

Analysis of OHS Understanding among Workers in High-Rise Building Construction Projects

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ABSTRACT	ARTICLE INFO
<p>Construction projects are one of the fields of work with a high level of risk of work accidents so the implementation of Occupational Health and Safety (OHS) is very important. This study aims to evaluate the level of OHS understanding of workers in occupational safety practices within high-rise building construction projects. This study adopts a quantitative approach using a descriptive method. Data collection was carried out through a questionnaire containing a likert scale consisting of 20 items each for the two variables with a total of 73 respondents in the construction project of the Hermina Pandanaran Semarang (HSP) Hospital parking building construction in Semarang City and also direct observation in the field. Data analysis was conducted using descriptive statistics to determine the average value, percentage, category, and was strengthened by a correlation test to analyze the relationship among variables. The results showed that the level of understanding of OHS workers was 80% and occupational safety practices were 82%, this shows that both are in the very good category. The outcomes of the pearson correlation test proved that there was a strong and significant relationship between the level of understanding of OHS and occupational safety practices, which was 0.704. The findings in this study can be said that a good understanding and supported by an effective occupational safety culture system can produce optimal work safety practices. Thus, improving the implementation of OHS needs to be carried out in an integrated manner through strengthening knowledge, safety culture, and a sustainable management system.</p>	<p>Article History: Submitted 27 April 2026 First Revised 28 April 2026 Accepted 29 April 2026 Available Online 30 April 2026 Publication Date 30 April 2026</p> <p>Keywords: Construction Projects; High-Rise Buildings; OHS; Workers Evaluation</p>

1. INTRODUCTION

Every work environment must pay close attention to occupational health and safety (OHS), especially in the construction sector which has a high level of risk. The importance of OHS has been emphasized in Law Number 1 of 1970 concerning Occupational Safety which regulates the industry's obligation to ensure a safe work environment through the provision of training, personal protective equipment (PPE), and safety procedures that must be complied with by workers. This regulation is the main foundation as part of workplace accident prevention efforts in Indonesia. However, the implementation of OHS in the field still faces various challenges. According to data from the Ministry of Manpower of the Republic of Indonesia shows that in 2023 there were 370,747 cases of work accidents, reflecting the low effectiveness of the implementation of occupational safety in various sectors. From this data, around 93.83% of cases involve wage workers, which shows that even formal workers who already have access to the OHS protection system still face a significant risk of work accidents. Data from the Indonesia Safety Center (2024) shows that in 2019 around 40% of work accidents occurred in the construction sector which is included in the category of high accident rates. This high number is inseparable from the characteristics of complex construction work such as the use of heavy equipment, work at heights, dynamic and high-risk work environment conditions (Putri & Lestari, 2023; Manaya et al., 2024). Various studies showed that work accidents are not only caused by technical factors but also by human factors. Many work accidents occur due to workers' lack of understanding and non-compliance with safety procedures (Prameswari & Cahyadi, 2024; Suprayitno et al., 2021; Mahyudin & Hermawan, 2025). This showed that the aspect of knowledge and awareness of workers has an important role in determining the success of the implementation of OHS in the field.

In addition, the implementation of OHS does not only depend on regulations but also on synergy between the government, industry, and workers. Conscious behavior regarding occupational health and safety represents an initial preventive measure intended to reduce, or even eliminate, the risk of accidents in the workplace (Ramadhan et al., 2025). Basically, OHS includes various main elements, namely work tools, work processes, and humans as the main actors (Ahmad & Susilawati, 2023). Work tools must be designed and maintained properly to minimize risks, while work processes must be carried out systematically and planned. In a construction project, a structured work process can reduce potential hazards in the workplace (Mulyo et al., 2020). Meanwhile, workers' compliance with OHS standards and safe work behavior are key factors in creating a safe and conducive work environment (Moosa et al., 2020). The level of workers' understanding of OHS is an important factor that can affect work safety behavior. In occupational safety, knowledge is the basis for the formation of a person's attitudes and actions in working safely.

Workers who have a good understanding of OHS tend to be more compliant with safety procedures and more aware of potential dangers in the work environment (Romuty et al., 2017; Setiadi et al., 2023). On the other hand, low understanding can increase the likelihood of unsafe actions that have the potential to trigger work-related accidents. Theoretically, in the study of Occupational Safety and Health, knowledge is a basic factor that affects the formation of safe work attitudes and behaviors (Pangestika et al., 2023). This can be seen from the still high rate of work accidents, even though various OHS training and socialization programs have been carried out by the government and industry. Referring to data issued by the Ministry of Manpower of the Republic of Indonesia which recorded hundreds of thousands of work accident cases shows that efforts to improve the understanding of OHS have not fully had a significant impact on reducing the number of accidents. This condition indicates an inequality between the cognitive aspect (understanding) and the behavioral aspect (implementation) in work safety practices. This inequality can be caused by various factors, such as a work culture that has not fully supported safety, pressure on job targets, lack of supervision, and low individual awareness in prioritizing safety over productivity (Antao et al., 2016). In addition, workers who have actually understood the OHS procedure often ignore its application due to habituary factors or the assumption that the risks faced are not too great. This phenomenon shows that understanding OHS alone is not enough, but needs to be accompanied by the formation of attitudes and commitments to safe work behavior (Fuad et al., 2024).

Thus, it is important to examine more deeply whether the level of understanding of OHS that workers have really has an impact on work safety practices, or there are other variables that are more dominant in influencing this behavior. This safety must be ensured, and production resources should be utilized in a manner that is both secure and efficient (Muzaki & Yustiarini, 2021). This research was carried out on the construction project of the construction of a parking building at Hermina Pandanaran Semarang (HPS) Hospital located in Semarang City. The selection of the research location was based on the characteristics of the construction work of the parking building which has a fairly high level of risk of work accidents, especially because the building consists of 7 floors and is equipped with a basement area. This condition causes work activities at height and underground work that have different types of hazards, including the risk of falling from heights and building collapse. In addition, limited space and ventilation in the basement area such as multi-storey structure work, the use of heavy equipment, and work activities at height are also top priorities in safety. This construction project involves various types of workers with diverse backgrounds of experience and understanding of OHS, so it is relevant to examine the relationship between the level of understanding of OHS and occupational safety practices in the field. This study is important as a foundation for developing strategies to improve the implementation of OHS that are more effective and sustainable in construction projects.

2. METHOD

This study adopts a quantitative approach with a descriptive research design. A descriptive approach is used to describe the level of understanding of OHS and occupational safety practices in construction project workers. The research location was carried out in the construction project of the HPS Hospital parking lot in Semarang City. The population in this study is all workers involved in the construction project. Sampling using a total sampling technique of 73 people. Data collection was carried out through the distribution of questionnaires to respondents and also direct observation in the field. The research instrument was prepared using a likert scale with 20 items each with indicators that measure two main variables, namely the level of understanding of OHS and occupational safety practices. The indicators and sub-indicators of each variable can be seen in **Table 1**.

Table 1. Variable Indicators and Sub-Indicators

Indicators	Sub-Indicators	Item
Workers' OHS Understanding Level		
Knowledge of work procedures	Understanding of standard operating procedures (SOP)	1,2
	Knowledge of safe work steps and sequences	1,2
	Understanding of safety rules in high-risk areas (heights, basement, etc.)	1,2
	Knowledge of proper use of work equipment	1
	Understanding of emergency procedures (evacuation, fire response, etc.)	1
Understanding of the use of personal protective equipment (PPE)	Knowledge of types of PPE based on job tasks	1,2
	Understanding of the function of each PPE	1,2
	Proper methods of using PPE	1
	Awareness of when PPE must be used	1
	Understanding the risks of not using PPE	1
Understanding in Identifying Potential Hazards	Ability to recognize potential hazards in the workplace	1
	Understanding types of hazards (physical, mechanical, environmental)	1
	Ability to assess the level of risk	1
	Awareness of unsafe conditions	1
	Ability to anticipate potential accidents	1
Occupational Safety Practices		
Compliance in the use of PPE	Consistency in wearing PPE during work	1,2
	Compliance with PPE regulations	1,2
	Discipline in using PPE without supervision	1,2
	Use of appropriate PPE based on job type	1
	Avoidance of neglecting PPE in any condition	1
Implementation of safe work procedures	Compliance with SOP during work activities	1,2
	Performing tasks according to safety procedures	1,2
	Avoidance of unsafe acts	1
	Following safety instructions from supervisors	1
	Proper implementation of emergency procedures	1
Work behaviour supports safety	Awareness of personal and co-worker safety	1
	Concern for workplace safety conditions	1
	Participation in safety activities (briefings, meetings, etc.)	1
	Willingness to report unsafe conditions	1

Indicators	Sub-Indicators	Item
Workers' OHS Understanding Level		
	Discipline and responsibility toward workplace safety	1

Table 1 shows that each variable has three indicators and five sub-indicators. The research variables cover two main aspects, worker understanding of and occupational safety practices in the field. Understanding encompasses knowledge of work procedures, use of PPE, and identification of potential hazards, while practices reflect the implementation and behavior of workers in implementing safety in the workplace. Before use, Validity and reliability tests were conducted on the research instrument to ensure that the questionnaire was able to measure variables accurately and consistently. The following is the intended validity and reliability which can be seen in **Table 2** and **Table 3**.

Table 2. Product Moment Validity Test

Workers' OHS Understanding Level			Occupational Safety Practices		
Code	R Value	Statement	Code	R Value	Statement
P01.X	.496	Valid	P01.Y	.317	Valid
P02.X	.509	Valid	P02.Y	.334	Valid
P03.X	.317	Valid	P03.Y	.539	Valid
P04.X	.333	Valid	P04.Y	.295	Valid
P05.X	.528	Valid	P05.Y	.275	Valid
P06.X	.415	Valid	P06.Y	.532	Valid
P07.X	.480	Valid	P07.Y	.501	Valid
P08.X	.414	Valid	P08.Y	.515	Valid
P09.X	.527	Valid	P09.Y	.503	Valid
P10.X	.471	Valid	P10.Y	.303	Valid
P11.X	.396	Valid	P11.Y	.398	Valid
P12.X	.374	Valid	P12.Y	.330	Valid
P13.X	.419	Valid	P13.Y	.342	Valid
P14.X	.568	Valid	P14.Y	.657	Valid
P15.X	.378	Valid	P15.Y	.432	Valid
P16.X	.333	Valid	P16.Y	.326	Valid
P17.X	.447	Valid	P17.Y	.230	Valid
P18.X	.511	Valid	P18.Y	.339	Valid
P19.X	.414	Valid	P19.Y	.228	Valid
P20.X	.500	Valid	P20.Y	.372	Valid

Table 2 shows the validity test using the product moment method shows that all questionnaire items are valid. This is evidenced by the correlation coefficient values (r value) for each item being greater than the r table value of 0.227. Reliability test can be seen in **Table 3**.

Table 3. Cronbach's Alpha Reliability Test

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Workers' OHS Understanding Level	.804	20
Occupational Safety Practices	.798	20

Based on **Table 3**, The Cronbach's Alpha analysis demonstrates that the level of OHS understanding level variable has an α value of 0.804, while the occupational safety practices variable has an α value of 0.798. Both variables have α values greater than 0.70, indicating that they are reliable. The data analysis techniques used consisted of descriptive analysis and inferential analysis. Descriptive analysis was used to determine the level of understanding of OHS and work safety practices by calculating average values, percentages, and categorization. Furthermore, inferential analysis was carried out to test the relationship between the two variables using a correlation test. **Figure 1** is the way of thinking in this study.

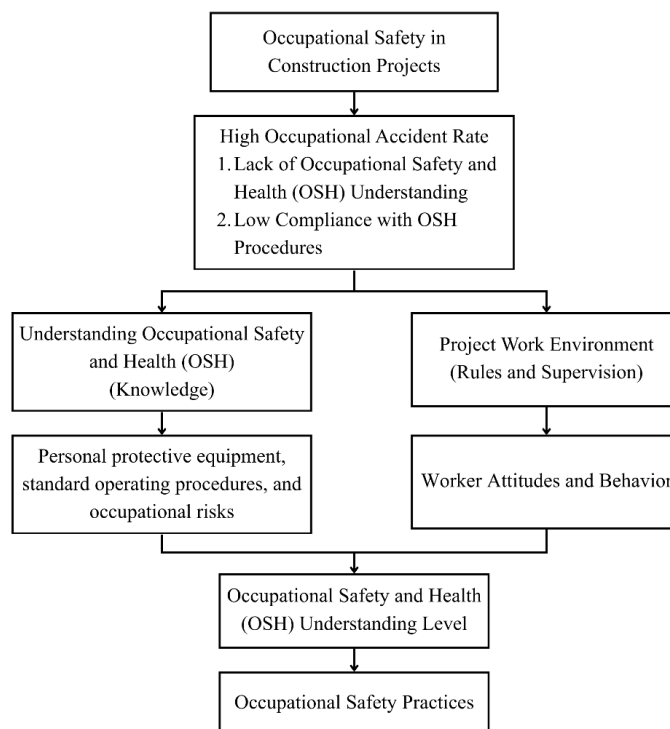


Figure 1. Research Thinking Framework

The conceptual framework in **Figure 1** explains that the high rate of workplace accidents in construction projects is influenced by low understanding and compliance with occupational health and safety (OHS). Workers' understanding of OHS, which includes knowledge of PPE, work procedures and risks, and work environment factors such as rules and supervision, shapes worker attitudes and behavior. This second aspect determines the overall level of OHS understanding, which in turn influences occupational safety practices in the field.

3. RESULT AND DISCUSSION

Normality testing was carried out to verify whether the data were normally distributed. The normality test was analyzed using the Kolmogorov-Smirnov test based on respondents' answers to a 20 item questionnaire for each variable. The number of respondents in this study was 73 workers on the HPS Hospital parking building construction project located in Semarang City. **Table 4** shows the results of the normality test.

Table 4. Cronbach's Alpha Reliability Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		73
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	4.25700178
Most Extreme Differences	Absolute	.095
	Positive	.095
	Negative	-.085
Test Statistic		.095
Asymp. Sig. (2-tailed)		.173 ^c

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

From **Table 4**, it can be seen that the Asymp. Sig. (2-tailed) value is 0.173. This value is greater than the minimum significance level of 0.05, indicating that the data are normally distributed. Furthermore, descriptive analysis was conducted to determine the general picture of the level of understanding of OHS and occupational safety practices of workers. The results of the descriptive analysis of indicators are presented in **Table 5**.

Table 5. Results of Descriptive Analysis of Indicators

Descriptive Statistics					
No	Variable	Indicator	N	Mean	Std. Deviation
1	Workers' OHS Understanding Level	Knowledge of work procedures	73	3.89	0.878
		Understanding of the use of personal protective equipment (PPE)	73	3.87	0.919
		Understanding in Identifying Potential Hazards	73	4.15	0.972
Valid N (listwise)			73		
2	Occupational Safety Practices	Compliance in the use of PPE	73	3.96	0.877
		Implementation of safe work procedures	73	4.21	0.868
		Work behavior supports safety	73	4.14	0.885
Valid N (listwise)			73		

Based on the results of the descriptive analysis of the indicators in **Table 5**, it is shown that the indicator of knowledge of work procedures has an average value of 3.89 with a standard deviation of 0.878 which indicates that respondents generally have a good and relatively equal level of understanding of safe work procedures. The indicator of understanding of the use of PPE obtained an average value of 3.87 with a standard deviation of 0.919. Although this value is the lowest compared to other indicators, the results still show that most workers have understood the importance of using PPE in work activities. Meanwhile, the indicator of understanding in the identification of potential hazards shows the highest average value of 4.15 with a standard deviation of 0.972 which reflects that workers have good ability to recognize potential risks in the work environment.

In the variable of occupational safety practices, the analysis showed that the compliance indicator in the use of PPE had an average value of 3.96 with a standard deviation of 0.877 which showed that workers in general had implemented the use of PPE fairly consistently in work activities. The indicator of the implementation of safe work procedures obtained the highest average value of 4.21 with a standard deviation of 0.868 which indicates that most of the respondents have followed the work procedures that have been well established and have a relatively high level of uniformity of answers. Meanwhile, the indicator of work behavior that supports safety has an average value of 4.14 with a standard deviation of 0.885 which can be interpreted that workers have shown behavior that supports the creation of a safe work environment.

Table 6. Final Descriptive Analysis Results

	Descriptive Statistics					
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Workers' OHS Understanding Level	73	20	68	88	79.79	5.778
Occupational Safety Practices	73	21	70	91	82.05	5.993
Valid N (listwise)	73					

Table 6 shows in addition to descriptive analysis of the indicators, this study also conducted an overall (final) descriptive analysis to obtain a more comprehensive overview of the level of understanding of OHS and workers' work safety practices. The results of the analysis showed that the variable level of OHS understanding of workers had an average value of 79.79 with a standard deviation value of 5.778. This shows that the distribution of data is relatively homogeneous which indicates that in general workers have a fairly high and consistent level of OHS understanding. Meanwhile, in the variable of occupational safety practices, a higher average value was obtained of 82.05 with a standard deviation value of 5.993 which shows that the variation in data is also relatively small, so it can be said that occupational safety practices tend to be uniform. The results of the descriptive analysis are also strengthened through the presentation of the percentage of indicators for each indicator in the variable level of understanding of OHS and occupational safety practices which can be seen in **Figure 2**.

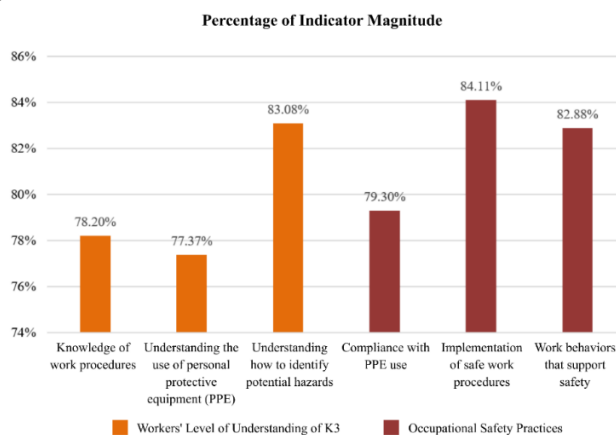


Figure 2. Percentage of Indicator Quantity

Figure 2 shows the results of a tabulation data analysis, the indicators on the variable level of understanding of OHS workers showed that knowledge of work procedures had a percentage of 78.20%, understanding of the use of personal protective equipment (PPE) of 77.37%, and understanding of the identification of potential hazards of 83.08%. The percentage value indicated that all indicators were in the good category. Meanwhile, in the variable of occupational safety practices, the indicator of compliance in the use of PPE had a percentage of 79.30%, the implementation of safe work procedures was 84.11%, and the work behavior that supports safety was 82.88%. These results show that all indicators of occupational safety practices are also in the good category. The percentage value in each of these indicators shows that workers tend to have followed work procedures that are set consistently in the implementation of work in the field. When compared between the two variables, it can be seen that the percentage value in occupational safety practices is higher than the level of OHS understanding. This can also be seen in **Table 7**.

Table 7. Final Variable Percentage Results

Introduce Variable			
No	Variable	Final Presentation	Categories
1	Workers' OHS Understanding Level	80%	Excellent
2	Occupational Safety Practices	82%	Excellent

Table 8. Percentage Interpretation

Scale	Indicator
80% - 100%	Excellent
70% - 79%	Good
60% - 69%	Medium
50% - 59%	Less
0% - 49%	Very Less

According to the analysis in **Table 7**, the variable of the level of understanding of OHS of workers as a whole obtained a percentage of 80%, while the variable of occupational safety practices obtained a percentage of 82%. Referring to the percentage interpretation criteria of (Ravid, 2024) in **Table 8**, the two values are in the category of very good. This shows that in general workers have a very good level of understanding of OHS and followed by also excellent occupational safety practices in the environment of high-rise construction projects. The difference in values between the two variables that is not too large shows that there is a consistency between the level of understanding that workers have and the occupational safety practices carried out. The results of the analysis are strengthened by the pearson correlation test in **Table 9**.

Table 9. Pearson Correlation Analysis Results

Correlations			
		Employee Understanding	OHS Practice
Workers' OHS Understanding Level	Pearson Correlation	1	.704**
	Sig. (2-tailed)		.000
	N	73	73
Occupational Safety Practices	Pearson Correlation	.704**	1
	Sig. (2-tailed)	.000	
	N	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

Table 10. Interpretation of Pearson Correlation Values

Scale	Indicator
0.8 – 1.000	Very strong
0.6 – 0.799	Strong
0.4 – 0.599	Moderate
0.2 – 0.399	Weak
0 – 0.199	Very weak

Based on the **Table 9** results of data processing, a correlation coefficient value of 0.704 was obtained or it can be said that the magnitude of the relationship observed between the two variables is 0.704. A value (Sig. 2-tailed) of 0.000 below the analysis requirement of 0.05 states that the understanding and practice variables have a very significant relationship. The relationship percentage value of 0.704 is a positive value, indicating that the higher the level of workers' understanding of , the better the occupational safety practices they carry out. The positive direction of the relationship indicates that an increase in the OHS understanding variable will be followed by an increase in work safety practices. According to **Table 10**, the correlation value of 0.704 resulting from the person correlation analysis is included in the strong category (Mulyati et al., 2024). These results also show that the relationship between the two variables is consistent, where workers who have a better understanding tend to show safer work behavior.

However, although the correlation value is categorized as strong, it also indicates that there is still a portion of variance in occupational safety practices that is not explained by the OHS comprehension variable. This means that worker understanding does not fully determine safety behavior in the field, and other factors may contribute to the remaining variance. Based on the researcher's analysis in field observations, these factors include the intensity of supervision, safety culture, management commitment, work environment conditions, and organizational policies that support safety implementation. Therefore, while OHS comprehension plays a significant role in improving occupational safety practices, it should be understood as part of a broader system in which multiple elements interact to shape workers' safety behavior in construction projects.

The findings of this study indicate that the level of understanding of Occupational health and safety(OHS) of workers is in a good category and in line with occupational safety practices in the field. Workers' understanding in a construction project is the main foundation in forming safe work attitudes and behaviors. Workers who have an understanding of work procedures, the use of personal protective equipment (PPE), and the identification of potential hazards tend to be able to reduce the risk of accidents through more appropriate decision-making in the work environment. Evaluation of the level of understanding of OHS in occupational safety practices shows that the understanding of construction project workers is not only in theoretical aspects but has been implemented in daily work activities. This is reflected in the compatibility between the understanding they have and the work behavior shown. From this study, it can be stated that when the understanding of OHS is supported by an adequate work system and environment, then occupational safety practices can run optimally.

Work accidents are mostly caused by unsafe actions that are rooted in a lack of knowledge and awareness of workers (Ikhtiar et al., 2024). In addition, occupational safety behavior is not only influenced by knowledge but also by environmental factors, work culture, and management systems applied (Moosa et al., 2020). Thus, the harmony between understanding and practice found in this study shows that these supporting factors have been running effectively. This condition can be seen in the implementation of the HPS Hospital parking building construction project in Semarang City, where various systematic efforts have been implemented to support work safety. Briefing activities every morning before starting work are an important means of conveying safety information, reminding of potential dangers, and building worker awareness. In addition, joint gymnastics activities routinely contribute to maintaining the physical condition of workers which indirectly affects readiness and vigilance in working in the field. Other efforts such as regular worker health checks show attention to preventive aspects in OHS that not only focus on safety but also worker health.

The installation of safety communication media such as banners and hazard signs in the project area also plays a role in strengthening visual awareness of potential risks. The success of the implementation of OHS is influenced by the integration between people, tools, and the work environment (Ahmad & Susilawati, 2023; Fuad et al., 2025). Based on the results of the discussion, it can be formulated that a strategy to improve the implementation of OHS that is more effective and sustainable does not only focus on improving worker knowledge, but must also include strengthening the system and culture of occupational safety (Jaafar et al., 2018; Umar et al., 2019). The strategy that can be done is to strengthen the safety communication program through routine briefings that are more interactive and based on actual conditions in the field. Furthermore, increase behavior coaching through a safety culture approach so that workers are not only compliant with the rules but also have an intrinsic awareness of the importance of safety (Sarbiah, 2023). The next strategy is to strengthen the monitoring and evaluation system

periodically to ensure that safety standards are consistently applied (Satoto, 2020). In addition, occupational health programs need to continue to be improved as part of the preventive approach in OHS. The use of visual communication media such as warning signs also needs to be continuously optimized to increase workers' awareness of potential risks. Thus, this is in line with the concept of OHS management which emphasizes the importance of integration between technical, human, and system aspects in creating a safe and sustainable work environment.

4. CONCLUSION

Based on the results and discussion of the research, it can be concluded that the level of understanding of Occupational health and safety(OHS) of workers in high-rise construction projects is in the very good category and in line with occupational safety practices which are also in the very good category. This shows that workers not only have adequate knowledge but are also able to implement it in daily work activities. The results of the study also show that there is a significant relationship between the level of understanding of OHS and occupational safety practices which indicates that increased understanding of workers contributes to the improvement of safe work behavior. The success of the implementation of OHS in the construction project of the HPS Hospital parking building construction located in Semarang City is not only influenced by the perception factor of workers but also supported by safety systems and cultures that are implemented consistently, such as regular briefings, fitness improvement activities, periodic health checks, and the provision of safety communication media in the work environment. This shows that an integrated approach between aspects of knowledge, behavior, and safety management systems is an important factor in creating a safe work environment. Thus, the strategy to increase effective and sustainable OHS implementation needs to be directed not only at increasing worker knowledge but also at strengthening safety culture, supervision systems, and preventive programs that support occupational health and safety.

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