Factors Associated With Nurse Actions In Separation Of Infectious And Non-Infectious Waste In Inpatient Rooms

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Abstract:

Background*: Activities in healthcare facilities can cause health problems if the management is not carried out effectively. The actions taken by nurses on waste sorting have not been maximized, so it is important to observe them. This study aims to determine the factors related to nurses' actions in waste sorting in the Medical Inpatient Room of X Hospital, Riau Province.*

Materials and Methods*: This study used a cross-sectional design in March-July 2022 at X Hospital. The population consists of 78 nurses using a total sampling technique. Data analysis used univariate, bivariate, and multivariate analysis (multiple logistic regression).*

Results*: The results showed that 39.7% of nurses had poor behavior in waste sorting, 41% had a low level of knowledge, 43.6% had a negative attitude, 42.3% had a poor perception of the availability of facilities and information, and 48.7% had a poor perception of supervision. And 48.7% have a bad perception of supervision. The results of the bivariate analysis showed that there was a relationship between knowledge (p=0.001), attitude (p=0.02), availability of facilities and information (p=0.04), and the act of sorting waste. The results of the multivariate analysis showed that the most dominantly related variable was knowledge (p=0.003). Knowledge, attitudes, availability of facilities, and information are factors related to waste segregation.*

Conclusion*: There was a relationship between knowledge, attitude, and availability of facilities and information with nurse actions in separating infectious and non-infectious waste in inpatient rooms. The hospital is expected to provide regular and uniform training for nurses and complete waste segregation facilities.*

Key Word*: nurses' action, waste separation, inpatient room.*

I.   Introduction

The waste generated by hospitals can have a negative impact not only on the environment but also on human health. Waste management in hospitals cannot be separated from the roles of nurses, midwives, doctors, and all health workers in hospitals. According to WHO which was published in 2018, the total amount of waste generated by health service activities is 85%, which is non-hazardous general waste. The remaining 15% is considered a hazardous material that may be infectious, toxic or radioactive.(1)

Muchsin's research, et al (2013) shows that nurses play a greater role in carrying out nursing service actions to patients. The nurse plays the first role in ascertaining whether the resulting medical waste is placed in the appropriate type or not before it is collected and transported to a place for final disposal by hospital waste collectors.(2) In inpatient services, the role of nurses is very important because they are health workers responsible for providing 24-hour nursing care to patients in inpatient rooms.(3) Nurses can get nosocomial infections caused by needle stick injuries and cuts by needles or sharp objects due to improperly treated injection waste. (4) According to the World Health Organization (WHO), around 2.5% of health workers worldwide face HIV exposure, and about 40% face exposure to Hepatitis B and C viruses due to blood resulting from puncture wounds from used contaminated needles that occur in the workplace.(5)

It is important to observe the actions of nurses in separating infectious and non-infectious waste because each waste generated has its own management procedure for handling it. The results of Dici's research (2017) in one of the Riau Provincial Hospitals found mixed waste, such as sharps waste, in infectious containers. This was done by nurses as medical personnel who carried out the sorting.(6) In Jufenti's study et al. (2019), the stage of sorting solid medical waste was carried out by hospital staff. Nurses in each unit/room immediately sorted Dr. RM. Pratomo, and there was a lot of medical and non-medical waste mixing in each installation/inpatient room. This happened due to the indifferent attitude of the officers in each room, who paid little attention to the solid medical waste generated, and this will become a problem when collection and destruction are carried out.(7)

The sorting of infectious waste by nurses at the hospital can be linked to the behavioral theory put forward by Lawrence Green which states that a person's behavior is influenced by three main factors, namely

predisposing factors (including knowledge, attitudes), enabling factors (including environmental drives such as the availability of facilities and information), and reinforcing factors (including the actions of health workers embodied in policies and supervision of someone who is used as a model of behavior). (8)

Nurses must apply good knowledge, positive attitudes, and safe actions because they have the highest risk of medical waste generated from their work. The lack of knowledge, attitudes and actions of health workers can endanger the health of workers, patients, the environment and the surrounding community. (9) The availability of facilities and information is also a supporting factor for the realization of attitudes toward the real behavior of officers in handling the sorting of medical waste in hospitals. Supporting good waste management facilities will make it easier for nurses to sort out infectious and non-infectious medical waste in hospitals. Research conducted by M. Sholikhul (2020) concluded that there was a relationship between knowledge, attitudes, availability of advice, and availability of information with the behavior of nurses towards sorting infectious waste in the Class 3 Inpatient Room at Haji Medan General Hospital. (10) In line with Desri's research (2021) shows that aspects of attitude, availability of facilities, and supervision are factors related to handling medical waste. (11) In another study by Riyani (2017) also shows a significant relationship between knowledge, attitudes, availability of facilities, and leadership support with nurses' actions in sorting solid medical waste. (2)

Based on the facts above, this study aims to determine the factors related to nurses' actions in sorting infectious and non-infectious waste in medical inpatient rooms.

II. Material And Methods

This research is a quantitative study with a cross-sectional design. The population in this study were all implementing nurses in the medical inpatient room at Arifin Achmad Hospital, Pekanbaru, Indonesia, with 78 implementing nurses. All populations were used as research respondents.

The dependent variable in this study is waste separation, while the independent variables consist of knowledge, attitude, availability of facilities and information, and supervision. The data were analyzed using the chi-square test with a significance level of 95% and α 0.05.

III. Result and Discussion

The characteristics of the respondents based on Table 1 show that almost proportional to the number of respondents aged <35 years with those aged ≥35 years, more than half of the respondents had a diploma in education, almost all of the respondents were female (94.9 %) and almost proportional to the number of respondents working period <10 years with those working period ≥10 years.

Table1. Characteristics Of Respondent

Characteristics	Category	Amount	%
Age	< 35 years	35	44.9
	≥ 35 years	43	55.1
Level of Education	Diploma	51	65.4
	Under Graduated	27	34.6
Gender	Male	74	94.9
	Female	4	5.1
Working Period	< 10 years	38	48.7
	≥ 10 years	40	51.3

The descriptive statistical analysis results in Table 2 show that 39.7% of nurses are not good enough at waste separation. 41.0% of nurses do not have good knowledge about waste separation. 43.6% of nurses have a negative attitude toward waste separation. 42.3% of nurses have poor availability of facilities and information. 48.7% of nurses perceive that supervision is not suitable for waste separation.

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Table2. Waste Separation, Knowledge, Attitude, Availability of Facilities and Information, and Supervision

Variable	Category	Amount	%
Waste Separation	Not good	31	39.7
	Good	47	60.8
Knowledge	Not good	32	41.0
	Good	46	59.0
Attitude	Negative	34	43.6
	Positive	44	56.4
Availability of Facilities and Information	Not good	33	42.3
	Good	45	57.7
Supervision	Nood Good	38	48.7
	Good	40	51.3

The results of the chi-square analysis contained in Table 3 explain a significant relationship ($p<0.05$) between knowledge, attitude, availability of facilities and information with waste separation. Still, there is no significant relationship between supervision with waste separation ($p>0.05$).

Table3. Relationship of Knowledge, Attitude, Availability of Facilities and Information, and Supervision with Waste Separation

Variable	Waste Separation				Total		p-value
	Not Good		Good				
	N	%	N	%	n	%	
Knowledge							
Low	20	62.5	12	37.5	32	100	0,001
High	11	23.9	35	76.1	46	100	
Attitude							
Negative	19	55.9	15	44.1	34	100	0,02
Positive	12	27.3	32	72.7	44	100	
Availability of Facilities and Information							
Not good	18	54.5	15	45.5	33	100	0.04
Good	13	28.9	32	71.1	45	100	
Supervision							
Not good	16	42.1	22	57.9	38	100	0.854
Good	15	37.5	25	62.5	40	100	

IV. Discussion

Based on the results of the study, it is known that there is a relationship between nurses' knowledge and the act of sorting infectious and non-infectious waste in medical inpatient rooms. This research is in line with Pertiwi's research (2017), which shows a relationship between knowledge and nurses' actions in sorting solid medical waste at RSUD Dr. Rasidin Padang.(2) Another research that is in line is the research of Reknasari et al. (2019), which shows that nurses' knowledge is related to the quality of solid medical waste management. However, research conducted by Khairunnisa (2019) showed the opposite results, namely that there is no relationship between knowledge and actions for managing infectious waste at the M. Djamil Hospital, Padang.(12)

This research aligns with the behavioral theory according to Lawrence (1980), which explains that a person's actions are influenced by 3 important factors, one of which is knowledge which is a predisposing factor. Knowledge or cognition is a very important domain in shaping one's actions. Knowledge can be measured through interviews or questionnaires that ask about the material's content to be measured by research subjects or respondents.(13) Knowledge can be influenced by a person's experience and environmental factors, which then experience is perceived and believed to give rise to a person's intention to act and finally into action.

Knowledge regarding infectious and non-infectious waste is very important to be given to every nurse who will separate infectious and non-infectious waste. One of the efforts to increase the knowledge of nurses is to provide socialization and training on an ongoing basis by asking each nurse about infectious and non-infectious waste so that nurses can take good actions regarding the segregation of infectious and non-infectious waste. This can reduce the positive impact on health and the environment, which can be caused by improper sorting.

Based on the results of the study, it was stated that there was a relationship between the attitude of nurses and the act of sorting infectious and non-infectious waste in medical inpatient rooms. This research is in

line with the research of Olaifa et al. (2018), which shows a relationship between attitudes and waste treatment practices in KwaZulu-Natal hospitals. Another research that is in line, namely the research by Huda et al. (2020) on nurses in class 3 inpatient rooms at Haji Medan General Hospital, is that there is a relationship between attitudes and behavior in segregating infectious and non-infectious waste. However, these results do not align with Reknasari's research (2019) on nurses in the inpatient room of the Rajawali installation at RSUP. Dr. Kariadi shows no relationship between attitudes and the quality of medical waste management.

According to WHO, attitude describes a person's likes or dislikes of objects. According to Newcomb, attitude is a readiness or willingness to act and is not an implementation of a certain motive.(13) A positive attitude is a response in the form of acceptance or approval with a tendency to approach and like a certain object. A negative attitude is a response to rejection or disapproval with a tendency to know a certain object, leading to wrong action. A negative attitude towards separating infectious and non-infectious waste will have a negative impact and impact on the management of infectious and non-infectious waste that is not in accordance with what it should be.

The more positive the nurse's attitude, the better the nurse's actions regarding the segregation of infectious and non-infectious waste, and vice versa. The more negative the nurse's attitude, the less good her behavior and actions will be. Therefore, to increase nurse awareness of the importance of proper segregation of infectious and non-infectious waste, the hospital can conduct regular training and socialization to increase the knowledge and understanding of nurses regarding the separation of infectious and non-infectious waste to change the attitude of nurses in a positive direction.

Based on the research results, it is known that there is a relationship between the availability of facilities and information and the act of sorting infectious and non-infectious waste in medical inpatient rooms. This research is in line with Pertiwi's (2017) research conducted at Dr. Rasidin Padang and shows a relationship between the availability of facilities and the act of sorting solid medical waste. Another research that is in line, namely the research of Huda et al. (2020), shows a relationship between the availability of facilities and behavior in separating infectious and non-infectious waste in class 3 inpatient rooms at Haji Medan General Hospital. Resfita's research (2021) also showed consistent results, which showed a relationship between the availability of facilities and behavior in sorting infectious and non-infectious waste for cleaning service workers at Sansani Hospital, Pekanbaru City.

According to WHO in Notoadmodjo, the availability of facilities facilitates the formation of the behavior of health workers disposing of waste in handling medical waste in accordance with regulations. Treatment of medical waste at health facilities can, of course, be carried out by using various facilities such as Infrastructure in the form of location, construction; Waste processing technology; waste storage areas; Waste management facilities such as plastic trash cans and reusable sharps containers, waste sorting posters, waste containers or skips, consumables: plastic bags, sharps containers, labels, cleaning and disinfectant materials, personal protective equipment (PPE); as well as fuel in medical waste management.(14)

Availability of information is the effort of the hospital to provide information related to the selection of infectious and non-infectious waste to health workers. Means of information can be obtained through B3 waste management training, socialization, education, K3 training, courses, counseling, posters, or other media regarding medical waste management organized by hospitals or other parties, and the socialization of written regulations in the form of regular procedures for disposing of medical waste easy for nurses to understand. The availability of medical waste information facilities will make it easier for nurses to obtain information and can change the actions of nurses disposing of medical waste according to requirements.(10)

Based on the results of the study, it was found that there was no relationship between supervision and the act of sorting infectious and non-infectious waste in the Medical Inpatient Room of Arifin Achmad Hospital. This research is in line with Kahirunnisa's research (2019) at Dr. M. Djamil Padang, which shows no relationship between supervision and infectious waste management. However, this research does not align with Pertiwi's research (2017) at Dr. Rasidin Padang, which shows a relationship between leadership support and nurses' actions in sorting solid medical waste. Another research that is not in line is Resfita's research (2021) on cleaning service officers at Sansani Hospital, Pekanbaru City, which shows that there is a relationship between supervision and handling of medical waste.

Supervision aims to find out if a process is running well and find out the problems or obstacles that occur when the process is running. So the supervision at the first stage aims to ensure that the implementation of the work is in accordance with the instructions that have been issued and to find out the weaknesses encountered in implementing the plan based on these findings can be corrected.(15) There is no relationship between supervision and the act of sorting infectious and non-infectious waste because the leadership always gives a warning for any negligence in sorting medical waste. In addition, the leadership also constantly supervises if medical waste is not separated.

V. Conclusion

Nearly half (39.7%) of the nurses in the medical inpatient ward had poor behavior in separating infectious and non-infectious medical waste. Less than half (41.0%) of nurses know poorly about separating infectious and non-infectious medical waste. 3. Less than half (43.6%) of nurses have a negative attitude toward separating infectious and non-infectious waste. Nearly half (42.3%) of nurses had a poor perception of the availability of facilities and information in separating infectious and non-infectious medical waste. Nearly half (48.7%) of nurses had a poor perception of supervision in separating infectious and non-infectious medical waste. There is a relationship between knowledge, attitudes, and the availability of facilities and information with the behavior of treating medical waste nurses. There is no relationship between supervision and medical waste handling behavior.

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