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Research Article

Factors Related To the Use of Personal Protective Equipment for Construction Workers

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Abstract: Construction services sector is one of the many areas of business are classified as highly vulnerable to accidents or exposure to occupational disease. Compliance of workers in the use of personal protective equipment (PPE) can reduce the risk of accidents or occupational diseases. This study aims to determine the relationship of knowledge, perceptions, attitudes, availability of PPE, comfort, and supervision of the use of PPE in construction workers of the AP Pettarani flyover toll road in Makassar City. This type of research is observational analytic with a cross sectional study approach. Data collection was conducted in March - April 2019 for 63 workers as samples taken using the proportionate stratified sampling technique. Data obtained using a questionnaire. Data were analyzed by univariate and bivariate using the chi square test on SPSS applications. The results showed that there was a relationship between knowledge p = 0,036 (p <0,05), perception p = 0,035 (p <0,05), attitude p = 0,010 (p <0,05), PPE availability p = 0,020 (p <0,05) with APD comfort while variable p = 1,000 (p> 0,05) and control p = 1,000 (p> 0,05) was not associated with the use of PPE. The conclusion of this research is that there is a relation between the knowledge, perceptions, attitudes, availibity of PPE with the use of PPE.

Keywords: Personal protective equipment, Construction.

INTRODUCTION

Development that is increasing rapidly in many countries in all fields has many impacts. Impacts that are not only positive impacts, will also bring unwanted negative impacts. In industry, workers will always be associated with occupational safety and health risks. This is because every place where the activity is carried out there is not a single place where the workplace is free from the threat of danger. This danger can lead to work accidents and illness (Sugeng *et al.,* 2003).

In ANSI Z10: 2005, the hierarchy of control in the occupational safety and health management system includes elimination, substitution, technical control, warning system, administrative control and the use of PPE, the use of PPE is the final stage of the method of controlling accidents or occupational diseases (Barizqi, 2015). The amount of benefits from the use of PPE at work does not guarantee that all workers will use it, because there are still many workers who do not use it. The effectiveness of the use of PPE collided with the workforce itself. Many factors affect the behavior of

workers so do not use personal protective equipment that has been provided by the company (Kani *et al.,* 2013).

Data from the International Labor Organization (ILO) notes that every day there are around 6,000 fatal work accidents in the world. In 2013 one worker in the world died every 15 seconds due to work accidents and 160 workers experienced occupational illness. In 2010, the Ministry of Manpower and Transmigration recorded 86,693 work accident cases in Indonesia, where 31.9% occurred in the construction sector, 31.6% occurred in the manufacturing sector, 9.3% in the transportation sector, 3.6% in the forestry sector, 2.6% in the mining sector, and 20% in other sectors (Fitriani, 2011).

General problems regarding Occupational Health and Safety (K3) occur in construction. The workforce in the construction service sector covers around 7-8% of the total workforce in all sectors, and accounts for 6.45% of the Gross Domestic Product (GDP) in Indonesia. The construction service sector is

one of the sectors most at risk for workplace accidents, in addition to other major sectors namely agriculture, fisheries, timber, and mining (Geller, 2001).

This is in line with research conducted by Palin (2012) in his research finding 87.5% of work accidents in printing due to not using PPE when working. Research conducted by Rengganis (2012) on workers in one of the printing companies in the city of Surabaya found factors that influence the low use of PPE, namely the comfort factor and OSH training provided by companies (Gemely, 2014).

Compliance of workers in the use of PPE can reduce the risk of accidents or occupational diseases, by complying with regulations agreed by the company in reducing the risk of work accidents. Non-compliance with PPE greatly affects the incidence of work-related accidents and occupational diseases that will cause 5 types of losses including organizational disorder,

complaints and sadness, abnormalities and disabilities, death (Green, 1980). This study aims to determine the factors associated with compliance with the use of PPE in A.P Pettarani elevated toll road construction workers in Makassar City.

METHODOLOGY

This type of research is analytic observational with cross sectional study approach. This research was conducted at PT. Wijaya Karya (WIKA) Makassar City Concrete Project A.P Pettarani overpass toll road Makassar City in April - May 2019. The population is 171 people. The 63 samples were taken using proportionate stratified random sampling technique. Data obtained from respondents using a questionnaire that has been validated. Data analysis performed was univariate and bivariate using the chi square test and the results were presented in tables and narratives.

RESULTS

Table 1. Distribution of Respondents to Flyover Toll Road Construction Workers, Pettarani, Makassar City in 2019

Variable	Frequency	
	n	**(%)**
PPE Knowledge		
Not good	46	73.0
Well	17	27.0
Worker Perception		
Bad	29	46
Well	343	54
Worker Attitude		
Negative	12	19.0
Positive	51	81.0
Availability of PPE		
Less complete	42	66.7
Complete	21	33.3
Convenience		
Less comfortable	21	33.3
Comfortable	42	66.7
Supervision		
Use of PPE		
There is no	7	11.1
There is	56	88.9

Source: Primary Data, 2019

The results of the study are based on knowledge in the use of PPE that the respondents' knowledge in the poor category is 46 people (73.0%) while the respondent's knowledge in the good category is 17 people (27.0%). The results of the study based on perceptions in the use of PPE showed that the perception of respondents in the bad category were 29 people (46.0%) while the perception of respondents in the good category was 34 people (54, 0%). The results of the study based on attitudes in the use of PPE showed that attitudes in the negative category were 12

people (19.0%) while attitudes in the positive category were 51 people (81.0%) (Table 1).

The results showed based on the availability of PPE showed that the availability of PPE with incomplete categories was 42 people (66.7%) while the availability of PPE with complete categories was 21 people (33.3%). The results of the study based on comfort in the use of PPE showed that 21 respondents (33.3%) were less comfortable respondents while 42 respondents (66.7%) were comfortable respondents. The results of research based on supervision in the use

of PPE showed that respondents who said that there was no supervision in the use of PPE were 7 people (11.1%) while respondents who said that there was supervision in the use of PPE were 56 people (88.9%) (Table 1).

Table 2. The Relationship of Independent Variables with Dependent Variables in the Construction Workers of Flyover Toll Road of A.P. Pettarani Makassar City in 2019

Variable	USE of PPE				Total	%	Statistical Test Result
	Use		Do not Use				
	N	%	n	%	n		
Knowledge							
Not good	21	60,3	17	37,0	46	100,0	*p = 0.036*
Well	5	29,4	12	70,6	17	100,0	
Perception							
Bad	11	37,9	18	62,1	29	100,0	*p = 0.035*
Well	23	67,6	11	32,4	34	100,0	
Worker Attitude							
Negative	11	91,7	1	8,3	12	100,0	*p = 0.010*
Positive	23	45,1	28	54,9	51	100,0	
PPE Availability							
Less complete	7	31,9	15	68,2	22	100,0	*p = 0.020*
Complete	27	65,9	14	34,1	41	100,0	
Convenience							
Less comfortable	11	52.4	10	47.6	21	100	*p = 1.000*
Comfortable	23	54.8	19	45.2	42	100	
Supervision							
There is no	4	57.1	3	42.9	7	100	*p = 1.000*
There is	30	53.6	26	46.4	56	100	

Source: Primary Data, 2019

The results of the bivariate analysis showed that respondents who did not use PPE were more prevalent in respondents who had poor knowledge of 17 respondents (37.0%) while respondents who had good knowledge were 12 respondents (70.6%). The results of data analysis using the Chi Square test obtained the value of p = 0.036 (p <0.05), this means that H0 is rejected and Ha is accepted. Then it can be concluded that there is a relationship between knowledge and the use of PPE in construction workers in the Flyover Toll Road of A.P Pettarani Makassar City (Table 2).

The results of bivariate analysis showed that respondents who did not use PPE were more prevalent among respondents who had perceptions about poor PPE that were 18 respondents (62.1%) while respondents who had perceptions about good PPE were 11 respondents (32.4%). The results of data analysis using the Chi Square test obtained the value of p = 0.035 (p <0.05), this means that H0 is rejected and Ha is accepted. Then it can be concluded that there is a relationship between perception with the use of PPE on construction workers in the Flyover Toll Road of A.P Pettarani Makassar City (Table 2).

The results of the bivariate analysis showed that respondents who did not use PPE were more likely to have a positive attitude of 28 respondents (54, 9%) while respondents who had a negative attitude were 1 respondent (8, .3%). The results of data analysis using

the Chi Square test obtained the value of p = 0.010 (p <0.05), this means that H0 is rejected and Ha is accepted. Then it can be concluded that there is a relationship between attitude with the use of PPE on construction workers in the Flyover Toll Road of A.P Pettarani Makassar City (Table 2).

The results of the bivariate analysis showed that respondents who did not use PPE were more prevalent among respondents who said that PPE availability was incomplete, as many as 15 respondents (68%) while respondents who said that PPE availability was as much as 14 respondents (34.1%). The results of data analysis using the Chi Square test obtained the value of p = 0.020 (p <0.05), this means that H0 is rejected and Ha is accepted. Then it can be concluded that there is a relationship between the availability of PPE and the use of PPE on construction workers in the Flyover Toll Road of of A.P Pettarani Makassar City (Table 2).

The results of the bivariate analysis showed that respondents who did not use PPE were more likely to say that using PPE was comfortable as many as 19 respondents (45.2%) while respondents who said that using PPE were less comfortable, as many as 10 respondents (47.6%). The results of data analysis using the Chi Square test obtained the value of p = 1, .000 (p> 0.05), this means that Ha is rejected and H0 is accepted. Then it can be concluded that there is no relationship

between comfort with the use of PPE on the construction workers of Flyover Toll Road of A.P Pettarani Toll Road Makassar City (Table 2).

The results of bivariate analysis showed that respondents who did not use PPE were more prevalent among respondents who said that there was supervision in the use of PPE by 26 respondents (46.4%) while respondents who said that there was no supervision in using PPE were 3 respondents (42.9%). The results of data analysis using the Chi Square test obtained a value of p = 1,000 (p> 0.05), this means that Ha is rejected and H0 is accepted. Then it can be concluded that there is no relationship between supervision with the use of PPE in the construction workers of Flyover Toll Road of A.P Pettarani Makassar City (Table 2).

DISCUSSION

According to the Occupational Safety and Health Administration (OSHA) that personal protective equipment PPE is a tool used to protect workers from injury or disease caused by contact with workplace hazards, whether chemical, radiation, biological, physical, electrical, mechanical and others. in the accident control hierarchy, the use of PPE is the last resort if the initial stages of control are not carried out optimally (Kaniah, 2018).

In this study, the results showed that respondents who do not use PPE tend to respondents who have less knowledge. This is because most respondents of workers did not finish school, this also affected the use of personal protective equipment PPE because usually workers who graduated from high school did not understand and were aware of the importance of using personal protective equipment while working. Knowledge enhancement can occur through the learning process by providing training and carrying out expected behaviors continuously. It is expected that increasing knowledge will further enhance behavior to continuously use PPE so that it becomes accustomed (Kasnadi, 2013).

In this study the results show that respondents who do not use PPE tend to be respondents who have a pretty good perception of PPE. This is supported by a briefing that is carried out every morning before work. A good perception is defined that the respondent has a good interpretation of the use of PPE and knows and is aware of everything that can cause and prevent workplace accidents. Poor perception is defined that respondents have a poor interpretation of the use of PPE and do not have good knowledge about the causes and prevention of work accidents (Lagata, 2015).

In this study, the results showed that respondents who do not use PPE tend to respondents who have a positive attitude about PPE. Poor perception is defined that respondents have a poor interpretation of the use of PPE and do not have good knowledge about

the causes and prevention of work accidents. that attitude is a closed reaction or response to a stimulus or object. Attitudes cannot be seen directly. Attitude is not yet an action or activity, but it is a predisposition of an action or behavior. People who have a positive attitude tend to have a sense of enthusiasm and optimism. This is based on Minister of Manpower and Transmigration Regulation No. PER.08/MEN/VII/2010 concerning Personal Protective Equipment.

In this study the results show that the availability of PPE in this company is complete. This is where the company has done well providing personal protective equipment PPE to workers but there are still many PPE personal protective equipment that has begun to experience damage and must be replaced. It's just that the workers ignore it and continue to use the PPE of the existing personal protective equipment until the PPE is distributed. The availability of personal protective equipment is one form of enabling factors that exist in Lawrence Green's health behavior theory (Notoatmodjo, 2003).

In this study, the results obtained that the respondents considered the PPE used was quite comfortable. This is in line with research Rahmawani (2014) which says that comfortable or uncomfortable using PPE does not significantly influence the behavior given the adequate comfort in using PPE and many other factors that shape the behavior of workers in using PPE (Puspaningrum, 2016).

In this study the results showed that respondents considered that there is supervision in the use of PPE. PPE supervision is carried out every day and uses persuasion approaches such as reprimands and outreach to workers and for workers who do not use PPE are not immediately sanctioned, but carried out a reprimand and companies are trying to civilize the use of PPE for workers (Palin, 2012). In addition, the presence of supervisors should facilitate supervision, provision of information and connecting tongues of foremen and workers regarding obstacles experienced in the field, in this case work safety, especially regarding the use of PPE (Purwanto, 1998).

CONCLUSION

This study concludes that there is a relationship between knowledge (p = 0.036), perception (p = 0.035), attitude (p = 0.010), availability of PPE (p = 0.020) and there is no relationship between comfort (p = 1,000) and supervision (p = 1,000) with the use of PPE on the construction workers of the A. P Pettarani elevated toll road Makassar City. This research suggests to the company to further increase worker knowledge about the importance of work safety and risks or hazards in the workplace as well as to tighten supervision of the use of personal protective equipment (PPE) and provide PPE according to potential hazards in the workplace

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