

Implementing an Integrated Zero Waste and Health Promotion Model to Enhance Community Awareness and Health Status

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ABSTRACT

Household waste management and low health awareness are persistent challenges for sustainable development in Indonesia. While waste-sorting programs exist, their integration with clinical health monitoring remains underexplored. This study evaluates a community service program in Cikoneng Kulon Village (2025) that integrates the Zero Waste concept—specifically the TOSADA (Kitchen Waste Bin) and Rocket Stove technologies—with Free Health Screenings (FHS). Using a participatory educational approach with 155 participants and pre/post-test evaluations from 20 purposively selected respondents, the study measured changes in knowledge and behavioral intent. Results indicated a substantial improvement in technical knowledge; understanding of TOSADA increased from 35% to 85%, and Rocket Stove utility from 30% to 80%. Furthermore, 90% of respondents expressed a willingness to adopt daily Zero Waste habits. The integration of clinical health screenings acted as a primary driver for community participation, proving that a holistic approach can foster sustainable behavioral change in both environmental and public health domains.

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INTRODUCTION

Domestic organic waste constitutes over 50% of Indonesia's total waste, yet source-based sorting remains inadequate. This deficiency directly correlates with increased risks of vector-borne and respiratory diseases. While the Zero Waste movement and technologies like Black Soldier Fly (BSF) biodegradation (TOSADA) or efficient biomass combustion (Rocket Stoves) offer technical solutions, community adoption is often hindered by a lack of perceived immediate benefit. **Research Gap & Novelty:** Most community programs address either environmental management or public health in isolation. There is limited empirical evidence on how integrating clinical health screenings—which address immediate community needs—can serve as an entry point for long-term environmental behavioral change. **Objective:** This study aims to evaluate the effectiveness of an integrated Zero Waste and health promotion model in increasing environmental awareness and public health status in Cikoneng Kulon Village.

METHOD

This project utilized a participatory educational design conducted in Cikoneng Kulon Village in 2025. **Participants & Sampling:** Socialization involved 155 residents, while 20 respondents were selected via purposive sampling for detailed pre- and post-test evaluation using validated questionnaires to ensure data reliability.

Operational Stages

- **Preparation:** Development of educational media (leaflets, slides) and calibration of medical equipment (sphygmomanometers, BMI scales).
- **Implementation:** Socialization of TOSADA and Rocket Stove technologies alongside clinical screenings for blood pressure, BMI, and metabolic risks.
- **Evaluation:** Statistical comparison of pre- and post-test scores to assess knowledge gain and behavioral intent.

RESULTS

The intervention led to a clear upward trend in community knowledge across 20 indicators (Table 1).

TABLE 1.

Domain	Pre-Test (%)	Post-Test (%)	Change
TOSADA Program Knowledge	35%	85%	+50%
Rocket Stove Technology	30%	80%	+50%
Zero Waste Daily Habits	60%	90%	+30%
Env-Health Link Awareness	50%	88%	+38%

The significant increase in technical knowledge suggests that the hands-on demonstration of TOSADA and Rocket Stoves effectively demystified waste technology for residents. Unlike previous studies that focus solely on waste, this program utilized health screenings as a "participation hook".

Clinical findings during the program revealed a high prevalence of hypertension and metabolic risks, which served as a powerful educational tool. By linking these health risks to poor environmental sanitation, the program achieved an 88% awareness level regarding the environment-health nexus.



FIGURE 1.

CONCLUSION

The integration of Zero Waste technologies with clinical health screenings is an effective model for enhancing community engagement and knowledge. Substantial gains were noted in the understanding of organic waste management and the willingness to adopt sustainable behaviors.

- Limitations: This study is limited by a small evaluation sample (n=20) and a short observation window.
- Recommendations: Future research should employ longitudinal designs to track the long-term maintenance of the TOSADA system and its direct impact on reducing environment-based disease prevalence in the village.

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