Correlation Knowledge and Attitude of Nurse Behaviour in Medical Waste Disposal in Inpatient Ward of The JIH Hospital Yogyakarta

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ABSTRACT

Background: In Indonesia there is an increase in the amount of medical waste. Medical waste is still not managed properly and the amount is very large. Previous studies conducted found that nurses had less behavior in disposing both medical and non-medical waste (58.3%). Hospital waste management carried out by nurses and medical personnel, must be done properly and carefully.

Method: This research was an analytic survey research with cross sectional approach. The population of this study were 150 nurses in the Inpatient Ward of JIH Hospital Yogyakarta. The sampling technique was simple random sampling, amounting to 60 people. The research instrument used questionnaire. The data analysis technique used chi-square test and logistic regression.

Result: Nurses knowledge mostly in sufficient category (55%). Nurses attitude mostly in supportive category (56.7%). Nurses behavior mostly in good category (50%). There was correlation between knowledge and medical waste behavior with significant value 0.030 (p<0.05). There was correlation between attitudes and medical waste behavior with significant value 0.019 (p<0.05).

Conclusion: There were correlations of knowledge and attitudes to the medical waste behavior on nurses in inpatient ward of JIH hospital Yogyakarta.

Keywords: Knowledge; Attitude; Behavior; Medical Waste; Nurses
Introduction

The hospital is an agency that provides health services including buildings, equipment, human (officers, patients, and visitors) as well as health-related services. Services available in hospitals include medical, dental, veterinary, pharmaceutical, or similar services, treatment, care, research, and education (Hidayatullah et al., 2014). The existence of hospital service activities can provide positive things, which is good health products for patients, meaning that they can improve the health status of the community. Hospitals also have a negative impact that can cause illness and infection for visitors, patients, and health workers due to medical waste (Zuhriani, 2019).

The World Health Organization (WHO) reports that from the total amount of waste around 15% are considered to be infectious, toxic, or radioactive. Health care waste is often not separated into hazardous or non-hazardous waste. Annually an estimated 16 billion injections are given worldwide, but not all syringes are disposed of properly afterward (WHO, 2018). In India there has been a sharp increase in the amount of waste from health facilities, it is estimated that 0.5 to 2.0 kg per bed of hospital waste is generated. The level of awareness about hazards and appropriate management techniques is still low (Shivalli & Sanklapur, 2014).

The increase in the amount of medical waste also occurs in Indonesia. There is still medical waste that has not been managed properly (Humas UGM, 2019). Nurharyanti's research in Surakarta found that 37.3% were said to be unfavorable in the behavior of disposing of medical waste because the respondent's actions were the first to provide nursing care to patients (Nurharyanti, 2016). While the study by Muchsin&Syahrial at the Aceh Tamiang Hospital, more than 50% of nurses were said to be lacking in the act of disposing of medical and non-medical waste (Muchsin & Syahrial, 2013).

Nurses are one of the health workers who are at great risk of infection from medical waste pollution if their behavior is not right. Nurses' understanding of the behavior of disposing of hospital medical waste correctly is very important to prevent the risk of infection and anxiety in providing nursing care following applicable rules (Padmadita, 2017). However, in practice, the behavior of nurses in medical waste management is still a problem in itself. A study in Yogyakarta, by Sudiharti, stated that 28.33% of nurses had poor behavior in disposing of medical waste (Sudiharti, 2012).
The behavior carried out by nurses and medical personnel must be carried out correctly and carefully. Because waste is waste after using tools to carry out maintenance actions such as syringes, infusions, and so on. This medical and non-medical waste must be managed properly under the regulations and provisions in the health law (Padmadita, 2017). Success in disposing of hospital waste requires an appropriate planning process, so nurses need socialization on how to properly dispose of waste, and is supported by awareness and responsibility about the dangers of medical waste. A supportive attitude can have an influence on nurses and officers in behaving properly and correctly in handling and disposing of waste, this support can have a direct effect on real behavior in its management (Sudiharti, 2012).

JIH Hospital is one of the private hospitals in the province of the Special Region of Yogyakarta. The results of observations in 3 inpatient wards at JIH Yogyakarta Hospital on October 30, 2019, to 9 nurses through "nursing care activities and disposing of medical waste. Observing the needle, the syringe was thrown away without being separated first, the researcher also found that the mask and handscoon were mixed in the vial/flacon waste, even though the trash can was labeled according to its type”.

Based on the background and the results of the preliminary study, this research was conducted to know the relationship between knowledge and attitudes with the behavior of nurses in disposing of medical waste in the inpatient ward of the hospital.

**Method**

This research is a quantitative analytic survey with a cross-sectional approach. The study was conducted in the inpatient ward of JIH Yogyakarta Hospital which was conducted in September-November 2020. The sample in this study was 60 nurses using a simple random sampling method.

The data collection technique used primary data with knowledge, attitude, and behavior questionnaires. Analysis of the data used is Chi-Square analysis because the data is nominal and ordinal and logistic regression analysis is used to determine the most dominant variable influencing behavior.
**Result**

Table 1 Frequency Distribution of Knowledge, Attitude, and Behavior of Nurses in the Inpatient Ward of JIH Hospital Yogyakarta (n=60)

<table>
<thead>
<tr>
<th>Variables</th>
<th>(f)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>Sufficient</td>
<td>33</td>
<td>55.0</td>
</tr>
<tr>
<td>Good</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not supportive</td>
<td>26</td>
<td>43.3</td>
</tr>
<tr>
<td>Supportive</td>
<td>34</td>
<td>56.7</td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>30</td>
<td>50.0</td>
</tr>
<tr>
<td>Good</td>
<td>30</td>
<td>50.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2021

Based on table 1 it is known that most of the respondents have sufficient knowledge of 55.0, the attitude of nurses in the supportive category is 56.7% and by 50% each nurse has bad and good behavior.

Table 2 Correlation between Knowledge and Attitude on Nurse Behavior in Medical Waste Disposal in The Inpatient Ward of JIH Hospital Yogyakarta (n=60)

<table>
<thead>
<tr>
<th>Variables</th>
<th>p-value</th>
<th>Chi Square</th>
<th>Coefficient Contingensi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0.030</td>
<td>7.021*</td>
<td>0.324**</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.019</td>
<td>5.498*</td>
<td>0.319**</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2021

Information: *Person Chi-Square
**Continuity correction

Table 2 shows the coefficient value of 7.021 with a significant p-value of 0.030 (p <0.05). This means that there is a significant relationship between knowledge and behavior in nurses in the Inpatient Ward at JIH Hospital Yogyakarta. The value of the contingency coefficient (C=0.324), the maximum contingency coefficient (C_{max}) or C_{max} - C<0.5 (0.71 – 0.324 = 0.386) thus the strength of the relationship between the two variables is stated to be strong. The coefficient value is 5.498 with a significant p-value of 0.019 (p<0.05). This means that there is a significant relationship between attitudes and behavior in nurses in the Inpatient Ward at JIH Hospital Yogyakarta. The value of the contingency coefficient (C=0.319), maximum contingency coefficient (C_{max}) or C_{max} - C<0.5 (0.71 – 0.324 = 0.391) thus the strength of the relationship between the two variables is stated to be strong.
Table 3 Logistic Regression Statistical Analysis of the Correlation between Knowledge and Attitude on Nurse Behavior in Medical Waste Disposal in the Inpatient Ward of JIH Hospital Yogyakarta (n=60)

<table>
<thead>
<tr>
<th>Variable</th>
<th>p</th>
<th>Exp (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0.020</td>
<td>3.217</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.016</td>
<td>4.111</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2021

Based on Table 3 shows that knowledge and attitudes are significantly related to behavior with a contribution of 0.198 (19.8%). The most dominant variable related to medical waste disposal behavior is attitude with p = 0.016 and value of $\text{Exp}(B) = 4.111$; CI = 1.299-13.014.

**Discussion**

1. Nurse’s Knowledge in Medical Waste Disposal

   Based on univariate analysis, nurses’ knowledge tends to be sufficient (55%). Sufficient knowledge means that nurses understand the definition of medical waste, understand how to dispose of medical waste and the risks of medical waste so that medical waste handling and disposal behavior is good. Supported by the frequency distribution based on the questionnaire, most of them understand the color of the plastic bag for infectious medical waste, which is yellow. This means that all nurses know the difference in color and function of each waste. This becomes a good knowledge base so that nurses will do the separation in disposing of medical waste.

   A study conducted in Nigeria showed that 18 (90%) nurses knew about waste segregation. Segregation at the source is known to 70% of nurses, 53.4% of nurses know that sharp objects must be separated from other waste A total of 16 (80%) nurses know about the color code of the trash can, and also 18 (90%) nurses, go to the garbage dump as a temporary storage place for waste (Adogu et al., 2014). The knowledge factor about waste is very important to be instilled in every nurse who will carry out hospital waste disposal. 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 its place (Solikhah, 2012).

a. Nurse's Attitude in Medical Waste Disposal

   The results showed that the attitude of nurses in medical waste disposal was in the category of supportive attitude (56.7%). The frequency distribution based on the
questionnaire is known that the highest answer is in the statement that the needle is separated into a predetermined waste disposal container. This means that the attitude of nurses is good to always pay attention to the type of medical waste before throwing it into the appropriate waste container.

The findings of the study indicate that nurses’ attitudes tend to support the level of good behavior in medical waste disposal. It is known that supportive attitudes, such as attitudes towards being seen and known, views, beliefs, thoughts, personal experiences, emotional needs, and information are related to the management and risk of medical waste. Attitudes towards the reaction of trust if doing waste management can support health in the work environment and the tendency to act on the attitude object it faces can encourage good medical waste disposal behavior.

Previous studies found that awareness of medical waste categories, numbers, color codes, discarded contents, labeling and lids of waste containers, and waste sorting was more among nurses and lab technicians than doctors but minimal among cleaning staff (Chowdhary, 2018). This means that the attitude of nurses supports the disposal of medical waste. In addition, other studies also mention that nurses have satisfactory practices and most health workers have satisfactory attitudes towards safe waste management (Mohammed et al., 2019).

2. Nurse Behavior in Medical Waste Disposal

Based on the univariate analysis, some nurses’ behavior was good in disposing of medical waste in hospitals (50%). Supported by frequency distribution based on a questionnaire, nurses do the separate between medical and non-medical waste bins and also dispose of medical type waste according to the color of the trash can. This means that you always dispose of medical and non-medical waste separately according to the color of the trash can provided. Good nurse behavior can prevent the spread of infection and accidents that can occur due to improper disposal of medical waste.

Medical waste management involves many departments and many individuals requiring interdepartmental collaboration. Especially now is a critical period for the prevention and control of the COVID-19 pandemic. As medical waste disposal can be an important means of controlling sources of infection, standardization and strict application of COVID-19-related medical waste management should be carefully considered to reduce the risk of epidemics in hospitals (Peng et al., 2020).
3. Correlation of Knowledge with Behavior of Medical Waste Disposal

The results of the chi-square test obtained a correlation value of 7.021 and a significant p-value of 0.030 (p<0.05). This means that there is a significant relationship between knowledge and behavior in the disposal of medical waste for nurses in the Inpatient Ward at JIH Hospital Yogyakarta. The better the knowledge of nurses about medical waste disposal, the better the behavior of nurses in medical waste disposal. Knowledge is a driving force for nurses to dispose of the waste following applicable regulations.

The results of this study are in line with previous research that there is a relationship between knowledge and solid medical waste management in health workers (Maharani et al., 2017). There is a significant relationship between knowledge and practice of waste management. Health care workers must have appropriate knowledge and adhere to appropriate disposal methods for each category of a health care worker. This is because health care generates large amounts of health care waste, which is complicated to manage due to its diversity and potential to pose health and safety hazards if handled improperly (Olaifa et al., 2018).

4. Relationship between Attitude and Medical Waste Disposal Behavior

The results of the chi-square test obtained a correlation value of 5.498 and a significant p-value of 0.019 (p<0.05). This means that there is a significant relationship between attitudes and behavior of nurses in the Inpatient Ward at JIH Hospital Yogyakarta. The attitude of the nurse will encourage nurses to behave well in carrying out their duties as a nurse, including the proper disposal of medical waste.

The results of this study are in line with previous research that there is a relationship between knowledge and behavior of nurses in medical waste disposal (Sudiharti, 2012). Other studies have also found that among the factors related to the practice of medical waste treatment, attitude is the most dominant factor (Sari et al., 2018). The preferred attitude among all health care personnel, but still requires knowledge that can benefit favorable and correct practice concerning medical waste management (Aanandaswamy et al., 2019).

5. The Most Dominant Factors Related to Behavior of Medical Waste Disposal

Logistic regression analysis showed that knowledge and attitudes were significantly related to behavior. The most dominant variable related to medical waste...
disposal behavior is attitude. The contribution of knowledge and attitudes together is 0.198 (19.8%) on the behavior of nurses in medical waste disposal.

Supported by previous research that attitude is the variable that most influences the behavior of nurses. “Nurses want to work on and complete what is given and invite others to work on or discuss a problem” (Yulidar et al., 2019). Likewise with other studies that the most dominant factor influencing the obedient behavior of nurses is the attitude with (OR=16,734) (Santi et al., 2019).

**Conclusion**

Based on the results of the study, it was found that the knowledge of nurses in disposing of medical waste in the inpatient room of JIH Yogyakarta Hospital was in the sufficient category. The attitude of nurses in disposing of medical waste in the inpatient room at JIH Yogyakarta Hospital is in the supportive category. The behavior of nurses in disposing of medical waste in the inpatient ward of JIH Yogyakarta Hospital is in a good category. There is a relationship between the knowledge and behavior of nurses in disposing of medical waste in the inpatient ward of JIH Hospital Yogyakarta. There is a relationship between the attitude and behavior of nurses in disposing of medical waste in the inpatient ward of JIH Hospital Yogyakarta. The most dominant variable related to medical waste disposal behavior is attitude.

For the management of JIH Yogyakarta Hospital, it is necessary to improve and maintain the behavior of nurses. The need for training programs needs to be given to various levels of staff in hospitals, not only medical waste handling and maintenance personnel but also from administrative staff, doctors, to nurses.

**References**


Shivalli, S., & Sanklapur, V. (2014). Healthcare Waste Management: Qualitative and Quantitative Appraisal of Nurses in a Tertiary Care Hospital of India. 1, 1–6.


