



Work-Related Burden of Absenteeism, Presenteeism, and Disability: An Epidemiologic and Economic Perspective

Marnie Dobson, Peter Schnall, Ellen Rosskam, and Paul Landsbergis

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Abstract

As noncommunicable chronic diseases rise in prevalence globally, so are the years individuals are living with disability, particularly disability resulting from mental health disorders such as depression, musculoskeletal disorders, and

M. Dobson (✉) · P. Schnall (✉)

Center for Occupational and Environmental Health, University of California, Irvine, CA, USA

e-mail: mdobson@uci.edu; pschnall@workhealth.org

E. Rosskam

Center for Social Epidemiology, Los Angeles, CA, USA

P. Landsbergis

SUNY Downstate School of Public Health, Brooklyn, NY, USA

e-mail: Paul.Landsbergis@downstate.edu

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cardiovascular disease (CVD). The psychosocial work environment including work-related psychosocial stressors, such as high demands, low job control (job strain), effort-reward imbalance, low social support, work-life conflict, bullying, and harassment, are significant contributors to these disorders, as well as to disability pensions, sickness absence, and presenteeism. These outcomes represent a substantial financial burden to workers, organizations, and societies. While many high-income countries provide social protection programs, including universal health care and state disability pensions that help to mitigate the burden of chronic disease on the worker, the USA has a very limited social safety net. Additionally, the USA is one of the few remaining high-income countries that do not officially recognize work-related psychosocial risks, which would require employers to identify and reduce psychosocial hazards to the same extent as other occupational hazards. Recognition by employers as well as by health policy-makers in the USA, that psychosocial risks pose a significant health and financial burden, is necessary.

Keywords

Psychosocial work stressors · Chronic illness · Disability · Absenteeism · Presenteeism · Costs · Productivity · Sick leave · Workers' compensation

Introduction

Disability adjusted life years (DALYs) is a measure of both years of life lost due to disability and years lived with disability. Globally, ischemic heart disease was the leading cause of DALYs in 2010 (Murray et al. 2012). While mortality rates are decreasing, particularly in high-income countries mostly due to aggressive treatments for cardiovascular disease and high blood pressure, the years lived with disability (YLDs) are increasing (Global Burden of Disease Study 2013 2015). Additionally, most cases of cardiovascular disease occur after people leave work, impacting their well-being and shortening their lifespan but not adding much to years lived with disability. Globally there have been substantial increases between 1990 and 2013 in the prevalence of and YLDs due to noncommunicable chronic diseases (NCDs) (ibidem). The leading causes of YLDs are musculoskeletal disorders (with low back pain at the top of that category) and mental and substance abuse disorders (predominantly major depressive disorders and anxiety) (ibidem). Musculoskeletal disorders (MSDs) accounted for over 20% of YLDs globally in 2010, partly a product of aging populations, but also driven by rising obesity rates and physically demanding work, as well as physical inactivity in many jobs, which are a crucial component of health-care costs in high- and middle-income countries. Mental health disorders, particularly major depressive disorder and substance abuse disorders, accounted for over 21% of YLDs (Murray et al. 2012).

There is a significant body of evidence documenting that working conditions, in particular psychosocial work stressors arising from the nature of modern work, are significant contributors to mental health disorders (Theorell and Aronsson 2015),

musculoskeletal disorders (Hauke et al. 2011), hypertension, diabetes, obesity, and cardiovascular disease (Schnall et al. 2016). The contribution of the psychosocial work environment to these chronic illnesses and to the resulting disability outcomes as well as to increases in absenteeism (i.e., lost work days), presenteeism (i.e., reduced productivity due to working while ill or injured), and related costs will be explored in this chapter.

The Role of Working Conditions in Disability, Absenteeism, and Presenteeism

Working conditions can contribute to the prevalence of illness and disability via two mechanisms. Injuries and illnesses specifically related to recognized occupational hazards can result in increases in workers' compensation claims and productivity losses due to short- and long-term sick leave, absenteeism, and presenteeism. In addition, there is a robust literature recognizing that stress arising from the ways in which work tasks are organized and how policies and practices are implemented by an organization constitute psychosocial hazards that can lead to ill health, disability, and death. Research demonstrates that job strain (high demands, low control) low social support, effort-reward imbalance, bullying, as well as other work organization factors (e.g., long work hours, shift work, and precarious work) are causal factors. These work-related psychosocial and other work organization factors act as "stressors" by triggering the biological "fight or flight" stress response on a chronic basis, which, over time, can lead to long-term physiological changes, including changes in blood pressure, inflammatory effects, and metabolic changes (Landsbergis et al. 2017a). Research shows that psychosocial work stressors contribute to the incidence of occupational injuries and musculoskeletal disorders (Farnacio et al. 2017; Hauke et al. 2011) as well as chronic illnesses such as depression (Theorell and Aronsson 2015), hypertension (Landsbergis et al. 2013a), cardiovascular disease risk factors (diabetes, obesity), and cardiovascular disease (Theorell et al. 2016). These are also some of the most prevalent illnesses contributing to YLDs and DALYs globally.

Recognizing that aspects of the work environment contribute to the incidence and prevalence of disability means that the workplace and the organization of work are important points of intervention to prevent illness, therefore potentially preventing a proportion of disability related to mental health disorders, musculoskeletal disorders, and cardiovascular disease risk factors (hypertension, diabetes, and obesity). Some countries require employers to pay into a workers' compensation fund to be used in the event of a work-related injury or illness. National recognition of the contribution of psychosocial hazards, however, is largely insufficient. Encouragingly, a number of high- and middle-income countries, although not the USA, have come to recognize that work-related psychosocial hazards significantly impact organizations by negatively affecting the health and well-being of working people, increasing health-care costs, and decreasing productivity due to absenteeism and presenteeism. Consequently, work-related psychosocial hazards are regularly researched and regulated

in a number of countries because they are understood as impacting health-care and disability costs and represent a substantial economic burden on state health-care and disability systems, as well as on individuals (EU-OSHA 2014). In the USA, psychosocial stressors are mostly not recognized as work-related or compensated by workers' compensation insurance, nor are they calculated into the costs of occupational injuries and illnesses. Furthermore, they are not regulated as occupational health risks, with some exceptions, such as workplace violence, fair scheduling laws, nurse staffing laws, and bans on mandatory overtime for nurses.

Psychosocial Work Stressors, Musculoskeletal Disorders, and Occupational Injuries

Given that musculoskeletal disorders and occupational injuries are among the leading causes of disability worldwide, the impact of psychosocial work stressors on MSDs and injuries has been a robust area of investigation. Jobs requiring high physical demands, such as lifting, kneeling, or standing, are related to increased risk of injuries and musculoskeletal disorders and subsequent likelihood of long-term sickness absence or disability pension (Sundstrup et al. 2017). However, after controlling for physical work factors, some studies and reviews have found moderate evidence for the role of psychological demands, emotional demands, job insecurity, work-family imbalance, hostile relationships with supervisors or coworkers, and effort-reward imbalance on musculoskeletal disorders or occupational injuries (Farnacio et al. 2017; Hauke et al. 2011). In a review and meta-analysis of 54 longitudinal studies, statistically significant, small to medium effects were found on the risk of onset of MSDs for low social support, high job demands, low job control, low decision authority, low skill discretion, low job satisfaction, and high job strain (Hauke et al. 2011). It was estimated that the onset of MSDs is elevated 15–59% among employees exposed to psychosocial work stressors and recommended that interventions to prevent MSDs focus on both physical and psychosocial risk factors.

Psychosocial Work Stressors and Chronic Mental and Physical Illness

A growing occupational epidemiology literature, including many prospective cohort studies, has investigated the role of psychosocial work stressors on mental health problems and chronic physical illnesses (e.g., CVD and CVD-related risks) in working populations. Work stressors have also been shown to affect chronic illnesses indirectly by influencing health behaviors, including leisure time physical activity, smoking, and alcohol consumption, all of which are considered risk factors for obesity, diabetes, and heart disease (Schnall et al. 2016).

The strongest and most consistent research documents the effects of job strain – work that is high in psychological demands, and low in control or “decision latitude” – on burnout (Aronsson et al. 2017), depression (Theorell and Aronsson 2015), high blood pressure (Landsbergis et al. 2013a), diabetes (Huth et al. 2014),

and cardiovascular disease (Theorell et al. 2016). Effort-reward imbalance (ERI) (i.e., work that is associated with a high level of effort or “over-commitment” with a mismatch in levels of reward) has been associated in longitudinal studies with depression (Rugulies et al. 2017), high blood pressure (Gilbert-Ouimet et al. 2014), and cardiovascular disease (Schnall et al. 2016). Bullying has also been shown in recent longitudinal reviews to be strongly associated with mental health problems (Theorell and Aronsson 2015), and more recently with cardiovascular disease (Xu et al. 2018). Low social support, low organizational justice, long work hours, work-family conflict, job insecurity, and other work stressors also have been shown to have modest levels of effect on mental and physical health problems (Theorell and Aronsson 2015).

Psychosocial Work Stressors and Population Attributable Risk (PAR) Percent

Job strain is one of the work stressors with consistently strong evidence of adverse health effects and that provides elevated estimates of population attributable risk percent (PAR%) (i.e., how much of a disease could be prevented in a population if the risk was eliminated). This is important as it allows policy- and other decision-makers to interpret how much work stressors contribute to various negative health outcomes, to disability, and other productivity outcomes and are therefore preventable. PARs help policy- and other decision-makers use evidence to set priorities and allocate funds to improve population health, economic health, and overall social well-being.

Population attributable risk percent for job strain has been estimated at 14% for common mental health disorders and at 15% for depression, which means that some 14–15% of new cases of mental health disorders or depression could be prevented by eliminating job strain (LaMontagne et al. 2010). In a study of the Australian workforce, it was estimated that 5.8% (AU\$730 million) of the societal cost of depression for 1 year could be attributed to job strain (LaMontagne et al. 2010). A recent review article discussed new research that shows cumulative exposure to job strain has a stronger adverse effect on the risk of depressive symptoms at follow-up and that other work stressors, not included in these calculations, also contribute to depression and other mental health problems (Theorell and Aronsson 2015), indicating that the PAR% might be even higher.

Research on job strain and cardiovascular disease has also demonstrated significant population attributable risks. The PAR% for job strain and acute ischemic heart disease (IHD) has been estimated at 5%, assuming a job strain prevalence of 22% and a risk ratio (RR) as low as 1.3 (Theorell et al. 2016). Moreover, this is just one work stressor (job strain), and many stressors have shown independent effects (Choi et al. 2015). In 2013, the International Commission on Occupational Health (ICOH) Scientific Committee on Cardiology in Occupational Health concluded that between 10% and 20% of cardiovascular mortality in working-age populations can be attributed to work (Tokyo Declaration).

Psychosocial Stressors, Disability, and Workers' Compensation

Disability is defined as a physical or mental impairment that affects one or more areas of daily life activities, including work, but is not considered work-related. The Americans with Disabilities Act protects those with disabilities from discrimination due to their disability, requiring workplaces, schools, and other institutions to accommodate individuals who have mental or physical impairments/differences. Disability insurance programs replace some of the wages lost by workers who cannot work because of a disabling injury or illness that is not work-related. If it is considered "work-related" then workers can file for workers compensation in the USA (Monaco 2015) (Box A).

Box A – US Disability Insurance and Workers' Compensation: A Special Case

Social protection programs vary by country, impacting who bears the burden of costs related to illness or disability (i.e., the state, the employer, or the worker), and to what extent people are protected. The USA, for example, has a social safety "net," not a solid protection "floor" through which no one can fall. In the event of work-related injuries or illnesses, employer or state workers' compensation funds provide some financial protection to workers. Every state has its own workers' compensation laws defining what is a "compensable" work-related injury or illness, which are contained in statutes, and vary from state to state. Under the law in most states, every business must have some form of workers' compensation insurance to cover injured employees. Workers' compensation systems are the primary mechanisms through which employers can be held financially responsible for the health and safety of employees.

In practice, there are significant barriers to workers' filing compensation claims resulting in significant underreporting of occupational injuries or work-related pain, and use of sick leave or vacation time to recover from what is, in reality, a work-related injury or illness. Financial hardship is a strong disincentive for workers to file a claim for workers' compensation, especially in low-wage occupations. There is an unknown time period between filing a claim and actually receiving any benefits; there is the likelihood of having to cover unpaid medical bills if claims are denied; and even if claims are awarded, wage replacement is significantly lower than the individual's previous wage, increasingly so as absence from work continues. In the USA, because successful claims made by workers can cause an employer's workers compensation insurance premium to increase, trigger an investigation, or create a negative reputation for the company (or all of the above), employers often discourage workers from making claims through the workers' compensation system. Workers can be "pressured" or "encouraged" to use their health insurance to pay for their health-care needs, instead of filing a legitimate

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workers' compensation claim. The protections that workers can receive through workers' compensation are not necessarily equivalent to those they may receive through health insurance. An important result of this mendacious approach is that costs incurred by work-related illnesses get externalized (i.e., not counted as part of a company or organization's bottom line) and are not counted as work-related, leading to significant underestimates in official work-related illness data (Rosskam 2007).

Unlike many other high- and middle-income countries including the European Union and Canada, in the USA psychosocial work stressors and their resultant health effects are not recognized as work-related and are, therefore, not compensable by workers' compensation. If burnout, anxiety, depression, MSDs, or cardiovascular disease prevent a worker from being able to work and require them to take short-term or long-term disability leave, their employer may provide disability benefits, but employers are not required to have disability insurance in the USA (Monaco 2015). More likely in such cases, workers would request disability payments through Social Security Disability (SSDI) or Supplemental Security Income (SSI), both of which are federal government programs offering cash benefits to disabled individuals. The programs have very different financial eligibility requirements. SSDI is available to workers who have accumulated a sufficient number of work credits, while SSI disability benefits are means-tested, available to low-income individuals who have either never worked or who have not earned enough work credits to qualify for SSDI. The amount of the monthly benefit depends on one's earnings record. The cost of disability includes money in lieu of wages paid to employees because they are unable to work, the time lost at work, and the costs of administration. These costs can include those due to temporary disability, permanent partial, and permanent total.

There are many obstacles in filing for and getting approved for disability payments through these programs. For both programs, the process of filing for disability is long. Initial claims can take 4 months (or longer) to be evaluated, after which over 60% are rejected. A request for reconsideration can take several months as well, and around 85% of those are rejected as well. If one chooses to file a new claim, they face starting all over, with the resultant waiting periods, after which they may be rejected once again. If they choose to appeal their case before an administrative judge (the most commonly recommended course of action), 2 years can pass by until the case is heard.

In the USA, relying on long-term disability benefits through either SSDI or SSI can mean living at or below the federal poverty level. The costs of work-related disability are borne by the affected individuals, employers, and by society. The loss of income has a substantial financial and general negative impact on the many working people experiencing disability. The absence of federal or state laws in the USA requiring employers to prevent illness related

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to workplace psychosocial stressors means that afflicted workers often return to or remain in the same conditions. Because of the lack of regulation and many of the costs being externalized, there are few incentives for employers to improve the organization of work.

Psychosocial work stressors contribute to workers' compensation and disability costs when they contribute to injuries and illnesses that are recognized as compensable. However, identifying and quantifying the contribution of work stressors to these costs is quite complex. Robust evidence indicates that psychosocial work stressors can play a role in illnesses such as burnout, depression, hypertension, and heart disease, but these generally are not recognized as work-related (Jauregui and Schnall 2009). Instead, these illnesses are most often seen as the result of individual behaviors or genetic history. Recognizing, addressing, and preventing the impact of work-related psychosocial stressors in producing illnesses that may result in disability is an important point of entry for the prevention of illness and disability-related costs.

Longitudinal studies have evidenced an independent relationship between disability and psychological job demands, decision latitude, or job strain (Canivet et al. 2013). In a Finnish prospective cohort study of public sector employees, those exposed to job strain were 2.6 times more likely to have a disability pension at follow-up. This relationship was replicated in aggregated work-unit level measurements of job strain and after controlling for health behaviors, prevalent diseases, psychological distress, and self-rated health (Laine et al. 2009).

Disability has been strongly associated with psychological distress, depression, and chronic work stress. One Canadian study found an interaction effect; a combination of having a psychiatric disorder and a chronic physical condition plus chronic work stress was associated with the highest odds of disability (Dewa et al. 2007). Effort-reward imbalance was associated with disability related to depression in a large Finnish cohort, and the authors also found that the combination of job strain and ERI doubled the risk of disability pension due to depression (Juvani et al. 2018).

Disability due to cardiovascular disease may be more difficult to predict compared to depression-related disability or disability from MSDs, since the etiological time frame is longer in the development of CVD, and in older persons there are frequently multiple work- and non-work-related disorders. In certain populations, however, job characteristics have been strongly associated with disability due to CVD. Occupations requiring vigilance and responsibility for others, such as air traffic controllers, airline pilots, flight attendants, professional drivers, teachers, and manual workers (machinists, carpenters etc.), have the highest rates of cardiovascular disability. In a study of autoworkers using employer administrative data, disability claims for hypertension, CVD, and psychological disorders were higher among assembly line workers and workers in a facility with 10 more overtime hours per week than other facilities (Landsbergis et al. 2013b). Understanding the

factors that might contribute to disability leave in workers with CVD could be an important area for prevention. A longitudinal study of health- and work-related predictors (e.g., alcohol, smoking, obesity, physical inactivity, job strain, ERI, social support, and shift work) of disability in employees with and without cardiometabolic diseases found these predictors accounted for 24% of the excess work disability in hypertension, 28% in diabetes, and 11% in heart or cerebrovascular disease (Ervasti et al. 2016).

In addition, a meta-analysis of four prospective studies has shown that employees who have suffered a first heart attack or other coronary heart disease and return to work to a job with job strain or effort-reward imbalance are 65% more likely to have a recurrent (second) case of coronary heart disease (Li et al. 2014). Due to improved medical care and an aging workforce, more and more employees are returning to work with heart disease. The clear implication of this research is that to reduce disability and to increase healthy and productive aging at work, sources of work stress need to be reduced.

Psychosocial Stressors and Absenteeism

Absenteeism is generally defined by employers as “a habitual pattern of absence from work obligations without good reason” and is generally considered as an employee performance problem. Some absences are protected by law (e.g., US Family Medical Leave Act) or by organizational policies (e.g., sick leave or vacation time). In the USA, however, there are no federal laws requiring employers to provide paid sick leave, and many workers, especially those in low-wage, part-time, or precarious jobs, do not receive any sick leave or vacation time from their employers. Therefore, workers without sick leave who are ill or have sick family members or other pressing obligations often have little choice but to take an “unexcused” absence without pay or to come to work sick (i.e., “presenteeism”). For women, and those with chronic health problems, absences due to sickness or to family responsibilities are generally higher than for men. Providing adequate paid sick leave for all workers would result in some progress toward addressing both “absenteeism” and “presenteeism” and address gender and class inequalities. However, sick leave is costly and is also a predictor of disability pensions and of higher morbidity and mortality (Westerlund et al. 2004), therefore preventing illness by reducing psychosocial stressors is essential.

Psychosocial work stressors have been shown in many studies, including now many prospective studies, to be strongly associated with sickness absence (Mather et al. 2015). In particular, low decision latitude has repeatedly been related to increased sickness absences, while high skill discretion and supervisor support have been associated with lower sickness absences (Rugulies et al. 2007). These studies have shown that specific psychosocial work stressors affect short-term and long-term sickness absence differently and differ by gender. Other studies addressing the demand-control-support model (job strain), effort-reward imbalance, and exposure to violence at work also have been shown to be related to increased sickness

absences (Ndjaboue et al. 2014). A systematic review and meta-analysis of 17 prospective studies on workplace bullying and sickness absence showed that exposure to bullying increased the risk of sickness absence by an odds ratio of 1.58 (95% CI 1.39–1.79) (Nielsen et al. 2016).

Some research also has estimated the proportion of sickness absences due to the psychosocial work environment. In a follow-up study of 52 Danish workplaces using employer sickness absence data, etiologic fractions were estimated and showed that psychosocial factors explained 29% of all sick-leave days (in particular, decision authority, social support from supervisors, psychological demands, and predictability) (Nielsen et al. 2006). And in a 3-year follow-up study of human service workers, the authors estimated that improving the psychosocial work environment and eliminating violence and threats would reduce 32% of sickness absences in that population (Rugulies et al. 2007).

Workers exposed to psychosocial work stressors are more likely to experience chronic illnesses such as burnout, depression, and hypertension, and those with these illnesses are more likely to take sick leave, thus increasing sickness absence in an organization. There is ample evidence, therefore, that organizations could reduce absenteeism and sick leave utilization by improving the quality of work, reducing psychosocial hazards, and improving workers' health.

Psychosocial Stressors and “Presenteeism”

Presenteeism is widely referred to as working despite being physically sick, mentally ill, injured, or exhausted, resulting in reduced productivity or reduced performance. Many people go to work feeling at less than optimal because they have a commitment to the job or to clients, while others cannot afford to take sick days off or to go on disability. Many have no entitlement to paid sick days. Others are afraid to lose their jobs by not being ever-present at work. Sometimes presenteeism occurs for a combination of these reasons. While the reduction in an employee's performance is an indirect but relevant factor influencing productivity, it is not easy to estimate the prevalence of presenteeism in a workplace or to quantify the costs of lost productivity.

Presenteeism has been identified in studies of specific illnesses in the workplace, including migraines, burnout, and depression, as well as studies of work-life balance (Biron et al. 2006). Presenteeism has been shown to be a response to job stressors, overwork, and company policies and demonstrated to have substantial longitudinal relationships with excessive job demands and burnout (i.e., exhaustion and depersonalization) (Demerouti et al. 2009). Workers mobilize compensation strategies when they experience exhaustion, which can ultimately increase their exhaustion. The reciprocal nature of exhaustion and presenteeism is of considerable importance to address proactively.

The 2011 Québec Survey on Working and Employment Conditions and Occupational Health and Safety found that presenteeism affects more than half of Québec's workforce (Vézina et al. 2011). The study revealed a high prevalence of long-term

presenteeism associated with a number of organizational and physical work demands, in particular low decision latitude, lack of job rewards or recognition, low social support at work, exposure to psychological harassment in the workplace, and frequent exposure to certain physical work demands. It further found women and individuals living in low-income households to be disproportionately affected by poor working conditions and more prone to long-term presenteeism.

To improve the well-being, performance, and productivity of their workforce, employers should make concerted efforts to prevent presenteeism by improving working conditions, reducing work stressors, and preventing burnout. Removing stigmas surrounding mental health problems may help more workers feel safe to report their problems and *not* go to work when they are sick. From a policy perspective, all working people deserve social protection that includes adequate paid vacation (18% of the US workforce has none), paid sick leave, and mechanisms for longer-term disability leave that protects their employment and does not sink them into poverty. While we need a better understanding of the links between presenteeism, workload intensity, and effort-reward imbalance, it is not necessary to wait for improved understanding to introduce interventions.

Economic Burden of Psychosocial Work Stressors

The economic burden of psychosocial work stressors affects workers, organizations, and society, particularly in the USA, through increased illnesses, health care costs, as well as lost time from work. We will also review some of the data showing that work stressors create increased costs to organizations through increased disability, workers' compensation, as well as the costs of absenteeism and presenteeism (EU-OSHA 2014).

Cost to Workers

Workers incur personal, health, social, and financial costs from psychosocial work stressors. Workers exposed to psychosocial work stress are at a higher risk of developing mental health disorders, chronic physical illnesses, and increased mortality (Goh et al. 2015). Psychosocial work stress and resulting illnesses can also lower quality of life and affect family relationships. The financial costs to workers are higher in societies that do not provide social protection such as guaranteed paid sick leave, state disability systems, workers' compensation, or universal health care, or in systems that do not recognize psychosocial stress and resulting illness to be work-related. In the USA, work-related psychosocial risks are not recognized through legislation or regulations, and employers are not responsible since the ill health outcomes are not commonly compensable by workers' compensation. Workers must rely on health insurance – if they have it – to cover health-care costs related to illness from psychosocial work stressors. Health insurance, however, does not provide wage reimbursement. Sometimes health-care services and

treatment needed to address mental health disorders, for example, are not adequately covered by insurance. The result is that many workers with work stress-related health problems pay out of pocket for the health services they may need, go without health services, are absent from work and may lose wages/income, or go to work and function at lower levels of productivity (presenteeism) primarily because they fear losing their jobs if they are absent.

Costs to Organizations

If employers are aware of psychosocial risks in the workplace, there are often assumptions that addressing these risks are more difficult and costly than addressing physical occupational risks. As previously stated, in the USA employers are not legally required to address psychosocial risks. However, evidence suggests that failure to address these risks can also be costly for employers, workers, and societies (EU-OSHA 2014). Unfortunately, estimating the costs to employers and organizations of psychosocial work stressors is not easy as there are very few methods for determining them, and as a consequence, there is little data on financial costs by business or sector of the economy. While some guidelines have been developed to help employers estimate the costs of psychosocial work stressors related to health care, disability, absenteeism, presenteeism, etc., simpler methods are needed (EU-OSHA 2014).

Organizational Health Care Costs Due to Work Stressors

Given that health problems associated with psychosocial stressors are not recognized as work-related in the USA, these costs are not readily measured and can only be estimated. Costs of work-related stress are borne mostly by workers, employers, and society especially through increased use of health care, and increased health insurance premiums and Medicare costs. A recent US study conservatively estimated the effects of multiple workplace exposures (unemployment, lack of health insurance, shift work, long working hours, job insecurity, work-family conflict, low job control, high job demands, low social support at work, and low organizational justice) on health and health care spending using the Medical Panel Expenditure Survey and concluded that approximately 5–8% of health-care costs in the USA could be attributed to workplace stressors (Goh et al. 2015). Goh et al. (2015) suggested that “more attention should be paid to management practices as important contributors to health outcomes and costs in the United States.” Some of that 5–8% of health-care costs impacts employers’ bottom line, as businesses with 50 or more employees in the USA are responsible for providing employees with group health-care plans, whereas in other countries with some form of universal health care or insurance, these costs are borne by governments and taxpayers.

Organizational Costs of Disability from Work Stressors

The costs of disability to employers differ by country. In countries where disability is part of a social welfare system, employers may be less impacted by the cost of disability insurance premiums. Sometimes workers’ compensation – both medical

and indemnity – are included in disability costs. There are additional “hidden costs” of disability which are harder to calculate but involve lost productivity from replacing a worker (with salary and benefits) who is on disability leave. Lost work days from long-term disability leave is estimated in the billions of dollars (EU-OSHA 2014). In an EU-wide study, it was estimated that work-related depression cost the European Union €617 billion annually, and €39 billion (6%) was from the social welfare costs of disability benefit payments. In a Dutch study, it was estimated that job strain cost the country €1.7 billion in just disability payments (EU-OSHA 2014). However, for many countries, data on disability costs at the organizational level is often folded into the cost of absenteeism in general since the state bears the cost of disability pensions, whereas the loss of labor affects organizational costs.

In the USA, employers are not required to offer short or long-term disability benefits, and there are only five states that have state-mandated disability insurance requirements: California, Hawaii, New Jersey, New York, and Rhode Island. Some medium and larger companies do offer disability benefits, with 39% of private industry workers taking part in short-term disability insurance and 33% in long-term disability insurance. The cost of providing short- and long-term disability insurance in the USA is on average \$624/year per full-time employee or 1% of total compensation (Monaco 2015). For an organization to be able to calculate what proportion of their disability costs could be due to work stress, they would have to calculate the proportion of disability due to work stress, which is not readily available in the USA.

Organizational Costs of Absenteeism Due to Work Stressors

Absenteeism is usually measured by measuring the days lost and calculating the lost wages. Another method, called the friction-cost method, also assesses costs such as replacement and retraining costs for the absent worker (EU-OSHA 2014). There is some evidence that job strain and other elements of the psychosocial work environment (decision latitude, skill discretion, bullying) are strongly related to sickness absence (see section above). Some studies have estimated the fraction of sick leave explained by various psychosocial factors, and several studies have concluded that around 20–40% of all sickness absence can be explained by psychosocial factors (Nielsen et al. 2006).

Organizations can use these population estimates to calculate the proportion of sickness absence that is stress-related. The next step is to estimate an organization’s annual cost of sickness absence per employee (the UK Chartered Institute of Personnel and Development (CIPD 2008) estimated this figure to be £666 per employee), and multiply by number of employees applying the appropriate percentage.

Organizational Costs of Presenteeism Due to Work Stressors

For employers, presenteeism is costlier than either absenteeism or short-term disability (Biron et al. 2006). Employers are mainly affected by costs related to presenteeism through reduced productivity. For example, presenteeism has been estimated to cost British employers £605 per year/per employee, representing 58.4% of the overall cost to British employers caused by stress, anxiety, and

depression (EU-OSHA 2014). In Australia, the costs of presenteeism due to work-related stress have been estimated to be AU\$9.69 billion per year, and in Germany it has been estimated to be €2,399 per employee/year (EU-OSHA 2014). In a study of US workers, those with depression reported significantly more health-related “lost productive time” (LPT) than those workers without depression, with 81% of LPT costs being explained by reduced work performance. These authors also estimated that employees with depression cost employers \$44 billion per year in LPT, excluding costs from short- and long-term disability (Stewart et al. 2003).

Cost to Societies

There are multiple methodologies for determining the societal costs related to work stressors and/or to work-related illnesses (e.g., work-related depression) (EU-OSHA 2014). One way is to determine the total cost of illness, then estimate the percentage of work-related cases which gives you the total cost of work-related illness. Another methodology is to sum the different types of costs involved with work-related stress/illness (health care, disability benefits, absenteeism, presenteeism, loss of productivity due to retirement/premature death), to come up with the total cost of work-related stress. Some studies have calculated “attributable fractions” (i.e., the proportion of an illness or financial cost of that illness that can be attributed to psychosocial work stressors) (LaMontagne et al. 2010).

In 2002 the European Commission estimated the cost of work-related stress in the EU-15 at €20 billion a year, based on a total cost of work-related illness of between €189 and 289 billion/year and an estimate that 10% of work-related illness is stress-related (EU-OSHA 2014). The European Agency for Safety and Health at Work report (EU-OSHA 2014) on the costs of work-related stress included studies from multiple countries, all with different methodologies and including different elements (direct costs such as health care, indirect costs such as sick leave/absenteeism, presenteeism, turnover, lost productivity, etc.). Some studies calculated costs based on national data on job strain, others based on “work-related stress” (see Table 1). However, these data are likely to underestimate the financial costs of work stressors, when the contribution of psychosocial work stressors to several major chronic diseases (depression, hypertension, cardiovascular disease, musculoskeletal disorders, and diabetes) is also taken into consideration.

The societal cost of depression for 28 European countries was estimated in 2004 for 1 year, at €118 billion, in the USA at \$83 billion, and in Australia at AU\$12.6 billion (EU-OSHA 2014). The PAR% for job strain and depression was calculated at around 15%, therefore, just in Australia and for one job stressor, the cost of work stress related to depression is AU\$750 million annually (LaMontagne et al. 2010). Similarly, the link between work-related stressors such as job strain and cardiovascular disease is strong (Theorell et al. 2016). The costs of CVD, the leading cause of death globally, in the EU was estimated at €196 billion in 2009 (EU-OSHA 2014). In the United States, the cost of CVD is more than US\$317 billion annually (2011–2012) and is responsible for \$1 of every \$6 dollars spent on health care in the USA (National Center for Chronic

Table 1 Summary of societal costs of work-related stressors from a selection of countries^{a,b}

Country	Type of stress	Costs considered	Estimated societal cost/ year	References
EU-15	Work-related stress	Work-related illness	€20 billion	European Commission 2002
Denmark	Job strain	Health admissions, insurance benefits, sick leave, early retirement, death	DKK 2.3–14.7 billion	Juel et al. 2006
France	Job strain	Medical/health care costs, sick leave/absenteeism, loss of productivity due to premature death relative to retirement age, years of life lost relative to life expectancy	€1.9–3 billion	Bejean and Sultan-Taieb 2005
Germany	Job strain	Direct costs – prevention, rehabilitation, maintenance treatment, and administration; Indirect costs – lost working years through incapacity, disability, and premature death	€29.2 billion	Bodeker and Friedrichs 2011
Netherlands	Psychosocial load	Absenteeism, disability benefits, work-related accidents, risk prevention, safety enforcement, medical costs	€4–6 billion	Blatter et al. 2005; Koningsveld et al. 2003
Sweden	Job strain	Health care, sickness absence, loss of productivity due to early death and retirement	ECU 450 million	Levi and Lunde-Jensen 1996
United Kingdom	Stress, depression and anxiety	Work-related illness and accidents	£7-10 billion	Chandola 2010
Australia	Work-related mental stress	Work-related mental stress claims, disruption of production, medical costs	AU\$5.3 billion	SafeWork Australia 2012
Canada	Work-related stress and stress-related illness	Mental health care, social services, and other costs	CAS\$2.9–11 billion	Shain 2008

(continued)

Table 1 (continued)

Country	Type of stress	Costs considered	Estimated societal cost/year	References
United States	Work-related stress	Stress-related absenteeism, additional overstaffing, counterproductive work performance/poor performance, and staff turnover	US\$200–300 billion	Matteson and Ivancevich 1987; Rosch 2001; Jauregui and Schnall 2009

^aEuropean Agency for Safety and Health at Work (EU-OSHA) Report “Calculating the cost of work-related stress and psychosocial risks” (2014)

^bThis table does not include estimates made in studies from some countries regarding work-related stress costs for specific illnesses including work-related depression, work-related CVD, work-related musculoskeletal disorders, or for work stressors such as workplace violence, bullying or “mobbing,” or harassment

Disease Prevention and Health 2016). According to a consensus of scientific researchers, 10–20% of all causes of CVD deaths among working-age populations can be attributed to work (Tokyo Declaration 2013).

Conclusion

Given the significant rise in the number of people worldwide that are spending years living with disability due to mental health disorders or are losing years of life due to chronic diseases such as ischemic heart disease (Global Burden of Disease Study 2015), it is imperative that we investigate effective ways of preventing these illnesses. Most major international agencies acknowledge that chronic diseases and disability are patterned by global and social inequalities that result in some of the poorest countries being burdened with some of the highest rates of disability and that even in high-income countries, the most vulnerable in terms of socioeconomic indicators suffer from the most illness and disability. However, there is also a significant research literature providing evidence that aspects of the psychosocial work environment are contributing significantly to the chronic disease burden and health inequality, as well as subsequent disability, absenteeism, and presenteeism, as explored in this chapter. As well, there is a growing worldwide literature showing that these consequences are costing businesses and society a substantial amount.

Work stress prevention strategies could reduce a significant portion (PAR%) of mental health outcomes such as burnout, anxiety, and depression, as well as chronic illnesses including hypertension and heart disease, and thus prevent or reduce disability and the resulting costs associated with disability, absenteeism, and presenteeism. Worksite-based programs and policies (LaMontagne et al. 2007), legislation, regulation (Leigh et al. 2015), and collective bargaining (Landsbergis et al. 2017b) can all be effective strategies to reduce work stressors causing disability.

Barriers to Prevention of Work Stress in the USA

Unfortunately, in the USA, two serious obstacles exist to preventing work stress or promoting healthy work and reducing the costs of disability; one is ideological, and the second is financial. First, the medical professions' limited understanding of the role of working conditions in promoting ill health and disease and second, the workers' compensation system which discourages recognizing how the organization of work is contributing to illness at the workplace because compensable diseases represent a potential economic burden to business.

Currently, in the USA, the medical profession *does* recognize that stress plays a role in disease and that working people are often beset by stress-related conditions. However, it is conceptualized as a problem of individuals (i.e., some people are less resistant to stress) like other behavioral risk factors (e.g., smoking, obesity (due to eating behaviors), lack of exercise, etc.) that are considered to be the primary factors in causing chronic illnesses such as CVD and hypertension. Occupational and environmental exposures present a challenge to the biomedical model, informing the growing public health movement in the twentieth and twenty-first centuries as more evidence demonstrated that chemical and other agents in the environment gave rise to disease. This led to an eventual understanding by some that "upstream" factors (i.e., social determinants) must be taken into consideration in addressing health, disease, and well-being. In the late twentieth century, research in Europe led to the recognition that stress at work is primarily the result of the way work is organized. Yet US national medical organizations, such as the American Medical Association and the American Heart Association, still resist the idea that it is the *conditions* of work, such as excessive demands, lack of control, inadequate support, long working hours, and effort-reward imbalance, that are major contributors to stress and ill health in working people.

The second obstacle results from the fact that in the USA, business organizations are financially responsible for the costs of officially compensable work-related diseases. Thus, it is not in the interests of businesses or insurance companies if policy-makers were to recognize additional illnesses such as those related to psychosocial factors (e.g., burnout, depression, hypertension, and cardiovascular disease) as work-related, in light of the scientific evidence. This can be a counter-productive strategy, since employers ultimately pay the costs of these chronic conditions through health or disability insurance, even while they avoid paying for workers' compensation. In fact, much of the costs of occupational disease are borne by taxpayers (through Medicare and Medicaid), workers, and their families (LaDou 2010).

These two obstacles – a limited biomedical model understanding of health and illness which neglects social causation and the mechanism of payment for workers' compensation – serve to reinforce each other. The medical profession's failure to recognize the role and significant contribution of working conditions to ill health and disability reinforces and supports the opposition of employers and workers' compensation insurers to recognize these illnesses as work-related. However, the lack of recognition of the role of working conditions is being challenged now by a

looming crisis of increased incidences of depression, burnout, suicide, obesity, hypertension, and cardiovascular disease (Case and Deaton 2017; Weinberger et al. 2018). There is an urgent need for the medical profession to reexamine the basic assumptions of the current biomedical model, using the body of scientific evidence to incorporate the new epidemics of stress-related disorders into national policies on disease prevention.

The current situation in the USA is that both employers and the medical profession reject the work-relatedness of disabling MSDs, depression, burnout, hypertension, and cardiovascular disease and other health problems influenced by a poor psychosocial work environment. Stressful working conditions may continue to increase in a business environment of increasing competitiveness, and if communication remains poor between workers and management, then assuredly the causes of poor worker health will continue to be ignored and the costs of worker health will continue to be externalized and underestimated by employers, insurance companies, individuals, the state, and society.

A significant change in policies is needed, especially in the USA, whereby social causations of illness, including working conditions, are actively incorporated into our models of disease causation. Policy changes should also provide that the costs of these work-related illnesses are borne by a national health-care program, thus externalizing the costs to the government where they belong (as in the European Union, Canada, Australia, and elsewhere) while also requiring or guiding US companies to identify and reduce work stressors at an organizational level as is already occurring in other countries (Kawakami and Tsutsumi 2016; UK Health and Safety Executive 2007).

Cross-References

- ▶ Concepts and Social Variations of Disability in Working Age Populations
- ▶ Investing in Integrative Active Labor Market Policies
- ▶ Policies of Reducing the Burden of Occupational Hazards and Disability Pensions
- ▶ Surveillance, Monitoring and Evaluation: Regulatory and Voluntary Approaches on Health, Safety and Well-Being
- ▶ Work-Related Burden of Absenteeism, Presenteeism and Disability – An Epidemiologic and Economic Perspective

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