



Published in final edited form as:

J Occup Environ Med. 2025 July 01; 67(7): 558–563. doi:10.1097/JOM.0000000000003396.

Scoping Total Worker Health: An Expanded View of Worker Well-Being

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Structured Abstract

Objective: The study conducts a scoping review of Total Worker Health (TWH) literature to identify disciplines and issues addressed in this field.

Methods: We identified 384 citations published from January 2010 - June 2023.

Results: Citations were organized by discipline. 9 disciplines and 26 subdisciplines contribute to the knowledge base of TWH. Comparing the bodies of literature with the TWH priority issues showed variation in coverage across disciplines with some overlap in issues covered with occupational health (OH), the discipline with the largest literature, but several disciplines cover issues OH does not.

Conclusions: Our findings indicate that many disciplines with potential contributions to TWH have not been incorporated into the mainline TWH literature. The TWH field of research and

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Specific author contributions:

C.B. conceived of the project and devised the study design, provided review of the database entries, conducted the analysis and interpretation of the results, contributed to the drafting and revising of the manuscript. A.L. contributed to data collection, targeted literature searches, the analysis of data, and drafting and revising the manuscript. I.V.M. and T.I. contributed to data collection, targeted literature searches, and the analysis of data. B.T.A. contributed to the search strategy and methodology, and to the collection of grey literature and social science literature. E.Y. contributed to the study design, data collection, the analysis of data, and provided critical feedback and revisions on the manuscript. All authors read and approved the final manuscript.

Conflicts of interest for all authors:

All authors declare no conflicts of interest for this article. Relationships that present potential conflict of interest: in the past 36 months, E.Y. has had a financial relationship with the American College of Rheumatology for his editorial role on its board; also during this period, C.B. has had a financial relationship with the University of Houston Hobby School for Public Affairs for consultancy services.

EQUATER Network checklist:

An EQUATER Network reporting guideline was not utilized for this paper because it was not applicable to a scoping review. However, we utilized a PRISMA checklist for scoping reviews and adapted a PRISMA flow diagram to depict the data collection through the different phases.

AI content statement:

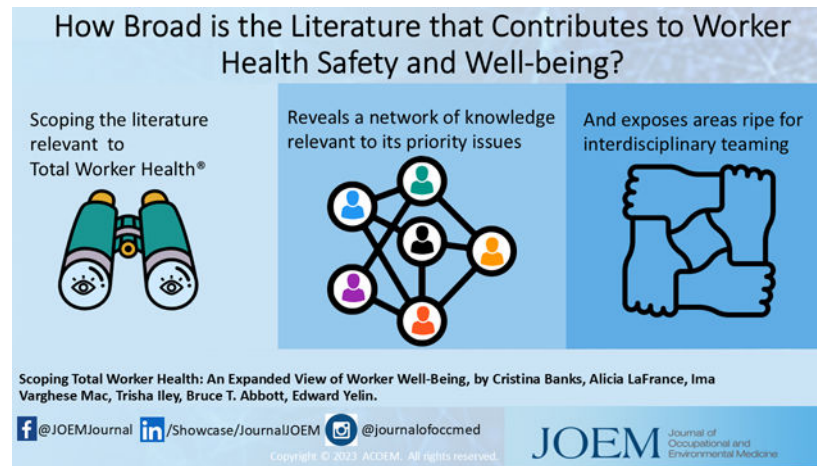
AI was not utilized in any stages of the hypothesis, project conception, data collection, data analysis, data evaluation, or manuscript preparation.

Ethical considerations & disclosures:

This project was not subject to institutional review board review.

practice could be advanced by greater collaboration among disciplines to integrate findings with all disciplines addressing worker well-being.

Graphical Abstract



Keywords

Workplace health and well-being; healthy work; total worker health; occupational health; scoping review

Introduction

The Total Worker Health® Approach (TWH), developed by the National Institute for Occupational Safety and Health in 2011, champions an approach to worker health, safety, and well-being that goes beyond merely avoiding harms and implementing workplace wellness programs (1) (2). Instead, TWH is notable for its orientation towards robust, holistic strategies, encompassing policies, programs, and practices that integrate the elimination of safety hazards with health promotion activities for the advancement of worker well-being (3). Consequently, among professionals who most commonly adopt these approaches, such as those in occupational safety and health (OSH) professions, new ways of intervening and collaborating have been required to carry out these initiatives (4).

An expanded approach to worker health, safety, and well-being, and broadened collaboration is consistent with the vision of TWH. The program anticipates that its future professionals will help build bridges to many new and diverse partners to take advantage of what the disciplines of those partners can contribute to research and practice in TWH (5). Understanding the current orientation of each discipline is essential to documenting what needs to be done to develop TWH as the interdisciplinary field it was envisioned to be.

Therefore, we conducted a scoping review, focusing primarily on review and summative literature, to understand the landscape of knowledge available across a myriad of fields that can inform and improve the TWH perspective on worker health, safety, and well-being. We also aimed to determine how this knowledge can extend the reach of TWH partnerships beyond traditional collaborators. A scoping review is a type of knowledge synthesis that

uses systematic and iterative approaches to identify and synthesize literature on a given topic (6). This current review aggregates literature from various disciplines that have published on topics of worker health, safety, or well-being but may not be formally recognized by the community of TWH researchers and practitioners. Furthermore, we analyze the literature as it relates to the 75 priority issues identified by the TWH program as important for advancing worker well-being (7). We observe the issues that are or can be addressed by a wide range of disciplines and identify gaps in areas that seem to have been addressed only lightly. We also identify priority issues that seem to have minimal input from various disciplines' literature. As a result of this review, we aim to broaden the scope of available knowledge that can enhance worker well-being within TWH practice by targeting research efforts incorporating a range of relevant disciplines in the short term, and in the longer term, prompting the design of effective interventions using a broadened research agenda for evidence-based practice.

Methods

Overview.

We searched the literature for publications contributing to the concepts within TWH, regardless of whether the authors classified them under the paradigm. We then charted the literature based on discipline and subdiscipline, and the primary TWH issues addressed by each. Our aim was to identify issues in need of greater attention and explore the possibility for expanding the range of disciplines that contribute to TWH research and practice by integrating their knowledge into the existing TWH paradigm.

We conducted a scoping review to document the range of disciplines that have contributed to the themes of worker health, safety and well-being. The search strategy and protocol were developed in consultation with a research librarian (see PRISMA-ScR Checklist Supplemental Digital Content, <http://links.lww.com/JOM/B899>).(8) Only English-language references published between January 2010 and June 2023 were included in the search. Searches were conducted in electronic databases [ClinicalTrials.gov](https://www.clinicaltrials.gov/), Google Scholar, Jstor, National Bureau of Economics Research (Health Economics Program), Ovid MEDLINE, PubMed, Semantic Scholar, Scopus, and Web of Science Core Collection. A combination of search terms was used: job site or location, workplace, work site, healthy lifestyle, occupation, and health. In concert with the research librarian's search strategy, co-authors AL, IVM, and TI conducted targeted searches and hand searches of special journal issues and scholarly annual reviews. References were also collected from several NIOSH Centers of Excellence, NIOSH Affiliates, and other subject matter experts (see PRISMA Supplemental Digital Content for a diagram of the literature identification and screening process, <http://links.lww.com/JOM/B900>). The literature of healthy work interventions is quite robust and well established; the search strategy emphasized literature that contained phrases related to healthy work, such as having the root terms health and work in the title, searching on terms such as workplaces, worksites and occupational health. To leverage the robust literature further, a citation-based searching strategy using Scopus was also employed using articles identified by the authors as highly relevant. This type of searching allowed the collection of the network of citations that shared citations with those identified as highly relevant articles.

Because our review focused on summative literature, we primarily included review articles, annual reviews of subject areas relevant to TWH, systematic reviews of research and practice interventions, meta-analyses, and book chapters that summarize the state-of-the-art knowledge about factors that affect worker well-being broadly defined. This strategy of prioritizing the summative literature also enabled an indirect inclusion of literature that predates 2010. References were included if they focused on the health and wellbeing of workers, described outcomes associated with worker health approaches, or had thematic congruence with TWH concepts or priority areas. We excluded references that did not relate to the worker health inquiry, or that focused solely on methodological questions rather than study the relationship between risk factors and worker health and well-being, or seemed specific to a single workforce or sociopolitical context in a way that would be difficult to generalize to other worker populations.

The references that met criteria were compiled into a database. For each reference in the database, summary information was collected. The source of summary information was either provided by the authors of the reference, usually in the form of an abstract, or generated by the research team by summarizing the gist of a reference when an abstract was lacking or an abstract lacked relevant information pertinent to the scoping review. After this information was compiled, the first author (CB) reviewed each reference and assigned it to a discipline and subdiscipline. These assignments were based on the best match between a citation's content and disciplinary definitions. The definitions of disciplines and subdisciplines were developed from academic textbooks, online encyclopedias, and input from subject matter experts (see Supplemental Digital Content 2, <http://links.lww.com/JOM/B901>). The research team then assessed each disciplines' body of literature as it related to the range of TWH priority issues through team review and consensus.

Results

A total of 3,751 references were screened for inclusion, and 384 were retained after meeting inclusion criteria for the scoping review. Of the 384 references, 224 were identified from the librarian's search of various electronic databases and 160 were identified from other methods, such as from targeted searches and hand searches conducted by research analysts (see PRISMA Supplemental Digital Content, <http://links.lww.com/JOM/B900>). The types of references represented in the compilation include books (n = 2), book and handbook chapters (n = 180), journal articles (n = 13), single studies (n = 38), review articles (n = 138), and working papers (n = 13). Included references were assigned to 9 disciplines and 26 subdisciplines (9) (see Supplementary Material 1, <http://links.lww.com/JOM/B902>).

Once disciplinary assignments were made, we tallied the citations of each, resulting in the following: occupational health (OH) had 105 citations, psychology had 103, business administration 61, architecture and design 47, public health 28, economics 18, sociology 15, public policy 6, and social work had 1 (see Figure 1). We also tallied the number of citations according to the 26 subdiscipline assignments; these values are reflected in Figure 2. For details on how subdisciplines were categorized under the disciplines, see Supplemental Digital Content 2 (<http://links.lww.com/JOM/B901>).

We then assessed the content of each discipline's body of literature and charted them according to the 75 TWH priority issues (see Table 1). This comparison revealed a variation in the quantity of issues a discipline's literature addressed. For example, out of 75 TWH issues, literatures from business administration (n = 68, 91%), psychology (n = 51, 68%), and occupational health (n = 47, 63%) addressed the highest number of issues whereas architecture and design (n = 20, 27%) and social work (n = 21, 28%) addressed the fewest. Each TWH issue was addressed by the literature of multiple disciplines, with the number of disciplines per issue ranging from as few as two to as many as eight (see Table 1 column, 'Number of Disciplines Addressing Each Issue'). The TWH issue categories with the greatest number of disciplines covering its issues were found in the categories 'Workforce Demographics' and 'Community Supports', both having an average of six disciplines covering issues under these categories. The TWH issue categories with the least number of discipline coverage were 'Work Arrangements', 'Organization of Work' and 'Healthy Leadership', with averages at or below 3.8. Using this framework of TWH issue coverage, we compared each disciplines' body of literature in relation to the issues covered by OH. We used OH as a reference point because of its predominant representation in the field of practice, demonstrated by courses taught in TWH principles, membership in NIOSH TWH Centers and Affiliates, and Society for Total Worker Health, among others. Disciplines with the most issues in common with OH included business administration, covering 41 of the same issues, psychology with 30 shared issues, and public health sharing 20. Sociology, social work, and economics had the fewest number of issues in common with OH, with 15, 12, and 9 shared issues, respectively.

To understand how proportional the volume of disciplines' literature was relative to the amount of TWH issue coverage, the research team compared the number of each discipline's citations in the scoping review database with the quantity of TWH priority issues a discipline's literature addressed (Figure 1). As expected, the greater the number of citations in the database, the greater the number of TWH issues its literature addressed. For example, OH, psychology, and business administration each have the highest numbers of citations in the database, and each of their literature addresses the greatest number of TWH issues. In contrast, economics, sociology, and social work have lower numbers of citations in our scoping review and cover a narrower range of TWH issues. However, there were a few outlying disciplines where the number of TWH issues did not correspond as linearly. For example, while architecture and design had a higher amount of included literature, the discipline had a lower amount of TWH issues it addressed. Conversely, public policy had a lower amount of included literature yet covered a wide range of TWH issues. A similar comparison was done, grouping each citation by subdiscipline and ascertaining their relationships with TWH priority issues (Figure 2). Among the 26 subdisciplines, the size of its literature was mostly commensurate with the number of issues covered. Yet, there were also several subdisciplines that did not follow that trend. For example, corporate real estate, a subdiscipline with a relatively higher citation count did not cover TWH issues as broadly as other disciplines with similar numbers of citations. The subdisciplines industrial-organizational psychology, management, and human resource management each had lower citation counts, but its literature was relevant to a wider range of TWH issues.

Discussion

This scoping review seeks to reveal the range of disciplines that can be included within the TWH paradigm, making practitioners within disciplinary frameworks aware of contributions from outside their disciplines and encouraging more collaboration to address complex, interconnected worker health, safety, and well-being issues. Literature generated from a broad search of workplace-related themes revealed there are many more disciplines that can contribute to TWH than are currently recognized by the community of practice. This suggests that a range of literature, beyond traditional OSH and occupational health psychology, could be drawn from to inform TWH practice. Disciplines where this need is especially important include architecture and design, economics, social work, sociology, public policy, and their subdisciplines.

Charting the literature by disciplines and the 75 TWH priority issues revealed there were no issues addressed by a single discipline alone; each issue was covered by at least two disciplines. Identifying opportunities for interdisciplinary alliances may be aided by recognizing disciplines that address common underlying structural problems within a TWH issue category, as expressed in Table 1. Disciplines with literature relevant to a TWH issue category could, in practice, address a component of the issue category in tandem. For example, within the TWH issue category “Compensation and Benefits”, business administration could work on pay and leave policies, while psychology ensures that workloads are equitable and workers are paid properly; public policy would assess compliance with federal and state pay and leave requirements, and social work would ensure workers who need support have access to the resources they need. Thus, interdisciplinary approaches to worker health, safety, and well-being could involve both sequential interventions and direct teaming, requiring continuous contribution on-demand. In addition, data from our analysis in Table 1 is suggestive of other starting points for convening an expanse of potential partners. TWH issue categories with many disciplines covering its issues, such as ‘Workforce Demographics’ and ‘Community Supports’, may point to areas of research and practice where new collaborations are ready to be formed. TWH issue categories where recent advances create an urgent need for multidisciplinary study, such as the ‘Technology’ category, may use this analysis to help extend the areas of inquiry so that issues such as artificial intelligence, robotics, and worker sensors and monitoring can be implemented to the benefit, rather than the detriment, of workers. Finally, the TWH priority areas that this review suggests are not well-covered by disciplines, such as ‘Work Arrangements’ and its component issues, may be indicative of an important need for further research attention.

Grouping the literature by disciplines and comparing their coverage of TWH issues with OH may suggest areas of natural allyship with OH and opportunities for new partnerships, since OH is a discipline that has a significant presence in the research and practice of TWH. The analyses have the potential to build bridges from OH to the formation of interdisciplinary teams focused on the same issues or issue categories. For example, literatures from the disciplines of business administration, psychology, and public health disciplines covered the greatest number of the same TWH issues as OH while sociology, social work, and economics covered the least. This suggests that contributions from the former disciplines

may already be engaged in TWH interventions while the latter are not as highly integrated into the TWH paradigm. In addition, disciplines with fewer issues in common with OH, such as sociology, social work and economics, may be areas of greatest opportunity for net increase in TWH knowledge and practice. Example issues that are not covered by OH include “Transportation and Commuting Assistance”, which can be addressed by the field of sociology, “Employee Assistance and Substance Use Disorder Programs” by social work, and “Adequate Wages and Prevention of Wage Theft” by economics.

Expanding TWH approaches to include the knowledge and practice of more disciplines will require new roles, strategies to expertly coordinate contributions, and best practices in convening and managing diverse teams. To accelerate this needed learning and skill development, research funders can create new incentives for TWH researchers and practitioners to work in interdisciplinary teams, particularly in areas in which multiple disciplines can contribute and in those in which one discipline’s research may be isolated from the others. They can also help establish enhanced educational programming to explicitly communicate contributions to TWH across disciplines and accelerate skill development and practice in interdisciplinary teaming. Future studies could analyze evidence of interdisciplinary collaboration in the context of TWH interventions and evaluate the impacts on worker well-being when such collaboration is brought to bear on issues of common interest across disciplines.

Limitations.

Some disciplinary literature may be underrepresented in our scoping review due to the inclusion criteria that emphasized inclusion of summative literature. Limitations of the review process include the bias in assigning literature to a primary discipline and subdiscipline based on the content of the cited article or book; authors attempted to mitigate this by having all disciplinary assignments reviewed by at least two team members, including the lead author (CB), and revisions were made by consensus, and enlisting subject matter experts as needed. Understanding how much existing collaboration exists where there are shared efforts on TWH priority issues is beyond the scope of this paper. Additional systematic analysis of the database could investigate other research questions, such as how interdisciplinary collaboration occurs and examine typical pairings among disciplines in TWH interventions, and areas of TWH deserving of greater interdisciplinary attention.

Conclusions

We conducted a scoping review primarily focused on summative literature to understand the landscape of knowledge available to address worker health, safety, and well-being using the TWH paradigm and determine how this knowledge can extend the reach of its partnerships. Searching for literature relevant to TWH themes generated a catalog of citations from many disciplines and subdisciplines, including some that may not be formally recognized by the TWH community. We enumerated them here with the intention of broadening the scope of knowledge and communities of practice for the benefit and enhancement of worker well-being. As TWH continues to evolve, it is pertinent to understand the various disciplines and perspectives that form its foundation and identify new disciplines and perspectives that

might enrich existing research and practice through collaboration with those with a longer history of involvement in the TWH movement.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

All sources of support relevant to publication:

This study was supported by a grant from the National Institute for Occupational Safety and Health, grant U19OHO12293.

Funding sources for all authors:

The results reported herein correspond to specific aims of grant U19OHO12293 to investigator Edward Yelin from National Institute for Occupational Safety And Health (NIOSH).

Data availability statement:

All data relevant to the study are included in the article or uploaded as supplementary information. In addition, data are available in a public, open access repository. While the data is currently under embargo, it will be made openly available upon publication.

The repository name is Zenodo, the persistent URL is <https://doi.org/10.5281/zenodo.11557715>.

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Clinical Relevance Statement

This scoping review provides evidence of disciplinary knowledge and practice beyond those traditionally engaged in worker health interventions and practice. Enumerating potential partners may enhance interdisciplinary efforts in the field and stoke the development of more holistic approaches and long-lasting improvements to worker well-being.

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Learning Outcomes

Upon completion of this educational activity, learners should be able to

- Identify multiple disciplines with relevant interventions that can address worker well-being.
- Identify disciplines that are not well-represented in the Total Worker Health™ (TWH) research and practitioner community that might enrich the field of TWH.

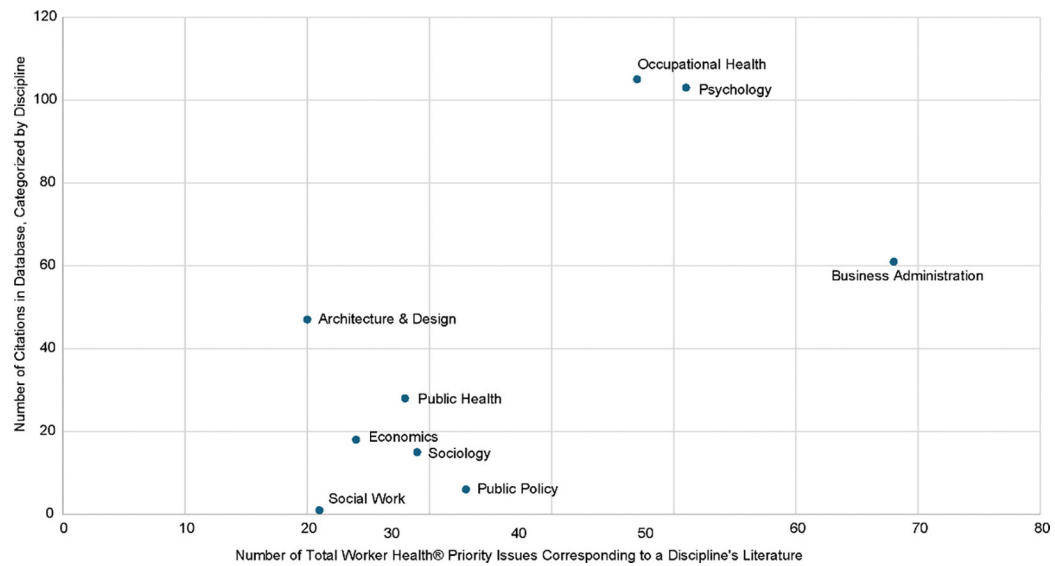


Figure 1:
Comparing the Number of Total Worker Health® Priority Issues Corresponding to a Discipline's Literature and the Number of Citations in the Scoping Review Database, Categorized by Discipline

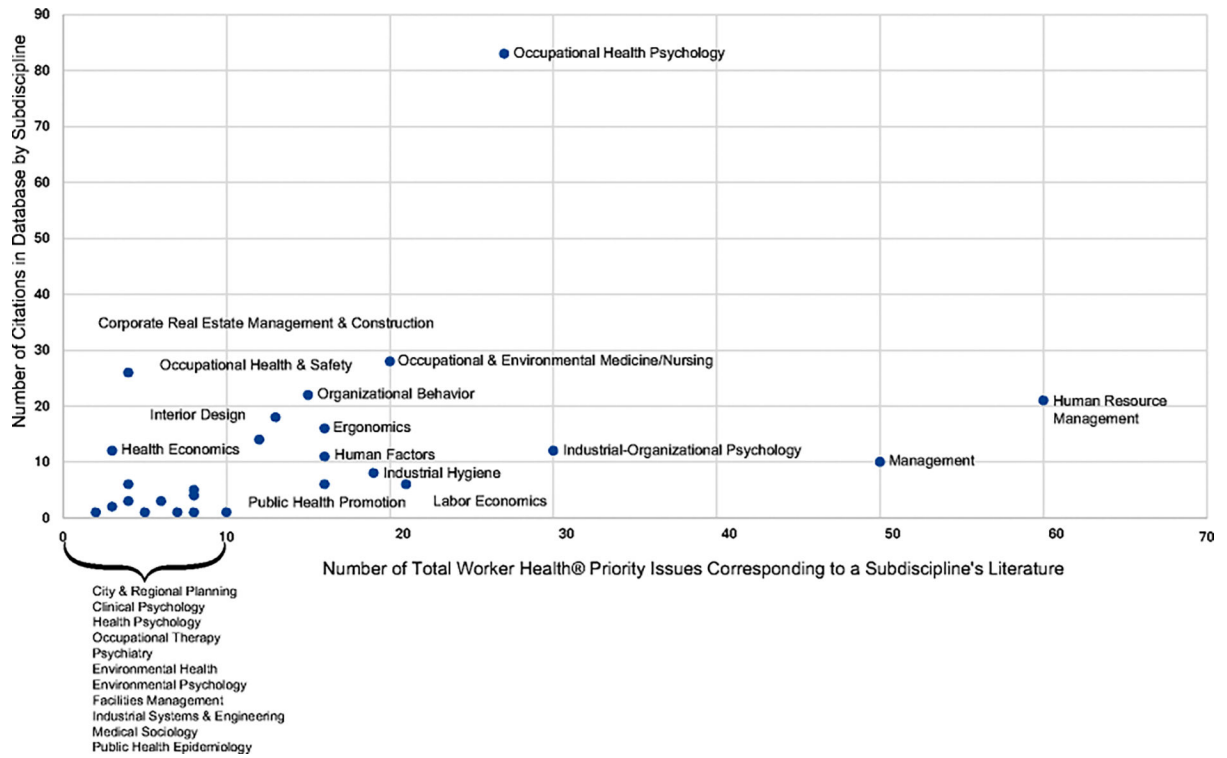


Figure 2:

Comparing the Number of Total Worker Health® Priority Issues Corresponding to a Subdiscipline's Literature and the Number of Citations in the Scoping Review Database, Categorized by Subdiscipline

TABLE 1
Total Worker Health® Issues Addressed by Disciplines Contributing to Total Worker Health® Literature

Issues Category	Issue	Architecture & Design	Psychology	Sociology	Occupational Health	Business Administration	Economics	Social Work	Public Health	Public Policy	Number of Disciplines Addressing Each Issue
Prevention and Control of Hazards and Exposures	Biological Agents	X			X				X	X	4
	Chemicals	X			X				X	X	4
	Ergonomic Factors	X			X						2
	Physical Agents	X			X				X	X	4
	Psychosocial Factors	X	X	X	X	X		X	X		7
Built Environment Supports	Risk Assessment and Management		X		X	X			X	X	5
	Accessible and Affordable Health Enhancing Options	X	X		X	X			X		5
	Clean and Equipped Breakrooms, Restrooms, and Lactation Facilities	X	X		X	X					4
	Healthy Workspace Design and Environment	X	X		X	X			X		5
	Inclusive and Universal Design	X	X	X	X	X					5
Community Supports	Safe and Secure Facilities	X	X		X	X					4
	Access to Safe Green Spaces and Pathways	X		X		X			X		4
	Healthy Community Design	X	X	X	X		X	X	X		7
	Safe and Clean Environment (Air and Water Quality, Noise Levels, Tobacco-Free)	X	X	X	X				X	X	6
	Safe, Healthy, and Affordable Housing Options	X	X	X			X	X	X	X	7
	Transportation and Commuting Assistance	X		X		X		X	X	X	6

Issues Category	Issue	Architecture & Design	Psychology	Sociology	Occupational Health	Business Administration	Economics	Social Work	Public Health	Public Policy	Number of Disciplines Addressing Each Issue
Compensation and Benefits	Adequate Wages and Prevention of Wage Theft			X		X	X			X	4
	Affordable, Comprehensive, and Confidential Healthcare Services				X	X	X	X	X	X	6
	Chronic Disease Prevention and Management Programs				X	X			X		3
	Continual Learning, Training, and (Re-) Skilling Opportunities		X		X	X	X				4
	Disability Insurance (Short-and Long-Term)				X	X	X	X	X	X	6
	Employee Assistance and Substance Use Disorder Programs		X			X		X	X		4
	Equitable Pay, Performance Appraisals, and Promotions		X	X		X				X	4
	Minimum Guaranteed Hours		X	X		X	X			X	5
	Paid Time Off (Sick, Vacation, Caregiving, Parental)			X		X	X			X	4
	Prevention of Healthcare Cost Shifting to Workers				X	X	X		X		4
	Retirement Planning and Benefits		X			X	X	X			4
	Work-Life Programs		X			X					2
	Workers' Compensation Benefits				X	X	X	X	X	X	6
	Collaborative and Participatory Environment		X	X	X						4
	Corporate Social Responsibility		X			X					2
Healthy Leadership											

Issues Category	Issue	Architecture & Design	Psychology	Sociology	Occupational Health	Business Administration	Economics	Social Work	Public Health	Public Policy	Number of Disciplines Addressing Each Issue
Organization of Work	Responsible Business Decision-Making		X			X					2
	Supportive Managers, Supervisors, and Executives		X			X					2
	Training					X	X				2
	Worker Recognition, Appreciation, and Respect		X			X					2
	Adequate Breaks				X	X				X	3
	Comprehensive Resources		X		X	X		X			4
	Fatigue, Burnout, Loneliness, and Stress Prevention		X	X	X	X		X	X		6
	Job Quality and Quantity		X		X	X					3
	Meaningful and Engaging Work		X		X	X					3
	Safe Staffing		X		X	X					3
Policies	Work Intensification Prevention		X		X	X					3
	Work-Life Fit		X	X		X		X	X		5
	Elimination of Bullying, Violence, Harassment, and Discrimination		X	X	X	X				X	5
	Equal Employment Opportunity		X	X		X	X			X	5
	Family and Medical Leave		X	X	X	X	X	X	X	X	8
	Human and Natural Resource Sustainability	X	X			X			X		4
	Information Privacy		X		X	X				X	4
	Judicious Monitoring of Workers and Biomonitoring Practices		X	X	X	X				X	5

Issues Category	Issue	Architecture & Design	Psychology	Sociology	Occupational Health	Business Administration	Economics	Social Work	Public Health	Public Policy	Number of Disciplines Addressing Each Issue
	Optimizing Function and Return-to-Work		X		X	X					3
	Prevention of Stressful Job Monitoring Practices		X		X	X			X		4
	Reasonable Accommodations		X		X	X				X	4
	Transparent Reporting Practices				X	X				X	3
	Whistleblower Protection				X	X				X	3
	Worker Well-Being Centered		X			X		X	X		4
	Workplace Supported Recovery Programs		X		X	X		X	X		5
	Artificial Intelligence			X	X	X				X	4
	Robotics				X	X					2
	Sensors	X	X	X	X	X				X	6
Technology	Contracting and Subcontracting		X			X	X	X		X	5
	Free-lance		X			X	X			X	4
	Global and Multinational					X	X				2
	Multi-Employer					X	X			X	3
	Non-Standard			X	X	X	X				4
	Organizational Restructuring, Downsizing, and Mergers				X	X	X				3
	Precarious and Contingent		X	X		X	X			X	5
	Small- and Medium-Sized Employers				X	X					2
	Temporary		X	X		X	X			X	5
	Unemployment and Underemployment		X	X		X	X	X		X	6
Work Arrangements											

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Issues Category	Issue	Architecture & Design	Psychology	Sociology	Occupational Health	Business Administration	Economics	Social Work	Public Health	Public Policy	Number of Disciplines Addressing Each Issue
	Virtual		X	X		X					3
Workforce Demographics	Diversity and Inclusivity	X	X	X	X	X		X			6
	Multigenerational	X	X	X	X	X					5
	Productive Aging across Lifecourse		X		X	X		X	X		5
	Vulnerable Workers		X	X		X	X	X	X	X	7
	Workers with Disabilities	X	X	X	X	X		X	X	X	8
Number of Issues Addressed by Discipline		20	51	29	47	68	24	21	28	33	