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The Relationship of Waste Sorting and Fly Density Levels in Temporary Shelter Places (TPS) In Madiun City

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ABSTRACT
Fly density can be a parameter for the success of waste management, both from containerization activities to final waste disposal, which must be integrated by sorting, collecting and transporting waste management. Waste that is not sorted can cause problems, one of which is disease caused by vectors. In this research, researchers used quantitative research as an approach. The research method used is an analytical survey while the type of research is cross sectional. The total population is 36 polling stations with a sample size of 20 polling stations using the Chi-Square test. Research shows that the independent variable value of sorting is significant (p-value = 0.014), with the level of fly density in the Madiun City Temporary Shelter (TPS). There is a relationship between waste sorting and the level of fly density in the Madiun City Temporary Shelter (TPS).
Keywords: Waste Sorting, Fly Density, TPS

INTRODUCTION

The fly density figure is one way of assessing environmental sanitation in an area. The higher the fly density figure, it indicates that the area is in the poor sanitation category.(Kurnia et al., 2023)Diseases transmitted by flies include dysentery, cholera, abdominal typhus, diarrhea and others related to poor environmental sanitation conditions. Transmission of this disease occurs mechanically, where the body's skin and legs are dirty, which is a place for disease microorganisms to attach, which then flies land on food.(Husin, 2020).Because of the large spread of diseases that can be transmitted through flies, it is necessary to control flies carefully.

Flies are one of the animals that can act as disease vectors. Flies live side by side with humans, especially in poor environmental sanitation, and often cause health problems for humans. Cases caused by flies have received almost no attention from the health sector, especially controlling fly-based diseases, seen from the lack of monitoring and surveillance activities regarding the presence of these flies in residential areas (Hastutiek & Fitri, 2019).

Flies really like rubbish bins because they are dirty, smelly and damp, making them the main habitat for flies. Piles of rubbish in rubbish bins can be used by flies as a breeding ground, because organic waste such as vegetable waste, fruit, meat and food waste in temporary shelters is a food source for flies.(Majdi et al., 2021)

Madiun City is one of the developing cities which is the economic center of the western part of East Java Province which produces 118.5 tons of waste/day. From a preliminary study related to the density of flies in the Madiun City Temporary Shelter, it shows that the results of fly measurements at the Kresno TPS were an average fly density of 5 high (unhealthy environment), at the Basuki Rachmat TPS the average fly density was 3 high (unhealthy environment).), at the Salak TPS the average fly density is 3 high (unhealthy environment), at the Margobawero TPS the average fly density is 5 high (unhealthy environment), at the Pudak TPS the average fly density is 3 (unhealthy environment) . Where for flies the quality standard value is <2 to create a healthy environment(Nuraeni et al., 2017)The increase in fly density is due to a waste sorting system that is poorly managed, causing increased waste generation, thus increasing the fly density value.

Waste Sorting can be interpreted as a process of waste handling activities from the source by utilizing resources effectively starting from containerization, collection, transportation, processing, to disposal, through organizational management control that is environmentally friendly, so that it can achieve the goals or targets that have been set. established, namely, a waste-free environment.(Budiasih, 2017)

Research conducted by Prajaningtyasititi, and Paauthor (2022) shows that waste sorting (p=0.007), which means there is a relationship between waste sorting and the level of fly density at the TPS, where waste management tends to pay less attention to waste sorting causing the waste to be mixed up and putrefaction. where this will invite flies to look for food. Similar research was also carried out by Lin Kristanti (2021) showing that waste selection (p=0.006) had a relationship between waste sorting and fly density where TPS did not sort waste because there were no special officers. Based on the description above, this is the background to the aim of this research, which is to analyze the relationship between waste management and the level of fly density in Madiun City Temporary Shelters (TPS).

METHOD

The approach taken in this research is analytical research. The method used in this research is a survey method which is carried out by distributing questionnaires and observing respondents directly using a cross-sectional approach.

RESULTS

Univariate Analysis

Univariate analysis here is presented based on the dependent variable, namely fly density. The independent variables are waste sorting and waste collection.

Table.1 Frequency distribution of waste sorting in Madiun City Temporary Shelters

Waste Sorting	Frequency	Percentage
Bad	15	75
Good	5	25
Total	**20**	**100%**

Based on table 1, 15 Temporary Shelters (75%) were bad at sorting waste. Meanwhile, 5 Temporary Shelters (25%) are good at sorting waste.

Table 2. Frequency distribution of fly density in temporary shelters in Madiun City

Fly Density	Frequency	Percentage
Tall	14	70
Low	6	30
Total	**20**	**100%**

Based on table 2, as many as 14 Temporary Shelters (70%) fall into the unhealthy environmental category. Meanwhile, 6 Temporary Shelters (30%) are low in the healthy environment category.

Bivariate Analysis

Bivariate analysis aims to determine the relationship between the independent variable and the dependent variable by using statistical tests. The statistical test used in this research is the Chi-Square test with a significance level of 0.05

Table 3. Relationship between Waste Sorting and Fly Density Levels in Madiun City Temporary Shelters.

Sorting	Fly Density				Total		ρ-value	RP (95% CI)
	Tall		Low					
	N	%	N	%	N	%		
Bad	13	86.7	2	13.3	15	100.0	0.014	4,333
Good	1	20	4	80	5	100.0		(0.742-25.294)

Based on table 3, it can be seen that the level of fly density is high in the unhealthy environment category in poor waste sorting at 13 TPS (86.7%). The level of fly density is high in the unhealthy environment category at good waste sorting at 1 TPS (20%). So, the proportion of high fly density in the unhealthy environmental category is greater in poor waste sorting than in good waste sorting.

Discussion

The results of data processing using the chi-square test can be seen from the Fisher exact test which shows that the p value is 0.014 ($p<0.05$), which means there is a relationship between waste sorting and the level of fly density.

According to the Minister of Public Works Regulation number 03/PRT/M/2013 concerning the implementation of waste infrastructure and facilities in handling household waste and waste similar to household waste, decomposing waste originating from plants, animals and their parts which can be decomposed by creatures. other life such as food waste and litter. Reusable waste is waste that can be reused without going through processing, including paper, cardboard, drink bottles, cans. Recyclable waste is waste that can be reused after going through a processing process, including cloth, plastic, paper and glass scraps.

This is in line with research by Kristanti (2021) entitled the relationship between waste management and the level of fly density in Temporary Shelters (TPS), high levels of fly density can be caused by waste management which tends to pay less attention to waste sorting, because the waste is not sorted. It will be mixed with rubbish and decomposition will occur, which will invite flies to look for food.

Based on the results of research in the field for poor waste sorting and the level of density of flies in the unhealthy environment category was 13 TPS (86.7%) in this case there was also a time when the research measured the level of density with a small amount of waste because it had been transported from the TPS to to TPA, and for good waste sorting and fly density in the unhealthy environment category is 1 TPS (20%). Based on field surveys, this can happen because Madiun City has 3 TPSTs where organic waste is sorted which is then used as fertilizer and waste of economic value such as plastic bottles, unpleasant odors and a texture that tends to be wet which may attract flies. to find food.

CONCLUSION

Based on the research results and discussion in this study regarding the relationship between waste management and fly density levels in Madiun City Temporary Shelters (TPS), the following conclusions can be drawn:

1. There are still many Temporary Shelters in Madiun City that are bad at sorting waste
2. There is a relationship between waste sorting and the level of fly density in the Madiun City Temporary Shelter

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