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FACTORS ASSOCIATED WITH COMPLIANCE WITH THE USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) IN CONSTRUCTION WORKERS

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ABSTRACT

The use of occupational health and safety (OHS) in Indonesia leads to workplace accidents because the industry and society remain relatively low. The use of Personal Protective Equipment (PPE) is the last step in the risk control hierarchy, which is applied when methods such as elimination, substitution, engineering, or administrative control do not provide effective results. This paper aims to examine the various factors that influence individual behavior in using PPE. This study is compiled in the form of a literature review, with data obtained from various sources and scientific databases, namely Engine Proquest, Pubmed, Research Gate, Sagepub and Schoolar from the time span 2018-2025. The analysis of this study uses a PRISMA flow diagram that includes the stages of identification, screening, evaluation of eligibility, to inclusion. The keywords used are "Personal Protective Equipment", "Personal Protective Equipment (PPE)", "construction workers", "compliance with the use of PPE". After going through the screening process, 20 appropriate journals were obtained and used as analysis material in this study. The findings show that although some journals discuss similar variables, there are differences in the results of the analysis of the relationship between these variables. Knowledge, attitude, and length of service are variables that are consistently analyzed in the five main articles. From these results, it can be concluded that worker behavior and compliance in using Personal Protective Equipment (PPE) are influenced by a number of factors, including level of knowledge, attitude, social support, length of service, and availability of PPE. Factors that influence the behavior of PPE use by workers include predisposing factors such as attitude, knowledge, and length of service, as well as supporting factors such as social support and availability of adequate protective equipment.

Keyword : *personal protective equipment (PPE), K3, worker discipline*

INTRODUCTION

According to the IAO/WHO, professional health is defined as the best mission and employee support in the best physical, psychological and social well through worker prevention, risk management and adaptation efforts. In general, there are two main factors that often cause company work accidents: accidents (indeterminate actions) caused by abnormal methods (indeterminate behavior). The second factor is uncertainty, This is because the workplace does not follow the prescribed rules regarding occupational health and safety. The biggest cause of childbirth accidents is often the human factor (human error). Up to 88% of work accidents are due to human error, i.e., irregular measurements, 10%. This is due to the uncertain conditions of the work environment, with the remaining 2% due to factors other than the ability to control humans (Adi Putri and Nezi Azwita 2021).

Occupational safety and health (K3) is one of the main pillars in the world of work to protect workers from the risk of occupational diseases and accidents. The importance of risk surveillance in the workplace as a precautionary idea, especially in sectors with high risk exposure, for example, in the construction industry using different types of activities. The construction industry is one of the high-risk sectors of the workforce where employees are more likely to experience labor injuries or work accidents compared to other jobs. The main causes that cause work accidents include employee behavior that overrides uncertain work environments and safety procedures and does not use personal protective equipment (PSA), such as helmets, safety shoes and eye protection. PSA is an important protection against exposure to hazardous substances and its use is a legal obligation in various countries. The risk of accidents can increase drastically if management does not ensure the correct use of PPE and does not provide adequate safety training (Yosef and Shifera 2023).

Construction workers face twice the risk of injury than workers in other sectors, with the number of deaths exceeding 60,000 cases each year globally. The root cause of accidents can come from a poor work environment, lack of site management, inadequate equipment, to limited experience and

skills of workers. In addition to the immediate causes, it is also important to pay attention to secondary causes such as management disruptions, lack of training, and maintenance of facilities in providing a safe work system (Sehsah, El-Gilany, and Ibrahim 2020).

Efforts to prevent and predict work accidents can be done by regulating, enforcing discipline, and creating a healthy, safe, and comfortable work environment. Personal Protective Equipment (PPE) is included in the hierarchy of hazard handling and has the main function to protect workers and maintain work safety. Workers are required to use appropriate PPE when entering the workplace (Lestari and Warseno 2021).

Personal Protective Equipment (PPE) is equipment used by workers to protect themselves, both partially and completely, from various hazards and accidents in the workplace. The use of PPE is very important in the work environment as a form of self-protection, in order to maintain worker safety while creating a safer work environment. PPE is used after engineering efforts and safe working methods PPE is suitable for use and can Create a safe working environment that meets the limits of safe standards (Aini and Suwandi 2023).

Data from BPJS shows an increasing trend in the number of work accidents involving workers. It was recorded that work accident cases increased in 2018, with the number reaching 173,105 cases, up from 123,041 cases in the previous year. For workers in the construction sector, the use of Personal Protective Equipment (PPE) is an obligation because it serves to protect them from various potential hazards in the workplace. In practice, the use of Personal Protective Equipment (PPE) is considered the last step in efforts to prevent work accidents, after elimination and hazard control efforts are carried out (Azizah et al. 2021).

Based on Law Number 13 of 2003 concerning Manpower, protection for labor aims to guarantee the fundamental rights of workers or laborers, as well as ensure equal opportunities and fair treatment without discrimination in any form. The ultimate goal is to create well-being for workers and their families, while still taking into account the dynamics and development of the business world (Adyssya Githa

Assyahra, Nurul Hikmah B, and Aulia Rahman 2024).

Inconsistent behavior, such as non-compliance in the use of personal protective equipment (PPE) in the workplace, can increase the risk of workplace accidents, even leading to death or loss. The less PPE is used, the more likely an accident is to occur. Low awareness in the use of PPE is often triggered by a lack of understanding and attitude of workers towards the importance of occupational safety and health aspects. Thus, human factors have a significant role in causing workplace accidents (Adyssya Githa Assyahra, Nurul Hikmah B, and Aulia Rahman 2024).

METHODS

This study was conducted to evaluate the compliance of construction workers in using Personal Protective Equipment (PPE) through a literature review method. This study focuses on identifying the factors that affect the level of compliance in the use of PPE in the construction work environment, by analyzing various studies that specifically address the topic. The research design used is a cross-sectional study, which is an approach that pays attention to data from the population and samples at a certain time.

This research uses data obtained from various studies that have been published in national and international scientific journals online. The researcher accessed these journals through an online search to obtain relevant with keywords: "Personal Protective Equipment", "Personal Protective Equipment (PPE)", "construction workers", "compliance with the use of PPE". This research has gone through the ethics review process of the Faculty of Public Health, University of Muhammadiyah Jakarta with ethics review number 10.096.C/KEPK-FKMUMJ/V/2025. Inclusion criteria include: articles in Indonesian or English, available in open access, downloadable in full-text form, published in the 2018–2025 time frame, and relevant to the context of compliance with the use of PPE in the construction sector. Articles that are not published in scientific journals, are not fully available, or are not relevant to the focus of the research, are not included in this analysis. The literature selection follows the PRISMA flowchart which includes

the stages of identification, screening, feasibility evaluation, and inclusion. Data collection was carried out from January to March 2025. During this period, a critical review of publications that meet the criteria was carried out to gain a deeper understanding of the problems discussed.

RESULTS AND DISCUSSION

Based on the analysis of 19 literature that has been compiled, there are several factors that often appear as the main influence on the compliance of the use of personal protective equipment (PPE) among construction workers. The most important factor is the knowledge and attitude of workers. Good knowledge of the benefits and importance of using PPE has proven to be a key driver in improving compliance.

Table 1. List of Literature Used in Research

No	Name of researcher	Title	Publication and year	Conclusion
1.	Ratna Lestari	Analysis Of Factors Related To Worker Compliance With Personal Protective Equipment	Jurnal Kesehatan Mercusuar Vol.4 No.2 Oktober 2021	The results showed that 76.7% of workers were not compliant in using PPE. All variables were not associated with worker compliance in using Personal Protective Equipment, namely age (p-value 0.942), education (p-value 0.300), length of work (p-value 0.077), employment status (p-value 0.797), knowledge (p-value 0.961), attitude (p-value 0.780), motivation (p-value 0.487), supervision (p-value 0.674) and availability of PPE (p-value 0.222). It can be concluded that there is no relationship between worker characteristics, knowledge, attitudes, motivation, supervision, and availability with compliance using personal protective equipment on

				workers at PT Madubaru Yogyakarta.
2.	Uswantun Hasanah	The Relationship Of Behavioral Components To The Use Of Personal Protective Equipment In Welding Workers At PT. Indonesian Ship Industry (Persero)Makassar, South Sulawesi	Journal of health (JoH) – Vol. 10 No. 2 (2023), 233-243	The results showed a relationship between knowledge and the use of PPE (p=0.05), a relationship between attitude and the use of PPE (p=0.01), and a relationship between action and the use of PPE (p=0.03). Based on research findings, it is concluded that there is a relationship between knowledge, attitudes and actions with the use of PPE for welding workers.It is recommended that workers always behave properly by using PPE and not using PPE half and half. The contribution of this study is to provide information in managing the disciplinary behavior of using PPE, so that workers can avoid accidents that result in permanent disability or death.
3.	Apriyanti Aini	The Relationship Between Knowledge And Compliance With The Use Of Personal Protective Equipment (Ppe)	Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal Volume 13 Nomor 2, April2023	This study aims to determine the relationship between knowledge and compliance with the use of personal protective equipment. This research is a quantitative study with an analytic descriptive design, with a cross sectional approach. The population in this study were all production employees totaling 76 people who were the research sample. The results of this study indicate that there is a relationship between knowledge (p value = 0.008) with compliance with the use of PPE.
4.	Sapriana	The Relationship Of Knowledge	Banua: Jurnal Kesehatan	This study is an analytical study with a cross sectional

		And Attitudes With The Use Of Personal Protective Equipment (PPE) In Loading And Unloading Workers At Pantoloan Port	Lingkungan Volume1Nomor1, Mei2021 | Hal. 26-31	approach, population 110 workers, sample 52 workers, using accidental sampling method. The results of univariate analysis showed 61.5% of workers had good knowledge about the use of PPE, 76.9% of workers had a positive attitude about the use of PPE, and most workers did not use PPE while working (88.5%). The results of the Fisher Exact test showed that respondents' good knowledge about personal protective equipment was related to the behavior of using PPE at work (p=0.045), and respondents' positive attitudes about personal protective equipment were not related to the behavior of using PPE at work (p=0.189). Conclusion: a) Good knowledge about personal protective equipment is related to the behavior of using PPE at work; b) Positive attitudes about personal protective equipment are not related to the behavior of using PPE at work. It is recommended to conduct qualitative research to help understand the attitudes and thoughts of workers about the use of PPE, in addition to the relevant parties, to make maximum efforts to increase workers' awareness about Occupational Health and Safety (K3), especially the use of PPE.
5.	Faiz Muhammad Azhari	Improving Strategy Use Of Tools Personal Protection (PPE)	Engineering And Technology International Journal	The results show that the strategy to improve PPE use in Tulungagung construction projects

		For Construction Project Workers In Tulungagung	November 2023 | Vol. 5 | No. 3	involves a combination of training approaches, risk awareness campaigns, improvements in PPE availability and quality, and cultural change through active participation of all relevant parties. With the implementation of these strategies, it is expected that positive changes in PPE use practices will occur, improving worker safety and reducing the incidence of accidents on the construction project. After conducting a SWOT analysis, several alternative strategies were identified to improve the implementation of OHS in construction workers. These strategies Provide financial assistance or scholarships to construction workers to improve their competencies. Establish cooperation with contractors, both from within and outside the country, to provide additional knowledge on discipline.
6.	Cucu Herawati	The Role Of Behavioral Determinants On The Use Of Personal Protective Equipment (Ppe) In Construction Projects	JKM Jurnal Kesehatan Masyarakat ITEKES Cendekia Utama Kudus Vol. 12, No. 3, Desember 2024	The results of the study obtained that almost all respondents had good knowledge as many as 21 (84.0%), most respondents stated that the facilities and infrastructure supported as many as 21 (52.5%), most of the policy support stated that it was supportive as many as 25 (62.5%), most respondents used complete PPE, namely 26 (65%), and almost half of the respondents did not use PPE completely, namely 14 respondents (35%). There is a relationship between

				respondents' knowledge (p=0.004) with the use of PPE, infrastructure (p=0.011) with the use of PPE, and policy support (p=0.004) with the use of PPE in construction projects. The company should make efforts to train workers and supervise infrastructure facilities, as well as evaluate policy support for the use of PPE. Workers should routinely attend counseling on the use of PPE and implement the policy of using PPE properly.
7.	Devianti Iin Cahyo	Factors Affecting Compliance With The Use Of Personal Protective Equipment (PPE) In Construction Workers At PT "X"	Banua: Jurnal Kesehatan Lingkungan e-ISSN 2797-8184 | p-ISSN 2797-8176 Volume 1 Nomor 2, 2021, Halaman 50-58	Results: From the results of research using univariate and multivariate analysis, it was found that the factors of length of service on compliance with PPE use (p-value = 0.005), education (p-value = 0.008), knowledge (p-value = 0. 029), behavior (p-value = 0.029), HSE inspection (p-value = 0.017), PPE comfort (p-value = 0.025), and factors that are not factors that influence compliance with PPE use are age (p = 0.113), OHS facilities (p-value = 0.307) and PPE policy (p-value = 0.783). Conclusion: Based on the results of the study, it can be concluded that there are several factors that influence compliance with the use of PPE in construction workers, namely from internal factors of education, knowledge, behavior, HSE inspection, and PPE comfort. It is recommended that there is a need for stricter supervision

				and sanctions in the application of supervision regarding compliance with the use of PPE so that the number of work accidents can be reduced.
8.	Eva Rahmawati	Factors Related To Compliance With The Use Of Personal Protective Equipment (PPE) In Construction Workers At PT. Abadi Prima Intikarya The Canary Apartment Project In South Tangerang City In 2022	Environmental Occupational Health and Safety Journal Pages : 75-88	The results obtained variables associated with compliance with the use of PPE are age (p value = 0.001 and OR = 6.222), tenure (p value = 0.035 and OR = 3.208), knowledge (p value = 0.001 and OR = 6.210), attitude (p value = 0.000 and OR = 13.393) and availability of PPE (p value = 0.018 and OR = 3.852) while unrelated variables are education (p value = 0.433 and OR = 1.783). Factors that have a relationship with compliance with PPE use are age, tenure, knowledge, attitude and availability of PPE. Increase effective supervision and run professionally so that workers are more compliant in using personal protective equipment. In addition, workers should be aware and consistent of the importance of using PPE at work, both under supervision and outside of supervision.
9.	Adyssya Githa Assyahra	The Use Of Personal Protective Equipment (Ppe) In Loading And Unloading Workers At Kendari Container Terminal	Window of Public Health Journal,Vol. 5 No. 2 (April, 2024) : 187 - 195	The results showed that there was no relationship between knowledge and the use of PPE in the workforce (p = 0.444). There is no relationship between attitude and the use of PPE (p = 0.444) and there is no relationship between action and the use of PPE in the workforce (p = 1,000). The suggestions in this study are

				expected to increase workers' knowledge about PPE. For workers who still do not wear PPE completely, it is recommended to further increase awareness about the importance of using Personal Protective Equipment (PPE) by participating in safety talks and there needs to be an award for workers who work according to standards such as workers who use good PPE.
10.	Dhesti Nisrina Azizah	Factors Related To Compliance With The Use Of Personal Protective Equipment (PPE) In Muara Tawar PLTGU (Persero) Construction Project Workers	Jurnal Ilmiah Kesehatan Masyarakat Volume 13 Edisi 3, 202	Methods: This study is a quantitative analytic with a cross-sectional design. The study population was PT Hutama Karya Muara Tawar PLTGU Project workers who were in the STG and HRSG areas totaling 349 workers. Results: The results obtained in this study showed that 9 workers were not compliant in using PPE. The results of statistical analysis concluded a relationship on the predisposing factor of knowledge (P = 0.005), the enabling factor of PPE availability (p = 0.003), the driving factor of supervision (p = 0.11), while no relationship was found between the variables of age (p = 0.474), attitude (p = 0.157), education (p = 1.000) with compliance with the use of Conclusion: It is recommended that companies can consistently provide an understanding of PPE and be firm in compliance with the use of PPE Keywords: PPE

				compliance, Workers, PPE in workers.
11.	Meisi Riana	Literature Review: Factors Influencing The Behavior Of Personal Protective Equipment (Ppe) Use In Industrial Workers	Juitech / Vol.5/No.1/ April 2021/ p-ISSN : 2580-4057/ e-ISSN : 2597-7261	The initial search results found 1,432 articles but after screening based on predetermined inclusion criteria, 15 articles were selected consisting of 13 Indonesian articles and 2 international articles. The conclusion obtained in this study is that there are several factors that influence workers' behavior in using PPE, namely predisposing factors including attitude, knowledge, and comfort in using PPE. Push factors include training, supervision, and policies or regulations. Supporting factors include social support and the completeness of the PPE used.
12.	Ramayanti Boru Simanjuntak	Analysis Of Factors Related To Compliance With The Use Of Personal Protective Equipment In Spraying Unit Workers At Pt Paj In 2023	Ibnu Sina: Jurnal Kedokteran dan Kesehatan-Fakultas Kedokteran Universitas Islam Sumatera Utara Volume 24 No. 2 Tahun 2025	The research design used quantitative methods with a cross-sectional approach. The sample consisted of 73 workers who were taken by total sampling. Data were analyzed using chi-square test for bivariate analysis and logistic regression for multivariate analysis. The results showed that the factors of length of service (PR = 13.471; p<0.001), knowledge (PR = 6.711; p=0.008), attitude (PR = 4.676; p=0.041), and leadership encouragement (PR = 7.205; p=0.005) had a significant relationship with compliance with PPE use. In contrast, age, gender, education, PPE availability, and coworker encouragement did not have

				a significant relationship. Tenure was the dominant factor influencing compliance. This study recommends strengthening training, increasing the availability of PPE, and optimizing the role of leaders to improve workers' compliance with PPE use.
13.	Silvia Adi Putri	Factors Related To The Practice Of Personal Protective Equipment (PPE) At PT Nusantara Beta Farma	Jurnal Amanah Kesehatan | E – ISSN : 2685- 4023 Volume 3 No 1 (2021)| ojs.stikesamanahpadang.ac.id	Data were collected through questionnaires with Univariate and Bivariate analysis using the Chi-Square test. Based on the results of the study of 50 respondents who had a low level of knowledge as many as 33 people (66%), a negative attitude of 31 people (62%), who did not exist in the use of PPE as many as 27 people (54%), poor action in the use of PPE as many as 29 people (58%). There is no significant relationship between knowledge and labor actions in the use of Personal Protective Equipment (PPE) showing a p value = 0.411, there is a significant relationship between attitudes towards labor actions in the use of Personal Protective Equipment (PPE) showing a p value = 0.040, there is no significant relationship between infrastructure and labor actions in the use of Personal Protective Equipment (PPE) showing a p value = 0.214. The conclusion is that respondents who have low knowledge (66%), negative attitudes (62%), who are absent in the use of PPE as much as (54%), poor action

				in the use of PPE (58%). To foster a positive attitude of the workforce towards the use of PPE, the company should continue to provide motivation and strict rules to the workforce.
14.	Yohani Wahyu Kumala Aprilianti	Literature Review: Factors Related To PPE Use Behavior	MEDIA KESEHATAN MASYARAKAT INDONESIA Publikasi 1 April 2022	Results: The results of the study showed that there were 10 journals showing some variables had similarities but there were differences in the results of the relationship test. The variables of knowledge, attitude and tenure are the variables analyzed by the five articles. So it can be concluded that the behavior and compliance of using personal protective equipment (PPE) by workers can be influenced by several factors including knowledge, attitudes, social support, tenure and availability of PPE. Conclusion: There are several factors that influence the behavior of workers in using PPE, namely predisposing factors, namely attitude, knowledge, and tenure in using PPE. Supporting factors include social support and the completeness of the PPE used.
15.	Pita Rolasna Br Hotang	Factors Related To The Occurrence Of Work Accidents In Construction Workers At The Medan Simalingkar House Of Worship Renovation Project In 2023	Jurnal Inovasi Kesehatan Masyarakat Vol. 4 No. 2 Edition: Juli-November 2023	1. Workers' knowledge is related to work accidents in the Medan Simalingkar House of Worship Project. 2. Workers' Attitudes are related to Work Accidents at the Medan Simalingkar House of Worship Project. 3. Workers' use of PPE is associated with Pita Rolasna Br Hotang, Factors

				Associated with the Occurrence of Work Accidents Among Construction Workers in the Renovation Project.The Medan Simalingkar House of Worship Project in 2023 52 Work Accidents at the Medan Simalingkar House of Worship Project. 4. Workers' tenure is associated with work accidents at the Medan Simalingkar House of Worship Project. 5. Workers' age is not associated with work accidents at the Medan Simalingkar House of Worship Project. 6. The use of PPE is the variable most associated with work accidents at the Medan Simalingkar House of Worship Project and has an 8.636 times chance of preventing work accidents at the Medan Simalingkar House of Worship Project.
16.	Muluken Tessema dan Wondimu Sema	Utilization Of Personal Protective Equipment And Associated Factors Among Large-Scale Factory Workers In Debre-Berhan Town, Amhara Region, Ethiopia, 2021	Journal of Environmental and Publik health (8 feb 2022)	This study showed that the level of personal protective equipment (PPE) use among large-scale factory workers in Debre-Berhan was good, with a use rate of 41.7%. **Factors that were the main predictors of PPE use were: Perceived susceptibility, Perceived severity of occupational diseases, Perceived barriers to PPE use, Self-confidence in using PPE (perceived self-efficacy).** The study recommends the importance of increasing health education that focuses on awareness of the severity and susceptibility to occupational diseases, as

				well as reducing barriers and increasing workers' confidence to use PPE.
17.	Maxwell Kwame Boakye, Selase Kofi Adanu, George Harrison Coffie, Eric Kwadzo Adzivor, dan John Coker Ayimah	Building Construction Artisans' Level Of Access To Personal Protective Equipment (PPE) And The Perceived Barriers And Motivating Factors Of Adherence To Its Use	Journal of Environmental and Public Health (27 April 2022)	The study found that most construction workers had access to PPE, but most obtained PPE through borrowing from coworkers rather than from company provision. Factors such as age, work experience, and form of employment status (permanent, temporary, casual) were the main factors influencing compliance and non-compliance with PPE use. More experienced and older workers were more likely to use PPE due to higher risk awareness, while casual and less experienced workers showed lower compliance.The study recommends the need for intensive safety training and encouragement to workers to own and use their own PPE to improve occupational safety.
18.	Simon Appah Aram, Benjamin M. Saalidong, Augustine Appiah, dan Idongesit Bassey Utip	Occupational Health And Safety In Mining: Predictive Probabilities Of Personal Protective Equipment (PPE) Use Among Artisanal Goldminers In Ghana	PLOS ONE (30 September 2021)	This study revealed that the use of personal protective equipment (PPE) among artisanal gold miners in Ghana reached 77.4%. PPE use was more likely among miners who worked in good occupational health and safety conditions, had higher levels of education, regularly underwent medical examinations, and had longer work experience. Miners working in the medium-scale mining sector and in non-production departments were also more likely to use PPE. In contrast, PPE use tended to be lower among female

				miners and those with higher incomes. This study highlights the importance of national legislation on occupational safety and health to improve awareness and self-protection behaviors in the artisanal mining sector in Ghana.
19.	Addisu Alehegn Alemu, Meseret Yitayew, Aklilu Azazeh, dan Sofia Kebede	Utilization Of Personal Protective Equipment And Associated Factors Among Building Construction Workers In Addis Ababa, Ethiopia, 2019	BMC Public Health (2020)	This study found that only 38% of building construction workers in Addis Ababa used personal protective equipment (PPE). The main reasons for not using PPE were the unavailability of equipment and the lack of orientation on its proper use. Factors that contributed to increased PPE usage included training on PPE usage, general safety training, pre-work safety orientation, and government supervision. The researchers recommend continuous supervision and PPE usage training at construction sites to improve occupational safety..

Based on a literature analysis, factors that are often related to compliance with PPE use include age, working period, knowledge, attitude, availability of PPE, comfort in PPE use, and social support. These factors play an important role in shaping workers' behavior in using PPE consistently in the workplace. Based on the journal Ratna Lestari, the factors of age, education, and working period do not show a significant relationship with compliance, but different results were found in the research of Eva Rahmawati and Devianti Iin Cahyo which showed that working period, age, and education level can affect the compliance behavior of workers in using PPE. The knowledge factor is one of the variables that is most often shown to have a positive

relationship with compliance, as stated in the research by Apriyanti Ain, Sapriana, and Cucu Herawati. Workers' attitudes towards the importance of occupational safety also contribute to the behavior of using PPE, as found by Uswantun Hasanah and Eva Rahmawati. In addition, the availability and comfort of PPE are supportive factors that influence workers' decisions to wear protective equipment while working.

The research by Uswantun Hasanah aims to analyze the relationship between workers' knowledge, attitudes, and actions and the behavior of using Personal Protective Equipment (PPE) in the welding work area of PT Industri Kapal Indonesia (IKI) Makassar. With an analytical approach on 49 respondents, the results were obtained that all variables had a meaningful relationship with PPE compliance, with values of p=0.05 for knowledge, p=0.01 for attitude, and p=0.03 for action. These findings show that the behavior of using PPE does not only depend on technical knowledge alone, but is also influenced by workers' attitudes towards safety and their consistency in acting according to procedures. Therefore, it is not enough to focus on providing information, but it is also necessary to pay attention to strengthening positive attitudes and implementing concrete actions in the workplace through training, routine supervision, and fostering safe work behaviors (Krisdayanti et al. 2023).

In her research at Pantoloan Port, Sapriana researched the extent to which the level of knowledge and attitudes play a role in shaping the behavior of using Personal Protective Equipment (PPE) in loading and unloading workers. The study, which involved 52 workers, revealed that, although most respondents had a good understanding of PPE (61.5%) and showed a positive attitude (76.9%), the PPE use rate remained low, at only about 11.5%. Fisher Exact statistical analysis showed a positive correlation between the level of knowledge and the use of PPE (p=0.045), but attitudes were not significantly related (p=0.189). This emphasizes that knowledge alone does not necessarily guarantee safe behavior in the field, so there is a need for additional strategies such as increasing supervision control, providing more adequate facilities, and promoting a strong safety culture so that workers are

more compliant in using PPE during work (Sapriana 2021).

Faiz Muhammad Azhari, in his research located in the construction sector of Tulungagung Regency, conducted a SWOT analysis to understand the internal and external factors that play a role in the implementation of Occupational Safety and Health (K3). The results of the study show that low education levels, lack of discipline, and lack of awareness about K3 are the main obstacles, although there are opportunities such as government regulations and the possibility of collaboration with various parties. Therefore, Azhari recommends a development strategy based on Weaknesses-Opportunities (WO), including through the provision of educational scholarships, increasing the frequency of K3 socialization, preparing work accident investigation procedures, and strengthening partnerships between the government and contractors. The implementation of this strategy is expected to form a better workplace safety culture, increase worker awareness, and create a safe and productive work environment (Azhari and Mustofa 2023).

Cucu Herawati through her research evaluated the influence of behavioral determinants on the use of Personal Protective Equipment (PPE) in the construction project environment. The study involved 40 workers and used a total sampling approach with a cross-sectional design. The results of the study show that the factors of knowledge, availability of infrastructure, and policy support have a significant relationship regarding the use of PPE. Most workers with good knowledge, adequate access to facilities, and strong corporate policy support indicate higher rates of PPE use. These findings make it clear that a comprehensive approach that combines regular training, provision of well-equipped work facilities, and the implementation of strict safety policies is essential to improve workplace safety behaviors (Herawati et al. 2024).

Eva Rahmawati's research at The Canary Apartment construction project, South Tangerang City, aims to identify factors related to the compliance of PPE use in construction workers. With the cross-sectional study approach and the

total sampling method of 70 workers, it was found that age, working period, knowledge, attitude, and availability of PPE had a meaningful relationship with compliance, while education level had no significant effect. The attitude factor was the most dominant factor, with an odds ratio of 13,393. This study highlights that changes in workers' behavior towards the use of PPE need to be focused on forming positive and consistent attitudes, through continuous education, effective supervision, and rewarding disciplined workers (Rahmawati et al. 2022).

Devianti Iin Cahyo in her research at PT "X" examines internal and external factors that affect compliance with the use of PPE in construction workers. The study used a cross-sectional observational analytical approach involving 67 workers. The results of the analysis showed that the factors of working tenure, education, knowledge, worker behavior, HSE inspections, and PPE comfort were significantly related to PPE use compliance, although the factors of age, K3 facilities, and PPE policies did not show a significant relationship. Based on these findings, Devianti recommends the need to tighten supervision of the use of PPE, provide strict sanctions for violations, and improve the comfort and quality of PPE to improve work safety in the construction sector (Devianti, Rupiwardani, and Susanto 2022).

In a literature review conducted by Yohani Wahyu Kumala Aprilianti, it was found that factors such as knowledge, attitudes, working periods, social support, and availability of PPE play an important role in shaping PPE use behavior. Based on an analysis of 10 articles from the period 2017 to 2021, this study concludes that changes in workers' behavior towards the use of PPE require intervention not only in terms of technical education, but also from social and cultural aspects. Thus, a successful occupational health promotion strategy must integrate educational approaches, worker community involvement, and policy and facility support to create a robust workplace safety culture (Aprilianti et al. 2022).

Meisi Riana in her study in the form of a literature review highlighted various factors that affect the behavior of PPE use in the industry. Based on the results of a synthesis of 15 articles, Meisi

found that predisposing factors such as knowledge, attitudes, and comfort in the use of PPE, coupled with driving factors such as training, supervision, and company policies, as well as supporting factors in the form of social support and adequate availability of PPE, all contribute significantly to worker behavior. Thus, efforts to consistently increase the use of PPE among workers must involve a holistic approach, not only focusing on individual aspects, but also optimizing the social environment and organizational systems that support it. (Riana 2021) .

The research conducted by Ramayanti Boru Simanjuntak at PT PAJ analyzed factors related to compliance with the use of PPE in Spraying Unit workers. By involving 73 respondents and using cross-sectional methods and multivariate analysis, the results showed that the length of work, knowledge, attitudes, and encouragement of leaders had a significant relationship with PPE use compliance, while the factors of age, gender, education, availability of PPE, and support from colleagues were not significantly related. The service period factor was recorded as the dominant factor with a PR=13.471 value, indicating that the longer the work experience, the higher the workers' compliance in using PPE. This study recommends strengthening occupational safety training, increasing the availability of PPE that is comfortable to use, and optimizing the role of leaders in encouraging safety behavior in the workplace. (Ramayanti Boru Simanjuntaka, Ratna Sari Putri Br Tarigana, Tety Junita Purbaa and AIn 2025)

Research conducted by Muluken Tessema and Wondimu Sema found that the rate of use of personal protective equipment (PPE) among workers in large factories in Debre-Berhan reached 41.7%. Although this figure is moderate, efforts are still needed to improve workers' compliance. The study also showed that the behavior of PPE use was influenced by several factors, such as the perception of their susceptibility to occupational hazards, the perception of the severity of health risks, obstacles in the use of PPE, and the level of confidence of workers. That is, workers who are more concerned about the risk of injury or illness due to work and who feel confident in using PPE, tend to be more compliant. Based on these

findings, researchers emphasized the importance of health education that not only focuses on the provision of PPE, but also on increasing awareness of risks, reducing barriers, and strengthening confidence in the regular use of PPE (Baye et al. 2022).

This study identified that although most construction workers have access to personal protective equipment (PPE), they more often obtain PPE by borrowing from co-workers, rather than obtaining it officially from the company. This suggests that even though PPE is available, the level of personal ownership is still low. Factors such as age, work experience, and type of employment status (permanent, temporary, or casual) influence the level of compliance with PPE use. Older and more experienced workers showed higher levels of compliance, possibly due to their better understanding of the risks of the job. In contrast, workers with casual or less experienced status tended to have lower levels of compliance, due to a lack of awareness of the hazards or a lack of concern for personal safety. The researchers emphasize the importance of more intensive safety training programs and encouraging workers to have their own personal PPE, in order to increase independence and compliance in the use of PPE in the workplace (Boakye et al. 2022).

Research conducted among traditional gold miners in Ghana shows that the use rate of personal protective equipment (PPE) reaches 77.4%, which is a fairly high figure compared to other sectors. These results show that the majority of miners are aware of the importance of self-protection in the face of occupational risks. Some of the factors that contribute to the high use of PPE include higher levels of education, longer work experience, regular medical examinations, and working in the medium-scale mining sector and non-production departments. However, female miners and those with higher incomes tend to show lower rates of PPE use. This may be related to cultural factors or the perception that higher experience and income may reduce the urgency to use PPE. The researchers emphasized the need for the establishment of national legislation on occupational safety and health in Ghana to raise awareness and ensure consistent protection for all workers in the mining sector, particularly for traditional miners

who face high occupational risks (Aram et al. 2021).

Support from colleagues and superiors, as well as company policies that support the strict use of PPE, can increase workers' motivation to comply. This is in accordance with the results of research from Alemu et al (2020) which emphasizes the importance of external factors in encouraging compliance with the use of PPE. The study showed that the rate of use of personal protective equipment (PPE) among construction workers in Addis Ababa was only 38%, reflecting the low awareness of the importance of occupational safety. One of the main causes of low PPE use is the unavailability of adequate protective equipment in the workplace, coupled with a lack of training or orientation on the use of PPE before starting work. The study found that factors such as PPE training, general safety training, pre-employment safety orientation, and supervision from government agencies, had a major influence on the increase in PPE use. This suggests that interventions in the form of structured training and consistent supervision from authorities can be an effective strategy in increasing awareness and behavior of PPE use among construction workers. The researchers recommend that continuous training and stricter supervision be carried out in the field, to ensure that all workers are aware of the importance of using PPE and to reduce the number of work accidents in the construction sector (Alemu et al. 2020).

CONCLUSION

Based on the results of the literature analysis of various studies reviewed, it can be concluded that compliance with the use of Personal Protective Equipment (PPE) in construction workers is influenced by a number of important factors. Individual factors such as knowledge, attitude, and length of service have been shown to be closely related to the behavior of using PPE. Workers with a better level of knowledge, a positive attitude towards work safety, and longer work experience tend to have a higher level of compliance.

In addition, environmental factors such as the availability and comfort of PPE, social support from coworkers and superiors, and supportive company policies also contribute to increased compliance. The studies reviewed

showed that interventions involving safety education, provision of appropriate PPE, routine supervision, and the establishment of a safety-oriented work culture were able to significantly increase PPE use behavior.

Thus, increasing compliance with the use of PPE must be done comprehensively, including strengthening aspects of individual knowledge and attitudes, providing supporting facilities, and implementing consistent safety policies and culture in the construction work environment..

RECOMMENDATIONS

Based on the results of a literature review related to compliance with the use of Personal Protective Equipment (PPE) by construction workers, several suggestions that can be given are:

1. **Improving Education and Training**
   - It is necessary to conduct regular education programs regarding the importance of using PPE, which not only emphasizes technical aspects, but also the formation of positive attitudes towards work safety.
   - Occupational safety training must be reinforced with contextual and interactive materials, so that workers better understand the risks they face and how to mitigate them through the use of PPE.
2. **Provision and Maintenance of Personal Protective Equipment**
   - Companies are required to ensure the availability of adequate, comfortable, standardized, and appropriate PPE for the type of work.
   - Periodic checks are carried out on the suitability of PPE to maintain functionality and comfort of use.
3. **Supervision and Enforcement of Rules**
   - Routine and strict supervision of the use of PPE in the field is required.
   - Implementation of rewards and punishments can be applied to increase worker compliance with the use of PPE.
4. **Strengthening Social Support and Work Environment**

- Encourage a work culture that reminds coworkers to use PPE consistently.
- Project leaders or foremen must provide exemplary examples in the use of PPE.

5. **Company Policy Development**
   - Companies need to create internal policies that regulate in detail the obligation to use PPE, as well as the consequences for violations.
   - Top management support is essential to creating a safe work environment and increasing worker compliance.

6. **Further Research**
   - Further research is needed using qualitative methods to explore more deeply the motivations, barriers, and cultural factors that influence the behavior of PPE use in construction workers.

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