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The Corelation of Compliance to Use PPE (Mask) and The Event of Respiratory Disorders in Workers in Bukit Kapur Jaddih, Parseh Village, Socah District, Bangkalan Regency

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Abstract

The process of limestone mining will resulted in limestone dust on the working environment. This can lead to inhalation of the limestone dust which can cause respiratory problems. The type of the research was analytic with Cross Sectional design. The population was all workers in Bukit Kapur Jaddih, Parseh Village, Socah District; 52 workers. The sample was 45 workers taken by simple random sampling technique. The independent variable was compliance to use mask protective equipment, while the dependent variable was respiratory disorders. The data was collected by questionnaires and observation physical observation. The data was analyzed using Lambda test, with $\alpha = 0.05$. The results of the research showed that workers who did not use PPE (masks) were 35 workers (77.8%), who experienced respiratory problems were 39 workers (86.7%), and 6 workers (13.3%) did not experience respiratory problems. The lambda test results p Value of $0.073 > \alpha$ (0.05) meant that H0 was accepted and H1 was rejected. The compliance to use personal protective equipment (masks) and the presence of respiratory problems showed no correlation. For this reason, workers must continue to use masks while working to protect themselves from the effects of occupational breathing (lime dust).

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INTRODUCTION

In the limestone mining process, limestone dust will always arise in the work environment. This results in exposure of workers to dust with different concentrations and sizes which can be inhaled by workers when breathin.

Lime dust contained in CaCO3 and silica (SiO2) has a health hazard when exposed and inhaled which can cause an increase in the mucosa in the nose and airway system and then cause respiratory tract irritation. Lime mining work causes lime dust to have a major effect on the workforce, such as lung function disorders, both acute and chronic. Acute lung function disorders such as respiratory tract irritation, increased mucus production, narrowing of the respiratory tract, loss of cilia and mucous membrane cell layers and difficulty breathing (Erka and Noeroel,2016).

Data from Kemenkes RI (2012) Patients with acute respiratory infection at Indonesia industrial and mining workers, from 2000-2012 ranged from 20%-100%. From these data, the incidence of acute respiratory infection (ARI) in industrial and mining workers has increased every period (Santi,2014).

One way to prevent the occurrence of ARI is by wearing Personal Protective Equipment (PPE) which aims to protect workers from accidents or serious illnesses in the workplace, due to contact with potential chemical, radiological, physical, electronic, mechanical hazards or other potential hazards at workplace. The use of Personal Protective Equipment (PPE) is the final stage of the method of controlling accidents and occupational diseaseas. However, the use of PPE will be very important if technical and administrative control has been carried out optimally, but the potential risk is still relatively high. (Wibowo,2010).

The working environment of limestone workers in Jaddih village has the potential for health problems, because workers are exposed to lime dust every day which can enter the respiratory tract. From the data from a preliminary study on 8 workers in Bukit Kapur Jaddih, Socah Subdistrict, 5 of them had experienced respiratory problems while working at Bukit Kapur Jaddih.

METHOD

The type of the research was analytic with a cross sectional design. The population was all workers in Bukit Kapur Jaddih, Parseh Village, Socah District as many as 52 workers. The sample was 45 workers taken by simple random sampling technique. The independent variable was compliance to use PPE (Personal Protective Equipment) Masks, while the dependent variable was respiratory disorders. The data was collected by using questionnaires and physical examination observations.

RESULT

1. Demographic Data

Table 1 Distribution of General Data on Workers in Bukit Jaddih, Parseh

		Frequency	Percentage (%)
1.	Age		
	17-25 year	2	4,2
	26-35 year	19	42,2
	36-45 year	10	22,2
	46-55 year	14	31,1
	Total	**45**	**100.0**
2.	Length of work		
	<5 Tahun	21	46,7
	≥5 Tahun	24	53,3
	Total	**45**	**100.0**
3.	Gender		
	man	41	91,1
	woman	4	8,9
	Total	**45**	**100.0**
4.	Education		
	Primary school	35	77,8
	Junior high school	7	15,6
	Senior high school	3	6,7
	Total	**45**	**100.0**

Based on Table 1. It was found that the most dominant age category was 26-35 years with the highest frequency of 19 workers (42.2%). The category of working years, the most dominant respondent was 5 years with a frequency of 24 workers (53.3%). The category of the most dominant sex was male with a frequency of 41 workers (91.1%). Meanwhile, from the education level, the highest education level is elementary school with a frequency of 35 workers (77,8%).

2. Special Data

Table 2 Frequency Distribution of Specific Data on Workers in Bukit Kapur Jaddih, Parseh

Usage Compliance PPE (Masks)	Frequency	Percentage (%)
Constantly	35	6,6
Occasionally	7	15,6
Never	3	77,8
Total	**45**	**100.0**
Respiratory disorders		
Having trouble	39	86,7
No disturbance	6	13,3
Total	**45**	**100.0**

Table 2 showed that the most of the workers never use a mask with a frequency of 35 workers (77.8%), while the most dominant respiratory disorders was experienced by the workers with a frequency of 39 workers (86.7%).

DISCUSSION

Compliance with The Use of PPE (Masks)

Based on the results of research conducted in March 2018 it was found that there were 3 workers who always used masks (6.7%), 7 workers who sometimes used masks (15.6%) and 35 workers who did not use masks (77, 8%). The used of PPE (masks) was a protection to prevent and protect workers from the dangers of work accidents and the impact of diseases resulting from the work. In Khumaidah 2009 The use of masks by industrial workers whose air contains a lot of dust is an effort to reduce the entry of dust particles into the respiratory tract. By wearing masks, workers are expected to protect themselves from the possibility of respiratory problems due to exposure to air with high levels of dust. However, there is no guarantee that by wearing a mask, a worker in the industry will avoid the possibility of respiratory problems. Many factors determine the level of protection from the use of masks, including the type and characteristics of the dust, as well as the filtering ability of the masks used. The habit of using a good mask is a "safe" way for workers in a dusty work environment to protect their health.

Khumaidah (2009) conducted a study on 44 furniture workers at PT. Jati Furnindo City, Suwawal Village, Mlonggo District, Jepara Regency. The results showed that workers who did not use PPE masks had an 8 times higher risk of lung function impairment than workers who used PPE masks. In a study conducted by Santi (2014) the results of research conducted on respondents to limestone workers at the LARA Anduriang Tilatang Kamang Trade Business in 2014 showed that there were 2 workers who wore complete PPE (6.7%), and workers who did not using PPE incompletely as many as 28 people (93.3%). This can be interpreted that most of the respondents did not use personal protective equipment (PPE) completely at work.

While research conducted in the field, there are still many workers who do not wear masks, with various reasons and different opinions, one of which is uncomfortable when use masks, they are not used to take a masks and feel they do not need to use masks, they have no funds set aside to buy masks while from where they work do not provide personal protective equipment (masks) for free, as has been stipulated in the regulation of the Minister of Manpower and Transmigration number 08 of 2010 concerning PPE. According to the regulation, companies are required to provide PPE free of charge for their workers and workers who enter the field of work must use PPE in accordance with the potential hazards that exist. With this regulation, the company should have complied with it, judging by the long history of mining, at least to prevent workers from being exposed to dust directly.

Respiratory Disorders

Based on the results of the study, there were 39 workers (86.7%) who experienced respiratory problems from 45 workers.

The lime particles are irritant but not carcinogenic. The limestone industry has polluted the air with dust and gases from limestone mining. Dust and gases caused by the limestone processing process will be in the work environment, this will result in workers being exposed to lime dust and gases at different concentrations and sizes. The main effects of lime dust on workers are lung disorders, both acute and chronic, disruption of physiological functions, eye irritation, sensory irritation and accumulation of harmful substances in the body. Effects on the respiratory tract are irritation of the respiratory

tract, increased production of mucus, narrowing of the respiratory tract, release of cilia and mucous membrane cell layers and difficulty breathing. The accumulation and movement of dust in the airways can cause airway inflammation. This inflammation can cause airway obstruction, which can reduce lung capacity. The impact of continuous exposure to dust can reduce lung function in the form of obstructive. One form of pulmonary abnormalities that are permanent is reduced lung elasticity, which is characterized by a decrease in the vital capacity of the lung (Yulaekah et al, 2007).

In Muttaqin 2012 it is stated that the result of high dust accumulation in the lungs can caused lung abnormalities and damage. Disease due to accumulation of dust in the lungs was called pneumoconiosis. Disease due to accumulation of dust in the lungs is called pneumoconiosis. Some types of dust if inhaled in large enough levels into the lungs will cause a fibrotic reaction, while other dusts have no effect.

Mining processed in Bukit Kapur Jaddih still used informal regulations or has not been touched and was bound by the laws and regulations that have been set by the government, so that all regulations related to the safety and health of workers are not paid attention to. As has happened so far, no inspection has been carried out by the company for its workers so that it can be seen that the incidence of respiratory disorders in workers is still high, this is also exacerbated by the habit of workers who smoke.

The Corelation of Compliance to Use PPE (Masks) and Respiratory Disorders

Based on research conducted, data obtained from 45 workers, 3 (6.7%) workers always used masks and did not experience respiratory problems as many as 3 people, 7 people (15.6%) sometimes used masks, 6 people experience respiratory problems and 1 more person does not have respiratory problems, and as many as 35 workers (77.8%) have never used it, the results show that 33 people have respiratory problems and 2 more people do not have respiratory problems. From the results of statistical test analysis using the Lambda test, a p Value of 0.073 > (0.05) was obtained so that H0 was accepted and H1 was rejected, which means that there was no correlation between compliance with the used of PPE (masks) and the incidence of respiratory problems in workers in Bukit Kapur Jaddih. Parseh Village, Socah District.

Respiratory system disorders are the most dangerous consequences of other disease problems due to work in a dusty work environment. As a result of dust entering the respiratory tract, it can cause disturbances in the form of coughing, sneezing and other disorders. Smooth muscle around the airway can be stimulated, causing constriction. This habit usually occurs due to high levels of dust in the workplace. The used of masks when work was very important to protect yourself while do work. The used of masks was very necessary because the location of the workplace has the potential to cause respiratory system disorders if the dust was inhaled continuously for a long period of time (Zainuri & Rahmalia, 2016).

From research conducted by Khumaidah (2009) regard the analysis of factors associated with impaired lung function in furniture workers at PT. Jati Furnindo City, Suwawal Village, Mlonggo District, Jepara Regency, against 44 respondents, the results showed that there was a correlation between the use of PPE for workers with pulmonary function disorders using statistical analysis of the chi square test obtained p value = 0.002 X2 value = 6.656 and Odd Ratio = 8.571 (95% CI). = 0.907-80.993). This shows that workers who do not use PPE have an 8.5 times risk of pulmonary function impairment compared to workers who use PPE.

Meanwhile, the results of the field research where the Lambda statistical test has been carried out, there was no significant correlation between compliance with the used of PPE (masks) and the incidence of respiratory disorders, although there were about 39 workers who experience respiratory problems from 45 workers, and there were some workers who say they haven a cough on at night and experiencing respiratory problems only for a few moments, while the researchers conducted research used the cross sectional method which only examined once so that symptoms and signs of respiratory problems may not be found during the examination, there are several factors that workers can also experience respiratory problems such as dust levels. those in the work environment, long working hours, then there were also workers who used masks from t-shirts maybe it could filter the dust in the work environment so that workers were not exposed to dust directly

CONCLUSION

Based on the results of research conducted on 45 workers, it was concluded that the use of PPE (masks) and respiratory system disorders in workers in Bukit Kapur Jaddih, Parseh Village, never used masks; 35 workers (77.8%). Workers who experienced respiratory problems in Bukit Kapur Jaddih, Parseh Village were 39 workers (86.7%). There was no correlation between the use of PPE (masks) and the incidence of respiratory problems in workers in Bukit Jaddih, Parseh Village, Socah District.

SUGGESTION

In this research, several suggestions are given for workers to always use masks even though in this research there was no correlation, as a form of prophylaxis against diseases that would arise due to work. For company owners it is expected to provide personal protective equipment in this case masks for their workers. For health workers is is hoped to be able to deliver health education related to the dangers of lime dust and the importance of using masks for respiratory health in particular. For future researchers, this research is expected to be a reference and can develop this research.

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