Advancing Safety Culture Programs: Interfacing Applied Social Work with Occupational Health and Safety for Assessing Organizational Safety Culture

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Abstract

Protecting workers from hazards and risks in the workplace is an ongoing challenge worldwide. Annual statistics report more than two million fatalities and more than 300 million non-fatal incidents from workplace accidents, workplace violence, and work-related disease worldwide. It is estimated that more than half of the accidents are a result of systems failures that can be attributed to human error, including error that stems from social, psychological, and behavioral factors.Experts have recognized that psychological and social factors play a critical role in organizational culture, and in safety practices in the workplace. Effective management of occupational health and safety programs requires assessment of safety culture. This position paper describes the functional gap in organizational safety culture assessment that can be closed by including social workers on occupational health and safety assessment teams, especially for assessment of organizational safety culture.

Keywords: safety culture, social work, social cubism, occupational health and safety, occupational health psychology, safety culture assessment

Introduction

Industrial hygienists, safety engineers, hazardous materials managers, environmental health specialists, health physicists, and biosafety professionals play vital professional roles in organizations by anticipating, recognizing, evaluating, controlling, and if possible, preventing workplace exposures to physical, chemical, and biological agents that may be harmful to the worker. Whether in nuclear power plants, shipbuilding yards, or construction projects, among other sites, the establishment of programs that protect employees from undue illness and injury are critical. Accidents and exposures occur, despite the existence of occupationalhealth and safety (OHS) programs and policies. Workers become subsequently ill and injured due to gaps or failures in OHS programs. Although OHS has historically been viewed as a

problem of engineering and exposure science, researchers and leaders are beginning to acknowledge the psychological and organizationally-based social factors that affect health and safety in the workplace[1, 2]. Evaluation of OHS programs for hazards should continue to include industrial hygienists, health and safety specialists, and other professionals that can perform hazard analyses and job safety assessments[3, 4]. They should, however, also include professionals well-versed in the psychological and social aspects that contribute to accidents, injury, and illness[2].A multidisciplinary professional approach is important in order to effectively determine the causative agents for workplace injuries, including systems-, management-, environment-, and behavior-based workplace hazards[2]. Social workers can play an important functional role as core members of teams that assess organizational safety culture, potentially creating a professional focus of social work in occupational health (SWOH).

Methods and Procedures

This combination review-and-position paper evaluates the social science and safety science literature and exhibits the need and utility of the social work profession in occupational health, especially regarding assessment of organizational safety culture. A literature search was performed on the topics of safety culture, Total Safety Culture, safety culture assessment tools, safety culture and social work, occupational health and social work, social factors and workplace accidents, social work and social cubism, and social and psychological factors in mishap investigations. The review was conducted using Internet-based medical, science and engineering, and legal literature search engines including PubMed, EBSCOHOST, ScienceDirect, GoogleScholar, and Lexus Nexus indexes.

Literature is limited regarding the inclusion of social workers in organizational occupational health and safety. However, substantial literature exists for the necessity of psychological and social sciences involved in occupational health, as well as psychosocial factors involved with occupational health and safety and organizational safety culture.

Literature Review

Protecting workers from hazards and risks using appropriate OHS programs and procedures remains a challenge worldwide. Global statistics report an estimated 2.3 million fatalities and approximately 313 million non-fatal incidents annually resulting from occupational accidents and work-related diseases, including cancer, respiratory diseases, accidents causing physical trauma, and workplace violence[2, 5, 6, 7]. These statistics exhibit a significant social and economic burden for corporations, communities, and nations, warranting the need for improved controls[2].

Although workplace accidents are often due to systems errors, poor equipment maintenance, faulty system design, improper management, and environmental conditions, human error has been attributed for relatively high proportion of accidents. Some literature estimates suggest an average of approximately 60 percent of system failures and the resulting accidents can be attributed to human error, including rates ranging from 19 percent to 90 percent in petroleum, nuclear power, petrochemical, and air traffic control

industries[8]. Human error can result from a variety of causes that can be related to cognition as well as a variety of social, psychological, and behavioral factors[2].

Accident investigation and prevention programs require effective strategies capable of identifying issues that lead to workplace illness and injury. These causes can be diverse, and can result from failures in safety management systems, faulty equipment, or as a result of safety behaviors that contribute to illness, injury, and property damage. Getting to the root-causes of these issues is necessary in order to anticipate, prevent, and control similar problems in the future[2, 9, 10].

Although not uncommon, equipment failures, chemical and biological agent exposures, and safety regulations are not the sole causes for illnesses and injuries that arise in industry. Social forces in workplace settings also contribute to the OHS environment, and can lead to exposure to workplace hazards[11, 12]. These social factors are part of an overall organizational culture and, from the perspective of the safety management system, are defined as safety culture[2].

Understanding and Assessing Safety Culture

Organizations on a global scale have had increasing interest in understanding the concept of safety culture as a driver of safety performance and a means of preventing workplace disaster[13]. The identification or development of effective investigation methods and assessment tools to rapidly characterize organizational safety culture are pivotal for recognizing root causes and curbing future mishaps[2, 14, 15].

Safety programs include social forces that consist of interactions between and among employees, employers, managers, and regulatory agencies,as well as established procedures, attitudes, and emotions. Therefore, it has been recognized that causation models must include the recognition of the interactive relationship between physical and technological safety and psychological or behavioral factors[16].

From a social science perspective, the perceptions of safety and how these perceptions are formed by and between individuals and groups are critical elements in OHS programs[17]. The construct of these social factors can vary by organization, department, workshop shop, and by individual workers. These social factors, and the way that they interact can significantly affect the safety status of organizations. Together, these elements combine to form what is known as organizational safety culture. The safety culture construct has the ability to either positively or negatively affect safety performance within organizations, including direct effect on organizational risk and risk management[18].

Safety Culture. Safety culture is a multidimensional concept consisting of numerous structural and behavioral elements and has been identified as a key element to the establishment of the tone for the importance of OHS within organizations[2, 19, 20]. Although social forces that affect organizational safety have been studied extensively, the term safety culture was not prevalent in literature until the Soviet Union's Chernobyl nuclear power disaster in 1986, when investigators from the International Atomic Energy Agency (IAEA) and related organizations identified a poor safety culture as a contributing cause in the

accident[2, 21].   Since then, safety culture has been prevalent in research and practice across industries, and has taken on numerous definitions by a multitude of agencies and professionals in OHS[2].

Perhaps the most comprehensive meaning of safety culture was recentlydefined as "an organization's dynamic beliefs, attitudes, roles, and norms based on the continual interaction of historical, political, power, psychosocial, economic, and demographic factors that influence the organization's procedural, technological, and behavioral practices and affect, positively or negatively, worker exposures to physical, chemical, biological, and ergonomic stressors in the occupational environment "[2].

Assessment of Safety Programs Using Conflict Analysis Strategies. Organizational culture is generally acknowledged as a critical determinant in the success or failure of an organization.   An organization's success is often seen to correspond to its ability to work effectively and safely.   Safety culture is measured by the ability to handle safety-related matters successfully[22].   Despite professional safety culture assessments conductedacross industries, including maritime, nuclear power plants, chemical manufacturing plants, and maintenance facilities[18, 23, 24, 25, 26], there has been a call for a more systematic approach in measuring the organizational dimensions that encapsulate safety culture[2, 21].   It has been established that safety culture must be assessed and addressed through comprehensive study including a combination of metrics, interviews, observation, and surveytools that capture worker attitudes, beliefs, and roles they share in their occupational environments[2].   It is vital, from the social science perspective, to understand the perceptions pertaining to safety and the factors that contribute to these perceptions, and thus the safety culture[17].

Several gaps have been identified in safety literature regarding assessment of safety culture, including that most assessments view safety culture as a stable construct rather than a dynamic phenomenon, and that safety assessments tend to discount or exclude the existence of politics, power, and external demographic and psychocultural issues that affect organizational safety culture[2, 17, 27, 28].   These issues are important to organizational safety culture and must be addressed during assessments and when trying to establish root causes for accidents, illness, and injury[2].

Recent peer-reviewed literature has identified occupational health and safety as a topic of conflict, and called for established conflict analysis and resolution (CAR) strategies to be incorporated into organizational perception surveys for more effective analysis. Social Cubism has been suggested as a means of assessing safety culture, analyzing psychological and social factors that affect organizational culture and its safety culture sub-component[2].Although Social Cubism is a model generally used for analyzing international and geo-political conflict[29, 30, 31, 32], it has been modified for assessment of environmental health, public health preparedness, health care, and OHS programs[2, 29, 33, 34].

This CAR strategy focuses on the multiple-factor interactions of the major forces that influence organizational conflict. Social Cubism defines six inter-related forces as the main factors of conflict. These factors are identified to be history, religion, demographics, politics, economics, and psychocultural factors, and they have been modified on occasion for health science purposes, in which casethe religion factor is

replaced by balance-of-power[2, 29, 33, 34]. This dynamic analytical model studies the six influencing factors simultaneously because it is the interaction, not isolation of the six factors that produces the trajectory of conflict. It is the evaluation of these interactions that is the effective diagnostic tool[2, 29, 34, 35]. Focusing on all of the involved social factors can provide a thorough analytical picture of the conflict with continued analysis during changes that occur throughout. Thorough analysis of these social factors often provides information that can be used to contribute to feasible interventions and solutions to problems[29, 37]. It is argued here that the application of this conflict analysis model, among other tools, to safety culture can be most effectively implemented by an interdisciplinary assembly of experts in OHS and social services professionals, relying on a multidisciplinary knowledge of safety management, safety engineering, occupational health, organizational behavior, psychology, and social services.

The Call for Social Services in Occupational Health

It is no surprise that a need for psychosocial involvement in occupational health and safety programs has been identified. Experts have recognized for decades that psychological and social factors play a critical role in organizational behavior, organizational culture, and in safety practices in the workplace[2, 8, 16, 17, 21, 27]. Although psychology has roots in workplace settings since early in the 20th century, governmental agencies that are focused on occupational health and safety did not identify and take steps to address the gap of professional psychology to improve occupational health until 1988, when the National Institute of Occupational Safety and Health (NIOSH) officially recognized psychological disorders as leading causes for occupational health and safety risks and accidents. Over the following two decades, together with the American Psychological Association (APA), NIOSH created post-doctoral training programs in occupational health psychology (OHP) in order to improve safety, health, and well-being in workplace settings through an interdisciplinary approach including psychology, public health, organizational development, engineering, human factors, economics, and sociology[38]. Through these programs, the inter-organizational partnership established the Occupational Health Psychology professional concentration designed to apply psychological principles in organizational settings in order to improve the protection and safety of workers, promote healthy work, and prevent work-related disease[39, 40]. Professionals that specialize in industrial and organizational psychology (I/O), among a diversity of other health science professionals, have engaged in this role. However, there are only a small group of social services professionals that are well-suited to serve in roles that incorporate psychological, social, and organizational factors in occupational health practice, and particularly in assessment of organizational safety culture in occupational health and safety programs.

With the necessity for hazard analyses, job safety assessments, sampling and analysis of environmental matrices, modification of processes and equipment, and real-time understanding of unique situations and hazards, OHS includes a group of professions rooted in problem-solving abilities. Because workplace health and safety does not stop with physical, chemical, and biological hazards, but also includes psychological and social factors that can affect safety performance and the potential for hazardous

exposures, there is a need for professionals or teams that can address and resolve the combination of problems as they arise.

The problem-solving function has been used extensively as a model for social work since the birth of the profession, particularly when it comes to human-to-human interactions, including relationships on individual, group, organizational, or even societal levels[41-43].

Social workers can play a pivotal role by interfacing applied social work with OHS science, providing services that deal with work and organizational psychology, health and wellness programs, workplace stress, employee assistance programs, substance abuse in the workplace, and employer-employee conflict mediation, among other topics that directly and indirectly affect workplace safety.

Social Workers. The social work profession continues to grow and social workers are in high demand on a global scale. The occupational outlook for social work in the United States is positive, according to the Bureau of Labor Statistics, which projects a 19% growth over the next decade, which is a faster-than-average growth when compared to all evaluated professions[44, 45].

Social work is a broad and diverse field of practice. In fact, many consider that social work is actually a group of professions rather than its own professional entity[43]. Professionals have experience in clinical therapy, hospital social work, personal counseling, educational counseling, domestic violence victim advocacy, sexual assault prevention and response, substance abuse, workplace violence, employee assistance programs, mediation and conflict resolution, transcendentalism and mindfulness, organizational development, gender and ethnic equitability and equal opportunity, inter-cultural exchange, child adoption services, humanitarian assistance, and human rights, among numerous other areas of concentration. There have been several calls over the past two decades for the modification of the definition of the social work profession to better represent effectively the entire range of knowledge, skills, and practice being performed by social workers globally[43].

Social Work in Business and Organizational Development. Social workers are often seen working within communities, examining problems and social conditions and exploring ways to address the issues discovered. Social workers with graduate social work training generally have a significant amount of clinical and macro-level social services experience. The broad knowledge and experience leaves social workers poised to thrive and contribute in non-traditional public and private sector environments[45]. The education and experience these professionals have often makes them effective at understanding human behavior and inter-personal and inter-group relationships, as well as the ability to understand workforce challenges, making them ideal candidates to develop positive relationships between agencies and the communities in which they operate[45]. Corporations have begun to recognize the value of social work professionals and the knowledge and skills they can use to affect an organization's social, environmental, safety, and productivity performance. Thus, there has been an increase in social workers recruited to positions within private, for-profit agencies[45].

Many, if not all of these inter-related issues that corporate social workers in public or private sector organizations can affect are factors that also directly influence organizational safety culture. Some of the relative roles that social workers can serve as auditors in corporate and public organizations include performing organizational culture assessments, employee assistance programs evaluations, community environmental justice audits, and safety culture assessments.

Social Work in Safety Culture Assessment. Occupational safety and health can vary drastically, depending on profession and work environment. Topics could include more common foci such as industrial safety, machine guarding, slips, trips, and falls, and personal protective equipment, to indoor air quality, chemical safety, and ergonomics, to topics such as workplace substance abuse, shift work errors, health and well-being, occupational incivility, work-to-family conflict, and workplace violence, among others.

The social work profession is no stranger to safety in the workplace. Social workers have professionally worked to assess and resolve issues of physical, social, and psychological workplace violence in many agencies and corporations. Likewise, one of the main tenets of the National Association of Social Workers focuses on protecting the practice of social work and social workers. The social work profession is increasingly dynamic and complex, with an increasingly broadening client base. A diversity of complex practice environments can sometimes be volatile and chaotic. Thus, there is, at a minimum, a perceived increase in unpredictable and often unsafe environments where social workers practice. Professionals have been targeted with verbal and physical assault by clients and other stakeholders in offices and during field visits[46]. Therefore, the association and the profession are profoundly focused on establishment and implementation of universal safety precautions in their work, promoting workplace safety assessments and risk reduction with all clients across practice settings[46].

As denoted, Social Cubism has been perceived as an effective means of assessing safety culture because it analyzes psychological and social factors that affect organizational culture and the safety culture sub-component, including history, power, demographics, politics, economics, and psychocultural factors[2, 29, 33, 34]. Focusing on all of the involved social factors can provide a thorough analytical picture of the conflict with continued analysis during changes that occur throughout. Thorough analysis of these social factors often provides information that points to the root causes of accidents, illness, and injury and can be used to contribute to feasible interventions and solutions[2, 29, 33, 34, 47]. This analysis can be accomplished by an experienced professional that deals with these social factors in part during professional training and continually and definitively in professional practice.

As required per the definition and tenets of their profession, social workers are intimately involved with psychocultural, economic, political, power, demographic, and historic factors in many different aspects of their professions. Social workers operate in a complex professional world that requires that they understand economic, ecological, and social forces that affect global populations[43]. The core concept of social work encompasses knowledge from many sciences, including sociology, psychology, anthropology,

medicine, economics, and political science[43, 48]. As such, the experience falls directly in line with what is required for understanding and analyzing cultural norms in organizations and the way these factors affect safety behaviors, safety performance, and the overall safety culture.

SWOH. The social work profession encompasses many aspects of human life, society, and behavior, promoting social change, empowerment of people to solve problems, and improving the way that people interact with one-another and with their environments[43]. Additionally, fundamental to social work are principles of human rights and social justice, focusing on ensuring that all people have the same basic rights and protections[43]. Health and safety in the workplace is generally considered a human right. All people, regardless of gender, ethnicity, religion, socio-economic status, or age, should be equally protected from becoming ill or injured in the workplace[49]. It is recognized that social work can be beneficial not only in assessment of organizational safety culture, but in the development and maintenance of Total Safety Culture, environmental justice, and workplace safety and health programs. It is proposed that social workers can play anfunctional role in organizations, and that a SWOH professional concentration should be developed to focus on social services and psycho-social aspects of worker health and safety.

Summary and Conclusion

Social factors affect OHS program effectiveness and decision-making within organizations[2, 11, 12]. A need exists to effectively assess these social forces during organizational audits, performance assessments, and mishap investigations as a potential root cause for accidents, illness, and injury. It is well-accepted that conflict analysis strategies can be used effectively in analyzing a diversity of conflict situations at inter-organizational, intra-organizational, and individual levels, and these strategies can also potentially be used to assess OHS functions, including accident investigations[2]. The dynamic social factors that interact in organizations can be assessed using Social Cubism and other social analysis tools, incorporated into established methods and survey techniques, can be particularly useful for analyzing organizational safety culture[2].

Interprofessional collaboration in occupational and environmental health and safety is critical in today's organizations. Occupational health and safety programs should be interdisciplinary in nature because they affect an increasing number of stakeholders viaa variety of physical and psychosocial routes[2]. Analysis and survey of these programs, particularly safety culture assessments, should likewise be conducted by a multidisciplinary group of professionals that can effectively analyze and understand the managerial, physical, and psychosocial forces that affect organizations and organizational safety programs. Collaboration of safety professionals, industrial hygienists, and safety managers with social workers can potentially form a comprehensive group that can provide a robust evaluation of total safety culture, leading to overall program improvement and reduction in injury and illness that arises in workplaceenvironments.

Recommendations for Further Research and Practice

With the belief that conflict analysis tools, such as the social cube interlaced withsafety perception surveys and other social survey methods,should be used for assessment of organizational safety culture and safety programs, the authors of this manuscript believe that further research should be performed investigating the proposed benefits of using social workers in OHS programs and safety culture assessment. Real-time organizational safety audits, safety culture assessments, and OHS-related surveys should be performed across a variety of industrial, clinical, and administrative settings. It is additionally recommended that professional associations and organizations that drive the social work field research the utility of expanding the profession to include a SWOH professional concentration in professional and academic settings.

Disclaimer Statement

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