Compliance applying OHS: Are knowledge and self-regulation influence?

Hafidha Tri Kurniati [a] *, Kartika Nur Fathiyah [b]
Universitas Negeri Yogyakarta. Jl. Colombo No. 1, Yogyakarta 55281, Indonesia
[a] hfidhatrikurniati@gmail.com; [b] kartika@uny.ac.id
* Corresponding Author.

Abstract: Occupational Health and Safety (OHS) is a work activity to prevent work accidents. Work accidents caused by workers are motivated by workers' non-compliance at work. Compliance is known as a person's ability to act, so that undesirable things do not happen, such as work accidents, do not happen. OHS knowledge and self-regulation affect a person's compliance to comply with OHS. This study aimed to determine the influence of OHS knowledge and self-regulation on compliance applying OHS. The sample research involved 80 chemistry students at Universitas Negeri Yogyakarta (UNY). The results showed an effect of OHS knowledge and self-regulation on compliance applying OHS (p=0,000) with an effective contribution of 68.1%. It means that OHS knowledge and self-regulation can predict compliance applying OHS of students practicing in chemical laboratories.
Keywords: OHS Knowledge, Self-Regulation, Compliance Applying OHS

INTRODUCTION

Occupational Health and Safety (OHS) is the most important part of work activity to prevent accidents due to work. This has been contained in Undang-Undang No. 1 of 1970, and occupational safety is safety related to machines, aircraft, work tools, materials and processing processes, work grounds and work environment, and ways of doing work and production processes (Kementrian Tenaga Kerja dan Transmigrasi Republik Indonesia, 1970).

Occupational Health and Safety (OHS) is one of the prerequisites that must be met by every industry in Indonesia (Ponda & Fatma, 2019). Although laws have been regulated, the implementation of OHS in some companies is still not optimal. As many as 85-96% of work accidents are caused by unsafe actions or human error factors (Bara et al., 2021). Work accidents by humans or workers are motivated by workers' non-compliance.

Research conducted by Zahara et al. (2017) said accidents due to non-compliance with the use of personal protective equipment in RSUD workers were known to be 54.7%. Other research conducted by Astiningsih et al. (2018) said that construction workers on the project did not comply with personal protective equipment, namely 54%. These findings indicate the low compliance of workers in the industry to comply with the provisions regarding OHS, especially in the use of personal protective equipment, thus becoming one of the causes of the high number of work accidents in the company. Compliance in wearing personal protective equipment is an important factor to reduce work-related accidents.

Compliance is a behavior or behavior that is considered positive and is an individual's choice to do, obey, respond critically to rules, laws, social norms, requests or wishes from someone who holds authority or an important role (Pozzi et al., 2014). A person can be said to be obedient if the individual believes, accepts and is willing to carry out the orders given by the authority (Blass, 1999). According to Kamidah (2015), several factors determine a person's compliance, namely, knowledge, motivation, family support (Kamidah, 2015), individuals who have power, rewards, punishments, and threats,

imitation or imitation, hope (Nursalim, 2017; Sears et al., 1992), self-control, emotional state, adjustment, family, peer relations, demographics, environment, punishment, teacher figure (Rahmawati, 2015).

Quantitative research conducted by Pramesti (2017) at Panembahan Senopati Hospital, Bantul Yogyakarta, showed that knowledge was positively correlated with compliance. Pramesti (2017) assumes that if a person's knowledge is lacking, the individual will tend to make the wrong decision. Other research conducted by Yuliana (2018) in the Inpatient Installation of Hospital X Surabaya found that knowledge positively correlates with the level of compliance behavior. A lack of OHS knowledge causes Non-compliance with occupational safety and health in the laboratory. In addition, the knowledge factor that affects compliance occurs not only in industrial institutions but also in educational institutions.

On March 17, 2015, Kompas reported an explosion in the UI chemical laboratory because the person in charge of the student group was negligent because he was busy playing with gadgets and forgot the acid content in the distillation flask was drying up. As a result, the distillation flask tube broke and exploded. Two people were seriously injured, and 13 others were slightly injured. This phenomenon proves that work accidents in chemical laboratories are very likely to occur considering the use of chemicals, and these tools have the potential to cause work accidents. In addition, playing gadgets resulting in negligence includes behavior that does not obey the procedures or rules that apply in the laboratory.

Milgram (1963) says that a person is responsible for what he does according to his awareness of his behavior to obey. Work accidents, as previously described, can be prevented by paying attention to the behavior of workers (Solekhah, 2018). Besides the OHS knowledge factor, Dewi and Taufik (2020) at SMK N 1 Pariaman, found that self-regulation is positively correlated with compliance.

Dewi and Taufik (2020) assume that high or low self-regulation greatly affects a person's compliance behaviour. Rahmawati (2015) said that individuals who have low self-regulation cannot control their behavior and do not pay attention to the risks that will occur if they commit violations. In contrast, high self-regulation individuals tend to think before controlling because they can control their behavior and are responsible for all their actions.

Based on the overall background description, according to the researcher, there are indications of a lack of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories. This study is important because the authors have not found any research on the influence of OHS knowledge and self-regulation on compliance applying OHS. According to the author, this research has not been found in the realm of universities, especially in chemistry laboratories in universities. So the authors feel that this research is important to be carried out in a chemical laboratory on the Universitas Negeri Yogyakarta campus.

Theoretically, this study understands the influence of OHS knowledge and self-regulation on applying OHS to students practising in chemical laboratories. This study contributes to developing theories regarding the factors that influence compliance applying OHS of students practising in chemical laboratories. Meanwhile, practically, for researchers, this study provides insight into the influence of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories. This research is used as reference material for students practising and provides an overview of things that affect compliance applying OHS, namely OHS knowledge and self-regulation.

METHODS

Participants

This research was conducted in the chemistry laboratory of Universitas Negeri Yogyakarta. The population in this study was 360 students for 2020, 2019 and 2018 batches. The participants in this study were 80 students. Researchers chose pure chemistry students because they are closely related to research in laboratories, both in universities and in large companies. Pure chemistry students in practice in the laboratory are more emphasized in conducting experiments and formulating reactions that occur in chemical processes. In contrast to chemistry education students, they focus more on teaching chemistry in schools.

Procedure

The sampling technique was non-probability sampling, using the accidental sampling method. According to Sugiyono (2018), accidental sampling is a sampling technique based on chance; that is, anyone who completely/accidentally meets the researcher can be used as a sample if it is seen that the person who happened to be completed is suitable as a data source with the main criterion being that the person is a student practitioner chemistry. The reason for using this method is due to the unknown population size of the researcher while in the laboratory, so this method is appropriate for this research. The research was conducted by distributing questionnaires when the student practitioners finished their practice in the laboratory.

The data collection technique in this study used three questionnaires in the form of a scale, namely a questionnaire about compliance in applying OHS, a questionnaire about self-regulation, and a questionnaire about OHS knowledge.

Measuring instrument

Compliance Scale Applying OHS

The compliance instrument for implementing OHS is based on the aspects/concepts proposed by Blass (1999). The researcher arranged these aspects into a grille and described each indicator's statement items. The quantitative data were obtained from the table with a scoring scale of the Likert model, namely from "very inappropriate" (1) to "very appropriate" (5), except for items whose response is unfavourable, namely "very inappropriate" (5) to "very suitable" (1).

Self-Regulatory Scale

The self-regulation instrument in the study was compiled based on the aspects/concepts proposed by Zimmerman (1989). The researcher arranged these aspects into a grille and described them into statement items for each indicator. The quantitative data were obtained from the table with a scoring scale of the Likert model, namely from "very inappropriate" (1) to "very appropriate" (5), except for items whose response is unfavourable, namely "very inappropriate" (5) to "very suitable" (1).

OHS Knowledge Scale

OHS (Occupational Health and Safety) knowledge instrument in this study was adapted from the Laboratory Safety Questionnaire by Akpullukcu and Cavas (2017) and consisted of 36 statements. The quantitative data were obtained from the table with a scoring scale of the Likert model with four answer options, namely "very appropriate", "appropriate", "not appropriate", and "very inappropriate".

RESULTS AND DISCUSSION

Result

The results of this study found several findings. First, this study produces an overview of participants for each variable, as shown in Table 1. The table shows statistical data on compliance with OHS, which is divided into five categories, namely very high, high, medium, low, and very low. Eighty participants showed that 7 (8.8%) participants were in the very high category. High category as many as 39 (48.8%) participant, moderate category as many as 25 (31.3%) participant, low category as much as 8 (10%) participant, and the last category is very low as much as 1 (1.3%) participant. Thus it can be concluded that UNY chemistry students are obedient in applying OHS in the chemistry laboratory.

In addition to compliance with OHS implementation, self-regulation in research is also divided into five categories, namely very high, high, medium, low, and very low. Eighty participants indicated that there were 5 (6.3%) participants, high category as much as 8 (10%) participants, moderate category as many as 32 (40%) participants, low category as many as 33 (41.3%) participants, and the last category is very low as much as 2 (2.5%) participant. Thus, UNY chemistry students cannot control their behavior and do not pay attention to the risks that will occur if they commit a violation.

Another variable examined in this study is knowledge of OHS. Like the two previously described variables, the OHS knowledge variable is also grouped into five categories: very high, high, medium, low, and very low. As much 80 participants indicated that there were 18 (22.5%) participants,

high category as many as 38 (47.5%) participant, medium category as many as 19 (23.8%) participant, low category as much as 1 (1.3%) participant, and the last category is very low as much as 4 (5%) participant. Thus, UNY chemistry students know OHS well, so there are few work accidents.

The results of this study indicate a significant influence on OHS knowledge and self-regulation on OHS compliance which can be seen in Table 2. The Table 2 how the correlation and coefficient of determination of the three variables, namely OHS knowledge, self-regulation, and compliance with OHS, apply. Found a correlation coefficient of r = 0.826. This means that the relationship between OHS knowledge and self-regulation on compliance with OHS is significant. In addition, for the coefficient of determination found the value of R^2 = 0.682, p = 0.000 (p <0.05). This means that 68.2% of compliance applying OHS is influenced by OHS knowledge and self-regulation.

Regression on X1 has a significant value or sig. (p) = 0.000 (p <0.05), then it is declared significant. This means that knowledge of OHS affects compliance with applying OHS. Furthermore, the regression on X2 has a significant value or sig. (p) = 0.000 (p<0.05), then it is declared significant. This means that self-regulation affects compliance applying OHS.

Table 1. Description of Compliance Applying OHS, Self-Regulation, and Participant OHS Knowledge

Variable	Frequency	Percentage	mean	Min Value	Max Value	SD
Compliance Applying OHS						
Very high	7	8.8				
High	39	48.8				
Medium	25	31.3	40.30	18	56	6.47
Low	8	10				
Very low	1	1.3				
Self Regulation						
Very high	5	6.3				
High	8	10				
Medium	32	40	52.39	27	83	10.99
Low	33	41.3				
Very low	2	2.5				
OHS Knowledge						
Very high	18	22.5				
High	38	47.5				
Medium	19	23.8	96.91	47	132	17.23
Low	1	1.3				
Very low	4	5				

Table 2. OHS Knowledge Regression Test and Self-Regulation of Compliance Applying OHS

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	*p*
1. Reqression	2254.544	2	1127.272	82.489	.000[b]
Residual	1052.256	77	13.666		
Total	3306.800	79			

a. Dependent Variable: Compliance Applying OHS
a. Predictors: (Constant), Self Regulation, OHS Knowledge

Table 3. Regression Test Results The Effect of OHS Knowledge and Self-Regulation
on Compliance Applying OHS

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficient	t	p
	B	Std. Error	Beta		
1. (Constant)	4.363	2.861		1.525	.131
OHS Knowledge	.189	0.025	.503	7.701	.000
Self Regulation	.337	.038	.572	8.758	.000

a. Dependent Variable: Compliance Applying OHS

Discussion

This study aims to determine the influence of OHS knowledge and self-regulation on applying OHS of students practising in chemical laboratories. Based on the study results, it shows that there is a significant influence of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories. It is known that OHS knowledge and self-regulation variables positively correlate with compliance with OSH implementation. This is obtained, the sig value in the two variables is 0.000 because the significance value is 0.000 <0.05, or the calculated F on the data is 82.489, so that the significance value is 82.489> 3.12. The variables of OHS knowledge and self-regulation also show a double correlation to compliance with OHS implementation of 0,826 with a coefficient of determination or R Square of 0.682 or 68.2%. This means that the magnitude of the influence of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories is 68.2%.

The researcher indicates OHS knowledge and self-regulation influence compliance applying OHS of students practising in chemical laboratories. This provides information that OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories has a positive or significant effect. According to the laboratory assistant, compliance is given because there is still a lack of knowledge of practical students, especially at the beginning of the semester. Most UNY chemistry students are high school or vocational graduates who still haven't received a more detailed practicum. Therefore, students practising at the beginning of the semester have been explained the rules before starting the practicum to avoid mistakes such as work accidents.

One of the dominant characteristics that cause individuals to obey is the knowledge factor. Knowledge is one of the factors that can encourage or inhibit individuals from behaving obediently. This finding is reinforced by Pramesti (2017) that knowledge is positively correlated with compliance. Pramesti (2017) assumes that if a person's knowledge is lacking, then the individual will tend to make the wrong decision. The first hypothesis in the study provides information that OHS knowledge is positively correlated with adherence to implementing OHS. It is known that UNY chemistry students have high OHS knowledge. This means that UNY chemistry students have good knowledge of OHS, so that they can encourage individual attitudes to behave obediently for the better.

The domain of knowledge determines the formation of one's actions (Notoatmodjo, 2012). A person's behavior based on knowledge, awareness and positive attitude tends to last a long time; on the contrary, if the behavior is not based on science, it will not last long. Thus behavior will be in accordance with his knowledge if the individual is strong enough to behave according to his knowledge so as to shape his behavior.

According to UNY chemistry students, the environment is very influential in creating awareness. This finding is reinforced by Komsi et al. (2018), assuming that the environment is everything outside of a person. Some of his fellow students were found to still ignore the rules or regulations, even to the point of being persuaded not to obey the rules. However, there are still practical students who care about rules or regulations. Such things can encourage a person to behave obediently or disobediently to the rules. Milgram (1963) says a person is responsible for what he does according to his awareness of his behavior to obey. The results of the observations that have been described previously can be prevented by paying attention to the behavior of workers (Solekhah, 2018). One's behavior to comply with OHS is also influenced by self-regulation.

The results also provide information that self-regulation is positively correlated with compliance. In line with research by Dewi and Taufik (2020), self-regulation is positively correlated with compliance. Dewi and Taufik (2020) assume that high or low self-regulation greatly affects a person's compliance behaviour. Rahmawati (2015) said that individuals who have low self-regulation are unable to control their behavior and do not pay attention to the risks that will occur if they commit violations. At the same time, individuals who have high self-regulation tend to think before controlling because they are able to control their behavior and are responsible for all their actions. The better a person's self-regulation, the better a person can control his behavior (Sukowati et al., 2020). UNY chemistry students are said to have low self-regulation. Until it can be said, UNY chemistry students are unable to control their behavior and do not pay attention to the risks that will occur if they commit a violation.

Research conducted by 80 students practising chemistry at the Universitas Negeri Yogyakarta laboratory for 2020, 2019, and 2018 batches answered the researcher's suspicion that OHS knowledge and self-regulation had a positive relationship and had an effect on compliance with OHS implementation. The results of the study prove that these students have high OHS knowledge of 47.5% and self-regulation, which can be said to be low by 41.3%.

Based on the results of the research and the explanation above, it can be concluded that the existence of OHS knowledge and self-regulation has a positive relationship to compliance applying OHS, so it can be said that the two variables are OHS knowledge and self-regulation is a predictor that can affect compliance applying OHS of students practicing in chemical laboratories.

CONCLUSION

There is a significant influence of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories. Based on research that has been carried out to determine the influence of OHS knowledge and self-regulation on compliance applying OHS of students practising in chemical laboratories. The results showed OHS knowledge and self-regulation influence on compliance applying OHS of students practising in chemical laboratories. Knowing the factors that influence compliance with implementing K3 can provide problem-solving, especially problems that allow work accidents in the laboratory. In addition, the instrument produced from this research is proven to be valid and reliable so that it can be used in assessments in the chemistry laboratory.

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