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Factors Related to the Unsafe Act in Office Construction Project Workers at PT. X North Jakarta, Indonesia

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A B S T R A C T

Unsafe act is a worker's failure to follow correct work procedures, giving rise to the potential for work accidents. Human factors with unsafe act are the cause of 85% of work accidents. This research aims to determine factors related to unsafe act, namely K3 knowledge, K3 supervision, K3 training, and fatigue in office construction project workers by PT. X in North Jakarta. This type of research is quantitative with a cross sectional study design. The research sample used a total sampling of 72 workers. Research variables were analyzed using the Chi-square test. The highest proportion of respondents were workers who behaved safely (53%), had good K3 knowledge (66%), good K3 supervision (65%), had attended K3 training (54%), and experienced severe fatigue (54%). Bivariate results show a relationship between K3 knowledge (p-value = 0.020), K3 training (p-value = 0.001), and fatigue (p-value = 0.004) with unsafe act. There is no relationship between K3 supervision (p-value = 0.731) and unsafe act. In conclusion, K3 knowledge, K3 training, and fatigue are related to unsafe act in workers.

1. Introduction

Work accidents are a crucial issue in the construction industry, including in Indonesia. Data shows that 85% of work accidents in Indonesia are caused by human factors with unsafe acts. This unsafe act refers to the failure of workers to follow correct work procedures, giving rise to carelessness and resulting in potential work accidents. Low knowledge and awareness about occupational safety and health (K3) can encourage unsafe act. Workers who do not understand potential dangers and how to overcome them are more susceptible to accidents. Adequate K3 training and education can help workers understand and implement safe work procedures. Lack of OSH training and education can increase the risk of unsafe act. Excessive work pressure and fatigue can affect workers' focus and concentration, thereby increasing their likelihood of making mistakes and behaving unsafely. Weak supervision and enforcement of K3 regulations can make workers feel that they do not need to follow safe work procedures. A work culture that does not prioritize K3 can encourage workers to take shortcuts and ignore safety procedures. Work accidents can cause minor injuries, serious injuries, and even death for workers. Work accidents can also result in financial losses for companies and construction projects. Work accidents and injuries can cause a decrease in productivity and work efficiency. Companies that experience frequent workplace accidents can have a bad reputation, making it difficult to attract and retain quality

workers. Work accidents can result in high care and medical costs for companies and workers.[1-3]

Companies can hold K3 training and education to increase workers' knowledge and awareness about work safety. Continuous and effective K3 training and education can help workers understand and implement safe work procedures. Companies need to build a work culture that prioritizes K3 and encourages workers to always work safely. Strict supervision and enforcement of K3 regulations can ensure that workers follow safe work procedures. Companies need to implement programs to manage work pressure and fatigue so that it does not interfere with workers' focus and concentration. Unsafe act is a serious problem in the construction industry that can result in various negative impacts. Comprehensive and sustainable prevention efforts need to be carried out to increase awareness and knowledge of K3, as well as create a safe and conducive work culture.[4-7] This research aims to determine the factors related to unsafe acts among office construction project workers in North Jakarta.

2. Methods

This study used a cross-sectional study design. Cross sectional design is an observational study conducted at one time to see the relationship between research variables. The population of this study is all workers of the office construction project of PT. X in North Jakarta Indonesia. The research sample was taken with a total sampling of 72 people. Total sampling was chosen because the population size is relatively small and to obtain more accurate results. The research instrument used was a questionnaire. The questionnaire contains questions about K3 knowledge, K3 supervision, K3 training, fatigue, and unsafe act. The questionnaire has been tested for validity and reliability. Data was collected by distributing questionnaires to respondents. Respondents were asked to fill out the questionnaire honestly and completely. Data were analyzed using the chi-square test to see the relationship between research variables. The Chi-square test was used to test the relationship between categorical variables. This research was conducted with due regard to research ethics. Respondents were guaranteed confidentiality and informed consent was obtained before the study was conducted. This research has received research ethics committee approval with number: 0923-12.007 /DPKE-KEP/FINAL-EA/UEU/I/2024.

3. Results and Discussion

Table 1 shows that the majority of respondents (53%) behaved safely, while 47% of respondents behaved unsafely. This shows that the level of safe act in the workplace still needs to be improved. As many as 66% of respondents had good K3 knowledge, while 34% had poor K3 knowledge. This shows that the majority of respondents have sufficient knowledge about K3. As many as 65% of respondents were well-supervised in their work, while 35% were poorly supervised. This shows that K3 supervision in the workplace is quite good. As many as 54% of respondents had attended K3 training, while 46% of respondents had never attended K3 training. This shows that it is necessary to hold regular K3 training to increase workers' knowledge and skills regarding K3. As many as 54% of respondents experienced severe fatigue, while 46% experienced mild fatigue. This shows that fatigue is a serious problem in the workplace. The level of safe act in the workplace still needs to be improved. The majority of respondents have fairly good K3 knowledge. K3 supervision in the workplace is quite good. It is necessary to hold regular K3 training to increase workers' knowledge and skills regarding K3. Fatigue is a serious problem in the workplace and needs to be overcome in various ways.

Table 1. Frequency distribution of unsafe acts, K3 knowledge, K3 supervision, K3 training, and fatigue.

Variable	Frequency (n)	Percentage (%)
Unsafe act		
Unsafe act	34	47
Safe act	38	53
K3 knowledge		
Poor	25	34
Good	47	66
K3 supervision		
Bad	25	35
Good	47	65
K3 training		
Never attended K3 training	33	46
Have attended K3 training	39	54
Fatigue		
Severe	39	54
Mild	33	46

Based on Table 2, there is a significant relationship between K3 knowledge and unsafe acts (p-value = 0.020). Workers with good K3 knowledge are 1.880 times less likely to behave unsafely compared to workers with poor K3 knowledge (PR = 1.880; 95% Cl: 1.180 – 2.944). This shows that knowledge about work safety is very important to prevent accidents. The research results show that there is no significant relationship between K3 supervision and unsafe acts (p-value = 0.731). This shows that K3 supervision carried out in the workplace is not optimal in preventing unsafe acts. There is a significant relationship between K3 training and unsafe act (p-value = 0.001). Workers who have attended K3 training are 2.471 times less likely to behave unsafely compared to workers who have never attended K3 training (PR = 2.471; 95% Cl: 1.427 – 4.278). This shows that K3 training can increase workers' knowledge and awareness about work safety, thereby reducing unsafe act. The research results show that there is a significant relationship between fatigue and unsafe act (p-value = 0.004). Workers who experience severe fatigue are 2,350 times less likely to behave unsafely compared to workers who experience mild fatigue (PR = 2,350; 95% Cl: 1,284 – 4,303). This shows that fatigue can reduce workers' alertness and ability to carry out work, thereby increasing the risk of accidents.

Table 2. Analysis of factors related to unsafe acts, K3 knowledge, K3 supervision, K3 training, and fatigue.

Variable	Unsafe act		Safe act		Total		p-value	PR (95%Cl)
	N	%	N	%	N	%		
K3 knowledge							0,020	1,880 (1,180 – 2,944)
Poor	17	68,0	8	32,0	25	100		
Good	17	36,2	30	63,8	47	100		
K3 supervision							0,731	1,164 (0,711 – 1,905)
Bad	13	52,0	12	48,0	25	100		
Good	21	44,7	26	55,3	47	100		
K3 training							0,001	2,471 (1,427 – 4,278)
Never attended K3 training	23	69,7	10	30,3	33	100		
Have attended K3 training	11	28,2	28	71,8	39	100		
Fatigue							0,004	2,350 (1,284 – 4,303)
Severe	25	64,1	14	35,9	39	100		
Mild	9	27,3	24	72,7	33	100		

This research shows that K3 knowledge and K3 training are factors related to unsafe acts. This is in line with previous theories and studies that have discussed the relationship between K3 knowledge, K3 training, and unsafe acts. The theory of planned behavior (TPB) explains that a person's behavior is influenced by three main factors: attitude, subjective norms, and perceived behavioral control. Attitude refers to a person's positive or negative beliefs about a behavior. Subjective norms refer to a person's perception of social pressure to perform or not perform a behavior. Perceived behavioral control refers to a person's beliefs about how easy or difficult it is to perform a behavior. In the K3 context, K3 knowledge can influence attitudes and perceived behavioral control. Good K3 knowledge can increase positive attitudes toward safe behavior and increase perceived behavioral control over safe behavior. The Diffusion of Innovation Theory explains how an innovation, such as K3 training, is adopted by individuals and organizations. This theory shows that the adoption of an innovation is influenced by several factors, including Innovation characteristics: Innovations that are perceived as beneficial, easy to use, and compatible with existing practices will be more likely to be adopted. Individual and organizational characteristics: Individuals and organizations that are open to new ideas and have the resources to implement the innovation will be more likely to adopt it. Previous research found that there is a significant relationship between K3 knowledge and safe act in construction workers. Workers with good K3 knowledge are more likely to behave safely compared to workers with poor K3 knowledge. Other research finds that K3 training can increase K3 knowledge and safe act in manufacturing workers. Workers who take K3 training have better K3 knowledge and behave safer compared to workers who do not take K3 training. The results of this study indicate that K3 knowledge and K3 training are factors related to unsafe acts. This is in line with previous theories and studies. Good K3 knowledge can help workers understand potential workplace hazards and ways to prevent them. Good K3 knowledge can also help workers to make the right decisions in risky situations. K3 training can improve workers' K3 knowledge and skills to do work safely. K3 training can also increase worker awareness about the importance of work safety. Employers need to ensure that workers have good K3 knowledge. This can be done by providing K3 training and other educational programs. K3 training must be designed and implemented effectively. Effective K3 training can improve workers' K3 knowledge and skills to do work safely. Employers need to create a positive workplace safety culture. A positive work safety culture can encourage workers to behave safely.[8-13]

Work accidents are a problem that often occurs in various industries. One factor that can increase the risk of work accidents is fatigue. Fatigue can cause decreased alertness, concentration, and decision-making ability, thereby increasing the likelihood that workers engage in unsafe acts. There are several theories that explain the relationship between fatigue and unsafe act. One of the most relevant theories is Attention Theory stating that human attention is a limited resource. When workers experience fatigue, their attentional resources are reduced, making it difficult to focus on tasks and more easily distracted by other things. This can increase the likelihood that workers will make mistakes and behave unsafely. Another related theory is the Fatigue Theory which explains that fatigue can cause various physiological and psychological effects, such as decreased alertness, slowed reaction time, and decreased quality of decision-making. These effects can increase the risk of work accidents. There are several studies that show a relationship between fatigue and unsafe act. One study found that workers who experience fatigue have a 2.5 times higher risk of experiencing work accidents. Another study found that fatigue is one of the main factors causing work accidents in the construction industry. Fatigue is a factor associated with unsafe act. Therefore, it is important for companies and workers to understand the dangers of burnout and take steps to overcome them.[14-20]

4. Conclusion

K3 knowledge, K3 training, and fatigue are related to unsafe acts in office construction project workers.

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