



(RESEARCH ARTICLE)



A bibliometric study on occupational health and safety: Exploring the connections between leadership, work environment and employee well-being

Unika Prihatsanti *, Kartika Sari Dewi, Bertha Kristiyanti and Ludfia Fath Hanafiah

Faculty of Psychology, Universitas Diponegoro, Semarang, Central Java, Indonesia, 50275.

World Journal of Advanced Research and Reviews, 2025, 26(03), 1909-1916

Publication history: Received on 10 May 2025; revised on 16 June 2025; accepted on 18 June 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.26.3.2381>

Abstract

Research on occupational health and safety (OHS) has become a significant concern and a very important research area for many reasons, including the prevention of workplace injuries. Leadership and work environment play an important role in occupational health and safety. These elements can directly affect the physical and mental well-being of workers. Exploring research on OHS research trends related to leadership, work environment, and employee well-being is the purpose of this study. This research used a bibliometric approach with VOS viewer software. Leadership, work environment, and well-being are in the first cluster in the bibliometric analysis, which means they have a closely interrelated relationship. The findings from this analysis underscore a clear opportunity to expand OHS research to include leadership, work environment and well-being. Future research integrating these elements could support the development of a more comprehensive and human-centered approach to occupational safety and health.

Keywords: Bibliometric; Leadership; Occupational health and safety; Well-being; Work environment

1. Introduction

According to the International Labor Organization (ILO) in 2017, nearly 6,300 individuals lost their lives daily as a result of workplace accidents or work-related illnesses, and more than 2.3 million deaths occur each year. The manufacturing sector is the most dangerous industry worldwide (1). Research on occupational health and safety (OHS) has become a significant concern. Research in occupational health and safety (OHS) is essential for various reasons, including the prevention of workplace injury (2), protecting human and facility resources as well as recognizing, evaluating, controlling, and eliminating hazards in the working environment (3). Studies (4,5) shows that a robust safety climate can alleviate symptoms of anxiety, depression, and PTSD among healthcare professionals, particularly those in non-administrative positions. OHS also has advantages in enhancing worker satisfaction and in reducing costs related to compensation (6). Therefore, it is important for organizations to ensure employee occupational health and safety. There are four key elements to enhance OHS, namely safety training, frequent risk assessments, and active employee participation in safety procedures. In organizations with less comprehensive OHS practices, those that exhibit leadership commitment and, strong safety culture have superior safety outcomes (7).

Leaders play a crucial role in ensuring the effectiveness of OHS management. Previous research has found that, first, leadership style namely, transformational leadership inspire and motivate employees to achieve higher safety goals by providing a clear vision and supporting innovation, transactional leaders providing rewards or penalties based on safety performance, delegative leadership (laissez-Faire) gives employee the freedom to make safety-related decisions but requires effective oversight to ensure compliance (8). Second, leaders have a role in developing a culture of safety. Leaders who are committed to creating a safety culture as a top priority communicate clearly about the goals of safety training (9). Safety culture can be enhanced through the role of leaders who proactively ensure employees comply with regulations in risk management (10). Effective leadership involves employees in the safety process, ensuring they

* Corresponding author: Unika Prihatsanti

understand and accept responsibility for maintaining safety. Studies show that assertive leader behavior can significantly reduce work accidents (11). Similarly, strategic and ethical leaders not only improve physical safety but also the psychological well-being of employees, which in turn improves overall safety. On the other hand, the challenge of limited time, energy, and funds can hinder the effective implementation of OHS. So, leaders need to allocate resources and ensure continuous training. In addition to leadership, the work environment also plays a significant role in occupational health and safety. The physical work environment is significantly impacted by various factors such as air quality, noise levels, lighting, and overall workplace climate (12). These elements can directly affect workers' physical and mental well-being, leading to various health issues and influencing productivity and job satisfaction.

Based on the exploration above, it can be concluded that effective leadership in OHS involves various styles and approaches that focus on system implementation, development of safety culture, improvement of safety performance, and the ability to overcome resource challenges. Thus, leaders who are committed and actively engaged can create a safe and healthy work environment. Therefore, it is important to explore the relationship between leadership work environment and employee wellbeing to know and answer research questions about OHS research trends related to these three things.

2. Material and methods

2.1. Bibliometric Approach

This study uses a bibliometric approach with VOSviewer software. Bibliometric analysis methods are used to map the current state of affairs and identify gaps and trends in research (13). Bibliometrics can be used to define our field by identifying relevant journals, articles, authors, and topics (14). Bibliometric techniques calculate the degree to which a particular research paper influences or impacts subsequent research (15).

2.2. Data Collection

This bibliometric study uses the Scopus database. The use of the Scopus database focused on searching with certain words in the search for article titles, abstracts, and article keywords. In the Scopus database used in this study, we did some filtering. This study focused on literature searches within the last ten years (2015-2025). The keywords selected were ("occupational safety and health" OR 'OSH' OR "health and safety at work"). Only journal articles with final publication were included in this study. The screening process was also limited to English-language articles. This screening was done to obtain in-depth analysis results in the bibliometric analysis.

2.3. Data Analysis

A gap analysis aims to identify opportunities to explore relevant new topics from a particular research area. A gap analysis aims to identify opportunities to explore relevant new topics from a particular research area, as well as studies that have not been fully explored and that require further study development to advance the current state of a particular theme (13). This research will explore the topic of occupational health and safety and studies related to the topic.

3. Results and discussion

3.1. Trends in publication and descriptive analysis

The search results on the Scopus database found 18,082 selected articles on occupational health and safety. Research on Occupational Health and Safety began in 1960 and began to increase significantly in 1992. After that, it increased again above 2007 until 2025. Figure 1 displays the number of articles that have been published from 1960 to 2025.

The red cluster focuses on topics related to occupational safety, employee well-being, and questionnaire-based research, with keywords such as *occupational health*, *employee*, *job satisfaction*, and *musculoskeletal disease*. This cluster reflects studies that examine human-centered aspects of occupational health, often using surveys to assess health outcomes and work experiences. The green cluster centers on occupational exposure and environmental risks, including terms like *air pollutant*, *respiratory protective devices*, and *filtration*, indicating a concentration of research on physical or chemical exposures in the workplace and the use of protective equipment. The blue cluster highlights demographic and epidemiological variables, such as *male*, *middle-aged*, *adolescent*, and *COVID-19*, pointing to population-based studies and health trends during the pandemic. Meanwhile, the yellow cluster deals with occupational risk prevention and safety management, including keywords like *accident prevention*, *occupational risks*, and the *construction industry*, reflecting efforts to manage hazards and implement safety strategies. Finally, the purple cluster touches on institutional and policy-level research, with terms like *government* and *United States*, suggesting a focus on regulatory frameworks and public health oversight in occupational contexts.

The overlay visualization presented in Figure 3 illustrates the temporal evolution of research topics within the field of Occupational Health and Safety (OHS). Each node represents a keyword, where its size indicates the frequency of occurrence, and its color reflects the average year the term appeared in the literature. Green-colored nodes, such as *human*, *occupational health*, and *occupational safety and health*, suggest these topics have been consistently central and relevant over time. Meanwhile, yellow nodes like *COVID-19*, *pandemic*, and *retrospective study* indicate more recent areas of interest that gained attention, particularly after 2020, highlighting how global events such as the COVID-19 pandemic have influenced the direction of OHS research.

Furthermore, keywords appearing in purple or blue tend to represent older themes that were more prominent prior to 2019. The spatial clustering and proximity between terms reveal a thematic relationship, such as the close association between *questionnaire*, *job stress*, and *employee*, which reflects a body of research focused on psychosocial risks and worker well-being. Through this visualization, one can observe both stable, core domains in OHS and shifting focuses that align with contemporary challenges.

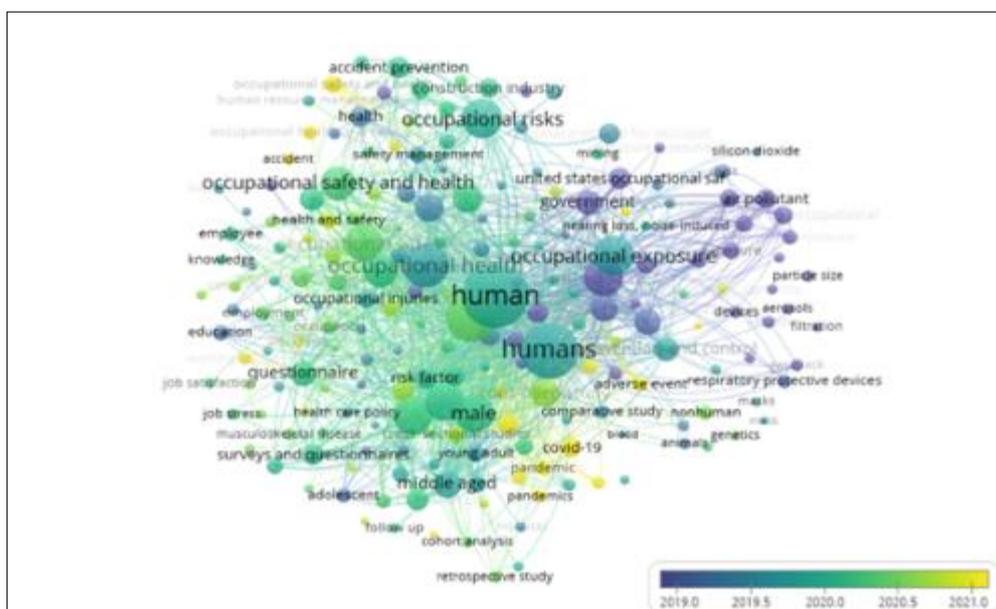


Figure 3 Overlay Visualization

The bibliometric visualizations reveal that topics such as leadership, work environment, and well-being do appear within the broader landscape of occupational health and safety (OHS) research. However, the term was identified in the first cluster of the red cluster group. This shows that the topics of leadership, work environment, and well-being are closely related to research on OSH (16,17). These terms are connected to the central theme of “human”, indicating that they are still relevant to the overarching focus on protecting and enhancing human well-being in the workplace. This pattern opens up opportunities to explore how organizational and psychosocial elements contribute to OHS outcomes. The following sections will examine each of these themes, such as leadership, work environment, and well-being, in greater depth, considering their presence in the literature and their potential role in advancing a more holistic understanding of occupational health and safety.

3.3. Leadership

The term “leadership” occurs 49 times and has links to 120 other terms in the bibliometric network. The link strength shows 654, indicating that this topic is quite actively discussed in various interconnected research contexts. The average year of publication associated with this term is 2019. In bibliometric analysis, leadership is often associated with the term “human”. The link strength shows 45, which means that the terms “human” and “leadership” co-occurrence 45 times in the documents analyzed. This suggests that the two terms are often discussed in the same context.

The presence of the term “leadership” in the first cluster of the main Occupational Health and Safety (OHS) research group, but the nodes appear to be small, suggesting that leadership has not been fully integrated as a major theme in mainstream OHS discourse. This peripheral positioning highlights a potential research gap and opens up opportunities for further inquiry into how leadership—particularly leadership behavior and styles—influences OHS outcomes. Its connection to “human” underscores its relevance to behavioral and managerial dimensions, particularly in relation to workplace culture and management practices.

Beyond the bibliometric findings, leadership has been widely recognized as a foundational pillar in the effective implementation of OHS programs. Strong leadership not only sets the tone for safety culture but also enhances the adoption, integration, and sustainability of safety measures across organizational levels (18–20). Particularly noteworthy is the role of *middle management*, which functions as a crucial intermediary between strategic leadership and operational execution. One study emphasizes that middle management leadership moderates the relationship between leading indicators (such as training or safety climate) and lagging indicators (such as injury rates or incident frequency), underscoring the importance of distributed leadership throughout OHS systems (21). Together, these insights call for greater attention to leadership as a strategic lever for advancing both the culture and outcomes of occupational safety and health.

3.4. Work Environment

The term “work environment” appears 173 times in the bibliometric. The term has a high link strength with 186 other terms, with a link strength of 2575, which means that this topic is relatively frequently discussed with various issues in the field of organization and human resources. The average publication appeared in 2020, which indicates that this term is still relatively new and has been actively researched in recent years.

The term “work environment” appears much more embedded in the network compared to leadership. It is closely tied to core keywords such as “occupational safety”, “occupational health”, and “questionnaire”, suggesting that it plays a critical role in OHS-related research. The term is also linked to variables like “risk assessment”, “occupational exposure”, and even demographic factors (e.g., “male”, “middle-aged”).

The work environment plays a pivotal role in shaping OHS outcomes, encompassing a range of factors including physical conditions, psychosocial dynamics, organizational system, and technological integration. Physical aspects such as air quality, noise level, lightning, and spatial arrangements directly influence workers' health, where poor conditions can contribute to respiratory diseases, musculoskeletal disorders, and other chronic issues (22).

Beyond physical elements, psychosocial factors are increasingly recognized as influential in occupational health. High job demands, ineffective leadership, and negative interpersonal dynamics can lead to elevated stress levels, which are linked to various health problems, including anxiety, depression, and gastrointestinal disorders (23). To address this, many organizations implement stress management initiatives and mental health support systems as preventative strategies (24). Furthermore, positive social interaction and a supportive workplace culture contribute significantly to employee well-being, whereas poor interpersonal relationships can intensify stress and reduce overall health (22,25).

Organizational practices also play a vital role in supporting a safe work environment. Effective management, including regular safety training and the use of safety management systems, can significantly reduce workplace accidents and foster a culture that values safety (24,26). Compliance with OHS policies and regulations further enhances safety standards, with organizations that prioritize these aspects often experiencing lower rates of accidents and better health outcomes for their employees (26,27).

3.5. Well-Being

The term “well-being” appears 46 times and has links to 137 other terms in the bibliometric network. The link strength is 764, which means that this topic has a fairly wide range of connections in research discussions, although the frequency

of occurrence is still relatively moderate. The average publication occurred in 2020, which indicates that this topic is relatively new and has developed quite a bit in recent years.

The term “well-being” is an emerging peripheral theme within the larger context of occupational health and safety research. It shows a direct connection between “well-being” and the central node “human”, indicating that while research on well-being is present, it is relatively limited in scope and mainly situated within studies focusing on individual human aspects. The isolated position and thinner linkage suggest that well-being is not yet strongly integrated into the core OHS discourse, but it is gaining relevance, especially in studies concerning psychological or subjective experiences in the workplace

The concept of well-being has become increasingly central in discussions surrounding OHS, particularly through the lens of occupational health psychology (OHP). OHP is a field that integrates psychology with occupational health to improve the well-being of workers. It focuses on the psychological aspects of workplace health and safety, including mental health, stress management, and the psychosocial work environment (28,29). OHP emphasizes the role of individual differences in stress, work well-being, and safety (30).

4. Conclusion

This bibliometric analysis provides a comprehensive overview of the research landscape in the field of OHS. Various terms appear to be associated with the field of OHS. Leadership, work environment and well-being are in the first cluster in the bibliometric analysis, which means they are closely interrelated. Leadership, though less frequently positioned at the center of OHS research, is acknowledged as a strategic factor in fostering a culture of safety and improving the implementation of safety programs across all organizational levels. The work environment, in contrast, appears more strongly embedded in the network and is discussed across physical, psychosocial, organizational, and technological dimensions, indicating its pivotal role in shaping both safety outcomes and employee well-being. The theme of well-being, as interpreted through the lens of OHS, is gradually gaining attention in OHS research. Overall, the findings from this analysis underscore a clear opportunity to expand OHS research to include leadership, work environment and well-being. Future research that integrates these elements can support the development of more comprehensive and human-centered approaches to occupational safety and health—approaches that not only reduce harm but actively promote the well-being and performance of workers across sectors.

Compliance with ethical standards

Disclosure of conflict of interest

We declare no conflicts of interest regarding the research and publication of this article. We have no financial or personal relationships that could influence of bias the findings and conclusions.

References

- [1] Selamat MN, Wern MKJ. An investigation of ergonomic risk factors and occupational safety and health (osh) performance. *Int J Acad Res Bus Soc Sci*. 2022 Oct 3;12(10):Pages 1790-1807.
- [2] Lay AM, Saunders R, Lifshen M, Breslin FC, LaMontagne AD, Tompa E, et al. The relationship between occupational health and safety vulnerability and workplace injury. *Saf Sci*. 2017 Apr;94:85–93.
- [3] Molamohamadi Z, Ismail N. The relationship between occupational safety, health, and environment, and sustainable development: A review and critique. *Int J Innov Manag Technol [Internet]*. 2014 [cited 2025 Jun 15]; Available from: <http://www.ijimt.org/index.php?m=content&c=index&a=show&catid=55&id=811>
- [4] Akbolat M, Amarat M, Yildirim Y, Yildirim K, Taş Y. Moderating effect of psychological well-being on the effect of workplace safety climate on job stress. *Int J Occup Saf Ergon*. 2022 Oct 2;28(4):2340–5.
- [5] Silvestre JD, Kim A, Khan TN, Okon SA, Lee H, Hoopsick RA. The effects of perceived workplace safety on U.S. healthcare workers' mental health symptomatology. *J Workplace Behav Health*. 2025 Apr 16;1–13.
- [6] Mei Q, Wang Q, Liu S, Zhou Q, Zhang J. Effects of organizational safety on employees' proactivity safety behaviors and occupational health and safety management systems in Chinese high-risk small-scale enterprises. *Int J Occup Saf Ergon*. 2020 Jan 2;26(1):101–11.

- [7] Varma P, Dash M, Sagar VJ, Purohit S. Examining the effect of occupational health and safety practices on improving workplace safety outcomes. *Health Leadersh Qual Life*. 2022 Dec 30;1:143.
- [8] Çalış Ç, Büyükkıncı BY. Leadership approach in occupational safety: Taiwan sample. *Procedia Comput Sci*. 2019;158:1052–7.
- [9] McKean EL, Snyderman CH. Leadership driving safety and quality. *Otolaryngol Clin North Am*. 2019 Feb;52(1):11–22.
- [10] Barbeau E, Roelofs C, Youngstorm R, Sorensen G, Anne S, Anthony L. Assessment of occupational safety and health programs in small businesses. *Am J Ind Med*. 2004 Apr;45(4):371–9.
- [11] May NC, Batiz EC, Martinez RM. Assessment of leadership behavior in occupational health and safety. *Work*. 2019 Jul 15;63(3):405–13.
- [12] Pujianti P, Djunaidi Z. Evaluation of the physical work environment of miners in Kutai Kartanegara, East Kalimantan. *Indones J Occup Saf Health*. 2022 Jun 16;11(SI):39–47.
- [13] De Oliveira OJ, Da Silva FF, Juliani F, Barbosa LCFM, Nunhes TV. Bibliometric Method for mapping the state-of-the-art and identifying research gaps and trends in literature: An essential instrument to support the development of scientific projects. In: Kunosic S, Zerem E, editors. *Scientometrics Recent Advances [Internet]*. IntechOpen; 2019 [cited 2025 Jun 14]. Available from: <https://www.intechopen.com/books/scientometrics-recent-advances/bibliometric-method-for-mapping-the-state-of-the-art-and-identifying-research-gaps-and-trends-in-lit>
- [14] Ninkov A, Frank JR, Maggio LA. Bibliometrics: Methods for studying academic publishing. *Perspect Med Educ*. 2021 Dec 16;11(3):173–6.
- [15] Cooper ID. Bibliometrics basics. *J Med Libr Assoc JMLA*. 2015 Oct;103(4):217–8.
- [16] Husainah N, Hasanah H, Iswandi M. Influence of leadership, work environment and work discipline on occupational safety and health. *Int J Soc Health*. 2024 Jan 31;3(1):63–9.
- [17] Lundqvist D, Reineholm C, Ståhl C, Wallo A. The impact of leadership on employee well-being: On-site compared to working from home. *BMC Public Health*. 2022 Nov 23;22(1):2154.
- [18] McLellan DL, Cabán-Martinez AJ, Nelson CC, Pronk NP, Katz JN, Allen JD, et al. Organizational characteristics influence implementation of worksite health protection and promotion programs: Evidence from smaller businesses. *J Occup Environ Med*. 2015 Sep;57(9):1009–16.
- [19] Yazdi M. The impact of leadership on fostering a safety-oriented organizational culture. In: Yazdi M, editor. *Safety-Centric Operations Research: Innovations and Integrative Approaches [Internet]*. Cham: Springer Nature Switzerland; 2025 [cited 2025 Jun 15]. p. 31–50. (Studies in Systems, Decision and Control; vol. 232). Available from: https://link.springer.com/10.1007/978-3-031-82934-5_2
- [20] Schwatka NV, Dally M, Shore E, Dexter L, Tenney L, Brown CE, et al. Profiles of total worker health® in United States small businesses. *BMC Public Health*. 2021 Dec;21(1):1010.
- [21] Sheehan C, Donohue R, Shea T, Cooper B, Cieri HD. Leading and lagging indicators of occupational health and safety: The moderating role of safety leadership. *Accid Anal Prev*. 2016 Jul;92:130–8.
- [22] Fong BYF, Law VTS, Lee A, editors. *Primary care revisited: Interdisciplinary perspectives for a new era [Internet]*. Singapore: Springer Singapore; 2020 [cited 2025 Jun 15]. Available from: <https://link.springer.com/10.1007/978-981-15-2521-6>
- [23] Marcatto F, Colautti L, Larese Filon F, Luis O, Di Blas L, Cavallero C, et al. Work-related stress risk factors and health outcomes in public sector employees. *Saf Sci*. 2016 Nov;89:274–8.
- [24] H. M, N. Bamne S, Joginder J, Kumar Sahoo A, Kr Sharma A. Healthcare management approaches for improving employee occupational safety. *Health Leadersh Qual Life*. 2023 Dec 31;2:303.
- [25] Akamangwa N. Working for the environment and against safety: How compliance affects health and safety on board ships. *Saf Sci*. 2016 Aug;87:131–43.
- [26] Mixafenti S (Vivi), Karagkouni A, Dimitriou D. Integrating business ethics into occupational health and safety: An evaluation framework for sustainable risk management. *Sustainability*. 2025 May 12;17(10):4370.

- [27] Zahid Çögenli M, editor. Interdisciplinary perspectives on occupational safety and health [Internet]. Nova Science Publishers; 2023 [cited 2025 Jun 15]. Available from: <https://novapublishers.com/shop/interdisciplinary-perspectives-on-occupational-safety-and-health/>
- [28] Sauter SL, Hurrell JJ. Occupational health contributions to the development and promise of occupational health psychology. *J Occup Health Psychol.* 2017 Jul;22(3):251–8.
- [29] Dong RK, Li X, Hernan “Banjo” Roxas. Psychological safety and psychosocial safety climate in workplace: A bibliometric analysis and systematic review towards a research agenda. *J Safety Res.* 2024 Dec;91:1–19.
- [30] Di Fabio A. Individual differences in occupational health psychology. In: Cooper C, Brough P, Anderson VL, editors. *Elgar Encyclopedia of Occupational Health Psychology* [Internet]. Edward Elgar Publishing; 2024 [cited 2025 Jun 15]. p. 87–90. Available from: <https://www.elgaronline.com/view/book/9781035313389/ch27.xml>