



IMPLEMENTATION AND STRATEGY OF HAZARDOUS MATERIALS MANAGEMENT IN NGASEM HEALTH CENTER

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Abstract

Puskesmas as a health facility has Hazardous and Toxic Materials and the waste that can pollute and / or damage the environment, and / or endanger the environment, health, and survival of humans and other living things. Approximately 70 - 90% of solid waste derived from health installations is a common waste that resembles household waste and does not contain risks. The remaining 10 -25% is waste that can cause various types of health impacts because it is considered dangerous. This community service aims to improve understanding of Hazardous and Toxic Materials management in Ngasem Health Center. This research method uses quantitative approach and data analyzed using Paired sample t-test, significance level $\alpha=0.05$. The average pretest research results obtained before the socialization of Hazardous and Toxic Materials management is 89.09. After socialization, the average posttest value is 125.45. The significance value of paired t test 0.003 which shows there is a significant influence of socialization on the understanding of B3 management in Ngasem Health Center, Kediri. To reduce the danger / risk due to services performed by puskesmas, the implementation of Hazardous and Toxic Materials management in accordance with standards must be done immediately.

Keywords: *Hazardous and Toxic Materials Management, Puskesmas, Socialization*

INTRODUCTION

Health care facilities are a tool and / or place used to organize health service efforts, both promotive, preventive, curative or rehabilitative conducted by the Government, local government, and / or the community (Undang-Undang RI 2009). Health facilities as a health care institution is one of the workplaces that have risks to occupational safety and health both in human resources Health care facilities, patients, patient escorts, visitors, and the community around the health care facilities. Potential occupational safety and health hazards in healthcare facilities include physical, chemical, biological, ergonomic, psychosocial, and occupational accident

hazards. The potential danger of biological transmission of diseases such as viruses, bacteria, fungi, protozoa, parasites is the highest occupational health risk in health care facilities that can cause occupational diseases. In addition, the use of various medical devices and technologies in health care facilities and the condition of facilities and infrastructure that do not meet safety standards will pose a risk of work accidents from mild to severe (Menteri Kesehatan RI 2019). Any health facility that produces residual substances, energy, and/or other components due to its nature, concentration, and/or quantity, either directly or indirectly, may pollute and/or damage the environment, and/or endanger the environment, health, and survival of humans and other living





things must conduct the management of Hazardous and Toxic Materials waste produced by it (Republik Indonesia 2009). Puskesmas is a service unit whose activities produce medical and non-medical waste, solid waste usually comes from the room of the puskesmas, general room, dental room, laboratory and pharmacies, while liquid waste usually comes from microorganisms, toxic chemicals, Puskesmas waste is considered as the link of the spread of ageing disease (Menteri Kesehatan RI 2017).

According to Mayonetta (2016) one of the problems of medical waste management in developing countries is not yet getting special attention and is still disposed of along with domestic waste. Medical waste puskesmas has great potential to pollute the environment, cause accidents, and transmission of diseases if the management of medical waste is not in accordance with applicable regulations. Waste produced from medical efforts such as puskesmas, polyclinics and hospitals that are types of waste that fall into the category of biohazard is a type of waste that is very dangerous to the environment, where there are many viruses, bacteria and other harmful substances that must be destroyed by road burned in temperatures above 800°C

Approximately 70 - 90% of solid waste derived from health installations is a common waste that resembles household waste and does not contain risks. The remaining 10 - 25% is waste that can cause various types of health impacts because it is considered dangerous (Astuti and Purnama 2014). The volume of medical waste

produced by puskesmas for 3 months can reach 6.5 kg (Masruddin et al. 2021)

Waste can be a place of accumulation of disease organisms and become nests of insects as well as rats. Puskesmas as a means of health services is a gathering place for sick and healthy people, can be a source of disease transmission and allow the occurrence of environmental pollution and health disorders, as well as produce waste that can transmit diseases. To avoid these risks, waste management is required in health care facilities (Menteri Kesehatan RI 2017)

Hazardous and Toxic Materials waste produced can cause health protection disorders and or risk of pollution to the environment. Given the magnitude of the negative impact of B3 waste caused, the handling of B3 waste must be carried out appropriately, starting from the stage of storage, the stage of transportation, the temporary storage stage to the processing stage. B3 waste handling shall be implemented in accordance with the provisions of the (Menteri Kesehatan RI 2019b). Based on the above background, the purpose of community service is to know the implementation and strategy of the management of hazardous and toxic materials in ngasem health center

RESEARCH METHOD

This study in Facility Management and Health in a Puskesmas. Information is obtained through literature studies, documents, brainstorming and interviews with the head of puskesmas, person in charge of environmental health programs, person in charge of quality management,





person in charge of all service units. Methods for determining which strategies to take use fishbone, USG and SWOT methods. The Fishbone method is used to identify and analyze a process or situation and find possible causes of an issue/problem that occurs (Fandy dan Diana, 2001). Metode USG (Urgency, Seriousness, dan Growth) to determine the priority of the problem and is an important part of the troubleshooting process (Menteri Kesehatan RI 2016). In the use of USG matrix, to determine a priority issue, there are three factors to consider. Scoring techniques are 1-5. The description of the assessment is in Table 1.

Qualitative data requires further processing using a scale of interest. The most commonly used scale for changing data is the Likert interval scale (Basyaib 2006). The three factors are urgency, seriousness, and growth. The result of the USG matrix is to combine the values of the three comparator factors and sort according to the sum. The biggest as a result of priorities. Swot analysis method according to Ferrel and Harline (2005) the function of SWOT Analysis is to obtain information from the analysis of the situation and separate it in internal issues (strengths and weaknesses) and external subject matter (opportunities and threats). The SWOT analysis will explain whether the information indicates something that will help the company achieve its goals or give an indication that there are hurdles that must be faced or minimized to meet the desired income.

SWOT analysis is the identification of various factors systemically to formulate a company strategy, this analysis is based on

logic that can maximize strengths and opportunities, but simultaneously can cause weaknesses and threats

RESULTS AND DISCUSSION

Analysis in finding the source of problems that become obstacles to the management of B3 is done using fishbone analysis.

The problems can be formulated, among others (1) Limitations of the number of human resources, (2) Awareness of the importance of Hazardous and Toxic Materials management has not been evenly distributed, (3) The knowledge of all employees is still not the same, (4) Constraints on the transportation of B3 waste in accordance with third party jadwa, (5) Work plan has not been comprehensively arranged, (6) Supervision is not routinely carried out, (7) Temporary storage Hazardous and Toxic Materials guidelines have not been understood, (8) Hazardous and Toxic Materials management program is still new, (9) Budget for coaching visits dinkes limited, (10) Limitations of special cabinets Hazardous and Toxic Materials Not included in the planning for labeling and symbols, (11) and (12) MSDS Has not been socialized.

The next step is USG analysis to determine the priority of problems that must be done in ngasem health center so that the management of Hazardous and Toxic Materials can run well.





Table 1. Prioritization of Hazardous and Toxic Materials Management Problems By Method USG

NO	PRIORITY ISSUES	USG			TOTAL	RANKING
		U	S	G		
1	Limited number of human resources	3	4	3	36	III
2	Awareness of the importance of <i>Hazardous and Toxic Materials</i> management has not been evenly distributed	4	5	4	80	II
3	The knowledge of all employees is still not the same	5	4	5	100	I
4	<i>Hazardous and Toxic Materials</i> waste transportation constraints according to third party jadwal	2	2	2	6	V
5	Work plan has not been comprehensively laid out	3	1	2	6	V
6	Surveillance is not routinely carried out	2	2	1	4	VI
7	<i>Hazardous and Toxic Materials</i> temporary storage guidelines are not yet understood	2	1	2	4	VI
8	<i>Hazardous and Toxic Materials</i> management program is new	1	2	3	6	V
9	Budget for coaching health service visits is limited	2	2	3	12	IV
10	Limitations of special cabinets	1	2	1	2	VII
11	<i>Hazardous and Toxic Materials</i> Not included in planning for labeling and symbols	2	1	1	2	VII
12	MSDS not yet presented	5	5	4	100	I

Prioritization of problems using the USG (Urgency, Seriousness, Growth). Based on table 1, the priority of the problem taken is the increase of knowledge about the correct management of B3 in The Ngasem Health Center of Kediri Regency. Swot (Strength, Weakness, Opportunitiess, Threats) analysis is then performed, to determine strategies that can be applied in Ngasem Health Center. Based on the results of swot analysis made, the strategy that can be used is strategi aggressive (SO) include(1) Optimization of puskesmas organizational structure , (2) Socialization of Hazardous and Toxic Materials management, (3) Msds creation for each Hazardous and Toxic Materials, (4) Reorganization of Hazardous and Toxic Materials storage according to standards, (5) installation of Hazardous and Toxic Materials symbols and labels in accordance with regulations, (6) Optimizing existing budgets for disposal and destruction of Hazardous and Toxic Materials waste, (7) Establishing and socializing Hazardous and Toxic Materials waste management procedures

Socialization related to the management of Hazardous and Toxic Materials in puskesmas is carried out with the audience of the Head of Puskesmas, Head of Quality and each person in charge of the program delivered in full the scope of Hazardous and Toxic Materials Management of activities that produce, transport, distribute, store, to use and or dispose of Hazardous and Toxic Materials. With Hazardous and Toxic Materials management objectives to prevent and or reduce the risk of Hazardous and Toxic Materials impacts on the environment, human health and other living things. Evaluation results on understanding





Hazardous and Toxic Materials management were conducted using a questionnaire containing 15 statement items. And in analysis with SPSS with Test Paired t Test.

Paired Samples Statistics				
Pair	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 PRE TES	89.0909	11	15.78281	4.75884
POST TES	125.4545	11	30.12097	9.08181

Paired Samples Correlations			
Pair	N	Correlation	Sig.
Pair 1 PRE TES & POST TES	11	.150	.641

Paired Samples Test									
Pair	PRE TES - POST TES	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	PRE TES - POST TES	-36.36364	31.70990	9.56059	-57.86597	-15.86131	-3.803	10	.003

Figure 1. Result Of pretest value

The test result of t above shows that the average pretest value is 89.00 and the average posttest value is 125.45. Based on the calculation above obtained Sig. (2-tailed) by 0.003. Because $0.003 < 0.05$ then H_0 is rejected. Thus, there is a significant difference between the results of the employee's initial understanding of Hazardous and Toxic Materials management (pretest) and the results of an understanding of Hazardous and Toxic Materials management in the final test (posttest).

Symboling and labeling B3, The next implementation activity in the form of Hazardous and Toxic Materials management is the provision of symbols and labels which is an activity to identify and classify B3, which will be very useful as important information in its management. Activities carried out in the form of: (1) Making stickers Symbol Hazardous and toxic materials that can stick well to the packaging, easy to use, durable, resistant to water and resistant to spills of packaging materials hazardous and toxic (2) Symbol type installed is adapted to the

characteristics of the materials it packs, (3) Symbols are mounted on the sides of the packaging that are not obstructed by other packaging and are easy to see, (4) The type of symbol installed is adapted to the classification of Hazardous and toxic materials it stores.

The next implementation activity is the reorganization of Hazardous and Toxic Materials storage, where the activities carried out in the form of: (1) Storage of Hazardous and Toxic Materials is done in the cabinet for Hazardous and Toxic Materials and labeled with the name of the material, the date of entry and the special sign / symbol Hazardous and Toxic Materials, (2) Putting materials according to the provisions in the room according to the instructions, (3) Does not store materials that easily react in the same place. (4) Do not store Hazardous and Toxic Materials beyond sight, avoid storing on the top shelf.

The next implementation is msds creation for each Hazardous and Toxic Materials. Material Safety Data Sheet (MSDS) is a document containing information on potential hazards (health, fire, reactivity and the environment) and how to work safely with chemical products. It is an important starting point for the development of a complete safety and health program. MSDS it also contains information about the use, storage, handling and emergency procedures of all materials. Material Safety Data Sheet (MSDS) placed in a place that is easy to reach or known by all employees of Ngasem Health Center, and close to the place of use of B3.





CONCLUSIONS

Hazardous and Toxic Materials Management conducted in Puskesmas Ngasem Kediri regency needs to be adjusted to the applicable regulations ranging from transporting, distributing, storing, to using and or disposing of Hazardous and Toxic Materials. The monitoring and evaluation process related to the implementation of Hazardous and Toxic Materials management needs to be done continuously because the management of Hazardous and Toxic Materials aims to prevent and or reduce the risk of Hazardous and Toxic Materials impact on the environment, human health and other living things

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