

Research Article

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HAZARDOUS AND TOXIC WASTE MANAGEMENT IN THE COVID-19 REFERRAL HOSPITAL IN KENDARI CITY

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Abstract

Background: Management of medical B3 waste during the COVID-19 pandemic is still very limited. At the Kendari City Regional General Hospital, B3 waste generation has increased from 24,324 kg in 2019 to 32,123 kg in 2020. In April 2021, the amount of B3 waste generation has reached 11,402 kg. There were several factors that affect the management of B3 waste. This study aims to determine the factors related to the management of hazardous and toxic waste (B3) at the Covid-19 Referral Hospital in Kendari City.

Methods: This research used a cross-sectional study design, conducted from August to September 2021. The samples in this study were 79 respondents taken by purposive sampling.

Results: The statistical test suggests the value of χ^2_{count} is 19,417 > χ^2_{table} is 3,841 and the value of the closeness relationship is $\Phi = 0,496$.

Conclusion: There is a moderate relationship between monitoring of management of hazardous and toxic waste (B3) at the Kendari City Covid-19 Referral Hospital.

Key words: *Supervision, Waste, Covid-19, Management, Hospital.*



INTRODUCTION

The world is currently experiencing the Corona Virus or Covid-19 pandemic. Efforts to prevent and control Covid-19 are inseparable from environmental conditions and now the whole world is trying to deal with the Covid-19 outbreak, including Indonesia(1). The first COVID-19 case in Indonesia occurred on March 2, 2020 and spread and increased rapidly throughout Indonesia. The highest number of cases in Indonesia is in DKI Jakarta Province, West Java Province, Central Java Province, East Java Province and East Kalimantan Province and Southeast Sulawesi Province which is ranked 26th(2).

Southeast Sulawesi Province until May 16, 2021 reported as many as 10.470 confirmed cases of Covid-19 with 216 deaths(3). Meanwhile, the Kendari City Health Office reports that there are confirmed cases of Covid-19 up to May 16, 2021 confirmed cases of Covid-19 amounted to 4.668 cases with 58 deaths (CFR 1.27%) (4).

Infectious waste is medical waste that is classified as hazardous and toxic waste because it can be one of the media for the spread of bacteria and viruses, and it is estimated that worldwide(5). At the beginning of the Covid-19 pandemic in China, hazardous waste generation increased from 4.902,8 tons per day to 6.066 tons per day(6). Meanwhile in Indonesia, since the beginning of the Covid-19 pandemic in March 2020 until early February 2021, there have been 6.417,95 tons of Covid-19 medical waste(7).

An initial study at the Kendari City Regional General Hospital showed that the generation of B3 waste had increased, where in 2019 it was 24.324 kg and increased in 2020 by 32.123 kg. Meanwhile, in 2021 until April, the amount of B3 waste generated has reached 11.402 kg(8). There

are several factors that affect the management of B3 waste, one of which is management supervision. Supervision of medical waste of hazardous and toxic materials at the Kendari City Hospital is still not optimal and there are still deficiencies in the management of its waste. The importance of optimal medical waste control measures can prevent health problems, spread of infection to health workers and the public.

Based on the description of the problem above, it is necessary to conduct an in-depth study related to "Management of Hazardous and Toxic Waste (B3) at the Covid-19 Referral Hospital, Kendari City Hospital".

METHOD

The research method uses an analytical survey with a cross sectional study approach(9). The purpose is to analyze each research variable and analyze the relationship between supervision and B3 waste management at the Covid-19 Referral

No	Husband Support	HIV Test Examination				Amount		Statistic test
		Done		No		n	%	
		n	%	n	%			
1	Well	24	68.6	11	31.4	35	100.0	X2 hits = 12.117 X2 tabs = 3.841 = 0.402
2	Not enough	14	28.0	36	72.0	50	100.0	
Total		38	44.7	47	55.3	85	100.0	

Hospital, Kendari City Hospital(10). The population in this study were all health workers in Kendari City Hospital, Southeast Sulawesi Province as many as 424 people, with a research sample of 79 respondents. The variables in this study are the supervision and management of B3 waste. Data analysis was carried out using

descriptive analysis and inferential analysis, namely Chi Square(11). This data analysis was carried out using the SPSS application.

RESULT

Table 1 shows that out of 79 respondents, 58 stated that there was supervision and 21 stated that there was no supervision. Respondents who stated that there was supervision mostly carried out B3 waste

management in the good category as many as 43 people (74,1%), while the sample who stated that there was no supervision, mostly carried out B3 waste management in the deficient category as many as 17 people (81%). The results of statistical tests using the test Chi-Square at the 95% confidence level, the value of X^2_{count} is $19.417 > X^2_{table}$ 3.841 and the value of the closeness relationship is $\Phi = 0,496$.

Table 1
Relationship between Supervision and Management of Hazardous and Toxic Waste at the Kendari City Covid-19 Referral Hospital

Supervision	Hazardous Waste Management				Total		Statistic Test
	Well		Deficient		n	%	
	n	%	n	%			
There is Supervision	43	74,1	15	25,9	58	100	$X^2_{hit.} = 19,417$ $X^2_{tab.} = 3,841$ $= 0.496$
No Supervision	4	19,0	17	81,0	21	100	
Total	47	59,5	32	40,5	79	100	

Source: Primary data 2021

DISCUSSION

The Relationship of Supervision with Management of Hazardous and Toxic Waste (B3)

According to Manullang, supervision is defined as a process for implementing what work has been carried out, evaluating it, and if necessary correcting it with the intention that the implementation of the work is in accordance with the original plan(12). Supervision of B3 waste management is one of the tough jobs that must get serious attention. Monitoring activities should be dynamic according to the existing conditions of B3 waste problems. Until now, the production of B3 waste continues to increase and the intensity of B3 waste management activities is also getting higher(13).

This study shows that the sample which states that there is supervision, most of them

manage B3 waste in the good category (74,1%), while the sample which states there is no supervision, mostly manages B3 waste in the deficient category (81%). This is because through supervision, health workers can implement waste management more routinely and it is easier to evaluate to serve as the basis for establishing a better B3 waste management system.

Test results Chi-Square found that there was a moderate relationship between monitoring with the management of hazardous and toxic waste (B3) at the Kendari City Covid-19 Referral Hospital. This situation is because with supervision, the waste management system is also getting better, but on the contrary, if there is no supervision, then waste management will be less. In general, the description of B3 waste management in each room is a waste selection container and then the B3 waste is collected using a transport cart and then

brought and stored in the B3 room. stored in hospital and not transported to landfill.

This research is in line with Uska's research which found that the supervision of Medical Waste of Hazardous and Toxic Materials at the Selasih Regional General Hospital, Pelalawan Regency, was seen from 3 monitoring indicators according to Manullang, namely: to set measuring devices (standards), conduct evaluations, and take corrective actions in its implementation there are still shortcomings so that the supervision carried out is not optimal. Some of the obstacles encountered in his research are the limited available budget, lack of human resources in carrying out the task of supervising medical waste who understand environmental laws and regulations in carrying out supervision, then the lack of public knowledge about the procedure for complaints in the event of pollution(14). Other studies that have been carried out have shown that the assessment of liquid waste management at the Konawe Selatan Hospital based on the results of the examination from the Regional Health Laboratory UPTD it is known that the results of the wastewater management in the WWTP BLUD of the Konawe Selatan Hospital as a whole are in accordance with the established quality standards. This is inseparable from the supervision carried out by the hospital in its management process, from sorting to the destruction of medical waste(15).

Based on the results of observations, the waste management system at the selection stage has implemented a selection based on the type of waste and the group of B3 waste, in terms of storage, a storage system based on colors and symbols has been implemented and stored B3 Waste in a special B3 Waste Storage facility. Then for transportation within the hospital area, it is carried out using waste transport carts and waste treatment using Autoclave, Microwaves, Irradiation frequency, Incinerator that is adapted to the waste material being processed. Then for burial, the hospital does not bury B3 waste.

Management of medical waste in health care facilities is very important because medical waste has various risks to health for anyone, including health workers, patients and the community. The impact of medical waste with for management on the environment includes the decline in environmental quality that can interfere and cause health problems for people living in the environment around health facilities and outside communities, the emergence of occupational health problems in the formal occupational diseases caused by sharp, infectious, medical waste. Or containing chemicals, such as being stuck with used / unsterileneedles, are high risk factors for the transmission of diseases such as Hepatitis B and HIV(16).

CONCLUSION

In this study, there is a moderate relationship between supervision and the management of hazardous and toxic waste (B3) at the Covid-19 Referral Hospital in Kendari City.

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