

Health and safety has saved lives at work – It has not prevented disability

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Abstract

Health and Safety (H&S) regulation has been one of the most successful public health interventions of the twentieth century, dramatically reducing fatal workplace injuries in high-income countries. However, while H&S has been effective in preventing death and acute injury, it has been far less effective in addressing the dominant occupational health problem of the contemporary workforce: work-related disability. This commentary argues that traditional H&S frameworks – designed for external, acute, measurable hazards – are ill-suited to chronic, multifactorial, context-dependent conditions such as musculoskeletal pain, burnout, and common mental disorders. It examines the limitations of ergonomics when applied through a narrow biomechanical lens, critiques the conflation of compliance with health outcomes, and identifies the medicalization of a systems problem. The commentary then proposes a modern H&S paradigm focused on sustaining work capacity, integrating psychosocial hazards, prioritizing autonomy and recovery, and accepting the uncertainty inherent in chronic health problems. Saving lives was the first chapter. Preventing disability must be the next.

Keywords: Occupational health, Work disability, Health and safety, Ergonomics, Psychosocial hazards, Prevention

Introduction

Health and Safety regulation has been one of the most successful public health interventions of the twentieth century. Across high-income countries, fatal workplace injuries and exposure to lethal occupational hazards have declined markedly over the past five decades. Improvements in machine guarding, chemical control, construction safety, and regulatory oversight have transformed work from a common cause of death into a comparatively safe activity. Between 1990 and 2020, fatal workplace injuries in the UK declined by approximately 80% [1]. This achievement is substantial and should be fully recognized.

However, while Health and Safety has been highly effective in preventing death and acute injury, it has been far less effective in addressing the dominant health problems of the contemporary workforce. Today, workers are not primarily exiting employment because work is unsafe in the traditional sense. Instead, they are leaving because they develop persistent pain, fatigue, mental distress, and reduced work capacity. These conditions rarely result in mortality, but they are the leading drivers of sickness absence, long-term disability, and economic inactivity [2–4].

This mismatch raises a fundamental question: *why has a system so effective at preventing fatal harm been unable to prevent work-related disability?*

Recent scholarship has extended this analysis. The Lancet Series on Occupational Health (2023) [5] called for integrating health protection with health promotion. The WHO/ILO Joint Estimates of the work-related burden of disease (2021) [6] quantified the global impact of occupational risk

factors. And a growing literature on “sustainable employability” examines how work can be designed to maintain capacity over the life course [7]. This commentary builds on these contributions by focusing specifically on the gap between traditional H&S and the prevention of work disability.

Before proceeding, a definitional note is necessary. In this commentary, “disability” refers to work disability – the limitation in functional capacity to perform job tasks due to a health condition. This is distinct from (a) sickness absence (the behavioural outcome of time off work), (b) clinical diagnosis (the medical label), and (c) disability as a legal or social status. The relationship between these constructs is not linear. A worker may have chronic pain without work disability, or work disability without a formal diagnosis. This commentary is primarily concerned with the first of these constructs: work disability.

The Changing Nature of Occupational Harm

Traditional Health and Safety frameworks were developed to address hazards that were external, acute, and measurable. The prevailing model – identify hazards, control exposure, prevent injury – remains highly effective for risks such as falls, toxic exposures, and mechanical trauma.

In contrast, the most prevalent work-related health problems today are chronic, multifactorial, and context dependent. Musculoskeletal pain, burnout, and common mental health conditions do not behave like chemical hazards. They emerge gradually, fluctuate over time, and are shaped by interactions between physical load, psychological stress, organizational context, and individual beliefs [8–10].

Yet many Health and Safety systems continue to apply the same logic used for acute hazard control to chronic health problems. This approach struggles to account for conditions that cannot be eliminated through engineering controls alone and that do not have clear exposure thresholds.

What about Work Causes Disability?

Research consistently identifies specific work characteristics that predict long-term work disability. High psychological workload, low job control, poor supervisory support, and fear of symptom recurrence are stronger predictors of prolonged absence than many biomedical variables [11–13]. These factors do not operate in isolation. They interact: high workload without control is more damaging than high workload with autonomy. Poor support exacerbates fear. Fear leads to avoidance. Avoidance leads to disability. Understanding these mechanisms is essential for designing effective prevention.

Ergonomics: Progress and Limitations

Ergonomics was intended to bridge the gap between safety and health by adapting work to human capabilities. Ergonomic interventions have improved comfort and task efficiency and reduced some forms of acute strain. However, population-level data indicate that these interventions have not reduced the overall burden of musculoskeletal pain or sickness absence [14–16].

Systematic reviews consistently show that ergonomic adjustments, when implemented in isolation, have modest or inconsistent effects on pain, disability, and return-to-work outcomes [14,17]. This is not because ergonomics is ineffective, but because it is often applied through a narrow biomechanical lens.

Contemporary ergonomics – particularly cognitive and organizational ergonomics – has evolved to incorporate psychosocial factors, workload management, and participatory design. The critique offered here is directed at the narrower, biomechanically-focused application that remains common in many practitioner settings, not at the full scope of ergonomics research.

Contemporary pain science demonstrates that pain is not a simple indicator of tissue damage. It is influenced by cognitive, emotional, and social factors, including fear, stress, expectations, and perceived control [18–20]. Ergonomic approaches that focus exclusively on posture or “optimal” movement risk reinforcing beliefs that the body is fragile and easily damaged, which may paradoxically increase disability [21].

Compliance Versus Lived Health

Modern Health and Safety practice often equates success with compliance. Risk assessments are completed, workstations meet standards, and policies are documented. However, compliance does not necessarily translate into improved health outcomes.

A task can be ergonomically “safe” while remaining psychologically unsustainable. A job can meet all regulatory requirements while exposing workers to excessive workload, low autonomy, poor recovery opportunities, and chronic stress. In such cases, Health and Safety systems may provide procedural reassurance without addressing the factors most strongly associated with long-term work disability [3,22].

This creates an illusion of control: harm appears to be managed, while sickness absence and disability continue to rise.

Why Sickness Absence Remains High

Evidence from occupational health and public health consistently shows that long-term sickness absence is driven less by diagnosis than by a combination of work demands, psychosocial context, and individual expectations [11,13,23]. Factors such as workload, lack of control, poor supervisory support, and fear of symptom recurrence are stronger predictors of prolonged absence than many biomedical variables [11,12].

Health and Safety systems were not designed to address these determinants. They aim to prevent injury events rather than to sustain work capacity over time. As work has become less physically hazardous and more cognitively and emotionally demanding, this limitation has become increasingly evident.

The Medicalization of a Systems Problem

In response to rising sickness absence, organizations often rely on healthcare interventions. Workers are referred to physiotherapy, occupational health, or psychological therapy. While these services are valuable, they are frequently tasked with managing problems that originate from work design rather than individual pathology.

This medicalization risks shifting responsibility away from organizational factors and onto individuals – though it is important to acknowledge that some occupational health models (e.g., UK Fit for Work, Dutch Gatekeeper protocols, Australian Return to Work programs) explicitly integrate workplace modification. The problem is not medicalization per se, but the fragmentation between healthcare and workplace systems that persists in many settings.

Workers are treated and returned to unchanged environments, increasing the likelihood of relapse and repeated absence [24]. Without parallel changes to work demands, autonomy, and recovery opportunities, clinical interventions alone are unlikely to produce sustained improvements.

Work as a Determinant of Health

A central limitation of traditional Health and Safety is the assumption that work is neutral once hazards are controlled. In reality, work can be health-promoting or health-damaging depending on how it is organized.

High-quality work characterized by autonomy, task variety, social support, and meaning is associated with better physical and mental health outcomes [2,25]. Conversely, poorly designed work contributes to chronic stress, pain, and disengagement, even when safety standards are met.

Health and Safety frameworks rarely evaluate whether work is sustainable over time. Instead, they focus on whether it is compliant at a given moment.

Towards a Modern Health and Safety Paradigm

The success of Health and Safety in preventing fatal injury should not obscure its limitations in addressing disability. A modern approach would expand its remit beyond hazard elimination to include capacity protection and health sustainability.

Such an approach would:

- integrate ergonomics with contemporary pain science and behavioral science,
- recognise that discomfort does not equate to danger,
- prioritise variability, autonomy, and recovery,
- treat psychosocial hazards as core occupational risks,
- and support adaptation rather than attempting to eliminate all load.

Concretely, this would mean risk assessments that include psychosocial hazards (workload, control, support) alongside physical hazards; metrics that measure work sustainability (e.g., sickness absence rates, presenteeism, job tenure) not just compliance; and interventions that prioritize worker autonomy and recovery, not just hazard elimination. Regulators, employers, and occupational health professionals each have a role. Regulators could update guidance to include psychosocial risk management. Employers could embed health sustainability into performance metrics. OH professionals could advocate for work design changes alongside individual rehabilitation.

Importantly, this shift requires acceptance of uncertainty. Chronic health problems do not lend themselves to simple thresholds or checklists. They require judgement, dialogue, and system-level change.

Limitations and Counterarguments

Several counterarguments merit consideration. First, the rise in reported disability may partly reflect improved awareness and reduced stigma, rather than a genuine increase in harm. Second, expanding the H&S remit could risk diluting focus on acute safety

– a legitimate concern given that fatal injuries, though reduced, have not been eliminated. Third, integrated approaches have been tried in some jurisdictions with mixed results; there is no guarantee that a broader paradigm would succeed where narrower ones have not.

These concerns are valid. The argument here is not that traditional H&S has failed, but that it is incomplete. A modern paradigm would not abandon hazard control; it would add capacity protection as a complementary goal.

Caveats: Global Context and Population Factors

This commentary focuses on high-income countries, where fatal injuries have declined and chronic disability has become the dominant concern. In low- and middle-income countries, acute occupational hazards remain the primary challenge. The arguments here are not directly transferable to those contexts.

Additionally, non-occupational factors also contribute to disability trends. Workforce ageing, rising multimorbidity, and changes in health expectations have occurred alongside shifts in work organization. These factors are not the primary focus here, but they contextualize the disability trends discussed and suggest that any solution must consider both work and non-work determinants.

Furthermore, the disability burden is not uniform across the workforce. Women, manual workers, and those in lower socioeconomic groups experience higher rates of work-related disability, reflecting differences in occupational exposure, access to support, and health expectations. Any adequate response must attend to these disparities.

Conclusion

Health and Safety has saved lives by protecting workers from acute harm. That achievement remains one of its greatest contributions to public health. However, the dominant occupational health challenge of the twenty-first century is no longer mortality, but disability.

Preventing work-related disability will require Health and Safety to evolve from a system focused on controlling hazards to one focused on sustaining human capacity. This does not diminish its historical success; it builds upon it.

Saving lives was the first chapter. Preventing disability must be the next.

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