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The Effect of Occupational Health and Safety (OHS) Knowledge and Organizational Commitment on Employees' Ability to Minimize Workplace Accidents at Hospital X, Surabaya

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Abstract: Workplace accidents remain a critical Occupational Health and Safety (K3/OSH) issue, particularly in hospitals where employees are exposed to multiple hazards and high work intensity. Strengthening employees' ability to minimize workplace accidents is essential to protect staff, maintain service continuity, and improve organizational performance. In this context, K3/OSH knowledge and organizational commitment are assumed to be key factors supporting accident-prevention capability. **Objective:** This study aims to analyze the effects of K3/OSH knowledge and organizational commitment on employees' ability to minimize workplace accidents at Hospital X Surabaya, both simultaneously and partially. **Methods:** This study employed a quantitative, cross-sectional design. Data were collected using a structured questionnaire administered to 84 employees selected from a population of 179 using Slovin's formula (e = 0.10). Respondents included clinical and non-clinical staff (doctors, nurses, midwives, medical record officers, pharmacists, radiology staff, and administrative personnel). Data were analyzed using multiple linear regression with SPSS, assessing the overall model significance (F-test) and the partial effects of each predictor (t-tests). **Results:** The regression model was statistically significant, indicating that K3/OSH knowledge and commitment jointly predict accident-minimization ability ($F = 142.686$, $p < .001$). Partially, K3/OSH knowledge had a significant positive effect on accident-minimization ability ($t = 4.423$, $p < .001$), and organizational commitment also had a significant positive effect ($t = 3.104$, $p = .003$). These results suggest that employees' ability to minimize workplace accidents tends to increase when they have stronger OSH knowledge and higher commitment. **Implications:** Hospitals should implement integrated OSH interventions that combine competency development (e.g., role-specific K3 training, SOP reinforcement) with commitment strengthening (e.g., leadership consistency, safety culture reinforcement, supportive supervision) to enhance accident prevention. **Originality:** This study provides context-specific evidence from an Indonesian hospital by testing K3/OSH knowledge and commitment simultaneously within one predictive model across diverse occupational roles, highlighting the need for combined knowledge–commitment strategies in accident prevention.

Keywords: Occupational Health And Safety; K3 Knowledge; Organizational Commitment; Workplace Accident Prevention; Hospital Employees.

INTRODUCTION

Work-related injuries and diseases remain a major global burden that directly affects productivity, service continuity, and organizational sustainability. Recent global estimates attribute 2.9 million deaths to work-related causes in 2019 (with a 26% increase from 2014), highlighting that prevention is not only a regulatory obligation but also a strategic necessity for organizations that rely on stable human performance. Earlier global estimates similarly emphasized that fatal occupational outcomes are substantial worldwide, reinforcing the urgency of strengthening preventive capacity at the workplace level (Hämäläinen et al., 2007).

This challenge is particularly relevant in healthcare facilities, where work processes are complex, time-critical, and involve multiple hazard sources (e.g., biological exposure, sharps injuries, chemicals, physical strain, and psychosocial demands). A recent meta-analysis reported that needlestick injuries remain prevalent among nurses, indicating that even routine clinical activities can generate recurrent occupational risks if preventive behavior and organizational control are inconsistent (Abdelmalik et al., 2023). Evidence from an Indonesian hospital context also suggests that organizational conditions related to occupational safety and health (OSH) climate are meaningfully associated with the prevention of needlestick injuries, implying that prevention in hospitals is shaped by both individual and organizational factors (Ismara et al., 2019).

From the literature, the first stream of studies emphasizes individual-level capability, showing that safety/OSH training and knowledge contribute to safer work behavior and improved safety outcomes. A meta-analysis on safety training demonstrates that training methods can improve safety-related learning and performance outcomes, although effectiveness varies by approach and context (Burke et al., 2006). Complementing this, safety performance models commonly distinguish safety compliance and safety participation, where safety knowledge is positioned as a key proximal determinant of employees' safety performance in day-to-day work (Griffin & Neal, 2000). A broader meta-analysis also supports that person-related factors (including knowledge/skills) meaningfully relate to safety outcomes across workplaces (Christian et al., 2009).

A second stream highlights organizational-level drivers, especially management commitment and safety climate, as upstream conditions that shape safe behavior and reduce accidents. Meta-analytic evidence indicates that stronger safety climate is associated with better safety performance across studies (Clarke, 2006). Seminal work further shows that

safety climate at the group level can predict micro-accidents, underscoring that employees' shared perceptions of how much safety is prioritized can translate into measurable incident differences (Zohar, 2000). In addition, management commitment has been identified as a practical predictor of safety outcomes, reinforcing the view that safety is strengthened when leaders consistently allocate attention, resources, and enforcement toward OSH.

A third stream focuses on behavioral mechanisms and sector-specific contexts, indicating that safety climate and management signals can influence intentions and unsafe behaviors through psychological pathways. For example, theory-driven work shows that perceived management attitudes and workplace norms can shape intentions that lead to unsafe violations, suggesting that organizational commitment cues matter for behavioral choices under pressure (Fogarty & Shaw, 2010). However, in hospital settings especially in Indonesia empirical evidence that simultaneously tests OSH knowledge and organizational commitment as joint predictors of employees' accident-prevention capability across diverse professional roles (clinical and non-clinical staff) is still limited (Ismara et al., 2019). This gap motivates a focused examination of how these two factors work together within a specific hospital context.

Therefore, this study aims to examine the effects of OSH (K3) knowledge and organizational commitment on employees' ability to minimize workplace accidents at Hospital X, Surabaya, using a quantitative survey design to estimate both simultaneous and partial effects of the predictors.

Based on the theoretical and empirical literature, the proposed hypotheses are: (H1) OSH knowledge and organizational commitment simultaneously have a significant positive effect on employees' accident-minimization ability; (H2) OSH knowledge has a positive partial effect on employees' accident-minimization ability; and (H3) organizational commitment has a positive partial effect on employees' accident-minimization ability (Clarke, 2006; Griffin & Neal, 2000).

RESEARCH METHOD

This study employed a quantitative, cross-sectional approach to examine how Occupational Health and Safety (K3/OSH) knowledge and organizational/work commitment influence employees' ability to minimize workplace accidents at Hospital X in Surabaya. The unit of analysis was the individual employee, with accident-minimization ability treated as the dependent variable, and OSH knowledge and commitment treated as

the independent variables. A quantitative design was selected because the study aimed to test hypothesized relationships objectively using numerical data and statistical procedures, enabling estimation of both the magnitude and significance of the effects.

The study population comprised 179 employees of Hospital X. The sample size was determined using Slovin's formula with a 10% margin of error (e = 0.10), resulting in 84 respondents. The sample included staff from multiple professional groups, namely doctors, nurses, midwives, medical record officers, pharmacists, radiology staff, and administrative personnel, to reflect the hospital's multidisciplinary work environment and exposure to varied occupational risks.

Primary data were collected using a structured questionnaire. The questionnaire was administered by distributing or sending a systematically arranged set of questions to respondents, allowing them to provide responses related to their OSH knowledge, commitment, and perceived ability to minimize workplace accidents. This method was used to ensure consistency of measurement across respondents and to facilitate quantitative aggregation and analysis.

After data collection, the analysis was conducted using multiple linear regression with the assistance of SPSS (Statistical Package for the Social Sciences). Multiple regression was applied to model the relationship between the dependent variable (Y), employees' ability to minimize workplace accidents, and two independent variables, OSH knowledge (X1) and commitment (X2), both simultaneously and partially. The regression specification can be stated as $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$. The model's overall significance was evaluated using the F-test, while partial effects were assessed through t-tests, with statistical significance interpreted at the conventional threshold of $p \leq 0.05$.

RESULTS AND DISCUSSION

Effect of OSH Knowledge and Commitment

The first evidence addresses whether OSH (K3) knowledge and commitment **jointly** predict employees' ability to minimize workplace accidents at Hospital X Surabaya. The multiple regression model was tested using an overall F-test to evaluate model feasibility and the simultaneous contribution of the two predictors. The analysis shows a statistically significant model (F = 142.686, Sig. = 0.000 in SPSS, which is reported as $p < .001$). This indicates that OSH knowledge and commitment, when considered together, are

meaningfully associated with accident-minimization ability among employees. To make the statistical evidence clearer, the key output is summarized in Table 1.

Table 1. Overall Model Significance (F-test)

Test	F	Sig. (SPSS)	APA reporting
Simultaneous effect (OSH knowledge & commitment → accident-minimization ability)	142.686	0.000	$p < .001$

In practical terms, this means the model is fit for interpretation, and it supports the idea that accident-minimization ability in a hospital setting is not explained by a single factor only. Instead, it tends to increase when employees have stronger OSH knowledge **and** when commitment to work/organization is also stronger. The pattern suggests that prevention capability is built through a combination of cognitive readiness (understanding hazards and procedures) and motivational/attitudinal readiness (commitment to comply and to participate in safety efforts).

Partial Effect of OSH (K3) Knowledge

The second evidence focuses on the independent effect of OSH (K3) knowledge on accident-minimization ability, while controlling for commitment. The partial test (t-test) indicates that OSH knowledge has a significant effect (t = 4.423, Sig. = 0.000 in SPSS, reported as $p < .001$). This finding means that, even when commitment is included in the model, OSH knowledge still contributes uniquely to explaining variation in employees' ability to minimize workplace accidents. The result is summarized together with the other predictor in Table 2 for readability.

Table 2. Partial Effects of Predictors (t-tests)

Predictor	t	Sig. (SPSS)	APA reporting
OSH (K3) knowledge	4.423	0.000	$p < .001$
Commitment	3.104	0.003	$p = .003$

Substantively, the pattern here indicates that employees who understand OSH procedures, hazard identification, and safe work practices tend to report a stronger ability to prevent or reduce accidents. The relatively larger t-value for OSH knowledge (compared

with commitment) also suggests that, in this dataset, knowledge shows a stronger statistical signal as a predictor of accident-minimization ability without implying that commitment is unimportant.

Partial Effect of Commitment

The third evidence examines the **independent** effect of commitment on accident-minimization ability, while controlling for OSH knowledge. The partial test shows that commitment is also significant ($t = 3.104$, $p = .003$). This means commitment contributes to accident-minimization ability beyond what is already explained by OSH knowledge.

In narrative terms, the data indicate that commitment matters because it is closely related to consistency in following SOPs, willingness to use protective equipment properly, readiness to report hazards, and persistence in maintaining safe routines especially in a hospital environment where workload, time pressure, and task complexity can weaken compliance. When commitment is higher, employees tend to show stronger accident-minimization ability, even when their OSH knowledge level is accounted for. Taken together with the significant overall model (Section 4.1), these findings support the interpretation that improving workplace safety capability requires both strengthening OSH competence and reinforcing commitment within the organization.

DISCUSSION

This study examined whether Occupational Health and Safety (K3) knowledge and organizational commitment predict employees' ability to minimize workplace accidents in Hospital X Surabaya. The regression results indicate that the model is statistically significant ($F = 142.686$, $p < .001$), meaning K3 knowledge and commitment jointly relate to accident-minimization ability. At the individual level, both predictors are significant: K3 knowledge shows a positive association ($t = 4.423$, $p < .001$) and commitment also shows a positive association ($t = 3.104$, $p = .003$). Taken together, these findings imply that employees who understand K3 principles better and who are more committed to their organization tend to report higher capability to prevent or reduce workplace accidents.

A plausible explanation for these relationships is that K3 knowledge strengthens workers' hazard recognition and procedural competence, while commitment strengthens motivation and persistence to follow safety procedures consistently. In other words, knowing what to do (knowledge) and being willing to keep doing it under operational

pressure (commitment) are complementary mechanisms that support safer behavior. This logic aligns with established safety-performance frameworks in which safety climate and management practices shape safety performance through safety knowledge and safety motivation (Griffin & Neal, 2000), and also aligns with evidence that both person factors and situational factors contribute meaningfully to workplace safety outcomes (Christian et al., 2009).

When compared with prior research, the present results are consistent with the broader empirical pattern that stronger safety-related cognition and organizational conditions predict safer performance. Meta-analytic findings have repeatedly shown that safety climate and related organizational factors correlate with safety behavior and outcomes (Clarke, 2006), and classic work on safety climate emphasizes that shared perceptions of safety priority influence day-to-day safety practices (Zohar, 1980). In the hospital context, where hazards include biological exposure, sharps injuries, ergonomic/manual-handling risks, chemical hazards, radiation, and psychosocial stressors (WHO, 2022), the combination of competence (knowledge) and commitment is especially relevant because safety often depends on consistent compliance with procedures across diverse tasks and units.

The findings also align with Indonesian evidence indicating that safety knowledge and commitment are practically meaningful variables in reducing unsafe behavior and risk. For example, K3 knowledge and management/organizational factors have been reported to relate to controlling unsafe actions (Subhan et al., 2025). Studies in industrial settings in Indonesia also show that worker commitment can be associated with higher accident risk when commitment is weak, reinforcing the practical value of strengthening commitment alongside procedural discipline (Putri et al., 2017). In addition, evidence linking K3-related knowledge with accident occurrence supports the idea that knowledge gaps can translate into preventable incidents, particularly when safety procedures require correct interpretation and routine execution (Hedaputri et al., 2021). Evidence that K3 commitment relates to implementation of safety and health management systems further supports the "commitment → consistent practice" pathway (Simanjuntak, 2019). What this study adds is a focused test of these two predictors together in a hospital workforce (multiple job roles) within a single integrated model useful for management because it indicates that improving only one aspect (training without commitment, or commitment messaging without competence) may be less effective than combining both.

From a practical and policy perspective, these findings matter because workplace accidents remain a substantial burden. The ILO reports around 2.93 million work-related deaths annually and approximately 395 million non-fatal work injuries globally (ILO, 2023), while Indonesian administrative data also indicate high national accident counts (Kemnaker RI, 2024). Hospitals are legally and operationally obligated to implement K3RS/OSH systems and standards (Permenkes RI No. 66 Tahun 2016), so the present results can be interpreted as empirical support for strengthening both competency-based K3 interventions and commitment-building governance in hospital settings.

However, it is also important to reflect on potential dysfunctions: intensifying compliance without supportive systems can create "paper safety," fatigue, and underreporting if staff feel procedures increase workload or if enforcement is perceived as punitive. Conversely, building commitment without ensuring adequate resources (PPE availability, safe staffing, functional reporting channels) can create frustration and reduce trust. Therefore, the implication is not merely "increase training and demand compliance," but rather "improve knowledge and commitment within a supportive safety management system."

In terms of action, hospitals can translate these findings into an integrated program: strengthen periodic, role-specific K3 training and competency checks; reinforce visible leadership commitment (safety walkrounds, rapid hazard correction, non-punitive incident learning); and institutionalize reporting and feedback loops (near-miss reporting, root-cause analysis, unit-level dashboards). These steps align with the intent of K3RS governance and can be embedded into standard operational procedures, audits, and performance indicators under hospital safety management obligations (Permenkes RI No. 66 Tahun 2016). In short, improving accident-minimization ability is most realistically achieved when knowledge-building and commitment-building interventions run together and are supported by consistent organizational systems.

CONCLUSIONS

This study provides clear evidence that Occupational Health and Safety (K3/OSH) knowledge and organizational commitment are important determinants of employees' ability to minimize workplace accidents at Hospital X Surabaya. The main lesson from the findings is that accident-prevention capability is strengthened when employees not only understand safety principles and procedures, but also possess sufficient commitment to

consistently apply them in daily operations. Empirically, OSH knowledge and commitment jointly showed a significant effect on accident-minimization ability ($F = 142.686$, $p < .001$), and each variable also demonstrated a significant partial effect, with OSH knowledge ($t = 4.423$, $p < .001$) and commitment ($t = 3.104$, $p = .003$) contributing independently. These results indicate that hospital safety efforts should be designed as an integrated strategy combining competency development and commitment reinforcement rather than relying on a single intervention.

The scientific contribution of this research lies in its quantitative confirmation that OSH knowledge and commitment operate as complementary predictors of accident-minimization ability within a hospital workforce that includes multiple professional roles. By testing both predictors simultaneously in a single regression model, this study adds context-specific evidence from an Indonesian hospital setting and supports a more integrated understanding of how cognitive (knowledge-based) and motivational/organizational (commitment-based) factors jointly shape safety capability. In practical terms, the study contributes actionable insight for OSH governance in hospitals by highlighting that strengthening knowledge through training should be accompanied by organizational mechanisms that cultivate and sustain commitment, such as leadership consistency, supportive supervision, and a reinforcing safety culture.

Several limitations should be acknowledged. First, the study used a cross-sectional survey design, which limits causal inference and cannot fully capture changes in knowledge, commitment, and safety capability over time. Second, the data relied on self-reported questionnaire responses, which may be affected by social desirability or response bias. Third, the sample was drawn from one hospital, which may restrict the generalizability of findings to other hospitals with different safety cultures, resources, or operational pressures. Future studies are recommended to use longitudinal or quasi-experimental designs (e.g., pre–post evaluations of K3 training and safety culture interventions), expand samples across multiple hospitals, and incorporate objective indicators such as incident/near-miss records, safety audit results, or observational measures to strengthen evidence and enhance external validity.

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