

# Relationship Between Knowledge and Availability of Personal Protective Equipment with the Attitudes Toward Occupational Safety and Health of the Students in Laboratory X

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**Submission date:** 11-Sep-2019 05:42PM (UTC+0800)

**Submission ID:** 1170726598

**File name:** Jurnal\_IJMFT.pdf (493.17K)

**Word count:** 2689

**Character count:** 14467

# Relationship Between Knowledge and Availability of Personal Protective Equipment with the Attitudes Toward Occupational Safety and Health of the Students in Laboratory X

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## Abstract

Occupational Safety and Health (here after OSH) are all efforts to protect workers / laborers in order to realize optimal work productivity which is a human right protected by Law of the Republic of Indonesia Number 1 of 1970 about Work Safety.<sup>(4)</sup> Occupational Safety and Health (OSH) is a substantial component that needs to be enforced whether in industrial sectors or in educational sectors. Educational sectors require to implement OSH learning practices as what has been implemented in the Laboratory X at Faculty of X. Practically, the students occupying the laboratory must have the attitude of OSH to lessen or foreclose the risks of unwanted occupational accidents. Experiments conducted in the laboratory undoubtedly contain hazards reasoning from physical, chemical, ergonomic, and psychosocial factors. Negative impacts that can occur such as the emergence of potential hazards that can cause accidents, fires or blasting and environmental pollution. In addition, potential hazards can also threaten the safety and health of workers at risk of workplace accidents and work-related illnesses, thus impacting the company both financially and company reputation.<sup>(1)</sup>

This research is observational descriptive research which aims at realizing the relationships between the knowledge level and the availability of Personal Protective Equipment (here after PPE) to the attitudes toward OSH in Laboratory X. The sample of this research is all population that consists of 33 student respondents in Faculty of X. The research method employed in the data collection, this research was the observational descriptive research. The instrument of this research is in the form of questionnaire concerning on the knowledge of OSH, the availability of PPE, and the attitudes toward OSH in the laboratory. The results sustain that there is no correlation between the knowledge level of OSH and the attitudes toward OSH in the laboratory. However, there is a weak relationship noticed between the availability of PPE and the attitudes toward OSH in the laboratory ( $p=-0.056$ ;  $\alpha=0.05$ ). Thus, in the end, it can be inferred that the knowledge level of OSH does not influence the attitudes toward OSH, yet the availability of PPE does even though according to the statistic test, the relationship between the availability of PPE and the attitudes toward OSH is considered perceptible.

**Keywords:** Attitudes toward OSH, Availability of PPE, Knowledge.

## Introduction

<sup>1</sup>Based on Regulation of the Minister of Manpower of the Republic of Indonesia Number 5 of 2018 about Occupational Safety and Health of the Work

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<sup>3</sup>Environment, states that occupational safety and health, here in after abbreviated as OSH, are all activities to guarantee and protect the safety and health of workers through efforts to prevent work accidents and work-related diseases.<sup>(2)</sup>

<sup>1</sup>Based on Regulation of the Minister of Manpower of the Republic of Indonesia Number 12 of 2015 Occupational Safety and Health or OSH is a series of activities in the form of reducing or eliminating the

sources of hazard in the workplace, which objectives are ensuring and protecting the labor through the prevention from the occupational accidents and occupational illnesses caused by the workplace environment.<sup>(3)</sup>

The implementation of OHS must be in accordance with Law Number 1 of 1970 on Occupational Safety, which includes:<sup>(4)</sup>

Providing personal protection tools to workers.

1 Prevent and reduce workplace accidents.

Prevent and reduce the danger of blasting.

Give first aid to an accident.

Based on Regulation of the Minister of State for the Use of State Apparatus and Bureaucratic Reform Number 03 of 2010 on Functional Position of Educator Laboratory Staff and Credit Figures, Laboratory is a supporting unit for educational institution in the form of room, both permanent and mobile, which is managed systematically for the activities of research, education, and community service by utilizing the specific equipment and materials based on the certain scientific method.<sup>(5)</sup>

According to ILO on the data of Fatal Accidents and Disease 2008, the total number of fatality reached 2.34 million, including the fatal occupational accidents which made up to 321,000 or about 14%, while the fatal occupational illness was as many as 2.02 million or about 86%. ILO also predicted that there are 160 million cases of non-lethal diseases related to work occur every year.<sup>(6)</sup>

Based on National Social Security of 2016, the number of occupational accidents that occur in Indonesia was still relatively high until the end of 2015, and there have been 105,182 cases of occupational accidents and have increased every year by 5%.<sup>(7)</sup> Generally, the occupational accidents is generated by two factors, which is human and environmental factors. The occupational accidents in the laboratory cannot be separated from the human and environmental factors. The human factors inducing the occupational accidents in the laboratory are generally the unsafe actions from humans themselves, such as violating the rules in the laboratory and not applying the OSH attitudes. Meanwhile, the environmental factor is the environmental or equipment condition in the laboratory.

Work in the laboratory like students' experiments can't be separated from the utilization of materials and equipment which require special treatment. The attitudes toward OSH are required as the initial efforts to prevent occupational accidents in the laboratory. The attitudes toward OSH are also needed to ensure the students remain safe in practicing in the laboratory. The students' attitudes toward OSH in the laboratory should be instilled and established from the beginning. Various procedures in the laboratory such as the provision and use of work equipment, the use of Personal Protective Equipment (PPE), and so on should be understood and implemented by the students.

The attitudes toward OSH need to be applied in the work and practicum implementations conducted by the students in the laboratory, one of them is at Laboratory X in Faculty of X. The students' attitudes toward OSH are implemented to anticipate and prevent the potential hazard so that there is no occupational accidents in the laboratory.

## Material and Method

Based on the research method employed in the data collection, this research was the observational descriptive research. It is addressed as the descriptive research design since it describes the phenomenon under study as well as the scope of the issue under study<sup>(8)</sup>. Meanwhile, in terms of the research time, the approach employed in this research was cross-sectional since it is only conducted simultaneously in a certain period of time<sup>(9)</sup>. The population and sample of this study was all students who conducted the experiments in Laboratory X at Faculty of X with a population of 33 respondents.

Material for data source of this research was the primary data and the instrument of data collection was questionnaire. The data collection technique of this research was utilizing questionnaire. The data analysis employed in this research was bivariate analysis to discover the relationship between the independent and dependent variables. The independent variables of this research were the knowledge level of OSH and the availability of PPE, while the dependent variable of this research was the attitudes toward OSH.

## Findings

This research was conducted in one of the laboratories used for student experiment in one of

the majors in Faculty of X. The experiment activities in the laboratory of Faculty of X has implemented the occupational safety and health which aimed at protecting the students from the occupational accidents in the laboratory as well as training them to acquire the attitudes toward OSH before eventually entering the working world.

Based on the research results on 33 respondents, it was discovered that the relationship between the knowledge level of OSH and the attitudes toward OSH of the students in Faculty of X is as follows:

**Table 1 Relationship between the Knowledge Level of OSH and the Attitudes toward OSH of Students in Laboratory X at Faculty of X**

Level of Education	Attitudes toward OSH				Total	
	Moderate		High			
	n	%	n	%	n	%
Advanced	1	3	32	97	33	100
Total	1	3	32	97	33	100

Table 1 about Relationship between the Knowledge Level of OSH and the Attitudes toward OSH of Students in Laboratory X at Faculty of X are presented the respondent distribution according to the knowledge level to the attitudes toward OSH. From the table, it can be seen that there were 32 respondents (97%) acquired the high attitudes toward OSH when they were in the laboratory. Yet, there was a student (3%) who had the

high knowledge level but acquired the moderate attitudes toward OSH. The results of statistical test indicated that there was no relationship between the knowledge level of OSH and the attitudes toward OSH.

**Table 2 Relationship between the Availability of PPE and the Attitudes toward OSH of Students in Laboratory X at Faculty of X**

Availability of PPE	Attitudes toward OSH				Total	p
	Moderate		High			
	n	%	n	%	n	%
Moderate	0	0	3	9.1	3	9.1
High	1	3	29	87.9	30	90.9
Total	1	3	32	97	33	100

Table 2 about Relationship between the Availability of PPE and the Attitudes toward OSH of Students in Laboratory X at Faculty of X are illustrated that the respondent distribution according to the availability of PPE to the attitudes toward OSH. From the table, it can be observed that as many as three people (9.1%)

acquired moderate response toward the availability of OSH and high attitudes toward OSH in the laboratory of Faculty of X.

Meanwhile, there were 29 students (87.9%) of Faculty of X who owned high response to the availability of PPE and high attitudes toward OSH. Then, there

was a student (3%) who acquired high response to the availability of PPE yet had the moderate attitudes toward OSH. The results of statistical test demonstrated that there was an extremely weak relationship between the availability of PPE and the attitudes toward OSH ( $p = -0.056$ ;  $\alpha = 0.05$ ).

#### A. Relationship between the Knowledge Level of OSH and the Attitudes toward OSH

The research results on 33 respondents demonstrated that the students owned the high knowledge level of OSH. According to Green's theory via Notoatmojo (2010), knowledge is one of the predisposing factors that can determine someone's attitude.<sup>(10)</sup>

This is in line with Arikunto's (2002) statement that individuals acquire the high knowledge level when they are able to answer the questions correctly, that is above 75%.<sup>(11)</sup> This research result can be said that the practicum students in Laboratory X at Faculty of X acquired the high knowledge level of OSH.

This research results indicated that there was no relationship between the knowledge level of OSH and the attitudes toward OSH. This is also in line with the research of Nestri Dito (2016) which explicated that there was no relationship between knowledge and the application of paramedical OSH in the hospital in Condong Catur of Sleman Regency, since someone's knowledge level can be affected by several factors, such as habitual, environmental, and family factors.<sup>(12)</sup>

#### B. Relationship between the Availability of PPE and the Attitudes toward OSH

The research results on 33 respondents about the availability of PPE in the laboratory showed that the students with the positive response toward the availability of PPE and high attitudes toward OSH had more number, that is as many as 87.9%. Green via Notoatmodjo (2010) argued that attitude is the predisposing factor which affects someone's behavior.<sup>(10)</sup> Attitude is someone's tendency to respond both positively and negatively toward certain people, objects, and conditions, which means that someone's positive attitude and response could generate the person to behave as expected, while someone's negative attitude and response would drive the person to behave badly, for example is the OSH behavior.

However, as obtained in the research results, the availability of PPE did not ensure that all individual would have the attitudes toward OSH. This could be caused by various factors, such as concerning the availability of OSH and not considering the impacts that could happen to the safety of the individual in the laboratory, so that the individual did not acquire the attitudes toward OSH.

The availability of PPE became the part of infrastructure provided by Faculty of X. According to the research of Gilang, infrastructure acquired the significant impact to the students' character toward OSH which means covering the attitudes toward OSH, mainly in the laboratory.<sup>(13)</sup> In accordance with the research of Gilang which was in line with the data obtained from the field, the availability of appropriate equipment and PPE would facilitate the students and generate them to have the desire in developing their characters in that they could apply the OSH behavior well.

### Conclusion

Based on the results of the research above, it can be concluded that:

1. The results of statistical test indicated that there was no relation between the knowledge level of OSH and the attitudes toward OSH. The students' knowledge level in Laboratory X at Faculty of X was not in line with their attitudes toward OSH.
2. The results of statistical test demonstrated that there was an extremely weak relationship between the availability of PPE and the attitudes toward OSH. The number of students who had positive response toward the availability of PPE was as many as 87.9%. This could be rendered by various factors, such as concerning the availability of PPE.

Recomandations for the problem are increasing awareness to use PPE for student in Laboratory with socialization about the importance use of PPE in the Laboratory, requiring the use of PPE in the Laboratory when student doing practices by looking for procedures in Laboratory and complete provision of PPE in the Laboratory.

**Conflict of Interest:** The authors declare that there was no conflict of interest with respect to the research, authorship, and/or publication of this article.

**Source of Funding:** The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported by independent funds.

**Ethical Clearance:** Ethical clearance was obtained from the Health Research Ethics Committee of the Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia.

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