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Relationship Between Level of Knowledge with Behavior Using Personal Protective Equipment among Laboratory Workers at Al-Ihsan Hospital, Bandung, West Java

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ABSTRACT

Background: Personal protective equipment (PPE) is mandatory equipment for workers to use while working in accordance with the hazards and risks that are being faced. This behavior of using PPE itself aims to isolate the workers' bodies from hazards and risks of occupational accidents. Based on the results of observations, laboratory workers of Al-Ihsan Hospital Bandung still often ignored the use of PPE which may inflict the risk of the occurrence of occupational accidents. This study aims to analyze the relationship between the level of knowledge and the behavior of using PPE among laboratory workers of Al-Ihsan Hospital Bandung, West Java.
Subjects and Method: It was a quantitative study with a cross-sectional study design conducted at Al-Ihsan Regional General Hospital Bandung from June to September 2022. The sample used was 43 laboratory workers. The dependent variable was the behavior of using personal protective equipment (PPE). The independent variable was the level of knowledge. Data collection was carried out using an online questionnaire. The data were analyzed using the Chi-Square test.
Results: The level of knowledge relates to the use of PPE. Well-informed workers increased the behavior of using PPE by 60.0 times compared to workers with a low level of knowledge and it was statistically significant (OR= 60.0; 95% CI= 8.98 to 400.8; p<0.001).
Conclusion: The level of knowledge is significantly related to the behavior of using PPE.

Keywords: behavior of using PPE, level of knowledge, and laboratory workers.

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BACKGROUND

Each year nearly 1.1 million deaths worldwide are generated by occupational diseases or accidents. This figure is equivalent to the death of 5,000 workers per day or 3 workers per minute. World Health Organization (WHO) data in 2016 records that out of 35 million health workers, 3 million were exposed to blood pathogens. 2 million of them were exposed to Hepatitis B virus (HBV), 0.9 million were exposed to the HBC virus and other 170,000 were exposed

to the HIV / AIDS virus (Azzahri & Ikhwan, 2019). Based on data from the Manpower and Transmigration Office (Disnakertrans) in 2016, the number of occupational accidents that occurred in Indonesia was 95,624 cases consisting of 4,973 cases of functional disabilities, 2,918 cases of partial disability, 122 total disabilities, 1,784 deaths, and 85,827 recoveries. In 2017 there were 65,474 cases of occupational accidents and work-related diseases, of which there were 1,451 worker victims died, 5,326 workers became disabled, and 58,697 recovered without disability (Wibowo, 2017).

Personal Protective Equipment or commonly referred to as PPE is a set of tools used by workers to entirely or partly protect their bodies from possible exposure to hazards in the workplace that can cause occupational accidents and work-related diseases (Tarwaka, 2008). The use of personal protective equipment is often considered unimportant or trivial by workers (Lagata, 2015). The use of personal protective equipment plays an important role and affects the workers' safety and health. Personal protective equipment cannot eliminate or reduce existing hazards, but only reduces the amount of contact with hazards that occur by placing barriers between labor and hazards (Suma'mur, 2009).

According to the Occupational Safety and Health Administration (OSHA), personal protective equipment is the equipment used to protect workers from accidents or diseases caused by contact or exposure to potential either physical, chemical, or biological hazards in the work environment. PPE is needed to protect workers in the event of emergency response hazards as well as exposure to potential physical, chemical, and biological hazards. Routes of exposure include respiratory, skin, mouth (oral), and mucous membranes (e.g., through eyes or open wounds). Therefore, the behavior of using PPE is adjusted to the potential hazards that exist in the workplace (Dahyar, 2018).

The behavior of using PPE among laboratory workers is part of an effort to provide an infection-free environment as well as an effort to protect themselves from the hazards of patient samples that are at risk of disease transmission (Perry & Potter, 2005). Based on the results of observations in the field, the behavior of using PPE is often not carried out according to procedures by laboratory workers so its use is often overlooked. The type of personal protective equipment required in the work environment varies, it depends on the activity carried out and the type of hazard in the work environment. Some examples of personal protective equipment are gloves, safety shoes, protective goggles, protective clothing, ear protection (ear muff, ear plugs), helmets, and masks (Matariani et al., 2012)

In general, a worker who has a good level of understanding and knowledge of personal protective equipment must understand the risk of danger that exists in his workplace, so that during carrying out his work the worker will have a high level of awareness (Ayu et al., 2017). A worker's obedience is formed if he is accustomed to doing things that according to his level of understanding and knowledge can create a safe attitude from the risk of danger. This statement is supported by the results of a study by Komalig & Tampa'i (2019) which shows that workers with a low level of knowledge have a non-compliant habit of using PPE while workers with a good level of knowledge will be obedient in using PPE.

Based on these problems, this study was conducted to analyze the correlation between the level of knowledge and the behavior of using PPE in laboratory wor-

kers at Al-Ihsan Hospital Bandung, West Java.

SUBJECTS AND METHOD

1. Study Design

The study was an observational study with a cross-sectional design conducted at Al-Ihsan Hospital Bandung from June to September 2022.

2. Population and Sample

The sample of the study was 43 laboratory workers in Al-Ihsan Hospital Bandung. The sampling technique used was a saturated sample (census).

3. Study Variables

The dependent variable was the behavior of using Personal Protective Equipment (PPE). Independent Variable was the Level of Knowledge.

4. Operational Definition of Variables

The behavior of using personal protective equipment is the appearance of a worker using equipment to protect himself from occupational accidents. In this case, it was grouped into two, namely, not using PPE and using PPE. The measuring instruments used were questionnaires or direct observation.

Level of Knowledge is information owned or mastered by employees related to their field of work. The level of knowledge was grouped into two, namely, low and good. Measurements were conducted using knowledge questionnaires distributed online to the respondents.

5. Study Instruments

Primary data is a data source that directly provides data to the data collector. The data were collected by the researcher herself directly from the first source or place where the object of study was conducted. In this case, the data obtained directly from the informants (workers) were in the form of a questionnaire containing questions related to the level of knowledge of workers regarding the use of PPE. In addition, there was supporting data in the form of secondary data obtained from a study through the official website of the hospital or a collection of journals, and existing scientific papers, used as supporting data for study necessities.

6. Data Analysis

Univariate analysis was performed to describe the frequency distribution of the variables studied. In this case, univariate analysis was used to analyze on a single variable with the aim of knowing and identifying the characteristics of that variable. Bivariate Analysis was performed to determine the correlation between the dependent variables of the behavior of using personal protective equipment (PPE) and independent variables (level of knowledge). Bivariate analysis was performed using the chi-square test.

7. Research Ethics

The research ethical approval letter was obtained from the Health Research Ethics Committee of the Faculty of Public Health, Airlangga University, Surabaya, Indonesia, No. 158/EA/KEPK/2022, on August 10, 2022.

RESULTS

1. Sample Characteristic

Based on table 1 below, it can be discovered that the frequency distribution of gender among laboratory workers of Al-Ihsan Bandung Regional General Hospital was 21 (48.8%) male and 22 (51.2) female. Also, can be discovered that the frequency distribution of the level of knowledge among laboratory workers of the Al-Ihsan Bandung Regional General Hospital was 23 (53.5%) have good knowledge and 20 (46.5%) have low knowledge.

Table 1. Frequency Distribution of Laboratory Workers' Gender at Al-Ihsan Hospital Bandung in June-September 2022.

Characteristics	Category	Total (n)	Percentage (%)
Gender	Male	21	48.8
	Female	22	51.2
Knowledge	Low	20	46.5
	Good	23	53.5

2. Bivariate Analysis

Table 2. Results of the Relationship Between Knowledge Level and the Use of PPE in Laboratory Workers of Al-Ihsan Hospital Bandung in June-September 2022

Level of Knowledge	Use PPE				OR	95% CI		p
	Case		Control			Lower Limit	Upper Limit	
	n	%	n	%				
Low	18	9.8	2	10.2	60.0	8.98	400.8	< 0.001
Good	3	11.2	20	11.8				

Based on table 3 below, it can be discovered that respondents with a low level of knowledge and did not use PPE were as much as 9.8%. Also, there were 11.2% of other respondents with a good level of knowledge but did not use PPE. Based on the chi-square test above, it indicated that the p-value was 0.000, which means that there was a significant correlation in alpha 5% between the use of PPE and the level of knowledge of laboratory workers at Al-Ihsan Hospital Bandung. In addition, it is also discovered that the OR value was 60, meaning that the respondents who had a low level of knowledge had a 60 times risk of not using PPE compared to respondents who have a good level of knowledge.

DISCUSSION

Based on the results of the study, it is discovered that almost half of the total number of laboratory workers in the Al-Ihsan Regional General Hospital Bandung still had a low level of knowledge. The results of this study are in line with a study conducted by Azzahri & Ikhwan (2019) in which almost half of the total population of 46.9% has a low level of knowledge. In addition, the study is also in line with a study conducted by Meganingsih (2018), in which out of the total population as much as 65% have a low level of knowledge. However, in contrast to a study conducted by Astuti et al. (2018) that from the results of the existing population, as many as 86% had a good level of knowledge. In this study, knowledge is information owned or known by the laboratory workers as their reference basis in doing their work.

Knowledge concerning the importance of using PPE is one of the aspects that is relatively important as a basis for understanding in acting wisely in the use of PPE for workers while in the work environments with the dangers and the risks that are likely to be faced (Notoatmodjo, 2010). It can be seen from the odds ratio obtained that workers who did not have good knowledge in the behavior of using PPE can be at 60 times greater risk of experiencing work accidents compared to workers who had a good level of knowledge. Knowledge of PPE for laboratory workers is everything that workers know and understand regarding the use and function of PPE, with the aim to protect themselves

from the risk of transmission or infection from the sample of patients which are analyzed. The PPE itself includes the use of head protective equipment, masks, eye protection, protective clothing, gloves, and footwear in every action (Fahri, 2009). Due to the high risk of occupational accidents in the form of infection or disease transmission to laboratory workers from patient samples, it is necessary to have SOPs related to the use of PPE so that there is no tolerance for negligence in the use of PPE for laboratory workers.

The existence of a significant correlation ($\rho < 0.001$) between the level of knowledge and the behavior of using PPE among laboratory workers at Al-Ihsan Hospital Bandung indicates that knowledge concerning the importance of the behavior of using PPE is very important and must be emphasized to workers. The results of this study are supported by a study by Apriluana et al., (2016) where the level of knowledge has a statistically close correlation with the use of PPE in health workers at Banjarbaru Regional Hospital. In general, the higher a person's education, the better the knowledge possessed due to the ease of absorbing the information received, so it is not wrong to say that the better a person's knowledge, the better and wiser his behavior will be (Notoatmodjo, 2003).

Personal protective equipment should be used by workers in accordance with applicable procedures. If workers are negligent in using PPE, then the possibility of occupational accidents and work-related diseases is likely to occur (Zubaidah et al., 2015). In this case, hospital management, especially the head of the laboratory, plays an important role in the existence of Standard Operating Procedures (SOPs) or regulations related to occupational safety and health for laboratory workers, because by making these regulations, it can make the workers constantly follow the existing regulations and be avoided from occupational accidents that can occur at any time. The availability of PPE is one of the factors that can influence compliance establishment. The availability of personal protective equipment in the workplace should be a particular concern to the hospital management as a support to create a culture of compliance in the use of PPE for laboratory workers. All personal protective equipment facilities required for health workers must be available in accordance with the risk of hazards that exist in the workplace (Husein et al., 2020).

Based on the results of the study, it can be discovered that the level of knowledge among laboratory workers at the Al-Ihsan Bandung Regional General Hospital was 53.5% with good knowledge and 46.5% with a low level of knowledge. The results of the correlation test discovered that there was a significant correlation between the level of knowledge and the behavior of using personal protective equipment (PPE) with the value $p < 0.001$. Advice that can be given to the Al-Ihsan Bandung Regional General Hospital is to regularly schedule the provision of education or counseling about the important role and benefits of using PPE for occupational safety and health. In addition, it is also necessary to have a clear SOP related to the use of PPE for workers so that there are also clear sanctions if there are violations.

AUTHOR CONTRIBUTION

Sekarningtyas Rahardianti Putri was the researcher who selected the topic, searched and collected study data, and analyzed the data. Endang Dwiyanti contributed to reviewing study documents.

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This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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