Advancing Worker Health and Safety in the Developing World

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Learning Objectives

- Contrast the work force in developed and developing countries, and take note of the implications of these differences for workers' safety and health.
- Summarize the magnitude of health risks in the developing world and the major occupational causes of death.
- Describe the economic aspects of lowering health risks in the workplace, key measures for achieving this, and the impact of globalization and free trade zones.

Abstract

Objectives: *Working conditions in the developing world seldom meet the minimum standards required by international agencies. This article addresses some of the major obstacles to occupational and environmental health and suggests methods by which they can be overcome.* ***Methods:*** *International agencies such as the World Health Organization (WHO) and the International Labor Organization (ILO) offer a number of programs that address the problem.* ***Results:*** *The results of international efforts to date have been disappointing. There is a need for renewed efforts on the part of international agencies and the developed countries.* ***Conclusions:*** *Occupational health and safety can be advanced in the developing world with modest funding of innovative programs.* (J Occup Environ Med. *2005;47:132–136*)

Workers around the world—despite vast differences in their physical, social, economic, and political environments—face virtually the same kinds of workplace hazards. More than 80% of the world's workforce resides in the developing world. These workers disproportionately share in the global burden of occupational disease and injury. Some of the classic occupational diseases, eg, silicosis and lead poisoning, that have been substantially eliminated in industrialized countries remain endemic elsewhere in the world. Whether this high and preventable burden of ill health faced by developing world workers is arrived at by ignorance, inattention, or intent, there is compelling evidence that work-related health conditions could be vastly reduced, often at modest cost.

Despite country-to-country differences, there are other distinguishing features of the developing world workforce that are worth noting. For one, their distribution by economic sector is different than their first-world counterparts. Compared with single-digit percentages elsewhere (eg, in the United Kingdom, approximately 2%), developing countries employ upwards of 70% of their economically active population in the agricultural sector.[1] For many of these workers, the distinction between health at work and health at home is blurred because health in the workplace is integrated into all aspects of daily life for these often-subsistence farmers. For example, pesticide poisoning is a hazard faced

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by the worker and his/her family and community.

The informal workforce, including self-employed, household-based unpaid labor (eg, family members), and independent service workers such as street vendors, which in industrialized countries is rarely larger than 10% of total employment, looms large in the developing world. Recent estimates place informal nonagricultural employment in much of Latin America at approximately 58% and in sub-Saharan Africa at approximately 75%. In India and Indonesia, the informal economy accounts for 90% of the women working outside agriculture, whereas in Benin, Chad, and Mali the proportion is 95%.[2] The contribution of the informal economy to gross domestic product (GDP) has been estimated at between 7% and 38% of total GDP in 14 countries of sub-Saharan Africa, between 16% and 32% in Asia, and between 12% and 13% in Mexico. In India, the informal economy generates approximately 62% of GDP, 50% of gross national savings, and 40% of national exports.[2]

Informal economy workers often are unprotected in the regulatory arena even in the developed world, a circumstance made even worse when in the developing world their vulnerable employment status often is coupled with other problems of poverty and ill health. Cottage industry workers abound in the informal sector, and here home-based work can blur the distinctions between occupational and other environmental hazards. Not uncommon across the developing world is the lead-poisoned adult who manufactures batteries in crude facilities at home while his (and her) lead-poisoned child is exposed by sleeping and playing in the room next door.

The migrant workforce is increasing worldwide, estimated at about 120 million.[3] In the developing world, immigrant workers often perform work deemed unattractive (eg, seasonal agricultural work in the United States, service sector work in the United Kingdom), but the issues of a migrant workforce in some parts of the developing world take on even greater import. In Southern Africa, for example, migrant mining workers face the extraordinary burden of risk for the triad of silicosis, tuberculosis, and HIV, diseases that are inextricably linked to interactive determinants of workplace, housing, social, and economic factors.

Workers in the developing world face different risks in the health transition than do their counterparts in the developed world. They may be exposed to the combined and often synergistic risks of both traditional and emerging hazards. Workers also may face unregulated and unprotected exposures to known hazards just as these same hazards, eg, silica and asbestos, were faced decades ago by millions of workers in the developed world. A significant difference, though, is that developing world workers are now being exposed when knowledge is widespread about the risks and best means to prevent them. But even as these developing world workers are forced to replay history—despite the availability of information and knowledge transfer unthinkable just a generation ago—they also face other hazards, including the production, marketing, and importation of environmental hazards.[4]

Occupational Disease and Injury

The overall picture that emerges from all parts of the developing world is one of increased health and safety risks in all occupations for which data are available. The International Labor Organization (ILO) estimates that there are 2.7 billion workers globally.[3]

Dramatic changes in the labor force will occur as globalization and population growth continue to have an impact on the global economy. For example, the labor force in Latin America and the Caribbean is one of the fastest growing in the world, with 217 million workers in 2000 expected to reach 270 million workers in 2010.[5] The burden of disease and injury due to workplace risks in the formal and informal sectors is grave, and will continue to deteriorate. Because of inadequate data and reporting systems, capturing the impact of workplace risks is difficult.

The gravity of workplace risks is seen in the recent ILO estimate that at least 2 million deaths per year are caused by occupational diseases and injuries. The ILO estimates for fatalities are the tip of the iceberg, as data for estimating nonfatal illness and injury are not available for most of the globe. ILO also notes that about 4% of the GDP is lost as the result of work-related diseases and injuries.[3]

The ILO estimates of global child labor are sobering. In its 2002 Report, A Future Without Child Labor, ILO states that almost 250 million children, which is approximately one in every six children aged 5 to 17 on the face of the globe, are involved in child labor. Of these, some 180 million (one in eight) are exposed to the "worst forms" of child labor, that is, hazardous work that endangers the child's physical, mental, or moral well-being. Two thirds of these children are younger than the age of 15, and approximately 60 million are 15–17 years old. The working children are in occupations with exposures to hazards known to cause illness or injury in adults.[6] The 137 nations that have ratified ILO Convention 182: Worst Forms of Child Labor (1999) have accepted obligations to remove children under 15 from workplaces, and to define what constitutes hazardous work for children aged 15–17 and to implement preventive and protective measures. The complex and unacceptable global situation of child labor requires action to assist needy countries to address the problem. As all nations have working teenagers, there is opportunity to share guidance already in place in many countries.

The World Health Organization (WHO) found that occupational injuries result in approximately 330,000 deaths per year per 2.7 billion workers. Contrast this to the approximately 6000 deaths per year per 150 million workers in the Untied States attributed to occupational injuries. As in the developed world, high injury fatality rates in the developing world are clustered in certain sectors, including agriculture, construction and mining. Occupational injuries account for more than 13 million Disability-Adjusted Life Years (DALYs) and 10% of unintentional injuries worldwide.[7]

WHO found that 37% of all back pain worldwide is attributable to work, resulting in an estimated 0.8 million DALYs, significant loss of time from work and high economic loss. Worldwide, 16% of all hearing loss was attributable to workplace exposures, resulting in 4.2 million DALYs.

In total, the few occupational risk factors considered here were responsible for about 800,000 deaths worldwide in 2000. Not considered by WHO, because of a lack of global data, are the additional 1.2 million deaths estimated by ILO to be caused by work-related risks.[3] The leading occupational cause of death was unintentional injuries, followed by chronic obstructive pulmonary disease and lung cancer. Workers who developed outcomes related to these occupational risk factors lost about 25 million years of healthy life. Among the occupational factors analyzed in this study, injuries, hearing loss and chronic obstructive pulmonary disease accounted for approximately 80% of years of healthy life lost. Low back pain and hearing loss have in common the fact that they do not directly produce premature mortality, but substantial disability.

The Case for Occupational Health and Safety

In developed countries, there are compelling economic incentives for employers to control risks for injury and illness on the job, especially those that result in demonstrable "near-term" lost work or function. These include the high cost of medical care (especially in the United States); the burden of workers' compensation payments; high replacement costs for the labor; risk of litigation and liability; and negative business consequences of adverse publicity. Although these factors may differ slightly from country to country and sector to sector, they are less likely in the developing world to confer on the employer a strong economic imperative for prevention—labor is plentiful, its replacement cost low, and, most importantly, a high portion of the real cost of injury and illness will not be borne by the employer. The recently reported case of Latin America is staggering. Although it is estimated that 2–4% of the GDP of the region is lost because of occupational fatalities alone, there is evidence of virtually no private sector investment to reduce the risk.[8]

One exception to this formulation are the multinational companies, to whom for many, costs of injury and illness may accrue in the parent country in terms of liability for suit and adverse publicity, a lesson well taught by Union Carbide's experience in the aftermath of the Bhopal disaster.

Although the perceived economic benefits are lower, the costs of preventive measures for employers may exceed those in developed countries, at least relative to other labor costs. Indeed, this factor has been cited as one of the major reasons private sector investment in occupational health remains, in most developing countries, lower than other investments in human capital.

Therein is the paradox that, despite evidence of the cost-effectiveness of workplace strategies, economic incentives are lacking when the cost of the status quo is not borne by those who would need to bear the cost of prevention. Hence, there is insufficient economic incentive for change.

The data are clear that workplace illness and injury produce terrible personal suffering and severe economic costs. The ILO estimates that approximately 4% of the global GDP worldwide is lost as the result of work-related diseases and injuries.[3] The European Agency for Safety and Health at Work indicates that the costs to society in European countries ranged from 0.4% to 4% of gross national product.[9] It is of interest to society, employers and workers to know what interventions can successfully reduce or prevent injuries and illness at work. In 1996, stakeholders in the United States identified intervention effectiveness research as one of 21 priority areas in occupational health research for the next decade.[10] From 1996 to 2002, research conducted or funded by the National Institute for Occupational Safety and Health to develop and evaluate the effectiveness of solutions to prevent work-related injury and illness has increased nearly sixfold, from about $5.5 to $33 million.[11]

The health of a country's workforce, even more than the health of the country's overall population, is critical to its economic and national security. No country has become a successful economic power without sustained attention to the health of workers, who create the successful economy. Responsibility for the safety and health of workers lies with government, employers and the workers themselves. But it is the governmental framework, whether at a national and local level or both, that is the linchpin upon which other efforts rest.

The potential to continually improve work-related health status, as measured by morbidity and mortality data across multiple economic sectors and across many countries, has been compellingly demonstrated. Not surprisingly, since these conditions are inherently preventable, what may be the achievable lowest level of risk is debated in developed countries. In the United States, for

example, occupational injury fatality rates have been steadily declining, now approaching 3.8 per 100,000 workers, down from 7.5 just 20 years earlier.

Key elements to improving worker health and safety—regardless of the level of development—include regulatory and enforcement framework; worker, employer and health professional education; surveillance and reporting systems; and dissemination and implementation of best practices. Often, these elements overlap in what of necessity are multifaceted approaches to addressing complex and disparate work settings.

Globalization

Globalization has brought work-related hazards to developing countries lacking the infrastructure and professional capacity to adequately handle them. It is incumbent upon the national and international bodies responsible for globalization to assist the recipient nations. Organizations with proven track records in occupational health, such as those described in this article, could play key roles if international and national laws provided the appropriate context and funding.

Increased globalization has effected some important changes in the equation for many developing countries. A country passes through a sequential series of developmental stages: underdevelopment and poverty, industrial revolution and accelerated "boom" of economic development, internal adjustments to strengthen national competitive power to enter "globalized" markets, adjustments for the "foreign policy" to integrate "globalized" markets, and aims toward a long-term sustainable human development. On the risk side, for example, free trade agreements have intensified rapid industrialization, the export of industry and materials–many hazardous–to regions with poor occupational infrastructure. These effects are likely enhancing risk and rates of injury and occupational disease

However, globalization has engendered major development projects around occupational health and safety, most notably sponsored by Scandinavian governments.[12] These initiatives have infused expertise, training programs, and equipment, and provided much needed (external) economic incentives for adoption of change on national, regional, or local levels. The major concern is sustainability, since the incentives are external.

Globalization has resulted in a rapid increase in the number of multinational companies operating outside developed countries—indeed this was the underlying economic intent of recent free trade agreements such as the North American Free Trade Agreement (NAFTA). In general, these companies bring with them a highly developed infrastructure in occupational health practice from their base countries. Unfortunately, although these "model" companies undoubtedly upgrade the availability of high-quality services and training, enhance workers awareness and create pressure on other industries in the region to conform, it is likely that the pressure goes in both directions. In other words, the competitive advantage of lowered investment in health and safety, so long as the labor markets are plentiful and the direct costs to employers of illness and injury very low, may result in pressure to minimize, or at least reduce the intensity and quality of services.

Even at their best, multinationals may inadvertently create an occupational health and safety "caste system." Many provide extremely high levels of care and service for their international managers and technical support staffs, while offering "local" resources to indigenous workers. More broadly, occupational clinics, industrial hygiene services, and the like are often developed, but available only for the exclusive use of the multinationals, creating almost "gated" communities inside which modern occupational health exists whereas outside, little has changed. Often the reverse has actually occurred, as the limited numbers of trained MDs, occupational health nurses, industrial hygienists, and safety professional are drained to the higher-paying, more prestigious positions.

The free trade zones, established by treaties such as NAFTA, create special considerations. Although the agreements offer the potential to incorporate strong "first-world" rules regarding labor, environment and health in underdeveloped zones, there is often resistance by the host countries who perceive these rules as trade restrictions. The final language regarding health and safety in NAFTA, for example, is significantly less stringent than rules in the US. Moreover, there is often resistance to even these rules on the part of some multinationals who seek broad economic relief as a foundation of moving "across the border."[13]

Nonetheless, globalization does offer some potential solutions. One is the linkage by international lending agencies such as World Bank and International Monetary Fund of health and safety considerations to developmental loans. In order to accept the developmental funds, control of health and safety conditions could thereby be mandated and enforced. A second opportunity is voluntary initiatives, as recently developed in the Apparel Industry Partnership, wherein a consortium of US and European garment manufacturers agreed to control labor and safety practices in their developing country facilities by joint consent. A third approach is to greatly expand the professional capacity building and technical assistance provided by existing strong collaborations fostered by WHO and ILO, including the Global Network of Collaborating Centers.[14] Models for international partnership of developed and developing nations exist in regional programs like the WHO/ILO Joint Effort on Occupational Safety and Health in Africa.[15]

Finally, the impact of collaborative research projects between universities and governments of developed countries and counterparts in developing ones should not be underestimated. In this way much of the information necessary for local control may be developed, and in a context in which translation to policy or practice is fostered. Moreover, since there are strong incentives on both sides to undertake such collaborations, it is likely that their numbers and breadth will increase in coming times, a basis for optimism about the future.

Conclusions

The burden of occupational health and safety problems is staggering in both human and economic costs, and it is borne disproportionately by workers in the developing world. Moreover, the most vulnerable—children and the poorest—also are disproportionately at risk. Compounding this tragedy is that many effective and economically feasible interventions are available to address these largely preventable health conditions.

Despite relatively little systemic data on cost and cost-effectiveness, even the "tip of the iceberg" picture demonstrates work-related conditions contributing significantly to overall mortality and morbidity and demonstrates the overall societal benefit accrued by their prevention and treatment. Externalization of costs by employers—to the society as a whole—often obscures the actual overall benefit of a framework that relies on governmental regulation and enforcement, education and best practices. Effectively addressing these problems takes active involvement from national and local government, employers, and workers and their representatives. The challenges to reducing the burden are heightened to the degree that public health and health care delivery systems isolate occupational health from the mainstream of health and health care.

Despite this high burden and structural and political barriers to overcoming them, there is evidence of enormous progress in the developed world and of isolated progress in parts of the developing world. Targeted future investments in research and public health and health systems are critical to assuring that progress continues and is more equitably distributed.

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