

Kepatuhan Penerapan Alat Pelindung Diri (APD) Pada Pekerja Konstruksi

Obedience to Implement Personal Protective Equipment (PPE) on Construction Workers

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ABSTRAK

Latar Belakang: Angka kecelakaan kerja pada negara berkembang seperti Indonesia diketahui lebih tinggi 4 kali lipat dibandingkan negara industri. Tingginya angka kecelakaan dapat terjadi karena rendahnya tingkat pendidikan pekerja dan pengalaman kerja yang minim sehingga menyebabkan tindakan tidak aman (*unsafe human acts*). Alat Pelindung Diri merupakan komponen yang penting dalam mencegah terjadinya kecelakaan kerja bagi pekerja, utamanya dalam bidang jasa konstruksi. Akan tetapi, kesadaran pekerja proyek konstruksi akan pentingnya menggunakan APD di Indonesia masih rendah karena rata-rata pekerja masih memiliki tingkat pendidikan yang relatif rendah dan pengalaman kerja yang masih tergolong minim.

Tujuan: untuk mengetahui hubungan antara tingkat pendidikan dan pengalaman kerja dengan kepatuhan penggunaan Alat Pelindung Diri (APD) pada pekerja konstruksi PT X yang sedang mengerjakan proyek pembangunan PT Willmar Indonesia Gresik

Metode: Penelitian ini merupakan penelitian observasional dengan rancang bangun cross sectional. Penelitian ini menggunakan total sampling sebagai populasi dan sampel penelitian yaitu sebanyak 62 pekerja.

Hasil: Hasil analisis menunjukkan nilai koefisien korelasi pada tingkat pendidikan adalah -0,191 dengan arah negatif dan koefisien pengalaman kerja yaitu 0,068 dengan arah positif yang berarti bahwa terdapat hubungan yang sangat lemah antara variabel tingkat pendidikan dan pengalaman kerja pekerja dengan kepatuhan menggunakan APD.

Kesimpulan: Semakin tinggi tingkat pendidikan tidak berarti kepatuhan dalam menggunakan Alat Pelindung Diri (APD) semakin tinggi dan semakin lama masa kerja pekerja tidak berarti tingkat kepatuhan menggunakan Alat Pelindung Diri (APD) semakin tinggi.

Kata kunci: Tingkat Pendidikan, Masa Kerja, Kepatuhan, Alat Pelindung Diri (APD)

ABSTRACT

Background: The number of work accidents in developing countries such as Indonesia is known to be 4 times higher than industrial countries. The high number of accidents can occur due to the low level of education of workers and minimal work experience, causing unsafe human acts. Personal Protective Equipment is an important component in preventing work accidents for workers, especially in the field of construction services. However, the awareness of construction project workers on the importance of using PPE in Indonesia is still low because the average worker still has a relatively low level of education and minimal work experience.

Objectives: This study aims to analyze the relationship between level of education and work experience with obedience in using Personal Protective Equipment (PPE) on construction workers.

Methods: This research is an observational study with a cross sectional design. This study used total sampling as the population and the research sample as many as 62 workers.

Results: The results of the analysis show that the correlation coefficient at the level of education is -0.191 with a negative direction and the coefficient of work experience is 0.068 with a positive direction, which means that there is a very weak relationship between the variables of education level and work experience of workers with compliance with using PPE.

Conclusions: *The higher the level of education does not mean compliance in using Personal Protective Equipment (PPE) is higher and the longer the working period of the worker does not mean the level of compliance in using Personal Protective Equipment (PPE) is higher.*

Keywords: *Level of Education, Work Experience, Obedience, Personal Protective Equipment (PPE)*

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INTRODUCTION

Health is a human right and one of the elements of well-being that must be achieved. In the process of improving the health of the community, all these activities must be carried out in accordance with the principles of non-discrimination, contribution and sustainability in order to form a good human resource in Indonesia and enhance the resilience and competitiveness of the future development of the country. (Undang - Undang RI Nomor 36 Tahun 2009, 2009). As a fundamental health issue and a much-needed concern, health and safety while performing work. Occupational safety or OHS is the effort to protect all potentials when something dangerous might happen. This is to ensure that workers and others in the workplace are always safe and healthy and that all productive resources are used safely and efficiently (Suma'mur, 2006).

Based on its philosophy that occupational health and safety is defined as an idea and the comprehensive and complete protection of a worker or individual, starting with work and culture, physical or mental, so that a prosperous, just and prosperous society can be accomplish. Meanwhile, from a scientific point of view, occupational health and safety is defined as knowledge that has the effect of preventing environmental accidents or other dangerous things (Mangkunegara, 2004). There is also an occupational health and safety objective based on Law No. 1/1970 of the Republic of Indonesia, which is to strive to prevent and reduce accidents or occupational diseases in the working environment of workers (Kementrian Tenaga Kerja dan Transmigrasi Republik Indonesia, 1970).

Referring to BPJS Employment data in 2021, there were 177,000 cases of work accidents between January and October 2020. The International Labour Organization (ILO) also states there are 270 million workers who experience accidents caused by work and 160 million suffer from work accidents and work-related illnesses each year. Based on estimates from the International Labour Organization that accidents and diseases caused by work can cause losses of up to US \$ 1.25 trillion or equivalent to 4% of Gross Domestic Product. This would certainly be considered a violation of Law No. RI. 36/2009, everyone has the human right to health.

As a developing country, Indonesia has a total population of 270.2 million and a population density of 141 people/km² (Badan Pusat Statistik, 2020). With such a large population, of course, the number of workers in Indonesia is naturally sufficient. According to the report from the Central Statistics Agency (*Badan Pusat Statistik*) in 2021, the number of the workforce in Indonesia will reach 138.2 million in 2020. As a large number of work force numbers, the possibility of work accidents will increase. Furthermore, according to the International Labour Organization (ILO) in 2004, it is known that the level of fatal accidents in developing countries tends to be 4 times higher than in industrialized countries (Markkanen, 2004).

The high rate of work accidents experienced in developing countries is much higher than those in industrialized countries, which can be experienced due to a number of factors, including the low level of education of workers, which causes unsafe human acts. Educational level as a predetermined stage based on a person's level of growth and development and can determine the extent of one's knowledge. According to Sarwono (1993), people who have a lower level of education is usually relatively more difficult to accept something new compared to people who have a higher level of education.

In addition to the level of education, other factors also have an impact on the high number of work accidents, namely work experience. According to the explanation from Marwansyah (2015), work experience is part of skilled knowledge and the ability to develop accountability on the job. Meanwhile, according to Aditia et al. (2021), the higher the length of time a worker has worked, the better the person will respond to a job risk and will be more obedient in using Personal Protective Equipment (PPE).

Personal protective equipment is a set of safety tools that workers use to protect all or part of their body from things that may compromise the scope of work, such as accidents or illness caused by work (Tarwaka, 2008). The definition of Personal Protective Equipment is also defined as an instrument that is capable of providing protection for individuals who function as isolated from half or all of the body by potentially dangerous things in the workplace. Personal Protective Equipment is an important component in preventing work accidents for workers (Hakim et al., 2021).

The construction services sector is a high-risk area of work for industrial accidents in other fields, as construction work requires significant resources, including resources in the form of construction materials and project tools, or human resources such as workers. Therefore, Personal Protective Equipment (PPE) is an important part of protecting workers from work accidents. However, the awareness of construction project workers about the importance of using PPE in Indonesia is relatively low. This is because construction project workers on average still have a low level of education and work experience also influences the attitude of workers to use PPE.

From the explanation above, researchers are interested in examining the relationship between the level of education of workers and work experience with the level of compliance in using Personal Protective Equipment (PPE) while working for PT X workers who are working on the construction project of PT Willmar Indonesia Gresik.

METHOD

Based on the type of research and data collection, the following research is an observational type with cross sectional because it does not provide intervention or special treatment on research subjects (Notoatmodjo, 2002). The following study is a retrospective cohort study with a quantitative approach. The independent variable studied was the level of education and the dependent variable studied was the level of compliance with using Personal Protective Equipment (PPE). The location of this research is PT X, which is working on the construction project of PT Willmar Indonesia Gresik, to be precise on Jl. Kapten Darmo Sugondo No. 56, Kebomas, Gresik, East Java. Primary data collection was carried out in September 2020. This study used all employees of PT X, as many as 62 workers as samples and the research population.

At the time of collecting research data using questionnaires. The data that has been collected will then be analyzed using SPSS software and analyzed univariate or bivariate. The use of univariate analysis is intended to determine the distribution and frequency of the independent and dependent variables. Meanwhile, for bivariate analysis, it is used to analyze the relationship of independent and dependent variables by using the Spearman correlation test. The Spearman correlation test is a descriptive measuring instrument that serves to determine the relationship or test the significance of the associative hypothesis of 2 variables (Adriansyah et al., 2021). The data from the analysis will be presented in the form of distribution tables and narratives. The following research has obtained an ethical certificate from the Faculty of Dentistry, Universitas Airlangga, Surabaya (No: 035/HRECC.FODM/I/2021).

RESULT

Individual Characteristics

Table 1 explains that all workers at PT X who are working on the construction project of PT Willmar Indonesia Gresik are male with a total of 62 workers. Meanwhile, the age distribution of PT X's workers includes 32 workers aged 30 years old with a percentage of 51.6% and 30 workers aged ≤ 30 years old with a percentage of 48.4%. In addition, the distribution of the education level of PT X workers includes 12 workers with the latest Elementary School education (ES) with a percentage of 19.4%, followed by 21 workers with the latest education being Junior High School (JHS) with a percentage of 33.9% and 29 workers with the latest education Senior High school (SHS) with a percentage of 46.8%. As for the work experience of the workers, there are 30 workers with work experience of <3 years with a percentage of 48.4% and 32 workers with work experience of ≥ 3 years with a percentage of 51.6%.

Table 1. Distribution of Gender, Age, Education Level, and Work Experience PT X workers who are working on the construction project of PT Willmar Indonesia Gresik

Characteristic	Frequency (n)	Percentage (%)
Gender		
Man	62	100
Woman	0	0
Age		
≤ 30 years old	32	51,6
> 30 years old	30	48,4
Education Level		
ES	12	19,4
JHS	21	33,9
SHS	29	46,8
Work Experience		
< 3 years	30	48,4
≥ 3 years	32	51,6

The Compliance Using Personal Protective Equipment (PPE)

The level of compliance using Personal Protective Equipment (PPE) in this study was measured using a questionnaire formed by the researcher. Table 2 shows that the majority of PT X project workers have a moderate level of compliance with a percentage of 95.2%.

Table 2. The Identification of Compliance Level Using Personal Protective Equipment (PPE) PT X workers who are working on the construction project of PT Willmar Indonesia Gresik

Variable	Frequency (n)		Percentage (%)
	Moderate	High	
Compliance Using PPE	59	3	95,2
Total	62		100

Source: Primary Data, 2020

The Correlation between Education Level and Compliance Using Personal Protective Equipment (PPE)

Table 3 is the result of cross-tabulation between education level and compliance with using PPE from PT X workers who are working on the PT Willmar Indonesia Gresik development project.

Table 3. Analysis of the Correlation between Education Level and Compliance Using Personal Protective Equipment (PPE)

Level of Education	Compliance Using PPE				Correlation
	Moderate		High		
	n	%	n	%	
ES	11	91,7	1	8,3	-0,191
JHS	19	90,5	2	9,5	
SHS	29	100	0	0	
Total	59	95,2	3	4,8	

From the results of the cross tabulation in table 3, it is known that most workers with the latest education in Senior high school (SHS) have moderate compliance with using PPE. The results of the Spearman correlation test analysis show that the correlation coefficient of the education level variable with compliance with using Personal Protective Equipment is -0.191. From these results, it can be interpreted that there is a weak relationship between the variable level of work education in compliance with using PPE by workers, because the strong relationship is in the correlation coefficient between 0.000-0.199. This shows that the education level of workers at PT X who are working on the development project of PT Willmar Indonesia Gresik has a weak relationship to compliance with using PPE by workers, with the direction of the relationship being negative, which means that the higher level of education does not mean compliance in using tools. Personal Protective Equipment (PPE) is increasing.

The relationship between Work Experience and Compliance Using Personal Protective Equipment (PPE)

Table 4 is the result of a cross tabulation between work experience and compliance with using Personal Protective Equipment (PPE) for PT X workers who are working on the construction project of PT Willmar Indonesia Gresik.

Table 4. Analysis of the Correlation between Work Experience and Compliance Using Personal Protective Equipment (PPE)

Work Experience	Compliance Using PPE				Correlation
	Moderate		High		
	n	%	n	%	
< 3 years	29	96,7	1	3,3	0.068
≥ 3 years	30	93,8	2	6,3	
Total	59	95,2	3	4,8	

The results from table 4 show that the majority of workers have 3 years of work experience. The results of the Spearman correlation test analysis show that the correlation coefficient of the work experience variable with compliance with using Personal Protective Equipment is 0.068. From these results, it can be seen that there is a weak relationship from work experience to compliance with using PPE by workers because the strong relationship is in the correlation coefficient between 0.000-0.199. This shows that the work experience of workers at PT X who are working on the construction project of PT Willmar Indonesia Gresik has a weak relationship to compliance with using PPE by workers, with the direction of the relationship being positive, which means that the longer work experience means compliance with using PPE of workers are getting higher.

DISCUSSION

Analysis of the Correlation Between Level of Education Within Obedience Using Personal Protective Equipment (PPE)

PT X construction project workers who are working on the PT Willmar construction project in Kebomas, Gresik, East Java have a fairly diverse education level, ranging from Elementary School (ES) to Senior High School (SHS). The highest percentage of PT X construction project workers are Senior high school graduates (SHS), as many as 29 people (46.8%), followed by junior high school graduates (JHS), as many as 21 people (33.9%) and the last one is, elementary school graduates (ES) as many as 12 people (19.4%).

Based on the analysis resulting from this study, it was found that the education level of workers had a weak relationship with compliance in using PPE for PT X workers who were working on the PT Willmar Gresik development project ($r = -0.191$). The research produced is different from the research from Syekura & Febriyanto (2021) where research on the Samarinda shipyard workforce shows that there is a strong or significant relationship between the education level of shipyard workers with compliance to use PPE. In addition, this study also differs from the research from Putri et al., (2018) where the Merak inpatient installation nurse at Dr Kariadi Hospital Semarang has a relationship between the level of education and the nurse's compliance with the use of Personal Protective Equipment.

The research from Celia et al., (2022) explained that there was a weak relationship between the level of education and the behavior of using PPE in the extruder division of PT Kerta Rajasa Raya. Celia et al., (2022) also stated that the higher the education level of the workforce, the higher the behavior of the workforce to use Personal Protective Equipment. However, the results of this study are similar to research from Andriyanto (2017) in which workers are part of the production unit 1 of PT Petrokimia Gresik, where the education level of workers does not have a strong relationship with compliance with Personal Protective Equipment. This is because education is not only obtained formally but can be obtained informally. For example, information through the media, OHS counselling or exchanging ideas with colleagues who have more experience.

Basically, the level of education can determine whether or not a person's knowledge of something is high. Based on the explanation of Notoatmodjo (2005), education is defined as every effort and impact that aims at having students go through the process of increasingly reaching maturity. If the level of education possessed by an individual is categorized as high, then the individual will also be likely to do a good job. However, this is not the case in this study. On average, construction project workers are not graduates of formal education such as Diploma III (D3) or Bachelor (S1), because construction project worker pay more attention to experience outside of formal education, such as the skills of workers in the construction sector (Husein et al., 2021).

Analysis of the Correlation Between Work Experience Within Obedience Using Personal Protective Equipment (PPE)

In this research, based on the Spearman correlation test, there was a very weak relationship from work experience to compliance with using Personal Protective Equipment by PT X workers who were working on a development project at PT Willmar Indonesia Gresik ($r = 0.068$). This is similar to the research by Wasty et al., (2021) where research conducted on workers at the Samarinda shipyard showed a weak relationship from years of service to compliance with using PPE by shipyard workers in Samarinda with a p-value of - 0.627. In addition, this study is also similar to research by Aditia et al., (2021) which did not find a significant relationship between length of work and adherence to using Personal Protective Equipment with a p-value of 0.863.

However, this research is not in line with the research conducted by Fairyo & Wahyuningsih, (2018) where it is known that there is a strong relationship between tenure and the use of Personal Protective Equipment for iron fabricators at the PT X Semarang construction project ($r = 0.001$). This study is also not in line with research conducted by Astuti et al., (2019) where there is no relationship between years of service and the level of compliance with using Personal Protective Equipment (PPE) for laundry workers at Hospital X Lampung Province.

Work experience is one of the tendencies of workers in carrying out a work activity. Workers who have long work experience will certainly be different from the experience of someone who does not have much experience in their work (Geller, 2011). Workers who have high work experience have contributed their workforce/activities to a company so as to produce good productivity in their respective fields (Setiawan & Febriyanto, 2020). However, this opinion is not in line with this research. Workers who have work experience or a relatively long period of work must be familiar with their work environment, so sometimes this makes workers even more negligent in responding to the dangers around them. In addition, workers feel confident and safe even though they do not use Personal Protective Equipment (PPE), because these workers feel that they have never experienced accidents or complaints of work-related illnesses.

CONCLUSION

Based on the results of this research, it was concluded that the educational level and work experience of the PT X construction project workers working on the PT Willmar construction project in Kebomas, Gresik, East

Java, are related to the use of personal protective equipment (PPE). The higher the education level, the higher the compliance with the use of personal protective equipment, the longer the professional experience, the higher the compliance with the use of personal protective equipment.

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