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Factors Associated with Safety Behavior Among Workers at PTPN IV Regional IV PKS Aurgading In 2024

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Abstract
Introduction: *Safety behavior is an action taken by workers to prevent or even reduce the risk of work accidents. The high number of accidents is often caused by a lack of safety behavior in the work environment. There are several factors that influence safety behavior in workers, including knowledge, length of service, safety talk and safety climate.* ***Purpose:*** *This study aims to analyze the relationship between knowledge, length of service, implementation of safety talk and safety climate with safety behavior in workers at PTPN IV Regional IV PKS Aurgading.* ***Method:*** *This study is a quantitative study with a cross-sectional study design, the population in this study was 60 people, the sampling technique used was total sampling, and data analysis included univariate and bivariate with the chi square statistical test.* ***Result and Discussion****: Most workers 59.3% safe behavior while 40.7% unsafe behavior. There is a significant relationship between the implementation of safety talk and safety behavior (p = 0.003) and safety climate and safety behavior (p = 0.000). However, there is no significant relationship between knowledge and safety behavior (p = 0.210) and length of service and safety behavior (p = 0.548).* ***Conclusion:*** *Factors related to safety behavior include safety talk and safety climate, while those that are not related are knowledge and length of service*

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Introduction

In the current era of globalization, occupational health and safety have become a necessity, but the implementation of occupational safety and health in a job cannot always run smoothly. Based on global data released by the International Labor Organization, in 2024 there were 77,066 cases of work accidents per 100,000 workers in the world. (ILO, 2024)

Work accident cases in Indonesia have shown an increasing trend over the past 3 years. According to data from Kementrian Ketenagakerjaan Republik Indonesia report in 2022 there were 298,137 cases, while in 2023, work accidents in Indonesia were recorded at 370,747 cases, while the number of work accident cases in 2024 was recorded at 462,241 cases (Kemenaker RI, 2024). According to the report of the Dinas Ketenagakerjaan dan Transmigrasi Provinsi Jambi, cases of work accidents in Jambi over the past 4 years have been fluctuating. In 2021, there were 62 cases, then in 2022 there were 110 cases, in 2023 there were 95 cases and in 2024 there were 35 cases of work accidents (Disnakertrans Jambi, 2024).

Heinrich (1980) stated that 88% of work accidents are caused by unsafe acts, while 10% are caused by unsafe conditions and 2% are caused by acts of gods. Work accidents are more often caused by mistakes made by individuals or human error. Human error in high-risk jobs is an event triggered by poor safety behavior in individuals. Safety behavior refers to positive behavior towards efforts to prevent work accidents.(Widhiastuti et al., 2021)

Personal factors in workers can affect safety behavior. Personal factors are something or aspects inherent in the worker that affect his behavior such as age, working period, knowledge and attitude. (Ardian, 2020 ; Dwipayana et al., 2018). Apart from personal factors, safety talk and safety climate also influence safety behavior in workers. (Huang et al., 2018)

Based on previous research by Trihatiniwati and Amalia (2021), there is a significant relationship between knowledge and safety behavior of PT PG Rajawali II Jatitujuh Majalengka factory workers with a p value = 0.044. Meanwhile, according to research by Lestari and Santiasih (2020) there is a significant relationship between working period and safety behavior in workers in the filling pouch section of a palm oil factory, with a p value = 0.004. The results of the study by Ananda et al., (2023) found that there was a significant influence between the implementation of safety talk on occupational safety and health behavior with a p value = 0.000. Hertanto et al., (2023) stated that there was a significant relationship between safety climate and safety behavior in Company X with a p value of 0.000.

PT. Perkebunan Nusantara (PTPN) IV Regional IV is a BUMN engaged in the plantation and processing of palm oil commodities, one of which is PKS Aurgading (PTPN IV, 2024). Based on a pre-research survey, data on work accidents were obtained as many as 3 cases in 2023 with the main cause being poor worker safety behavior, such as not maintaining safety equipment so that it continues to function properly, operating equipment not according to procedures, and taking objects with incorrect body positions, 2 out of 3 cases of work accidents involved workers with a work period of ≤ 3 years. In fact, the company had previously won a zero-accident award. Without a study of factors related to safety behavior, detrimental things such as work accidents caused by unsafe behavior are feared to continue to recur. This study is expected to provide insight and evaluation for companies in creating a safer and more efficient work environment so that

it can encourage safe behavior among workers. Therefore, researchers are interested in researching factors related to worker safety behavior.

Method

The study was conducted in December 2024 located at PTPN IV Regional IV PKS Aurgading, the type of research used was quantitative with a cross-sectional study design. The population of this study was 60 people, the sampling technique used was total sampling, with a sample of 59 people, because 1 more person fell into the exclusion criteria. Data collection using questionnaires, data processing using SPSS version 25 software and data analysis including univariate and bivariate using the chi square statistical test with a confidence level of 95%.

Research and Discussions

1. Result

Univariate Analysis

Table 1
Frequency Distribution of Respondent Characteristics

Characteristics of Respondents	F	%
Gender		
Man	59	100
Women	0	0
Age		
20-30 years old	27	45.8
31-40 years old	12	20.3
41-50 years old	10	16.9
≥50 years old	10	16.9
Education		
End of ES	0	0
End of JHS	4	6.8
End of SHS	39	66.1
Graduated from academy	16	27.1
Department		
Production	30	50.8
Technical	14	23.7
Quality	15	25.4

Source: Primary Data 2025

Based on the table above, it can be concluded that the characteristics of the respondents in this study are as follows: all of them are male, totaling 59 people (100%). Most workers are in the 20–30-year age range, with 27 individuals (45.8%), and the highest education level among workers is dominated by senior high school graduates with 39 people (66.1%). The workers are distributed across several departments, including production (30 people, 50.8%), technical (14 people, 23.7%), and quality (15 people, 25.4%).

Table 2
Frequency Distribution of Research Variables

Variables	F	%
Safety behavior		
Safe behavior	35	59.3
Unsafe behavior	24	40.7
Knowledge		
Good	41	69.5
Less	18	30.5
Working period		
(New) ≤ 3 years	16	27.1
(Long) > 3 years	43	72.9
Safety talk		
Good	32	54.2
Less	27	45.8
Safety climate		
Sufficient	30	50.8
Less	29	49.2

Source: Primary Data 2025

Based on the results from the table above, it can be concluded that the proportion of workers demonstrating safe behavior is 59.3%, while approximately 40.7% exhibit unsafe behavior. Furthermore, the majority of workers (65.9%) have good occupational health and safety (OHS) knowledge, whereas 30.5% are categorized as having less knowledge. Additionally, 72.9% are long employees, while the remaining 27.1% are new employees. Regarding the implementation of safety talks, it was observed that most workers (54.2%) rated the implementation as good, while the remaining 45.8% considered it less effective. As for safety climate, the proportion shows that 50.8% of workers perceived the safety climate as sufficient, whereas 49.2% stated it was less developed

Table 3
Frequency Distribution of Safety Climate Dimension

No.	Dimensi	Mean	SD	Category
1	Management safety priority, comitment and competence	2.83	0.15	Sufficient but needs minor improvement
2	Management safety empowerment	2.96	0.12	Sufficient but needs minor improvement
3	Management safety justice	2.59	0.22	Insufficient and needs major improvement
4	Workers safety commitment	2.97	0.36	Sufficient but needs minor improvement
5	Workers safety priority and risk non acceptance	2.13	0.20	Insufficient and needs major improvement
6	Safety communication, leraning and trust in co workers safety competence	2.61	0.18	Insufficient and needs major improvement
7	Trust in the efficacy of safety systems	2.75	0.33	Sufficient but needs minor improvement

Source: Primary Data 2025

Based on Table 3, it can be concluded that among the seven safety climate dimensions measured using NOSACQ-50, four dimensions (Dimensions 1, 2, 4, and 7) fall under the 'sufficient' category. Meanwhile, Dimensions 3, 5, and 6 are categorized as

'insufficient' and thus require major improvement. This classification follows Kines et al. (2011), where a safety climate mean score <2.70 is categorized as insufficient**.**

Bivariate Analysis

Table 4
The relationship of OHS knowledge with safety behavior

Knowledge	Safety behavior				Total		PR (95% CI)	P value
	Unsafe behavior		safe behavior					
	n	%	n	%	n	%		
Less	10	55.6	8	44.4	18	100	**1.627 (0.899-**	**0.210**
Good	14	34.1	27	65.9	41	100	**2.943)**	

Source: Primary Data 2025

Based on Table 4, it is found that the proportion of unsafe behavior is higher among workers with less OHS knowledge (55.6%) compared to workers with good OHS knowledge (34.1%). According to the statistical analysis using the chi-square test, there is no significant relationship between OHS knowledge and safety-related behavior, with a p-value of 0.210 (p > 0.05).

Table 5
The relationship of working period with safety behavior

Working Period	Safety behavior				Total		PR (95% CI)	P value
	Unsafe behavior		Safe behavior					
	n	%	n	%	n	%		
New (≤3 years)	5	31.3	11	68.8	16	100	**0.707 (0.318-**	**0.584**
Long (>3 years)	19	44.2	24	55.8	43	100	**1.575)**	

Source: Primary Data 2025

The percentage of unsafe behavior among new employees is 31.3%, while the percentage of unsafe behavior among long employees is 44.2%. According to the results of the chi-square statistical test, a p-value = 0.584 (p > 0.05) was obtained, meaning there is no significant relationship between work tenure and safety behavior.

Table 6
The relationship of safety talk with safety behavior

Safety talk	Safety behavior				Total		PR (95% CI)	P value
	Unsafe behavior		Safe behavior					
	n	%	n	%	n	%		
Less	17	63	10	37	27	100	**2.878 (1.407-**	**0.003**
Good	7	21.9	25	78.1	32	100	**5.889)**	

Source: Primary Data 2025

Table 6 shows the proportion of unsafe behavior is higher among workers who rated safety talk implementation as less effective (63%) compared to those who rated it as good (21.9%). Statistical analysis reveals a significant relationship between safety talk implementation and safety behavior with p-value = 0.003 (p < 0.05). The risk calculation yielded a PR value of 2.878, indicating that workers with less effective safety talk implementation are 2.878 times more likely to exhibit unsafe behavior compared to those with good implementation.

Table 7
The relationship of safety climate with safety behavior

Safety climate	Safety behavior				Total		PR 95% CI	P value
	Unsafe behavior		Safe behavior					
	n	%	n	%	n	%		
Less	19	65.5	10	34.5	29	100	**3.931 (1.693-**	**0.000**
Sufficient	5	16.7	25	83.3	30	100	**9.129)**	

Source: Primary Data 2025

Based on Table 7, it can be concluded that the proportion of unsafe behavior is higher among workers who perceived the safety climate as less developed (65.5%) compared to those who perceived it as sufficient (16.7%). The statistical test results show a significant relationship between safety climate and safety behavior with a p-value of 0.000. The calculated PR value was 3.931, meaning that a less developed safety climate increases the risk of unsafe behavior by 3.931 times compared to a sufficient safety climate category.

2. Discussion

Relationship Between OHS Knowledge and Safety Behavior Among Workers at PTPN IV Regional IV PKS Aurgading

Safety knowledge refers to employees' understanding of safety performance requirements, including the ability to comprehend instructions, training, and safe work procedures (Benni Agus Setiono dan Tri Andjarwati, 2019). Among the 59 workers studied, approximately 30.5% had insufficient occupational health and safety (OHS) knowledge, while 69.5% demonstrated good knowledge. The chi-square statistical analysis yielded a p-value of 0.210 ($p > 0.05$), indicating no significant relationship between OHS knowledge and safety behavior at PTPN IV Regional IV PKS Aurgading.

Based on questionnaire responses, the researcher concluded that while most workers had sufficient knowledge, its application to safety behavior remained suboptimal. Despite adequate theoretical understanding, a gap between knowledge and practical implementation was observed. External factors such as time pressure and unsupportive work environments may lead workers to disregard safety procedures, even when they possess the requisite knowledge.

These findings align with (Yuliani et al., 2021), who reported no significant relationship between knowledge and safety behavior ($P = 0.111$, $P > 0.05$) at PT. X, attributing this to workers' failure to translate theory into practice. Knowledge that remains theoretical—without practical application—tends to have no significant impact on behavior.

Similarly, (Ristantya et al., 2022) found no correlation between knowledge and unsafe behavior ($p = 0.388$). While knowledge is important, it is not the primary determinant of safety compliance. Increased knowledge does not guarantee behavioral change. However, these results contrast with (Maulana & Welyusafadilla, 2020), who identified a significant relationship ($p = 0.000$) between knowledge and safety behavior at PT Transindo.

Relationship Between Working Period and Safety Behavior Among Workers at PTPN IV Regional IV PKS Aurgading

Working period refers to the length of time an individual has been employed in their profession (Ristantya et al., 2022). The univariate analysis revealed that 27.1% of workers were new employees while 72.9% had long working periods. Statistical analysis using chi-square test showed that workers with long working periods demonstrated higher rates of unsafe behavior (44.2%) compared to new employees (31.3%), with a p-value of 0.548 ($P > 0.05$), indicating no significant correlation between working period and safety behavior.

These findings suggest that employees with longer working periods tended to exhibit more unsafe behaviors, while newer employees showed better safety compliance. This phenomenon aligns with Geller's (2001) observation, as cited in Pane et al., (2022), that familiarity with tasks and work environment can lead workers to take unsafe shortcuts they perceive as convenient or time-saving. The ILO further supports this finding, noting that experienced workers remain susceptible to unsafe practices (Pane et al., 2022).

The results are consistent with Maulana Syaputra & Nurbaeti, (2021) study at PT X's workshop ($P=1.000$) where 33.3% of new employees followed safety procedures while 50% of experienced workers engaged in unsafe acts, and with Sukma Ika Noviarmi & Hamengku Prananya, (2023) research showing no relationship between working period and PPE compliance ($p=0.527$). However, these findings contrast with Pratiwi, (2022) study which found a significant correlation between working period and OHS behavior ($p=0.001$). The overall results suggest that while working period may influence safety behavior patterns, it does not consistently predict compliance across different work environments.

Relationship Between Safety Talk and Safety Behavior Among Workers at PTPN IV Regional IV PKS Aurgading

Safety talk is a communication method in occupational safety that facilitates information exchange between management and employees, enabling easier identification and resolution of safety-related issues along with solution development (Huang et al., 2018). The study found that 54.2% of workers rated safety talk implementation as good, while 45.8% considered it less effective. Notably, 63% of workers demonstrating unsafe behavior reported less effective safety talk implementation, compared to only 21.9% who rated it as good. Chi-square analysis revealed a statistically significant relationship ($p = 0.003$) between safety talk implementation and safety behavior.

These findings align with Andriyadi et al., (2021), who reported a strong correlation between safety talk and safe behavior at PT. X, where 53.6% of regular safety talk participants exhibited good safety practices ($p = 0.001$). Workers emphasized that safety talks positively influenced daily operations by enhancing safety awareness and motivation, serving as an effective tool to ensure task preparedness according to safe procedures. The results are further supported by Darmawan et al., (2024) in a palm oil mill study, where 73.8% worker comprehension of safety briefings correlated significantly with reduced workplace accidents ($p = 0.001$). This reinforces Reason's Swiss Cheese Model, which posits that accidents occur when multiple safety layers fail—with safety talks acting as a critical communication layer to strengthen worker awareness and close gaps in safety behavior.

Relationship Between Safety Climate and Safety Behavior Among Workers at PTPN IV Regional IV PKS Aurgading

Safety climate plays a crucial role in shaping safety behavior, serving as a key factor for employees to achieve optimal performance. While company commitment significantly influences safety climate formation, active employee participation also contributes to developing safe work behaviors (Hertanto et al., 2023). Univariate analysis revealed that 50.8% of workers perceived the safety climate as sufficient, while 49.2% considered it insufficient. Notably, 65.5% of workers demonstrating unsafe behavior reported an insufficient safety climate, compared to only 16.7% who rated it as sufficient. Chi-square test results showed a highly significant relationship ($P = 0.000$, $P < 0.05$) between safety climate and safety behavior among workers at PTPN IV Regional IV PKS Aurgading.

These findings align with Dewi et al., (2024), who reported a significant relationship between safety climate dimensions and unsafe actions among workers at PT. Bintan Resort Cakrawala (p-value = 0.000, $p<0.05$). The results are further supported by Yeni Ariska Wulandari & Djudiyah, (2024), demonstrating a significant influence of safety climate on safe behavior (F-test value = 47.093 with significance level $0.000<0.05$). This indicates that improved safety climate leads to enhanced safe behaviors, while deteriorating safety climate results in decreased safety compliance.

Conclusion

The study of 59 workers at PT. Perkebunan Nusantara IV Regional IV PKS Aurgading revealed that the majority demonstrated safe behavior (59.3%) and possessed good OHS knowledge (69.5%). Most workers had long working periods (72.9%), with over half rating safety talk implementation as good (54.2%) and assessing the safety climate as sufficient (50.8%). Statistical analysis showed no significant relationship between OHS knowledge ($p = 0.210$) or working period ($p = 0.548$) with safety behavior. However, significant relationships were found between both safety talk implementation ($p = 0.003$, PR = 2.878) and safety climate ($p = 0.000$, PR = 3.931) with safety behavior. These results demonstrate that while workers' knowledge and experience didn't significantly influence safety compliance, regular safety communication and a strong safety climate played crucial roles in promoting safe behaviors among the workforce.

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