

ORIGINAL RESEARCH

Evaluation Studies on Education in Occupational Safety and Health: Inspiration for Developing Economies

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Abstract

BACKGROUND Education and training of students, workers, and professionals are essential for occupational safety and health (OSH). We noticed a lack of debate on how to advance coverage and quality of OSH education given high shortages in developing economies.

OBJECTIVES International discussion on future options might be stimulated by an overview of recent studies.

METHODS We employed a search of the Cochrane Library and PubMed/MEDLINE databases for articles from the last decade on evaluation of OSH education.

FINDINGS We selected 121 relevant studies and 6 Cochrane reviews. Most studies came from the United States, Western Europe, and Asia. Studies from low-income countries were scarce. From a global perspective, the number of evaluation studies found was disappointingly low and the quality needs improvement. Most commonly workers' education was evaluated, less often education of students, supervisors, and OSH professionals. Interactive e-cases and e-learning modules, video conferences, and distance discussion boards are inspiring educational methods, but also participatory workshops and educational plays. Ways to find access to underserved populations were presented and evaluated, such as educational campaigns, farm safety days, and OSH expert-supported initiatives of industrial branch organizations, schools, and primary, community, or hospital-based health care. Newly educated groups were immigrant workers training colleagues, workers with a disease, managers, and family physicians.

CONCLUSIONS Developing economies can take advantage of a variety of online facilities improving coverage and quality of education. Blended education including face-to-face contacts and a participatory approach might be preferred. For workers, minor isolated educational efforts are less effective than enhanced education or education as part of multifaceted preventive programs. Collaboration of OSH experts with other organizations offers opportunities to reach underserved worker populations. Increasing international collaboration is a promise for the future. National legislation and government support is necessary, placing OSH education high on the national agenda, with special attention for most needed professionals and for underserved workers in high-risk jobs such as in the informal sector. International support can be boosted by a high-level international task force on education and training, funded programming, and a global online platform.

KEY WORDS education, training, occupational health, safety, evaluation, developing economies, developing countries

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INTRODUCTION

A Need for Education and Training. A recent overview of global working conditions and adverse effects on health and safety presented as World Health Organization (WHO) and International Labor Office (ILO) conclusions that of all fatalities in industrial countries, some 5%–7% are attributed to work-related illnesses and occupational injuries. The economic cost is equivalent to a range of 1.8%–6% of gross domestic product (GDP).¹ Based on the “Workers’ Health: Global Plan of Action” (2007), WHO encourages strongly the education of workers, employers, primary health care practitioners, and professionals for occupational health services. Workers’ health should be integrated in basic training for health care.² It is regarded as a workers’ right in all countries to be well informed, educated, and trained in safety and health at work.

Education in occupational safety and health (OSH) is needed urgently in developing economies.¹ A few examples may serve as illustration. Kumar et al reported about welders in India exposed to flying sparks and particles, ultraviolet radiation, metal fumes, and many other risks. Awareness of hazards and safety precautions was limited and only 20% of them had institutional training.

The authors refer to studies on welders in Saudi Arabia, Pakistan, Nigeria, and South Africa with similar observations and recommend an educational campaign, besides enforcement of safety regulatory measures to control the informal sectors.³ Migrant workers in Oman exposed to pesticides in greenhouses were studied by Esechie et al. Hygiene was poor, personal protective equipment (PPE) was hardly used, and health symptoms were reported frequently. The authors recommend adequate legislation for mandatory PPE provisions and regular training programs.⁴ Education on safe handling of pesticides in a high-risk region in India was evaluated by Sam et al. Knowledge, attitude, and practice improved. They too recommend continuous education and training programs for agricultural workers.⁵

Anderson et al concluded, after studying farmers’ concerns in Alabama, USA, that medical students should be educated in farming practices including

occupational exposures when interested in a rural area practice.⁶ A training course for health care professionals on farmers’ occupational health needs started in Iowa, USA, in 1974 and expanded gradually. This 40-hour course is now also given in Turkey and Australia.⁷ In addition, because only about 10%–15% of the global workforce has access to occupational health services, it is a great challenge to educate large numbers of OSH professionals being experts in OSH prevention and health care tasks. Rantanen et al estimated a global need of 312,000 more OSH experts to be educated.⁸ A tremendous task has to be done in newly industrialized and least developed countries. Delclos et al started a discussion about competencies and curricula in developing and developed countries.⁹ The Occupational Hygiene Training Association (OHTA) created free high-quality e-modules for occupational hygiene and ergonomics to meet a growing demand.¹⁰

Education of Workers Alone Is Insufficient. One of the reasons why improvement of working conditions stagnates is the absence of effective education of workers. Some authors believe that working conditions will improve over the long term when the educated, trained worker becomes an integral part of workplace safety programs.¹¹ Others have strong concerns over the influence of education and training in the real-life situations.¹² We agree that education and training alone cannot solve all problems in health and safety. Just offering education can be an inadequate answer to complex problems when legislation and inspection are needed as well as comprehensive prevention programs in which workers and employers cooperate not only in education but also in improving working conditions and social relationships. On the other hand, health risks and high job demands cannot always be eliminated. High-demand jobs can even be challenging such as teaching adolescents, firefighting, removing asbestos in demolition work, or treating patients with AIDS or Ebola. Therefore, education in how to cope with risks is necessary for many jobs, today and in the future.

Interestingly, education is also a component in new OSH interventions such as on how to retain a job while having a chronic disease as rheumatoid arthritis or serious hearing loss. Workplace health promotion, motivated by epidemics threatening the working population and facilitated by companies accepting social responsibility, can include training such as on how to prevent obesity, cardiovascular diseases, or HIV/AIDS.

¹Most publications in health sciences use the term *developing countries* for all non-high-income countries. Presumably it is more correct nowadays to use the term *newly industrialized countries* to refer to, for example, China, India, Brazil, Turkey, and South Africa. We have chosen the term *developing economies*, aware of still existing problems in terminology.

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