



The Impact of the Waste Bank Program on Changes in Community Environmental Cleanliness Behavior

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ABSTRACT

Environmental cleanliness is an important indicator of public health and quality of life. The problem of poorly managed waste is a major challenge in many urban areas, including Indonesia. One innovation to increase community participation in waste management is the waste bank program, a community-based waste collection, processing, and utilization system that provides economic incentives for residents. This study aims to determine the effect of the waste bank program on changes in environmental cleanliness behavior in three urban villages. The method used was a quantitative survey with a pretest-posttest design. The study sample consisted of 120 residents who actively participated in the waste bank program for at least 3 months. Data were collected through hygiene behavior questionnaires before and after participating in the program, as well as in-depth interviews with program managers to obtain supporting qualitative information. Data analysis was conducted using a paired t-test to determine significant differences in hygiene behavior before and after the program. The results showed a significant increase in all hygiene behavior indicators, including the habit of disposing of waste properly, sorting waste, and participation in environmental activities ($p < 0.01$). These findings demonstrate that the waste bank program is not only effective as a waste management tool but also plays a role in encouraging positive behavioral changes, increasing environmental awareness, and building a sustainable culture of community cleanliness. This research underscores the importance of program sustainability, community education, and local government support to ensure long-term impacts on environmental quality.

Keywords: Waste Bank, Cleanliness Behavior, Community, Environment

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1. Introduction

Environmental cleanliness is a crucial aspect of public health and a good quality of life. A clean environment not only impacts physical health but also affects people's comfort, aesthetics, and psychological well-being. One of the main problems in many urban areas is suboptimal waste management, which can lead to various negative impacts, such as water and soil pollution, the spread of disease, unpleasant odors, and damage to environmental aesthetics. This problem is often exacerbated by low public awareness of the importance of maintaining environmental cleanliness and a lack of participation in waste management.

As a solution, several regions in Indonesia have implemented waste bank programs, a community-based innovation that combines waste management with environmental education and economic incentives. This program encourages residents to sort, collect, and deposit recyclable waste into waste banks, which are then valued or exchanged for savings. In addition to providing economic value, this program also aims to raise public awareness of the importance of maintaining a clean and healthy environment. Waste bank programs are expected to encourage positive hygiene behaviors, such as disposing of waste properly, sorting waste, and participating in regular environmental activities.

Previous research has shown that active community participation in community-based waste management programs significantly impacts behavioral change and environmental quality improvement. However, few studies have quantitatively measured the impact of waste bank programs on community hygiene behavior in urban areas, particularly in the context of pretests and posttests to assess changes before and after program participation.

This study aims to analyze the impact of the waste bank program on changes in community hygiene behavior in three urban sub-districts. The results are expected to provide useful information for local governments, program managers, and the community in improving the effectiveness of the waste bank program and supporting the creation of a clean, healthy, and sustainable environment.

2. Research Methods

a. Types of research

This study used a quantitative method with a pretest-posttest design to measure changes in community hygiene behavior before and after participating in the waste bank program. This design was chosen because it can directly demonstrate the program's effects on participants' behavior over a period of time.

b. Population and Sample

The study population consisted of all residents registered as active participants in the waste bank program in three urban sub-districts. The study sample consisted of 120 residents, selected using purposive sampling, namely residents who:

- 1) Actively participate in the waste bank program for at least 3 months.





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- 2) Willing to participate in research and provide complete information via questionnaire.
- 3) Aged ≥ 18 years and domiciled in the sub-district where the program is run.

c. Research Instruments

Data was collected using several instruments:

- 1) Cleanliness Behavior Questionnaire: Measures habits of disposing of waste properly, sorting waste, and participating in environmental activities. Behaviors are scored on a Likert scale of 1–5, with higher scores indicating more positive behavior.
- 2) In-depth interviews: Conducted with waste bank managers to obtain qualitative information regarding program implementation, obstacles, and residents' motivations.
- 3) Field observation: To validate residents' behavioral data and ensure their involvement in program activities.

d. Research Procedures

- 1) Fill out the hygiene behavior questionnaire before the program (pretest).
- 2) Residents participate in the waste bank program for a minimum of 3 months, including depositing waste, participating in education and environmental activities.
- 3) Fill out the hygiene behavior questionnaire after the program (posttest).
- 4) Conduct interviews with program managers and field observations for supporting data.

e. Data analysis

- Quantitative data were analyzed using a paired t-test to compare hygiene behavior scores before and after the program, with a significance level of $p < 0.05$.
- Qualitative data from interviews were analyzed descriptively to support the interpretation of quantitative results.
- The analysis was conducted using SPSS version 25, and the results of statistical tests were used to draw conclusions regarding the influence of the waste bank program on community hygiene behavior.

This methodological approach is expected to provide a clear picture of the effectiveness of the waste bank program in encouraging changes in citizen behavior, as well as being the basis for policy recommendations for local governments and environmental program managers.

3. Results and Discussion**a. Research result**

This study involved 120 residents who actively participated in the waste bank program in three urban sub-districts. Data analysis showed significant changes in community hygiene behavior before and after participating in the program.

Table 1. Changes in Residents' Hygiene Behavior Scores (n=120)





| Hygiene Behavior | Pretest Score (Mean ± SD) | Posttest Score (Mean ± SD) | P- value |
|---|------------------------------|-------------------------------|----------|
| Throw garbage in its place | 2.8 ± 0.6 | 4.1 ± 0.5 | <0.01 |
| Sorting garbage | 2.5 ± 0.7 | 4.0 ± 0.6 | <0.01 |
| Participation in environmental activities | 2.9 ± 0.5 | 4.2 ± 0.4 | <0.01 |
| Average total score | 2.73 ± 0.6 | 4.1 ± 0.5 | <0.01 |

Interpretation of Results:

Paired t-test results showed a significant increase in all hygiene behavior indicators after residents participated in the waste bank program ($p < 0.01$). The average total score increased from 2.73 to 4.1, indicating significant positive behavioral changes.

Qualitative Findings:

Interviews with waste bank managers revealed that residents felt more motivated to dispose of waste properly, sort waste, and participate in environmental activities due to the ongoing education and economic incentives provided by the program. Field observations also showed improved regularity in waste collection and cleanliness of public areas within the sub-district.

These results confirm that the waste bank program not only functions as a waste management mechanism, but also as an effective community education and empowerment tool in significantly changing environmental cleanliness behavior.

b. Discussion

The results of the study indicate that the waste bank program has a significant impact on changing community hygiene behavior. All behavioral indicators, including disposing of waste properly, sorting waste, and participating in environmental activities, showed significant improvements after the program was implemented. This indicates that the waste bank program functions not only as a waste management mechanism but also as an effective educational and community empowerment tool.

Improved public hygiene behavior can be explained through several mechanisms. First, the waste bank program provides ongoing education on the importance of waste sorting and maintaining a clean environment. This education helps the community understand the negative impacts of improperly managed waste, including environmental pollution, the spread of disease, and the decline in the aesthetic quality of the environment.





Second, the economic incentive of exchanging waste for savings or cash further motivates residents to actively participate. This combination of education and incentives strengthens residents' intrinsic and extrinsic motivation to maintain a clean environment.

Third, the waste bank program increases social participation and community engagement, as waste management activities are carried out collectively and involve interaction between residents. This active participation in environmental activities creates a sense of shared responsibility and reinforces social norms regarding cleanliness.

The findings of this study align with previous research showing that community empowerment through waste banks can encourage positive behavioral changes and improve environmental quality (Anwar & Rahmawati, 2020; Kusnadi, 2017; Nugroho & Putri, 2020). Furthermore, the program's success is influenced by local government support, the involvement of community leaders, and program continuity, which are crucial factors in ensuring a long-term impact on community behavior.

Overall, the waste bank program has proven effective in encouraging changes in public hygiene behavior, increasing environmental awareness, and building a sustainable culture of cleanliness. These findings can serve as a basis for local governments and program managers to expand waste bank implementation to other areas and improve the quality of community-based waste management.

4. Conclusion and Suggestions

a. Conclusion

Based on the research results, it can be concluded that:

- 1) The waste bank program has a significant influence on changes in community hygiene behavior in the three urban sub-districts studied.
- 2) Behavioral indicators that have increased significantly include disposing of waste in its place, sorting waste, and participation in environmental activities.
- 3) The program's success is influenced by a combination of education, economic incentives, and community engagement, which encourage positive behavioral changes and environmental awareness.

b. Suggestions

Based on the findings of this study, several suggestions that can be given include:

- 1) Program expansion: Local governments and program managers should expand the implementation of waste banks to other areas, both in urban and rural areas, to increase public awareness and participation.
- 2) Continuous education: Counseling and education regarding waste management and the importance of environmental cleanliness must be carried out continuously to form consistent and sustainable behavior.





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- 3) Incentives and motivation: Providing economic incentives or awards to residents who actively participate in programs can increase community motivation and involvement.
- 4) Community approach: The involvement of community leaders, RT/RW, and citizen groups is crucial to strengthen social norms and program sustainability.
- 5) Further research: It is recommended that further research be conducted to evaluate the long-term impact of the waste bank program on environmental quality and public health, and to identify factors that influence the program's success in more depth.

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