SCIENTIFIC CULTURE

www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 12, No. 1.1, (2026), pp. 2049-2060
Open Access. Online & Print

DOI: 10.5281/zenodo.11425250

LEADING FOR SAFETY AND SUSTAINABILITY: THE ROLE OF LEADERSHIP AND KNOWLEDGE IN FOSTERING NURSES' SAFETY BEHAVIOR THROUGH ORGANIZATIONAL SAFETY CLIMATE

Akhmad Darmawan[1*], Apik Anitasari Intan Saputri[2], Imam Nazarudin Latif[3]

[1]Faculty of Economic and Business, Universitas Muhammadiyah Purwokerto, Indonesia, akhmaddarmawan@ump.ac.id, https://orcid.org/0000-0003-0577-7479
[2]STAI Al Hikmah 2 Brebes, Jl. Raya Benda Sirampog, Kabupaten Brebes, Indonesia, apikanita@staialhikmahdua.ac.id, https://orcid.org/0000-0002-5728-7925
[3]Universitas 17 Agustus 1945 Samarinda, Indonesia, imamlatif5@gmail.com, https://orcid.org/0000-0001-8124-0273

Received: 11/11/2025
Accepted: 18/12/2025

Corresponding Author: Akhmad Darmawan (akhmaddarmawan@ump.ac.id)

ABSTRACT

Healthcare organizations bear a crucial responsibility to ensure patient and workforce safety in line with the Sustainable Development Goals (SDG 3: Good Health and Well-Being, and SDG 8: Decent Work and Economic Growth). This study examines the influence of Safety Leadership and Safety Knowledge on nurses' Safety Behavior, with Safety Climate as a mediating variable, using the Theory of Planned Behavior (TPB) framework. Data were collected from 203 nurses working in several public hospitals in Indonesia and analyzed using the Structural Equation Modeling Partial Least Squares (SEM-PLS) method. The results reveal that Safety Leadership and Safety Knowledge positively and significantly affect Safety Behavior and foster a supportive Safety Climate. However, Safety Climate does not mediate the relationship between leadership, knowledge, and Safety Behavior. These findings indicate that leadership commitment and individual competence play a more dominant role in shaping Safety Behavior than collective perceptions of organizational climate. Practically, the study highlights the need to integrate safety-oriented leadership with continuous knowledge development to strengthen a resilient safety culture. This approach enhances occupational safety performance while contributing to the achievement of SDGs 3 and 8 through sustainable and safe healthcare systems.

KEYWORDS: Safety Leadership, Safety Knowledge, Safety Climate, Safety Behavior, Sustainable Development Goals.

1. INTRODUCTION

Hospitals and healthcare facilities play a crucial role as service centers that focus not only on patient care but also on ensuring the safety of workers, who are an integral part of the healthcare system (Utomo et al., 2023). Globally, occupational safety in the healthcare sector is a key element of sustainable development, in line with the Sustainable Development Goals (SDG 3: Good Health and Well-Being) and SDG 8: Decent Work and Economic Growth, which emphasize the importance of a safe, healthy, and productive work environment for all healthcare workers (Haskins & Roets, 2022;Saleem & Malik, 2022).

Nurses are a profession with the highest level of risk exposure because they interact directly with patients and potentially dangerous medical equipment (Sahadewa & Durry, 2024;Tobing, 2020). Various studies have shown that occupational incidents in hospitals are often caused by behavioral factors, such as negligence in the use of personal protective equipment, procedural errors, or lack of awareness of hazards (Irwandi et al., 2023;Panaha & Maramis, 2021). Therefore, developing strong Safety Behaviors is a strategic priority for healthcare organizations to maintain service quality while protecting the workforce (Ansori et al., 2021; Bagis et al., 2024).

Safety Leadership is considered a key element in fostering a safety culture in the workplace. Leaders who demonstrate a strong commitment to safety can influence the attitudes and actions of team members through role modeling, effective communication, and support for safety practices (Abdullah & Aziz, 2020;Basahel, 2021). Safety-oriented leaders not only set rules, but also act as change agents who internalize safety values into work systems and individual behavior (Hamdan et al., 2023;Jiang et al., 2024). Thus, Safety Leadership is a strategic factor in building a positive Safety Climate in an organization (Dewangga & Lestari, 2023;Nosary & Adiati Rosatyani Puspita, 2021).

Besides leadership, Safety Knowledge also plays an important role in shaping Safety Behavior. Individuals with a good understanding of occupational risks, hazard control procedures, and preventive measures have a higher tendency to behave safely (Rahmadhan et al., 2021;Seo & Lee, 2022). Safety Knowledge serves as a foundation for the workforce to make appropriate and prompt decisions when facing risky situations (Letuka et al., 2021;Tuglo et al., 2021). In the hospital context, increased Safety Knowledge contributes to increased professionalism and compliance with safety standards (Eko Arianto et al., 2021; Wiranata et al., 2023).

Safety Climate reflects the workforce's shared perception of the importance of safety in the workplace. A positive climate encourages collaboration, open communication, and adherence to safety procedures (Abeje & Luo, 2023;Dollard & Bakker, 2010). Several studies have found that Safety Climate can act as a mediating variable that bridges the relationship between leadership and Safety Behavior (Draghici et al., 2022;Sari & Faidal, 2023). However, other studies have shown conflicting findings: Safety Climate does not always have a significant effect on Safety Behavior, especially in high-pressure sectors such as hospitals (Fajrin, 2024;Tandiabang et al., 2023).

These differing findings indicate a research gap regarding the mechanisms that shape Safety Behavior in the healthcare sector. Most previous research has focused on the construction and manufacturing sectors (Kalteh et al., 2021;Omidi et al., 2023), while studies in the healthcare sector, particularly those examining the interaction between leadership, knowledge, and Safety Climate, are still limited (El Meneza, 2020; Ningsih & Endang Marlina, 2020). Furthermore, little research links these factors to sustainability perspectives and SDG achievement (Cheng et al., 2023;Haskins & Roets, 2022).

Based on the research gap, this study has an urgency to analyze the influence of leadership and Safety Knowledge on nurses' Safety Behavior, by considering the mediating role of organizational Safety Climate. This study's foundation is the Theory of Transcendental Learning (TPB) (Ajzen, 1991), which states that human development is influenced by one's own strengths, social norms, and the ability to apply those strengths (Pratama et al., 2025). Using this theoretical perspective, the study aims to understand how professionals might improve their health by reducing the risk of illness. At the time, he aimed to obtain practical experience in order to develop a stronger sense of self-worth and to improve workplace practices with a greater commitment to continuous improvement in the health-care system (Bagis et al., 2025). The main contribution of this study is the integration of the TPB perspective with the primary organizational structure for the health sector, as well as the empirical investigation of the impact of mediasi iklim keselamatan - hubungan that was previously investigated with variable results. Furthermore, this study expands the theoretical framework by integrating work-life balance practices with SDG 3 (Good Health and Well-Being) and SDG 8 (Good Jobs

and Economic Growth). With this integration, this study makes a significant contribution: filling a theoretical gap in work quality and providing a practical framework for developing leadership in healthcare organization.

2. LITERATURE REVIEW

2.1. Theory Of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) (Ajzen, 1991) provides a framework for understanding how individuals transform thoughts and intentions into concrete actions. Rather than viewing behavior as spontaneous, the TPB posits that it emerges through a cognitive process shaped by three interrelated elements: personal attitudes toward the action, perceived social expectations, and the perceived sense of control one has over the action. Over time, this model has become increasingly complex. According to (Bosnjak et al., 2020), the TPB becomes more advantageous by incorporating contextual variables such as social interactions and organizational beliefs, which influence how time passes and is expressed in the workplace. Applying this perspective to the workplace, this study examines the impact of work practices on employees, the impact of supervisors on employees, and the impact of their own abilities on their perceived safety (Guzzo et al., 2020). Positive perceptions of an action, reinforcement from the social environment, and confidence in one's ability to perform the action all strengthen the intention to act in that manner (Manuntung & Kep, 2020). When individuals perceive that their work benefits themselves and others, they will strive to maintain or even improve their job (Ajzen, 1991). In the context of this study, the TPB serves as a conceptual foundation for understanding how leadership and Safety Knowledge interact through Safety Climate to enhance employee performance. This theoretical lens allows research to capture the psychological and organizational factors that influence Safety Behaviors in healthcare settings.

2.2. The Influence of Safety Leadership on Safety Climate

Safety Leadership reflects a managerial orientation that seeks to align operational performance with employee well-being. Efficient business leaders do not lose sight of their productivity goals; instead, they integrate quality improvement into all aspects of daily operations, ensuring that every employee is protected and compensated (Jiang et al., 2024). In practice, a leader who prioritizes integrity creates a safe and supportive work environment, inspires initiative, and fosters teamwork (El Meneza, 2020;Wu et al., 2011). Consistent empirical evidence shows that leaders with high levels of self-confidence contribute to the development of a strong sense of safety. Through demonstrated commitment and open communication, leaders build shared beliefs about the importance of safety and reinforce norms that guide behavior throughout the organization (Dewangga & Lestari, 2023;Nosary & Adiati Rosatyani Puspita, 2021;Sari & Faidal, 2023). When leaders emphasize safety as a core element of organizational practices, employees are more likely to internalize these values, fostering a culture that anticipates and mitigates risks before they escalate.

H1: Safety Leadership is expected to strengthen the Safety Climate within an organization by promoting shared values and proactive safety norms.

2.3. The Influence of Safety Knowledge on Safety Climate

Safety Knowledge is an employee's understanding of concepts, procedures, and precautions that are essential for maintaining workplace safety (Ningsih & Endang Marlina, 2020). Workers with strong Safety Knowledge are generally better able to recognize potential hazards and take appropriate action to minimize accidents (Letuka et al., 2021;Tuglo et al., 2021). Cognitive competence is crucial for developing a positive Safety Climate, as informed employees contribute to the development of collective norms that prioritize safety. Previous research also shows that higher levels of ethical knowledge correlate with higher levels of ethics within the organization (Albab & Faidal, 2024; Wiranata et al., 2023).

H2: Increased employee Safety Knowledge is expected to positively impact the development of supportive and consistent safety indicators.

2.4. The Influence of Safety Climate on Safety Behavior

A Safety Climate reflects employees' shared understanding of the importance of safety within their organization (Rahman et al., 2023). When a workplace fosters a strong commitment to safety, employees are more likely to adhere to established procedures and be aware of potential risks (Geczik et al., 2022;Mirza et al., 2022). Efficient communication and well-structured safety training further enhance the atmosphere and integrate safety into daily practices (Dollard & Bakker, 2010;Xia et al., 2023). When employees experience stress and anxiety at work, they tend to develop greater discipline and initiative to carry out tasks safely. This sense of inclusion not only increases personal

responsibility but also strengthens collective adherence to safety norms. Empirical evidence supports this relationship research has shown that a positive Safety Climate encourages safer behavior patterns among employees (Draghici et al., 2022;Palendeng & Bernarto, 2022).

H3: Positive safety indicators improve employee safety.

2.5. The Influence of Safety Leadership on Safety Behavior

Safety Leadership describes a leader's ability to improve employee behavior through various psychological and social factors (Zhao et al., 2022). Effective leaders not only exceed integrity standards but also inspire and motivate their employees to make integrity part of their values (Hamdan et al., 2023;Unur et al., 2022). Safety-focused leadership creates a sense of shared responsibility and encourages active employee participation in creating a safe work environment (Hu et al., 2020). Several studies have found that Safety Leadership has a direct impact on safety performance (Mujahid et al., 2024;Rahman et al., 2023;Sadili & Faidal, 2024).

H4: Safety Leadership should improve employee Safety Behavior by establishing commitment and accountability for good work practices.

2.6. The Influence of Safety Knowledge on Safety Behavior

Understanding safety plays a crucial role in improving employee performance in the workplace (Suyoto et al., 2025). When individuals have a better understanding of safety principles, they are more likely to consistently apply them in their daily activities (Hu et al., 2020; Jung et al., 2020). Such knowledge encompasses the awareness and skills needed to identify potential hazards, properly utilize protective equipment, and respond effectively during emergency situations (Teffo & Tabit, 2020). In addition to cognitive aspects, Safety Knowledge also shapes moral awareness that safety is a shared responsibility (Arianto & Feriana, 2021; Dwi Stiawan, 2024; Rahmadhan et al., 2021). Thus, Safety Knowledge becomes the basis for the formation of safe and consistent behavior in the workplace.

H5: Employees' level of Safety Knowledge is expected to positively shape their Safety Behavior by enabling them to act more carefully and consistently in maintaining safe work practices.

2.7. The Mediating Role of Safety Climate Between Leadership and Knowledge on Safety Behavior

Safety Climate serves as a reflection of employee values, beliefs, and perceptions regarding the importance of safety in the workplace (Prameswari & Cimera, 2023; Rahmadhan et al., 2021). When employees feel that safety is an organizational priority, they will be more disciplined, comply with procedures, and be proactive in maintaining the safety of themselves and their coworkers (Surbakti et al., 2023). Leaders who demonstrate a focus on safety create a safe and supportive work environment, thus fostering a strong Safety Climate (Ante Sulu et al., 2024;Nathasya Abigail Putri Andira et al., 2024). On the other hand, good Safety Knowledge also strengthens employees' positive perceptions of the organization's safety culture (Anita, 2021; Zaujan et al., 2021). A positive Safety Climate ultimately encourages safe behavior and reduces the risk of workplace accidents (Cooper & Phillips, 2004;Santosa, 2023).

Thus, Safety Climate can function as a mediator variable explaining how Safety Leadership and knowledge influence employee Safety Behavior.

H6: The influence of Safety Leadership on employees' Safety Behavior is presumed to operate indirectly through the mediating role of the Safety Climate.

H7: The influence of Safety Knowledge on employees' Safety Behavior is presumed to operate indirectly through the mediating role of the Safety Climate.

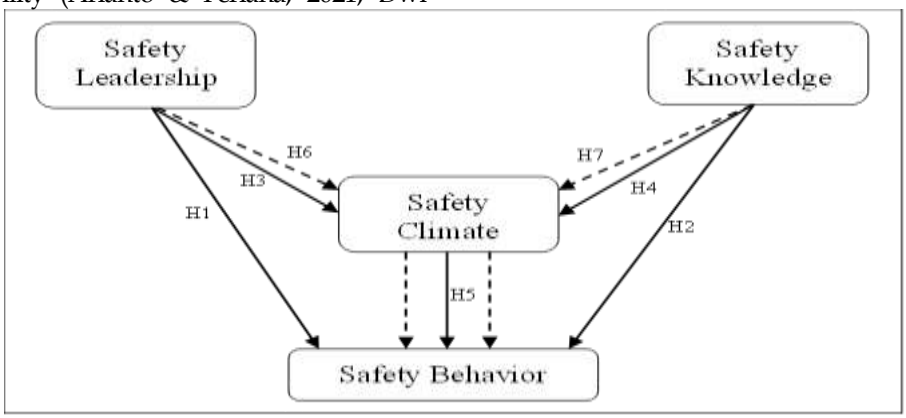

Figure 1: Conceptual Framework ((Developed by authors, 2024 based on TPB)

3. RESEARCH METHOD

This study employed a quantitative explanatory design to determine the relationships between leadership, knowledge, climate, and health-related behaviors. This methodological approach allows for a more comprehensive examination of the long-term and short-term effects of variables within a specific conceptual framework (Creswell & Clark, 2017). This conceptual model is based on the Theory of Planned Behavior (TPB) (Ajzen, 1991), which states that an individual's behavior is influenced by personal characteristics, social perspectives, and feelings about the situation. This concept has been widely used in organizational research to explain workplace behavior, including workplace safety (Bosnjak et al., 2020;Guzzo et al., 2020). Based on this foundation, research is currently being conducted to determine how factors such as leadership and knowledge contribute to improving organizational performance through employee perceptions.

This study focused on employees working in various healthcare institutions across Indonesia. Nurses were selected because they involve continuous exposure to occupational hazards and direct responsibility for implementing safety processes. The purposeful sampling strategy was based on the following criteria: (1) a minimum of one year of professional experience, (2) active participation in patient care, and (3) knowledge of job duties and procedures in the workplace. The final sample consisted of 203 respondents, all of whom met the outlined criteria. This dataset was intended for Structural Equation Modeling-Partial Least Squares (SEM-PLS) analysis, as recommended by (Hair et al., 2020), which requires a minimum of five to ten times the number of indicators in the model.

The research instrument was developed based on indicators adapted from relevant previous research. Safety Leadership was measured through the dimensions of leader role model, safety communication, and support for safety practices (Abdullah & Aziz, 2020;Jiang et al., 2024). Safety Knowledge encompasses an understanding of safe work procedures, the ability to identify risks, and emergency preparedness (Letuka et al., 2021;Tuglo et al., 2021). Safety Climate reflects collective perceptions of an organization's commitment to safety and employee participation in its implementation (Dollard & Bakker, 2010; Rahman et al., 2023). Meanwhile, Safety Behavior is measured through two main dimensions: compliance with safety procedures and active participation in maintaining safety (Mujahid et al., 2024;Xia et al., 2023).

A Likert scale was used, with scores ranging from 1 (dissatisfied) to 5 (satisfied). Before distributing the main survey, consider conducting a small group of respondents to ensure each item is clear and easy to understand. Feedback from this stage confirmed that the statements were valid and demonstrated acceptable internal consistency. Data were collected through a self-administered questionnaire distributed through a secure digital platform to facilitate access and maintain respondent confidentiality. Participation was completely voluntary, and all participants received a brief explanation of the study's purpose and assurance that their responses would be used solely for academic research. This research process validated ethical standards established in social science studies (Bryman, 2016).

For data processing, Partial Least Squares-Structural Equation Modeling (PLS-SEM) was used with SmartPLS version 4.0. The analytical procedure involved two key phases. The first evaluated the measurement model, examining convergent and discriminant validity as well as construct reliability through indicators such as factor loadings, Average Variance Extracted (AVE), and Composite Reliability (CR) (Hair et al., 2020). The second phase tested the structural model, estimating path coefficients, t-statistics, and p-values obtained via bootstrapping to assess the proposed hypotheses.

A mediation analysis was further performed to explore how the Safety Climate links Safety Leadership and Safety Knowledge to employees' Safety Behavior. Model quality was evaluated using the R^2, effect size (f^2), and predictive relevance (Q^2) statistics, indicating the explanatory strength of the endogenous variables. The interpretation of results was contextualized within the healthcare setting and aligned with the sustainability framework, particularly SDG 3 (Good Health and Well-Being) and SDG 8 (Decent Work and Economic Growth).

4. RESULTS AND DISCUSSION

4.1. Results

4.1.1. Descriptive Statistical Analysis

The respondents in this study consisted of 203 nurses working in various healthcare organizations in Indonesia. Most respondents were between 25 and 35 years old, with two to five years of work experience. This composition reflects a group of

healthcare workers who are productive, adaptable to change, and have a high level of awareness of the importance of occupational safety.

Table 1: Descriptive Statistics of Research Variables.

Variable	Mean	Std. Dev	Catagory
Safety Leadership	4,21	0,61	High
Safety Knowledge	4,35	0,58	High
Safety Climate	4,18	0,63	High
Safety Behavior	4,40	0,55	Very High

In general, the results of the descriptive analysis indicate that respondents' perceptions of all research constructs were high. Safety Leadership received an average score of 4.21, indicating that leaders in the workplace were deemed to provide strong role models and direction in implementing safety practices. Safety Knowledge received an average score of 4.35, indicating that nurses have a good understanding of safe work procedures and how to manage workplace risks. Safety Climate received an average score of 4.18, indicating that the work environment is considered supportive of safety implementation, both through open communication, clear policies, and employee participation. Meanwhile, Safety Behavior received an average score of 4.40, indicating that most nurses consistently implemented safe work behaviors. These results indicate that the safety culture in healthcare organizations has been established quite strongly.

4.1.2. Measurement Model Testing (Outer Model)

The measurement model testing was conducted to ensure the validity and reliability of each construct. In the initial stage, outer loading analysis revealed that several indicators had values below the threshold of 0.70, necessitating filtering. Of the 28 initial indicators, four with loading factor values below 0.65 were eliminated as they did not meet convergent validity requirements. After the weak indicators were removed, the analysis process was repeated two iterations until the model reached stability. The final results showed that all remaining indicators had loading factor values between 0.73 and 0.89, indicating that each statement item adequately represented its construct.

Table 2: Outer Loading Results (After Indicator Elimination).

Construct	Indicator	Loading	Information
Safety Leadership (SL)	SL1 – Leaders lead by example in safety	0,83	Valid
	SL2 – Safety communication runs effectively	0,88	Valid
	SL3 – Leaders provide support for safe practices	0,79	Valid
	SL4 – Leaders give feedback on incidents	0,76	Valid
Safety Knowledge (SK)	SK1 – Understanding work procedures	0,85	Valid
	SK2 – Able to recognize work risks	0,81	Valid
	SK3 – Prepare for a crisis	0,73	Valid
Safety Climate (SC)	SC1 – Organizations demonstrate commitment to safety	0,84	Valid
	SC2 – Security communication goes both ways	0,87	Valid
	SC3 – Employee participation in high safety	0,78	Valid
Safety Behavior (SB)	SB1 – Compliance with occupational safety procedures	0,89	Valid
	SB2 – Remind colleagues of work hazards	0,84	Valid
	SB3 – Participation in safety training	0,77	Valid

The Average Variance Extracted (AVE) selection results showed a high level of convergence, with all constructs exceeding the minimum threshold of 0.50. Specific AVE values were 0.62 for Safety Leadership (SL), 0.65 for Safety Knowledge (SK), 0.68 for Safety Climate (SC), and 0.70 for Safety Behavior (SB). The composite reliability coefficient (CR), which ranged from 0.87 to 0.93, became increasingly important in determining internal item consistency. Collectively, this indicates that each construct meets established validity and reliability standards, making it suitable for further evaluation of the structural model.

4.1.3. Structural Model Test (Inner Model)

The structural model was analyzed using bootstrapping at a 5% significance level ($p < 0.05$). The R^2 coefficient for the Safety Climate variable was 0.59 and for the Safety Behavior variable was 0.67, indicating strong explanatory power.

Table 3: Structural Model Test Results (Path Coefficients).

Influence Path	Coephyses (β)	t-value	p-value	Information
Safety Leadership → Safety Climate	0,41	6,12	< 0.001	Significant
Safety Knowledge → Safety Climate	0,38	5,46	< 0.001	Significant
Safety Leadership → Safety Behavior	0,32	4,71	0.001	Significant
Safety Knowledge → Safety Behavior	0,29	3,85	0.002	Significant
Safety Climate → Safety Behavior	0,35	5,18	< 0.001	Significant

The analysis revealed that all relationships between variables were statistically significant. Safety Leadership and Safety Knowledge positively contribute to shaping a Safety Climate and improving Safety Behavior among healthcare workers. Furthermore, the theory states that higher safety perceptions are associated with higher levels of safety in daily tasks. This pattern suggests that when leaders consistently implement safety practices and employees possess knowledge of safety principles, individuals will remain unconcerned and focused on their work environment. The mediation analysis further showed that the Safety Climate did not serve as a full mediator between leadership and Safety Behavior ($p = 0.08$) nor between Safety Knowledge and Safety Behavior ($p = 0.09$). The results indicate that leadership and education have a long-term impact on outcomes, particularly through shared perceptions of the environment. In practice, healthcare worker Safety Behavior appears to be more strongly influenced by personal factors, such as leadership influence and individual competence, than by collective perceptions of the organization.

The study concludes that improving quality of life in healthcare systems requires more than just a positive climate; it requires a focus on leadership and improving the quality of life for employees. Implementing these elements can drive faster operational change and align organizational practices with global development priorities, particularly SDG 3 (Health and Well-Being) (Bagis et al., 2024) and SDG 8 (Long-Term Employment and Economic Growth), both of which improve working conditions.

4.2. Discussion

The findings of this study indicate that Safety Leadership has a significant impact on the Safety Climate and behavior patterns of healthcare workers. These results emphasize that leaders are responsible for fostering a peace-focused culture across all levels of the organization. Leaders who lead by example, communicate openly, and support safety practices can foster mutual trust among team members. When leaders consistently emphasize the importance of safety in every work process, employees become more motivated and committed to completing safety processes.

This finding is consistent with the findings of (Jiang et al., 2024;Zhao et al., 2022), who stated that effective leaders in a safety context not only comply with regulations but also recognize safety values and practices as components of organizational culture. Therefore, Safety Leadership can be defined as a type of leadership that focuses on long-term goals that include not only productivity but also job security and employee well-being.

In addition to the leadership dimension, this study emphasizes the importance of ethical knowledge in shaping organizational policies and employee behavior. Healthcare workers with a good understanding of safety, risk control measures, and emergency response procedures are more likely to anticipate and mitigate potential hazards that may arise during their work. This knowledge provides a cognitive foundation for making timely and appropriate decisions when faced with potentially dangerous situations. This perspective aligns with the ideas of (Letuka et al., 2021;Tuglo et al., 2021), who believe that formal education and training play a crucial role in reducing employee turnover.

Broader research has shown that a positive Safety Climate is associated with proactive Safety Behaviors. When healthcare institutions create a health-promoting atmosphere, employees are more likely to engage in activities that protect themselves and the company they work for. A conducive work culture also facilitates two-way communication between employees and managers, allowing potential risks to be identified and addressed more effectively. This aligns with the findings of (Dollard & Bakker, 2010;Xia et al., 2023), who found that a supportive work environment increases intrinsic motivation to perform consistently.

However, the analysis concluded that Safety Climate does not adequately address the relationship between leadership and safety, or between knowledge and safety. This suggests that in healthcare organizations, individual factors such as leadership and professional competence have a greater dampening effect on safety than broader situational factors. This may be due to the inherent

nature of healthcare work, which requires rapid response, privacy, and protection from high-risk situations. Consequently, safe behavior often depends more on personal awareness and the immediate influence of leadership than on generalized perceptions of the organizational environment.

These findings provide a theoretical contribution to the development of the Theory of Planned Behavior (TPB), where leadership and Safety Knowledge can be viewed as external factors that strengthen individuals perceived behavioral control and subjective norms in the context of Safety Behavior. When leaders act as role models and credible sources of information, individuals will feel more capable and motivated to perform safe actions.

From a practical perspective, the results of this study demonstrate the importance of strengthening leadership capacity and occupational safety competency improvement programs in healthcare organizations. Management needs to create a continuous training system and ensure that leaders at every level of the organization understand their responsibilities as key drivers of safety culture. Encouraging healthcare personnel to participate directly in designing safety-related policies and operational procedures can further enhance their sense of responsibility and shared commitment to maintaining a safe work environment. When students complete a test, they tend to internalize the results as part of their daily professional practice. This has significant implications for achieving the Long-Term Development Goals (SDGs), particularly SDG 3 (Good Health and Safety) and SDG 8 (Good Jobs and Economic Growth). Strengthening safety-first leadership and enhancing employee safety competencies not only protects the well-being of healthcare workers but also contributes to building an inclusive, productive, and sustainable healthcare system. Ultimately, strong religious beliefs serve as an important foundation for improving the quality of patient care and, as a result, driving long-term organizational success.

5. CONCLUSION

This study found that leadership and safety knowledge serve as fundamental drivers of safe work practices in healthcare organizations. Leaders who model safety-oriented behavior, communicate expectations clearly, and maintain open dialogue about workplace risks foster positive perceptions of safety and consistent adherence to procedures. Likewise, comprehensive safety knowledge equips healthcare workers with the cognitive and emotional capacities needed to effectively manage occupational risks and sustain safe practices.

From a theoretical perspective, this study reinforces the Theory of Planned Behavior (TPB) by demonstrating that leadership and safety knowledge strengthen individuals perceived behavioral control and commitment to safety. While safety climate contributes to reinforcing these behavioral patterns, the evidence indicates that its mediating role is only partial. Safe behavior in high-risk settings appears to be more strongly influenced by personal factors such as leadership role modeling and individual competence rather than collective perceptions alone.

From a practical standpoint, the findings emphasize the importance of strengthening safety-based leadership capacity and continuous knowledge development at all organizational levels. Leadership that embeds safety as a core organizational value can foster a sustainable safety culture while advancing the Sustainable Development Goals (SDGs 3 and 8) through the creation of a safe, productive, and humane workplace. Future studies should employ longitudinal or mixed-methods approaches to examine the dynamic interaction between leadership, knowledge, and safety climate across time and contexts. Overall, this study contributes to theory by extending TPB into the domain of sustainable healthcare safety, and to practice by providing actionable insights for cultivating leadership and organizational resilience in healthcare systems.

REFERENCES

Abdullah, K. H., & Aziz, F. S. A. (2020). Safety Behavior In The Laboratory Among University Students. *Journal Of Behavioral Science*, *15*(3), 51–65.

Abeje, M., & Luo, F. (2023). The Influence Of Safety Culture And Climate On Safety Performance: Mediating Role Of Employee Engagement In Manufacturing Enterprises In Ethiopia. *Sustainability (Switzerland)*, *15*(14). Https://Doi.Org/10.3390/Su151411274

Ajzen, I. (1991). The Theory Of Planned Behavior. *Organizational Behavior And Human Decision Processes*, *50*(2), 179–221. Https://Doi.Org/10.47985/Dcidj.475

Albab, A. U., & Faidal. (2024). Pengaruh Safety Knowledge, Safety Awarness, Safety Climate Dan Safety Citizhinsip Behaviour Terhadap Safety Behaviour Pada Objek Wisata Pantai Lombang Sumenep, Madura. *Jurnal Ilmiah Wahana Pendidikan*, *10*(13), 16–30.

Anita, A. (2021). Improved Knowledge And Reporting Of Patient Safety Incidents By Nurse Executives After Academic Model Supervision In X Hospital, Cirebon City. *Jurnal Ilmiah Perawat Manado (Juiperdo)*, *9*(02), 296–317.

Ansori, N., Widyanti, A., & Yassierli. (2021). The Influence Of Safety Climate, Motivation, And Knowledge On Worker Compliance And Participation: An Empirical Study Of Indonesian Smes. *Ingenieria E Investigacion*, *41*(3), 1–9. Https://Doi.Org/10.15446/Ing.Investig.V41n3.83763

Ante Sulu, J., Ombuh, Tt., Yeddy, S. &, & Aliong. (2024). Pelaksanaan Safety Drill Sesuai Aturan Solas Chapter Iii Di Km Kendagha Nusantara 03. *Journal Of Nautical Science And Technology*, *1*(4), 48–54.

Bagis, F., Adawiyah, W. R., Purnomo, R., & Sudjadi, A. (2024). Exploring Islamic Spiritual Well-Being: Conceptualization And Validation Of A Measurement Scale. *Islamic Guidance And Counseling Journal*, *7*(2). Https://Journal.Iaimnumetrolampung.Ac.Id/Index.Php/Igcj/Article/View/4735

Bagis, F., Adawiyah, W. R., & Sudjadi, A. (2024). Employee's Spiritual Well-Being: Diminishing The Negative Fibs Of Job Stress, Ego Depletion And Cyberloafing. *Revista De Gestão Social E Ambiental*, *18*(6), 1–23.

Bagis, F., Adawqiyah, W. R., Purnomo, R., & Setyanto, R. P. (2025). The power of Islamic spirituality in diminishing darkness of job stress, ego depletion and cyberloafing diversion in the Islamic workplace culture. Management & Accounting Review (MAR), 24(3), 313-338.

Bagis, F., & Adawiyah, W. R. (2025). Divine Guidance in The Face of Toxicity: How Islamic Leadership Navigates Workplace Stress and Mental Wellbeing in Higher Education Institutions. MIX: Jurnal Ilmiah Manajemen, 15(2), 31–43. https://doi.org/http://dx.doi.org/10.22441/jurnal_mix.2025.v15i2.004

Basahel, A. M. (2021). Safety Leadership, Safety Attitudes, Safety Knowledge And Motivation Toward Safety-Related Behaviors In Electrical Substation Construction Projects. *International Journal Of Environmental Research And Public Health*, *18*(8). Https://Doi.Org/10.3390/Ijerph18084196

Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The Theory Of Planned Behavior: Selected Recent Advances And Applications. *Europe's Journal Of Psychology*, *16*(3), 352–356. Https://Doi.Org/10.5964/Ejop.V16i3.3107

Bryman, A. (2016). Social Research Methodology. In *Social Research Methodology*. Oxford University Press. Https://Doi.Org/10.1007/978-0-230-22911-2

Cheng, B., Wei, Y., Li, H., Huang, J., & Chen, H. (2023). Science Mapping The Knowledge Domain Of Construction Workers' Safety Behavior. *Buildings*, *13*(6). Https://Doi.Org/10.3390/Buildings13061365

Cooper, M. D., & Phillips, R. A. (2004). Exploratory Analysis Of The Safety Climate And Safety Behavior Relationship. *Journal Of Safety Research*, *35*(5), 497–512. Https://Doi.Org/10.1016/J.Jsr.2004.08.004

Creswell, J. W., & Clark, V. L. P. (2017). *Designing And Conducting Mixed Methods Research*. Sage Publications.

Dewangga, R. S., & Lestari, F. (2023). Hubungan Frontline Leadership Styles Terhadap Iklim Keselamatan Di Berbagai Industri. *Jurnal Cahaya Mandalika …*, *3*(2), 927–939.

Dollard, M. F., & Bakker, A. B. (2010). Psychosocial Safety Climate As A Precursor To Conducive Work Environments, Psychological Health Problems, And Employee Engagement. *Journal Of Occupational And Organizational Psychology*, *83*(3), 579–599. Https://Doi.Org/10.1348/096317909x470690

Draghici, A., Dursun, S., Başol, O., Boatca, M. E., & Gaureanu, A. (2022). The Mediating Role Of Safety Climate In The Relationship Between Transformational Safety Leadership And Safe Behavior—The Case Of Two Companies In Turkey And Romania. *Sustainability (Switzerland)*, *14*(14). Https://Doi.Org/10.3390/Su14148464

Eko Arianto, M., Feriana, S., Kesehatan Masyarakat Universitas Ahmad Dahlan, F., & Jl Soepomo Shkec Umbulharjodaerah Istimewa Yogyakarta Indonesia, Y. D. (2021). Pengetahuan Keselamatan Berkendara, Masa Kerja Dan Peran Manajemen Dengan Perilaku Keselamatan Berkendara Pada Pengemudi Truk Bermuatan Semen Di Pt Energi Sukses Abadi Cilacap Knowledge Of Driving Safety, Working Period And The Role Of Management With The Safety Behavior Of The Rider Of Cement Truck Drivers At Pt Energi Sukses Abadi Cilacap. *Jurnal Kesehatan Masyarakat*, *8*(1), 14–20.

El Meneza, S. (2020). Egyptian Neonatal Safety Training Network: A Dream To Improve Patient Safety Culture In Egyptian Neonatal Intensive Care Units. *Eastern Mediterranean Health Journal*, *26*(10), 1303–1311. Https://Doi.Org/10.26719/Emhj.20.034

Fajrin, M. I. V. (2024). The Influence Of Safety Leadership And Safety Climate On Safety Behavior Is Mediated By Safety Motivation In Sugar Factory Employees. *Asian Journal Of Engineering, Social And Health*, *3*(9), 1971–1981. Https://Doi.Org/10.46799/Ajesh.V3i9.403

Geczik, A. M., Lee, J., Davis, A. L., Allen, J. A., & Taylor, J. A. (2022). Size Matters: How Safety Climate And Downstream Outcomes Vary By Fire Department Organization Type. *Injury Epidemiology*, *9*(1), 1–17.

Https://Doi.Org/10.1186/S40621-022-00373-X

Guzzo, R. F., Wang, X., & Madera, J. M. (2020). Since January 2020 Elsevier Has Created A Covid-19 Resource Centre With Free Information In English And Mandarin On The Novel Coronavirus Covid- 19 . The Covid-19 Resource Centre Is Hosted On Elsevier Connect , The Company ' S Public News And Information. *International Journal Of Hospitality Management*, *93*(January). Https://Doi.Org/Https://Doi.Org/10.1016/J.Ijhm.2020.102778

Hair, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing Measurement Model Quality In Pls-Sem Using Confirmatory Composite Analysis. *Journal Of Business Research*, *109*(December 2019), 101–110. Https://Doi.Org/10.1016/J.Jbusres.2019.11.069

Hamdan, H., Mahmood, R., Abdullah Hashim, R., & Rosli, N. S. (2023). Building A Safer Future: The Impact Of Safety Leadership And Safety Competency In The Construction Industry. *The Asian Journal Of Professional & Business Studies*, *4*(2), 1–12. Https://Doi.Org/10.61688/Ajpbs.V4i2.124

Haskins, H. E. M., & Roets, L. (2022). Nurse Leadership: Sustaining A Culture Of Safety. *Health Sa Gesondheid*, *27*, 1–8. Https://Doi.Org/10.4102/Hsag.V27i0.2009

Hu, R., Hu, N., Liu, R., Shi, L., Shi, J., & Ling, L. (2020). Association Between Occupational Health And Safety Knowledge And Behaviours Among Migrant Workers: Results From A Cross-Sectional Study In China. *Bmj Open*, *10*(12), 1–6. Https://Doi.Org/10.1136/Bmjopen-2020-040143

Irwandi, I., Manik, M. H., & Sitorus, F. E. (2023). Hubungan Antara Masa Kerja Dengan Kejadian Kecelakaan Kerja Pada Tenaga Medis Di Rumah Sakit Sembiring. *Best Journal (Biology Education, Sains And Technology)*, *6*(2), 1012–1018.

Jiang, Z., Zhao, X., Wang, Z., & Herbert, K. (2024). Safety Leadership: A Bibliometric Literature Review And Future Research Directions. *Journal Of Business Research*, *172*(June 2022), 114437. Https://Doi.Org/10.1016/J.Jbusres.2023.114437

Kalteh, H. O., Mortazavi, S. B., Mohammadi, E., & Salesi, M. (2021). The Relationship Between Safety Culture And Safety Climate And Safety Performance: A Systematic Review. *International Journal Of Occupational Safety And Ergonomics*, *27*(1), 206–216. Https://Doi.Org/10.1080/10803548.2018.1556976

Letuka, P., Nkhebenyane, J., & Thekisoe, O. (2021). Street Food Handlers' Food Safety Knowledge, Attitudes And Self-Reported Practices And Consumers' Perceptions About Street Food Vending In Maseru, Lesotho. *British Food Journal*, *123*(13), 302–316. Https://Doi.Org/10.1108/Bfj-07-2020-0595

Manuntung, N. A., & Kep, M. (2020). *Terapi Perilaku Kognitif Pada Pasien Hipertensi*. Wineka Media.

Mirza, M. Z., Isha, A. S. N., Memon, M. A., Azeem, S., & Zahid, M. (2022). Psychosocial Safety Climate, Safety Compliance And Safety Participation: The Mediating Role Of Psychological Distress. *Journal Of Management And Organization*, *28*(2), 363–378. Https://Doi.Org/10.1017/Jmo.2019.35

Mujahid, I., Miftah Faridli, E., & Darmawan, A. (2024). Emphasizes The Importance Of Safety Behavior By Optimizing Safety Leadership And Safety Knowledge Through A Safety Climate. *Revista De Gestao Social E Ambiental*, *18*(1), 1–18. Https://Doi.Org/10.24857/Rgsa.V18n1-117

Nathasya Abigail Putri Andira, Fierdania Yusvita, Eka Cempaka Putri, & Ahmad Irfandi. (2024). Analisis Faktor Kepemimpinan, Pengetahuan, Dan Sikap Terhadap Perilaku Tidak Aman Pada Pekerja Produksi Sauna Di Pt. Xyz. *Sehat Rakyat: Jurnal Kesehatan Masyarakat*, *3*(4), 209–219. Https://Doi.Org/10.54259/Sehatrakyat.V3i4.3113

Ningsih, N. S., & Endang Marlina. (2020). Pengetahuan Penerapan Keselamatan Pasien (Patient Safety) Pada Petugas Kesehatan. *Jurnal Kesehatan*, *9*(1), 59–71. Https://Doi.Org/10.37048/Kesehatan.V9i1.120

Nosary, I. P., & Adiati Rosatyani Puspita. (2021). Pengaruh Kepemimpinan Tranformational Dan Safety Climate Terhadap Safety Behavior Di Mediasi Oleh Safety Knowledge. *Buletin Riset Psikologi Dan Kesehatan Mental*, *1*(1), 756–767.

Omidi, L., Karimi, H., Pilbeam, C., Mousavi, S., & Moradi, G. (2023). Exploring The Relationships Among Safety Leadership, Safety Climate, Psychological Contract Of Safety, Risk Perception, Safety Compliance, And Safety Outcomes. *Frontiers In Public Health*, *11*(October), 1–7. Https://Doi.Org/10.3389/Fpubh.2023.1235214

Palendeng, F. O., & Bernarto, I. (2022). Pengaruh Iklim Keselamatan, Sistem Manajemen Keselamatan, Dan Perilaku Keselamatan Terhadap Budaya Keselamatan Staf Klinis Di Rs Gunung Maria. *Jurnal Ilmiah Manajemen Bisnis Dan Inovasi Universitas Sam Ratulangi (Jmbi Unsrat)*, *9*(3), 1599–1616.

Panaha, M. M., & Maramis, F. R. R. (2021). Tinjauan Sistematis Hubungan Motivasi Kerja Dengan Kepatuhan Penggunaan Alat Pelindung Diri (Apd) Pada Perawat Di Rumah Sakit. *Jurnal Kesmas*, *10*(4), 16–23.

Prameswari, K. B., & Cimera, N. (2023). Gambaran Iklim Keselamatan Kerja Menggunakan Metode Nosacq-50 Di Pt X. *Jurnal Kesehatan Tambusai*, *4*(2), 548–553.

Pratama, B. C., Kusbandiyah, A., Innayah, M. N., Kuswara, A. R., & Bagis, F. (2025). Country Governance And Sustainable Development: Wgi As A Driver Of Fdi And Human Development In Southeast Asia. *Lex Localis-Journal Of Local Self-Government*, *23*(10). Https://Doi.Org/Https://Doi.Org/10.52152/801250

Rahmadhan, B. A., Ambarwati, T., & Nurhasanah, S. (2021). The Effect Of Work Safety Climate And Safety Knowledge On Safety Behavior In Production Employees Of Pt. Sumber Abadi Bersama. *Jamanika (Jurnal Manajemen Bisnis Dan Kewirausahaan)*, *1*(2), 81–87. Https://Doi.Org/10.22219/Jamanika.V1i2.16994

Rahman, A., Daryanto, E., Aini, N., Kesehatan, F. I., Masyarakat, K., Kesehatan, I., & Medan, H. (2023). Pengaruh Safety Leadership Dan Safety Climate Melalui Safety Behavior Terhadap Kecelakaan Kerja Pada Karyawan. *Jukeke*, *2*(1), 20–28.

Sadili, F., & Faidal, F. (2024). Analysis Of The Influence Of Safety Leadership On Safety Behavior Through Safety Awwernes, Safety Climate, Safety Citizen Behavior At Boekit Tawap Saronggi Tourism Objects. *Dynamic Management Journal*, *8*(1), 299. Https://Doi.Org/10.31000/Dmj.V8i1.10333

Sahadewa, S., & Durry, F. D. (2024). Kesehatan Mental Dan Stres Kerja Di Tempat Kerja: Tinjauan Pustaka. *Jurnal Ners*, *8*(1), 605–611.

Saleem, F., & Malik, M. I. (2022). Safety Management And Safety Performance Nexus: Role Of Safety Consciousness, Safety Climate, And Responsible Leadership. *International Journal Of Environmental Research And Public Health*, *19*(20). Https://Doi.Org/10.3390/Ijerph192013686

Santosa, A. (2023). Kinerja Keselamatan Penerbangan Berbasis Reduksi Ketidakpastian Dinamis (Studi Pada Bandara Internasional Indonesia). *Stipas Tahasak Danum Pambelum Keuskupan Palangkaraya*, 1–149.

Sari, C. F., & Faidal, F. (2023). Peran Mediasi Safety Climate Dalam Hubungan Safety Knowledge, Safety Leadership, Dan Safety Behavior Wisata Bukit Tawap Lengleng Sumenep. *Jurnal Mirai Management*, *8*(3).

Seo, J. K., & Lee, S. E. (2022). Mediating Roles Of Patient Safety Knowledge And Motivation In The Relationship Between Safety Climate And Nurses' Patient Safety Behaviors: A Structural Equation Modeling Analysis. *Bmc Nursing*, *21*(1), 1–9. Https://Doi.Org/10.1186/S12912-022-01123-6

Surbakti, A., Nyorong, M., & Aini, N. (2023). Pengaruh Penyuluhan Keselamatan Dan Kesehatan Kerja Terhadap Perilaku Penggunaan Alat Pelindung Diri. *Jurnal Kesehatan Dan Kedokteran*, *2*(1), 29–38. Https://Doi.Org/10.56127/Jukeke.V2i1.527

Suyoto, Darmawan, A., Bagis, F., & Anggara, A. A. (2025). Does Genai As A Personal Resource Improve Employee Performance And Engagement In The Workplace? *Modern Economic Science*, *47*(5), 144–165.

Tandiabang, D., Russeng, S. S., Saleh, L. M., Wahyu, A., Thamrin, Y., & Mallongi, A. (2023). The Effect Of Safety Climate On Safety Behavior With Safety Motivation As An Intervening Variable On Contractor Workers In Pt X. *Pharmacognosy Journal*, *15*(3), 411–416. Https://Doi.Org/10.5530/Pj.2023.15.93

Tobing, R. S. C. L. (2020). *Penerapan Keselamatan Dan Kesehatan Kerja Pada Perawat Di Instalasi Gawat Darurat (Igd)*.

Tuglo, L. S., Agordoh, P. D., Tekpor, D., Pan, Z., Agbanyo, G., & Chu, M. (2021). Food Safety Knowledge, Attitude, And Hygiene Practices Of Street-Cooked Food Handlers In North Dayi District, Ghana. *Environmental Health And Preventive Medicine*, *26*(1), 1–13. Https://Doi.Org/10.1186/S12199-021-00975-9

Unur, M., Atai, G., Capkiner, E., & Arasli, H. (2022). Can Safety Leadership Be An Antidote In The Covid-19 Fear Of Job Insecurity And The Work Engagement Relationship In The Norwegian Service Industry? A Moderated-Mediation Model. *Sustainability (Switzerland)*, *14*(19). Https://Doi.Org/10.3390/Su141912203

Utomo, A. Y. S., Widjanarko, B., & Shaluhiyah, Z. (2023). Quality Of Service With Patient Satisfaction In Hospital: Literature Review. *Media Publikasi Promosi Kesehatan Indonesia*, *6*(9), 1708–1714. Https://Doi.Org/10.56338/Mppki.V6i9.3720

Wiranata, I. N., Swarjana, I. K., Negara, I. G. N. M. K., & Nuartini, N. N. (2023). Persepsi Manajer Perawat Tentang Keselamatan Pasien. *Journal Of Telenursing (Joting)*, *5*(2), 3077–3085. Https://Doi.Org/10.31539/Joting.V5i2.7620

Wu, T. C., Chang, S. H., Shu, C. M., Chen, C. T., & Wang, C. P. (2011). Safety Leadership And Safety Performance In Petrochemical Industries: The Mediating Role Of Safety Climate. *Journal Of Loss Prevention In The Process Industries*, *24*(6), 716–721. Https://Doi.Org/10.1016/J.Jlp.2011.04.007

Xia, N., Griffin, M. A., Xie, Q., & Hu, X. (2023). Antecedents Of Workplace Safety Behavior: Meta-Analysis In The Construction Industry. *Journal Of Construction Engineering And Management*, *149*(4), 4023009.

Zaujan, N. A. M., Ali, A., Osman, M., Chee, H. Y., Ithnin, N. R., Misni, N., Sukeri, S., & Chin, C. P. Y. (2021). Effect Of Smartphone App's Intervention On Consumers' Knowledge, Attitude, Practice, And Perception Of Food Poisoning Prevention When Dining Out At Selected Rural Areas In Terengganu. *International Journal Of Environmental Research And Public Health*, *18*(19), 1–20. Https://Doi.Org/10.3390/Ijerph181910294

Zhao, L., Yang, D., Liu, S., & Nkrumah, E. N. K. (2022). The Effect Of Safety Leadership On Safety Participation Of Employee: A Meta-Analysis. *Frontiers In Psychology*, *13*(June). Https://Doi.Org/10.3389/Fpsyg.2022.827694