Relationship between Knowledge and Supervision with Unsafe action in Practical Workshop of State Vocational School Students in Medan City

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Abstract

Vocational High School (VHS) is an educational institution with various practical activities to equip students to master the competencies needed when working in the industrial world. Working in a practical workshop has various potential hazards, including the risk of experiencing work accidents, one of which is due to unsafe action. A preliminary survey based on the results of observations showed that out of 30 VHS students working in the practical workshop, 83.3% of them had unsafe actions such as not using personal protective equipment, as well as chatting and joking during the practical process. This study aims to determine the factors that influence unsafe action in the practical workshop of students of public vocational schools in Medan City. The study population was class XI students, totalling 164 students, with a sample size of 113 students selected by simple random sampling. This type of research is quantitative research with a cross-sectional design. The study was conducted in three Vocational Schools with mechanical engineering majors in Medan City: State Vocational School 2, State Vocational School 5, and State Vocational School 14. Data analysis was conducted univariately and bivariately, with simple and multivariate data, and with multiple logistic regression. The results showed that the majority of students had unsafe action (84.1%), as well as knowledge (60.2%) and supervision (61.1%). Supervision (p=0.012) had a relationship with unsafe action, while knowledge (p=0.143) and tools and equipment (p=0.121) did not show significant relationship. Students with poor supervision had 3.937 times (95% CI: 1.353-11.640) risk of unsafe action compared to those with good supervision. Schools are expected to increase supervision or responsibility as well as implement a reward and punishment system for students to reduce the occurrence of unsafe actions that can increase the risk of work accidents.

Keyword: Knowledge, Supervision, Unsafe action, Vocational high school

INTRODUCTION

Education plays the leading role in shaping the quality of students/students who are educated and have knowledge and abilities; one of the assessments of the success of activities in the field of education is to improve the quality of education through an increase in learning outcomes both formal and non-formal. The value of learning outcomes is the intelligence that students have after receiving educational experiences; in essence, learning outcomes become changes in behaviour. (Frimananda, et al., 2021).

As one of the educational institutions, State Vocational School will produce a workforce that works as an executive worker or entry-level supervisors, where the work is directly related to various equipment, tools, powered machines, and certain hazardous materials and will face various workplace situations that contain elements of danger (hazard).

Government Regulation Number 50/2012 explains the implementation of the Occupational Health and Safety Administration system. The goal and target are to create an occupational safety and health system by dealing with management factors, labour, conditions, and work areas that are integrated into preventing or avoiding and limiting the occurrence of work accidents and making the workplace comfortable, productive and efficient. Accidents at work are a threat in every work activity. Therefore, the prevention of work accidents must be carried out, both in the industrial work environment and in the world of education, for example, in State Vocational Schools, as a basis for forming a professional workforce (Hidayati et al., 2020).

Vocational students are required to comply with special regulations or guidelines related to OHS in work practicum so that in its implementation, there are no work accidents and can do the practicum properly, for practicum teachers, it is advisable during implementation to follow particular regulations and guidelines for work safety, so that teachers can help students and monitor to prevent work accidents during practicum implementation (Dina, 2019).

The result of research by the U.S Chemical Safety Board (2018) shows were 216 work accidents in work laboratories in the United States. 130 of these cases occurred in laboratories in schools and universities. Occupational safety and health are a person's need to protect his life, which is related to taking preventive and security measures against work accidents while working (Frimananda, 2021).

Facts show that the condition of the school environment poses a risk of accidents and health problems for school residents. If potential dangers cannot be controlled appropriately and carefully, it will result in adverse conditions such as fatigue, injury, illness and even severe injuries. (Wahyurianto et al., 2022).

Various factors that cause work accidents will be a warning for every work activity, so work accident prevention must be implemented well in the work industry environment or The world of education, for example, vocational school education, which will produce professional workers. Knowledge of occupational health and safety is essential as technological and industrial groups describe locations to create a professional workforce ready to work and develop disciplined habits in carrying out occupational health and safety procedures while working (Dodoo et al., 2019).

METHODS

This research is an analytical survey with a cross-sectional study design. This study examined factors influencing students' unsafe behaviour in concurrent, practical workshops. This research was conducted at three state Vocational High Schools in Medan City. This research was conducted in March 2024 until the research was completed.

For research purposes, the population consisted of class XI students majoring in mechanical engineering from three state Vocational Schools in Medan City, namely 164 students. These three schools were chosen because of the 14 state vocational schools in Medan city; only these three schools have mechanical engineering majors. The sample in this study was class XI students majoring in mechanical engineering at each school who had relatively similar characteristics and were considered to be representative of the population.

The sampling technique used in this research is random sampling with a simple random sampling technique, namely that each member or user of the population has the same opportunity to be selected as a sample (Notoadmodjo,2013).

Dependent variable unsafe behaviour. Unsafe behaviour (unsafe action) is any action that deviates from what is generally recognized as a safe way to do work and increases the possibility of an accident. Independent variable. Knowledge, supervision, equipment and supplies.

According to Sugiyono (2013), This research data analysis uses a multiple logistic regression test, a statistical technique that simultaneously develops a mathematical relationship between two or more independent and dependent variables. Alternatively, in this case, measuring the magnitude of the influence of knowledge and supervision on occupational health and safety among state vocational high school students in Medan. This research has received approval from the health research ethics committee, marked with approval letter No.208/KEPK/USU/2024 and signed by Mr. Dr. dr. Juliadi Harahap, MA, FISPH,FISCM, Sp.KKLP is the Chair of the Research Ethics Committee at North Sumatra University.

RESULTS

Table 1 Relationship Between Knowledge, Supervision and Unsafe Action

Variable	Unsafe		Safe		Total		*p-value*
	n	%	n	%	n	%	
Knowledge							
Bad	60	88.2	8	11.8	68	100	0.143
Good	35	77.8	10	22.2	45	100	
Supervision							
Bad	63	91.3	6	8.7	69	100	0.012
Good	32	72.7	12	27.3	44	100	

The cross-tabulation results between knowledge and unsafe action obtained data from 68 students in the poor knowledge category, as many as 60 students (88.2%) with unsafe action, and 8 students (11.8%) with safe action. Meanwhile, out of 35 students with sound knowledge, 21 (46.7%) had unsafe actions, and 24 (53.3%) had safe actions.

Based on the results of the cross-tabulation between supervision and unsafe action, it was found that of the 69 students who had a category of poor supervision, most had unsafe action. Namely, 91.3% (63 students) and only 8.7% (6 students) had safe action. Similarly, out of 44 students in the excellent supervision category, most had unsafe actions, at 72.7% (32 students). In comparison, 27.3% (12 students) had safe action during the practical workshop.

Bivariate analysis was carried out with a simple logistic regression statistical test to determine and test the relationship between the independent variables (knowledge and supervision) and the dependent variable (unsafe action). Based on the results of the bivariate analysis in Table 1, it is found that the variables of knowledge and supervision have a relationship with unsafe action by obtaining a p-value <0.05.

DISCUSSION

The study results obtained a p-value = 0.143 (p-value> 0.05), indicating no effect of student knowledge on unsafe action. Based on the results of univariate analysis, 68 students (60.2%) who have poor knowledge, and based on the distribution of student knowledge answers, the majority of them answered the questionnaire incorrectly related to actions that must be taken to prevent work accidents as many as 59 students (52.2%). The results of this study are not in line with the research of Uyun and Widowati (2022), who found a relationship between knowledge about OHS and unsafe action (p-value=0.039). Literature review research by Dodoo and Al-samarraie (2019) found that inadequate knowledge about safety and health is a significant factor in unsafe action. This is also in line with research conducted by Islami (2019), which states that there is a significant relationship between the level of knowledge and unsafe acts, as evidenced by the test results using Fisher's Exact Test with a p-value of 0.000 < α (0.05) which means that there is a relationship between the level of knowledge and unsafe acts on porters at the Surakarta Area Railway Station.

Students with extensive occupational health and safety knowledge tend to be aware of the need to act by occupational health and safety because they know what risks they will face if they ignore occupational health and safety. Occupational Health and Safety knowledge can be further improved by schools placing more emphasis on Occupational Health and Safety to students during Occupational Health and Safety lessons of in the form of training on

Occupational Health and Safety which discusses Occupational Health and Safety issues including understanding, objectives, identifying factor that cause work accidents, how to prevent accidents, and the use of personal protective equipment. While woriking (Hidayati & Ekaputri,2020).

Knowledge is a significant factor in the formation of a person's behaviour. Although the results of student knowledge are predominantly not good, it does not affect the unsafe actions of these students because the unsafe actions of these students are also high, so other factors can also influence, such as good supervision from the school, the availability of suitable facilities and infrastructure so that whether or not the knowledge will still occur unsafe action if it is not balanced with other factors that can influence it. This study's results align with the research (Nining & Bambang, 2020). There is no relationship between occupational health and safety knowledge and safety practices (p=0.651) among machining engineering students at VHS 7 Semarang. This can be because many students have good knowledge about Occupational Health and Safety, even though some still carry out unsafe actions.

The results showed an effect of student supervision on unsafe action by obtaining a p-value = 0.018 (p-value <0.05). In the world of work, supervision has a vital role, especially for the health and safety of workers. Lack of supervision can contribute to work accidents (Widajati & Suryanto, 2019). The results of this study are in line with the research of Uyun and Widowati (2022), who found that there is a relationship between Occupational Health and Safety supervision and unsafe action (p-value=0.010; p-value<0.05). This research also aligns with Ernyasih, et al (2022) with the title of factors related to unsafe action in The Canary Apartment PT project workers. Abadi Prima Intikarya, in 2022, with the research results showing a relationship between supervision and unsafe actions, found that respondents with less supervision were 37 (71.2%) behaving unsafely with high categories. While respondents with good supervision, 6 respondents (33.3%) behaved unsafely in a high category.

Working positions can cause auto disorders and increase workload. Body posture is one of the potential factors causing musculoskeletal disorders in a person. Lack of knowledge about safe actions when working, what tools are appropriate for the work being carried out, and lack of adequate knowledge about occupational health and safety are closely related to triggering musculoskeletal disorders in a person. Moreover, of course, this can be detrimental to someone.

CONCLUSIONS

Based on the research that has been carried out, several things can be concluded, namely, factors that influence unsafe actions are students' lack of knowledge regarding safety at work and lack of supervision when carrying out work because supervision also dramatically influences the occurrence of actions at work which can prevent work accidents. Moreover, the suitability of tools and equipment can also influence unsafe work actions. The person in charge of the Occupational Health and Safety section is expected to increase and tighten supervision regarding student behaviour during practice, including the use of personal protective equipment and facilitate Occupational Health and Safety training regarding unsafe behaviour for teachers and those in charge of the Occupational Health and Safety section in practical workshops to improve their abilities as supervisors in the student practice area.

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