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Knowledge, Attitude, Actions on the Use of Personal Protective Equipment (PPE), and PPE Facilities and Infrastructure for Infectious Waste Management Workers at Siti Khodijah Hospital, Sepanjang, Sidoarjo

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ABSTRACT

A hospital for type B in Sidoarjo, in the section of infectious waste management, has already implemented the use of Personal Protective Equipment (PPE). However, the use of complete PPE is still lacking. As a result, there was a work accident in 2010 where a worker suffered from a skin infection caused by infectious waste. The aim of this study is to describe the knowledge, attitudes, actions on the use of PPE, and the facilities and infrastructure of PPE among infectious waste management workers at a type B hospital in Sidoarjo in 2023. This research is a descriptive observational study, with a sample population of 10 infectious waste management workers using a total sampling technique. The variables studied are the knowledge, attitudes, actions on the use of PPE, and the facilities and infrastructure of PPE among infectious waste management workers. Data analysis was performed univariately. The results showed that out of 10 people, 8 people (80%) had good knowledge and 2 people (20%) had sufficient knowledge. 7 people (70%) had good attitudes and 3 people (30%) had sufficient attitudes. 4 people (40%) had good actions and 6 people (60%) had sufficient actions. Additionally, 3 people (30%) had good PPE facilities and infrastructure and 7 people (70%) had sufficient PPE facilities and infrastructure. The conclusion obtained from this study is that the knowledge and attitudes of the workers are categorized as good, while the actions of the workers and the PPE facilities and infrastructure are categorized as sufficient. The suggestion is to pay more attention to the availability, completeness, and comfort of the PPE facilities and infrastructure needed by infectious waste management workers, and to conduct research on the use of PPE.

Keywords: Knowledge, Attitude, Actions, PPE

INTRODUCTION

Hospital waste includes all waste generated from hospital activities in solid, liquid, and gas forms (Yudhistira et al., 2019). Hospital waste is produced by hospital activities and other supporting activities. Generally, hospital waste is divided into two categories: infectious waste and non-infectious waste. Infectious waste consists of infectious waste, pathological waste, sharp waste, pharmaceutical waste, cytotoxic waste, chemical waste, radioactive waste, pressurized container waste, and waste with high heavy metal content (Trismi Widayati et al., 2020). Infectious waste from hospitals includes waste generated from diagnostic or medical procedures performed on patients. Infectious waste comes from several categories, including laboratory units, waste from surgeries and autopsies of patients with infectious diseases, patient care rooms, pathology units, autopsies,

isolation units, and hemodialysis units (Rizaldi et al., 2020).

The management of infectious waste includes a series of activities such as transportation, collection, storage, processing, and disposal of medical waste. Infectious waste is collected in infectious waste bins located in the hospital. It is then transported using closed, wheeled transport equipment to a temporary B3 waste storage area. Infectious waste is stored in this temporary storage area before being transported and processed by a third party. The third party transports the infectious waste from the temporary B3 storage area to the truck using a motorized vehicle.

Managing hospital infectious waste is crucial as it poses occupational health risks to employees, residents, and anyone present in the hospital (Sakti, 2022). Workers involved in infectious waste management activities can

experience health issues such as headaches, dizziness, nausea, and vomiting, skin burns, or acute radiation syndrome, and long-term health effects like cancer and cardiovascular diseases (Wiranata et al., 2020). Personal protective equipment (PPE) is mandatory to use while working according to the hazards and work risks to protect the safety of the workers themselves and those around them. PPE is used by workers to prevent accidents caused by various factors (Rojabiansyah et al., 2021).

According to the International Labour Organization (ILO) data in 2017, each year, 2.78 million workers die due to work-related diseases and accidents. Among these, 2.4 million are due to work-related diseases, and 374,000 workers experience work-related accidents. The number of work-related accidents is higher than work-related diseases. In Indonesia, according to BPJS Ketenagakerjaan data, there were 123,041 work-related accident cases in 2017, which increased to 173,415 cases in 2018. These data show an increase in work-related accidents from 2017 to 2018 (BPJS Ketenagakerjaan, 2020).

Knowledge about the use of PPE is a crucial factor influencing workers' compliance with safety protocols. Studies show that increasing workers' knowledge about risks and how to use PPE significantly enhances compliance in its use (Garg et al., 2020). Workers' attitudes towards PPE also play a significant role. A positive attitude towards the importance of PPE is often associated with higher compliance in its use (Mokhtari et al., 2021). This positive attitude is usually influenced by a deep understanding of the health risks posed by infectious waste.

Actual actions in the use of PPE are influenced by training, supervision, and managerial support (Mashi et al., 2017). Research shows that comprehensive and ongoing training can improve the practice of using PPE in the field (Verbeek et al., 2020). Moreover, the availability of PPE facilities and infrastructure is essential to support consistent PPE use. Research indicates that adequate availability and accessibility of PPE are key factors in ensuring workers use PPE effectively (Brown, 2019).

This study aims to evaluate the knowledge, attitudes, and actions of infectious waste management workers and assess the availability of PPE facilities and infrastructure at Siti Khodijah Hospital in Sepanjang, Sidoarjo. The results of this study are expected to provide practical and evidence-based recommendations to improve worker safety and health.

METHODE

The type of research used is descriptive, which is a research method conducted with the main aim of creating an objective description or depiction of a situation (Wahyu Hilal, 2019). The research design in this study involves using observation, questionnaires, and field surveys to obtain information about the knowledge, attitudes, actions on the use of PPE, and the PPE facilities and infrastructure of infectious waste management workers at a type B hospital in Sidoarjo (Yayang Hidayatul, 2019). The

sampling technique used in this research is total sampling. Total sampling is a sampling technique where the entire population becomes the sample. This is done because the population size is relatively small.

In this study, the type of data used is qualitative data. Primary data is data obtained by the researcher during the study through observations related to the knowledge, attitudes, actions on the use of PPE, and the PPE facilities and infrastructure of infectious waste management workers at a type B hospital in Sidoarjo. Secondary data is data obtained from the type B hospital in Sidoarjo related to the number of infectious waste management workers (Firdayanti & Rokhmalia, 2021).

The data collection tool in this research is a questionnaire as an assessment tool related to the knowledge, attitudes, actions, and PPE facilities and infrastructure of infectious waste management workers at a type B hospital in Sidoarjo (Hidayatul & DN, 2019). The data collection technique in this research uses a questionnaire. A questionnaire involves collecting data by distributing written question lists to the respondents being studied. Data collection is carried out by filling out a questionnaire sheet related to the knowledge, attitudes, actions on the use of PPE, and the PPE facilities and infrastructure of infectious waste management workers at a type B hospital in Sidoarjo. Besides using a questionnaire, this research also requires observation and interviews (Sri Wahyuning, 2019).

The data analysis used in this study is univariate analysis, which explains in detail the characteristics of the variables studied. Univariate analysis is conducted to describe the variables being studied, namely the knowledge, attitudes, actions, and PPE facilities and infrastructure of infectious waste management workers, in the form of a single table because the data scale used is ordinal (Firda Safira, 2019).

RESULT AND DISCUSSION

Figure 1

Knowledge of Infectious Waste Management Workers

Table 1
Knowledge of Infectious
Waste Management Workers

No.	Knowledge	Number	Percentage (%)
1.	Good	8	80%
2.	Sufficient	2	20%
3.	Insufficient	0	0%
Total		10	100%

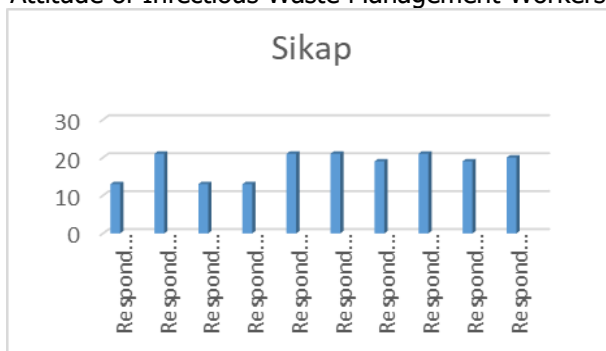
Based on Table 1, it can be seen that the analysis results related to respondents' knowledge about the use of PPE show that respondents have good knowledge as many as 8 people (80%), sufficient knowledge as many as 2 people (20%), and insufficient knowledge as many as 0 people (0%). This is in line with a study conducted by Sisca Ardini in 2019, which showed that out of 42

respondents, 30 people (71.4%) had good knowledge and 12 people (28.6%) had sufficient knowledge (Sisca Ardini, 2019). The results of this study also align with research conducted by Azzahri and Ikhwan in 2019, titled "The Relationship Between Knowledge About the Use of Personal Protective Equipment (PPE) and Compliance in the Use of PPE Among Nurses at Kuok Health Center." Out of 49 respondents, 26 people (53.1%) had good knowledge and 23 people (46.9%) had insufficient knowledge (Azzahri & Ikhwan, 2019). This is also in line with the study by Alfarel et al. in 2021, titled "The Relationship Between Health Workers' Knowledge and Behavior and the Use of Personal Protective Equipment During the Covid-19 Pandemic at Balung Regional Hospital." The results showed that 91 respondents (71.7%) had good behavior, higher than 17 respondents (13.4%) with poor behavior (Alfarel, 2021). Similarly, a study conducted by Lany Hakim in 2020 in Makassar found that discomfort while using PPE when working was a reason for non-compliance among workers during the Covid-19 pandemic (Lany Hakim, 2020).

This needs attention because many workers still do not fully understand which PPE is needed at Siti Khodijah Sepanjang Hospital in Sidoarjo, especially PPE for infectious waste management workers. Workers assume that what they are currently using is sufficient to protect their bodies from occupational diseases or accidents. Therefore, it is necessary to hold seminars for workers on the importance of PPE to prevent occupational diseases and work accidents.

Figure 1

Attitude of Infectious Waste Management Workers



Sikap -> Attitude

Table 2

Attitudes of Infectious Waste Management Workers Percentage

No.	Attitude Level	Number	Percentage (%)
1.	Good	7	70%
2.	Sufficient	3	30%
3.	Insufficient	0	0%
Total		10	100%

Based on Table 2, it can be seen that the analysis results related to respondents' attitudes regarding the use of PPE show that 7 respondents (70%) have a good attitude, 3 respondents (30%) have a sufficient attitude,

and 0 respondents (0%) have an insufficient attitude. These findings indicate that the majority of workers have a positive attitude towards the use of PPE, which is important for the prevention of nosocomial infections (Nofal et al., 2021). This good attitude may be due to effective training programs and high awareness of the risks posed by infectious waste (Shwe et al., 2021).

Workers with a sufficient attitude (30%) indicate that there is still room for improvement in understanding and commitment to the use of PPE. Factors such as the comfort of PPE and management support can influence this attitude (Brown et al., 2021). The absence of respondents with an insufficient attitude indicates the effectiveness of the existing education programs; however, ongoing supervision and evaluation are still necessary to ensure optimal compliance (Liow et al., 2022).

Inspections are conducted to detect and correct potential hazards in the workplace that can cause accidents during work (Fikra Wahyuni, 2019). Similarly, a study conducted by Nasrullah in 2022 in Banda Aceh found that discomfort when using PPE while working was a reason for non-compliance among field workers at PT. PLN Luang Bata Unit (Nasrullah, 2022). This is caused by workers' doubts about the usefulness of the PPE used while working. Workers feel uncomfortable, which is one reason they do not wear PPE completely. Some workers feel that using PPE is unnecessary because it interferes with their activities at work. Therefore, seminars should be held for workers on the importance of PPE to prevent occupational diseases and work accidents.

Tindakan -> Actions

Table 3

Percentage of Actions of Infectious Waste Management Workers

No.	Action Level	Number	Percentage (%)
1.	Good	4	40%
2.	Sufficient	6	60%
3.	Insufficient	0	0%
Total		10	100%

Based on Table 3, it can be seen that the analysis results related to the respondents' actions regarding the use of PPE show that 4 respondents (40%) have good actions, 6 respondents (60%) have sufficient actions, and 0 respondents (0%) have insufficient actions. These findings indicate that although a majority of the respondents have sufficient actions, most have not yet achieved optimal actions in the use of PPE (Casanova et al., 2016). The good actions, exhibited by 40% of the respondents, reflect compliance with the implemented occupational health and safety protocols. This compliance may be influenced by effective training and education as well as strict supervision (Shwe et al., 2021). A positive attitude towards the use of PPE also plays a role in enhancing these good actions (Nofal et al., 2021).

However, the sufficient actions shown by 60% of the respondents indicate barriers that hinder full compliance with the use of PPE. These barriers may include discomfort when using PPE, lack of availability of PPE, or inconsistent supervision (Green et al., 2020). Other factors such as lack of management support and high work pressure can also influence workers' compliance (Adams & Walls, 2020). To improve the use of PPE, it is recommended to enhance continuous training programs that emphasize the importance of PPE and its correct usage (Liow et al., 2022). Additionally, regular evaluation and feedback to workers are needed to ensure they follow the protocols correctly. Management should also ensure that the available PPE is comfortable and easy to use, and ensure its availability at all times (Garg et al., 2020).

The complete PPE mentioned includes head protection, face protection (mask), gloves, work clothing, and foot protection (boots). Infectious waste management workers at Siti Khodijah Hospital in Sidoarjo all wear PPE, but none of them wear it completely. This happens because complete PPE is not provided and there is a lack of awareness among the workers about the importance of PPE in protecting against occupational diseases or work accidents. Therefore, complete PPE should be provided and seminars for workers on the importance of PPE should be conducted to prevent occupational diseases and work accidents.

Figure 2

Personal Protective Equipment (EEP) Facilities

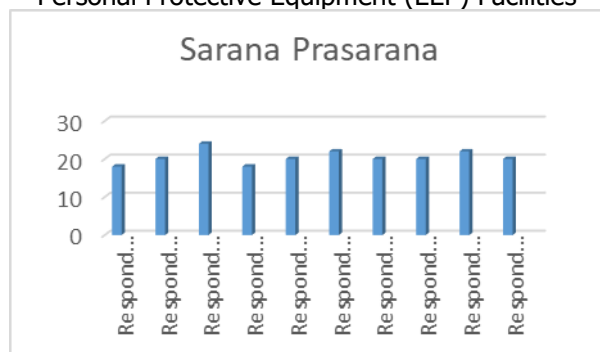


Table 4

Personal Protective Equipment (PPE) Facilities

No.	Facility Level	Number	Percentage (%)
1.	Good	3	30%
2.	Sufficient	7	70%
3.	Insufficient	0	0%
Total		10	100%

Based on Table 4, it can be observed that the analysis regarding the facilities and infrastructure of Personal Protective Equipment (PPE) shows that 3 individuals (30%) consider the facilities and infrastructure to be good, 7 individuals (70%) consider them to be sufficient, and 0 individuals (0%) consider them to be inadequate. These findings indicate that the majority of workers perceive the facilities and infrastructure of PPE to be adequate, but there is still room for improvement (World Health

Organization, 2020). Sufficient availability of PPE is crucial to ensure the safety and health of workers handling infectious waste (Nofal et al., 2021).

Although no respondents consider the facilities and infrastructure to be inadequate, efforts to improve the quality and accessibility of PPE should remain a priority to achieve optimal standards (Adams & Walls, 2020). Previous research has shown that improving PPE facilities can increase compliance among workers (Casanova et al., 2016). Additionally, continuous training programs and strict supervision are also needed to ensure that workers use PPE correctly and consistently (Verbeek et al., 2020).

The availability of PPE is an essential environmental factor influencing individual behavior; when workers use available PPE, it can prevent risks and hazards in the workplace (Edigan, 2019). This is consistent with a study conducted by Rahma in 2018 in the Gegeran Village, Sukorejo, Ponorogo, where there was a correlation between facilities and infrastructure with the behavior of using masks and complaints of respiratory disorders among rice milling workers (Bintoro Allazib, 2018). This is because complete PPE is not provided and there is a lack of awareness among the workers about the importance of PPE in protecting against occupational diseases or work accidents. Therefore, complete PPE should be provided and seminars for workers on the importance of PPE should be conducted to prevent occupational diseases and work accidents.

CONCLUSION

Based on the research results regarding knowledge, attitudes, actions towards the use of PPE, and the facilities and infrastructure of PPE for healthcare waste management workers, it can be concluded that the knowledge of personnel in the use of PPE among healthcare waste management workers at Type B Hospital in Sidoarjo in 2023 mostly had good knowledge, amounting to 80%. The attitudes of personnel in the use of PPE among healthcare waste management workers at Type B Hospital in Sidoarjo in 2023 mostly had a positive attitude, amounting to 70%. The actions of personnel in the use of PPE among healthcare waste management workers at Type B Hospital in Sidoarjo in 2023 mostly had sufficient actions, amounting to 60%, and the facilities and infrastructure of PPE among healthcare waste management workers at Type B Hospital in Sidoarjo in 2023 mostly had sufficient facilities and infrastructure, amounting to 70%.

SUGGESTION

To improve compliance with the use of Personal Protective Equipment (PPE) among healthcare waste management workers at Siti Khodijah Hospital in Sidoarjo, it is recommended to provide regular comprehensive training on the importance of PPE and correct usage. Additionally, strict supervision and periodic evaluations are necessary to ensure compliance. Increasing the availability and accessibility of PPE facilities and infrastructure is also crucial. Collaboration with hospital management to ensure

full support for occupational safety programs can help create a better safety culture in the workplace.

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