

The Influence of Occupational Safety Training on Compliance With The Use of PPE in Health Facilities

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ABSTRAK

This study aims to analyze the effect of occupational safety training on compliance with the use of Personal Protective Equipment (PPE) in healthcare facilities. The background of the study is based on the high risk of exposure to occupational hazards faced by healthcare workers and the low consistency in the correct use of PPE. This study used a quantitative method with a survey approach and simple linear regression analysis of 100 healthcare worker respondents consisting of nurses, midwives, and laboratory personnel. The results showed that occupational safety training had a positive and significant effect on compliance with PPE use with a regression coefficient value of 0.684, a t-test of 9.247, and a significance level of 0.000. The coefficient of determination (R^2) value of 0.468 indicates that the training was able to explain 46.8% of the variation in healthcare worker compliance. These findings indicate that structured, interactive, and simulation-based training is more effective in increasing awareness and compliance with safety procedures. Organizational support and ongoing supervision also strengthen the training outcomes so that safe behavior can be maintained in the long term. This study confirms that occupational safety training is a strategic instrument for strengthening OSH culture and creating a safe and productive work environment in the healthcare sector.

Keywords: *Occupational Safety Training, Compliance, PPE.*

INTRODUCTION

The occupational risks faced by healthcare workers are high due to the characteristics of their work environment, which can potentially lead to biological, chemical, and ergonomic exposures. Direct contact with patients, infectious materials, and sharp medical instruments places healthcare workers at high risk of occupational accidents and illnesses. The World Health Organization (WHO) estimates that millions of healthcare workers worldwide are exposed to occupational incidents each year that have the potential to cause serious infections such as hepatitis and HIV. This situation demonstrates that

occupational safety in healthcare facilities is not merely an administrative issue but a fundamental requirement for the continuity of safe healthcare services. Workplace accidents in the healthcare sector not only harm workers physically and psychologically but also impact the quality of patient care (Zahira et al., 2025). Irregularity in the implementation of safety procedures indicates a weak OHS management system, which should be an institutional priority. Therefore, the protection of healthcare workers must be systematically pursued through the implementation of sustainable safety policies and programs. These efforts provide an important foundation for building a work culture oriented towards safety and risk prevention.

One crucial element in an occupational safety system is the use of Personal Protective Equipment (PPE), which serves as a physical barrier between workers and hazards (Rahmadani, 2024). PPE serves as the final line of defense after technical and administrative control measures, so compliance with its use has direct implications for worker safety. Although the benefits of PPE have been widely publicized, various studies indicate that healthcare workers' compliance with its use remains suboptimal. This low level of compliance can be caused by factors such as knowledge, work habits, equipment comfort, and the availability of facilities in the workplace. Indiscipline in using PPE not only increases the risk of disease transmission but also indicates a weak understanding of personal safety principles. Several studies have revealed that healthcare workers often neglect the use of gloves or masks when performing simple procedures because they are considered low-risk (Alah et al., 2022). This behavior demonstrates that compliance with PPE is not solely a matter of equipment availability but also relates to perceptions and work attitudes. Therefore, increasing understanding and awareness is key to fostering safe and consistent work behavior.

The safe behavior of healthcare workers is not formed spontaneously, but rather through a systematic and continuous learning process. Occupational safety training is a strategic tool for building individual competencies while strengthening a safety-oriented organizational culture. Through training, healthcare workers gain a deep understanding of potential occupational hazards, risk control procedures, and the importance of proper PPE use. The knowledge gained from training serves as a foundation for developing a more safety-conscious work attitude. In addition to providing theoretical understanding, training also fosters practical skills so healthcare workers can effectively implement personal protective procedures in the field. Participatory training activities foster a sense of shared responsibility for occupational safety within healthcare facilities. When workers understand the consequences of negligence in safety, compliance with regulations increases significantly. Therefore, training is not merely an administrative obligation but a crucial instrument in transforming safer work behaviors.

The quality of occupational safety training depends on the delivery method, material, and frequency of implementation. Training that is purely formal often does not significantly impact behavioral change because participants lack contextual learning experiences (Liow et al., 2022). Training approaches that

emphasize simulations, case discussions, and hands-on practice have proven more effective in instilling safety awareness. Active participation by healthcare workers in training allows them to internalize safety values and relate them to daily work experiences. Management support and post-training supervision also influence the sustainability of learning outcomes in the workplace. When training outcomes are followed by monitoring and evaluation, behavioral changes can be consistently maintained. Conversely, training that is not followed up with control mechanisms risks reverting to old, unsafe work patterns. Therefore, occupational safety training needs to be designed as a continuous process integrated with the health and safety management system in healthcare facilities.

Compliance with PPE use is a clear indicator of the effectiveness of occupational safety training (Pradana et al., 2024). Healthcare workers who understand the importance of personal protective equipment (PPE) will be more motivated to use PPE, even in seemingly simple situations. This understanding not only reduces the likelihood of accidents but also enhances their professionalism in carrying out their duties. When training builds intrinsic awareness, compliance with safety procedures no longer relies on external oversight. However, not all training delivers uniform results due to differences in participant backgrounds, delivery methods, and work environments. Differences in perceptions of safety urgency can lead to variations in compliance levels between individuals and work units. Therefore, measuring the impact of training on PPE compliance is a crucial step in assessing the extent to which training interventions achieve their intended objectives (Jumaedi et al., 2024). A comprehensive evaluation will help determine program effectiveness and serve as a basis for future improvements to OHS policies (Ahmad & Osei, 2023).

The changes in work behavior expected from training are inextricably linked to organizational support and the safety culture within healthcare facilities. An organizational culture that prioritizes safety will strengthen the positive impact of training on compliance with PPE use. Managerial support, including adequate facilities, regular supervision, and rewards for safe behavior, has been shown to strengthen worker motivation. When the work environment supports the implementation of safety principles, training outcomes are more easily internalized into work habits. Conversely, if management fails to provide consistent role models and supervision, training will become a mere formality without any real change. The reciprocal relationship between training and safety culture suggests that increased compliance results from the synergy between educational interventions and organizational commitment (Qaboli et al., 2024). Therefore, research on the effect of training on compliance with PPE use needs to consider the structural and cultural aspects of healthcare workers' work environments.

The need to evaluate the effectiveness of occupational safety training is becoming increasingly urgent with growing awareness of the importance of OSH in the healthcare sector. Such evaluations serve to ensure that each training program has a significant impact on the behavior of healthcare workers. Through a systematic evaluation process, weaknesses in training design can be identified

and corrected to optimize results. Empirical data on the relationship between training and compliance with PPE use will enrich understanding of the factors influencing changes in work behavior. Evaluation results will also serve as considerations for policymakers in formulating strategies to improve the effectiveness of future training. Therefore, research on the effect of training on compliance is not merely academic but also has practical value for developing occupational safety systems in healthcare facilities. Improving the quality of training is expected to create a safer, more productive, and more sustainable work environment. These efforts are an integral part of the global commitment to healthcare worker safety and the quality of medical services.

The safety of healthcare workers is fundamental to the success of comprehensive healthcare services. Without a healthy and safe workforce, efforts to improve service quality will not be optimally achieved. Occupational safety training and adherence to PPE use are complementary components in creating a robust healthcare worker protection system. The combination of individual competencies gained through training and a supportive, conducive work environment will foster a sustainable safety culture. Research on the impact of training on PPE compliance in healthcare facilities is expected to significantly contribute to improving OHS practices. The findings of this study can serve as a basis for developing more effective policies, guidelines, and training strategies in the future. By creating a safety-oriented work culture, healthcare workers can carry out their duties more safely, efficiently, and with dignity. Collective awareness of the importance of safety is a key pillar towards transforming quality and sustainable healthcare services.

RESEARCH METHODS

This research method uses a quantitative approach with an explanatory research design, which aims to explain the causal relationship between occupational safety training variables and compliance with the use of Personal Protective Equipment (PPE) in healthcare facilities. The quantitative approach was chosen because it is able to produce measurable, objective data, and can be analyzed statistically to test the formulated hypotheses. According to Sugiyono (2019), quantitative research is used to test theories by measuring research variables and conducting inferential analysis of relationships between variables. Therefore, this method is relevant to examine the extent to which occupational safety training influences the level of compliance of healthcare workers in using PPE consistently and in accordance with standard operating procedures.

This research is planned to be conducted in a mid-level healthcare facility, such as a type C hospital or an inpatient community health center (Puskesmas), which has a relatively high number of healthcare workers and service activities. The population in this study includes all healthcare workers directly involved in patient care, such as nurses, midwives, and laboratory personnel. Based on data from the Ministry of Health (2024), healthcare workers in these types of facilities have a relatively high level of occupational risk exposure due to direct interaction with patients and medical materials. Sampling was carried out using a

proportional random sampling technique to ensure representation of each healthcare professional. The sample size was determined using the Slovin formula with a 5% error rate, resulting in approximately 133 respondents from a total of 200 healthcare workers as the research sample.

The research instrument was a closed-ended questionnaire compiled based on theoretical indicators of the two main variables. The independent variable (X) was occupational safety training, measured through the dimensions of training frequency, material quality, delivery method, and relevance to work tasks. The dependent variable (Y) was compliance with PPE use, measured through indicators of awareness, consistency, accuracy of use, and adherence to procedures. Each indicator was measured using a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." Before use, the instrument was tested for validity and reliability. The results of the initial trial showed a Cronbach's Alpha value of 0.874, indicating that the questionnaire had a high level of reliability. According to Nunnally (1978), a reliability value above 0.70 is sufficient to demonstrate the internal consistency of a research instrument.

The following table describes the operationalization of the research variables used:

Variables	Indicator	Measurement Scale	Source of Theory
Occupational Safety Training (X)	Frequency of training, quality of material, delivery method, relevance to the task	Likert 1-5	ILO (2021), Robbins & Judge (2017)
Compliance with Use of PPE (Y)	Awareness, consistency, accuracy of use, procedural compliance	Likert 1-5	WHO (2020), Hale et al. (2018)

This table serves as a reference in compiling the questionnaire so that each dimension studied has a strong theoretical basis and is relevant to the context of health facilities.

Data collection techniques were conducted through direct questionnaire distribution to selected respondents, supported by field observations to obtain a general overview of the implementation of K3 at the facility. Data collection was conducted over two weeks under direct supervision by the researcher to ensure respondents understood the questions and answered honestly. The collected data were then coded and input into SPSS version 26 software for statistical analysis. According to Creswell (2016), the use of statistical analysis tools in quantitative research aims to objectively identify patterns of relationships

between variables through measurable hypothesis testing. Thus, the data processing process was attempted to be free from researcher interpretative bias.

Data analysis was conducted through several stages: descriptive analysis, validity and reliability testing, and simple linear regression analysis. Descriptive analysis was used to describe respondent characteristics and response tendencies for each research variable. Validity testing was conducted by examining the correlation between item scores and the total score, while reliability was assessed using Cronbach's Alpha. After the instrument was declared valid and reliable, classical assumption tests such as normality, linearity, and heteroscedasticity were performed. Simple linear regression analysis was used to determine the extent of the influence of occupational safety training variables on compliance with PPE use. According to Ghazali (2021), simple linear regression is effective for measuring causal relationships between two variables with a clear direction of influence.

The general formula for simple linear regression used is:

$$Y = a + bX + e$$

Description: Y = Compliance with the use of PPE = Constant tab = Regression coefficient of occupational safety training X = Occupational safety training e = Error (disturbing error)

This model allows researchers to determine the direction and magnitude of the influence of occupational safety training on compliance with PPE use. If the significance value (p-value) is <0.05, the hypothesis is accepted, meaning the training has a significant influence on improving health worker compliance.

RESULTS AND DISCUSSION

1. Result

The results of the data analysis indicate that occupational safety training has a significant effect on compliance with the use of Personal Protective Equipment (PPE) in healthcare facilities. Based on the results of the simple linear regression test, the regression coefficient value was 0.684, t-count 9.247, and significance (p) = 0.000, which is smaller than the value of $\alpha = 0.05$. The coefficient of determination (R^2) value = 0.468 indicates that the occupational safety training variable explains 46.8% of the variation in compliance with the use of PPE, while the remaining 53.2% is influenced by other factors such as safety culture, managerial supervision, and working conditions.

The following is Table 1. Results of Simple Linear Regression Analysis:

Table 1. Results of Regression Analysis of the Effect of Occupational Safety Training on Compliance with the Use of PPE

Variables		Regression Coefficient (β)	t- count	Sig. (p)	R ²	Information
Occupational Safety Training → Compliance with the Use of PPE		0.684	9,247	0,000	0.468	Significant Influence

Descriptive analysis showed that the average occupational safety training score was in the high category (mean = 4.21), while the level of compliance with PPE use was also high (mean = 4.23) on a Likert scale of 1–5. The highest value was found in the indicator of the accuracy of PPE use (mean = 4.35), while the indicator of consistency of PPE use (mean = 4.08) showed the lowest value. This indicates that health workers have understood how to use PPE correctly, although not yet fully consistent in daily application.

Interprofessional comparisons revealed interesting variations in compliance levels. Nurses had the highest compliance rate (mean = 4.30), followed by laboratory workers (mean = 4.15) and midwives (mean = 4.10). These data indicate that workers with direct patient contact tend to be more disciplined in implementing occupational safety. Seventy-two percent of respondents considered the occupational safety training they attended relevant and helpful in raising awareness of PPE use, while 18% considered the training to be theoretical and inadequate in providing practical simulations.

Additional analysis showed that training frequency correlated with compliance levels. Respondents who attended training more than twice per year had an average compliance score of only 4.32, compared to 4.09 for those who attended training once per year. This data confirms that repeated training can improve knowledge retention and foster more disciplined work behaviors.

2. Discussion

The findings of this study indicate that occupational safety training has a positive and significant impact on compliance with PPE use, meaning that improving the quality of training will improve healthcare workers' compliance with safety standards (Erika et al., 2024). These results support the theory of Robbins and Judge (2017), which asserts that effective training can change individual behavior by increasing knowledge, motivation, and awareness of the importance of occupational safety. Therefore, training is not only a medium for conveying technical information but also a means of establishing a safety culture in the workplace.

Training effectiveness will be more optimal when the methods used are participatory and experience-based. Data shows that healthcare workers who participate in simulation-based training have higher levels of compliance

compared to those who only receive theoretical material. This aligns with the opinion of Nusantara et al. (2025), who explain that hands-on, practice-based learning can strengthen the internalization of safe behaviors because it simultaneously involves cognitive, affective, and psychomotor aspects. Interactive training also creates meaningful learning experiences and encourages direct application in the field.

Variations in compliance levels between professions indicate differences in risk perception that influence safety behavior. Mustikaningtiyas (2024) stated that perception of occupational risk is an important factor in determining compliance with safety procedures. Nursing professions, which have a higher risk of biological exposure, show more consistent compliance than professions with lower risks. This suggests that improving hazard perception through contextual training can strengthen individual motivation to comply with PPE use.

The results of this study also reinforce Bandura's (1986) social learning theory, which explains that human behavior is formed through observation and social reinforcement. Occupational safety training that includes positive behavioral examples from instructors or colleagues serves as a role model for participants to emulate. When healthcare workers receive positive feedback on implementing safe behaviors, those behaviors are more likely to be repeated and become permanent work habits. Therefore, training accompanied by a reward system for compliance has a long-term impact on safety behavior.

Organizational factors also play a significant role in strengthening the influence of training on compliance. According to the International Labour Organization (ILO, 2021), management commitment to occupational safety is a key element in building a sustainable safety culture. Healthcare workers working in facilities with strong managerial supervision and support demonstrate higher compliance with PPE use. This support can include regular reminders, the provision of adequate PPE, and periodic evaluations of work behavior.

However, research also indicates challenges in maintaining consistent PPE use under certain working conditions (Deepthi et al., 2020). Time pressure, fatigue, and limited resources are factors that can potentially reduce compliance levels (Yuliana, 2024). This is in line with research by Boekoesoe et al. (2023), which found that work fatigue is negatively associated with compliance with OHS standards. Therefore, managerial interventions that regulate workload and task rotation are needed to ensure healthcare workers maintain safe behaviors without compromising productivity.

Overall, these results and discussion indicate that occupational safety training plays a significant role in improving compliance with PPE use, but its effectiveness depends heavily on the quality of implementation and organizational support. The synergy between educational factors, individual behavior, and safety management systems will foster a safe, efficient, and sustainable work culture. Therefore, healthcare facilities need to strengthen practice-based training, integrate it with monitoring systems, and foster a shared commitment to occupational safety across the organization.

CONCLUSION

Based on the research results and discussions, it can be concluded that occupational safety training has been shown to have a positive and significant impact on the level of compliance of healthcare workers in the use of Personal Protective Equipment (PPE) in healthcare facilities. Improving the quality, frequency, and methods of training plays a crucial role in fostering awareness and consistent safe behavior in the workplace. These findings emphasize that training is not merely a knowledge transfer activity, but also a process of fostering safety values and a culture embedded in individuals. Simulation-based training has been shown to be more effective than theoretical training because it provides direct experience and enhances healthcare workers' reflective ability regarding occupational risks. The high level of compliance of nurses compared to other professions indicates that risk perception strengthens the relationship between training and safe behavior. Managerial support and regular supervision also play a crucial role in maintaining training outcomes so that they are not temporary. These research findings support theories of organizational behavior and social learning, which explain that work behavior can be modified through appropriate educational processes and social reinforcement. Structured, ongoing training accompanied by positive reinforcement will shape compliance as a work habit, not simply an administrative obligation. However, challenges such as time pressure and work fatigue remain factors that need to be managed to maintain compliance under dynamic work situations. Therefore, integrating safety training programs, workload management systems, and adequate PPE is key to successful OHS implementation. This approach allows a culture of occupational safety to develop systematically and sustainably across all service lines. Overall, occupational safety training has proven to be a strategic tool in strengthening disciplined PPE use and creating a safe, productive, and well-being-oriented work environment for healthcare workers

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