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FACTOR RELATING TO BEHAVIOUR IN MANAGING DISPOSABLE MASK WASTE IN THE HARBOUR OF BATAN CITY

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ABSTRACT

The harbour which is a public place has the potential as a place for disease transmission, environmental pollution, or other health problems. The objective of the current research was to determine the factors relating to behavior in managing disposable. This type of research is observational analytic using a cross sectional design. Simple random sampling technique and a sample of 90 respondents. The research instrument used a questionnaire and used the Chi Square test and logistic regression (α = 0.05). The results of the study showed that the most important factor related to the management of garbage masks are knowledge with (p value = 0.004; p < 0.05; OR = 6.571; 95% CI = 1.566-25.929), attitude (p value = 0.049; p < 0.05; OR = 3.388; 95% CI = 1.006-11.407), and binding regulations (p value = 0.002; p < 0.05; OR = 0.098; 95% CI = 0.022-0.434). The conclusions of the current research is that there is a significant relationship between knowledge, attitude and binding regulations with mask waste management.

KEYWORDS *Knowledge, Attitude, Binding Regulations, Face Mask*

INTRODUCTION

Face masks are generally worn to filter the air entering the mouth and nose to block harmful gases, odors, droplets, viruses and other substances (Beyuo, 2023). The use of face masks has become a global issue as current waste management systems are insufficient to handle solid and medical waste (Lyu et al., 2024). Kumar et al. showed that the use and removal of face masks can increase infection rates (Kumar et al., 2020). In addition, improperly discarded masks can contain viruses and particles. This can cause the virus to spread, become a microbial habitat, and affect the overall aquatic ecosystem (Dussud et al., 2018). Masks can be trapped by aquatic and riverine vegetation, accumulate on the surface of reservoirs, and be

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transported through rivers to the ocean causing further pollution (Li et al., 2022). The World Health Organization (WHO) also mentions the use of face masks in its guidelines to stop the spread of the virus in public places. A reduction of 3–5% in deaths may be expected; an additional targeted distribution of surgical masks to the elderly and symptomatic (Worby & Chang, 2020).

However, an approach that proved effective at slowing the rate of transmission has now turned into a severe environmental threat. Almost every country prioritizes the protection of public health over environmental health, adversely affecting policies to reduce the use of single-use plastics (Patrício Silva et al., 2020). Disposable face masks contain mostly polymeric materials such as polyurethane, polycarbonate, polypropylene, polystyrene, polyacrylonitrile, polyethylene, or polyester (Fadare & Okoffo, 2020).

Lack of removal guidance, widespread use of masks by the general public may lead to the production of severe plastic waste, which will enter soil and water and become persistent pollutants (Wang et al., 2020) (Demirbas, 2011). So the need to establish and implement appropriate waste management protocols and infrastructure to handle the increasing volume of masks used is critical to ensure public health and environmental protection. Management of public place areas must provide waste sorting facilities that contain hazardous waste (Doutia et al., n.d.). Providing information to the community will affect community behavior in managing mask waste, and the existence of binding regulations will affect mask users in managing mask waste (Sari & Budiono, 2021).

RESEARCH METHOD

The research was conducted at Telaga Punggur Domestic Port and Roro Port of Batam City for 5 months (January-June 2022). Research with criteria for mask users in the Port area, namely crew members, Directorate of Security, Office Boy, Management Agency, Passengers per day with a total population of 890 people and the sample obtained was 90 respondents using Slovin formula with a margin error of 10%. Sampling using the Probability Sampling method with the Simple Random Sampling technique (Sugiyono, 2019). This study was a descriptive observational study with a cross-sectional design (Sugiyono, 2018). Primary data was obtained using questionnaires distributed to respondents. Data were collected through observation and questionnaire distribution. The data obtained were analyzed univariate and bivariate by conducting the chi square test to determine the significant relationship between each independent variable and the related variable with a confidence level of 95% ($p < 0.05$).

RESULT AND DISCUSSION

The majority of respondents in this study were male (60%) and young <45 years old (70%) (Table1).

Table 1. Frequency Distribution of Waste Management

Variable	Frequency (f)	Percentage (%)
Gender		
Male	54	60
Female	36	40
Age		
Young Age (<45 years)	63	70
Vulnerable Age (>45 years)	27	30
Knowledge		
Good	54	60
Fair	36	40
Attitude		
Positive	56	62
Negative	34	38
Action		
Supportive	66	74
Not Supportive	24	26
Information Exposure		
Good Exposure	34	38
Less Exposure	56	62
Facility Availability		
Fully Available	30	33
Partially Available	60	67
Binding Regulations		
Existing	51	57
None	39	43
Mask Waste Management		
Qualified	70	78
Not Qualified	20	22

Respondents with good knowledge amounted to 60% and those with sufficient knowledge amounted to 40%. In the attitude variable, most of those who have a positive attitude are 62% and 38% have a negative attitude. Most of the supportive actions in mask waste management amounted to 74% and those who did not support amounted to 26%. Respondents with good exposure to waste management information total 38% and those with less exposure total 26%. In the facility availability variable, 33% of respondents stated that the availability of facilities was complete while 67% of the availability of facilities was incomplete. Respondents who stated that there were binding regulations amounted to 57% and those that were not binding 43%. As for mask waste management, 78% stated that

it met the requirements and 82% stated that it did not meet the requirements (Table 1).

Table 2. Factors associated with mask waste management

Variable	Mask Waste Management (%)		OR (95%CI)	*P Value*
	Qualified	**Not Qualified**		
Male				
Female	46.7	13.3	1.000	1.000
Age	31.1	8.9	(0.363-2.758)	
Young Age (<45 years)				
Vulnerable Age (>45 years)	53.3	16.7	0.727	0.782
Knowledge	24.4	5.6	(0.235-0.254)	
Good				
Fair	53.3	6.7	5.091	0.004
Attitude	24.4	15.6	(1.727-15.001)	
Positive				
Negative	54.4	7.8	4.333	0.010
Action	23.3	14.4	(1.514-1.2402)	
Supportive				
Not Supportive	63.3	10.0	5.359	0.003
Information Exposure	14.4	12.2	(1.843-15580)	
Good Exposure				
Less Exposure	32.2	11.1	0.707	0.670
Facility Availability	45.6	11.1	(0.261-1.917)	
Fully Available				
Partially Available	23.3	10.0	0.524	0.324
Binding Regulations	54.4	12.2	(0.189-1.450)	
Existing				
None	37.8	18.9	0.167	0.008
Male	40.0	3.3	(0.045-0.620)	

There is a relationship between the level of knowledge (p = 0.004), attitude (p = 0.010), action (p = 0.03) and binding regulations (p = 0.008) with mask waste management. Meanwhile, there was no association between gender (p = 1.000), age (p = 0.782), exposure to information (p = 0.670) and availability of facilities (p = 0.324) with mask waste management (Table 2).

Overall, the factors associated with mask waste management based on the results of the multivariate test analysis show that statistically significant variables are knowledge, attitude and binding regulations (Table 3).

Table 3. Factors Most Associated with Mask Waste Management

Variable	OR (95%CI)	*P value*
Knowledge	6.571 (1.566-25.929)	0.004
Attitude	3.388 (1.006-11.407)	0.049
Binding Regulations	0.098 (0.022-0.434)	0.002

In addition, the table results show that the most related variable in mask waste management is the knowledge variable. The OR value shows that mask users with good knowledge will result in eligible mask waste management 6.571 times higher than mask users with sufficient knowledge.

Discussion

In the knowledge variable with p value = 0.004; p < 0.05; OR = 6.571; 95% CI = 1.566-25.929, thus indicating there is a significant relationship between the level of knowledge and mask waste management. Mask users who have good knowledge will result in the management of eligible mask waste 6.571 times higher than mask users with sufficient knowledge. In the attitude variable with p value = 0.049; p < 0.05; OR = 3.388; 95% CI = 1.006-11.407, thus indicating a significant relationship between attitude and mask waste management. Mask users who have a positive attitude will result in the management of eligible mask waste 3.388 times higher than mask users who have a negative attitude. In the binding regulations variable with p value = 0.002; p < 0.05; OR = 0.098; 95% CI = 0.022-0.434, thus indicating a significant relationship between binding regulations and mask waste management. The presence of binding regulations will result in 0.098 times higher qualified mask waste management compared to no binding regulations.

Knowing, understanding, applying, analysing, synthesizing, and evaluating are all levels that make up knowledge. According to Permatasari (2019), knowledge plays a crucial role in determining one's actions. The level of knowledge has an important influence on the behaviour of disposable mask waste management. For that, there needs to be an effort to empower the community can be socialization that not only enhances knowledge but also builds interest in the community to do management in particular the waste of masks in the environment. Awareness-raising can be done by organizing socialization to the community, dissemination of health promotion media in the form of posters, leaflets or sharing broadcasts through whatsapp groups to be disseminated by local cadres. The attitude has an important influence on the behavior in managing the waste of once-used masks. A society with a negative attitude tends to behave badly. Responsible and sustainable attitudes are crucial to protecting the environment and public health (Irfandi Achmad, 2022).

The presence of plastics in the environment has also been reported as significantly contributing to climate change due to carbon emissions and greater risk to the global food chain (Ford et al., 2022; Si et al., 2021). As much as 45% of the community has a lack of knowledge about waste removal according to the type of waste, the availability of facilities and infrastructure such as temporary waste piling sites is still lacking (Wijayanti, 2021).

A study conducted by Tan et al. in China showed that most people (94%) actually dispose of used masks, but few get rid of them, 7.6% of people throw masks into the trash without a lid and 22.5% of people throw them into the trash within their reach even though they have a closed trash can (Tan et al., 2021) About 20% of people usually carelessly dispose of face masks that can be moved by others (Cai et al., 2023).

According to the researchers themselves, knowledge about mask waste management in mask users at the port is very important because the results of poor knowledge can be due to the lack of information obtained about the ways and benefits of Personal Hygiene (Delea et al., 2020) (Nurudeen & Toyin, 2020) in the management of mask waste that can be obtained, mask user respondents sometimes lack information on the importance of disposing of waste in different containers and also the lack of facilities such as posters that should be installed around the trash and socialization to related parties (Benson et al., 2021). Health workers play a role in socializing to the public about the management of medical garbage in households to be separated from other garbages, stored in closed containers/plastics and stored for 3 days before being transported by hygienists, in the hope that the public is avoided from the danger and health impacts caused by the poor and safe management of disposable mask waste.

Based on the results of research conducted by Alomari et al, it shows that public awareness of attitudes and actions taken by local governments to reduce the spread of the corona virus has a significant positive correlation ($r = 0.279$, $p = 0.0001$) (Alomari et al., 2021). In addition to knowledge, information accessibility is included in enabling factors or factors that enable behavior (Krisdayanti, 2021).

Information availability has a major influence on attitudes, namely a person's opinion or belief so that timely communication, education, and unique innovations are the key to overcoming some of these concerns (Daniel, 2020).

In the study of Abbasi et al, it was suggested that proper regulations on face mask waste should be made to avoid undesirable consequences in the near future (Akber Abbasi et al., 2020). Regulations or policies on mask management in mask users are one of the reinforcing factors to encourage respondents to implement mask management, one of which aims to reduce the presence of greenhouse gas footprints (Howarth, 2014; Mejjad et al., 2021).

CONCLUSION

Factors associated with mask waste management are knowledge, attitude and binding regulations. While the most related factor in mask waste management is the knowledge variable. Mask users who have good knowledge will result in eligible mask waste management 6.571 times higher than mask users with sufficient knowledge. In the attitude variable with p value = 0.049; $p < 0.05$; OR = 3.388; 95% CI = 1.006-11.407, thus indicating a significant relationship between attitude and mask waste management. For Port managers, it is necessary to handle the mask waste generated per day. installation of posters or banners to provide information to the public and local workers and provide separate, label bins and different colored plastics, one of which is plastic (yellow). If this research is developed, it can add

other research variables and research can be carried out by providing information and education as well as interviews with respondents.

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