Risk Assessment of Work Accident at 31 Rice Mill Centers at Kaway XVI Sub-District, Aceh Barat District

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Abstract: Rice milling is a business that produces ready-to-eat rice. The rice milling process cannot be separated from the risks of disturbance of the rice production process. Workers in the rice milling industry have a risk of work accidents. The rice milling industry in the Kaway XVI sub-district has some cases of work accidents with different levels of including minor accidents such as sprains, slips, cuts, and even falls from a pile of grain, and moderate accidents such as leg injury due to the fall of the sack needle on the worker's leg. The proposed formulation of the research problem is the risk factors of work accidents at 31 rice mill centers at Kaway XVI sub-district, Aceh Barat District. This quantitative study used a case-control design and quantitative analysis. The study showed a relationship between unsafe action, unsafe conditions, and work accidents at 31 rice mill centers at Kaway XVI sub-district as the P-Value of the four variables was <0.05. The researcher suggests the need to provide education and information about risk factors of work accidents in the 31 rice mill centers, and it is expected that they can build a work safety unit in puskesmas in the Kaway XVI sub-district that workers in the central informal sector can be properly recorded.

Keywords: Unsafe Action, Unsafe conditions and occupational health and work accidents

Introduction

The current process supports industrial development in various sectors by applying existing technology following technological developments and media or materials used. The development of this industry affects the workforce. Thus, it is necessary to implement occupational safety and health in the workplace to minimize workplace accidents. (Tika & Widya, 2019). Risks of work accidents can be found in both the formal and informal sectors. The informal sector is a small-scale economic sector that produces and distributes goods and services, with the main objective of providing employment and income opportunities for the actors. (Salsabila et al., 2020). Risks can be managed by incident investigation. Incident investigation is a complex fact-based process to describe the most likely sequence of facts and the associated causes of an undesired safety outcome. This investigation has been used as one of the most valuable sources for safety improvement in regulatory oversight activities as it directly links the causes of incidents to risk management failures. (Almeida & Vinnem, 2020)

Human behavior is one of the causes of work accidents in which human behavior is a complex phenomenon determined by many factors, including environmental factors (such as social support/barriers, ability to change own environment), behavioral factors (such as skills, practice, and self-efficacy), and cognitive/personal factors (such as knowledge, perceptions, expectations, and attitudes). (Dartanto et al., 2020) Occupational Health and Safety (K3) aims

to prevent/avoid/minimize work accidents by stopping/eliminating risks (dangerous elements) to achieve targets/productivity. (Salles et al., 2021). International Labor Organization (ILP) estimated that more than 1.8 million work-related deaths occur in the Asia and Pacific region each year. Two-thirds of the world's work-related deaths occur in Asia. At the global level, more than 2.78 million people die each year due to work accidents or illnesses. Besides, there were approximately 374 million non-fatal work-related injuries and illnesses each year, resulting in much work absenteeism. (Lusiani, 2018).

Based on the Health Care and Social Security Agency (BPJS) data, work accident cases increased from 2019 to 2020 from 114,235 cases to 177,161 cases. (Work Accident Data, 2020).

Methods

A case-control design is an analytic study in which risk factors are studied using a retrospective approach. Case-control design can be used to assess the role of risk factors in illness incidence (causal relationship) (BMJ, 2020).

The population in this study was all rice mill workers in 31 rice mill centers in the Kaway XVI sub-district, Aceh Barat district, with 182 workers. The sample was divided into two groups (1:2) consisting of 58 workers who had a work accident and 116 workers who had never had a work accident. The data were collected by observation and interviewing the workers in 31 rice mill centers in the Kaway XVI sub-district, Aceh Barat District. It used the analytical method of univariate analysis with descriptive analysis and bivariate analysis with the chi-square test.

Results

Tabel 1. The relationship between unsafe actions and work accidents at 31 rice mill centers

Unsafe Action	**Cases**		**Control**		**P-value**	**OR**
	F	%	F	%		
Unsafe	56	96.6	5	4.39	0.000	621.6
Safe	2	3.4	111	95.7		
Total	58	100	116	100		

The results of the study revealed that there is a significant relationship between unsafe actions and work accidents. The number of respondents who perform unsafe action or unsafe behavior at work was higher in the case group (96.6%) compared to the control group (4.39%) with a P-value of = 0.000 and OR = 621.6. It indicates that workers who perform unsafe actions or unsafe behavior have a 621.6 times greater risk of experiencing work accidents than those who perform safe actions or behavior in the workplace.

Table 2. The relationship between unsafe conditions and work accidents

Unsafe Condition	Case		Control		P-value	OR
	F	%	F	%		
Unsafe	56	96.6	8	6.9	0.000	378
Safe	2	3.4	108	93.1		
Total	58	100	116	100		

The results of the study showed that there is a significant relationship between unsafe conditions and work accidents. The number of respondents with unsafe conditions was higher in the case group (96.6%) compared to the control group (6.9%) with a P-value of = 0.000 and OR = 378. It indicates that workers with unsafe conditions or unsafe workplace conditions have a risk of having a work accident 378 times greater than workers in safe conditions or safe workplace conditions at work.

Discussion

1. The relationship between unsafe actions and work accidents

The results of this present study are in line with a study by Irkas (2020) in the furniture industry in which unsafe action has a significant relationship with work accidents with a p-value of = 0.025 and OR = 5.179. It indicates that workers who perform unsafe actions have a risk of experiencing work accidents of 5.179 times greater than workers who perform safe actions at work. (Irkas et al., 2020) This study follows a previous study by Ratman (2020), which was conducted in the furniture industry. The study revealed that unsafe action has a significant relationship with work accidents (P = 0.001), with a risk of work accidents of 1.170 times greater in people who perform unsafe actions than those who perform safe actions at work. (Ratman, 2020). The implication of the results of this study is the urgency to improve occupational health and safety (with the main indicator of work accidents) in informal sector workers. Therefore, it is important to change unsafe to safe behavior at the workplace. (Rantanen et al., 2017).

Some participatory studies in developing countries such as Thailand have successfully reduced the number of work accidents. The approaches taken were applying health promotion to change unsafe behavior and improving the promotion of occupational health and safety among informal sector workers. (Nvestad et al., 2019)

2. The relationship between unsafe actions and work accidents

The results of this study are in line with the study conducted by Putri (2019) in the industry sector in Padang City, which revealed that unsafe conditions had a significant relationship with work accidents (a P-value of = 0.001; OR = 1.513). Unsafe conditions pose risks of work accidents by 1.513 times greater compared to safe conditions at work. (Putri et al., 2019) Besides, this study follows Primadianto (2020), which was conducted in the furniture industry. It showed that unsafe conditions had a significant relationship with work accidents (a P-value of = 0.001) with a 1.116 times greater risk of work accidents compared to safe or secure conditions at work. (Primadianto et al., 2018). Unsafe conditions are commonly caused by piles

of goods in the workplace, scattered work tools, unavailability of PPE, slippery and uneasy to clean floors, narrow work areas, piles of garbage, dangerous/disturbing cable reels, and lack of air ventilation and lighting. (Irkas et al., 2020).

Workplaces that do not meet occupational health and safety standards can decrease production power and productivity. Besides, it can also have a negative effect on the workers. For example, insufficient air ventilation causing no air changes in the workspace so that the workers are lack oxygen and may result in fainting while working. (Zhou et al., 2020)

Conclusion

Based on the study results in 31 rice mill centers in Kaway XVI sub-district, Aceh Barat District, it can be concluded that there is a relationship between unsafe actions, unsafe conditions, and knowledge of occupational safety and health with work accidents.

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