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Household Waste Management in Buluhcina Village Kampar Regency

Fifia Chandra[1*], Tubagus Odih Romdhani Wahid[2], Suci Anggraini[3], Sucitra[4], Shalsabila Ghaasani A[5], Agnes Rica Yosidres[1], Doni Fahlepi[6]

ABSTRACT

Waste mismanagement remains a pressing social issue that negatively affects the environtment, health, and the visual quality of communities. In Riau, factors such as poor infrastructure, low public awareness, and weak regulations contribute to improper household waste disposal, particularly along riverbanks, leading to environtmental degradation, flooding, and disease outbreaks like dhiarrea and dengue. In Buluhcina, the lack of proper waste collection and sorting systems drives residents to burnt their trash, which increases air pollution and poses long-term health threats, including cancer. This research aims to describe how households manage waste in Buluhcina Village, Kampar Regency. This study used a descriptive observational method with questionnaires administered to 110 household in Buluhcina Village, Kampar Regency. The data were analyzed narratively in tables. This study shows that 91,82% household burnt their waste, 21,05% do not own trash bin in their home, 81,58% do not sort their waste, 15,21% still dispose of waste into rivers. Additionally, there are no waste collectors in the area. This study reflects critical shotchomings in local wate management. The ongoing practices not only endanger the ecosystem through land and water pollution but also increase public health risks. To resolve these issues, improvements in infrastructure, waste education, and systems that support 3R (reduce, reuse, recycle) principles are essential. Moreoever, the active role of the Village Head in establishing access to waste trasnfer stations is vital to support better waste handling in the community.

Keywords: Buluhcina Village, flood, household waste, household waste management

INTRODUCTION

Waste is a societal problem that must be properly managed to prevent adverse effects on the environtmental integrity, public helath, and the visual quality of the area. Solid waste from human daily activities and natural processes remains a significant environmental issue today. This is related to population growth and changes in community consumption patterns.[1-3] Based on its source, waste can come from households, offices, tourist attractions, traditional markets, business centers, public facilities, industrial areas, and more.[1] This highlights the need for increased public awareness of household waste management to prevent waste accumulation in the environment.

Household waste that is not properly managed can pose a serious threat to the environment, especially in riverbank areas. It can cause river shallowing and block water flow, leading to flooding and disrupting the activities of residents. Additionally, improperly managed household waste can become a source of disease transmission, either through direct contact with humans or through contact with vectors carrying germs that breed in the waste.[4,5] Examples of diseases caused by improperly managed household waste include diarrhea, dengue fever (DBD), leptospirosis, and others.[6] Household waste that is discarded into rivers can also pollute the water and soil.[7,8] This certainly affects the aesthetics of the rivers and the river ecosystem.

* Corresponding author: Fifia Chandra, fifia.chandra@lecturer.unri.ac.id
[1] Departemen Ilmu Kesehatan Masyarakat, Fakultas Kedokteran, Unversitas Riau, Pekanbaru, Indonesia
[2] Departemen Bedah, Fakultas Kedokteran, Unversitas Riau, Pekanbaru, Indonesia
[3] Departemen Fisiologi, Fakultas Kedokteran, Unversitas Riau, Pekanbaru, Indonesia
[4] Departemen Biologi Kedokteran, Fakultas Kedokteran, Unversitas Riau, Pekanbaru, Indonesia
[5] Departemen Histologi, Fakultas Kedokteran, Unversitas Riau, Pekanbaru, Indonesia
[6] Program Studi S1 Kedokteran, Fakultas Kedokteran, Unversitas Riau

In Riau, the management of household waste is often marred by inadequate infrastructure, limited public awareness, and insufficient regulatory frameworks. Many communities lack access to proper waste collection services, resulting in the improper disposal of waste in open areas, rivers, and other natural environments. This not only poses significant environmental risks, such as soil and water contamination, but also threatens public health through the proliferation of pests and the spread of diseases. Despite the challenges, there is a growing recognition of the need for sustainable waste management practices in Riau. Local governments, non-governmental organizations, and community groups are increasingly advocating for improved waste management systems that prioritize recycling, waste reduction, and public education. However, the effectiveness of these initiatives remains limited by various factors, including cultural attitudes towards waste disposal and the lack of comprehensive policies.

Buluh Cina Tourism Village, located in Siak Hulu District, Kampar Regency, is situated on the banks of the Kampar River. This river has a watershed area of 2,186,000 hectares with a rainwater catchment area of 24,548 square kilometers.[9] Based on interviews with the village governance before the study began, as the preliminary study, the residents often burn their household waste, there is no waste collector and waste sorting activity. Moreover, household waste is unknowingly discarded into the river area by residents. The conditions mentioned above have led the researchers to study household waste management in Buluhcina Village, Siak Hulu District, Kampar Regency. This study aims to describe how households manage waste in Buluhcina Village, Kampar Regency. The novelty of this study lies in its specific examination of household waste management practices within Buluhcina Village, detailing the prevalent issues such as waste burning, lack of sorting, and river disposal, alongside the absence of waste collectors. This research will provide data that underpins whether there is a need for localized solutions, such as improved infrastructure and community education.

METHOD

This study is a descriptive observational method through interview and questionnaires that made by researcher to illustrate the knowledge regarding household waste management. This study was approved by the Ethical Review Board For Medicine & Health Research of the Faculty of Medicine Universitas Riau (number: B/113/UN19.5.1.1.8/UEPKK/2024). Study was conducted in Buluhcina Village, Kampar Regency, Riau Province, in June until November 2024. The sample size was 110 respondents determined using *Lemeshow* formula and the sampling technique was proportional random sampling.

The inclusion criteria in this study are housewives residing in Buluhcina Village and residents who permanently live in Buluhcina Village. The exclussion criteria are residents who are not categorized as housewives, who were absent during the data collection period, and residents who registered under the same family card with the previously selected respondent. The primary data of this study is the household waste management that consisting of waste management, home trash bin availability, type of trash bin, waste sorting, waste collector availability, and waste disposal into River, and the secondary data of this study is the respondent characteristics. Data in this stduy were analyzed through SPSS version 22, and Crosstab Analysis and Chi Suqare Test were used to to assess the statistical significance of the association between dependent and independent variables.

RESULTS

This study invloved 110 respondents. Table 1 shows the caracteristic of the respondents:

Table 1. Characteristic Respondents

Characteristic	Category	Frequensi	%
Age	Late teenage years (17-25)	7	6.36
	Early adulthood (26-35)	31	28.18
	Late adulthood (36-45)	36	32.73
	Early elderly (46-55)	22	20
	Late elderly (>55)	14	12.73
Work	Yes	9	8.18
	No	101	91.82
Highest level of education	Not attending school	3	2.73
	Elementary school	41	37.27
	Junior high school	24	21.82
	Senior high school	37	33.64
	University	5	4.54

The distribution of respondents based on age category shows that the highest percentage is from respondents in the late adulthood age group (36-45 years), which accounts about 32.73%. The majority of repondents were housewives, accounting for 91.82%, while in terms of education, the highest proportion has completed elementary school, at 37.27%.—

Regarding household waste management practices, the results show in table 2:

Table 2. Household Waste Management

Indicator	Cateogry	Number of Respondents	Percentage (%)
Wate Management	Burned	101	91.82
	Not Burned	9	8.18
Home Trash Bin Availabality	Has Trash Bin	87	78.95
	No Trash Bin	23	21.05
Type of Trash Bin	Open Plastic Bag	46	42.11
	Closed Plastic Bag	0	0
	Open Trash Bin	32	29.82
	Closed Trash Bin	9	7.89
	None	23	21.05
Waste Sorting	Does Not Sort	92	83.64
	Sorts Waste	18	16.36
Waste Collector Availability	Available	0	0
	Not Available	110	100
Waste Disposal into River	Yes	17	15.45
	No	93	84.55

Table 2 showed that an overwhelming majority (91.82%) of household disposed of their waste by burning it. This practice is prevalent in the absence of formal waste collection services. In terms of equipment used for household waste storage, 42.11% respondents reported using open plastic bags as trash bin in their homes. Meanwhile, 21.05% of households did not have any trashbin at all. When it comes to sorting waste, most respondents (83.64%) did not engage in any form of waste segregation. Interestingly, while Buluhcina Village is located near a river, only 15.21% of respondents admitted to disposing of household waste directly into the river.

DISCUSSION

The findings of this study highlight the critical challenges in household waste management in Buluhcina Village, revealing significant environmental and health risks associated with improper practices. One of the key issues identified is the practice of waste burning. In fact, there were no waste collectores available in Buluhcina Village at the thim of the study, which explains why burning is the dominant method used by residents. This practice is concerning, as research has shown that burning waste, particularly plastics, releases harmful pollutants into the air such as dioxins and furans, which pose serious health risks including respiratory

problems and long-term diseases like cancer.[7] The study by Herniawanti and Mitalianti, has shown that smoke from burning garbage contains hazardous substances that can cause eye irritation, respiratory problems, and, in the long term, chronic diseases such as cancer and others.[10] The study also found that 42.11% of respondents use plastic bags as trash bins, indicating the absence of proper household waste containers and reflecting inadequate waste management infrastructure in that are. The use of plastic bags for waste storage, coupled with the burning of waste, increases the emission of toxic substances, further exacerbating environmental degradation.[5]

In contrast, 21.05% of respondents did not have any form of trash bin in their homes, suggesting a lack of basic resources and awareness about proper waste handling practices. The lack of proper containers contributes to unhygienic waste handling and further justifies the reliance on burning as a disposal method. In a same study conducted in Surabaya and Banyuwangi, it was reported that approximately 18% of respondents did not have a designated trash container and 24% of rural households lacked trash bins and disposed of waste in open fields or rivers. Furthermore, over 90% of households owned a trash bin, although only 62% used it consistently.[11-12] The lack of trash bins was attributed to economic limitations and low awareness about sanitation. Results of this study falls within the range observed in rural or peri-urban settings in Indonesia, suggesting that infrastructure limitations and low awareness are widespread issues outside of large cities. These findings emphasize the importance of education programs and basic waste management infrastructure.

Furthermore, the lack of waste sorting practices in the community is a significant concern, as 83.64% of respondents reported not sorting their waste. This suggests a low level of awareness or infrastructural support for recycling or reuse initiatives. Improper waste sorting practices can lead to significant environmental and health issues. When waste is not sorted correctly, it contributes to environmental pollution, increases health risks, and increases economic costs.13 Without source-level sorting, the potential for impementing recycling programs is significantly hindered. Waste segregation at the source is a critical component of sustainable waste management, allowing for more efficient recycling and reducing the amount of waste that ends up in landfills or natural environments. The lack of waste collection services further exacerbates the problem, limiting residents' ability to dispose of waste in an environmentally responsible manner.[6]

Throwing waste into the river, reported by 22.73% of respondents, raises significant environtmental concerns . River disposal not only leads to water pollution and the destruction of aquatic ecosystems but also increases the risk of flooding, which can have severe consequences for local communities.[14] Improper disposal practices contribute to increased incidences of waterborne diseases. For instance, areas with high waste levels reported typhoid and cholera cases, and the presence of pathogenic bacteria, such as Vibrio and Staphylococcus, that significantly increases following sewage discharge, further endangering community health.[15] This practice is commonly observed in rural areas with limited waste management services, as seen in other studies of similar regions.[3]

In terms of waste management infrastructure, the lack of a formal waste collection system in the village further exacerbates the situation. Without a proper waste management framework, residents are forced to resort harmful practices such as burning and river disposal. Proper waste management involves collecting, transporting, processing, and disposing of waste responsibly. It includes strategies like waste reduction, recycling, and composting, which minimize landfill use, protect public health, conserve resources, and reduce greenhouse gas emissions. Effective waste management not only mitigates environmental hazards but also promotes resource conservation and community engagement.[16]

This highlights the urgent need for the development of local waste management strategies, including regular waste collection, public awareness campaigns on waste sorting and recycling, and infrastructure support for proper waste disposal.[17] Respondent awareness about waste management is crucial for effective implementation and sustainability of waste management practices. Studies indicate that higher levels of awareness correlate with better waste management outcomes, as informed citizens are more likely to engage in responsible waste

disposal and recycling practices.[18] This awareness is essential not only for individual behavior but also for community engagement and policy support. Despite the evident benefits of awareness, challenges remain. Many individuals may understand the importance of waste management yet fail to act due to systemic issues, such as inadequate services or enforcement, indicating that awareness alone is insufficient for effective waste management.[17-18,3]

Overall, the findings suggest that improving waste management in Buluhcina Village, will require a multi-faceted approach. This should include raising public awareness about the dangers of burning waste and river disposal, introducing waste segregation programs, and developing adequate waste collection systems. In addition, support from local government and non-governmental organizations (NGOs) will be crucial to ensure the success of these initiatives. Implementing sustainable waste management practices in rural areas like Buluhcina can not only protect the environment and public health but also serve as a model for other communities facing similar challenges.

CONCLUSIONS

Effective household waste management is crucial for the environment, public health, and the aesthetic quality of the surroundings. Unfortunately, the community in Buluhcina Villages manages waste through burning. Therefore, there is a need for public awareness regarding waste management using the 3R method (reduce, reuse, recycle). Additionally, the role of the Head of Buluhcina Village is essential in providing waste collection services to the nearest waste transfer station.

CONFLICT OF INTEREST

The authors affirm that there are no actual or potential conflicts of interest related to financial, personal, or professional associations that could be perceived as interfering with objectivity in this study.

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