ANALYSIS OF THE EFFECT OF INCREASING KNOWLEDGE ON ORGANIC AND INORGANIC WASTE SELECTION BEHAVIOR IN THE COMMUNITY

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Abstract

The problem of waste management is still an important issue due to the low public awareness in sorting organic and inorganic waste. Many people still throw away garbage in a mixed way without understanding its impact on the environment and health. In fact, waste sorting from the source is an effective first step in supporting sustainable waste management. This study aims to analyze the effect of increasing knowledge on waste sorting behavior in the community by using the narrative synthesis method based on an analysis of 20 relevant research articles. The results of the analysis show that increasing knowledge through education, socialization, and environmental campaigns can encourage changes in people's behavior in sorting waste. However, these changes are not fully optimal without the support of facilities, habituation, and the active role of the community. Thus, knowledge enhancement has an important role in shaping sustainable organic and inorganic waste sorting behavior in the community.

Keywords: Knowledge, Waste Sorting, Organic, Inorganic, Community Behavior

INTRODUCTION

The behavior of disposing of waste is a habit that is influenced by the environment. Until now, the problem of waste management is still an unresolved global issue. [1] One way to form good behavior in littering is to get used to throwing garbage in its place according to the type or color of the garbage can. [2] Waste is a remnant of human activities that increase with urbanization, population growth, and lifestyle changes. [3] Population growth and higher consumption patterns have also accelerated the increase in the volume of waste. [4] Waste sorting has a very important role, especially if it is done from the source. [5]

The waste problem is still a serious concern in Indonesia. According to data from the Ministry of Environment, in 2021 Indonesia produced around 23,260,069.83 tons of waste, of which 42.23% came from the household sector. [6] Piles of garbage in landfills give rise to various problems, ranging from health problems, pollution, to declining environmental aesthetics. [7] In other words, the higher the lifestyle and consumption, the greater the amount of waste that must be managed so as not to cause environmental problems. [8] The role of the community is very important in this regard, because the community is required to be able to overcome various problems related to the environment. [9]

Waste accumulation not only has an impact on public health, but also pollutes soil, water, and air. Waste that is not properly managed can seep into the soil and contaminate clean water sources, while incinerating garbage creates smoke and toxic gases that are harmful to the respiratory system. The issue of waste is not solely about how to process or manage it, but also related to the culture and sociological conditions of the community. [10] In addition, the existence of scattered garbage reduces the beauty and comfort of the environment, thereby reducing the overall quality of life of the community. [11]

Environmental health is a reflection of people's quality of life. A clean and healthy environment plays an important role in preventing various diseases, both infectious and non-communicable. Poor household waste management not only damages the beauty of the

environment, but also becomes a source of various health problems. Accumulation of garbage can cause diseases such as diarrhea, dengue, ARI, and skin disorders. [12] Waste management aims to reduce the volume of waste or process it into forms that have useful value through various ways. [13]

Problems Waste continues to increase along with population growth, human activity, lifestyle changes, and technological advancements. The increase in public consumption also increases the volume of waste every day, so it becomes a big challenge in realizing sustainable environmental management. [14] The waste problem is influenced by the improvement of people's quality of life which is not accompanied by knowledge related to waste, as well as the lack of community participation in maintaining cleanliness and disposing of waste in its proper place [15]. The role of the community is very important because they are the drivers and controllers of social change in protecting the environment. [16]

In general, waste is divided into two types: organic and inorganic. Organic waste comes from the remains of living things that are easily decomposed naturally, while inorganic waste is difficult to decompose and takes a long time, so it can have adverse effects on the environment. [17] Waste management that is not in accordance with environmentally friendly principles can have a serious impact on health and the environment. [18] The increase in the amount and accumulation of waste can cause environmental damage and endanger public health. Without proper management, waste can pollute the air, water, and soil, and become a source of various diseases. [19]

Ineffective waste management can trigger various environmental problems such as poor sanitation, increased risk of disease, declining agricultural land quality, and contributing to global warming.[20] In addition, waste management education is not enough to be delivered in theory alone. Direct practice is needed so that the community better understands and is actively involved in waste management. [21] Waste management can be done in a simple way that is easy to implement in households. This step not only reduces the amount of waste, but also contributes positively to environmental sustainability. [22]

Effective waste management starts from the habit of sorting waste independently. Efforts that can be made include reducing and controlling environmental pollution. The community needs to be increased in their awareness and concern in order to prevent pollution. The habit of using used goods, not throwing garbage carelessly, and living frugally needs to be instilled from childhood. [23] However, building that awareness takes time and process. In addition to knowledge, people also need to have skills to be able and willing to manage their own waste. [24] One of the solutions to overcome this problem is to provide education about waste sorting from the source. The separation of organic and inorganic waste is an important step in waste management. Organic waste can be processed into compost, while inorganic waste such as plastic can be recycled. Therefore, continuous efforts are needed to increase public awareness in managing waste correctly. [25]

RESEARCH METHODS

This research was conducted using the literature review study method with the PRISMA approach, namely through the process of identification, evaluation, and interpretation of various relevant research results on the topic. The articles that will be included in this study are articles published in the last five years, the literature is collected through reliable scientific sources such as Google Scholar, PubMed, ScienceDirect, and Garuda Portal**.** The keywords used included *"waste sorting", "community knowledge", "organic and inorganic waste",* and *"waste management behavior."* The process of making a systematic literature assessment (PRISMA) consists of four steps:

1. Identify journals to be included in the meta-analysis;
2. Screening, screening or data selection;
3. Eligibility, determining the article to be used as material for literature evaluation;
4. Inclusion, combining and reporting results

According to the inclusion and exclusion criteria, 25 articles were obtained that were suitable for the research topic

RESEARCH RESULTS

This study uses an article search method by conducting a selection and grouping process based on data relevant to the objectives and aspects to be achieved in this study. The keywords used include *"waste sorting", "community knowledge", "organic and inorganic waste",* and *"waste management behaviour". According to the inclusion and exclusion criteria, 25 articles were obtained that were suitable for the research topic.* From the results of searches through Google Scholar, Semantic Scholar, and several other scientific sources, as many as 20 articles were obtained that were considered relevant and worthy of analysis in this study.

An analysis of 25 articles shows that increased knowledge plays an important role in shaping organic and inorganic waste sorting behavior in the community. People who receive education tend to be more able to distinguish types of waste and are more disciplined in sorting them. However, these behaviors are stronger when supported by segregated bin facilities, environmental habits, and community roles. The results of the study confirm that education accompanied by environmental support can increase awareness and habits of waste sorting in a sustainable manner. The following is a summary of the results of the article review used in this study

Table 1. Results of literature review

No	Title	Author / Year	Article Type	Method	Main Findings
1	Relationship Between Knowledge Level and Waste Management Behavior in Yaturaharja Village Arso X	Pusmiati, Midah Nurhidayah, Taufik Mubarak, Yanti Diana, Ardian Hangga Kelana (2025)	Empirical (Quantitative)	Questionnaire, cross-sectional, purposive sampling, Chi-Square test	There is no significant relationship between knowledge level and waste management behavior. Good knowledge is not necessarily followed by good behavior due to limited facilities and infrastructure.
2	The Influence of Knowledge and Community Behavior in Responding to Household Waste on Household Waste Accumulation in Bangkinang Seberang District	Ade Dita Puteri & Devina Yuristin (2020)	Empirical (Quantitative)	Questionnaire survey, cross-sectional, 100 respondents, Slovin sampling	Knowledge does not affect differences in waste volume, but waste sorting behavior influences the reduction of waste accumulation. Knowledge affects behavior, and successful waste management is influenced by economic factors, social encouragement, environmental awareness, and the sustainability of waste bank facilities.
3	Relationship Between Knowledge and Organic and Non-Organic Waste Management Among the Community of Banjar 1 Village, Kotapinang District	Khodijah Tussolihin Dalimunthe & Aidah Nasution (2022)	Empirical (Quantitative)	Survey, cross-sectional, total sampling, 50 respondents, Chi-Square test	There is a significant relationship between knowledge and the management of organic and non-organic waste (p-value = 0.002). The better the community's knowledge, the better the waste management practices.
4	Factors Related to Waste Management Practices Among Coastal Communities in Bajo Indah	Nila Sari, Suhadi, Yasnani (2024)	Empirical (Quantitative Analytical)	Cross-sectional, questionnaire, simple random sampling, 129 respondents, Chi-Square test	There is a significant relationship between knowledge, attitudes, and facility availability with waste management practices. Knowledge (p=0.001), attitudes (p=0.000), and facilities (p=0.005) influence

No	Title	Author / Year	Article Type	Method	Main Findings
	Village, Soropia District, Konawe Regency				waste management practices in coastal communities.
5	Relationship Between Knowledge and Attitudes with Community Waste Management in Manggala District, Makassar City	Mushawwir Tayeb & Firdaus Daud (2021)	Empirical (Quantitative Correlational / Ex Post Facto)	Survey, questionnaires and tests, cross-sectional, cluster random sampling, 115 households, descriptive and inferential statistical analysis	Knowledge and attitudes together have a significant relationship with waste management. Partially, both knowledge and attitudes also significantly relate to community waste management.
6	Relationship Between Knowledge and Attitudes of Housewives Toward Waste Sorting in Pamulang Barat, South Tangerang City (2023)	Siti Rukmini, Nurul Hidayah, Heni Lestari (2024)	Empirical	Questionnaire (Cross-Sectional)	There is a significant relationship between knowledge and waste sorting behavior; higher knowledge leads to better sorting behavior.
7	Environmental Education on Organic and Inorganic Waste Separation at Kasih Ibu Orphanage, Kampar Regency	Andi Irfan et al. (2023)	Community Service	Participatory education	Environmental education increases knowledge and awareness of orphanage children in sorting organic and inorganic waste.
8	Education on Organic and Inorganic Waste Management and Sorting in Pecalongan Village, Bondowoso	Nurul Fauziah, Siti Aminah, Dwi Kartika (2021)	Community Service	Observation and direct education	Educational programs improve community understanding and participation in managing and sorting household waste.
9	Influencing Factors of Rural Residents'	Changjin Liu et al. (2024)	International Empirical	Survey and multiple regression analysis	Environmental knowledge, emotions, facilities, and economic incentives

No	Title	Author / Year	Article Type	Method	Main Findings
	Household Waste Classification Habits: Evidence from Jiangxi Province, China				positively influence residents' waste sorting habits.
10	The Effect of Mentoring and Educational Counseling in Improving Knowledge of Organic and Inorganic Waste Sorting Among Students of SDIT Ashabul Kahfi	Rizky Indah Syahfitri et al. (2023)	Empirical – Experimental (Pre-Post Test)	Pre-test, educational counseling, mentoring, post-test (SPSS)	Students' knowledge increased significantly after counseling; education is effective in shaping waste sorting behavior.
11	Education on Organic and Inorganic Waste Sorting at SDN Matagara	Mariska Junia Silva et al. (2025)	Empirical – Experimental (Pre-Post Test)	Interactive presentation, discussion, pre-test & post-test with paired t-test	There is a significant increase in students' knowledge; school education effectively builds environmentally caring behavior.
12	Efforts to Improve Understanding of the Importance of Waste Sorting Among Elementary School Students	Dutho Suh Utomo et al. (2025)	Empirical – Descriptive (Interactive Educational Intervention)	Educational activities and games with participation evaluation	Children better understand the importance of waste sorting and are motivated to apply it in daily life.
13	Raising Awareness Among Housewives in Sorting Organic and Inorganic Household Waste in Minas District	Latifa Siswati et al. (2022)	Empirical – Descriptive	Counseling, demonstration, evaluation	Housewives' knowledge increased by 46–87%; more environmentally responsible waste behavior was formed.
14	Education on Sorting and Disposal of Organic,	Mutiara Cinta Lestari et al. (2025)	Empirical – Descriptive	Counseling, discussion, waste sorting practice	Students can distinguish waste types and dispose of them according to categories.

No	Title	Author / Year	Article Type	Method	Main Findings
	Inorganic, and Hazardous Waste at SDN 11 Sembawa Banyuasin				
15	Socialization of Organic and Inorganic Waste Sorting Among Students of SDN 124/VI Koto Baru	Hilman Yusra et al. (2024)	Empirical – Descriptive	Observation, lectures, waste bin training	Students become more disciplined and accustomed to disposing of waste according to its type.
16	Education on Plastic Waste Processing and Sorting to Improve Eco-Literacy of Parents of TK Cahya Mentari Students	Dhias Cahya Hakika et al. (2024)	Community Service Article	Education and technical guidance (participatory approach)	Education increased parents' understanding from 53% to 91.33%. Knowledge about waste types increased by 36.5%, 3R concept by 42.5%, and home waste sorting by 36%.
17	Education on Organic and Inorganic Waste Sorting for Communities in Kelurahan 22 Ilir Palembang	Gaya Tridinanti et al. (2025)	Community Service Article	Education and physical intervention: socialization, training, discussion, composting	Programs improve community knowledge and skills in distinguishing waste types. Residents begin sorting waste independently and produce compost from household waste.
18	The Influence of Knowledge, Attitudes, and Motivation on Household Waste Sorting and Processing Behavior	Nur Chabibah et al. (2021)	Quantitative Research Article	Observational analytic, cross-sectional, Chi-Square test	Knowledge (p=0.048), attitudes (p=0.002), and motivation (p=0.027) significantly influence waste sorting behavior, but knowledge does not significantly influence waste processing behavior (p=0.174).
19	Socialization of Organic and Non-Organic Waste Sorting at SDN Banjarharjo 07 Central Java	Tri Aji Purnomo & Diah Sunarsih (2023)	Community Service Article	Socialization, lectures, simulation, mentoring	Socialization increases students' awareness and understanding of waste types and improves school cleanliness behavior.

No	Title	Author / Year	Article Type	Method	Main Findings
20	Waste Sorting Education in Improving Knowledge, Attitudes, and Actions of Elementary School Students in Palembang City	Meiranda Dwinissa Kesuma et al. (2025)	Quantitative Research Article	Pre-experiment, one group pretest–posttest	Significant increases in knowledge, attitudes, and actions after audio-visual education ($p<0.05$).
21	Zero Waste-Based Organic and Non-Organic Waste Sorting Education	Arshy Prodyanatasari et al. (2024)	Community Service Article	Participatory education and performance evaluation	Zero Waste education increases students' knowledge and awareness of waste sorting and the 3R concept.
22	Education on Organic and Inorganic Waste Sorting and Management in Dusun IV Batukarut Village, Bandung	Emay Mastiani et al. (2025)	Community Service Article	Education and socialization through seminars and practice	Education increases community awareness and application of the 3R concept; residents begin sorting waste independently.
23	Implementing Waste Sorting as a Sustainable Environmental Awareness Practice for Early Childhood Education	Faizatul Widat et al. (2025)	Community Service Article (Qualitative)	Naturalistic observation and interviews	Practical environmental education improves early childhood understanding of wet and dry waste sorting. Teacher and parent involvement strengthens behavior at home.
24	Influence of Multi-Dimensional Environmental Knowledge on Residents' Waste Sorting Intention	Zhihua He et al. (2022)	International Research	Structural Equation Model (SEM)	Multidimensional environmental knowledge positively influences waste sorting intention; environmental concern strengthens the relationship.
25	Community Behavior in Waste Management	Adelse Prima Mulya et al. (2024)	Descriptive Research	Observational survey	Most residents still do not sort waste (46.7%); increasing knowledge and motivation is recommended.

DISCUSSION

A person's knowledge of an object consists of two sides, namely positive and negative aspects, which affect the way he views things. In the context of waste management, people who have poor knowledge are usually caused by a lack of access to adequate information about the correct way to manage waste and its impact on the environment. The lack of socialization and education from related parties also makes the community not fully understand the importance of sorting and managing waste properly, so their awareness and participation in maintaining environmental cleanliness is still low. Therefore, high awareness is needed from the community to take responsibility for waste management together. This sense of responsibility will grow if each individual has a good understanding of how to manage waste, including knowledge, attitudes, and supportive motivations. With this provision, the community will be better able to implement household waste sorting, so that the next waste processing process can run more easily and efficiently.

People are beginning to understand that separating organic waste such as food scraps from inorganic waste such as plastics, cans, and bottles is very important to maintain the cleanliness of the environment. This awareness is growing along with the increasing understanding of the negative impact of unsorted waste on the environment. Therefore, the community began to demand supporting facilities, such as garbage cans with different categories and transportation services that can adjust the type of waste collected. Although public knowledge about the importance of waste sorting has increased, its application in daily life is still not optimal. This shows that knowledge alone is not enough to change behavior. Support is needed in the form of sorting facilities, sustainable habituation, and encouragement from the environment so that the community can sort organic and inorganic waste consistently. This behavior change requires a process and cannot happen through information alone.

CONCLUSION

Based on the results of the review of 20 research articles that have been reviewed, it can be concluded that increasing public knowledge has an important relationship and role in shaping organic and inorganic waste sorting behavior. Adequate understanding makes the community more sensitive to the importance of sorting waste from the source, so as to support sustainable waste management and environmental cleanliness.

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