

Chronic diseases and individual risk for workplace injury

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Among adults in the USA, the prevalence of obesity is approximately 36%, diabetes or prediabetes 11% and asthma 8%.¹⁻³ Globally, deaths from non-communicable diseases, including cancer, ischaemic heart disease and stroke, accounted for two of every three deaths in 2010.⁴ Based on the prevalence of these illnesses, along with the estimated high medical costs to treat them, chronic diseases are considered the major public health challenge of the 21st century.⁵ At the same time, fatal and non-fatal occupational injuries also exact a significant toll on society. In 2011, nearly 4700 workers were killed on the job and another three million non-fatal injuries and illness were reported by private industry employers in the USA.^{6,7} Around the world, road traffic injuries, including those that occur during work, are also a leading cause of death.⁵ While chronic diseases and injury tend to be studied and addressed in separate domains, the nexus of these areas is significant, especially since employed adults spend an estimated 30% of their day at work.⁸

Kubo *et al* make an important contribution to the literature regarding the effects of chronic disease on occupational injury risk.⁹ A growing number of studies have explored obesity as a risk factor for injury, and these authors extend this line of inquiry to investigate how chronic diseases correlate with acute traumatic injury, including first aid and Occupational Safety and Health Administration (OSHA)-recordable injuries. The authors reported that when modelled individually, the presence of asthma increased the hazard of injury by 14%; diabetes increased the hazard of injury by 17%; heart disease increased the hazard of injury by 23%; and depression increased the hazard of injury by 25%. Kubo *et al* also used a general health insurance risk score, based on medical claims data and intended to reflect general health, and found an overall

increased risk of injury as risk score decile increased.⁹

Although the observed effects reported by Kubo *et al* were modest, especially when compared with other well-documented risk factors for injury such as job demand, the findings are important for several reasons. First, the number of US working-age adults who reported having at least one of seven major chronic conditions was at 58 million by 2006.¹⁰ This number is likely to increase as individuals with chronic diseases remain in the workforce until later years in life. Kubo *et al*, remind us that while efforts to reduce occupational injury should include efforts to change the environment, occupational policies and behaviours, implementing effective workplace health promotion initiatives may have an added benefit of reducing injury risk.

Second, there has been increased attention by the US National Institute for Occupational Safety and Health as part of their Total Worker Health initiative to integrate occupational safety and health protection with health promotion.¹¹ Four modifiable health risk behaviours—lack of physical activity, poor nutrition, tobacco use and excessive alcohol consumption—are responsible for much of the illness, suffering and early death related to chronic diseases.⁴ While Kubo *et al* did not examine the pathways through which chronic conditions increase injury risk, identifying the pathways could help inform effective interventions. For example, the association between chronic disease and injury may be due to comorbidities such as fatigue or medication use, which may inform future research and prevention. Consistent with the emphasis of Total Worker Health, integrating these two areas supports the notion that, ‘a healthier workforce is a safer workforce, and a safer workforce is a healthier workforce’.¹²

Third, these data reflect the impressive access of the study team to a rich dataset of almost 40 000 employees at a large multinational company. The analysis illustrates the value of administrative data in studying workplace injury risk, and the unique ability to include first-aid injury in addition to OSHA-recordable injuries.

Assessment is one of the core functions of public health and having robust data systems that allow linkages across health records, injury records, exposure and medical claims presents a tremendous opportunity to greatly advance the field.

The research by Kubo *et al* raises important questions upon which other studies can build. Future research could extend the knowledge on chronic disease and injury by exploring how the presence and interactions of multiple chronic conditions affects injury, or the important effects of medication use for these chronic conditions on occupational injury risk. As efforts continue to prevent chronic diseases and injury, research documenting the link between these two areas bolsters support for an integrated approach to workplace safety and health. Furthermore, as suggested by Kubo *et al*, the development of effective intervention strategies to improve worker health would reduce the prevalence of chronic disease and related health costs, and likely affect injury risk.

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Commentary

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