MODEL DEVELOPMENT OF COVID-19 SOLID MEDICAL WASTE MANAGEMENT SYSTEM IN BAYU ASIH REGIONAL PUBLIC HOSPITAL PURWAKARTA DISTRICT

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Abstracts

Introduction:The potential for an increase in the generation of Covid-19 solid medical waste due to the Covid-19 pandemic will have a negative impact on the environment. Good management of Covid-19 solid medical waste is one of the efforts to deal with the Covid-19 pandemic as an effort to break down the chain of transmission of Covid-19 disease. The generation of solid medical waste at Bayu Asih Regional Public Hospital, Purwakarta District at the end of 2020 was 56.2 kg/day increasing to 167.66 kg/day in June 2021. The aim of the research is to build a model for a Covid-19 solid medical waste management system at Bayu Hospital Asih, Purwakarta District. Methodology: The research method used is a qualitative research. The sources of informants were 12 informants consisting of the Head of Supporting Division, Staff of Medical Waste Management, Isolation Room Nurse Officer, Medical Waste Officer and Cleaning Service Officer. Data collection was carried out through Indeepth Interview (IDI), document review and observation. Data were analyzed thematically, through the stages of transcription, reduction, and categorization. Research findings:The results of the study obtained 11 themes and 18 sub-themes which were described in the research concept map, so that a solid medical waste management system model was compiled at Bayu Asih Regional Public Hospital, Purwakarta District. Conclusions:Compilation of a model for the Covid-19 Solid Medical Waste Management system as a reference in compiling policies/Standard Operating Procedures (SOP) in the Management of Covid-19 Solid Medical Waste at Bayu Asih Regional Public Hospital, Purwakarta District.

Keywords: *Model, Management System, Covid-19 Solid Medical Waste, Qualitative.*

1. Introduction

The Covid-19 pandemic has resulted in an increase in the amount of medical waste, thereby burdening health service facilities (Calma, 2020). In March 2020, medical waste in Malaysia increased by 10% from the previous month (Hakim, 2020), in Jakarta it increased by 30% (Rikin, 2020), while in Wuhan City, China, there was an increase from 40 tons to 240 tons per day (Brunell, 2020). quoted from the journal (Yolarita & Kusuma, 2020) Waste generation generated from health service facilities consisting of 2,900 hospitals, 10,062 health centers, 8841 clinics, health laboratories, 26,418 pharmacies, blood transfusion units, optics produces waste generation of 456.18 tons/day of this waste, 384,120 tonnes/day is managed by 3rd party (three) waste processing services and 71.53 tonnes/day is managed independently

by 111 hospitals that have incinerator permits, 2 licensed hospital autoclaves and 6 hospital autoclaves. which is still processing the autoclave permit. From this data, there is still a difference in waste generation with waste processing capacity of 0.5 tonnes/day (Sofwan, 2021).

The generation of medical waste from 105 Covid-19 referral hospitals and self-isolation centers in West Java Province from January to July 2020 generated 2,287 tons of medical waste, while the amount of Covid-19 waste was 173.3 tons. In 2020, there were 371 hospitals in West Java and only 95 hospitals reported the generation of medical waste and Covid-19 waste to the West Java Provincial Health Service. The amount of Covid-19 waste generated from January to June 2021 was 871.5 tons (Erdani, 2021). Purwakarta District Health Service, the amount of Covid-19 waste from January to June 2021 was 62,510.33 kg (Purwakarta District Health Office, 2021).

Handling of Covid-19 medical waste needs to be taken seriously. Research has proven that the cause of Covid-19, the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), can survive in certain conditions (temperature and humidity). It takes several days for the virus to infect humans, depending on the type of medical surface material on which it lives. However, with a standard disinfection process (using soap, disinfectant or heating) the virus will easily be inactivated or in other words not contagious (Prasetiawan, 2020). Considering the large negative impact that B3 waste has, the handling of B3 waste must be carried out appropriately in accordance with regulations starting from the sorting stage, the container stage, the transportation stage, the temporary storage stage up to the processing stage (Minister of Health Regulation No. 7, 2019). For Covid-19 solid waste, the handling starts from the sorting stage, containerization with disinfection, transportation, storage at TPS B3 with disinfection and processing by a third party (Minister of Health of the Republic of Indonesia, 2020).

Penelitian (Maharani et al., 2017), Evaluasi Pengelolaan Limbah Bahan Berbahaya dan Beracun (LB3) di RS. Roemadi Muhammadyah Semarang, belum memenuhi persyaratan sesuai Permen LHK No. 56 Tahun 2015 seperti belum adanya pelabelan dan simbol pada kantong plastik, penyimpanan limbah yang disimpan lebih dari 2 hari dalam TPS, Tempat Penyimpanan Sementara yang belum memiliki alarm tanda bahaya dan fasilitas P3K, masih ditemukan adanya pemadatan atau penekanan pada limbah menggunakan kaki, belum adanya jalur khusus pengangkutan dan kelalaian petugas terhadap penggunaan alat pelindung diri dalam proses pengangkutan limbah.

Research by Amelia et. al. (2020) Management of Solid Medical Waste at the Mamuju Regional General Hospital, West Sulawesi Province, the management of solid medical waste does not meet the requirements according to Minister of Health Decree number 1204/2004, namely the separation of medical and non-medical waste before storing it in TPS B3, the container should be washed first by plastic bags, transportation using separate routes and temporary storage areas available for medical waste and non-medical waste.

Research by Yolarita & Kusuma, (2020) Management of B3 Medical Waste in Hospitals in West Sumatra during the Covid-19 Pandemic, the amount of B3 waste during the Covid-19 pandemic has increased 2 (two) times, management of B3 medical waste in hospitals in Sumatra Province

In the West during the Covid-19 pandemic, this has not been fully implemented, especially regarding the practice of storing B3 medical waste, sorting special routes, carrying out disinfection and non-compliance by officers in using PPE.

Bayu Asih Regional General Hospital (RSUD) Purwakarta District is a government-owned hospital which is a class B hospital with a land area of 5 Ha and a building area of 19,003 M2, has 223 beds and provides outpatient, inpatient, medical support services and supporting services. non-medical. Bayu Asih Regional General Hospital is a hospital that provides Covid-19 services in accordance with the Decree of the Governor of West Java Province Number 445/Kep.18- Dinkes/2020 concerning the Designation of Referral Hospitals for Handling Certain Emerging Infectious Diseases.

According to 2020 data, obtained from the Environmental Sanitation and Mortuary Installation at Bayu Asih Regional Public Hospital, Purwakarta, since the Covid-19 pandemic, infectious waste in 2020 amounted to 45,270 kg/year with an average daily waste generation of 124.03 kg/day. Meanwhile, Covid-19 waste data from March 2020 to December 2020 was 13,745 kg/year with an average generation of 45.82 kg/day. Data on Covid-19 waste generation at Bayu Asih Regional Public Hospital, Purwakarta District from January 2021 – June 2021 was 30,179 kg with an average generation of 167.66 kg/day from January 2021 – June 2021.

According to 2020 data, obtained from the Environmental Sanitation and Mortuary Installation at Bayu Asih Regional Public Hospital, Purwakarta, since the Covid-19 pandemic, infectious waste in 2020 amounted to 45,270 kg/year with an average daily waste generation of 124.03 kg/day. Meanwhile, Covid-19 waste data from March 2020 to December 2020 was 13,745 kg/year with an average generation of 45.82 kg/day. Data on Covid-19 waste generation at Bayu Asih Regional Public Hospital, Purwakarta District from January 2021 – June 2021 was 30,179 kg with an average generation of 167.66 kg/day from January 2021 – June 2021. During initial observations in the field regarding management Covid- 19 solid medical waste was found at the stage of collecting Covid-19 waste from containers where the waste had already been sorted to be stored in temporary storage trolleys and had not been periodically disinfected and when the volume of waste had reached ¾ the packaging for binding was still using rabbit ties, a temporary collection place In the isolation room, there are some isolation rooms that have not been provided with wheel bins, there are still some that are located on the floor, at the trolley transportation stage it exceeds ¾ and is not closed and does not have a special route for transporting waste so that it is connected to the route for employees, visitors and patients. At the stage of storing Covid-19 solid medical waste at TPS B3, there has not been regular disinfecting of the waste to be stored at TPS B3 and there is no cold storage available for storing waste for more than 2 x 24 hours, there is no distance between waste storage at TPS. waste and has not been palletized in its entirety and the waste storage trolley is open because the volume is more than ¾ and when the waste is handed over to a 3rd party it is not disinfected regularly. This is not in accordance with government regulations that have been implemented, which are outlined in the form of the SOP for the Solid Medical Waste Management System at Bayu Asih Regional Hospital, Purwakarta District.

Based on this phenomenon, the formulation of the research problem raised is how to develop a Covid-19 Solid Medical Waste Management System Model at Bayu Asih Regional Public Hospital, Purwakarta District?

2. Methods

2.1 Data Source

This type of qualitative research was carried out on 12 informants consisting of 1 Head of Support Division, 1 Person Responsible for Medical Waste Management Activities, 3 Isolation Room Nursing Officers, 2 Medical Waste Officers and 5 Cleaning Service Officers until qualitative data saturation was met. Data was collected through In-depth Interviews (IDI), document studies and field observations. The collected data was processed through a process of transcription, reduction, theme categorization and data conclusions. The following is the definition of the research concept as follows.

Table 1. Definition of Research Concept

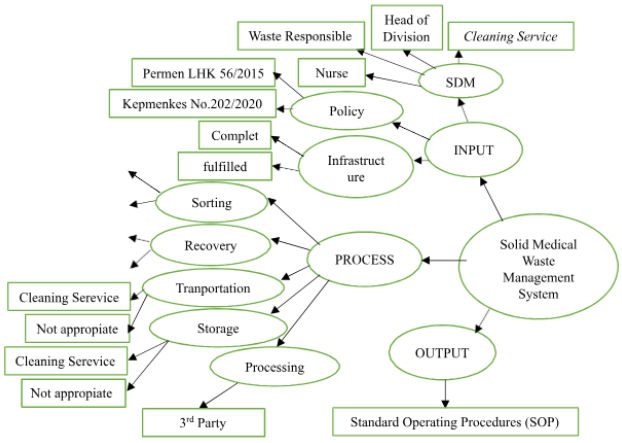
Variable	Concept Definition
Input	Tools that function/are used in the solid medical waste management system at Bayu Asih Regional Public Hospital, Purwakarta District, including policies, infrastructure and human resources
Process	Implementation of solid medical waste management at Bayu Asih Regional Hospital, Purwakarta District, which includes the stages of sorting, containing, transporting, storing and processing solid medical waste at Bayu Asih Regional Hospital, Purwakarta District
Output	The results achieved in the short term are the basic ingredients for the SOP for the Solid Medical Waste Management System at Bayu Asih Regional Public Hospital, Purwakarta District

2.2 Data Analysis

Data analysis was qualitative analysis with a thematic approach, so that the results will be obtained in the form of a concept map.

3. Result

The data was processed through a transcription stage of 20 pages, then reduced to 12 pages, then categorized into 11 themes and 18 research sub-themes. The Concept Map of research results can be depicted in the following image scheme:



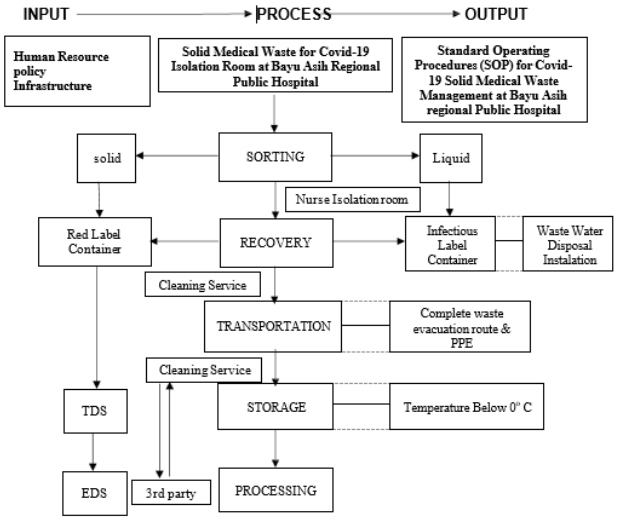
The results of the research obtained 11 themes and 18 sub-themes, where the solid medical waste management system at Bayu Asih Regional Hospital, Purwakarta District includes input consisting of government policy regarding the solid medical waste management system regulated in the Environment & Forestry Ministerial Decree Number 56 of 2015 and Ministerial Decree Health Number 202 of 2020. The theme of human resources involved in the solid medical waste management system at Bayu Asih Regional Public Hospital, Purwakarta District is the Head of the Medical Division, the person in charge of waste management, all health workers (nurses), and Cleaning Service officers, some of whom are trained in the system. Management of solid medical waste at Bayu Asih Regional Public Hospital, Purwakarta District. The theme of facilities and infrastructure for managing solid

medical waste at Bayu Asih Regional Public Hospital, Purwakarta District.

4. Discussion

Based on the results of the research, 11 themes and 18 sub-themes were obtained as material for developing a Covid-19 solid medical waste management model at Bayu Asih Regional Public Hospital, Purwakarta District, including the Human Resources (HR) involved in the Solid Medical Waste Processing process at Bayu Asih Regional Public Hospital. Purwakarta District is managed directly by the Waste Person in Charge (PJ) in a hierarchical manner directly under the Head of Support Division and as a daily implementation it is carried out by an adequate number of Cleaning Services (CS). The Solid Medical Waste Management Policy refers to the Minister of Environment and Forestry Regulation Number 56 of 2015 and the Minister of Health Regulation Number 2020 of 2020 in accordance with what is mandated by the government, but has not been explained in the form of Standard Operating Procedures (SOP) for solid medical waste management at Bayu Asih Regional Public Hospital, Meanwhile, the facilities and infrastructure for managing medical waste during Covid-19 are complete and fulfilled in accordance with the established requirements.

The Covid-19 solid medical waste management process is carried out starting from the waste source, namely the Covid-19 Treatment Isolation Room which produces solid waste and liquid waste, but because Covid-19 waste is categorized as infectious waste, the waste sorting process is carried out by the Isolation Room Nurse. and then the container process is put into black labeled containers for solid waste and liquid waste. Transportation of waste from the treatment room to the temporary disposal site (TDS) is carried out according to the twice/day work shift carried out by the Cleaning Service (CS) with inadequate PPE through the hospital service route, so there is a high potential for the spread of the Covid-19 virus through this medical waste. Transporting waste from TDS to EDS in collaboration with the 3rd Party, then B-3 waste management is carried out by the 3rd Party. The Covid-19 Solid Medical Waste Management System at Bayu Asih Regional Public Hospital, Purwakarta District can be depicted in the following schematic image



5. Conclusion

11 themes and 18 sub-themes were obtained, thus forming a Covid-19 Solid Medical Waste Management System Model at Bayu Asih Regional Public Hospital, Purwakarta District which includes input consisting of human resources, policies, human resources and facilities and infrastructure.

The process consists of sorting, containing, transporting, storing and processing Covid-19 solid medical waste at Bayu Asih Regional Public Hospital, Purwakarta District.

The output is the preparation of Standard Operational Procedures for the Covid-19 Solid Medical Waste Management System at Bayu Asih Regional Public Hospital, Purwakarta District.

Acknowledgment

Thank you to the Management of Bayu Asih Regional Public Hospital for the research collaboration.

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