



COMMUNITY BEHAVIOR IN WASTE MANAGEMENT

Adelse Prima Mulya^{1*}, Witdiawati¹, Nur Bilqis Haibah Mufidah Hasan²

¹Department of Community Nursing, Faculty of Nursing, Universitas Padjadjaran, Jl. Raya Bandung Sumedang KM.21, Sumedang, West Java 45363, Indonesia

²Bachelor of Nursing Science Program, Faculty of Nursing, Universitas Padjadjaran, Jl. Raya Bandung Sumedang KM.21, Sumedang, West Java 45363, Indonesia

*adelse@unpad.ac.id

ABSTRACT

Waste is an inseparable part of human life. Good community behavior in waste management can realize sustainable and environmentally friendly waste management. Conversely, in terms of health, waste that is not managed properly can facilitate the spread of disease so that the quality of public health can decrease. The design of this paper is a single case report. Data collection was carried out on February 15-20, 2024 in the population of Sukapura Village, Kiaracondong District, Bandung City with a total sampling technique of 1833 houses. The instrument used was the Self-Inspection Survey (SMD), with a validity and reliability value of 0.75. In general, the majority of houses already have waste disposal facilities. The behavior of the majority of residents of each house always disposes of garbage in its place, namely 91.43%. However, the habit of sorting waste still varies. The majority of residents of the house do not sort between organic and inorganic waste, namely 46.7%, while those who only sort are 32.79% and those who have sorted and processed it into compost or magot are 20.51%. One of the main problems in organic waste management in Kelurahan Sukapura is the low motivation of the community in general in the organic waste management process. For further research, it is necessary to examine more deeply and accountably related to the knowledge and perceptions of the people of Sukapura Village about waste and waste sorting, other factors that correlate with waste sorting behavior, and the reasons why the people of Sukapura Village do not sort waste so that work programs can be arranged that are targeted and sustainable.

Keywords: behavior; garbage; waste management

How to cite (in APA style)

Mulya, A. P., Witdiawati, W., & Hasan, N. B. H. M. (2024). Community Behavior in Waste Management. Indonesian Journal of Global Health Research, 6(S5), 357-364. <https://doi.org/10.37287/ijghr.v6iS5.4058>.

INTRODUCTION

Waste is an integral part of human life. Sustainable development and economic growth accompanied by an increase in population can lead to waste problems. Improving the quality of life has the potential to increase people's consumption of goods that ultimately produce waste (Chisholm et al., 2021). Ironically, when waste production is increasing, public awareness to manage waste properly is not massive enough. (Prihatin, 2020). In addition, the readiness of the government and/or local governments to facilitate infrastructure to manage waste in their areas is often hampered by costs and bureaucracy (Awasthi et al., 2021). Disasters or health risks due to the adverse effects of waste are actually preventable. In the community as partner model, the physical environment (including waste management) becomes a subsystem that interacts with and influences humans in an area (Anderson, 2018). So the behavior of the people in the area becomes very crucial. According to the Preceed Model in the book entitled "Health Promotion Planning: An Educational and Environmental Approach" there are 3 factors that influence health behavior, one of which is related to waste management, namely predisposing factors, enabling factors, and reinforcing factors (Moradi et al., 2023).

Predisposing factors include knowledge, attitudes, beliefs, values, and perceptions that facilitate or hinder motivation to change. Enabling factors are the various skills, resources, or barriers that can help or hinder the desire to change behavior such as environmental changes. Reinforcing factors are the rewards or feedback a person receives from other elements that can encourage or discourage the practice of a behavior on an ongoing basis. (Green & Kreuter, 1991). There is the role of community nurses, especially in primary prevention, namely with promotive and preventive interventions so that community behavior supports the stability of health status, which in this case relates to waste management (Hosseinnejad et al., 2022). Good community behavior in waste management can realize sustainable and environmentally friendly waste management. In fact, there have been many innovations that show that waste can be reprocessed into something of economic value so that it can play a role in improving the welfare of society. Conversely, an increase in the amount of waste in an area if not accompanied by an increase in the quality of waste management will risk causing various adverse effects on humans. In terms of health, waste that is not managed properly can facilitate the spread of disease so that the quality of public health can decrease. This condition in the long run can cause environmental pollution and the proliferation of vector-borne diseases, namely, diseases spread by insects and rodents (Hasibuan, 2016). (Hasibuan, 2016). In terms of the environment, waste is a source of soil, water, and air pollution. Waste can also cause flooding if it is allowed to fill up riverbeds or sewers. In addition, waste also contributes to increased greenhouse gas (GHG) emissions in the atmosphere and triggers global warming by releasing carbon dioxide and methane gas (Purwanta, 2009 in Prihatuan, 2016). (Purwanta, 2009 in Prihatin, 2020)..

According to the World Bank, the world generates 2.01 billion tons of municipal solid waste each year, and the waste that is not managed properly accounts for 33%, which can damage the environment. It is projected that global waste will increase by 70% by 2050 to 3.40 billion tons of waste per year. Driven by population growth, economic development, and rapid urbanization (Silpa et al., 2018). This shows that waste management is a global problem. In Indonesia alone, overall, there are 17.4 million tons of annual waste generated in 2023. A total of 11.6 million tons or 66.47% of waste has been managed, while as much as 5.8 million tons or 33.53% of other waste is unmanaged. (Ministry of Environment and Forestry, 2023). Bandung City is one of the cities with a high population density and produces a large amount of household waste. In 2020, data from the Bandung City Disdukcapil shows a population of 2,500,965 people and the Bandung City Environment and Hygiene Office (DLHK) assessed the amount of waste generation per capita in 2019 as 0.63 kg/person/day, so Bandung City produces $\pm 1,601.25$ tons of waste per day. Of this amount, the waste sent to landfill averaged 488,661.34 tons/year or 82.23% of the total waste generation, while waste that could be processed into valuable products was recorded at only around 262 tons per day or 16.09% of the total waste generation. (DLHK, 2021).

Sukapura Village is one of the areas in Bandung City with a population of 28,527 people with a population density of 262 people / ha in 2021. One of the community leaders of Sukapura Village in the Waste Management Discussion and Socialization Forum held at the Multipurpose Building RW 12 Sukapura Village on March 14, 2024 estimated that the waste production of 15 RW in Sukapura Village could reach 75 tons a day. This certainly needs the attention of various parties because it can be a source of health and environmental risks, but on the other hand it also has the potential to be processed by the government or utilized by the community. In relation to waste management in Sukapura Village, the Sukapura Village government has a vision and mission that is in line with the Bandung City government. Waste management is one of the 3 strategic issues prioritized by the Bandung City government.

Some of the ongoing program innovations include Reduce, Separate, and Utilize Waste (Kang Pisman) and Composting Bucket Sacks (Kang Empos). Therefore, this article will discuss the description of community behavior in waste management in Sukapura Village, Bandung City.

METHOD

This research design is a single case report, which focuses on one case or phenomenon only. Data collection was carried out on February 15-20, 2024 on the population of the Sukapura Village community, Kiaracundong Subdistrict, Bandung City with a total sampling technique of 1833 houses. The instrument used was the Self-Inspection Survey (SMD), with a validity and reliability value of 0.75. The SMD instrument was modified as needed and included several questions to find out the habits of people in the area in managing their household waste. Data were analyzed univariately to determine the description of community behavior in waste management.

RESULTS

Based on the results of the assessment, the demographic characteristics of the community assessed in Kelurahan Sukapura are as follows.

Table 1.
Frequency Distribution of Residents in Sukapura Village Based on Demographic Characteristics (n=6927)

Respondent characteristics	f	%
Gender		
Male	3364	48,56
Female	3563	51,44
Age		
Neonates (0-28 Days)	0	0
Infants (1-12 Months)	63	0,91
Toddlers (1-5 Years)	393	5,67
School Age Children (6-11 Years)	598	8,63
Teenagers (12-18 Years)	765	11,04
Adults (19-44 Years)	2537	36,62
Pre-elderly (45-59 Years)	1590	22,95
Elderly (>60 Years)	981	14,16
Last Education		
No diploma	1138	16,43
Elementary school graduate	1098	15,85
Junior high school graduate	1075	15,52
High school graduate	2418	34,91
College graduate	1198	17,29
Jobs		
Not Labor Force	3812	55,03
Not Working	458	12,01
IRT	1418	37,20
Student	1602	42,03
Retired	334	8,76
Labor Force	3115	44,97
PNS	300	4,33
Private Employee	842	12,16
Merchant	160	2,31
Labor	558	8,06
Self-employed / Entrepreneur	590	8,52
Health Workers	96	1,39
Not Working	458	6,61
More	115	1,66

Respondent characteristics	f	%
Marital Status		
Not Married	2892	41,75
Mating	3418	49,34
Divorce Life	188	2,71
Death Divorce	429	6,19
Status in the family		
Head of Family	2231	32,21
Wife	1710	24,69
Child	2852	41,17
Adopted Child	12	0,17
Other Family	122	1,76

In addition, the Kelurahan Sukapura area is a densely populated area. The area of Kelurahan Sukapura, if divided according to its utilization, will become an area of residential land covering 59 ha, agricultural land covering 8.72 ha, offices covering 4 ha, forest land covering 20 ha, and other public infrastructure covering 17 ha, so that in total it has an area of around 108.72 ha. Geographically, Kelurahan Sukapura has a flat/shaped area of 0.5% of the total area. The Kelurahan is located at an altitude of 700 m above sea level in terms of land elevation.

Table 2.
Frequency Distribution of Availability of Waste Disposal Facilities in Sukapura Urban Village, Kiaracondong Sub-district (n=1833 houses)

Waste Disposal Facilities	f	%
None	121	6,6
Existing, not watertight, not covered	446	24,33
Existing, watertight, not covered	1135	61,92
Existing, watertight, closed	131	7,15

From the table, in general, the majority of houses already have waste disposal facilities with a total of 1,712 houses or 93.39% of the total houses studied. However, there are still many uncovered waste disposal facilities, namely 1,581 houses (86.25%) and only 131 houses (7.15%) whose waste disposal facilities are watertight and covered.

Table 3.
Frequency Distribution of Community Behavior in Managing Household Waste in Sukapura Village, Kiaracondong Sub-district (n=1833 houses)

Category	f	%
The habit of throwing away inorganic waste		
To the river/garden/pond/any place	4	0,22
Sometimes to the trash can	153	8,35
Always go to the trash can	1676	91,43
Waste Sorting Habit		
Not segregated with inorganic waste	856	46,7
Segregated with inorganic waste	601	32,79
Sorted and processed into compost	376	20,51

From the table, in general, the behavior of the majority of residents of each house always disposes of garbage in its place, namely 1676 houses or 91.43% of the total houses studied. However, the habit of sorting waste still varies. The majority of residents of the house do not sort between organic and inorganic waste, namely 856 houses (46.7%), while those who only sort are 601 houses (32.79%) and those who have sorted and processed it into compost or magot fertilizer are 376 houses (20.51%).

DISCUSSION

Behavior of Disposing of Garbage in its Place

In general, the majority of houses already have waste disposal facilities with a total of 1,712 houses or 93.39% of the total houses studied. This shows that the majority of people already

have the concern to collect their own waste which will later be channeled to the TPS either collectively or independently. In addition, it was also found that in general the behavior of the majority of residents of each house was good, namely always disposing of garbage in its place. In line with research Yulida et al. (2016) Based on the results of the chi-square test, it can be concluded that the availability of good facilities can increase behavior by 5.87 times to dispose of waste in accordance with Lawrence Green's theory which explains that one of the factors that influence behavior is the enabling factor. Quoting Marshall McLuhan's famous phrase in 1964, "The medium is the message", it can be interpreted that the availability of garbage bins as a medium indirectly gives a message to the public to dispose of garbage in its place so that the environment becomes clean. The availability of waste disposal facilities in various places will make it easier for people to dispose of waste. The unavailability of waste disposal facilities makes it more difficult for people to dispose of waste in its place because they have to store their garbage for some time (Yulida et al., 2015). In addition, the existence of collectors who usually pick up plastic waste in Sukapura Village also provides convenience for the community so that they do not litter (Yulida et al., 2016).

This is in line with research conducted by (Hengi & House, 2022), that the people of developed countries, especially America, Canada, and Europe even though they are in different countries (as travelers) they still have awareness in disposing of good waste. A person's behavior of disposing of waste can be influenced by several factors including; psychosocial, individual characteristics and available trash facilities (Fan et al., 2023). Waste disposal behavior can also be influenced by knowledge and social environment, while for facility factors the influence is not significant (Natsir et al., 2024). In addition to internal individual factors and the surrounding environment, social media also influences people in disposing of garbage (Teoh et al., 2022). To realize the behavior of people who are obedient and obedient to the behavior of disposing of garbage, it is necessary to have the right rules and policies in the community (Boulet et al., 2023). The regional and social characteristics of Kelurahan Sukapura can also affect the community's waste disposal behavior. The close distance between houses and the social characteristics that tend to be close-knit and there is still interaction between neighbors in Kelurahan Sukapura allow each person to influence each other. In line with the opinion of Andina (2019) who explains that focusing on social pressure is important because waste management is not only a matter of knowledge, but also influenced by habits and situations. A person must be in an environment where waste management is practiced in order to do the same, including disposing of waste in its place.

Waste Sorting and Processing Behavior

In contrast to the habit of disposing of waste in its proper place, the habit of sorting waste in Kelurahan Sukapura still varies. The majority of households do not segregate between organic and inorganic waste, 856 households (46.7%), 601 households (32.79%) and 376 households (20.51%) have segregated and processed their waste into compost or magot. There are many factors that can influence community participation in sorting waste. According to research by Maulina (2012) which examines waste segregation in North Cimahi Subdistrict, factors that correlate with community participation in sorting waste are divided into 2, namely internal factors (gender, education, perceptions of waste, knowledge of types of waste, and knowledge of the benefits of sorting waste) and external factors (government socialization, transportation of segregated waste, availability of segregated waste bins, and activeness of environmental cadres). From these factors, the results of chi square analysis show that perception of waste and knowledge of waste types are most strongly correlated with waste sorting behavior, but it is not absolute because there are some respondents who have a correct understanding of waste

but do not sort waste at home for reasons of no free time, no segregated collection, no socialization, small waste volume, and the assumption that sorting waste is troublesome.

In connection with the internal and external factors mentioned, in the Waste Management Discussion and Socialization Forum held at the Multipurpose Building RW 12 Sukapura Village on March 14, 2024, one of the main problems in organic waste management in Sukapura Village is the generally low motivation of the community in the organic waste management process. Some of the things that have been identified as possibilities for low community motivation are the absence of economic incentives, the uneven activeness of cadres or community leaders who focus on sorting and managing organic waste, and uneven socialization. On the other hand, there are already 376 houses (20.51%) that have sorted and processed it into compost or magot. This organic waste processing is pioneered by the Kang Pisman program, which is a program initiated by the Bandung City government so that people process waste from its source, namely households. This program collaborates with citizens, the private sector, and others in building a new lifestyle through efforts to reduce, separate, and utilize waste. The Kang Pisman program needs to be a new lifestyle because without habituation, awareness on a community scale will be more difficult to grow. By becoming a lifestyle, it is expected that awareness to manage household waste can be triggered from interactions between communities in daily activities (Sekarningrum et al., 2020).

Compost fertilizer has benefits including improving soil structure, increasing soil binding capacity to water and nutrients from the soil, increasing the binding capacity of sandy soil, improving drainage and air systems in the soil, containing complete nutrients even though the amount is small, becoming a food reserve for microbes that support plant growth, playing a role in the process of weathering mineral materials, and reducing the activity of harmful microorganisms. (Yovita, 2001 in Suhastyo, 2017). Meanwhile, the cultivation of Black Soldier Fly (BSF) magot, besides being able to be utilized as a decomposer of organic waste, can also be used as an alternative feed for poultry and fish (Wang & Shelomi, 2017). Both have economic value that can be utilized by the government and the community. But for now, the compost and magot produced in Kelurahan Sukapura are distributed on a scheduled basis to the government and then the profits generated are used for operational needs for waste transportation and processing. The Sukapura Village Government has initiated the existence of a Community Self-Help Group (KSM) in each RW in Sukapura Village which is expected to increase community motivation in organic waste management. Referring to Lawrence Green's theory, the active role of the government and community leaders can be a reinforcing factor that influences community behavior in sorting and processing waste in Sukapura Village.

Developing countries can utilize the 4Rs (reduce, reuse, recycle, recover) in waste disposal behavior methods, especially in the disposal of rubber-based waste, this will be very beneficial in protecting the environment (Leong et al., 2023). Good waste management behavior, such as 3Rs, composting, etc. indirectly reduces several impacts such as global warming potential, acid rain, eutrophication potential, and resource depletion (Emara, 2023). In addition, some developed countries, for example Germany, have utilized digital waste management, this is very accurate and very profitable (Borchard et al., 2022). The limitation of this study is that it does not examine in more detail the predisposing factors that influence people's behavior in Sukapura Village in sorting and managing both inorganic and organic waste. In addition, this study also did not examine further the integrated waste management system from waste banks or TPS to landfill and whether this has an impact on people's behavior in sorting waste.

CONCLUSION

In general, the majority of houses already have waste disposal facilities. The behavior of the majority of residents of each house is always throwing garbage in its place, which is 91.43%. However, the habit of sorting waste still varies. The majority of residents of the house do not sort between organic and inorganic waste, namely 46.7%, while those who only sort are 32.79% and those who have sorted and processed it into compost or magot are 20.51%. One of the main problems in organic waste management in Kelurahan Sukapura is the low motivation of the community in general in the organic waste management process. For further research, it is necessary to conduct a more in-depth and accountable study related to the knowledge and perceptions of the people of Sukapura Village about waste and waste sorting, other factors that correlate with waste sorting behavior, and the reasons why the people of Sukapura Village do not sort waste so that a targeted and sustainable work program can be developed.

REFERENCES

- Anderson, E. (2018). *Community as partner: Theory and practice in nursing*, 8th edition. In *Community as Partner: Theory and Practice in Nursing*, 8th Edition.
- Andina, E. (2019). Analisis Perilaku Pemilahan Sampah di Kota Surabaya The. *Aspirasi: Jurnal Masalah-Masalah Sosial*, 10(2), 119–138. <https://doi.org/10.22212/aspirasi.v10i2.1424>
- Awasthi, A. K., Cheela, V. R. S., D'Adamo, I., Iacovidou, E., Islam, M. R., Johnson, M., Miller, T. R., Parajuly, K., Parchomenko, A., Radhakrishnan, L., Zhao, M., Zhang, C., & Li, J. (2021). Zero waste approach towards a sustainable waste management. In *Resources, Environment and Sustainability* (Vol. 3). <https://doi.org/10.1016/j.resenv.2021.100014>
- Borchard, R., Zeiss, R., & Recker, J. (2022). Digitalization of waste management: Insights from German private and public waste management firms. *Waste Management and Research*, 40(6). <https://doi.org/10.1177/0734242X211029173>
- Boulet, M., Stott, A., & Kneebone, S. (2023). Which behaviours matter? Prioritising food waste reduction behaviours for targeted policy and program approaches. *Journal of Environmental Management*, 345. <https://doi.org/10.1016/j.jenvman.2023.118668>
- Chisholm, J. M., Zamani, R., Negm, A. M., Said, N., Abdel daiem, M. M., Dibaj, M., & Akrami, M. (2021). Sustainable waste management of medical waste in African developing countries: A narrative review. *Waste Management and Research*, 39(9). <https://doi.org/10.1177/0734242X211029175>
- Dinas Lingkungan Hidup dan Kebersihan. (2021). *Perubahan Rencana Strategis Dinas Lingkungan Hidup dan Kebersihan Kota Bandung Tahun 2018-2023*.
- Emara, K. (2023). Sustainable solid waste management in rural areas: A case study of Fayoum governorate, Egypt. *Energy Nexus*, 9. <https://doi.org/10.1016/j.nexus.2022.100168>
- Fan, H., Wang, J., Lu, X., & Fan, S. (2023). Factors Influencing Food-Waste Behaviors At University Canteens In Beijing, China: An Investigation Based On The Theory Of Planned Behavior. *Frontiers of Agricultural Science and Engineering*, 10(1). <https://doi.org/10.15302/J-FASE-2022472>
- Green, L. W., & Kreuter, M. W. (1991). *Health Promotion Planning: An Educational and Environmental Approach*. Mayfield Publishing Company.

- Hasibuan, R. (2016). Analisis Dampak Sampah/Sampah Rumah Tangga Terhadap Pencemaran Lingkungan Hidup. *Jurnal Ilmiah Advokasi*, 4(1), 42–52.
- Hengi, Y., & House, L. (2022). Consumers' perceptions and behavior toward food waste across countries. *International Food and Agribusiness Management Review*, 25(2). <https://doi.org/10.22434/IFAMR2020.0198>
- Hosseinnejad, A., Rassouli, M., Jahani, S., Elahi, N., & Molavynejad, S. (2022). Community Health Nursing in Iran: A Review of Challenges and Solutions (An Integrative Review). In *Frontiers in Public Health* (Vol. 10). <https://doi.org/10.3389/fpubh.2022.899211>
- Kementerian Lingkungan Hidup dan Kehutanan. (2023). Capaian Kinerja Pengelolaan Sampah. <https://sipsn.menlhk.go.id/sipsn/>
- Leong, S. Y., Lee, S. Y., Koh, T. Y., & Ang, D. T. C. (2023). 4R of rubber waste management: current and outlook. In *Journal of Material Cycles and Waste Management* (Vol. 25, Issue 1). <https://doi.org/10.1007/s10163-022-01554-y>
- Maulina, A. S. (2012). Identifikasi Partisipasi Masyarakat dalam Pemilahan Sampah di Kecamatan Cimahi Utara Serta Faktor yang Mempengaruhinya. *Journal of Regional and City Planning*, 23(3), 177. <https://doi.org/10.5614/jpwk.2012.23.3.1>
- Moradi, A., Soltani, R., Shamsi, M., & Moradzadeh, R. (2023). Effects of online social media on improving mothers' behaviors towards preventing their children's otitis media based on the PRECED model: a randomized educational intervention trial. *BMC Pediatrics*, 23(1). <https://doi.org/10.1186/s12887-023-04016-y>
- Natsir, M. F., Muktadir, M. I. Al, Ibrahim, E., Daud, A., Yusbud, M., Rahmadani, S., Anwar, A., Asfar, M., & Khaer, A. (2024). Analysis of Factors Influencing Community Behavior in Household Waste Management on Lakkang Island, Indonesia. *Environment and Ecology Research*, 12(1). <https://doi.org/10.13189/eer.2024.120103>
- Prihatin, R. B. (2020). Pengelolaan Sampah di Kota Bertipe Sedang: Studi Kasus di Kota Cirebon dan Kota Surakarta. *Aspirasi: Jurnal Masalah-Masalah Sosial*, 11(1), 1–16. <https://doi.org/10.46807/aspirasi.v11i1.1505>
- Sekarningrum, B., Suprayogi, Y., & Yunita, D. (2020). Sosialisasi Dan Edukasi Kangpisman (Kurangi, Pisahkan, dan Manfaatkan Sampah). *Jurnal Pengabdian Kepada Masyarakat*, 3(1), 73–86.
- Silpa, K., Yao, L., Bhada-Tata, P., & Woerden, F. Van. (2018). What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. World Bank Group.
- Suhastyo, A. A. (2017). Pemberdayaan Masyarakat Melalui Pelatihan Pembuatan Pupuk Kompos. *JPPM (Jurnal Pengabdian Dan Pemberdayaan Masyarakat)*, 1(2).
- Teoh, C. W., Koay, K. Y., & Chai, P. S. (2022). The role of social media in food waste prevention behaviour. *British Food Journal*, 124(5). <https://doi.org/10.1108/BFJ-04-2021-0368>
- Wang, Y. S., & Shelomi, M. (2017). Review of Black Soldier Fly (*Hermetia Illucens*) As Animal Feed And Human Food. *Foods*, 6(10), 91.
- Yulida, N., Sarto, S., & Suwarni, A. (2016). Perilaku masyarakat dalam membuang sampah di aliran sungai batang bakarek-karek kota padang panjang sumatera barat. *Berita Kedokteran Masyarakat*, 32(10), 373–378.