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The Influence of Age, Tenure, and Work Attitude on Unsafe Action Among Workers at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant

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Abstract

Introduction: There has been an increase in the incidence of unsafe behavior in the last 3 years. This knew from the number of incidence of minor work accidents and findings of near-miss conditions in each production area. This research aims to analyze the effect of age, tenure and work attitude on unsafe action in PT JCI Plant Margomulyo workers.

Methods: This research is quantitative analytical with a cross-sectional design. The population in this study were 93 workers in the production area of PT JCI Plant Margomulyo. The sampling technique used Slovin with 76 sample. The variables of this study include independent variables (age, work tenure, work attitude), and dependent variables (unsafe action). Data collection in this study used a questionnaire that had been tested for validity and reliability previously. The analysis in this study used chi square and multiple logistic regression.

Results: The p-value of the chi square test on the age variable with unsafe action showed a value of 1.000 while for the variable tenure with unsafe action, it was 0.004 and work attitude with unsafe action was 0.000. The p-value of the multiple logistic regression test is 0.000 on the variables of tenure and work attitude towards unsafe action.

Conclusion: There is no relationship between age and unsafe action, while work tenure and work attitude are relate to unsafe action. There is an influence of work period and attitude towards unsafe action while age does not affect unsafe action.

Keywords: *Age, Tenure, Work Attitude, Unsafe Action*.

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 (Jauhari et al., 2023). 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, and more (Priyohadi & Achmadiansyah, 2021). One indicator of unsafe action is the continuous rise in claims for Work Accident Insurance and Death Insurance filled by Social Security Bureau (BPJS Ketenagakerjaan). This increase aligns with data released by the Ministry of Manpower (Kemenaker), which recorded 370,747 workplace accident cases in Indonesia in 2023, marking a 24.11% increase from 2022. At the provincial level, East Java ranked second for the highest number of workplace accidents in 2023, accounting for 15.27% of total cases (Kementerian Ketenagakerjaan, 2024).

One of the national-scale agri-food companies operating in East Java is Japfa Comfeed Indonesia Incorporated Company, which has three units, including the Margomulyo Plant. This company faces workplace accident risks in various operational activities. A brief interview with the HSE (Health, Safety, and Environment) Supervisor revealed 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 HSE unit data, the number of workplace accidents increased from 5 to 6 cases from 2023 to 2024. These accidents are likely caused by unsafe worker behavior. The Workplace Accident Data of Japfa Comfeed Indonesia Incorporated Company Margomulyo Plant (2023-2024) indicates 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 action aligns with Heinrich's Domino Theory, which states 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 are direct causes of incidents (Juwarsih, 2022).

Japfa Comfeed Indonesia Incorporated Company Margomulyo Plant's HSE team also observed a three-year increase in unsafe action among workers, which may be a risk factor for workplace accidents. The HSE unsafe action report from 2022 to 2024 shows an increase from 19 cases in 2022, 22 in 2023, to 36 in 2024. According to HSE unit data, the highest number of unsafe action incidents occurred in 2024. Total case amount 36 cases. 63,6% higher than 2023. unsafe action incidents contributing 47% to 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 action, as a direct cause of workplace accidents, is influenced by personal and work-related factors. Personal factors include workers' individual characteristics or physical and mental conditions. Work-related factors include mismatched tasks and labor, excessive work hours, high-risk jobs without control measures, unsuitable workloads, and more. Several studies have established a relationship between individual characteristics and workplace accidents. Common variables studied include age and tenure.

According to employee profile data from HRD (Human Resources Department), most workers at Japfa Comfeed Indonesia Incorporated Company Margomulyo Plant are over 35 years old (75%), while 96.2% have worked for more than five years. Research by Hamudya (2022) found that workers with less than three years of experience are more likely to engage in unsafe action compared to those aged ≥40 years. Older workers tend to be more cautious, reducing accident risks, whereas younger workers may act more recklessly and hastily. Longer work tenure is believed to reduce workplace accident risks, as experienced workers are more familiar with hazardous areas and behaviors. Hamudya also found that workers with shorter tenure tend to engage in unsafe actions more frequently (Hamudya et al., 2023).

Unsafe action can also stem from workplace attitudes, especially among workshop workers, leading to accident risks. Larasatie conducted a bivariate analysis, yielding a p-value of 0,000 (Larasatie et al., 2022), indicating a significant relationship between work attitude and unsafe action among production workers at X Incorporated Company. Similarly, Monalisa found a link between attitudes and unsafe action among service workers at Agung Automall Incorporated Company Jambi Branch which p-value amount 0,013 (Monalisa et al., 2022). Research by Budiman and Wahyuningsih, using a Chi-Square test with a 95% confidence level, showed a p-value of 0.007. It is indicate a significant relationship between work attitude and unsafe action among workers at X Incorporated Company, Cilacap, Central Java (Budiman & Wahyuningsih, 2023).

Based on initial observations with the HSE Supervisor and previous research, the researcher is interested in find the influence of age, tenure, and work attitude towards unsafe action at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant. The goal is to minimize workplace accident risks that may cause losses for both employees and the company.The rising trend of unsafe action each year over the past two years at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant underscores the need for research on the correlation between increasing workplace accident rates and unsafe action, focusing on age, work tenure, and work attitude factors. This study aims to analyze the effects of age, work tenure, and work attitude on unsafe action among workers at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant.

Methods

Research Design

The research is analytical quantitative approach with an observational method. This study draws conclusions about the population based on data collected from a sample. The research design follows a cross-sectional study, where 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 will be conducted at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant from August to December 2024.

Population and Sample

The study population consists of workers in high-risk work areas at Japfa Comfeed Indonesia Incorporated Company, Margomulyo Plant, totaling 93 workers. A simple random sampling technique will be used, yielding a sample size of 76 respondents.

Inclusion & Exclusion Criteria

There are inclusion and exclusion criteria in this research. Inclusion criteria including employees working in the production area and agree to participate. Exclusion criteria including employees who are absent during questionnaire distribution and non-shift workers in the production area.

Research Variables

The research variables are divided into dependent variable and independent variables. Dependent variable is unsafe unsafe action. Independent variables are age, tenure, and work attitude.

Data Collection Techniques & Instruments

Data will be collected through interviews using a questionnaire. The questionnaire has undergone validity and reliability testing. The interview process aims to obtain respondents' characteristics, including age, work tenure, work attitude, and unsafe behavior at work.

Data Analysis

The data analysis consists of univariate, bivariate, and multivariate analysis. Univariate analysis including frequency distribution and percentage of each variable. Bivariate analysis consist of chi-square test to examine relationships between variables. Multivariate analysis using multiple logistic regression test to analyze the influence of multiple variables on unsafe action.

Results

Variable Distribution

The youngest respondent in this study is 25 years old, while the oldest is 56 years old. The average age of respondents is 41.2 years old. Age in this study is categorized into two groups. The age distribution data is presented in Table 1 below.

Table 1: Age, Tenure, Attitude, and Unsafe Action Distribution of Respondents at Japfa Comfeed Indonesia Incorporated Company, Plant Margomulyo Surabaya, 2024

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 1 show the distribution of age categories among the 76 respondents in this study. Age is divided into two groups: adults (12-45 years) and the elderly (>45 years). The majority of respondents belong to the adult group, with 56 respondent (73,7%). The elderly group follows with 20 respondents (26.3%), This data indicates that the respondent population is dominated by adults, significantly outnumbering the other groups. Work tenure in this study is categorized into two groups. Table 1 indicates that the majority of workers have been employed for more than 10 years, accounting for 65 respondent (85,5%). The second group consists of workers with a tenure of ≤10 years, comprising 11 individuals (14,5%). These findings suggest that most respondents have been employed at Japfa Comfeed Indonesia Incorporated Company, Plant Margomulyo Surabaya for a considerable period.

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 distribution of respondents' attitudes is displayed in Table 1. Most respondents (67.1%) displayed a negative attitude (51 workers), while the remaining 32.9% (25 workers) had a positive attitude. This finding indicates that most workers hold negative attitudes toward 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).

The behavior variable 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, and safe, as presented in Table 1. Most workers exhibit unsafe action (53.9% or 41 workers), while 46.1% (35 workers) demonstrate moderately safe action. No workers were categorized as having good or safe action.

Crosstabulation

Crosstabulation and chi-square test results for age, tenure, attitude, and worker behavior are presented in Table 2.

Table 2: Frequency Distribution of Respondent Unsafe Action by Age, Tenure, and Attitude (2024)

Variable	Category	Unsafe Action				Total		*Chi Square Test (sig)*
		Unsafe		Moderate				
		n	%	n	%	n	%	
Age	Adult (12-45)	30	53,6	26	46,4	56	100,0	1,000
	Elderly (>45)	11	55	9	45	20	100,0	
Tenure	≤10 Years	1	9,1	10	90,9	11	100,0	0,004
	>10 Years	40	61,5	25	38,5	55	100,0	
Attitude	Negative	40	78,4	11	21,6	51	100,0	0,000
	Positive	1	4,0	24	96,0	25	100,0	

Table 2 show a cross-tabulation between age, tenure, and attitude to unsafe action among 76 respondents. Unsafe action is categorize as unsafe and moderate. Among adults, 53,6% demonstrated unsafe action, while 46,5% exhibited moderate unsafe action. Among the elderly, 55% demonstrated unsafe action, while 45% exhibited moderate unsafe action. The chi-square test for the relationship between age and unsafe action show that p-value of 1,000. It is indicating there are no significant relationship between age and unsafe action.

Table 2 shows that tenure has a significant statistical relationship with unsafe action (p-value = 0,004). The findings suggest that longer tenure correlates with a higher likelihood of unsafe action. Similarly, Table 2 presents a crosstabulation of attitude and unsafe action. The chi-square test result (p-value = 0,000) indicates a statistically significant relationship between attitude and unsafe action. Workers with negative attitudes are significantly more likely to engage in unsafe action.

Regresion Model

A multiple logistic regression analysis was conducted, yielding a model significance of 0,000. This indicates that the independent variables significantly influence the dependent variable, The Nagelkerke R-square value was 0,832, meaning the independent variables explain 83,2% of the variance in the dependent variable, while the remaining 12,8% is influenced by other factors outside this study.

Table 3: Logistic Regression Test Results for Age, Tenure, and Attitude on unsafe action (2024)

Variable	Category	Beta	Sig	Exp B	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]	.	.	.
Tenure	≤10 Years	5,100	0	164,034	12,511-2150,709
	>10 Years	0[b]	.	.	.
Attitude	Negative	-6,151	0	0,002	0-0,026
	Positive	0[b]	.	.	.

Exp :
Reference category : Unsafe
[b] : Reference category

Since age was not significant in the model, a 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 work tenure and attitude explain 83,2% of the variation in unsafe action.

Table 3: Logistic Regression Test Results for Tenure and Attitude on Unsafe Action (2024)

Variable	Category	Beta	Sig	Exp B	Confidence Interval
Intercept	*Intercept*	3,136	0,002	.	.
Tenure	≤10 Years	5,168	0	175,571	14,308-2154,39
	> 10 Years	0[b]	.	.	.
Attitude	Negative	-6,106	0	0,002	0-0,026
	Positive	0[b]	.	.	.

Exp :
Reference category : Unsafe
[b] : Reference category

This analysis confirms that work tenure and attitude significantly influence unsafe action. Workers with longer tenure tend to exhibit more unsafe action, while workers with a negative attitude are significantly more likely to act unsafely.

Discussion

The chi-square test show that the relationship is not statistically significant, meaning there is no correlation between age and unsafe action. According to Wuni, age influences unsafe actions, with unsafe actions increasing in the older age category (Wuni, 2022). As people age, their physical abilities tend to decline. However, Prakoso argued that age has a significant effect on unsafe action (Prakoso, 2022). Workers over 30 years old tend to perform better due to better emotional control and more mature thinking, which helps them avoid workplace accidents(Prakoso, 2022). At Japfa Comfeed Indonesia, Plant Margomulyo Surabaya, workers' mindset often perceives near-miss situations as acceptable and frequently repeated. Most workers consider near-miss situations safe and non-hazardous. This contradicts, who stated that workers aged ≥30 years tend to act rationally and possess better thought patterns, making them more likely to adopt safe work habits (Kusumaningtiar et al., 2021). Similarly, (Kase et al., 2023) found that respondents in high-risk age groups demonstrated the most unsafe behaviors. However, those under 45 years old who acted safely were more prevalent. Age can be a factor influencing changes in unsafe action among workers, but in this research it doesn't. Other variables may also play a significant role in determining an individual's behavior.

The distribution of age variables in this study plays a crucial role in understanding the extent to which different age groups of workers actively contribute to maintaining occupational safety and health standards. The high level of work activities in the company leads to varied perceptions among employees regarding safe work behavior. According to Table 1, the majority of respondents fall within the productive adult age range. The study results indicate 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 enables a higher level of engagement in implementing OSH practices within the company. Similarly, (Basri & Sani, 2024) found that the most dominant productive age group falls within the 31–40 age range. These adult productive workers are generally in a more advanced stage of their careers and may have a stronger influence on perceptions of safe work behavior. Annisa (2019) stated that as workers age, they develop more rational thinking patterns.

Workers in the 30–34 age range are 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 tend to listen to

music 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 carry a high risk of work-related accidents and occupational diseases. Ashari (2019) found that age significantly influences workers' perceptions of unsafe behavior, as they tend to become accustomed to performing seemingly simple and routine tasks without considering their long-term consequences.

Workers in the 50–54 age range account for 8 employees (10.5%). This group holds 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 2 employees (2.6%) fall within the 55–59 age group, nearing retirement with minimal exposure to work-related accidents or occupational diseases, as they are primarily assigned administrative duties. In the 25–29 age range, 4 workers (5.3%) are 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. These chemicals, as stated in the Material Safety Data Sheets (MSDS), have carcinogenic, irritant, and corrosive properties. Among all job types, administrative work poses the lowest risk of 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 old. Workers under 30 tend to experience behavioral changes influenced by the habits they observe and imitate from their colleagues.

The study results show that the highest frequency of unsafe behavior was found among workers with more than 10 years of tenure, totaling 28 individuals (71.8%). Meanwhile, the highest frequency of fairly safe behavior was found among workers with less than six years of tenure, totaling 10 individuals (90.9%). Workers with longer work tenure tend to gain more experience but often ignore work procedures. According to Suma'mur in Annisa (2019), work experience improves with tenure. Heavy equipment operators with more than 10 years of experience frequently operate 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.

According to interviews with the HSE team, workers with less than six years of tenure tend to display fairly safe behavior. This means they generally follow standard given by their superiors, although they sometimes fail 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 in 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 (Ramadhany & Pristya, 2019). According to Yusril et al. (2020), long work tenure does not always result in safer behavior. Long tenured workers accumulate experience that can be used to behave safely by following procedures. However, these workers should also demonstrate that they have learned from their experiences and adhere to current procedures.

14 The study results indicate a significant relationship between tenure and unsafe action, with a p-value of 0,004. Longer tenure often correlates with more frequent unsafe behaviors at work. According to Ashari (2019), inexperienced workers tend to engage in unsafe actions that increase workplace accident risks. For example, heavy equipment operators with over 10 years of tenure habitually drive recklessly, fail to wear safety helmets, and neglect seat belts. In contrast, Ayu & Rhomadhoni (2019) found that as work tenure increases, unsafe behavior should decrease. However, field observations indicate 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.

The distribution of work tenure in this study provides an explanation related to workers' perceptions of unsafe action and their tendency to recognize the types of hazards associated with their respective jobs. Tenure are categorize 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 is employees with more than 10 years of service, accounting for nearly half of the workforce, with 39 workers (51.3%). This group tends to exhibit passive unsafe behavior and does not fully comply with OSH regulations in the company. Therefore, direct supervision and counseling from their superiors are needed to ensure that near-miss incidents in the field are promptly reported. The expectation is that employees with long work tenure will maximize safe work behavior, set a positive example for their colleagues, and reinforce OSH culture (Suma'mur, 2017). The longest recorded work tenure in this study is 30 years. Ideally, an extended tenure should lead to improved safety behavior. However, based on the distributed questionnaires, some workers tend to take shortcuts in certain tasks, leading to persistent unsafe behavior. According to Rajab & Djunaidi (2024), work tenure can influence an employee's performance.

The second tenure group consists of employees with ≤10 years of service. This trend suggests that the organizational culture passed down by long-tenured workers (over 10 years) may not be ideal, as unsafe behavior is imitated and normalized among newer employees. Senior workers in each unit provide limited education on safe work behavior to their colleagues. Mattalatta (2023) found that work tenure can have both positive and negative impacts on worker performance. Longer tenure can enhance experience and task execution, but it can also lead to ingrained unsafe habits. This finding aligns with Annisa (2019), who stated that workers with less than six years of tenure tend to engage in unsafe behavior due to limited knowledge and experience regarding OSH hazards in their work areas. Work tenure significantly influences a worker's sensitivity to their environment, affecting their awareness of safe or unsafe behavior (Dewi et al., 2024).

The distribution of work attitude variables shows that negative attitudes dominate, with 51 workers (67.1%). The work attitude measured in this study is based on questionnaire instrument indicators, where the majority of respondents admitted to frequently not reading the MSDS guidelines when handling chemical substances, often not using personal protective equipment (PPE), smoking in work areas, and rarely paying attention to OSH signs in their respective workplaces. These factors contribute 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 (2018) study, which found that 58.3% of respondents had a negative attitude due to a lack of awareness regarding workplace hazards. To address this issue, training programs have been implemented, including basic and advanced OSH refresher training, which will be continuously monitored by the HR team and supervisors from each unit, supported by the HSE team conducting oversight. 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 toward either a positive or negative mindset.

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 are 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, though 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. Prakoso (2022) similarly found that the majority of workers (53.7%) had negative work attitudes, often ignoring OSH signs and posters, neglecting hazard reporting, and failing to read MSDS guidelines regarding workplace hazards.

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” report such incidents. This suggests that when near-miss conditions occur, workers are reluctant or unwilling to report them, creating barriers that increase the risk of fatal workplace accidents due to unrecorded near-miss incidents across different work activities (McKinnon, 2023). Additionally, workers’ awareness of near-miss risks within their respective units is not well-documented, leading to incomplete or insufficient data for the HSE team. Another frequently observed unsafe work behavior is the failure to turn off machines or equipment after use (negligence). This condition significantly increases the potential for workplace accidents

Workers with negative attitudes tend to exhibit unsafe behavior, totaling 40 individuals (78.4%). Meanwhile, workers with positive attitudes tend to display fairly safe behavior, totaling 24 respondents (96.0%). Workers with positive attitudes are more likely to behave safely than those with negative attitudes. According to HSE team observations, workers with negative attitudes often belong to the older workforce with high seniority. Older organizational culture fosters bad habits that negatively influence new or replacement workers. Siregar & Susilawati (2023) stated that an individual's attitude is shaped by their own experiences or by learning from others. Experience-based responses create stimulus reactions that lead to perceptions and actions. A negative attitude toward 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 claim discomfort as the main reason for not using PPE. Infrequent PPE usage increases the risk of unsafe actions and workplace accidents (Amalia et al., 2021).

The study results confirm a relationship between work attitude and unsafe behavior, with a p-value of 0,000. Workers with positive attitudes understand safety signs in their respective work areas, which helps them recognize potential hazards. Technical controls, such as workplace safety signs, serve as a hierarchy to minimize accident risks (Rahman et al., 2022). 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 are a cognitive construct interpreted into behavior (Widiatmoko, 2020). These attitudes determine whether workers adopt safe or unsafe behaviors, shaped by their understanding, knowledge, and habits.

The distribution of respondents' behavior in this study tends to be dominated by the unsafe category, with 41 workers (53.9%), while the distribution of fairly safe behavior frequency accounts for 35 workers (46.1%). There are no respondents categorized under the safe behavior frequency distribution in this study. This aligns with the research by Krisyanti (2024), which found that unsafe behavior also dominated (57.7%) with 28 respondents. This was attributed to workplace culture factors, particularly poor OHS (Occupational Health and Safety) communication in the steel fabrication division at PT. X. Based on the questionnaire data, 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 initial field observations conducted with the HSE team, where instances were found of workers not wearing PPE because it was damaged. There were also cases where workers’ PPE was missing during joint inspections in the production area. Such conditions may arise due to workers’ negligence regarding company-established procedures. According to information from the HSE team, workers tend to comply with PPE usage when HSE teams are visibly monitoring the field. However, once the HSE team leaves the work area, most workers immediately stop using their PPE. This behavioral tendency reinforces the notion that many workers do not consistently adhere to PPE regulations set by the company (McKinnon, 2023).

Another unsafe action identified through the questionnaire responses was smoking in the workplace. The majority of respondents admitted to frequently smoking in work areas. This aligns with Prakoso (2022), who found that workers struggle to quit smoking due to habits developed to alleviate boredom. The unsafe behavior of smoking is continuously monitored and inspected by the HSE team and management. Japfa Comfeed Indonesia, Plant

Margomulyo Surabaya, has designated nine smoking areas where smoking is permitted. However, many workers continue to smoke in their work areas, often in hiding to avoid detection by colleagues or supervisors. This was evident from cigarette butts found in several workplace locations. Engaging in unsafe behavior, such as smoking in the workplace, is influenced by personal intentions that drive an individual's desire to perform certain actions (Widhiastuti et al., 2021). Another study by Paramita (2024) explains that field observations indicate workers lack the motivation to engage in safe behavior. They also exhibit limited knowledge, skills, and motivation required for construction work. These workplace factors vary significantly and are interconnected, influencing changes in work behavior.

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 suggests that independent variables together significantly affect the dependent variable (unsafe behavior), as evidenced by a p-value of 0.000. Regression analysis confirms that older respondents with longer tenure are more likely to engage in unsafe behaviors. A negative work attitude often results from excessive workloads, such as for heavy equipment operators. These workers cannot be replaced due to limited personnel and specific OHS licenses. Increased work demands, overtime, or covering for absent colleagues contribute to unsafe behavior. Prakoso (2022) stated that workloads should align 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, their risk of workplace accidents increases (Ayu & Rhomadhoni, 2019). From the study findings, 11.9% of the R^2 value might be attributed to other factors not examined in this study. These factors could include knowledge, training, work motivation, education levels, or other influences. Human behavior is shaped by two key factors: behavioral causes and non-behavioral causes (Notoatmodjo, 2022).

Conclusion

The conclusion of this study is that work tenure and attitude have an influence on unsafe action, whereas age does not have an impact on unsafe behavior. Recommendations for the company are provide periodic basic and advanced Occupational Health and Safety training to the workers which have tenure more than 10 years and improve employee attitude by safety talks or briefings before each shift.

Ethics approval

This research has been approved by the health research ethics commission (KPEK), Stikes Yayasan Rumah Sakit Dr Soetomo, the ethics permit number is KEPK/YRSDS/090/XI/2024. The date of ethical approval is November 14, 2024.

Availability of data and materials

Not applicable.

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Author Contribution

Susan Nabila Putri Taufiq the main researcher in the preparation of the proposal, analysis, discussion, conclusions, and article writing. Nugrahadi Dwi Pasca Budiono guiding and directing the research. Andrea Thrisiawan Pradhana managing permits and data collection.

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