Journal of Health Promotion and Behavior (2024), 09(02): 145-153
Masters Program in Public Health, Universitas Sebelas Maret

Original article
Open Access

Qualitative Study of Solid Medical Waste Management at dr. R. Koesma Regional Hospital, Tuban, East Java

Luly Ervidiana, Yuli Peristiowati, Agusta Dian Ellina

Master's Program of Public Health Sciences, STRADA Institute of Health Sciences, Kediri, East Java

Received: 19 February 2024; Accepted:8 March 2024; Available online: 16 April 2024

ABSTRACT

Background: Activities in the hospital generate various kinds of waste. One of them is medical waste. Medical waste is part of the Hazardous and Toxic Material (HTM) waste which is very dangerous if it is disposed of directly at the Final Disposal Site (FDS). This study aimed to determine the management of Solid Medical Waste at RSUD dr. R. Koesma, Tuban Regency.
Subjects and Method: A qualitative research with interviews was conducted at RSUD Dr. R. Koesma, Tuban Regency, East Java in March 2022. Participants consisted of 27 informants and 2 source triangulations. Data transcripts were analyzed using content analysis.
Results: Human Resources involved in solid medical waste management are all employees or employees who work at dr. R. Koesma Regional Hospital, Tuban, East Java which produces waste. All waste management hospital staff have received medical waste training through PPI training, solid medical waste management has been labeled. The transportation of solid medical waste does not have a special route for transportation to garbage dump but instead uses the same route used by visitors to the hospital.
Conclusion: Waste management hospital staff have received medical waste training through PPI training, solid medical waste management at dr. R. Koesma Hospital Tuban has been going well.

Keywords: hazardous and toxic material waste, solid medical waste, hospitals, health personnel.

Correspondence:
Luly Ervidiana. Master's Program of Public Health Sciences, STRADA Institute of Health Sciences, Indonesia. Jl. Manila No.37, Tosaren, Kediri, 64123, East Java. Email: lulyervidiana@gmail.com Mobile: +6285233942484.

Cite this as:
Ervidiana L, Peristiowati Y, Ellina AD (2024). Qualitative Study of Solid Medical Waste Management at dr. R Koesma Regional Hospital, Tuban, East Java. J. Health Promot Behav. 09(02):145-153. https://doi.org/10.-26911/thejhpb.2024.09.02.05.

BACKGROUND

Increasing the quantity of activities to improve the quality of life has had consequences for increasing the types of services including health services such as hospitals, and in addition to having a positive impact on increasing health status, these activities also have a negative impact, which is to produce waste. Hospitals are expected to be able to provide quality health services at affordable costs, professionalism of medical personnel, health service facilities and technology, and environmental impact management (Salman et al., 2021).

The hospital as a means of health efforts that organizes health service efforts

which include outpatient services, inpatient services, emergency services, medical and non-medical services which in carrying out these activity processes will generate waste. If not managed properly, hospital waste will pollute the environment and cause occupational diseases and accidents. (Pertiwi, 2017).

Activities in the hospital generate various kinds of waste. One of them is medical waste. Medical waste is part of the Hazardous and Toxic Material (HTM) waste which is very dangerous if it is disposed of directly at the Final Disposal Site (TPA). Medical waste comes from various sources of waste, including waste from hospitals, maternity hospitals, polyclinics, medical practices, midwives, veterinary hospitals or veterinary clinics and drug houses which require serious handling starting from collection, transportation to final management (Amelia et al. ,2020).

According to the Indonesian Ministry of Health (2017), it is stated that the number of hospitals in Indonesia is 1,090, with 121,996 beds. The results of a study of 100 hospitals in Java and Bali showed that the average waste production was 3.2 kg per bed per day. Further analysis shows that the production of waste (solid waste) in the form of domestic waste is 76.8 kg and in the form of infectious waste is 23.2%. Nationally, it is estimated that the production of hospital solid waste is 376.089 tons per day and the production of wastewater is 48,985.70 tons per day. The amount of solid medical waste that arises shows how big the potential for hospitals is to pollute the environment and possibly cause work accidents and disease transmission (Arisma, 2019).

In 2020, in Wuhan City, China, there was an increase from 40 tons to 240 tons per day, medical waste in Malaysia increased by 10%, from before, while Jakarta increased by 30% (Yolarita & Kusuma, 2020). At dr. R. Koesma Hospital, Tuban Regency, the evaluation results for the Environmental Sanitary Installation show that the amount of medical waste in 2021 is 237,431 kg per year, an increase of 54% compared to 2020 which amounted to 154,176 kg per year. In 2021 there was a surge in patients with COVID-19 which affected the use of Personal Protective Equipment (PPE) which was quite large and of course affected the amount of medical waste in hospitals (Wardani and Azizah, 2020).

Regarding the management of solid medical waste at dr. R. Koesma Regional Hospital, Tuban Regency, there are still a number of problems. mixed non-medical. At the time of transporting solid medical waste, the height exceeded the height of the special solid medical waste transport trolley, and it was found that officers handling the waste did not use complete Personal Protective Equipment (PPE). This study aims to determine the management of Solid Medical Waste at dr. R. Koesma Regional Hospital, Tuban Regency, East Java, Indonesia.

SUBJECTS AND METHOD

1. Study Design

The interactive qualitative research design was used to interpret various phenomena related to the management of solid medical waste at the dr. R. Koesma Regional Hospital, Tuban Regency, East Java.

This approach facilitates the flexible expression of ideas and experiences that might be left behind in the construction of a structured interview format, and the iterative data collection and research question format allows thorough exploration of the participant's perspective, which makes it impossible to use quantitative methods (Annisa and Yulinah (2020); Lubis, 2019).

This research was conducted at dr. R. Koesma regional hospital, Tuban Regency. The research was conducted in March 2022.

2. Population and Sample

The research subjects in this study were all employees who are related to waste, namely employees who work in Inpatient, Outpatient, Hemodialysis Installations, Laboratory Installations, ICU, Central Surgery Installations, and Emergency Installations. The informants in this study are health workers who have direct contact with patients and produce medical waste, waste workers and cleaning services who have direct contact with medical waste.

3. Operational Definition of Variables

Solid Medical Waste is medical waste in solid form originating from hospitalization, outpatient care, hemodialysis installations, laboratory installations, ICU, IBS, and emergency room. Measuring tools used are checklist sheets and interviews.

Solid medical waste processing is a series of activities by officers in medical waste management including the stages of labeling, sorting, transportation, collection of medical waste, up to the final stage, namely the process of destroying medical waste. Measuring tools used are checklist sheets and interviews.

4. Data Analysis

Data analysis techniques are techniques used to analyze data that has been collected (Herdiansyah, 2019). The process of inductive thinking starts from specific decisions (collected data) then draws general conclusions.

This data analysis starts from data reduction. The data obtained from the field is summarized, then the main things are selected, and after that the data is focused. The results of the interviews were converted into written form according to their respective formats. Next is the display of data in written form and already has a clear theme flow into a categorization matrix according to the themes that have been grouped and categorized, until the last step is drawing conclusions.

RESULTS

1. Characteristics of Informants

Based on the table above, it illustrates that the last education level of the informants was 1 (one) General Practitioner and 15 (fifteen) D4/S1 people, 4 (four) D3, and 7 (seven) SMA. While the educational level of the source triangulation is S1 with a total of 2 (two) people.

The position of informant head of Installation is 2 (two) people, Head of Room is 7 (seven) people, Nurse is 8 (eight), Midwife is 1 (one), Pharmacist is 1 (one), Analyst is 2 (two) people, cleaning service personnel 3 (three) people, and waste officers 4 (four) people. While the triangulation position is the Head of the Environmental Health Installation and the IPCN Infection Control Prevention Committee.

No	Informant Code	Age (year)	Last education	Work place	Position
1	I 1/AY	37	General practitioners	ER	Head of IGD
2	I 2/HI	46	D4 Midwifery	Delivery room	Head of the Delivery Room
3	I 3/ K	48	D3 Midwifery	Flamboyant Room	Midwife Flamboyan Space
4	I 4/ AW	45	S1 Nursing	ICCU	Head of ICCU Room
5	I 5/DM	30	S1 Nursing	Pulmonary Poly	Pulmonary Poly Nurse
6	I 6/DK	52	S1 Nursing	Hemodialysis Room	Head of Hemodialysis Room

No	Informant Code	Age (year)	Last education	Work place	Position
7	I 7/ES	56	S1 Nursing	ER	ED nurse
8	I 8/EY	27	S1 Nursing	General Poly	General Poly Nurse
9	I 9/ER	42	S1 Nursing	Ashoka room	Nurse Ashoka
10	I 10/GP	46	D3 Analyst	PA Laboratory	PA Laboratory Analyst
11	I 11/LY	47	S1 Nursing	ICU	ICU nurse
12	I 12/ M	54	S1 Nursing	Aster Room	Nurse Aster
13	I 13/NS	41	D4 Analyst	Laboratory Installation	Laboratory analyst
14	I 14/NN	50	D3 Nursing	Child Poly	Pediatric Poly Nurse
15	I 15/SD	45	S1 Nursing	K3	K3 nurse
16	I 16/SW	46	S1 Nursing	HCU	Head of HCU
17	I 17/TD	44	S1 Nursing	NICU	Head of NICU
18	I 18/W	43	S1 Nursing	IDIC	Head of IDIK
19	I 19/A	40	S1 Pharmacy	Pharmaceutical Installation	Pharmacist
20	I 20/RY	53	D3 Radiology	Radiology Installation	Head of Radiology Room
21	I 21/MAR	32	SENIOR HIGH SCHOOL	Cleaning service	Cleaning service officer
22	I 22/D	21	SENIOR HIGH SCHOOL	Cleaning service	Cleaning service officer
23	I 23/SA	33	SENIOR HIGH SCHOOL	Cleaning service	Cleaning service officer
24	I 24/MJ	25	SENIOR HIGH SCHOOL	IPL	Waste Officer
25	I 25/K	38	SENIOR HIGH SCHOOL	IPL	Waste Officer
26	I 26/MI	25	SENIOR HIGH SCHOOL	IPL	Waste Officer
27	I 27/MR	30	SENIOR HIGH SCHOOL	IPL	Waste Officer
28	TS 1/AW	41	SKM	IPL	Head of IPL
29	TS 2/S	57	S1 Nursing	PPI Committee	IPCN

Human Resources involved in managing solid medical waste at Dr. R. Koesma Hospital Regional Hospital, Tuban, East Java

Based on the results of interviews with informants that the human resources involved in the medical solid waste management process at Dr.R.Koesma Tuban Hospital are all employees/officers who work in hospitals that deal with waste such as doctors, nurses, other health workers and as well as waste workers/cleaning services.

"Yes, for HR actually there are many who are responsible, sis. Of course, those who are very competent, the main thing is that they have a good background in the field of medical waste management, maybe in public health. It should be like that for work, of course, people who are competent and have expertise there" (informant 1)

"In my opinion, everything is right, starting from the term part, the whole team, so when in that room, the responsibilities start from the imple-

menting midwife, I get to the PJ, even until CS, everyone is involved in this waste management" (infor-mant 2)

"All hospital workers who produce waste" (informant 3)

"All employees in the hospital including nurses and doctors" (informant 4)

"The nurse in the room continues to CS, yes, the room cleaning service continues to be the incinerator part" (informant 5)

"The role is all the officers in this space where they will produce waste. So, they play a role in waste manage-ment" (informant 6)

"In our opinion, all employees in this hospital are involved. Starting from the leadership down to the managers in the back waste. All are involved" (informant 7).

"In my opinion, the human resources involved in the medical solid waste management process are all employees or employees who have something to do with the service in the room. What is the service about, medical service" (source 1 triangulation)

"Yes, all officers who have pro-duced waste, that is, are competent as HR in this hospital, so starting from the cleaning service to the director's room, if they produce waste, the HR is involved" (source 2 triangulation)

Criteria for human resources involved in solid medical waste manage-ment.

From the statements of 26 informants at dr. R. Koesma Tuban stated that there were criteria for human resources involved in medical waste management.

"The criteria must have training, especially PPI training" (informant 8)

"Yes. The criteria for participating in PPI training" (informant 9)

"Solid waste must miss. So yes, solid waste must be for human re-sources according to the field" (infor-mant 10)

"There should be special criteria, such as taking part in training in medical waste management because that is indeed different from waste outside the hospital" (informant 11)

"At the very least, you have to be healthy and obey the rules, why?

"So, it's better if you have a certain profession. Especially those dealing with waste related to the environment because there are medicines or medical waste there. So, you have to know that it's not just non-health graduates" (informant 18)

"Of course, there is, so especially officers or human resources who have been trained so in this case participate in PPI training because in standard precautions one of them is waste management so if you have received the training, those who are directly involved" (triangulation informant source 2)

Solid medical waste management officer training.

The regulation of the Minister of Health of the Republic of Indonesia, number 9 of 2019 states that all officers involved in medical waste management must receive medical waste management training. From the statement of the informant that at dr.R.Koesma Hospital that officers had received medical waste training.

"Yes, everyone here has received training" (informant 17)

"Alhamdulillah everything is over" (informant 18)

"As for the health workers, everyt-hing is already. But if it's only the basic

training base, yesterday we have provided each unit with information and have provided counseling to each of its staff" (informant 19)

"Yes. PPI training" (informant 21"

"He must. With training" (informant 22)

"Some of them are not yet" (informant 23)

The Role of Human Resources in the solid medical waste management process at dr. R. Koesma Tuban.

Based on informants regarding the role of human resources in the solid medical waste management process at RSUD dr.R. Koesma Tuban, it has been running.

"In my opinion so far for the room I know in the room already, meaning that the waste separation has been going on and because at the beginning it was separated properly it seems that at the end the waste disposal has also gone well" (informant 5)

"Already, God willing, it has gone well" (informant 7)

"Alhamdulillah it has gone well" (informant 8)

"Already" (informants 9,14,22)

"in accordance with the procedure" (informant 10)

"Yes, I think there is an SPO as well and there are already procedures that have been carried out at the RSUD, so I think it has gone well" (informant 11)

Facilities and infrastructure that support the medical waste management process at dr. R. Koesma Hospital, Tuban, East Java

Based on a statement from the informant on facilities and infrastructure at Dr. R. Koesma Tuban Hospital, medical and non-medical waste bins have been provided, safety boxes for sharp waste, waste transport carts, TPS and incinerators.

"Therefore, there are sufficient medical and non-medical waste bins, and waste management is also good. Because I work in the emergency room, the flow from or to the management there is also good" (informant 1)

"I am facilitated here, so for medical waste, we use yellow waste, then for non-medical waste or households use green trash with black plastic bins. And for the bottles we separate then for waste in the form of sharps we use a safety box. For liquid waste, we have a spoelhoex for disposal" (informant 2)

"Medical, non-medical waste bins and savety boxes" (informant 3)

"Infrastructure, at least there is a trash can for medical and non-medical, there is a savety box for the needles" (informant 4)

Waste management related to labeling of solid medical waste at dr. R. Koesma Hospital, Tuban, East Java

The informant's statement that at Dr. R. Koesma Hospital, Tuban already has a special trash can according to the type of waste and its labeling. For medical waste, put it in a yellow plastic bag and place it in a special container that has a yellow medical waste label

"There are already yellow trash bins labeled medical waste, green trash bins labeled non-medical waste" (informant 3)

"Already. Yellow for medical waste, black for non-medical waste, and safety box for sharp objects" (informant 5)

"That's it, so the trash bins have a color and a label, so the medical and non-medical ones. The medical one wears a yellow non-medical one with a green label" (informant 6)

"Yes, it already exists, so for sorting, there is already a non-medical

one, the color is green, cracked with black crackle. Then for the infectious yellow color with a yellow crackle. The label already exists. So every place has its own label" (informant 7)

The process of sorting solid medical waste

"Medical waste with non-medical waste. Medical waste is disposed of in the medical waste bin, if it is non-medical, it should be disposed of as non-medical waste" (informant 9)

"For sorting, am I for medical, like, what if in the PA lab, the used consumables are the tissue itself for non-medical purposes" (informant 10)

"It's been differentiated, yes, for infectious waste, we put it in a yellow bag, for needles and ampoules, we put it in the savety box" (informant 11)

"This is if this is appropriate, so if medical waste is disposed of, it will automatically be disposed of in the medical waste bin, it already exists itself" (informant 12)

Policies/SOPs for medical waste management at dr. R. Koesma Hospital, Tuban, East Java

Efforts to manage hospital solid waste can be carried out by preparing software in the form of regulations, guidelines and policies governing the management and improvement of hospital environmental health.

Dr.R.Koesma Tuban General Hospital already has an SPO (Standard Operating Procedure) which is based on the RI Minister of Health Number 7 of 2019 concerning hospital environmental health requirements. The following is the informant's statement that there is a policy/ SPO that has been issued by Dr. R. Koesma Tuban Hospital.

"For the SPO, everything starts from separation to collection. It already exists" (informant 7)

"SPO medical waste" (informants 8,9)

"If there is an SPO, of course there is an SPO in every room" (informant 10)

"SPO waste" (informant 11)

"SPO of waste management, what else is SPO of waste mana-gement?" (informant 13)

"SOP for sorting non-medical medical waste" (informant 14)

Obstacles to the process of sorting solid medical waste.

Medical waste sorting at Dr. R. Koesma Hospital, Tuban has no problems.

"Nothing, we are thrown out every shift by our CS" (informant 13)

"No, so far there have been no problems, Mrs. Luly. So, for example, sharp solid waste, so that it's not even full yet, has been replaced by them. So it's not full of overload and it's not mixed, it's also been sorted" (informant 15)

"Nothing, because the available places have been provided in our room, each room has been facilitated with medical and non-medical waste disposal sites" (informant 17)

DISCUSSION

Human Resources at dr. R. Koesma Regional Hospital, Tuban has all received medical waste management training through training (Zuhriyani, 2019). Infection Control Prevention (PPI) at dr. R. Koesma Hospital, Tuban. This activity aims to educate all dr. R. Koesma Tuban hospital staff in the handling of solid medical waste that must be in accordance with standards and followed by the correct steps.

The results of this study are in accordance with the Minister of Health of the Republic of Indonesia Number 9 of 2019 that all officers involved in medical

waste management must receive medical waste management training.

Human Resources have an important role in managing an organization so that it can run according to applicable regulations, thereby minimizing the occurrence of errors. Behavior based on knowledge and awareness will last longer than behavior that is not based on knowledge and awareness (Notoadmojo, 2018).

Human Resources at dr. R. Koesma Hospital in carrying out the process of managing solid medical waste, according to the informant, there are still problems, namely there is an overload of solid medical waste. Meanwhile, according to source triangulation, officers still make the mistake of disposing of medical and non-medical waste. This is not in accordance with the Minister of Health of the Republic of Indonesia Number 7 of 2019, which states that medical waste cannot exceed 2/3 of the trash can, and medical waste is put in yellow and labeled plastic bags, while non-medical waste (domestic waste) is put in black plastic bags.

From the results of the research as conveyed by the informant and triangulation of sources, that dr. R. Koesma Tuban Hospital already has a special trash bin according to the type of waste and its labeling. For medical waste, put it in a yellow plastic bag and place it in a special containner that has a medical waste label attached. yellow. Meanwhile, non-medical waste is put in a black plastic bag and placed in a special container that has a green non-medical waste label. And for sharps waste put in a safety box.

This is waste at the dr. R. Koesma Tuban hospital, the management of which is in accordance with the Minister of Health of the Republic of Indonesia Number 7 of 2019 that all waste must be grouped by type, color code, symbol, containner or packaging, waste group labeling.

In the final processing of solid medical waste, the results of this study are in accordance with the informants and triangulation of sources that at dr. R. Koesma Hospital, Tuban, the processing is carried out internally and externally. Internally using an incinerator while externally using a licensed third party.

The results of this study are in accordance with (Minister of Health Regulations of Indonesia, number 7, 2019) that treatment of medical waste in hospitals can be carried out internally and externally. Processing internally is carried out in the hospital environment using an incinerator that has an operational permit and is carried out in accordance with statutory provisions. while external treatment is carried out in cooperation with the party processing or landfilling HTM waste that already has a permit.

AUTHOR CONTRIBUTION

Luly Ervidiana as the main researcher who determines research topics, data collection and data transcripts, Yuli Peristiowati and Agusta Dian Ellina as supervisors in data collection and writing research manuscripts.

FUNDING AND SPONSORSHIP

This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

ACKNOWLEDGMENT

Researchers express their deepest gratitude to all informants at dr. R. Koesma regional hospital, Tuban Regency, East Java.

REFERENCES

Amelia AR, Ismayanti A, Rusydi AR (2020). Pengelolaan Limbah Medis Padat Di

Rumah Sakit Umum Daerah Mamuju Sulawesi Barat. Window of Health: J Kesehatan. 3(1): 73-85. Doi: 10.33-096/woh.v3i1.539.

Arisma N (2019). Gambaran Pengelolaan Limbah Medis Padat Di Rumah Sakit Hi Muhammad Yusuf Kalibalangan. J Kesehatan Lingkungan Ruwa Jurai, 15(2): 85-91. Doi: 10.26630/rj.v15i2.-2808.

Hanako A, Trihadiningrum Y (2020). Kajian Pengelolaan Limbah Padat HTM di Rumah Sakit X Surabaya (Study of HTM Solid Waste Management at X Hospital Surabaya). Jurnal Teknik ITS, 9(2): 133-138. Doi: 10.12962/j23-373539.v9i2.55026.

Lubis S (2019). Peenggunaan Alat Pelindung Diri (APD) dalam Penanganan Sampah dan Linen di Rumah Sakit Prima Husada Cipta Medan Tahun 2019. Karya Tulis Ilmiah Politeknik Kesehatan Kemenkes Medan.

Pertiwi V, Joko T, Dangiran HL (2017). Evaluasi Pengelolaan Limbah Bahan Berbahaya Dan Beracun (HTM) Di Rumah Sakit Roemani Muhammadiyah Semarang. J Kesh Masy (e-Journal). 5(3): 420-430. Doi: 10.14710/-jkm.v5i3.17260.

Notoadmodjo S (2018). Metodelogi penelitian kesehatan (Revisi ed.) (Health research methodology (Revised ed.).). Jakarta: PT. Rineka Cipta.

Peraturan Menteri Kesehatan Republik Indonesia Nomor 7 Tahun 2019 tentang Kesehatan Lingkungan Rumah Sakit.

Salman N, Aryanti D, Taqwa FML (2021). Evaluasi Pengelolaan Limbah Rumah Sakit (Studi Kasus: Rumah Sakit X di Kab. Tasikmalaya). J Komposit. 5(1): 7-16. Doi: 10.32832/komposit.v5i1.-4262.

Wardani RA, Azizah R (2020). Management of Solid Medical Waste on One of the COVID-19 Referral Hospitals in Surabaya, East Java. Jurnal Kesehatan Lingkungan. 12(1): 38-44. Doi: 10.-20473/jkl.v12i1si.2020.38-44.

Yolarita E, Kusuma DW (2020). Pengelolaan Limbah HTM Medis Rumah Sakit di Sumatera Barat Pada Masa Pandemi COVID-19. Jurnal Ekologi Kesehatan. 19(3): 148-160. Doi: 10.-22435/jek.v19i3.3913.

Zuhriyani (2019). Analisis Sistem Pengelolaan Limbah Medis Padat Berkelanjutan di Rumah Sakit Umum Raden Mattaher Jambi. Jurnal Pembangunan Berkelanjutan, 1(1): 40-52. Doi: 10.22437/jpb.v2i1.6436.