Emerging Issues in Occupational Safety and Health

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In developed countries, changes in the nature of work and the workforce may necessitate recalibrating the vision of occupational safety and health (OSH) researchers, practitioners, and policymakers to increase the focus on the most important issues. New methods of organizing the workplace, extensive labor contracting, expansion of service and knowledge sectors, increase in small business, aging and immigrant workers, and the continued existence of traditional hazards in high-risk sectors such as construction, mining, agriculture, health care, and transportation support the need to address: 1) broader consideration of the role and impact of work, 2) relationship between work and psychological dysfunction, 3) increased surveillance basis for research and intervention, 4) overcoming barriers to the conduct and use of epidemiologic research, 5) information and knowledge transfer and application, 6) economic issues in prevention, and 7) the global interconnectedness of OSH. These issues are offered to spur thinking as new national research agendas for OSH are considered for developed countries. *Key words*: stress; psychosocial; prevention; surveillance; policy.

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BROADER CONSIDERATION OF THE ROLE AND IMPACT OF WORK

Occupational safety and health (OSH) has traditionally focused on the specific effects of workplace hazards on workers. For the most part, these have been chemical, physical, and biological hazards. However, there have been changes in the nature of work, workplaces, and the workforce that require OSH practitioners, researchers, and policymakers to take a broader view of the factors that influence the health of workers. This broader view is based on the fact that many of the most prevalent and significant health conditions among workers may not be caused solely by workplace hazards. Increasingly, non–work-related hazards and factors also play roles. Stress-related conditions, cardiovascular, psychological, and musculoskeletal disorders, obesity, depression, substance abuse, and violence are some of the health problems that are linked to the workplace but also to other, non-work, conditions.[1–6] Attention to these health conditions does not mean that traditional OSH risk factors are not still important in research and intervention. However, generally, the types of research and intervention that will be most useful for addressing traditional risk factors are those that focus more on what works to prevent or control traditional workplace health hazards rather than those that focus on hazard identification.[7] Much is known about the causes of many traditional occupational injuries and diseases. What is needed are better ways to apply what is known.

The fact that many of the most prevalent and significant health conditions among workers may not be caused solely by workplace hazards dovetails with two other factors. First, work and workplaces are changing. Among these work-related changes are new methods of organizing the workplace, non-traditional work schedules, extensive labor contracting, worker shortages in various sectors, expansion of service and knowledge sectors, economic pressure from globalization, and increase in small businesses.[8–10]

The second factor is the realization that the separation between "work" and "non-work" is in some ways artificial. Society separates life into "work" and "non-work" when this generally is not logical in terms of health outcomes. Much of this separation stems from the concept of the "labor or employment contract" and the compartmentalization of work for political or economic reasons. By compartmentalizing work and the interaction of the worker and employer in the labor/employment contract, the attribution of risk and the attribution of liability are controlled by workers' compensation, with additional cost shifting to the general health care system.[11] This compartmentalization and concern for liability lead to underreporting of occupational disease and incomplete characterization of the societal burden.[12,13]

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However, the separation of work risks from other risks has precluded a holistic approach to health risks, particularly for psychosocial issues such as work–stress–health relationships.[1] Increasingly, as many overt and direct traditional workplace hazards become controlled, the health of workers may be the result of less direct work and more non-work factors. Historically, non-work factors have been seen as confounders rather than as determinants of health. However, at a minimum, various non-work factors should be considered as effect modifiers, and more informatively, as covariate risk factors. For example, recent research has demonstrated a causal relationship between stress-based work–home interference and health impairment (i.e., increased levels of fatigue and depressive complaints).[14] At present, many employees have difficulty reconciling work and domestic obligations.

Other major multifactorial health problems, such as cardiovascular disease, obesity, and depression have both work and non-work risk factors.[3,5,6] The contemporary workforce in developed countries is influenced by a constellation of risk factors, including stress at work and home, hazardous physical and chemical exposures, energy imbalance, hypertension, smoking, alcohol use, and medications, that all may influence worker health in interactive ways. Additionally, demographic factors, such as the aging of the workforce, have an impact on the diseases and injuries in workers. While understanding the role of each of the exogenous and endogenous risk factors is important, understanding the totality of the interaction might be more so.[15] Clearly, the concern for the constellation of risks that impact workers is not without political issues. While a holistic view is presented here, this does not mean that efforts to maintain a safe and healthy workplace should be diminished or refocused to "blame the worker" or to shift resources away from workplace control.

The various organizational and historic trends in work and workplaces serve as the basis for suggesting that occupational safety and health take a broader view of work and the health of workers. All the risks that affect workers should be considered as within the purview of investigators and practitioners, not only because they affect workers, but also because the workplace is a potential effective venue for some kinds of health-promoting interventions.[16] Moreover, worker health is fundamental to public health. Occupational health should be better integrated into mainstream public health.[15,17]

RELATIONSHIP BETWEEN WORK AND PSYCHOLOGICAL DYSFUNCTION

Work stress has been increasingly recognized both as a health outcome and as an important health determinant.[1,5] Traditionally, the occupational safety and health field has investigated the causal sequence of the relationship between work and well being. However, newer research has demonstrated how work and mental health influence each other reciprocally and longitudinally. The number of studies that provide evidence for reversed effects of strain on work is increasing.[2] One longitudinal study found reciprocal causal relationships between job demands, control, and social support of supervisors on the one hand and depressive mood, job satisfaction, and emotional exhaustion on the other.[2]

Another disorder that appears to have a bi-directional relationship with work is depression. The incidence of depression is high and it is one of the most prevalent and costly issues affecting the American workforce.[3] Depression has been shown to be highly associated with work limitations in time management, interpersonal or mental functioning, and overall productivity.[18] In the other direction, workplace risk factors for depression involve situations promoting lack of autonomy and involving "caring" for others as part of the work role, particularly where there is a dependence on others for their livelihood.[4]

INCREASED SURVEILLANCE BASIS FOR RESEARCH AND INTERVENTION

It is well known that traditional (widely established) occupational diseases are underreported.[12] As the morbidity and mortality patterns of the workforce shift to include various psychological disorders and conditions with multifactorial causes, the existing surveillance systems may be even less useful for evaluating the extent of those health outcomes and targeting needed areas of research. There is need to address those aspects of the surveillance systems that are most in need of repair, improvement, or development to capture traditional and emergent health conditions as well as hazards. These have been identified in a national surveillance plan.[19]

In addition to surveillance data needed to target research or intervention, there is an increasing need for a surveillance system that allows for the evaluation of the impacts of interventions and policies. This may require surveillance of hazard prevalence and intermediate indicators. Recently, the Council of State and Territorial Epidemiologists (CSTE) has identified some occupational health indicators that may be useful in this regard. These indicators also may provide a focus for discussing occupational health with public health practitioners and researchers.[20] They allow a state to compare its health status with those of other states and within-state over time.[17]

OVERCOMING BARRIERS TO THE CONDUCT AND USE OF EPIDEMIOLOGIC RESEARCH

One new requirement for the conduct of occupational epidemiologic research is the need to assess risks and

determinants at the micro-space and at the macro-level and to integrate these findings into a meaningful evidence base on which to plan interventions.[21] Epidemiologists in many countries face increasing legal and social barriers to obtaining access to populations and existing data sources.[21] In the United States, added time, costs, and effort required because of new Health Insurance Portability and Accountability Act (HIPAA) requirements may make epidemiologic research more difficult.[22] Additionally, difficulty finding cohorts of sufficient size with adequate exposure and records of exposure may create barriers for epidemiologic research. Innovative approaches and study designs may need to be considered to overcome these barriers.

Occupational safety and health improvements have depended on epidemiologic research.[23,24] However, the epidemiology literature for assessing risk in many, if not most, modern occupations has been characterized as becoming "sufficiently obsolete" that it can no longer be depended upon to guide either prevention or adjudication of compensation.[25] Whether this assessment is too harsh may not be the issue; rather, the issue is the extent to which it is an accurate characterization. The thrust of the criticism is that the identification of a possible association between an occupational exposure and disease is not enough to support adjudication to determine whether a common condition, such as lung cancer, is more likely than not the result of an occupational exposure. There is need for some indication of magnitude compared with the frequency of the condition in the general population. The existing body of knowledge of occupational risks is rapidly becoming less useful for this purpose.[25] The validity of such an argument may rest on whether apportionment of hazard is a achievable concept to begin with.[26] Nonetheless, in order to examine relationships between complex and low-level exposures and subtle and long-term physical and psychosocial risks in working populations, epidemiology is essential.[24]

MORE FOCUS ON INFORMATION AND KNOWLEDGE TRANSFER

The ultimate utility of OSH research is the extent to which results can be applied to reduce morbidity, mortality, and costs. Few systematic attempts have been made to broadly outline the requirements and future of information in the OSH field, whether it be for decision makers or workers. Moreover, investigators have made minimal efforts to track the process of OSH research as it affects OSH practices, regulation, and impact. More pointedly, most OHS researchers have not focused on communicating beyond the OSH research community. Many clinicians, employers, policymakers, labor representatives, and government agencies do not understand how research can contribute to the excellence of their endeavors and think there is a chasm between the research and user communities. Few see it as their job to bridge the gap. The OSH field would benefit by more connections between researchers and decision makers.[27] Both would gain by these connections. The growing disciplines that focus on evidence-based decision making and knowledge utilization as they apply to the workplace should help to foster these connections.

Critical in the issue of information and knowledge transfer is the development of coherent and transparent information policies, open information networks, research on how to make prevention messages effective, and addressing the barriers to interactive multimedia in information and training. The 3rd International Conference of Information Technologies in Occupational Safety and Health Information, Training, and Education, sponsored by the International Social Security Association, the European Commission, and the ILO in Brussels in 1996, attempted to address this need. Moreover, there is need for investment in studying how information is used and translated into practice.

> One of the greatest problems in the occupational safety and health community is the lack of appropriate emphases on research involved in the dissemination, adaptation, and utilization of information . . . , and . . . there seems to be a severe mismatch between the optimistic assumptions made by senders about dissemination of research results, and what is available, assimilated, and needed for a potential user.[28]

Equally important as transfer of information to decision makers is the need to communicate with workers about hazards, risks, and controls. This issue is exacerbated in countries where immigrant workers, who do not speak the language of the host country or share the same risk perception and acceptance values, are employed. In the United States, the growing presence of Spanish-speaking workers and the high rate of injuries and fatalities in some sectors such as agriculture, construction, food processing, and heath care among Hispanics illustrate this point. Critical in moving forward is the need to prioritize which information gaps to fill and not merely on translation of technical health and safety documents. Emphasis should be on developing materials as part of a strategic initiative to reach Spanish-speaking workers, their employers, and their communities with practical information that can assist in preventing workplace injury and illness.[29]

Finally, the area generally agreed to be most in need of information and knowledge transfer is small business.[30] It is time the various components of "small business" are differentiated and plans are devised that focus on the unique issues of the subcategories. This means that, for example, that businesses with 0–10 employees may have different issues than those with 11–50, 51–100, and 101–250 employees. More specific

characterization of the hazards and resources of those various small businesses should be explored and the information requirements assessed. There may be a need for size-specific OSH programs because small businesses are not homogeneous entities in terms of capacity to address OSH issues.

FURTHER ATTENTION TO ECONOMIC ISSUES IN PREVENTION

There is a growing realization that occupational safety and health professionals need to be able to convey information about workplace risks and controls not only in epidemiologic and industrial hygiene terms, but also in economic terms.[31] This is illustrated by the efforts to quantitatively characterize the return on investments in occupational safety and health. One approach is the Return on Health, Safety and Environmental Investment (ROHSEI®) used by the Organization Resource Counselors.[29] Critical in making the business case for OSH investment is the impact of ill health or hazardous work conditions on productivity. The link between health and productivity has been recognized for centuries as the cornerstone for healthy economy.[33] At the enterprise level, if the health of an employee or of a worker is adversely affected by his or her work, there will be an adverse cost to the employer as well.[31,34] The most visible form of adverse cost is workplace absence.

Major steps have been made in assessing the costs of occupational injury and disease,[13] but more needs to be done. At issue is the need to characterize the full range of societal costs, particularly the indirect costs, such as the costs associated with productivity changes, costs shifted to the medical care/insurance system, and the costs of pain and suffering.

One of the critical gaps in considering this issue is the need for validated measures of workplace productivity and techniques for translating them into employer costs.[35] Without such measures, research associating health and illness with productivity loss and studies demonstrating the impact of programs to reduce work loss and cost have no framework for understanding and comparison.[35] The issues of the influence of health on productivity, the return on investment, and making the business case for OSH investments should be a major focus for the field. This is especially needed for small- and medium-sized enterprises.

ADDRESSING THE GLOBAL INTERCONNECTEDNESS OF OCCUPATIONAL SAFETY AND HEALTH

Globalization is the process of growing interdependence between all people on the planet—linked together by trade, investments, and governance. Globalization also refers to the increasing integration of economics and information systems around the world. Despite potential gains that can occur from globalization, there is concern that globalization can adversely impact jobs, rights, safety, and health.[36] There is a growing literature on the health effects of job change and insecurity.[36–38] The rapid movement of capital puts pressure on labor to be compliant and to work in precarious circumstances or lose the opportunity to work. Increasingly, pressure may be put on workers in developed countries to work faster, harder, and in riskier ways to compete with foreign, cheaper labor and work conditions unencumbered by health and safety regulations. It is necessary to increase the awareness of decision makers and the public of the importance of occupational health for the overall development of a country. While the OSH community has a rich history in sharing information on a global scale, further efforts to address global issues are needed.[39] Attention to OSH issues in developing countries by specialists in developed countries may also impact the developed countries by "leveling the playing field" with regard to workers' safety and health.[40] That is, control and regulatory costs may rise in nations not currently investing in occupational safety and health.

Various efforts are under way to address the global aspects of OSH. The central focus has been the development of a global strategy by the World Health Organization to: provide evidence for policy, legislation, and support to decision makers, including work carried out to estimate the magnitude of the burden of occupational diseases and injuries; provide infrastructure support and development through capacity building, information dissemination, and networking; and support protection and promotion of workers' health. This is being addressed through a work plan that organizes WHO collaborating centers into 15 task forces that carry out projects in priority areas, supporting the implementation of the global strategy.[41,42] The success of this effort will be a result of the extent to which the participants on the 15 task forces can develop and implement projects and disseminate and apply findings. There continues to be a need to influence decision makers in all countries to pay special attention to the importance of OSH at the enterprise and national economy levels.[43,44]

CONCLUSION

Over the past few decades, the nature of work in established market economies has undergone significant changes. These changes have resulted in a shift of adverse working conditions. While traditional physical, chemical, and biological risks still are significant, new risks involving psychological stress and overload are becoming increasingly important. Sedentary work is leading to a decrease in physical activity and to an increase in obesity. The time might be approaching for a holistic approach to the health of workers, one that considers work and non-work risks, and one that leads to the integration of OSH and public health. The focus

of the OSH field also needs to expand to address intervention effectiveness, better and more comprehensive surveillance, information and knowledge exchange, and a clearer economic characterization of the costs of occupational injury and disease and the benefits of prevention and intervention. Meanwhile, the interconnectedness of countries and economies leads to competing benefits and consequences for the health of workers. The OSH field should continue efforts to operate on a global scale to protect these workers.

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