

Building Ppe Compliance Through Strengthening Knowledge And Attitudes: An Empirical Study And Construction Workers

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ABSTRACT

The purpose of this study is to find out and examine variables related to cobstruction workers' compliance with the use of personal protective equipment (PPE). Based on factors such as age, education, knwoledge, attitude towards safety, and supervision of the use of PPE. Despite some safety initiatives, it's still common for people to ignore guidelines for wearing personal protective equipment (PPE), such as not wearing safety helmets or eye and face protection this research was conducted between January and April 2025 using a qualitative descriptive method. The analysis examined 15 articles published between 2020 and 2025. The articles were gleaned from a number of national databases including ScienceDirect and Google Scholar. The findings of the analysis show that internal and external factors include risk awareness, eork discipline, and social support from colleagues, internal factors include workers' knowledge, attitudes, age, and experience. The element that most affects the level of compliance among them is knowledge and work attitude. This study advances knowledge of behavioral factors related to cosmology workers' compliance to wear personal protective equipment.

Keywords: *factors for the use of PPE, work safety, PPE, compliance with the use of PPE.*

INTRODUCTION

Various unexpected, unpredictable, and unforeseen incidents that can interfere with a person's ability to perform their job effectively are referred to as work accidents. Workplace accidents can result in huge losses for the company. The impact of lost time due to work delays is the first. Second, businesses must pay for the risks faced by employees and the recovery of assets harmed in disaster (Fenelia & Herbawani, 2022).

The majority of the 130,923 work accidents in Indonesia in 2019 occurred in the country's construction industry. Construction Development of the Ministry of Public Works and Spatial Planning provided this information. It is imperative to make significant efforts to ensure occupational safety and health because of this very high number (K3). K3 serves as a coordinates management component in the construction industry, with various objectives of regulating and controlling K3 risks associated with all construction-related activities (Jalil Al-Bayati et al., 2023).

To ensure the safety of construction workers in the workplace, risk control is an important first step in preventing accidents. The procedure begins with a comprehensive

risk assessment and hazard identification steps. The goal of risk management is to eliminate potential risks to lower the likelihood of accidents for employees present in the work area, especially when using designated tools. By adopting sensible measures to mitigate current hazards and potential threats, these risk mitigation initiatives continue (Fenelia & Herbawani, 2022).

Reducing the likelihood of harm to a manageable threshold is essential for addressing or managing risk. The Hierarchy of Control Approaches, both current and potential, should be referenced in the risk management process. The hierarchy of control is known to include five levels: engineering, administration, substitution, elimination, and personal protective equipment (PPE) (Fenelia & Herbawani, 2022).

Personal protective equipment (PPE) is the final step in the risk control hierarchy to deal with workplace hazards. To protect themselves from various risks, such as mechanical, chemical, biological, and physical hazards that may develop in the workplace, workers are required to wear personal protective equipment (PPE). Personal protective equipment (PPE) is very

important to reduce accidents in the workplace because of the many potential risks that may occur both inside and outside the work site (Fenelia & Herbawani, 2022).

For example, in industrial and construction companies, we often encounter the fact that many workers are reluctant or even not to use PPE at all. This is due to various factors. On the one hand, companies may not provide adequate PPE, while on the other hand, workers' attitudes and knowledge also influence. The comfort and feasibility of the PPE used also plays an important role in their compliance with the use of the protective equipment (Fenelia & Herbawani, 2022).

Despite the fact that the organization has supplied personal protective equipment (PPE) and implemented rules mandating its use, there is a problem with employee non-compliance. According to Sari (2012), how people behave when using personal protective equipment (PPE) has a big influence on how often work accidents occur. According to a study, 26.3% of employees have had accidents while working without personal protective equipment (PPE) (Fenelia & Herbawani, 2022).

This article aims to uncover the characteristics associated with construction workers' compliance with the use of PPE. It is intended that by having a better awareness of this problem, employees will be more diligent in the use of personal protective equipment (PPE), so that accidents at work can be minimized.

RESEARCH METHODS

The System Literature Review (SLR) approach is the method used in this study, which selects any previous publication or study, the investigation will be conducted in 2025 between January and April. The data of this study comes from reliable sources, such as scientific publications released between 2020 and 2025. With the keywords "PPE use factors", "work safety", "PPE", and "compliance with the use of PPE", Google Scholar provides the literature used in this manuscript.

Journals selected based on inclusion criteria such as Indonesian or English, are publicly accessible (open access), can be accessed in full text, and are published between 2020-2025, as well as the topic of compliance with the use of PPE in the construction sector, included in the diagram representing the stages of identification,

screening, feasibility evaluation, and inclusion. This research has gone through the ethics review process of FKM UMJ with an ethics review number 10.090.C/KEPK-FKMUMJ/V/2025.

RESULTS AND DISCUSSION

Based on a review of 15 journals analyzed, a number of factors were found related to compliance with the use of Personal Protective Equipment.

No.	Name Of Researcher	Title	Year Of Publication	Conclusions
1.	Nikhmatul Huda, Azizah Musliha Fitri, Arga Buntara, Dyah Utari.	Factors Related to Work Accidents in Building Construction Project Workers at PT. X year 2020	Journal of Public Health (e-journal), Faculty of Health Sciences, Veteran National Development University Jakarta, September 2021.	Most of the workers (62.4%) in building construction projects in Pt. X have experienced work accidents. The most common types of accidents are cuts, trips, nail piercings, slips, and falls, the majority of which are classified as minor injuries. (Huda et al., 2021)

2.	Alda Ayu Putriyona, I Made Muliatna	Analysis of the Influence of Personal Protective Equipment (PPE) Use on Work Accident Statistics in the Safety and K3LH Division of PT. PAL Indonesia (Persero)	JPTM (Journal of Mechanical Engineering Educators), State University of Surabaya, 2020	This study analyzes the impact of the use of Personal Protective Equipment (PPE) on the statistics of work accidents at PT. PAL Indonesia (Persero) from 2015 to 2018. The results show that Work accident cases decreased from 34 cases in 2018. (Putriyona & Muliatna, 2020)
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3.	Annisa Nabila, Azizah Musliha Fitri, Arga Buntara, Dyah Utari	Analysis of Factors Related to Complaints of Hand Arm Vibration Syndrome in Construction Workers	Forikes Voice Health Journal, Volume 11 Special Issue, January-April 2020.	There was a significant relationship between age, vibration exposure, working period, PPE use, and smoking with HAVS complaints in workers at PT X. The company is expected to provide health workers and conduct periodic inspections; carrying out maintenance on vibrating devices and providing information about HAVS, the use of PPE, and the dangers of smoking to workers, foremen and implementers through oral and written communication in the form of safety talks and poster installation. (Nabila et al., 2020)
4.	Putri Wulandari, Cici Wuni, Sugiarto	Factors Related to Work Accidents in Building Construction Workers in Telanaipura District, Jambi City in 2022	SEHATMAS (Scientific Journal of Public Health), 2023, STIKes Harapan Ibu Jambi.	59.7% of employees have a work accident. Factors that are significantly related to work accidents are: Unsafe actions ($p = 0.008$) • Work fatigue ($p = 0.014$) Employee knowledge was not significantly related to work accidents ($p = 0.072$). (Putri Wulandari et al., 2023)

5.	Devianti Lin Cahyo, Irfany Rupiwardani, Beni Hari Susanto.	Factors Affecting the Efficiency of the Use of Personal Protective Equipment (PPE) in Construction Workers at PT. X	Journal of Environmental Health, published by the Palu Ministry of Health Polytechnic, 2022.	The higher the level of education, knowledge, and positive behavior of workers towards K3, the higher the level of compliance with the use of PPE. The supervision and convenience factors of PPE also play an important role in improving compliance. On the other hand, age factors, K3 facilities, and PPE policies did not have a significant effect on workers' compliance in using PPE. (Devianti et al., 2022)
6.	Muchamad Rafi Wahyu Pratama, Merry Sunaryo, Mazidatur Rohmah, Naufal Al Faridzi Mubarak, Moch Sahri.	The Effect of Working Period and Level of Knowledge with Compliance with the Use of Personal Protective Equipment (PPE) on Workers at PT. X	Journal of Integrated Industrial Engineering- Tuanku Tambusai Hero University, 2023.	The main factor that causes non- compliant workers to wear PPE is a lack of knowledge and work experience. Workers' awareness of using PPE is greatly influenced by their level of knowledge of occupational safety. (M. R. Pratama et al., 2023)

7.	Ramayanti Boru Simanjuntak, Ratna Sari Putri Br Taringan, Tety Junita Purba, Alprindo Sembiring	Analysis of Factors Related to Compliance with the Wearing of Personal Protective Equipment in Spraying Unit Work at PT PAJ in 2023	Journal of Medicine and Health, Faculty of Medicine, Islamic University of North Sumatra, Volume 24, Number 2, Year 2025.	This study found that four factors have a significant relationship with compliance with the use of PPE (Personal Protective Equipment) in Spraying Unit workers at PT PAJ: Working Period ≥ 1 year → employees are 13.47x more compliant. High knowledge of K3 → 6.71x more compliant. Positive attitude → 4.68x more compliant. The encouragement from the leadership → 7.21x more compliant. In contrast, factors of age, gender, education, availability of PPE, and encouragement from co- workers had no significant association with PPE use compliance. (Utara et al., 2025)
8.	Yemima Irawati, Cornelis Novianus, Arif Setyawan.	Factors Related to Work Accident Reporting Behavior in Production Section Workers of PT X in 2020	Journal of Health, Occupational Health and Environment (JK3L), Volume 2, Number 1, Year 2021.	This study found that there are 9 factors that have a significant relationship with work accident reporting behavior: Age, Gender, Education, Knowledge of K3, Unsafe action, Peer support, Superior Support, Punishment, Unsafe condition While the length of work, attitude, and injury history do not show a significant relationship

				with the behavior of work accident initiators. (Irawanti et al., 2021)
9.	Tezar Aulia Rachman, Hendra Cahyadi, Risya Aulia.	Analysis of Factors Related to the Use of Personal Protective Equipment in Workers of the Barai River Flood Control Development Project, Hulu Sungai Tengah Regency (MYC)	Journal of Civil Engineering Science, Volume 6, Number 2, December 2023, Islamic University of Kalimantan Muhammad Arsyad Al Banjari.	The availability of PPE is the most significant factor in the compliance of PPE use. The chance of workers not wearing PPE completely before the variable is tested is 85%. (Keilmuan & Sipil, 2023)
10.	Rafit Rahmat Daeli, Serniati Zebua, Martha Surya Dinata Mendrofa, Eduar Baene.	The Effect of the Use of Personal Protective Equipment (PPE) on the Occupational Safety and Health of Medical Personnel at the Afulu Health Center UPTD	Metansi Scientific Journal (Management and Accounting)-Nias University, 2024.	Non-compliance in using PPE can increase the risk of work accidents, such as being punctured by sharp objects or exposure to infectious liquids, which have the potential to lead to nosocomial infections or other illnesses. (Daeli et al., 2024)
11.	Ramadisul Mafra, Riduan, Zulfikri.	Analysis of Compliance with the Use of Personal Protective Equipment (PPE) in Handyman and Construction Worker Skills Training Participants.	Jurnal Arsir, University of Muhammadiyah Palembang, 2021.	The average compliance rate for the correct use of PPE is 82.92%. Individual compliance averaged 66.25%. The highest non-compliance was in the use of safety helmets (29.00%), cotton gloves (19.38%), safety vests (16.25%), and safety boots (3.44%). The main reasons for non-compliance were forgetting (33.85%), feeling annoying PPE (26.67%), feeling uneasy (26.15%), and

				feeling uneasy (13.33%). 30% of participants committed repeated violations. (Mafra et al., 2021)
12.	Muhammad Agung Pratama.	Effectiveness of the Use of Personal Protective Equipment with the Incidence of Contact Dermatitis in Factory Workers	Journal of Medical Research, 2021.	The effectiveness of the use of personal protective equipment (PPE) is essential to avoid contact dermatitis in workers, especially in preventing exposure to allergens and irritants. Lack of PPE use and poor personal hygiene increase the risk of contact dermatitis. (M. A. Pratama, 2021)
13.	Xianbo Zhao, Diya Yan.	Incorporating Technological Acceptance Model Into Safety Compliance of Constuction Workers in Australia	Safety Scienc, 2023	This researcher integrates the Technology Acceptance Model (TAM) to understand the occupational safety compliance of construction workers in Australia This study distinguishes between: Deep Safety Compliance (DSC) sincere compliance and focus on safety outcomes. Suface Safety Compliance (SSC) Superficial compliance or just for the sake of formality. (Zhao & Yan, 2023)

14.	Raul Aguilar-Elena, Juan Jose Agun-Gonzalez.	Chi-square automatic interaction detection (CHAID) analysis of the use of safety goggles and face masks as personal protective equipment (PPE) to protect against occupational biohazards	Jurnal of Biosafety and Biosecurity, 2024.	This study uses the CHAID (Chi-square Automatic Interaction Detection) method to analyze the factors that affect the use of protective glasses and face masks as personal protective equipment (PPE) against biological hazards in the workplace. (Aguilar-Elena & Agún-González, 2024)
15.	Ahmed Jalil Al-Bayati, Andrew T. Rener, Michael P. Listello, Mamdouh Mohamed.	PPE Non-compliance Among Construction Workers: An Assessment of Contributing Factors Utilizing Fuzzy Theory	Journal of Safety Research, 2023.	This study identified and evaluated the factors that cause non-compliance with the use of personal protective equipment (PPE) among construction workers, using fuzzy set theory and K-means clustering methods. (Jalil Al-Bayati et al., 2023)

Knowledge of PPE use is a sticking element (predisposing factor) that promotes or prevents people from acting in this way by using PPE. Further, Ramsey argues that knowledge plays an important role in the potential dangers or sources that can arise while performing their duties, they tend to make poor choices about the use of personal protective equipment.

With a p-value of 0.133, studies of the age of use of personal protective equipment

(PPE) by construction workers did not show a significant relationship between age and compliance. Similar findings were found in another study by Astiningsih and Suroto, who found no correlation between after-school and compliance with PPE use (p-value=0.779). Chandra emphasized that the age gap does not always have an impact on employees' attitudes and actions towards the use of personal safety equipment (PPE). This implies that adherence to PPE use is

not significantly affected by age (Devianti et al., 2022).

In addition, the relationship between supervision and compliance in the use of Personal Protective Equipment (PPE) is very important. Supervision is one of the management functions that must be pursued to achieve organizational goals efficiently. With good supervision, we can prevent sharing things that can hinder the achievement of goals, such as deviations, waste, misappropriation, errors, and failures in carrying out organizational tasks.

A p-value of 0.029 indicates that behavioral factors are an important factor in construction workers' compliance with the use of personal protective equipment (PPE). These results are consistent with the research of Nurdiani and Krianto, who also found that behavior significantly impacts PPE use compliance (p-value=0.004). This implies that a person's level of compliance with PPE use increases with their behavioral level. However, negative behavior tends to make people more pessimistic and less enthusiastic

Many aspects related to the use of personal protective equipment (PPE) affect its efficacy. These factors include potential

factors, such as facilities or facilities: reinforcing factors, such as technical advice and supervision; and predisposing factors, such as age, education, work duration, knowledge, and attitude. Individual work productivity and overall company productivity will benefit from a more efficient use of PPE, which will also have a stronger effect on the company's performance. Using Personal Protective Equipment (PPE) is essential in the workplace, especially in places where there may be safety risks. In most cases, bismis has implemented an Occupational Health and Safety (K3) management system with guidelines for the use of PPE. However, in reality, a large number of employees do not wear PPE in the workplace. This may be due to a number of things, including discomfort when wearing Personal Protective Equipment (PPE) and a lack of awareness of the risks associated with their job.

CONCLUSION

Based on the results of a review of 15 literature, it was found that the knowledge factor has a relationship with worker compliance with the Use of Personal Protective Equipment (PPE), attitudes, social support, and the complete provision

of PPE, as well as strict supervision of workers. To increase compliance with the use of PPE among workers, it is necessary to have factors that act as controllers in the implementation of each activity. This aims to achieve the target that has been set. This supervision basically includes monitoring the process, work results, and individuals who carry out the task.

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