

Examining the impact of knowledge, supervision, and work fatigue on unsafe actions among warehouse workers

Dewi Transmiatun Hasanah, Iwan Muhamad Ramdan,
Dewi Novita Hardianti, Muhammad Sultan,
Ida Ayu Indira Dwika Lestari*

Faculty of Public Health, Universitas Mulawarman
Jl. Kuaro, Gn. Kelua, Samarinda, Kalimantan Timur, 75119, Indonesia

*Corresponding Author: E-mail: gek.indira@fkm.unmul.ac.id

Abstract

Unsafe actions are dangerous behaviors that can cause work accidents, resulting in injury or death. Warehouses are high-risk areas for such incidents due to the presence of unsafe actions during work processes. This study aims to explore the relationship between knowledge, supervision, and work fatigue with unsafe actions among warehouse workers at PT Cipta Krida Bahari Samarinda. This quantitative study employs a cross-sectional design, with a sample size of 50 workers using the total sampling technique. The independent variables are knowledge, supervision, and work fatigue, while the dependent variable is unsafe action. Data analysis utilized univariate and bivariate (chi-square) methods. Results indicated that 54 percent of workers engaged in unsafe actions, 60 percent had good knowledge, 56 percent reported good workplace supervision, and 54 percent experienced fatigue. Bivariate analysis showed no significant relationship between knowledge ($p=0.203$) and work fatigue ($p=0.168$) with unsafe actions. However, a significant relationship was found between supervision ($p=0.019$) and unsafe actions. It is recommended that the company enhance supervision practices and enforce strict penalties for violations to minimize unsafe actions among workers.

Keywords: Knowledge, Supervision, Unsafe action, Work fatigue

©2024 Jurnal Penelitian

This is an open access article distributed under the CC BY-SA 4.0 license
(<https://creativecommons.org/licenses/by-sa/4.0/>)

How to cite:

Hasanah, D. T., Ramdan, I. M., Hardianti, D. N., Sultan, M., & Lestari, I. A. I. D. (2024). Examining the impact of knowledge, supervision, and work fatigue on unsafe actions among warehouse workers. *Jurnal Penelitian*, 21(1), 1-8. <https://10.0.105.25/jp.v21i1.13213>

1. Introduction

Safety aspects must be implemented by all company components and become the responsibility of all workers. Occupational Safety and Health (OSH) is a fundamental right and an effort to improve employee work quality, as well as a protection measure aimed at ensuring that workers and others in the workplace are always healthy and safe, so that all production resources can be used safely and efficiently (Bilqis et al., 2021).

Article Info:

Received: 2024-02-12

Revised: 2024-04-20

Accepted: 2024-05-11

Published: 2024-06-30



E-ISSN: 2809-7688

P-ISSN: 1410-7295

The International Labour Organization (ILO) (2018) states that more than 1.8 million work-related deaths occur annually in the Asia and Pacific region, with over 250 million workers dying from work accidents. According to accident data from the Social Security Agency for Employment (BPJS Ketenagakerjaan), the number of work accidents in Indonesia was 265,334 cases in 2022. This number increased by 13.26 percent from the previous year, which recorded 234,270 cases (Pratiwi, 2022).

Work accidents are influenced by two factors: unsafe actions and unsafe conditions. Unsafe actions are dangerous acts by humans or workers, driven by internal factors such as unsafe attitudes and behaviors, lack of knowledge and skills, decreased concentration, lack of work motivation, fatigue, and boredom. Risk factors affecting unsafe conditions include ineffective personal protective equipment, unsuitable work clothing, hazardous materials, and ineffective tools or machines (Monalisa et al., 2022).

Unsafe actions are behaviors that violate or do not comply with safe work standards, thereby having the potential to cause work accidents, such as working at incorrect speeds, using tools improperly, failing to use proper Personal Protective Equipment (PPE), repairing equipment while it is in operation, joking around in the workplace, and so on (Larasatie et al., 2022). Notoadmodjo's concept of behavior explains that there are two factors influencing behavior: internal and external factors. Internal factors include inherent characteristics such as knowledge, motivation, gender, physical traits, and so on. External factors include the physical, social, cultural, economic, and political environment.

PT. Cipta Krida Bahari is a company engaged in logistics. CKB Logistics provides logistics services, large cargo shipping, international shipping, and integrated transportation tailored to needs. The company has a warehouse area for storing and shipping goods to customers. The warehouse can be described as a part of a company's logistics system that functions to store products and provide information about the status and condition of materials/inventory stored in the warehouse. This information is always up to date and easily accessible to anyone concerned. One area with high potential hazards is the warehouse area, where various types of raw materials, most of which are heavy, are stored. The storage height in the warehouse is 8 meters. This height also poses potential hazards that can lead to work accidents. Generally, work activities in the warehouse include receiving, storage, and shipping.

Based on initial observations, unsafe actions were found to be performed by workers, such as lack of awareness of potential hazards in a work process, failure to use PPE, and worker negligence. Additionally, initial observations also found symptoms of fatigue experienced by workers, such as headaches, neck pain, arm pain, back pain, shoulder stiffness, and frequent full-body fatigue. Supervision is carried out by leaders responsible for overseeing the work process. If unsafe actions are performed by workers, the leader will reprimand them. A brief interview with the HSE Officer of PT. Cipta Krida Bahari in the warehouse revealed that accidents had occurred due to worker negligence, causing minor injuries like hands getting pinched by racks or cut by knives and cutters. It cannot be denied that unsafe actions are still found in work processes, with almost all workers in the warehouse having a high risk of accidents. The study aims to analysis the relationship between knowledge, supervision, and work fatigue with unsafe actions among warehouse workers at PT. Cipta Krida Bahari Samarinda.

2. Methods

The type of research used is quantitative research with a Cross-Sectional design. Cross-Sectional design is a research design that studies risks and effects through observation, with the aim of collecting data simultaneously or at one point in time (Abduh et al., 2023). This research was conducted to determine the relationship between

knowledge, supervision, and work fatigue with unsafe actions among warehouse workers at PT. Cipta Krida Bahari Samarinda. The research period was carried out from January to March 2024. The sampling method used was total sampling, where the entire population becomes the research sample, with the sample size in this study being 50 workers who are permanent employees of the company and in a healthy condition.

The analysis used is univariate analysis to describe each variable in the study. Then, bivariate analysis using chi-square with a confidence level of 95 percent ($\alpha=0.05$) is used to determine the relationship between independent and dependent variables.

3. Results and Discussion

Based on Table 1, the characteristics of respondents can be seen based on age, gender, length of work and highest level of education.

Table 1.
 Respondents based on age, gender, length of work and highest level of education

Variable	n	%
Age		
19-28 years old	30	60
29-38 years old	17	34
39-48 years old	2	4
≥49 years old	1	2
Total	50	100
Gender		
Male	45	90
Female	5	10
Total	50	100
Length of Work		
≤5 years	36	72
>5 years	14	28
Total	50	100
Highest Education		
Senior high (SMA/SMK)	26	52
Diploma III (D3)	9	18
Bachelor/Diploma IV (S1/D4)	15	30
Total	50	100

Based on Table 1, among the 50 warehouse worker respondents at PT. CKB Samarinda, the highest age category is 19-28 years, accounting for 60 percent. The highest gender category is male, with a percentage of 90 percent. The most common length of service is ≤5 years, with a percentage of 72 percent. The majority of warehouse workers have a high school or vocational school education, with a percentage of 52 percent. It can be seen that the majority of workers are male, have an average length of service of less than 5 years, and most have a high school or vocational school education.

Based on the frequency distribution data in Table 2, out of 50 warehouse workers at PT. CKB Samarinda, 27 workers (54 percent) engaged in unsafe actions, while 23 workers (46 percent) engaged in safe actions. Regarding knowledge, 30 workers (60 percent) had adequate knowledge, while 20 workers (40 percent) had inadequate knowledge. Additionally, 28 workers (56 percent) stated that workplace supervision was adequate, while 22 workers (44 percent) stated that workplace supervision was inadequate. In terms of fatigue, 27 workers (54 percent) experienced fatigue, while 23 workers (46 percent) did not experience fatigue.

Table 2.

Frequency distribution of unsafe actions, knowledge, supervision, and job fatigue

Variable	n	%
Unsafe Actions		
Unsafe	27	54
Safe	23	46
Total	50	100
Knowledge		
Inadequate	20	40
Adequate	30	60
Total	50	100
Supervision		
Inadequate	22	44
Adequate	28	56
Total	50	100
Job Fatigue		
Yes	27	54
No	23	46
Total	50	100

Based on Table 3, using the chi-square test, n indicates the number of respondents was 50. Respondents with poor knowledge who engaged in unsafe actions totaled 13 respondents (65 percent) and those with poor knowledge who engaged in safe actions totaled 7 respondents (35 percent). Meanwhile, respondents with good knowledge who engaged in unsafe actions totaled 14 respondents (46.7 percent) and respondents with good knowledge who engaged in safe actions totaled 16 respondents (53.3 percent). The statistical test results yielded a p-value of 0.203 (p-value > 0.05), indicating that there is no significance between knowledge and unsafe actions.

Table 3.

Statistical significance of knowledge and unsafe action

Knowledge	Unsafe Action		n	p-value
	Unsafe	Safe		
Insufficient	13 (65%)	7 (35%)	20	0.203
Sufficient	14 (46.7%)	16 (53.3%)	30	
Total	27 (54%)	23 (46%)	50	

Table 4.

Statistical significance of supervision and unsafe action

Supervision	Unsafe Action		n	p-value
	Unsafe	Safe		
Insufficient	16 (72.7%)	6 (27.3%)	22	0.019
Sufficient	11 (39.3%)	17 (60.7%)	28	
Total	27 (54%)	23 (46%)	50	

Based on Table 4, using the chi-square test, n indicates the number of respondents was 50. Respondents who stated that supervision was inadequate and engaged in unsafe actions totaled 16 respondents (72.7 percent) and those who stated that supervision was

inadequate and engaged in safe actions totaled 6 respondents (27.3 percent). Meanwhile, respondents who stated that supervision was good and engaged in unsafe actions totaled 11 respondents (39.3 percent) and respondents who stated that supervision was good and engaged in safe actions totaled 17 respondents (60.7 percent). The statistical test results yielded a p-value of 0.019 (p-value < 0.05), indicating that there is a significance between supervision and unsafe actions.

Table 5.
 Statistical significance of job fatigue and unsafe action

Job Fatigue	Unsafe Action		n	p-value
	Unsafe	Safe		
Yes	17 (63%)	10 (37%)	27	0.168
No	10 (43.5%)	13 (56.5%)	23	
Total	27 (54%)	23 (46%)	50	

Based on Table 5, using the chi-square test, n indicates the number of respondents was 50. Respondents who experienced fatigue and engaged in unsafe actions totaled 17 respondents (63 percent) and those who experienced fatigue and engaged in safe actions totaled 10 respondents (37 percent). Meanwhile, respondents who did not experience fatigue and engaged in unsafe actions totaled 10 respondents (43.5 percent) and respondents who did not experience fatigue and engaged in safe actions totaled 13 respondents (56.5 percent). The statistical test results yielded a p-value of 0.168 (p-value > 0.05), indicating that there is no significance between fatigue and unsafe actions.

Discussion

There are several limitations in the research conducted by the researcher. One of the limitations is that the variable of fatigue is subjective. The research on work fatigue using the IFRC (International Fatigue Research Committee) questionnaire focuses more on the symptoms caused by the physical and mental activities of the workers, making it less effective in identifying other factors causing fatigue beyond physical and mental activities.

Bivariate analysis

The bivariate analysis in this study includes examining the relationship between knowledge and unsafe actions (unsafe action), supervision and unsafe actions (unsafe action), and work fatigue and unsafe actions (unsafe action) among warehouse workers at PT Cipta Krida Bahari Samarinda.

Relationship of knowledge and unsafe action

A person's behavior can be greatly influenced by their knowledge or cognitive domain, including safer work practices to reduce the risk of accidents and occupational diseases (Novianus & Setyawan, 2019). Workers who have knowledge about occupational health and safety are more aware of workplace hazards, both minor and serious. This awareness encourages them to act more safely. Conversely, lack of knowledge makes it difficult for workers to identify hazards in their work environment, and they may struggle to take appropriate actions to manage these potential hazards (Uyun & Widowati, 2022).

The research findings indicate that there is no significant relationship between knowledge and unsafe actions (unsafe action). Most respondents have good knowledge of Occupational Health and Safety (OHS), workplace hazards, causes of work accidents, and types of unsafe actions. Statistically, 30 respondents (60 percent) have good knowledge.

This finding is consistent with previous research (Yaqub & Solulipu, 2022), which also found no significant relationship between knowledge and unsafe behavior (unsafe action).

Having good knowledge does not always lead to safe work behavior. Safe work behavior is more influenced by understanding the benefits of such behavior and then implementing it in daily work routines. Even though workers have good knowledge of workplace hazards, they may still engage in unsafe behaviors out of habit or because they perceive no issues with such behavior, such as improper use of personal protective equipment (PPE), working in non-ergonomic positions, or carrying excessive loads.

According to Notoatmodjo (2012), knowledge in the cognitive domain has six levels, from mere awareness to evaluation. Although workers may have good knowledge, it may not yet reach the application stage where that knowledge is implemented in actual actions. Therefore, to promote safe work behavior, more than just knowledge is needed—there must also be deep understanding and commitment to applying that knowledge in every work activity.

Relationship of supervision and unsafe action

Supervision is an activity of overseeing work activities to ensure that each task is performed safely and in accordance with established procedures and guidelines. Effective supervision supports good performance. Monitoring by supervisors influences subordinates to work safely and according to procedures, thereby reducing the risks of accidents and occupational diseases (Novianus & Setyawan, 2019).

The results of this study indicate a significant relationship between supervision and unsafe actions (unsafe action). Most respondents reported that supervision in their workplace is good, with supervisors consistently reminding about personal protective equipment (PPE) and providing corrections when tasks are not performed correctly. Statistically, 28 respondents (56 percent) indicated that supervision in their work environment is good. The research findings show that respondents who rated supervision as good are less likely to engage in unsafe actions. This demonstrates that supervision is a crucial factor in promoting safe behavior among workers.

This study is consistent with research by Larasatie et al. (2022), which found a significant relationship between supervision and unsafe actions among production workers at Company X. When supervision in the workplace is inadequate, there is a higher likelihood of workers engaging in unsafe actions. These findings are also supported by research conducted by Listyandini & Suwandi (2019), which showed a significant relationship between supervision and unsafe actions categorized as low. However, this study contradicts the findings of Agustiya et al. (2020), which did not find a significant relationship between supervision and unsafe actions.

Continuous supervision is essential for every worker. A supervisor plays a critical role in monitoring employees to perform their tasks effectively, efficiently, and safely, as some workers may not always adhere to safety standards during their work. The role of supervisors is crucial in supporting the success of company operations (Utami, 2021).

Relationship of job fatigue and unsafe action

Fatigue is a subjective response that workers experience and tends to decrease motivation and performance while increasing the likelihood of accidents in the workplace. This condition can be detrimental to both the company and the employees by reducing productivity. Additionally, fatigue has the potential to disrupt concentration, leading to unsafe behaviors. When work demands exceed the capacity of the workforce, and this persists continuously, it can result in fatigue-related accidents or occupational diseases, and an increase in absenteeism, thereby causing a decline in productivity (Nisa & Fachrin, 2021).

The results of this study indicate that there is no significant relationship between work fatigue and unsafe actions (unsafe action). A majority of respondents experienced work fatigue, with 27 respondents (54 percent) reporting fatigue. Based on the analysis, it is found that respondents who engage in unsafe actions are higher among those experiencing work fatigue. The questionnaire results indicated that respondents' complaints of fatigue include overall body fatigue, frequent headaches, back pain, and shoulder stiffness.

This study aligns with research by [Jauhari et al. \(2023\)](#), which found no significant relationship between work fatigue and unsafe actions. Another study that supports these findings is by [Yunus et al. \(2022\)](#), which concluded that there is no relationship between work fatigue and unsafe actions among employees at PT. Industri Kapal Indonesia (Persero). However, this study contradicts research by [Yusril et al. \(2020\)](#), which indicated a relationship between work fatigue and unsafe actions.

Possible factors for the lack of relationship between work fatigue and unsafe actions include the understanding that fatigue is not solely caused by the intensity and duration of physical and mental work but can also be influenced by environmental factors such as humidity or temperature. Another contributing factor could be that workers are accustomed to their work patterns, including the feelings they experience after working, thereby not significantly influencing their behavior.

4. Conclusion

Based on the research findings on the relationship between knowledge, supervision, and work fatigue with unsafe actions among warehouse workers at PT CKB Samarinda, the following conclusions can be drawn. The study revealed no significant relationship between the level of knowledge and the occurrence of unsafe actions among warehouse workers. This suggests that while knowledge is essential, it alone may not be sufficient to influence workers' safety behaviors. There is a significant relationship between supervision and unsafe actions. Effective supervision appears to play a crucial role in reducing unsafe behaviors among workers. Regular and rigorous oversight, coupled with strict enforcement of safety protocols, can significantly mitigate the risk of accidents. The research found no significant relationship between work fatigue and unsafe actions among the warehouse workers. This indicates that while fatigue is a prevalent issue, it may not directly contribute to unsafe actions, or other factors might be mitigating its impact. Overall, these findings highlight the importance of robust supervisory practices in ensuring workplace safety. While knowledge and managing fatigue are important, the pivotal role of active and effective supervision cannot be overstated. Companies should prioritize enhancing supervisory measures and implementing stringent safety policies to minimize unsafe actions and foster a safer working environment.

References

- Abduh, M., Alawiyah, T., Apriansyah, G., Sirodj, R. A., & Afgani, M. W. (2023). Survey design: Cross sectional dalam penelitian kualitatif. *Jurnal Pendidikan Sains dan Komputer*, 3(01), 31-39. <https://doi.org/10.47709/jpsk.v3i01.1955>
- Agustiya, H., Listyandini, R., & Ginanjar, R. (2020). Faktor-faktor yang mempengaruhi tindakan tidak aman (unsafe action) pada pekerja. *Promotor*, 3(5), 473-487. <https://doi.org/10.32832/pro.v3i5.4204>
- Bilqis, K., Sultan, M., & Ramdan, I. M. (2021). Hubungan antara budaya Kesehatan dan Keselamatan Kerja (K3) dengan perilaku tidak aman pekerja konstruksi di PT. X Kabupaten Kutai Kartanegara. *Jurnal Kesehatan Masyarakat Mulawarman (JKMM)*, 3(1), 19. <http://dx.doi.org/10.30872/jkmm.v3i1.6271>

- Jauhari, A. R., Firdani, F., & Gusti, A. (2023). *Faktor-faktor yang berhubungan dengan tindakan tidak aman (unsafe action) pada pekerja produksi di PT Wijaya Karya Pabrik Fabrikasi Baja Tangerang tahun 2022* (Thesis, Universitas Andalas).
- Larasatie, A., Fauziah, M., Dihartawan, D., Herdiansyah, D., & Ernyasih, E. (2022). Faktor-faktor yang berhubungan dengan tindakan tidak aman (unsafe action) pada pekerja produksi PT. X. *Environmental Occupational Health and Safety Journal*, 2(2), 133-146. <https://doi.org/10.24853/eohjs.2.2.133-146>
- Listyandini, R., & Suwandi, T. (2019). Faktor yang berhubungan dengan tindakan tidak aman pada pekerja di Pabrik Pupuk NPK. *Jurnal Kesehatan Masyarakat*, 7(1), 18–27. <https://doi.org/10.32832/hearty.v7i1.2299>
- Monalisa, U., Sibakir, & Listiawati, R. (2022). Faktor-faktor yang berhubungan dengan perilaku tidak aman pada pekerja service PT. Agung Automall Cabang Jambi. *Jurnal Inovasi Penelitian*, 2(10), 3391–3398. <https://doi.org/10.47492/jip.v2i10.1332>
- Nisa, S. C., & Fachrin, S. A. (2021). Faktor yang berhubungan dengan tindakan tidak aman pada pekerja di PT. Industri Kapal Indonesia (Persero) Makassar. *Window of Public Health Journal*, 2(4), 636-647. <https://doi.org/10.33096/woph.v2i4.218>
- Notoatmodjo, S. (2012). *Metodologi penelitian kesehatan*. Jakarta : Rineka Cipta
- Novianus, C., & Setyawan, A. (2019). Hubungan karakteristik, ketersediaan fasilitas dan pengawasan dengan tindakan tidak aman pada petugas penanganan prasarana dan sarana umum di Jakarta Timur. *ARKESMAS (Arsip Kesehatan Masyarakat)*, 4(1), 118–124. <https://doi.org/10.22236/arkesmas.v4i1.3668>
- Pratiwi, F. S. (2023, April 28). *RI alami 265.334 kasus kecelakaan kerja hingga November 2022*. DataIndonesia. Retrieved from: <https://dataindonesia.id/tenaga-kerja/detail/ri-alami-265334-kasus-kecelakaan-kerja-hingga-november-2022>
- Utami, S. A. (2021). Faktor-faktor yang berhubungan dengan tindakan tidak aman (unsafe action) pada pekerja bagian produksi tambang PT. Arteria Daya Mulia Kota Cirebon Tahun 2021. *Journal of Health Research Science*, 1(02), 83-89. <https://doi.org/10.34305/jhrs.v1i02.368>
- Uyun, R. C., & Widowati, E. (2022). Hubungan antara pengetahuan pekerja tentang K3 dan pengawasan K3 dengan perilaku tidak aman (unsafe action). *Jurnal Kesehatan Masyarakat (Undip)*, 10(3), 391–397. <https://doi.org/10.14710/jkm.v10i3.33318>
- Yaqub, M., & Solulipu, M. (2022). Faktor yang berhubungan tindakan tidak aman pada pekerja konstruksi pembangunan Rumah Sakit Raudah Makassar. *Window of Public Health Journal*, 3(5), 934-944. <https://doi.org/10.33096/woph.v3i5.884>
- Yunus, A. A., Ikhtiar, M., Hamzah, W., & Hardi, I. (2022). Faktor yang berhubungan dengan tindakan tidak aman (unsafe action) pada pekerja bagian produksi di PT. Industri Kapal Indonesia (PERSERO) Kota Makassar. *Window of Public Health Journal*, 3(3), 575-586.
- Yusril, M., Alwi, M. K., & Hasan, H. (2020). Faktor yang berhubungan dengan tindakan tidak aman (unsafe acation) pada pekerja bagian produksi PT Sermani Stell. *Window of Public Health Journal*, 1(4), 370-381. <https://doi.org/10.33096/woph.v1i4.107>