



## THE RELATIONSHIP BETWEEN NURSES' KNOWLEDGE AND ATTITUDE WITH B3 WASTE MANAGEMENT IN THE INPATIENT ROOM OF SUNDARI GENERAL HOSPITAL MEDAN

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### Abstract

Introduction: Medical waste is waste produced from infectious materials, used medical equipment, expired medicines, and others, and the amount of medical waste is expected to continue to increase every year. WHO criticizes good hospital medical waste management at 15%, but in Indonesia the disposal rate is 23.3%, containerization 20.5%, and transportation 72.7%. The purpose of the study was to determine the relationship between the knowledge and attitude of nurses and the management of hazardous and toxic waste (B3) in the inpatient room of Sundari General Hospital Medan. The research method uses a quantitative approach with a cross sectional approach. The research population is all nurses with a sample of 50 people using the total sampling technique. Data were collected by interviews using questionnaires. Data analysis uses univariate and bivariate with chi-square test. The results of the study showed that 26 people (52%) had good knowledge, 29 people (58%) had negative attitudes, and 31 people (62%) had poor waste management. The results of the chi-square test were obtained that the p-value of knowledge was 0.007 and attitude was 0.008. The conclusion is that there is a relationship between knowledge and attitude with B3 waste management in the inpatient room of Sundari General Hospital Medan. It is recommended that hospitals make policies on B3 waste management, facilitate B3 waste containers and provide socialization about waste management.

**Keywords** : B3, Inpatient, Nurse

### Introduction

According to Law Number 32 of the Republic of Indonesia of 2009 concerning Environmental Protection and Management of Hazardous and Toxic Materials (abbreviated as B3), B3 is a substance, energy or other component that by its nature increases its concentration and/or any amount that directly or indirectly pollutes the environment and endangers the environment, health, and survival of humans and other living things (1).

Medical waste is waste from infectious materials, used medical devices, and expired medicines, which is estimated to continue to increase every year. The reason is the increasing number of hospitals, health centers, treatment centers, and medical laboratories (2). Hospital activities last twenty-four hours a day and involve a wide range of people's activities, so they have the potential to generate large amounts of waste (3).

The danger of B3 under certain circumstances sometimes increases due to its flammable, toxic and so on, so it is clear that working with these materials has a high risk of danger in the process of storage, transportation and use. Many accidents occur because workers do not know how to recognize and handle B3 waste. So working with chemicals, K3 must be a guideline during its implementation because the substance of B3 and medical waste from B3 can threaten the health of the workforce and

the surrounding environment (4).

Doing work that has a risk of exposure and exposure to harmful chemicals, nurses must use PPE personal protective equipment such as gloves and masks are alternative preventive measures for nurses to avoid occupational diseases (5).

Based on the criteria (WHO), good hospital waste management is if the percentage of medical waste is 15%, but in Indonesia the percentage of waste reaches 23.3%, 20.5% is containers, and 72.7% is transported. There is less medical waste than domestic waste, but it can pose a greater health risk if not handled properly. Medical waste produces only 10% to 25% of waste, while domestic waste produces 75 to 90% of the other waste.(6).

This is in accordance with a study conducted by Lilian Imwonghomwen Salubi, Julius Olatade Maitanmi, Abiodun Samuel Olowolafe and Shafiu Adewole Ademola at Abeokuta Hospital, Ogun State with the title "*Knowledge, Attitude, and Factors Influencing Health Care (HCW) Waste Management Among Nurses in Selected Hospitals*". The results showed that improving nurses' understanding of certain aspects such as the correct location or place of care and disposal and the color-coded separation system broadly is not just three colors (7).

In line with the research conducted by Ali, Asmaa Farghaly, Salih, Amal Mohamed Elhusein, Mostafa, Shimaa Mahmoud Mohammed, Fahmy, Amira Mostafa at the University Hospital of Minia entitled "*Biomedical Waste Product Management in Pediatric Units and Its Relation to the Occurrence of Occupational Health Hazards*". The results showed that almost half (48.1%) of the healthcare providers studied had less knowledge about biomedical waste management, and most (83.3%) had a positive attitude about biomedical waste management. Also, there is a fair negative correlation between healthcare providers' knowledge of the management of biomedical waste products to exposure to physical health hazards. The purpose of this study is to determine the Relationship between Nurses' Knowledge and Attitude with B3 Waste Management in the Inpatient Room of Sundari General Hospital.(8)

## **Method**

The type of research used is quantitative, in this study using *a cross sectional* (9) approach, that is, a research design by making measurements at the same time. The location of the research was carried out at Sundari General Hospital. The population in this study is all nurses who work in the inpatient room of Sundari General Hospital Medan as many as 50 people using *the total sampling* technique. Data were collected by interviews using questionnaires. Data analysis uses *chi-square test* for univariate and bivariate.

## Result

### Characteristics Responden

Respondent characteristics will present the characteristics of respondents based on gender, age, education and working period

**Table 1. Distribution of Respondent Characteristics in the Inpatient Room of Sundari General Hospital Medan**

No	Characteristic	Frequency	Percentage (%)
Gender			
1	Man	20	40
2	Woman	30	60
<b>Total</b>		<b>50</b>	<b>100</b>
Last Education			
1	D3 Nursing	37	74
2	S1 Nursing	13	26
<b>Total</b>		<b>50</b>	<b>100</b>
Working Period			
1	< 5 Years	22	44
2	5-10 Years	18	36
3	>10 Years	10	20
<b>Total</b>		<b>50</b>	<b>100</b>

Based on table 1. The above shows that the characteristics of respondents in the Inpatient Room of Sundari General Hospital Medan are male as many as 20 people (40%) and female as many as 30 people (60%). The characteristics of D3 Nursing education are 37 people (74%) and S1 Nursing as many as 13 people (26%). Based on the length of service <5 years as many as 22 people (44%), 5-10 years as many as 18 people (36%) and >10 years as many as 10 people (20%).

### Univariate Analysis

**Table 2. Distribution of Frequency of Knowledge of Officers, Attitudes, and Management of B3 Waste in the Inpatient Room of Sundari General Hospital Medan**

Knowledge	Frequency (f)	Percentage (%)
Good	26	52
Bad	24	48
<b>Total</b>	<b>50</b>	<b>100</b>
<b>Attitude</b>		
Positive	21	42
Negative	29	58
<b>Total</b>	<b>50</b>	<b>100</b>
<b>B3 Waste Management</b>		
Good	19	38
Bad	31	62
<b>Total</b>	<b>50</b>	<b>100</b>

Based on table 2. The above shows that the frequency distribution of nurses' knowledge is good for 26 people (52%) and not good for 24 people (48%). The frequency distribution of nurses' attitudes was positive for 21 people (42%) and negative for 29 people (58%). The frequency distribution of B3 waste management was good for 19 people (38%) and bad for 31 people (62%).

## Bivariate Analysis

The following is the relationship of knowledge of B3 Waste Management in the Inpatient Room of Sundari General Hospital Medan:

**Table 3. The Relationship between Nurses' Knowledge and B3 Waste Management in the Inpatient Room of Sundari General Hospital Medan Tahun**

No	Knowledge	B3 Waste Management						P-value
		Bad		Good		Total		
		f	%	f	%	f	%	
1	Not Good	20	40	4	8	24	48	0,007
2	Good	11	22	15	30	26	52	
<b>Total</b>		<b>31</b>	<b>62</b>	<b>19</b>	<b>38</b>	<b>50</b>	<b>100</b>	

Based on table 3. above, it shows that the management of B3 waste in the General Hospital Inpatient Room is not good as many as 20 people (40%) and good as many as 4 people (8%). For good knowledge, as many as 26 people (52%) with poor B3 waste management as many as 11 people (22%) and good as many as 15 people (30%). The results of *the chi-square* test obtained a p-value of 0.007 which can be concluded that there is a relationship between nurses' knowledge and B3 waste management in the Inpatient Room of Sundari General Hospital Medan

**Table 4. The Relationship between Nurses' Attitudes and B3 Waste Management in the Inpatient Room of Sundari General Hospital Medan**

No	Attitude	B3 Waste Management						P-value
		Bad		Good		Total		
		f	%	f	%	f	%	
1	Negative	23	46	6	12	29	58	0,008
2	Positive	8	16	13	26	21	42	
<b>Total</b>		<b>31</b>	<b>62</b>	<b>19</b>	<b>38</b>	<b>50</b>	<b>100</b>	

Based on table 4. above, it shows that B3 waste management in the Inpatient Room of Sundari General Hospital Medan in 2022 out of 50 people for a negative attitude was 29 people (58%) with poor B3 waste management as many as 23 people (46%) and good as many as 6 people (12%). Meanwhile, for a positive attitude, 21 people (42%) with poor B3 waste management as many as 8 people (16%) and good as many as 13 people (26%). The results of *the chi-square* test obtained a p-value of 0.008 which can be concluded that there is a relationship between nurses' attitudes and B3 waste management in the Inpatient Room of Sundari General Hospital Medan.

## Discussion

### The Relationship between Nurses' Knowledge and B3 Waste Management in the Inpatient Room of Sundari General Hospital Medan

Data shows that waste management management in hospitals is still found as many as 1220 cases of B3 waste not in accordance with the actual disposal site and 45% of hospitals manage B3 waste in accordance with SOPs. For the inpatient room, medical waste was found in non-medical waste bins such as 20 pairs of handsoons exposed to liquids from patients, 10 vials of medicine entered into non-medical waste, 5-10 sponges of contaminated gauze into non-medical waste, 30 pieces of uncontaminated infusion hoses entered into medical waste, Infusion bottles are included in medical waste as many as 10-15 pieces, syringe needles and nald hecting are included in medical waste as many

as 20 pieces. Based on the results of the study, it was shown that B3 waste management in the Inpatient Room of Sundari General Hospital Medan that 50 people for bad knowledge was 24 people (48%) with bad B3 waste management as many as 20 people (40%) and good as many as 4 people (8%). For good knowledge, as many as 26 people (52%) with poor B3 waste management as many as 11 people (22%) and good as many as 15 people (30%). The results of the chi-square test obtained a p-value of 0.007 which can be concluded that there is a relationship between nurses' knowledge and B3 waste management in the Inpatient Room of Sundari General Hospital.

This research is in line with Laudikia Nelsen Robot, et al. (2019) entitled "The Relationship of Knowledge and Attitudes of Nurses to Actions in the Process of Reducing and Sorting B3 Waste at the Noongan Regional General Hospital". The results showed that knowledge had a relationship with actions in nurses in reducing and sorting B3 waste ( $p = 0.023$ ). (10)

There are similar research results where the results show that there is a relationship between the variable of nurse knowledge and the quality of solid medical waste management has a significance value of  $p \text{ value} = 0.011$ . Where the title of the research is "The Relationship between Nurses' Knowledge, Attitudes and Practices with the Quality of Inpatient Intensive Medical Waste Management". It can be seen that solid medical waste is one part of B3 waste in the Hospital itself (11).

In line with Huda (2019) research entitled "Factors Affecting Nurse Behavior in Sorting Infectious and Non-Infectious Waste". The results showed that the knowledge factor of nurses (0.019), so that there was an influence of nurses in the sorting of infectious and non-infectious waste (12).

According to Skinner as quoted by Notoatmodjo, health behavior is a person's response to stimuli or objects related to health, disease, and factors that affect health such as the environment, food, beverages, and health services. In other words, health behavior is all activities or activities of a person, both *observable* and *unobservable*, related to the maintenance and improvement of health. According to Bloom quoted by Notoatmodjo, an educational psychologist distinguishes the existence of 3 areas, regions, domains or domains of this behavior, namely *cognitive*, *affective*, and *psychomotor* (10).

The cognitive realm or knowledge is the result of human sensing, or the result of a person's knowledge of objects through their senses (eyes, nose, ears and so on). A person's knowledge of objects has different intensities or levels. The knowledge factor about waste is very important to be instilled in every nurse who will dispose of hospital waste. One of the efforts to increase knowledge is by providing training or counseling as a means of providing education, especially nurses to behave in disposing of medical waste according to their place. So that it can reduce the impact of work accidents and nosocomial infections (13).

The results of the researchers' observations in the field are related to the basic knowledge of nurses about B3 waste management that there are still many nurses who do not know the type of B3 waste in hospitals. This can be seen from the results of the study that for bad knowledge as many as 17 people (34%) with bad B3 waste management as many as 16 people (32%) and good as 1 person (2%), so that from this lack of knowledge, nurses will be less in managing B3 waste and finally there will be mistakes in disposing of medical and non-medical waste in inappropriate containers. There is an influence from the lack of socialization and education about B3 waste in the inpatient room for nurses, resulting in poor management of B3 waste.

### **The Relationship between Nurses' Attitudes and B3 Waste Management in the Inpatient Room of Sundari General Hospital Medan**

Based on the results of the study, it was shown that B3 waste management in the Inpatient Room of Sundari General Hospital Medan that, out of a total sample of 50 people, there were 29 people (58%) with bad B3 waste management as many as 23 people (46%) and 6 people (12%) who were good. Meanwhile, for a positive attitude as many as 21 people (42%) with poor B3 waste management as

many as 8 people (16%) and good as many as 13 people (26%). The results of the chi-square test obtained a p-value of 0.008 which can be concluded that there is a relationship between nurses' attitudes and B3 waste management in the Inpatient Room of Sundari General Hospital Medan

This research is in line with Huda's (2019) research entitled "Factors Influencing Nurse Behavior in Infectious and Non-Infectious Waste Sorting". The results showed that attitude (0.035) had an effect on behavior in the separation of infectious and non-infectious waste (13).

However, this research is not in line with Veronika (2019) entitled "The Relationship Between Knowledge and Attitude with Nurse Behavior in Infectious Waste Sorting". The results showed that there was no correlation between attitudes and behaviors of nurses in the sorting of infectious waste (pvalue=0.146. (14)

Attitude is a person's closed response to something or a certain event, which is influenced by their related opinions and emotions, such as happy or unhappy, agree or disagree, and so on. Champbell defines it very simply: "An individual's attitude is syndrome of response consistency with regard to object". Here, it is clearly said that attitude is a syndrome or set of symptoms that indicate a response to a stimulus or object. Thus, attitudes involve thoughts, feelings, attention, and other psychiatric symptoms. In situations where attitudes are not always manifested in actions. So that with a good thinking process supported by good knowledge will produce a good attitude (positive). The highest level of attitude is to be responsible for what he has believed (15).

Attitude is related to what is in the nurse's heart which involves the opinions and emotions of nurses in working or accepting B3 waste management so that they do it correctly. This can be seen from the study which shows that 21 people (42%) have a positive attitude with poor B3 waste management as many as 8 people (16%) and good as many as 13 people (26%). The data shows that the better the attitude of nurses, the better the management of B3 waste. Attitudes are greatly influenced by opinions and emotions so that when there is an unhealthy condition or too tired, it is likely that the nurse will be original in managing B3 waste even though the nurse has a positive attitude. (15)

The negative attitude in this study shows that B3 waste management is not good, which can be seen from the results of the negative attitude research of 29 people (58%) with bad B3 waste management as many as 23 people (46%) and good as many as 6 people (12%). The influence of low knowledge will affect the attitude to receive information about B3 waste so that it can cause B3 waste management to be poor. In addition, from the results of the study, it was also found that there were 6 nurses who had a negative but good attitude in managing B3 waste caused by the influence of their colleagues' good environment in managing B3 waste so that the nurse followed it.

## **Conclusion**

The conclusion in the researcher is that there is a relationship between knowledge and the management of hazardous and toxic waste in the inpatient room of Sundari General Hospital Medan. So it is recommended for hospitals to make policies on B3 waste management, facilitate B3 waste containers and provide socialization about B3 waste management. So that the level of control over B3 waste management in the hospital can be better.

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