



Community Service Report

Efforts to Increase Public Knowledge About Waste Management in Panyangkalang Hamlet

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ARTICLE INFO

Keywords:

Waste Management; Health Counseling; Environmental Health; Community Knowledge

History:

Submitted : 6 April 2026

Reviewed : 30 July 2026

Accepted : 7 August 2026

Competing Interests:

The authors declare no conflicts of interest related to this work.

ABSTRACT

Unsafe household waste management is still an environmental health problem in Indonesia, especially the practice of burning waste which has the potential to cause air pollution and health problems. In Panyangkalang Hamlet, Belabori Village, Parangloe District, Gowa Regency, most of the people still burn garbage as the main method of disposal. This activity aims to increase public knowledge about proper waste management through health counseling. The method used is a pre-experimental design with a one group pre-test post-test approach. The intervention was carried out in the form of counseling for 10–20 minutes to 15 participants, with knowledge measurement using structured questionnaires before and after the counseling. The results showed an increase in knowledge scores from an average of 60.67% in the pre-test to 81.33% in the post-test. The Wilcoxon Signed-Rank statistical test showed a significant difference between the score before and after the intervention ($p = 0.002$). These findings show that health counseling is effective in increasing public knowledge about proper waste management. It is hoped that this increase in knowledge can encourage changes in people's behavior towards safer and more sustainable waste management practices.

1. Introduction

Household waste management is one of the environmental and public health problems that are still faced by various regions in Indonesia. Waste that is not managed properly can pollute the soil, water, and air, and become a medium for disease vectors to develop. The impact caused is not only in the form of environmental pollution, but also contributes to an increased risk of environment-based diseases such as acute respiratory infections (ARI), diarrhea, and other health disorders. One of the waste management practices that is still widely practiced by the community is open burning of waste. This practice is often chosen because it is considered practical, fast, and does not require

additional costs. However, the burning of garbage produces harmful fumes and particles that can pollute the air and have a detrimental impact on human health, especially in vulnerable groups such as children and the elderly. In addition, the burning of garbage also contributes to air pollution and changes in environmental quality (Ministry of Health of the Republic of Indonesia, 2023).

Data from the Ministry of Health of the Republic of Indonesia shows that around 57.2% of households in Indonesia still manage waste by incineration. This figure shows that waste burning is still the dominant practice, especially in areas that have limited waste management facilities and infrastructure. This condition reflects the low public awareness and knowledge about safe and environmentally friendly waste management (Ministry of Health of the Republic of Indonesia, 2023).

At the provincial level, South Sulawesi Province also faces similar problems. A report by the South Sulawesi Provincial Environment Agency shows that waste management is not optimal due to limited facilities and the low application of the reduce, reuse, and recycle (3R) principle in the community. The percentage of urban waste handled through a formal management system in the 2016–2020 period ranged from 66.91% to 75.41%, which shows that there is still a large amount of waste that is not managed optimally (South Sulawesi Provincial Environment Office, 2022).

This problem is also seen at the district level, including Gowa Regency. Based on the Gowa Regency Regional Government Work Plan (RKPD), the percentage of waste reduction through the 3R program is still relatively low, ranging from 4.54% to 4.68% in the 2017–2021 period. In addition, although most of the waste has been handled through formal services, there is still residual waste that is managed independently by the community, one of which is through incineration. (South Sulawesi Provincial Government, 2022).

Low public knowledge about the impact of waste burning and the correct way to manage waste is one of the main factors that affect this behavior. Knowledge is an important component that shapes a person's attitude and behavior. People who have adequate knowledge tend to be better able to understand the risks posed by certain behaviors and are more open to healthier and safer behavioral changes (Gowa Regency Environmental Service, 2025).

Efforts to increase public knowledge can be carried out through various approaches, one of which is health counseling. Counseling is a form of non-formal health education that aims to increase public understanding, awareness, and ability to maintain health and the environment. Through counseling, the community is expected to be able to obtain correct information about waste management and be motivated to apply it in their daily lives.

Based on this background, intervention efforts in the form of health counseling are needed to increase the knowledge of the people of Panyangkawang Hamlet about proper waste management. This activity is expected to be the first step in encouraging changes in community behavior towards safer, healthier, and more sustainable waste management practices.

2. Method

This activity is part of the implementation of Problem Based Learning (PBL) II which will be held on October 7, 2025 in Panyangkawang Hamlet, Belabori Village, Parangloe District, Gowa Regency. The intervention carried out was in the form of a non-physical program in the form of health counseling regarding the correct management of household waste.

The design of the activity uses a pre-experimental approach with a one-group pre-test post-test design. This design aims to assess the effectiveness of health counseling on improving community knowledge by comparing knowledge scores before and after interventions in the same group.

The subject of the activity was the people of Panyangkalang Hamlet who were willing to take part in counseling, with a total of 15 participants. The selection of participants was carried out purposively based on the availability and willingness of the community to participate in the entire series of activities. Before the implementation, participants were given an explanation of the purpose of the activity and were asked to give approval to participate.

The measurement of the level of knowledge was carried out using a structured questionnaire that had been prepared based on correct waste management materials. The same questionnaire is used during the pre-test and post-test to ensure measurement consistency. The pre-test is carried out before the counseling to measure the participants' initial knowledge, while the post-test is carried out after the counseling to assess the change in knowledge.

The counseling intervention was carried out for 10–20 minutes with the method of lectures and interactive discussions. The material presented included the definition of waste, types of household waste, the impact of burning waste on health and the environment, as well as how to manage waste correctly and environmentally friendly.

The data obtained from the results of filling out the questionnaire is calculated in the form of a percentage score. Data analysis was carried out descriptively to describe the characteristics of participants and knowledge levels, and inferential analysis using the Wilcoxon Signed-Rank test to determine the difference in knowledge scores before and after counseling. Statistical analysis was carried out with a significance level of 0.05. All activities are carried out with due regard to ethical principles, including data confidentiality and voluntary participation.

3. Results & Discussion

Counseling activities regarding correct waste management were carried out at one of the houses of residents of Panyangkawang Hamlet, Belabori Village, Parangloe District, Gowa Regency on October 7, 2025. This counseling began with filling out pre-test questions first, then continued with a theoretical explanation of waste management of the 3R principle and ended with filling in post-test questions.

The following is a table of distribution of respondents in the correct waste management counseling activities:

Table 1. *Distribution of Participants in Correct Waste Management Counseling Based on Gender*

Gender	Quantity (n)	Percentage (%)
Male	11	73%
Women	4	27%
Total	15	100%

Source: Primary Data 2025

Based on Table 1 the distribution table of participants in the correct waste management counseling based on gender, it can be seen that the majority of participants who attended were men, namely 11 people (73%) while female participants who attended were 4 people (27%).

Table 2. *Distribution of Participants in Correct Waste Management Counseling Based on Age*

Age Group	Quantity (n)	Percentage (%)
15-20 years	8	53%
21-35 years old	6	40%
36-50 years old	1	7%
Total	15	100%

Source: Primary Data 2025

Based on Table 2, the distribution table of participants in the correct waste management counseling based on age, it can be seen that the majority of participants who attended were in the age range of 15-20 years, namely 8 people (53%), as many as 6 participants (40%) were in the age range of 21-35 years, and there was 1 participant in the age range of 36-50 years (7%).

Table 3. *Distribution of Participants' Knowledge Before and After Proper Waste Management Counseling*

Knowledge Score	Quantity (n)	Min	Max	Mean+SD	P-Value
Pre-Test	15	30	100	60,67+18,310	0,002
Post-Test	15	50	100	81,33+15,253	

Based on Table 3, the average pre-test score of participants before counseling was 60.67% and increased to 81.33% in the posttest after counseling. The results of the statistical test using the wilcoxon signed-rank test showed a value of $p=0.002$ which means that there was a significant difference between the pre-test and post-test scores ($p < 0.05$). This shows that the counseling carried out succeeded in increasing the knowledge of participants about waste management.

Table 4. *Results of Pre-Test and Post-Test Statistics for Correct Waste Management Counseling*

Knowledge	Pre-Test		Post-Test	
	n	%	n	%
Less	12	80%	6	40%
Enough	3	20%	9	60%
Total (n)	15	100	15	100

Based on Table 4, the results of the pre-test and post-test statistical tests on waste management counseling, it can be seen that there is a significant increase in participants' knowledge. Before the counseling, as many as 80% of the participants had a low level of knowledge, while the other 20% already had sufficient knowledge about waste management. After counseling, the number of

participants with less knowledge decreased to 40% while 60% of participants showed an increase in knowledge into the sufficient category.

These results show that the counseling carried out was effective in increasing participants' understanding of waste management. However, further efforts are still needed to encourage knowledge enhancement to a higher level and ensure that all participants understand the correct waste management to the maximum extent in daily activities.

Waste management in Indonesia is faced with various complex and multidimensional challenges. One of the main challenges is the limitation of waste management infrastructure. In many parts of Indonesia, especially rural areas and small towns, waste management facilities are still not adequately available. Final Disposal Sites (TPAs) often do not meet set environmental standards, so they have the potential to cause soil and water pollution. In addition, recycling facilities and processing organic waste into compost are still very limited, which causes most waste to end up in landfills without going through an adequate processing process (Lingga et al., 2024).

Waste is material residue derived from human, animal, and plant activities that are no longer used and disposed of into the environment in solid, liquid, or gaseous form, and are inseparable from daily life (Khoiriyah, 2021).

Waste is classified into three types, namely organic waste, inorganic waste, and hazardous and toxic material waste (B3). Organic waste is waste that is easily decomposing and decomposes naturally, such as food scraps, animal carcasses, dried leaves, and the like. Meanwhile, inorganic waste is waste that is difficult to decompose and does not decompose easily, such as cans, glass, plastic, paper, and other materials. B3 waste is a type of waste that has the potential to harm health and the environment, including used diapers, insecticides, used batteries, and the like (Aulia et al., 2024).

Waste management based on the 3R concept is a new paradigm that places top priorities on waste management that is oriented towards the prevention of waste generation, waste reduction through the reuse of goods that can still be used, and the treatment of biodegradable waste, while still implementing an environmentally friendly waste disposal system. This concept is known as the 3R principle, which is reduce, reuse, and recycle. The reduce principle emphasizes efforts to reduce and prevent waste generation from the source. The principle of reuse refers to the reuse of waste that is still suitable for use, both for the same function and for other functions. Meanwhile, the principle of recycling is the activity of processing waste into new products that have use value. The following is an explanation of the 3R principle (Junaidi & Alimun Utama, A., 2023).

Various human activities, such as agricultural, trade, and household activities, produce waste so that its management is the responsibility of the entire community so that it does not have a bad impact on health and the surrounding environment. Therefore, waste is a serious problem faced by rural areas, including Panyangkawang Hamlet, Belabori Village (Khoiriyah, 2021).

Improper waste management can cause a variety of health problems, including the emergence of diseases transmitted through polluted environments. Therefore, counseling efforts on waste management need to be increased to provide a better understanding to the public about how to handle waste correctly and environmentally friendly (Rosdiana et al., 2025).

Waste management requires adequate knowledge and understanding because it is not only related to technical aspects, but also includes elements of knowledge and attitudes. The complexity of waste management, which includes the sorting process from source to the final processing stage, requires the involvement of people who have a good understanding of waste management principles. Therefore, knowledge is an important factor that influences people's behavior in supporting sustainable waste management. People with low levels of understanding tend to be passive and less participating, while increased knowledge can foster awareness and encourage active participation. In this context, community empowerment is a very important strategy. (Ruslina et al., 2025).

Knowledge improvement can be done through formal and informal education. Among the community, knowledge improvement is generally carried out informally through socialization activities to the community, counseling, and the dissemination of health promotion media such as posters and leaflets. Community empowerment efforts begin with increasing public understanding of the activities to be carried out, including in terms of waste management (Lestari et al., 2025).

Knowledge is a condition when a person has an understanding of something. In it there are elements of the subject that knows, the object that is known, and the information that you want to understand. Thus, knowledge requires individual awareness in understanding a certain subject and the existence of objects that are central to the process of understanding (Pradani, et al., 2025).

A person's age also affects a person's ability to grasp and think mindset. The older he gets, the more his catchability and mindset will develop, so that the knowledge he gains will be better. Most of the participants in this counseling were in the age range of 15-20 years, namely 8 people and 6 people from 21-35 years. At the age of 20-35 years, individuals will play a more active role in society and social life and make more preparations for the success of efforts to adjust to old age. In addition, they will spend more time reading. Intellectual ability, problem-solving and verbal ability are reported to have almost no decline at this age (Sitepu et al., 2024).

The results of the study showed that the people of Panyangkawang Hamlet, Belabori Village, Parangloe District, Gowa Regency had a better understanding after the counseling was carried out than before the counseling. This is shown by the results of a statistical test using the wilcoxon signed-rank test showing a value of $p=0.002$ which means that there is a significant difference between the pre-test and post-test scores ($p < 0.05$). This shows that the counseling carried out succeeded in increasing the knowledge of participants about waste management.

However, there are a number of challenges in the implementation of this extension program, including the low participation of some people who still feel less involved or have not realized the importance of waste management. This condition shows that counseling programs need to be implemented in a sustainable manner and involve more community leaders so that community participation can increase.

Behavior change basically takes time, but through a consistent approach, more optimal and sustainable results can be achieved (Khaerudin & Amalia, 2024)

4. Conclusion

The results of the extension activities showed a significant increase in knowledge about proper waste management. This increase is evident from the comparison of knowledge scores between pre-test and post-test as well as the results of the Wilcoxon Signed-Rank test which showed a value of $p=0.002$ (p value < 0.05) confirming the significant difference between pre-test and post-test scores, which clearly shows that the counseling carried out was successful in increasing the knowledge of the participants.

5. Reference

- Aulia, D. S., Arwoko, H., & Asmawati, E. (2024). Household Waste Classification Uses The Convolutional Neural Network Method. *Journal Extraction*, 8(2), 114-120.
- Bagas Pradani, A., Et Al. (2024). The Effect Of Waste Management Education On The Knowledge, Attitudes, And Behavior Of Residents Towards Zero Waste In Rt 20 Sawah Lebar Baru Village (Doctoral Dissertation, University Of Muhammadiyah Bengkulu).
- Gowa Regency Environmental Agency. (2025). Work plan of the Gowa Regency Environmental Agency in 2025. <https://id.scribd.com/document/901385656/Renja-Dlh-Gowa-2025>
- South Sulawesi Provincial Environmental Agency. (2022). Waste management report of South Sulawesi Province. <https://ppid.sulselprov.go.id/ppidpelaksana/dlhk>
- GoodStats Indonesia. (2023). 57.2% of households in Indonesia still burn waste. <https://data.goodstats.id/statistic/menguak-kebiasaan-pengelolaan-sampah-rumah-tangga-di-indonesia-2023-TiNH4>
- Junaidi, J., & Utama, A. A. (2023). Analysis of waste management with the 3r principle (reduce, reuse, recycle) (case study in Mamak Village, Sumbawa Regency). *JISIP (Journal of Social Sciences and Education)*, 7(1), 706-713.
- Ministry of Health of the Republic of Indonesia. (2023). Indonesia's health profile in 2023. <https://www.kemkes.go.id>
- Khaerudin, M. W., & Amalia, I. S. (2024). The effect of providing waste management education on the knowledge and attitudes of the community in Cihanjaro Village, Kuningan Regency. *Journal of Health Research Science*, 4(02), 364-370. <https://doi.org/10.34305/jhrs.v4i02.1380>
- Khoiriyah, H. (2021). Analysis of public awareness of health on waste management efforts in Tegorejo Village, Pegandon District, Kendal Regency. *Indonesian Journal of Conservation*, 10(1), 13-20.
- Lestari, R. R., Zurrahmi, Z. R., & Febria, D. (2025). The Effect Of Counseling On Household Waste On The Level Of Community Knowledge In Teluk Paunc Village, Kampar Kiri District, Kampar Regency In 2025. <Http://Journal.Universitaspahlawan.Ac.Id/Index.Php/Ners>
- Lingga, L. J., Yuana, M., Sari, N. A., Syahida, H. N., Sitorus, C., & Shahron, S. (2024). Waste in Indonesia: Challenges and solutions towards positive change. *INNOVATIVE: Journal Of Social Science Research*, 4(4), 12235-12247.
- Gowa Regency Government. (2023). Gowa Regency Local Government Work Plan (RKPD) for 2023. https://ppid.gowakab.go.id/ad_min/files/1699630702_1452055719.pdf
- South Sulawesi Provincial Government. (2022). Work plan of the local government of South Sulawesi Province in 2022. https://bappelitbangda.sulselprov.go.id/content/uploads/Rencana_Kerja_Pemerintah_Daerah_Provinsi_Sulawesi_Selatan_Tahun_2022.pdf

- Rosdiana, E., Et Al. (2025). The Effect Of Health Education On Public Understanding Of Waste Management In Sumbawa District, Sumbawa Regency. *Journal Of Healthcare Technology And Medicine*, Vol. 11, No. 2, October 2025.
- Ruslina, I.C., Rahman, A.Z., & Purnaweni, H. (2025). Community Empowerment Through A Knowledge Enhancement Program In Waste Management Based On 3r (Reduce, Reuse, Recycle). *Journal Of Policy Review And Public Management* , 14 (4), 153-162.
- Sitepu, D.E., Primadiamanti, A., & Safitri, E.I. (2024). The Relationship between age, work and patient education to the level of knowledge of DAGUSIBU at the Central Lampung Health Center. *Scientific Journal of Educational Vehicles*, 10 (6), 196-204. <https://doi.org/10.5281/zenodo.10642605>
- Tayeb, M., & David, F. (2021). The relationship between knowledge and attitudes with community waste management in Manggala District, Makassar City. In *National Seminar on Research Results* (Vol. 10, pp. 2039-2059).