Journal of Occupational and Environmental Hygiene ›
Volume 11, 2014 - Issue 5

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Original Articles

Global Estimates of the Burden of Injury and Illness at Work in 2012

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Pages 326-337 | Published online: 14 Apr 2014

Cite this article https://doi.org/10.1080/15459624.2013.863131

Abstra

This arti strategies to tackle he article is based on ation (AIHA) at its 20 cupational burde occu c cost estimate ation on the problem f internati r Organiza EU), institutio essful solution comes at

ageing are clearly on the increase, while the number of occupational injuries has gone down in industrialized countries thanks to both better prevention and structural changes. We have estimated that globally there are 2.3 million deaths annually for reasons attributed to work. The biggest component is linked to work-related diseases, 2.0 million, and 0.3 million linked to occupational injuries. However, the division of these two factors varies depending on the level of development. In industrialized countries the share of deaths caused by occupational injuries and work-related communicable diseases is very low while non-communicable diseases are the overwhelming causes in those countries. Economic costs of work-related injury and illness vary between 1.8 and 6.0% of GDP in country estimates, the average being 4% according to the ILO. Singapore's economic costs were estimated to be equivalent to 3.2% of GDP based on a preliminary study. If economic losses would take into account involuntary early retirement then costs may be considerably higher, for example, in Finland up to 15% of GDP, while this estimate covers various disorders where work and working conditions may be just one factor of many or where work may aggravate the disease, injury, or disorders, such as traffic injuries, mental disorders, alcoholism, and genetically induced problems. Workplace health promotion, services, and safety and health management, however, may have a major preventive impact on those as well. Leadership and management at all levels, and engagement of workers are key issues in changing the workplace culture. Vision Zero is a useful concept and philosophy in gradual hat themsel with economi risk manage rement, and corporat k life. We consider ered a daily activity. able work life w the legal retire

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Based on different starting points the International Labor Organization (ILO) and the World Health Organization (WHO), have made estimates of occupational injuries and illnesses or burden of disease. ILO has made global estimates from the point of view of occupational burden and WHO from the health point of view. Both of them have come to the conclusion that of all fatalities in industrial countries some 5– 7%[(,)] is attributed to work-related illnesses and occupational injuries. This percentage is somewhat smaller in developing countries where non-occupational health problems have a bigger share.[()] While new information gradually becomes available from various sources, and when work processes, work environment, and working populations change quantitatively and qualitatively, updates of the estimates become important. Better evidence is needed for policy and practices in countries, companies, and organizations. This article and related presentation provide the latest updated information for such purposes. The article is based on the Yant Award Lecture of the American Industrial Hygiene Association (AIHA) at its 2013 Congress.

Economic cost studies related to injuries and illnesses have been carried out using different methods. The most appropriate method has been the incidence approach where new injuries, diseases, and disorders occurring in a particular year are counted. Once this is known—e.g., by using the attributable fraction (AF) method—all direct and indirect costs can be calculated, including costs that are extended to the expected total work life y long term disabiliti mature retireme dies and estimate of work-related i GDP.

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data for occupational injuries may be replaced by a proxy, a country, or an average of several countries that have closely resembling economic structures and methods of production and work cultures, and that have reported such data well.

Occupational injuries (accidents) are followed and recorded in many countries and the ILO, European Union (EU), and to some extent other regional organizations collect and record such national data. However, national systems are usually poorly standardized and international comparisons are difficult. The best recorded data involves fatal injuries and this is also the starting point for estimating the number of less severe injuries. The methodology on establishing more comparable estimates for occupational deaths and injuries has been described in several papers while the methodology has gradually been improved.[4–6]

Reliable and comparable occupational disease statistics based on compensated cases are not available at the global level. This lack has been compensated for by the population attributable fractions (AF) for work-related illnesses—a wider concept than the usually legally defined term of “occupational diseases.” The AFs are commonly used to measure the component or fraction of such illnesses and deaths that are related to work. Those fractions have been extensively studied in developed countries but very limited information from developing countries exists. WHO mortality tables by different regions provide background data and by using the AF component as a percenta ch disease or group vidual member latest possible

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vi. communicable diseases: AF = 8.8% (4.8% male, 32.5% female, the latter being high due to occupational infections in the health sector). This high AF value was adjusted for developing countries where health sector exposure is small compared to other exposures in agriculture and elsewhere, such as tropical diseases, bacteria, viruses, and vector-borne diseases.

Studies adapted by ILO for use as global estimates state that the overall AF for work-related causes was 6.7% (2005).() The AF method is widely used to assess work-relatedness of a broad range of diseases and disorders.

These AF values have been adapted from those used originally in Finland.() These have been used in other parts of the world, in particular, by ILO and in Australia,() New Zealand,() and Alberta, Canada.() Estimates based on these AF values have been reviewed to be the most representative globally() so far. While somewhat different AF values have been used, such as those by Steenland (2003),() new information has come much closer to the above-mentioned AF values used by the ILO. For example, Rushton et al.,() have demonstrated that occupational cancer in the U.K. kills 8010 people annually. After this study a group from the International Agency for the Research of Cancer (IARC), led by MacGormack() have shown that the number of mesothelioma cases can be used as an indication and proxy for asbestos exposures that do cause both mesothelioma and lung cancer. The number of deaths caused by lung cancer could be estimates have be ually (Takala/I .() A compara

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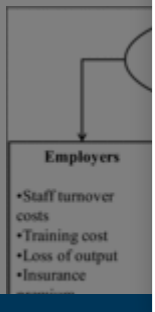
Figure 1



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The ILO has estimated that 4%% of annual global GDP, or US$2.8 trillion, is lost due to the direct and indirect costs of occupational accidents and diseases, including lost working time, workers' compensation, interruption of production, and medical expenses.()

Many studies on the economic cost of workplace injuries and diseases have been conducted. Leigh() estimated that the national cost of work-related injuries and diseases in the United States amounted to US$250 billion (1.8% of GDP). Safe Work Australia estimated that the costs of work-related injuries and illnesses for Australia were AU$57.5 billion (5.9% of GDP)() for 2005–2006 and AU$60.6 billion (4.8% GDP) for 2008–2009.() The European Agency for Safety and Health at Work made a Member State Survey on the estimated economic costs: some results are as follows()

- Norway() 6.0% of GDP (not in the EU report)
- Sweden 4.0% of GDP
- Finland() 3.8% of GDP
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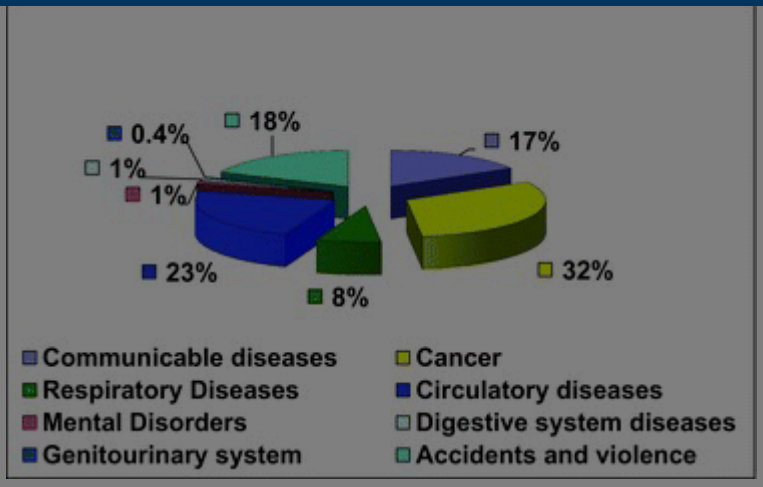

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In estimating the economic costs the Workplace Safety and Health (WSH) Institute in Singapore reviewed the methodologies and cost models from different countries and global estimates when developing a preliminary economic cost model for Singapore. In this model, Figure 1, the Institute determined the cost of work-related injuries and ill health that would be borne by employers, workers, and the community. Cost items linked to staff turnover, training of replacement workers, loss of worker output, insurance premiums, and legal costs incurred were computed as costs borne by employers. The costs borne by workers included expenses beyond those covered by compensation for medical treatment, rehabilitation, and loss of future earnings. Cost items like social payouts, costs of investigation, inspection, and promotion activities, and loss red as costs borne by unt the cost from pro

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Figure 3 Work-related annual deaths - EU and the pattern in other industrialized countries (Sources: Hämäläinen P, Takala J, Saarela KL; TUT, ILO, EU-OSHA).

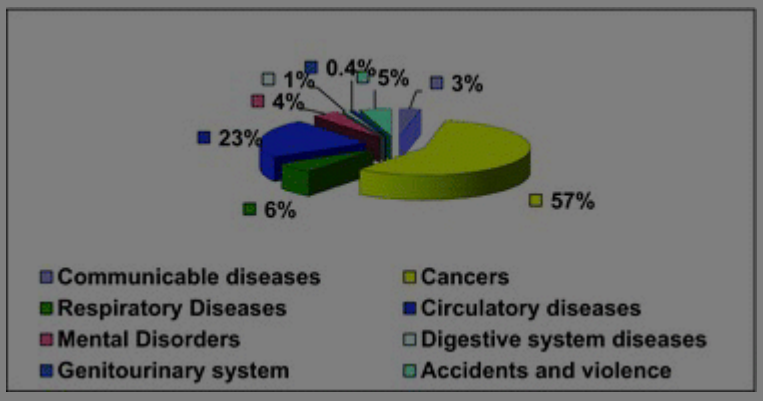

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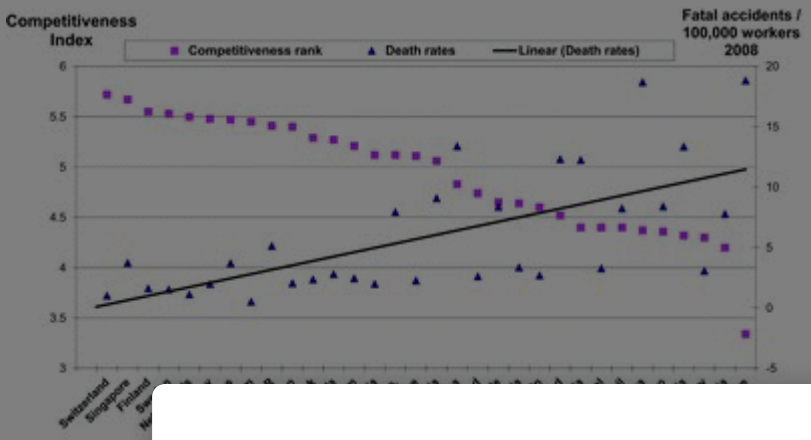
Figure 4 Inverse correlation of competitiveness and occupational safety (Source: WSH Institute and World Economic Forum Lausanne, Switzerland, 2012–2013 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012–13.pdf.



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more important. Long-term latency disorders continue to grow and cause fatalities—for example lung cancer and circulatory diseases—and long-term absences caused by musculoskeletal disorders and psychosocial factors. These are ranked as major problems by enterprises and organizations in economic sectors employing a large number of people. These are ranked as major problems by enterprises and organizations in economic sectors employing a large number of people, such as government and municipal workers, health and education sectors.

Competitiveness and safety and health go hand-in-hand; the lower the number of accidents the higher is the competitiveness and productivity. Figure 4 illustrates the link between competitiveness as measured by the World Economic Forum() in 2013, and total accident rates using data reported to the ILO.(6) While ILO data are from the year 2008, the total global numbers have not changed radically from the past. The United States had 96,000 fatal work-related diseases and 5,300 fatal occupational injuries including an adjustment for under reporting, while the competitiveness ranking was the highest in the world in 2008; today the United States is ranked seventh. Canada had 11,330 fatal work-related illnesses and 479 fatal occupational injuries and its competitiveness ranking today is 12.

Regions follow WHO Regions except for the high-income countries and EU27 that are separately covered and excluded from corresponding WHO Regions in Table II.

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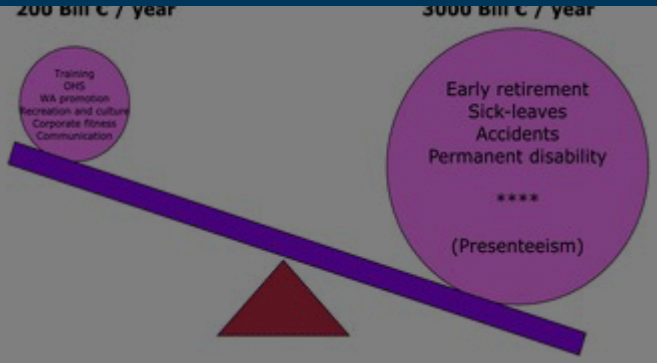

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The only region or group where the level of accident reporting is relatively close to expected numbers is the group of high-income countries. In contrast, most other regions have low levels of reporting. This will also provide a false picture to decision makers believing that there is no reason to be worried. This in turn will become not only an economic obstacle to increasing competitiveness and productivity but will continue to increase pressures for basic human rights. No country has shown a high level of competitiveness and productivity while maintaining poor safety records. Such links exist for companies and organizations as well while small- and medium-sized enterprises may not have firsthand feedback of poor working conditions in the form of accidents that are statistically not common in smaller populations.

Figure 6 Perceptions of people are different from reality (Sources: S. Hertlich, M. Hamilo, S. Kuval

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The EU data related to occupational injuries have been separately studied by Eurostat through a self-reported injury and illness survey in all EU Member States. The result of this study concluded that in the EU27 there were 7 million occupational injuries, or 3.2% of the workforce, in 2007.() This validated perfectly the ILO estimate, mentioned previously, that arrived at 7.37 million occupational injuries based on ILO data from 2008, data collection must have been earlier than that. On the other hand 8.6% of workers in the EU-27 experienced a work-related health problem in the past 12 months, which corresponds to 20 million workers.

Economic costs in Singapore

The estimated cost in Singapore was equivalent to 3.2% of the Singapore GDP in 2011. This is comparable to similar studies done by other countries, e.g., Australia (4.8%) and the ILO (4%). Workers bore about half of these costs (51%) while the rest is shouldered by employers (22%) and the community (27%).

The circumstances in Singapore reflect those of other highly developed countries. As a result of having overcome most communicable diseases as a cause of death, the relative importance of non-communicable diseases and disorders is constantly increasing. Some diseases that have a clear linkage to work are work-related cancers, circulatory diseases, chronic respiratory diseases, musculoskeletal disorders, and psychos

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1. Establishing a Research Agenda setting priorities for the continuous search for evidence for policy and practice()

2. Building a Risk Observatory or Observatory for Workplace Landscape (OWL).()

Often perceptions drive action more than real evidence and it is important to highlight the difference between media interest, public attention, and real evidence for policy and practice. Media, including social media, are vital for communication, for reaching large number of stakeholders, workers, small and medium-sized enterprises (SMEs), the informal sector, migrant workers, and vulnerable groups, and to foster a safety culture at places of work. Figure 6 illustrates, however, that misperceptions in assessing risks exist. In particular statistical risks are not easy to assess correctly. Further, common everyday risks are underestimated and complicated technologically and risks not easily controlled by individuals are overrated.

Leadership, management, and systems thinking at all levels() and related worker engagement have been identified as key for efforts to ensure workplace safety and health.() Recent experiences from mega-projects such as the London Olympics construction effort were successful exactly because of emphasis on and continuous follow-up of these factors.()

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Labelling of Chemicals (GHS) labelling requirements. One groundbreaking and new longer-term concept, or philosophy, is Vision Zero. The idea is to change the values and mindset of all stakeholders from business as usual and ensure zero accidents, zero illnesses, zero exposures, zero violence, zero harassment, simply zero harm during an entire working life as the ultimate goal. So far it has been launched for selected special needs already, such as the Swedish traffic vision.[()]

CONCLUSION

KKey action programs should concentrate on finding solutions and reducing exposures for illnesses that have a long latency period. For each injury and illness there are many factors with influence on the negative outcomes. Cultures that start from committed and capable leadership in the organization need to be developed and presently known best practices as well as new innovations at an organization and country levels need to be identified and used. In addition to laws, enforcement, and health and safety services, media including social media should be better used for promotion of safety, health, and well-being at work.

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