https://jurnal.uinsu.ac.id/index.php/kesmas/index
DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

Research Article

Aspects Related to Compliance with the Use of Personal Protective Equipment (PPE) in Workers at PT X

Hasanatun Laili[1*], Mayumi Ershanda[2], Hubban Fathani Manik[3], M. Syaufi Syukri Handoyo[4], Zahra Ananda[5], Zahrani Nabilah[6]
[1,2,3,4,5,6]Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara

Abstract

The use of PPE is still often found by workers who are not compliant in using it. With occupational safety and health, individuals are expected to do work safely and comfortably. This research was conducted using a quantitative approach with a cross sectional design. The population in this study were all production workers totaling 40 people. Sampling with total sampling technique with data collection methods using primary data in the form of observations and interviews, data collection instruments using questionnaires, data analyzed using the colleration test with a significant level of α = 0.05. The results of statistical tests found that there is a relationship between age and compliance with the use of PPE obtained a p value of 0.001, and there is a relationship between supervision and compliance with the use of PPE obtained a p value obtained of 0.001. Based on the results of the research conducted, it can be concluded that there is a significant relationship between age and supervision on compliance with the use of PPE.

Keywords: *Compliance, Personal Protective Equipment, Safety, Work Accidents, Workers*

Introduction

Occupational safety and health means ensuring physical and mental perfection. With occupational safety and health, individuals are expected to perform work safely and comfortably. In addition, it is expected that occupational safety and health will result in a high level of occupational comfort and safety. Many hazards directly and indirectly exist in the physical environment where workers perform their daily activities (Runtuwarow et al., 2020). The type of production, the technology used, the materials used, the layout and buildings used, and the quality of management and employees determine the size of the potential (Indragiri & Salihah, 2020).

**corresponding author: Hasanatun Laili*
Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara
Email: husanatunlaily12345@gmail.com
Summited: 17-11-2024 Revised: 06-01-2025
Accepted: 08-01-2025 Published: 15-02-2025

In 2018, the International Labor Organization (ILO) said that the rate of workplace accidents and other hazards to workers' safety and health (OSH) in Indonesia is still high, especially as construction workers are the most vulnerable. About 6000 cases of workplace accidents occurred in Indonesia, with 20 fatalities per 100,000 workers (Parashakti & Putriawati, 2020). Based on data from the Employment Social Security Organizing Agency, the number of work accidents in Indonesia was 234. 270 cases in 2021. In the previous year there were 221,740 cases, an increase of 5.65%. Over the past 5 years, the number of activity accident problems in Indonesia has grown. Since 2017, 123,040 cases of work accidents have been recorded. The number increased by 40.94% to 173. 415 cases in 2018 (Saraswati, 2021).

In Law no. 1 of 1970 concerning Occupational Safety, formalized work safety requirements that must be met by every person or agency that carries

https://jurnal.uinsu.ac.id/index.php/kesmas/index
DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

out efforts, whether official or informal, wherever located in an effort to share the protection of the safety and health of all people located in the business area (Ummah, 2019). One of the OSH programs in industry is the provision of personal protective equipment. Based on Law no. 1 of 1970 article 14 (c) regarding Occupational Safety, managers or entrepreneurs must provide PPE freely to their workers and other people who penetrate the place of activity (Qurbani & Selviyana, 2019). In Law no. 1 Year 1970 article 3 regarding Occupational Safety is spoken of the requirements for work safety, one of which is providing personal protective equipment to workers. Compliance with the use of PPE also depends on how each employee perceives their occupational health and safety (Erika et al., 2024).

Seeing the high number of work accidents, it is necessary to control risks such as elimination, substitution, engineering, administrative, and the use of PPE. Many efforts have been made to prevent work accidents and protect the workforce with the use of PPE, but it is still often found that employees are not compliant when using PPE. Many factors contribute to employee non-compliance when using PPE, even though the company has provided PPE. It is not enough for the company to provide and require the workforce to use PPE, but it must also create workforce compliance to use PPE. The most basic stage to foster labor awareness to use PPE is to create a safety culture of PPE (Sertiya, 2018).

Studies show that knowledge of risks, safety training, workers' perceptions of safety, and management support and supervision are some of the factors that influence PPE use compliance rates. Studies in construction, for example, show that good supervision and regular training can improve compliance rates (Delhi et al., 2020). Other factors hindering compliance include lack of awareness of the importance of PPE and the perception that PPE interferes with work comfort. Research in a Ugandan hospital showed that, although PPE was available, lack of awareness and discomfort often led to low compliance (Badran et al., 2023). Therefore, to improve compliance with PPE use across industries, a comprehensive strategy involving education, supervision, and strengthening safety culture is required.

Observations show that most workers have complied with the use of personal protective equipment (PPE), which includes safety helmets, safety footwear, gloves, and goggles. However, a small number of workers still do not use all PPE, such as not using gloves and goggles. Such circumstances can lead to occupational accidents or occupational diseases with those who s In addition, the company has set high industrial safety standards, provided a safe and comfortable working environment for every worker, and continuously strives to reduce the number of occupational accidents. According to the hazard control hierarchy, there are five hazard controls, namely elimination, substitution, engineering, administration, and PPE. Workers are required to use personal protective equipment to prevent work accidents. 80-85% of work accidents are caused by human negligence. In addition to negligence at work, another human factor is the behavior of using PPE. Research (Puspitasari & Nurcahyati, 2018) states that 26.3% of workers who rarely use PPE have experienced work accidents while working. This means that compliance in using PPE also has a relationship to work accidents. The purpose of this study is to determine the aspects related to compliance in workers in the use of personal protective equipment (PPE) at PT X.

Method

This study is a quantitative study using cross sectional. The research was conducted from October 19 to December 15. The sample selection technique was total sampling of 40 production workers. Data collection using a questionnaire based on Law No. 1 of 1970 concerning Occupational Safety. Data processing and analysis through four processes used in data processing: Coding, editing, data entry, and cleaning. Data analysis in this study was conducted to determine what aspects were related to compliance with the use of personal protective equipment (PPE). With the help of Statistical

https://jurnal.uinsu.ac.id/index.php/kesmas/index
DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

Product and Service Solutions (SPSS), the questionnaire data will be processed and analyzed using the Correlation test with a significant level of α = 0.05. Abnormal data was found in 3 variables, so the Spearman correlation test was used to determine the strength of the relationship between variables.

For the age category, it was found that the age classification of workers was in the range of 28 to 45 years, with 40 male respondents and no respondents who had female gender. The Ministry of Health (2023) categorizes "early adulthood" as the age range of 26-35 years, while the "late adulthood" category is the age range of 36-45 years. The classification of working period consists of: 1) New working period: < 6 years, 2) Intermediate working period: 6-10 years, 3) Long service period: > 10 years, so this study categorizes the length of service into three referring to the study. For the compliance variable, the categories "Compliant" and "Non-compliant" were obtained, and the supervision variable obtained the categories "Good", "Adequate", and "Lack" which were referred to based on research conducted by Yusuf Bachtiyar Lobis, Dwi Ariyanto, Warsini (Lobis et al., 2020).

Results

Respondent Characteristics

Based on [table 1] the number of respondents as many as 40, it was found that the age of workers was in the range of 28 to 45 years, with 40 male respondents and no respondents who had female gender. The age of respondents in the "Early Adult" category was 34 respondents with a percentage of 85%. While the "Late Adult" category was 6 respondents with a percentage of 15%. For the Length of Service**,** it is obtained that the working period of the "New" category is 17 respondents with a percentage of 42.5%, the "Medium" category is 19 respondents with a percentage of 47.5%, while the "Old" category is 4 respondents with a percentage of 10%. For the PPE Comfort, , it was found that the PPE Comfort category "Positive" was 38 respondents with a percentage of 95.0%, while the "Negative" category was 2 respondents with a percentage of 2%. And for the Compliance, it was found that the "Compliant" category was 15 respondents with a percentage of 37.5%, while the "Non-compliant" category was 25 respondents with a percentage of 62.5%.

Relationship between Age and Compliance with PPE Use

The results of statistical calculations in [table 2] using the Correlation Test α = 0.05 obtained a P value of 0.001. This can be interpreted that there is a relationship between age and compliance with the use of PPE.

The Relationship Between Supervision and Compliance with PPE Use

The results of statistical calculations in [table 3] using the Sig-2tailed Correlation Test = 0.05 obtained a p-value of 0.001. This can be interpreted that there is a relationship between supervision and compliance with the use of PPE.

Discussion

Relationship between Age and Compliance with PPE Use

Based on the correlation statistical test, it can be seen that there is a relationship between usaia and compliance with the use of PPE. This is evidenced in table 6, which is obtained a p-value of 0.001 <0.05. This result is inversely proportional, it is known from the data above that early adulthood is more compliant in the use of personal protective equipment (38.2%), compared to late adult workers (33.3%). This can happen if the individual is accustomed to unsafe behavior and always considers it easy or underestimates the dangers that exist. According to the researcher's assumption, the older a person is, the level of compliance with the use of PPE decreases, because the older respondents feel they have longer experience in working so that the level of vigilance also decreases.

According to research conducted by (Sangaji et al., 2018) it is known that in early adulthood many apply unsafe work behavior at work (47.6%), compared to middle age workers (36.8%). The study also stated that with increasing

https://jurnal.uinsu.ac.id/index.php/kesmas/index
DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

age and experience, it will affect his attitude at work. On the other hand, according to research (Silva et al., 2021) 83.3% of workers who have a work period ≥ 6 years have high compliance and safety, adequate work experience makes workers understand workplace hazards, and are able to increase their awareness in the workplace, and are able to increase their awareness in the workplace. Other studies have shown the relationship between age and compliance in PPE use, in general, older workers tend to be more compliant compared to younger workers. A study in Surabaya, Indonesia, for example, found that health workers older than 45 years showed a higher level of compliance than those under 35 years old. In the study, health workers above 45 years old had a compliance rate of 100%, while those below 35 years old tended to be lower, at around 48% (Hasina et al., 2022).

However, other studies have found that age does not always have a direct relationship with PPE compliance. In some cases, knowledge and attitude towards occupational risks and experience were more influential. Those with good knowledge and positive attitudes towards PPE use showed higher levels of compliance, regardless of age (Saputra & Widowati, 2023).

The Relationship Between Supervision and Compliance with PPE Use

Based on the correlation statistical test, it can be seen that there is a relationship between supervision and compliance with the use of PPE. This is evidenced in [table 3], namely the obtained p-value of 0.001 <0.05. The results of this study are in line with research conducted by Indragiri, et al (2018), it can be seen that respondents based on research data, it was found that there was a relationship between supervision and the use of PPE obtained a p-value of 0.049. The results of this study are in line with research (Sukma Ika Noviarmi & Hamengku Prananya, 2023) with a p-value of 0.000 <0.05 which states that there is a relationship between supervision and compliance with PPE use in PA Plant Area workers at PT X.

Supervision is an activity that ensures that tasks are performed under the plan and the desired results. For supervision to be successful, it is necessary to take actions such as checking, matching, inspecting, controlling, and other similar actions, even if it is necessary to regulate and prevent potential undesirable outcomes. Management behavior greatly influences worker behavior towards PPE use. Supervisors should set the first example in using PPE; they should be trained and educated on how to properly use and care for PPE.

This is in accordance with observations in the field, where routine supervision is carried out every day by inspectors at PT X. Supervision is carried out starting solid when starting work until workers are ready to carry out work activities. So that it motivates workers to be obedient in wearing PPE completely. But on the other hand, there are obstacles in the form of limited inspector personnel to carry out supervision during full working hours. Supervision of workers should be given more attention and carried out regularly in order to improve worker discipline to avoid the risk of work accidents. The purpose of supervising worker activities is to measure implementation in the field and compare it with existing standards. It is also expected to increase compliance and awareness of the importance of occupational safety and health for themselves, other workers, and their work environment (Alfiansah et al., 2020).

Based on research (Utami & Sillehu, 2020) using PPE because of supervision. This means that workers' awareness of complying with the rules and their awareness of the dangers and risks of occupational diseases is still low. Workers assume that as long as they work there will be no problems. Supervision in compliance with using personal protective equipment while working is strengthened by Minister of Manpower and Transmigration Number Per. 03 / Men / 1982 which states that guidance and supervision of equipment for labor health. One of the objectives of supervision is to increase the discipline of workers to use personal protective equipment while doing work, besides that it can also give punishment or a strong warning to workers who do not use personal protective equipment while

DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

working so that workers' behavior will be better with supervision from the company or related parties (Japeri et al., 2016).

Several studies have found that effective supervision from supervisors directly increases workers' compliance with safety regulations, including the use of PPE. The study in Makassar showed that consistent supervision and support from supervisors were highly influential in ensuring the proper use of PPE by construction workers (Su et al., 2019). In addition, another study focusing on safety climate showed that safety-related supervisory support, such as reminding workers to adhere to PPE protocols and modeling correct PPE use, can significantly improve compliance. This study found that the more positive the safety climate at the project site, which is often influenced by the level of supervision and support, the higher the compliance with PPE use (Russeng et al., 2019).

Conclusion

Based on the results of the research conducted, it can be concluded that it was found that workers did not use personal protective equipment completely, this happened because based on the facts in the field that older workers feel that they have longer experience in working so that the level of vigilance also decreases so that these individuals are accustomed to unsafe behavior and always take it easy or underestimate the dangers that exist. This is also due to lack of supervision due to limited personnel in the field. PPE itself is the last alternative to avoid workplace hazards but there are still workers who underestimate personal protective equipment, so that if workers neglect the use of PPE, it will cause the risk of work accidents.

Reference

Alfiansah, Y., Kurniawan, B., & Ekawati. (2020). Analisis Upaya Manajemen K3 dalam Pencegahan dan Pengendalian Kecelakaan Kerja pada Proyek Konstruksi PT. X Semarang. *Jurnal Kesehatan Masyarakat*, *8*(5), 595–600. http://ejournal3.undip.ac.id/index.php/jkm

Badran, E. F., Jarrah, S., Masadeh, R., Al Hammad, A., Al Shimi, R., Salhout, S., Al Wahabi, N., Al Jaberi, M., Rayyan, A., Madi, T., & Hassan, S. (2023). Assessment of Perceived Compliance and Barriers to Personal Protective Equipment Use Among Healthcare Workers During the COVID-19 Pandemic's Second Wave Surge: Walk to Talk Cross-Sectional Correlational Study. *Disaster Medicine and Public Health Preparedness*, *17*(4). https://doi.org/10.1017/dmp.2021.289

Delhi, V. S. K., Sankarlal, R., & Thomas, A. (2020). Detection of Personal Protective Equipment (PPE) Compliance on Construction Site Using Computer Vision Based Deep Learning Techniques. *Frontiers in Built Environment*, *6*(September). https://doi.org/10.3389/fbuil.2020.00136

Erika, E., Colia, E. S., Ramli, S., & Sugiarto, S. (2024). Hubungan Kepatuhan Penggunaan Alat Pelindung Diri dan Perilaku Keselamatan Kesehatan Kerja dengan Kinerja Karyawan. *Jurnal Keselamatan Kesehatan Kerja dan Lingkungan*, *5*(1), 65–75. https://doi.org/10.25077/jk3l.5.1.65-75.2024

Hasina, S. N., Ardiansah, N., Nurjanah, S., & Wijayanti, L. (2022). Analysis of factors related to health personnel compliance with the use of personal protection equipment (PPE) during the COVID-19 pandemic. *International journal of health sciences*, *6*(April), 10649–10656. https://doi.org/10.53730/ijhs.v6ns3.9584

Indragiri, S., & Salihah, L. (2020). Hubungan Pengawasan Dan Kelengkapan Alat Pelindung Diri Dengan Tingkat Kepatuhan Penggunaan Alat Pelindung Diri. *Jurnal Kesehatan*, *10*(1), 1238–1245. https://doi.org/10.38165/jk.v10i1.2

Japeri, J., Helmi, Z. N., & Marlinae, L. (2016). Analisis Pengaruh Pengawasan, Pengetahuan Dan Ketersediaan Terhadap Kepatuhan Pemakaian Alat Pelindung Diri. *Jurnal Berkala Kesehatan*, *2*(1), 41. https://doi.org/10.20527/jbk.v2i1.4845

DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

Lobis, Y. B., Ariyanto, D., & Warsini, W. (2020). Pengaruh Pengawasan Terhadap Kepatuhan Penggunaan Alat Pelindung Diri Di Pt Jamu Air Mancur Palur. *PLACENTUM: Jurnal Ilmiah Kesehatan dan Aplikasinya*, *8*(1), 31. https://doi.org/10.20961/placentum.v8i1.35669

Parashakti, R. D., & Putriawati. (2020). Pengaruh Keselamatan Dan Kesehatan Kerja (K3), Lingkungan Kerja Dan Beban Kerja Terhadap Kinerja Karyawan. *Jurnal Ilmu Manajemen Terapan*, *1*(3), 290–304. https://doi.org/10.31933/jimt.v1i3.113

Qurbani, D., & Selviyana, U. (2019). Pengaruh Keselamatan & Kesehatan Kerja (K3) Terhadap Kinerja Karyawan Pada Pt. Trakindo Utama Cabang Bsd. *Jimf (Jurnal Ilmiah Manajemen Forkamma)*, *1*(3), 110–129. https://doi.org/10.32493/frkm.v1i3.2553

Runtuwarow, N. Y., Kawatu, P. A. T., & Maddusa, S. S. (2020). Hubungan Kepatuhan Penggunaan Alat Pelindung Diri Dengan Kejadian Kecelakaan Kerja. *Indonesian Journal of Public Health and Community Medicine*, *1*(2), 21–26.

Russeng, S. S., Rahim, M. R., Rahmah, S., & Siswadi, N. (2019). Factors Related To the Use of Personal Protective Equipment for Construction Workers. *East African Scholars Journal of Education, Humanities and Literature*, *2*(12), 692–696.

Sangaji, J., Jayanti, S., & Lestantyo, D. (2018). Faktor-Faktor Yang Berhubungan Dengan Perilaku Tidak Aman Pekerja Bagian Lambung Galangan Kapal PT X. *Jurnal Kesehatan Masyarakat (e-Journal)*, *6*(5), 563–571. https://ejournal3.undip.ac.id/index.php/jkm/article/view/22095

Saputra, A., & Widowati, E. (2023). Relationship between Predisposing Factors and Compliance with the Use of PPE (Personal Protective Equipment) among Workers at Steel Industry of PT X. *Poltekita: Jurnal Ilmu Kesehatan*, *17*(2), 352–359. https://doi.org/10.33860/jik.v17i2.2135

Saraswati, B. (2021). *Hubungan antara Perilaku Keselamatan, Pengetahuan dan Kepatuhan Penggunaan APD dengan Kejadian Kecelakaan Kerja pada Pekerja Bangunan PT Adhi Persada Gedung di proyek mth 27 Office Suite Jakarta Tahun 2024*. 32.

Sertiya, PKD. (2018). Analisis Faktor Yang Berhubungan Dengan Kepatuhan Menggunakan Alat Pelindung Diri. *The Indonesian Journal of Occupational Safety and Health*, *6*(3), 311. https://doi.org/10.20473/ijosh.v6i3.2017.311-320

Silva, P. H., Freitas, L. de B. R. de, Santos, S. M. dos, Carmo, T. L. do, Porto, A. L. F., Oliveira, V. de M., Calaça, P. R. de A., & Soares, M. T. C. V. (2021). Factors Associated with Safety Compliance among Workers at Feed Poultry Industry. *Research, Society and Development*, *10*(8), e45510817454. https://doi.org/10.33448/rsd-v10i8.17454

Su, Y., Cong, W., & Liang, H. (2019). The impact of supervisor–worker relationship on workers' safety violations: A modified theory of planned behaviour. *Journal of Civil Engineering and Management*, *25*(7), 631–645. https://doi.org/10.3846/jcem.2019.10439

Sukma Ika Noviarmi, F., & Hamengku Prananya, L. (2023). Hubungan Masa Kerja, Pengawasan, Kenyamanan APD dengan Perilaku Kepatuhan Penggunaan Alat Pelindung Diri (APD) pada Pekerja Area PA Plant PT X. *Jurnal Keselamatan Kesehatan Kerja dan Lingkungan*, *4*(1), 57–66. https://doi.org/10.25077/jk3l.4.1.57-66.2023

Ummah, M. S. (2019). Hubungan Kepatuhan Pemakaian Alat Pelindung Diri (APD) dengan Kecelakaan Kerja di PT. Global Permai Abadi Medan Timur Sumatera Utara. *Sustainability (Switzerland)*, *11*(1), 1–14. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ah

https://jurnal.uinsu.ac.id/index.php/kesmas/index
DOI: 10.30829/jumantik.v10i1.22109
p-ISSN: 2548-2173; E-ISSN: 2580-281X

ttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_Sistem_Pembentungan_Terpusat_Strategi_Melestarikan

Utami, T. N., & Sillehu, S. (2020). *Compliance of the Use of Personal Protective Equipment for Workers*. *24*(Uphec 2019), 128–131. https://doi.org/10.2991/ahsr.k.200311.024

Table 1. Distribution of Respondents by Age

Age	n	Percentage (%)
Early Adulthood	34	85,0
Late Adulthood	6	15,0
Length of Service		
New	17	42,5
Medium	19	47,5
Old	4	10,0
PPE Comfort		
Positif	38	95,0
Negatif	2	5,0
Supervision		
Good	0	0
Fair	40	100
Less	0	0
Compliance		
Compliant	15	37,5
Non-Compliant	25	62,5
Total	40	100

Table 2. Distribution of Respondents by Age on Compliance with PPE Use

Age	PPE Use Compliance				Amount		P *value*
	Compliant		Non-Compliant				
	N	%	N	%	N	%	
Early Adulthood	13	38,2	21	61,8	34	100	0,001
Late Adulthood	2	33,3	4	66,7	6	100	
Total	15	37,5	25	62,5	40	100	

Table 3. Distribution of Respondents based on Supervision of Compliance with PPE Use

Supervision	PPE Use Compliance				Amount		P *value*
	Compliant		Non-Compliant				
	N	%	N	%	N	%	
Good	0,0	0,0	0,0	0,0	0,0	0,0	0,001
Fair	15	37,5	25	62,5	40	100	
Less	0,0	0,0	0,0	0,0	0,0	0,0	
Total	15	37,5	25	62,5	40	100	