

THE EFFECT OF COMPLIANCE WITH WEARING APPROPRIATE PROTECTIVE PERSONAL EQUIPMENT WITH EXPOSURE RISK ON THE INCIDENCE OF OCCUPATIONAL ACCIDENTS

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ABSTRACT

Work accidents are one of the problems that often occur in the workplace. Work accidents can cause material and non-material losses, both for workers, companies, and society. One of the factors that can cause work accidents is workers' non-compliance in using personal protective equipment (PPE). The purpose of this study was to analyze the effect of compliance with the use of PPE in accordance with the risk of exposure to the incidence of work accidents. The research method used in this research is quantitative research. The data collection techniques used in this study were questionnaires and literature studies. The data that has been collected is then analyzed using the help of the SPSS program. The results showed that compliance with the use of PPE in accordance with the risk of exposure had a significant effect on the incidence of work accidents. Workers who are obedient in using PPE have a lower risk of work accidents compared to workers who are not obedient in using PPE.

INTRODUCTION

A work accident is a clearly undesirable and unexpected event which can cause losses in time, property and or casualties that occur while carrying out work (Shamsuddin et al., 2015). Unsafe working conditions and lack of awareness of the importance of safety are often the cause of accidents (Shamsuddin, 2015). Referring to data from the Employment Social Security Agency (BPJS) (2019) explains that every day there are workers who die due to work accidents and occupational diseases (Madya et al., 2019). So that this results in 2.78 million deaths per year (Delgermaa et al., 2011). In Indonesia, the number of work accidents continues to increase as many as 123,041 cases of work accidents recorded throughout 2017 and in 2018 reached 173,105 cases (Priyanka et al., 2023). Therefore, the compliance factor in the use of Personal Protective Equipment (PPE) in accordance with the risk of exposure is very important to reduce the number of work accidents (Andrade-Rivas et al., 2015).

Personal Protective Equipment (PPE) is a set of tools that can protect workers from potential accidents while working. According to the Ministry of Manpower and Transmigration (Novianti et al., 2020) the use of PPE is an effort to protect themselves from

the dangers of exposure risks that exist in the workplace, such as exposure to hazardous chemicals, extreme temperatures, noise, debris of sharp objects to minimize the number of work accidents that occur in the company. The use of PPE that is appropriate and in accordance with the risk of exposure is a fundamental step in maintaining work safety. However, the importance of wearing PPE is sometimes not taken seriously by some workers. This was confirmed by Sari (Marlina et al., 2021) who explained that as many as 26.3% of workers who did not use PPE had experienced work accidents while carrying out work. Non-compliance in the use of PPE can also have a negative impact on work productivity. If a worker does not use PPE in accordance with the risk of exposure, unwanted accidents or injuries can occur. This can result in decreased work productivity, increased medical costs, and lost work time due to recovery.

Several relevant studies are presented that are in line with the research conducted, including research conducted by (Qadry et al., 2023) which shows that there are factors that influence the use of PPE on the incidence of workplace incidents, namely the availability of PPE, the condition of PPE, and compliance in the use of PPE. So that the results of his research provide positive input for the company to be able to provide PPE that is good and comfortable to use in order to minimize accidents for workers while working. Likewise with research conducted by (Azizah et al., 2022) which shows that all health workers (100%) experience work accidents in the central surgical installation (IHS) because they are not compliant with using PPE on the grounds that the use of PPE completeness is not appropriate.

Compliance in increasing the use of PPE in accordance with the risk of exposure is the reason for researchers to find out more. Supported by the results of observations that have been made, that it shows that non-compliance with the use of PPE in accordance with the risk of exposure causes work accidents that occur at work, so researchers want to find out more about this. Is it true that compliance with the use of PPE in accordance with the risk of exposure can minimize work accidents or not?.

RESEARCH METHODS

This research uses a quantitative approach. Quantitative research is a scientific research method that uses data in the form of numbers or numerical values to collect information. This method focuses on measuring and analyzing data to obtain objective information and making generalizations or conclusions based on measured data. This approach involves collecting data through observation techniques, surveys, experiments, or statistical analysis to understand the relationship between variables and test proposed hypotheses. The main goal is to collect quantitative data that is valid and can be measured statistically to provide objective and accurate information (Machali, 2021). Where there are two variables under study consisting of the independent variable, namely work accidents and the dependent variable, namely compliance with the use of PPE. The data collection tools used in the study were questionnaires and literature studies. The population in this study were employees of company X, the sampling technique in this study was selected using random sampling technique so that 50 respondents were obtained. The data that has been obtained from the research results is then analyzed using the help of the SPSS application.

RESULTS AND DISCUSSION

Validity Test

Validity testing is a process in research to assess the extent to which the measuring instrument or instrument used measures what should be measured. Validity refers to the validity or compatibility of the research instrument with the concept being measured (Wainer et al., 2013).

Table 1. Validity Test

		Correlations		
		PPE Compliance	Work Accidents	Total
PPE Compliance	Pearson Correlation	1	.830**	.978**
	Sig. (2-tailed)		<.001	<.001
	N	50	50	50
Work Accidents	Pearson Correlation	.830**	1	.927**
	Sig. (2-tailed)	<.001		<.001
	N	50	50	50
Total	Pearson Correlation	.978**	.927**	1
	Sig. (2-tailed)	<.001	<.001	
	N	50	50	50

Based on the results in table 1, it can be seen that each instrument shows a Pearson correlation value that is higher than r Table = 0.230 (N=50), and all Significance (2-tailed) correlation values for all items are .000, which is smaller than the significance limit value of 0.05. This indicates that all statements on the items have strong validity, so the entire questionnaire is considered valid for use in the study.

Reliability Test

Reliability test is how consistent and reliable an instrument or measurement tool is in measuring the same variables in research. Reliability tests are used to ensure that measurement instruments produce consistent results at different times (Morgan et al., 2019).

Table 2. Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.824	2

The results of the reliability test in table 2 show a Cronbach Alpha value of 0.824, exceeding 0.600. This indicates that the questionnaire has a good level of consistency and is reliable for use in further research.

Regression Test

Regression test is a statistical analysis technique used to study the relationship between independent variables (causes) and dependent variables (outcomes) in a model. Regression tests help in understanding how changes in one variable can affect another (Darma, 2021).

Table 3. Regression Test

Model	Coefficients ^a					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	5.172	.733		7.055	<.001
	PPE Compliance	.457	.044	.830	10.302	<.001

The results showed that the significance value of 0.001 < 0.05, which means that there is a significant relationship between compliance with the use of Personal Protective Equipment (PPE) in accordance with the level of exposure risk with the incidence of work accidents. Based on table 3, the regression equation can be described as follows:

$$Y = \alpha + \beta X + e$$

$$Y = (5.172) + 0,457X + e$$

From the linear regression equation above, it can be explained as follows:

1. The constant value (a) in this study was recorded at 5,172, which is a positive number. The existence of this positive value indicates a unidirectional relationship between the independent variable (X) and the dependent variable. In other words, if there is no change at all in the independent variable, namely PPE compliance (X), which means the value is 0 percent, then the incidence of work accidents will remain at 5,172.
2. The regression coefficient for the PPE compliance variable (X) is 0.457. This figure indicates a positive relationship between compliance with the use of PPE in accordance with the risk of exposure and the incidence of work accidents. This means that if there is a 1% increase in the PPE compliance variable, there will be an increase of 0.457 in the incidence of work accidents, assuming other variables remain constant.

Coefficient of Determination Test

The Coefficient of Determination test is also known as R-squared (R²), this test measures how well the variability of the dependent variable can be explained by the independent variables in the regression model. The R-squared value ranges from 0 to 1 and the closer to 1, the better the model is at explaining variations in the data (Darma, 2021).

Table 4. Determination Coefficient Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.830 ^a	.689	.682	1.36320

Table 4 displays the coefficient of determination in R Square of 0.689, which is equivalent to 68.9%. This means that the effect of compliance with the use of PPE in accordance with the risk of exposure to the incidence of work accidents is 68.9%. Meanwhile, the remaining 31.1% is influenced by other factors not discussed in this study.

The results showed that there was a significant relationship between compliance with the use of Personal Protective Equipment (PPE) in accordance with the level of exposure risk and the incidence of work accidents. Workers who are compliant in using PPE in accordance with the risk of exposure they face tend to have a lower risk of occupational accidents when compared to workers who do not comply with the use of PPE, this shows that compliance in using PPE in accordance with the risk of the work environment can play an important role in reducing the incidence of occupational accidents in the workplace. In agreement with research conducted by (Azzahri et al., 2019) which shows that the use of PPE is an important aspect for a worker in carrying out work and this is supported by the knowledge of each worker. Knowledge about the use of good PPE will have an impact on the worker's compliance in using PPE while working. Vice versa, if the worker's knowledge regarding the use of PPE is lacking, then compliance in the use of PPE on that worker is also lacking. In addition, research conducted by (Yunus et al., 2020) explains that there is a relationship between PPE compliance and the incidence of work accidents at PT Tropica Cocoprime, Lelema Village, South Minahasa Regency. Where it shows that compliance with the use of PPE in accordance with the risk of exposure is very important. Thus, every company is expected to provide PPE that can be used by workers in accordance with the risk of exposure to minimize work accidents while carrying out work.

Accidents and diseases that occur due to working conditions can cause losses in production, including waste of productivity due to interruptions in the course of work. The implementation of measures to prevent occupational accidents in Indonesia still encounters obstacles, mostly due to traditional thinking, which considers accidents as an inevitable event. This view results in a lack of public awareness of the importance of maintaining Occupational Safety and Health (OHS) (Ihsan et al., 2019). Accidents in the workplace can be minimized by improving Occupational Safety and Health (OHS) standards, which include guarantees of safe and comfortable work activities and environments. One of the efforts that can be made is risk management, where identifying hazards and evaluating risks are effective steps in control, which aims to increase productivity while reducing the incidence of work accidents (Putra et al., 2018). In reducing risks in OHS, risk management is carried out to prevent accidents and reduce the risks that may occur due to work accidents. Risk management is a risk management process that aims to anticipate unwanted accidents in a detailed, comprehensive, planned, and systematic manner in an efficient system (Mardhatillah et al., 2020).

One of the K3 management is the use of PPE in accordance with the risk of exposure. The use of Personal Protective Equipment (PPE) appropriate to the risk of exposure refers to the use of devices, equipment, or protection required by individuals to protect themselves from hazards or risks that may arise from exposure in the work environment. PPE appropriate to the risk of exposure should be selected based on the type of hazard or risk present in a particular work environment. For example, PPE such as respiratory masks, eye protection, gloves, or protective clothing are some examples that are appropriate depending on the type of exposure workers may experience in the workplace. Compliance with the use of PPE according to the risk of exposure can minimize work accidents compared to workers who are not compliant in using PPE.

CONCLUSION

The conclusion of this study is that compliance with the use of PPE according to the risk of exposure can minimize work accidents compared to workers who are not compliant in using PPE. Compliance with the use of PPE according to the risk of exposure is a form of application to minimize losses both to oneself and others and the company. Thus, workers must have compliance with the use of good PPE and the company must provide PPE that is appropriate to the risk of exposure, suitable for use and comfortable for use by workers. In addition, the company must also be able to increase supervision not only of the work process but also supervision related to workers' compliance in the use of PPE and provide strict warnings or sanctions for workers who do not comply with the use of PPE.

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