cloth or paper to maintain moisture and air circulation.

Maintenance and Utilization of Compost

After the manufacturing process, participants were taught how to take care of the compost by stirring it regularly so that the fermentation process runs optimally and prevents unpleasant odors. Within 2–4 weeks, mature compost is blackish-brown and has a soil-like texture. The results of this compost can be used as organic fertilizer for household plants, thereby supporting family food security and reducing household organic waste in a sustainable manner.

Figure 6. Takakura Compost Documentation

Conclusion

Education and training succeeded in increasing participants' knowledge about sanitation and waste management, as evidenced by the results of the pre-test and post-test which showed an increase in scores. The composting training using the Takakura method equips participants with the skills to process organic waste, support food security, and create a cleaner environment.

Acknowledgments

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