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Work Tenure and Attitude Associated with Unsafe Action Among Workers at "X Company", Indonesia

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Abstract
Introduction: The incidence of unsafe behavior has increased over the last three years. This was based on the incidence of minor work accidents and findings of near-miss conditions in each production area. This research aimed to analyze the association between age, tenure, and work attitude on unsafe action among "X company" workers.
Methods: This study employed a quantitative analytical method with a cross-sectional design. The population in this study comprised of 93 workers in the production area of "X Company" in one of the plants. A simple random sampling technique was used, which yielded a sample size of 76 respondents. The independent variables studied were age, work tenure, and work attitude. The dependent variable was unsafe action. Data were collected through interviews using questionnaires, which had been tested for their validity and reliability. Chi-square tests and multiple logistic regressions were used for data analysis.
Results: The subjects were between 25-56 years, with an average of 41.2 years. The majority of the subjects (85.5%) had work tenure for ≥ 10 years, 67.1% had negative work attitude, and 53.9% had unsafe action. There was no association between age and unsafe action (p=1.000), but there were associations between work tenure (0.004) and work attitude (p=0.0001) with unsafe action. The multiple logistic regression showed that both work tenure and attitude concurrently associated to unsafe action.
Conclusion: The work tenure of more than ten years and negative work attitude were associated to unsafe action behavior in "X Company," whereas age did not associated to unsafe behavior.

Keywords: Work Tenure; Work Attitude; Age; Unsafe Action; workers.

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Introduction

Unsafe action among workers refers to actions that do not comply with established procedures and safe work practices, potentially putting the individual at risk of harm, either to themselves or others, ultimately leading to workplace accidents.[1] Some common examples of unsafe action among workers include performing tasks without proper qualifications and authority, failing to use personal protective equipment (PPE), neglecting equipment safety, working at dangerous speeds.[2] One indicator of unsafe action was the continuous rise in claims for Work Accident Insurance and

Death Insurance to the Social Security Bureau (BPJS Ketenagakerjaan). This increase aligns with the data released by the Ministry of Manpower (Kemenaker), which recorded 370,747 workplace accident cases in Indonesia in 2023, an increase by 24.11% from cases in 2022. At the provincial level, East Java ranked second for the highest number of workplace accidents in 2023, with 15.27% of total cases.[3] This was in line with a research that showed that unsafe actions had an impact on work accidents.[4]

One of the national-scale agri-food companies operating in East Java is the "X Company", which has three units, including the plant where this study was conducted. The company faced workplace accident risks in various operational activities. A brief interview with the HSE (Health, Safety, and Environment) Supervisor revealed that several jobs with high accident potential, such as cleaning production machines at a height of 5–8 meters, fumigating silos at 40 meters, inspecting raw materials with a risk of falling, exposure to noise and machine vibrations, and other workplace hazards. According to the HSE team's report, minor workplace accidents were recorded during the 2023-2024 period. Based on the HSE unit data, the number of workplace accidents has increased from five to six cases from 2023 to 2024. These accidents were likely caused by unsafe worker behavior. The Workplace Accident Data of "X Company" (2023-2024) indicated that most minor accidents were due to unsafe actions, particularly non-compliance with personal protective equipment (PPE) usage. The relationship between workplace accidents and unsafe actions aligns with Heinrich's Domino Theory, which stated that 88% of workplace accidents result from unsafe actions, 10% from unsafe conditions, and 2% from other factors. Heinrich concluded that preventing workplace accidents requires eliminating unsafe actions, which were the direct causes of incidents.[5]

"X Company" HSE team also observed a three-year increase in unsafe action among workers, which might be the risk factor for workplace accidents. The unsafe HSE action report from 2022 to 2024 showed an increase from 19 cases in 2022 to 22 cases in 2023, and 36 cases in 2024. According to the HSE unit data, the highest number of unsafe action incidents occurred in 2024. The total case were 36 cases, 63.6% higher than that in 2023. Unsafe action incidents contributing to 47% of the overall incidents. Upon further investigation, all 36 cases were predominantly caused by negligence, lack of concern, and non-compliance with PPE usage across different production areas. Unsafe actions, as a direct cause of workplace accidents, were influenced by personal and work-related factors. Personal factors include workers' individual characteristics, physical and mental conditions. Work-related factors include mismatched tasks and labor, excessive work hours, high-risk jobs without control measures, and unsuitable workloads. Several studies had established the relationship between individual characteristics and workplace accidents. The common variables studied were age and work tenure.

According to employee profile data from the Human Resources Department (HRD), most workers at "X Company" were over 35 years old (75%), whereas 96.2% have worked for more than five years. Hamudya (2022) found that workers with less than three years of experience were more likely to engage in unsafe actions compared to those aged ≥40 years. Older workers tended to be more cautious, reducing accident risk, whereas younger workers might act more recklessly and hastily. A longer work tenure was believed to reduce workplace accident risks, as experienced workers were more familiar with hazardous areas and behaviors. Hamudya also found that workers with shorter tenure tend to engage in unsafe actions more frequently.[6]

Unsafe actions can also stem from workplace attitudes, especially among workshop workers, leading to accident risks. Larasatie conducted a study and found a significant relationship between work attitude and unsafe actions among production workers at Y Incorporated Company (p=0,000). [7] Similarly, Monalisa found a link between attitudes and unsafe action among service workers at Agung

Automall Incorporated Company Jambi Branch (p=0.013.) [8] Research by Budiman and Wahyuningsih, also found the association between work attitude and unsafe action among workers at X Incorporated Company, Cilacap, Central Java.[9]

Based on initial observations with the HSE Supervisor and previous research, this study aimed to determine the association between age, work tenure, and work attitude towards unsafe action at the "X Company", Indonesia. The results of this study could be used to minimize workplace accident risks that may cause losses for both employees and the company.

Methods

Research Design

This research used an analytical quantitative approach with an observational method. The research design followed a cross-sectional study in which both independent and dependent variables are collected at a single point in time, reflecting the conditions at that moment.

Research Location and Period

This research was conducted at the " X Company", Indonesia, from August to December 2024.

Population and Sample

The study population consisted of 93 workers in high-risk work areas at "X Company". A simple random sampling technique was used, which yielded a sample size of 76 respondents.

Inclusion & Exclusion Criteria

Inclusion and exclusion criteria were applied in the study. The inclusion criteria were employees working in the production area and agreeing to participate. The exclusion criteria included employees who were absent during the questionnaire distribution and non-shift workers in the production area.

Research Variables

The dependent variables were unsafe behavior. The independent variables were age, tenure, and work attitude. The attitude variable was measured through interviews using a questionnaire containing nine questions related to work instructions or standard operating procedures for safe work, workplace hazards, safety sign functions, and hazardous materials listed in the Material Safety Data Sheet (MSDS). The score ranged from a minimum of 9 to a maximum of 45 and was categorized into negative and positive attitudes.

The unsafe behavior was measured through interviews using a questionnaire containing 15 questions about daily workplace safety and health practices regarding potential near misses, incidents, and workplace accidents. The questionnaire responses were categorized as unsafe, moderately safe, or safe.

Data Collection Techniques & Instruments

Data were collected through interviews, using structured questionnaires. The questionnaire had underwent validity and reliability testing previously. The interview process aimed to obtain respondents' characteristics, including age, work tenure, work attitude, and unsafe behavior at work.

Data Analysis

Data analysis were conducted through Chi-square tests to examine the associations between age work tenure dan attitude with unsafe behavior. The analysis then continued to multivariate analysis using multiple logistic regression.

Results

Variable Distribution

The youngest respondent in this study was 25 years old, whereas the oldest was 56 years old. The average age of the respondents was 41.2 years old. Age was categorized into two groups of adults (12-45 years) and older age (>45 years). The age distribution data are presented in Table 1.

Table 1 shows the distribution of age categories among the 76 respondents in this study. The majority of respondents belonged to the adult group (56 respondent (73.7%). Work tenure in this study was categorized into two groups. Table 1 indicates that the majority of workers had

been employed for more than 10 years, accounting for 65 respondents (85.5%). These findings suggest that most respondents have been employed at the “X Company“ for a considerable period.

Table 1 shows that most respondents (67.1%) displayed a negative attitude (51 workers). This finding indicates that most workers hold negative attitudes towards safe work instructions or standard operating procedures, workplace hazards, and safety sign functions as well as recognizing hazardous materials used in the Material Safety Data Sheet (MSDS).

Table 1 also shows that most workers exhibited unsafe actions (53.9% or 41 workers), while 46.1% (35 workers) demonstrated moderately safe actions. None of the workers was categorized as having good or safe actions.

Crosstabulation

Table 2 shows a cross-tabulation between age, work tenure, and attitude towards unsafe action among 76 respondents. Unsafe actions were categorized as unsafe or moderate. Among the adults, 53.6% demonstrated unsafe action, while 46,5% exhibited moderate unsafe action. Among the older adult, 55% demonstrated unsafe actions, while 45% exhibited moderate unsafe actions. The chi-square test for the association between age and unsafe actions showed a p-value of 1.000, which indicated that there was no significant relationship between age and unsafe actions.

Table 2 shows that work tenure had a significant statistical association with unsafe actions (p=0.004). The findings suggested that a longer tenure correlated with a higher likelihood of unsafe actions. In table 2, it is also shown that there was an association between work attitude and unsafe actions (p=0.0001). Workers with negative attitudes were significantly more likely to engage in unsafe actions.

Regresion Model

Multiple logistic regression analysis yielded a model significance of 0,0001. This indicates that the independent variables significantly influenced the dependent variable. The Nagelkerke R-squared value was 0.832, meaning that the independent variables explain 83.2% of the variance in the dependent variable, while the remaining 12.8% was influenced by other factors outside this study.

As age was not significant in the model, multiple logistic regression analysis was conducted again without the age variable. The new model still showed a significance of 0.000, with a Nagelkerke R-square of 0.832, meaning that work tenure and attitude explain 83.2% of the variation in unsafe action. This logistic regression showed that work tenure and attitudes together were associated with unsafe actions. Workers with a longer tenure tend to exhibit more unsafe actions, while workers with a negative attitude are significantly more likely to act unsafely.

Table 1. Description of Age, Work **T**enure, Work Attitude, and Unsafe Action in categories

Variable	**Category**	**Total**	**Percentage (%)**
Age	Adult (12-45)	56	73.7
	Elderly (>45)	20	26.3
Tenure	≤10 Years	11	14.5
	>10 Years	65	85.5
Attitude	Negative	51	67.1
	Positive	25	32.9
Unsafe Action	Unsafe	41	53.9
	Moderate	35	46.1

Table 2. Crosstabulation between Age, Work Tenure and Work Attitude with Unsafe Action

Variable	Category	Unsafe Action				Total		P
		Unsafe		Moderate				
		n	%	N	%	n	%	
Age	Adult (12-45)	30	53.6	26	46.4	56	100	1.000
	Older adult (>45)	11	55	9	45	20	100	
Work Tenure	≤10 Years	1	9.1	10	90.9	11	100	0.004
	>10 Years	40	61.5	25	38.5	55	100	
Work Attitude	Negative	40	78.4	11	21.6	51	100	0.0001
	Positive	1	4.0	24	96.0	25	100	

Table 3. Logistic Regression Model for Age, Work Tenure, and Attitude on unsafe action

Variable	Category	Beta	P	Exp B	95% Confidence Interval
Intercept	*Intercept*	2.971	0.019	.	.
Age	Adult (12-45)	0.278	0.835	1.320	0.097-17.973
	Elderly (>45)	0[b]	.	.	.
Work Tenure	≤10 Years	5.100	0	164.034	12.511-2150.709
	>10 Years	0[b]	.	.	.
Work Attitude	Negative	-6.151	0	0.002	0-0.026
	Positive	0[b]	.	.	.

Reference category : Unsafe
[b] : Reference category

Table 4. Logistic Regression Model for Work Tenure and Attitude on Unsafe Action

Variable	Category	Beta	Sig	Exp B	Confidence Interval
Intercept	*Intercept*	3,136	0,002	.	.
WorkTenure	≤10 Years	5.168	0	175.571	14.308-2154.39
	> 10 Years	0[b]	.	.	.
Work Attitude	Negative	-6,106	0	0.002	0-0.026
	Positive	0[b]	.	.	.

Reference category : Unsafe
[b] : Reference category

Discussion

There was no association between age age and unsafe action. Wuni' studies showed that age influenced unsafe actions, with unsafe actions increasing in the older age category.[10] As people age, their physical abilities tend to decline. However, Prakoso argued that age has a significant effect on unsafe action.[11] Workers over 30 years old tend to perform better due to better emotional control and more mature thinking, which helps them avoid workplace accidents.[11] At "X Company", workers' mindset often perceived near-miss situations as acceptable and frequently repeated. Most workers considered near-miss situations as safe and non-hazardous. This contradicted the finding that workers aged ≥30 years tended to act rationally and possess better thought patterns, made them more likely to adopt safe work habits.[12] Similarly, Kase et al. (2023) found that respondents in high-risk age groups demonstrated the most unsafe behaviors. However, those under 45 years of age who acted safely were more common. Age can be a factor influencing changes in unsafe actions among workers, but in this research, it did not. Other variables might also play a significant role in determining

an individual's behavior. In this research, based on result it was clear that the work tenure and attitude played the roles in determining an individual's working behavior.[13]

The distribution of age variables in this study played a crucial role in understanding the extent to which workers of different age groups actively contribute to maintaining occupational safety and health standards. A high level of work activities in the company leads to varied perceptions among employees regarding safe work behavior. Table 1 shows that the majority of the respondents were within the productive adult age range. The results indicated a diverse age distribution in groups due to the division of work locations into multiple areas and sub-departments, which collectively form a single production area. A study by Mattalatta (2023) found that the most common age group of workers was between 36 and 45 years. The large number of workers in this group enabled a higher level of engagement in implementing OSH practices within the company.[14] Similarly, Basri & Sani (2024) found that the most dominant productive age group fell within the 31–40 age range. These adult productive workers were generally in a more advanced stage of their careers and may have a stronger influence on perceptions of safe work behavior.[15] Annisa (2019) stated that as workers aged, they develop more rational thinking patterns.[16]

Workers in the 30–34 age range were more prone to unsafe behavior due to their habit of ignoring OSH warning signs in their respective work areas, as confirmed through interviews. In contrast, almost all workers aged 35–39 belong to the warehouse sub-department, where unsafe behavior includes failing to use personal protective equipment (PPE) in areas with noise levels exceeding the threshold limit value (TLV). Some workers also tended to listen to music by using headsets while working. The job responsibilities of workers in the adult productive age group vary widely, including positions such as heavy equipment operators (wheel loader, dump truck, and forklift operators), electrical maintenance operators, high-altitude workers (Silo-Production), fumigation operators, and hazardous chemical (B3) formulation operators for feed additive-premix production. These roles carried a high risk for work-related accidents and occupational diseases. Ashari (2019) found that age significantly influenced workers' perceptions of unsafe behavior, as they tended to become accustomed to performing seemingly simple and routine tasks without considering their long-term consequences.[17]

Workers in the 50–54 age range accounted for eight employees (10.5%). This group held a wide range of job positions and responsibilities, working across various sub-departments with high-risk activities, such as silo-production operators, heavy equipment maintenance operators, forklift operators, and civil maintenance workers. Meanwhile, only two employees (2.6%) fell within the 55–59 age group, nearing retirement with minimal exposure to work-related accidents or occupational diseases, as they were primarily assigned administrative duties. In the 25–29 years age range, four workers (5.3%) were mainly responsible for tasks with a high risk of occupational accidents or diseases, such as frequent exposure to hazardous chemicals used in livestock feed formulation. As stated in the Material Safety Data Sheets (MSDS), these chemicals had carcinogenic, irritant, and corrosive properties. Among all job types, administrative work poses the lowest risk for workplace accidents and occupational diseases, although ergonomic-related subjective complaints may still occur. Prakoso (2022) found different results, reporting that the majority of respondents were under 30 years of age. Workers under 30 tend to experience behavioral changes influenced by the habits they observe and imitate from their colleagues.[11]

The study results showed that the highest frequency of unsafe behavior was found among workers with more than 10 years of tenure, with a total of 28 individuals (71.8%). Meanwhile, the highest frequency of fairly safe behavior was found among workers with less than six years of tenure with 10 individuals (90.9%). Workers with longer work tenures tended to gain more experience but often ignored work procedures. According to Suma’mur in

Annisa (2019), work experience improved with tenures. Heavy equipment operators with more than 10 years of experience frequently operated vehicles carelessly, while line press operators and hammermill operators with less than six years of experience exhibit unsafe behavior by not using hearing protection in work environments with noise levels of 92 dB.[16]

According to interviews with the HSE team, workers with less than six years of tenure tended to display fairly safe behavior. This means that they generally followed the standard given by their superiors, although they sometimes failed to communicate their work results effectively. For example, when unloading raw materials using a forklift, production staff often communicate delays to heavy equipment operators regarding material retrieval from the warehouse. Both groups, workers with less than six years and those with over ten years of tenure, have the same likelihood of engaging in unsafe behavior.[18] According to Yusril et al. (2020), long work tenure did not always result in safer behavior. Long-tenured workers accumulated experience that can be used to behave safely through the following procedures: However, these workers should also demonstrated that they have learned from their experiences and adhered to current procedures.[19]

The results indicated a significant association between work tenure and unsafe action, with a p-value of 0.004. A longer tenure often correlates with more frequent unsafe behaviors at work. According to Ashari (2019), inexperienced workers tended to engage in unsafe actions that increase the risk of workplace accidents. For example, heavy equipment operators with over 10 years of tenure habitually drive recklessly, failed to wear safety helmets, and neglect seat belts.[17] In contrast, Ayu & Rhomadhoni (2019) found that as work tenure increases, unsafe behavior should decrease. However, field observations indicated that the longer the tenure, the more unsafe behaviors workers exhibit. Interviews with workers revealed that unsafe behaviors arise due to high work demands in certain units, forcing employees to adopt unsafe habits to complete their tasks.[20]

The distribution of work tenure in this study provides an explanation for workers' perceptions of unsafe actions and their tendency to recognize the types of hazards associated with their respective jobs. Work tenure was categorized into clusters or groups to highlight significant differences in observations and analyses based on questionnaire responses and interviews with workers. The results will serve as an evaluation material for improving the company's occupational safety and health (OSH) culture. The most dominant work tenure group was employees with more than 10 years of service, with 39 workers or 51.3% of the respondents. This group tended to exhibit passive unsafe behavior and did not fully comply with OSH regulations. Therefore, direct supervision and counseling from superiors was needed to ensure that near-miss incidents in the field were promptly reported. The expectation was that employees with a long work tenure would maximize safe work behavior, set a positive example for their colleagues, and reinforce OSH culture.[21] The longest recorded work tenure in this study was 30 years. Ideally, extended work tenure should lead to improved safety behavior. However, based on the distributed questionnaires, some workers tended to take shortcuts in certain tasks, leading to persistent unsafe behavior. According to Rajab & Djunaidi (2024), work tenure could influence an employee's performance.[22]

The second tenure group consisted of employees with ≤10 years of experience. This trend suggested that the organizational culture passed down by long-tenured workers (over ten years) might not be ideal, as unsafe behavior was imitated and normalized among newer employees. Senior workers in each unit provided limited education on safe work behavior to their colleagues. Mattalatta (2023) found that work tenure could have both positive and negative effects on worker performance. Longer tenure could enhance experience and task execution, but it could also lead to ingrained unsafe habits.[14] This finding aligns with Annisa (2019), who stated that workers with less than six years of tenure tended to engage in unsafe behavior due to limited

knowledge and experience regarding OSH hazards in their work areas.[16] Work tenure significantly influenced a worker's sensitivity to their environment, affecting their awareness of safe or unsafe behavior.[23]

The distribution of work attitude variables showed that negative attitudes dominated with 51 workers (67.1%). The work attitude measured in this study is based on questionnaire instrument indicators, where the majority of respondents frequently did not read the MSDS guidelines when handling chemical substances, often did not use personal protective equipment (PPE), smoked in work areas, and rarely paid attention to OSH signs in their respective workplaces. These factors contributed to unsafe worker behavior, increasing the likelihood of near miss incidents, unsafe conditions, and even fatal workplace accidents. These findings highlight the need for management to implement corrective measures to address the prevalent negative work attitudes. This aligns with Sihombing's (2018) study, which found that 58.3% of respondents had negative attitudes due to a lack of awareness regarding workplace hazards. To address this issue, training programs had been implemented, including basic and advanced OSH refresher training, which would be continuously monitored by the HR team and supervisors from each unit, supported by the HSE team conducting oversight.[24] In contrast, Basri & Sani (2024) study on hydroelectric power plant construction workers found that 65 respondents (95.6%) demonstrated predominantly positive work attitudes. The formation of these attitudes is influenced by workers' knowledge, which shapes their tendency towards either a positive or negative mindset.[15]

The study also found that positive work attitudes were present in 32.9% of the respondents, or 25 workers. Those with a positive work attitude were continuously monitored and engaged by the HSE and HR teams to maximize safe work behavior in each unit. According to Asfian et al. (2021), many employees at Pelindo IV Kendari exhibit good work behavior, although some still engage in unsafe actions, such as smoking or using mobile phones while working. Positive attitudes were identified among respondents whose questionnaire scores ranged from 28 to 45, whereas scores between 9 and 27 were categorized as negative attitudes.[25] Prakoso (2022) similarly found that the majority of workers (53.7%) had negative work attitudes, often ignored OSH signs and posters, neglected hazard reporting, and failed to read MSDS guidelines regarding workplace hazards.[11]

One of the most concerning findings from the distributed questionnaire was the workers' response to the statement: "Near-miss incidents or close calls must be reported to supervisors." More than 80% of respondents stated that they "rarely" reported such incidents in this study. This suggested that when near-miss conditions occured, workers were reluctant to report them, creating barriers that increased the risk of fatal workplace accidents due to unrecorded near-miss incidents across different work activities .[26] Additionally, workers' awareness of near-miss risks within their respective units was not well documented, leading to incomplete or insufficient data for the HSE team. Another frequently observed unsafe work behavior was the failure to turn off machines or equipment after use (negligence). This significantly increased the potential for workplace accidents.

Workers with negative attitudes tended to exhibit unsafe behaviors, totaling 40 individuals (78.4%). Meanwhile, workers with positive attitudes tended to display fairly safe behaviors with 24 respondents (96.0%). Workers with positive attitudes were more likely to behave safely than those with negative attitudes were. According to HSE team observations, workers with negative attitudes often belonged to an older workforce with a high seniority. An older organizational culture fostered bad habits that negatively influence new or replacement workers. Siregar and Susilawati (2023) stated that an individual's attitude was shaped by their own experiences or learning from others.[27] Experience-based responses created stimulus reactions that lead to perceptions and actions. A negative attitude towards OHS implementation is often linked to a

lack of knowledge about the benefits of PPE. According to the HSE team, workers with negative attitudes frequently claimed discomfort as the main reason for not using PPE. Infrequent PPE usage increased the risk of unsafe actions and workplace accidents.[28]

The study results confirmed an association between work attitude and unsafe behavior, with a p-value of 0.0001. Workers with positive attitudes understood safety signs in their respective work areas, which helped them recognize potential hazards. Technical controls, such as workplace safety signs, serve as a hierarchy to minimize accident risks.[29] Examples include "No Smoking" signs, maximum speed limits for heavy equipment, reminders to wear masks in production towers, noise reduction equipment recommendations, body harness usage for high-altitude work (PO Tank and SILO), and emergency evacuation route signs. Perceptions of workplace attitude is a cognitive construct interpreted as behavior.[30] These attitudes determines whether workers adopt safe or unsafe behaviors, shaped by their understanding, knowledge, and habits.

The distribution of respondents' behavior in this study tended to be dominated by the unsafe category, with 41 workers (53.9%), while the distribution of fairly safe behavior frequency accounted for 35 workers (46.1%). No respondents were categorized under the safe behavior frequency distribution in this study. This aligns with the research by Krisyanti (2024), who found that unsafe behavior also dominated (57.7%) with 28 respondents. This was attributed to workplace cultural factors, particularly poor Occupational Health and Safety (OHS) communication in the steel fabrication division at PT. X. Based on the study, the most dominant unsafe behavior observed among workers was the failure to use personal protective equipment (PPE) as per standard operating procedures. This finding is consistent with the initial field observations conducted by the HSE team, where instances were found in workers not wearing PPE because they were damaged. There were also cases where PPE was missing during joint inspections in the production area. Such conditions might arise because of workers' negligence regarding company-established procedures. According to information from the HSE team, workers tended to comply with PPE usage when HSE teams visibly monitored the field. However, once the HSE team leaves the work area, most workers immediately stopped using PPE. This behavioral tendency reinforces the notion that many workers did not consistently adhere to PPE regulations set by the company.[26]

Another unsafe action identified through the questionnaire responses was smoking at the workplace. Most respondents admitted frequent smoking in work areas. This aligns with Prakoso (2022), who found that workers struggle to quit smoking due to habits developed to alleviate boredom.[11] The unsafe behavior of smoking was continuously monitored and inspected by the HSE team and management. "X Company", has designated nine smoking areas where smoking is permitted. However, many workers continued to smoke in their work areas, often hiding themselves to avoid detection by colleagues or supervisors. This was evident from cigarette butts found in several workplace locations. The sanctions for smoking were in three stages. The first stage is warning. The second stage involved a written warning. The third stage is the fine of 200,000 rupiahs. Engaging in unsafe behavior, such as smoking in the workplace, was influenced by personal intentions that drive an individual's desire to perform certain actions.[31] Another study by Paramita (2024) explains that field observations indicate workers lack the motivation to engage in safe behavior. They also exhibited limited knowledge, skills, and motivation required for construction work. These workplace factors vary significantly and were interconnected, influencing changes in work behavior.[32]

The study results show an R^2 or coefficient of determination of 83.2%, indicating that age, work tenure, and work attitude collectively influence unsafe behavior. This strong correlation suggested that the independent variables together significantly affect the dependent variable

(unsafe behavior), as evidenced by a p-value of 0.0001. Regression analysis confirmed that older respondents with longer tenures were more likely to engage in unsafe behaviors. A negative work attitude often results from excessive workloads such as heavy equipment operators. These workers could not be replaced due to limited personnel and specific OHS licenses. Increased work demands, overtime, or covering of absent colleagues contribute to unsafe behavior. Prakoso (2022) stated that workloads should be aligned with a worker's capacity and ability. Increased job demands and exhaustion can lead to unsafe behavior, even for experienced workers. Additionally, as individuals age, the risk of workplace accidents increases. [20] From the study findings, 11.9% of the R^2 value might be attributed to other factors that were not examined in this study. These factors could include knowledge, training, work motivation, education level, and other influences. Human behavior is shaped by two key factors: behavioral causes and non-behavioral causes.[33]

Conclusion

It was concluded that work tenure and attitude associated to unsafe actions, whereas age did not associated to unsafe behavior. Recommendations for the company: provides periodic basic and advanced Occupational Health and Safety training to workers who have work tenure for more than 10 years and improve employee attitudes through safety talks or briefings before each shift.

Ethics approval

This research has been approved by the Health Research Ethics Committee (KPEK), Stikes Yayasan Rumah Sakit Dr Soetomo, by the letter number of KEPK/YRSDS/090/XI/2024. The date of ethical approval was November 14, 2024.

Availability of data and materials

Not applicable.

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Author Contribution

Susan Nabila Putri Taufiq prepared the proposal, analysis, discussion, conclusions, and article writing. Nugrahadi Dwi Pasca Budiono guided and directed this study. Thrisiawan Pradhana manages permits and data collection.

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