



Emerging Evidence Alert November 2020

This Emerging Evidence Alert includes the latest peer-reviewed articles, reports and evidence on a range of workplace health and safety, prevention, recovery at work and return to work topics. It provides a review of recent journal articles and relevant content related to Comcare’s five research themes: Fostering Work Participation; Building Employer Capability; Adapting to the Future of Work; Guiding and Supporting Mental Health and Wellbeing; and Enabling Healthy and Safe Workplaces. As the COVID-19 pandemic continues and the evidence base grows, the Emerging Evidence Alert now includes an expanded section highlighting the latest research relating to the impact of COVID-19 on workers and workplaces. Collated articles were published in October 2020 only.

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Latest return to work research focuses on wellbeing

Wellbeing at work represents a key challenge for workers returning to work after having an ongoing health problem or disability. While there is extensive research into return to work, the focus has largely been on workplace interventions, specific diseases and conditions, and barriers to work participation. However, worker wellbeing is also important for achieving a successful and sustained return to work.

A [recent systematic review](#) of 20 studies (from various countries) explores factors influencing the wellbeing of workers with an ongoing health problem or disability following return to work. The research highlights the importance of subjective and psychological wellbeing at work which includes life satisfaction, self-esteem, happiness, job satisfaction and work engagement. For example, the review finds that organisational support and the quality of return to work policies predict job satisfaction for returned workers.

Employers can improve wellbeing at work by ensuring managers and human resource professionals have the tools they need to actively monitor and support workers returning to work after health problems or disability. Workplace strategies may also consider positive work-health balance — the compatibility among work and health demands — as a driver for improving job satisfaction, worker engagement and worker wellbeing.

For more information and guidance about the health benefits of good work, visit the [Comcare website](#).

Latest COVID-19 research and guidance

In this edition, you will find [recent research](#) exploring the role of communications throughout the pandemic.

The research finds that the type and source of information that people are exposed to like web-based, television and print media, impact on mental health and compliance with preventive measures. For example, higher information exposure via television and print media is associated with better sleep quality and increased compliance with hand sanitising. These findings highlight the importance of risk and crisis communications in order to build trust and support prevention — to enhance outcomes, these communications can also focus on positive messaging and addressing misinformation.

For more guidance and the latest work health and safety information on COVID-19, visit the [Comcare website](#).

For industry specific COVID-19 information, visit the [Safe Work Australia website](#).

Description of Evidence Levels Definitions Used in this Review

- 1. Level of Evidence** – Certain study designs are scientifically stronger at answering a question. The scoring hierarchy we provided is presented below.

Level of Evidence	Description
Level 1	Evidence from a systematic review or meta-analysis of relevant studies.
Level 2	Evidence from a randomised controlled trial
Level 3	Evidence from a controlled intervention trial without randomisation (i.e. quasi-experimental).
Level 4	Evidence from a case-control or cohort study.
Level 5	Evidence from a single case study, a case series, or qualitative study.
Level 6	Evidence from opinion pieces, reports of expert committees and/or from literature reviews (scoping or narrative).

- 2. Relevance** – Research carried out in Australia or similar countries is most relevant to Australian readers.

Level	Description
A	Study conducted in Australia or the study has been conducted outside Australia but confounders unlikely to affect relevance
B	Study conducted outside Australia and confounders likely to affect generalisability

Fostering Work Participation

Return to Work

Well-being at work after return to work (RTW): A systematic review

Background: Employees' well-being at work after the return to work (RTW) is considered a key aspect of rehabilitation and maintenance of workability. This systematic review aimed at identifying the common psychosocial factors that predict the subjective and psychological well-being in RTW processes after having a long-standing health problem or disability. **Objective:** To evaluate the subjective and psychological well-being at work of employees with chronic or long-standing health problems or those returning to work after any cause of disability. **Data source:** Systematic review of articles published in English or Spanish using PsycINFO, PsycARTICLES, MEDLINE, Psychology, and Behavioral Sciences Collection, and Pubpsych. An additional study was identified by contacting expert academics in the field. The search equations used included terms such as Return to Work, Long-Standing Health Problems or Disability, Work Health Balance, and job satisfaction or subjective well-being. Eligibility criteria for the studies: Studies that included a measure of employees' well-being at work following return to work were selected for the review. Evaluation of the studies and synthesis methods: The studies were selected using predefined fields which included quality criteria. **Results:** Of the 264 articles returned by the initial search, a total of 20 were finally selected. Results were organized around the three different theoretical approaches for understanding RTW and its antecedents and consequences: (a) RTW and autonomy at work have a positive effect on psychological well-being; (b) job demand is linked to less job satisfaction, whereas a higher level on the work-health balance is associated with job satisfaction and work engagement; (c) internal and external support is linked to job satisfaction in the case of a disease. **Limitations:** The evidence provided by the results is restricted by the limited availability of studies focusing on well-being at work following return to work. Moreover, the studies identified are of different kinds, thereby preventing comparisons. Conclusions and implications of the main findings: Employees' subjective well-being after return to work has received very little attention to date. Given its importance in the current configuration of the labor market, it should be the object of more research.

Figueredo et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Job satisfaction; psychological well-being at work; return to work; subjective well-being; work–health balance; work–health incompatibility.

Evidence Level: 1A

Link: <https://www.mdpi.com/1660-4601/17/20/7490>

Presenteeism and Absenteeism

Pre-existing and new-onset depression and anxiety among workers with injury or illness work leaves

Objectives: To examine the influence of depression and/or anxiety on work leaves and the impact of work leaves on experiencing a new-onset depression and/or anxiety disorder. **Methods:** IBM's MarketScan® research databases were linked to investigate depressive and anxiety disorders in workers with a work leave due to an injury or non-mental health illness (n = 467,930) and without a work leave (n = 2,764,447). **Results:** The odds of a work leave within a year were 2.10 times higher (95%CI: 2.08-2.13) in individuals with depression and/or anxiety compared to those without. The odds of developing a new-onset depression and/or anxiety within a year was 4.21 times higher (95% CI: 4.14-4.27) in individuals with a work leave compared to those without. **Conclusion:** Depression and anxiety are both risk factors for and subsequent outcomes of injuries or illnesses that require a work leave.

Gaspar et al. 2020.

Journal of Occupational and Environmental Medicine, vol. 62, no. 10.

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Keywords: Depression; anxiety; workers; injury; illness.

Evidence Level: 5A

Link:

https://journals.lww.com/joem/Fulltext/2020/10000/Pre_Existing_and_New_Onset_Depression_and_Anxiety.21.aspx

The economic burden of lost productivity due to presenteeism caused by health conditions among workers in Japan

Objective: To identify the primary health conditions that cause presenteeism, and to estimate the economic cost of lost productivity due to presenteeism in Japan. **Methods:** We conducted an Internet survey among 10,000 Japanese workers. Participants were asked to answer the health condition most affecting their work. Presenteeism was evaluated using the Quantity and Quality methods, and we estimated an annualized cost per capita and nation. **Results:** The common health conditions most interfering with work were neck pain or stiff shoulders, low back pain, and mental illnesses. The annualized costs of presenteeism per capita for each were \$414.05, \$407.59, and \$469.67, respectively. The estimated national costs for each were all above \$27 billion. **Conclusions:** Mental illnesses and musculoskeletal symptoms were the leading causes of presenteeism in Japan, and the economic burden of presenteeism was considerably large.

Yoshimoto et al. 2020.

Journal of Occupational and Environmental Medicine, vol. 62, no. 10.

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Keywords: Productivity; presenteeism; health conditions; workers; economic cost.

Evidence Level: 5B

Link:

https://journals.lww.com/joem/Fulltext/2020/10000/The_Economic_Burden_of_Lost_Productivity_due_to.17.aspx

Building Employer Capability

Organisational Issues

Cleaner production practices at company level enhance the desire of employees to have a significant positive impact on society through work

Implementation of cleaner production practices (CPP), service quality (SQ) and corporate social responsibility (CSR) is often studied at organizational level. A number of studies on trio have reported its significant impact on overall organizational performance and profitability across the globe. However, not much is studied about the individual level micro influence of these constructs on employee engagement (EE), organizational pride (OP), organizational identification (OI) and "*desire to have a significant impact through work*" (DSIW). Therefore, this study presents a comprehensive framework for assessing the impact of the implementation of CPP, SQ and CSR on EE, OP, OI and DSIW. Data collected from 320 non-managerial staff members employed at a garments manufacturing company in Pakistan was analyzed using partial least square (PLS) approach. Findings revealed that the implementation of CPP, SQ and CSR plays an important role in shaping EE, OP, OI and DSIW in the garments manufacturing industry. Further, it is found that the implementation of CPP has a non-significant impact on SQ. Additionally, results of the importance-performance map analysis (IPMA) have also confirmed that the implementation of CPP at company level has shown a highest importance and performance amongst all the latent constructs proposed as predictors of DSIW in the garments manufacturing industry. These findings are a step forward and unique contribution of this study in the domain of CPP, SQ, CSR, EE, OP, OI and DSIW.

Farooq et al. 2020.

Journal of Cleaner Production.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: Cleaner production practices; corporate social responsibility; employee engagement; organizational pride; service quality.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7552993/>

The uncertain state of work in the U.S.: Profiles of decent work and precarious work

This research utilized a person-centered approach to identify profiles of decent work and precarious work, which were explored due to their centrality in current debates about the uncertain state of work conditions in the U.S. Using the Decent Work Scale and the Precarious Work Scale, the following five profiles were identified from a sample of 492 working Americans: 1) Indecent-Precarious; 2) Highly Decent; 3) Low Health Care-Low Rights; 4) Vulnerability-Dominant; 5) Health Care-Stability. These profiles were further elaborated by examining the relationship of theoretically-informed predictors and outcomes that would distinguish profile membership. Using psychology of working theory as an organizing framework for determining predictors and outcomes, the findings revealed that work volition, age, income level, and educational level significantly predicted profile membership, and autonomy, social contribution, survival needs, job satisfaction, and life satisfaction differed meaningfully across the profiles. Implications for theory, research, practice, and public policy are discussed highlighting the complexity of work conditions and their relationship to various aspects of vocational and psychological functioning.

Blustein et al. 2020.

Journal of Vocational Behavior, vol. 122.

User License: Elsevier Connect COVID-19 resource centre

Keywords: Decent work; latent profile analysis; precarious work; psychology of working; well-being; work volition.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7449123/>

Shift Work

Work schedule irregularity and the risk of work-related injury among Korean manual workers

Work schedules comprise various variables and generate health and safety outcomes, including work-related injury, which causes socioeconomic problems, such as productivity loss and damage to worker health. We investigated the association between work schedule irregularity and the incidence of work-related injury among South Korean manual workers using data from the 5th Korean Working Conditions Survey. In total, 18,330 manual workers were included. A multivariate logistic regression analysis was performed to understand the association between work schedule and work-related injury and the influence of sufficient safety information and work schedule on work-related injury. We calculated the influence of an irregular work schedule on occupational injury after controlling for personal and work environment-related factors. The adjusted odds ratio (OR) for work-related injury was 1.66 (95% confidence interval (CI) 1.32-2.09) for an irregular work schedule. The interaction had an additive effect when the work schedule was irregular, even when sufficient safety information was provided. Manual workers had a higher incidence of injury (2.1%). Even in adjusted analyses, work schedule irregularity conferred greater risks of work injury, particularly when not working the same number of days weekly (OR 1.52, 95% CI 1.21-1.90). Policymakers and health professionals need to consider the impact of work schedule irregularity on worker safety and health.

Lee et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Schedule irregularity; shift work; work schedule; work-related injury.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/17/20/7617>

Important difference between occupational hazard exposure among shift workers and other workers; comparing workplace before and after 1980

Improving health and safety at work has been an important issue for the European Union since the 1980s. The existing literature supports that shift work is associated with multiple indicators of poor health but

frequently neglects the potential impact of occupational hazards. This study aims at describing and comparing the exposure to different workplace hazards among shift and other workers before and after 1980. Exposure to different workplace hazards (noise, dust, pollutant, and other physical stressors) were analyzed among 119,413 participants from the UK Biobank cohort. After stratifying the analyses before and after 1980, exposure was compared between shift and other workers. Potential confounding variables (sex, age, ethnicity, education level, occupational category, and neuroticism) were adjusted for in the log-binomial regression. Shift workers had a higher prevalence ratio (PR) than other workers of being exposed to almost all identified hazards both before or after 1980. They were also more likely to be exposed to multiple hazards compared to other workers, both before 1980 (PR: 1.25; 95% CI: 1.21-1.30) and after 1980 (PR: 1.34; 95% CI: 1.30-1.38). The prevalence of all measured risk factors was higher after 1980 than before 1980 among shift workers. Of note, the work environment has improved overall for other workers. Our findings suggest that changes at the workplace have benefited other workers more than shift workers as they are still more exposed to all occupational hazards.

Miguet et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Epidemiology; hazardous substances; occupational health; pollutant; shift work; work environment; world disease.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/17/20/7495>

Work Ability

Early determinants of work disability in an international perspective

This study explores the interrelated roles of health and welfare state policies in the decision to take up disability insurance (DI) benefits due to work disability (WD), defined as the (partial) inability to engage in gainful employment as a result of physical or mental illness. We exploit the large international variation of health, self-reported WD, and the uptake of DI benefits in the United States and Europe using a harmonized data set with life history information assembled from SHARE, ELSA, and HRS. We find that the mismatch between WD and DI benefit receipt varies greatly across countries. Objective health explains a substantial share of the within-country variation in DI, but this is not the case for the variation across countries. Rather, most of the variation between countries and the mismatches are explained by differences in DI policies.

Borsch-Supan et al. 2020.

Demography, vol. 57, no. 5.

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Keywords: Disability insurance; international comparisons; life histories; social security and public pensions; work disability.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007%2Fs13524-020-00902-7>

The influence of unhealthy behaviours on early exit from paid employment among workers with a chronic disease: A prospective study using the Lifelines cohort

Objectives: This study examined the risk of unhealthy behaviours and the additive effects of multiple unhealthy behaviours on exit from paid employment among workers with a chronic disease and investigated effect modification by gender and educational level. **Methods:** Data from the Lifelines cohort, collected between 2006 and 2013, were enriched with registry data from Statistics Netherlands with up to 11 years follow-up. Workers with a chronic disease were selected (n = 11,467). The influence of unhealthy behaviours (physical inactivity, smoking, unhealthy diet, high alcohol intake, and obesity) on exit from paid employment (unemployment, disability benefits, early retirement, and economic inactivity) was examined using competing risk models. To examine effect modification by gender and educational level, interaction terms were added. **Results:** Smoking and low fruit intake increased the risk to exit paid employment through unemployment and disability benefits. Low vegetable intake increased the risk of unemployment,

obesity the risk of receiving disability benefits, and high alcohol intake the risk of early retirement. Physical inactivity was not associated with any exit from paid employment. Having multiple unhealthy behaviours increased the risk of both unemployment and of receiving disability. No consistent effect modification for gender or educational level was found. **Conclusions:** Unhealthy behaviours increased the risk to exit paid employment through unemployment and disability benefits among workers with a chronic disease, and this risk increased when having multiple unhealthy behaviours. Health promotion to support workers with chronic diseases to make healthier choices may help to extend their working life.

Ots et al. 2020.

Preventative Medicine, vol. 139.

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Keywords: Alcohol drinking; chronic disease; diet; employment; exercise; health behaviour; obesity; smoking; unemployment.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S0091743520302528?via%3Dihub>

Adapting to the Future of Work

Potential scenarios and hazards in the work of the future: A systematic review of the peer-reviewed and gray literatures

It would be useful for researchers, practitioners, and decision-makers to anticipate the hazards that workers will face in the future. The focus of this study is a systematic review of published information to identify and characterize scenarios and hazards in the future of work. Eleven bibliographic databases were systematically searched for papers and reports published from 1999 to 2019 that described future of work scenarios or identified future work-related hazards. To compile a comprehensive collection of views of the future, supplemental and ad hoc searches were also performed. After screening all search records against a set of predetermined criteria, the review yielded 36 references (17 peer-reviewed, 4 gray, and 15 supplemental) containing scenarios. In these, the future of work was described along multiple conceptual axes (e.g. labor market changes, societal values, and manual versus cognitive work). Technology was identified as the primary driver of the future of work in most scenarios, and there were divergent views in the literature as to whether technology will create more or fewer jobs than it displaces. Workforce demographics, globalization, climate change, economic conditions, and urbanization were also mentioned as influential factors. Other important themes included human enhancement, social isolation, loneliness, worker monitoring, advanced manufacturing, hazardous exposures, sustainability, biotechnology, and synthetic biology. Pandemics have not been widely considered in the future of work literature, but the recent COVID-19 pandemic illustrates that was short-sighted. Pandemics may accelerate future of work trends and merit critical consideration in scenario development. Many scenarios described 'new' or 'exacerbated' psychosocial hazards of work, whereas comparatively fewer discussed physical, chemical, or biological hazards. Various preventive recommendations were identified. In particular, reducing stress associated with precarious work and its requirements of continual skill preparation and training was acknowledged as critical for protecting and promoting the health and well-being of the future workforce. In conclusion, the future of work will be comprised of diverse complex scenarios and a mosaic of old and new hazards. These findings may serve as the basis for considering how to shape the future of work.

Schulte et al. 2020.

Annals of Work Exposures and Health, vol. 64, no. 8.

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Keywords: Digitalization; future of work; industry 4.0; psychosocial hazards; robots; technological unemployment.

Evidence Level: 1A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7454321/>

Technology

ICT-enabled mobile work: Challenges and opportunities for occupational health and safety systems

The development and dissemination of new technologies has brought forward a rise in flexible work arrangements, such as mobile work. In the literature, mobile work has mostly been discussed from a microergonomic perspective, considering detachment, stress, strain, and life-domain balance. However, the macroergonomic or institutional perspectives have often been neglected, although for occupational health and safety (OHS) management, as well as occupational health and safety systems, many questions remain unanswered. Therefore, in the present paper, information and communication technologies (ICT)-enabled mobile work is described taking into account institutional and regulative, as well as company-related, requirements. As the literature-based analysis was able to show, existing regulations cover many aspects of mobile work arrangements but also offer starting points for a more concrete protection of mobile workers. Furthermore, there are challenges regarding the enforcement of regulation. In this regard, new technologies might offer the chance to improve the interactions between institutional and company-related occupational health and safety systems. Additionally, 278 co-funded research projects in Germany were categorized, yielding 18 projects on new ways of work, of which another eleven projects addressed different aspects of mobile work. The project analysis revealed that current research focuses on tools and strategies for designing communication and cooperation. In conclusion, the examination of research trends can be used to generate new knowledge for better OHS management and effective OHS systems.

Robelski et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: OHS; flexible work arrangements; institutional health and safety systems; mobile work; occupational health and safety.

Evidence Level: 6A

Link: <https://www.mdpi.com/1660-4601/17/20/7498>

Aging Workforce

Aging at work: A review of recent trends and future directions

Demographic data suggest a rapid aging trend in the active workforce. The concept of aging at work comes from the urgent requirement to help the aging workforce of the contemporary industries to maintain productivity while achieving a work and private life balance. While there is plenty of research focusing on the aging population, current research activities on policies covering the concept of aging at work are limited and conceptually different. This paper aims to review publications on aging at work, which could lead to the creation of a framework that targets governmental decision-makers, the non-governmental sector, the private sector, and all of those who are responsible for the formulation of policies on aging at work. In August 2019 we searched for peer-reviewed articles in English that were indexed in PubMed, IEEE Xplore, and Springer and published between 2008 and 2019. The keywords included the following phrases: "successful aging at work", "active aging at work", "healthy aging at work", "productive aging at work", and "older adults at work". A total of 47,330 publications were found through database searching, and 25,187 publications were screened. Afterwards, 7756 screened publications were excluded from the further analysis, and a total of 17,431 article abstracts were evaluated for inclusion. Finally, further qualitative analysis included 1375 articles, of which about 24 are discussed in this article. The most prominent works suggest policies that encourage life-long learning, and a workforce that comprises both younger and older workers, as well as gradual retirement.

Husic et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Aging at work; assistance; deficit; discrimination; growth; legislation; policy.

Evidence Level: 6A

Link: <https://www.mdpi.com/1660-4601/17/20/7659>

Work characteristics and health in older workers: Educational inequalities

To be able to extend working lives, maintaining good health in older workers is important. The aim of the present study was to identify which work characteristics are associated with physical and mental health outcomes in older workers in the Netherlands, and particularly whether there are educational differences in these associations. We used longitudinal tobit and ordered logistic regression analyses to examine the associations between physical demands, psychosocial demands, variation in tasks, autonomy, and job strain and self-rated health (SRH), functional limitations, and depressive symptoms. We included interaction terms between the work characteristics and education to examine effect modification by education. We found that high physical demands, low variation in tasks, low autonomy, and high job strain were associated with poorer physical and mental health. We found evidence for educational differences in the exposure to these work characteristics, as well as in the strengths of their associations with health, with lower educated workers being disadvantaged. The associations between physical demands (SRH: OR = 3.70 (95%CI:1.92;7.11); functional limitations: B = 1.27 (95%CI:.47;2.07)), autonomy (SRH: OR = .42 (95%CI:.26;.69)), and job strain (active job; SRH: OR = .25 (95%CI:.09;.69); functional limitations: B = -1.51 (95%CI:-2.68;-.34), and health were strongest in the lower educated workers. In order to maintain good health in older workers and reduce health inequalities, it is recommended to implement workplace interventions to improve working conditions, especially among the lower educated workers.

De Breij et al. 2020.

PLoS One, vol. 15, no. 10.

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Keywords: Work; health; older workers; educational inequalities.

Evidence Level: 4A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0241051>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

Occupational and non-occupational injuries can result in prolonged augmentation of psychiatric disorders

Background: The long-term effects of occupational injury (OI) on psychiatric diseases are unclear. This study assessed and compared the effects of OI, no injury (control), and non-OI (NOI) on the development of psychiatric diseases. **Method:** We used Taiwan's National Health Insurance Research Database to investigate the incidence of psychiatric disorders in OI, NOI, and control groups. The subjects were aged 20-50 years, actively employed in 2000, and did not have history of injury or psychiatric disorders. All subjects were followed from 2000 and were classified into OI, NOI, and control groups according to occurrence of target injury later on. Individuals in each group were matched by age, sex, insurance premium before the index date, and year of the index date. Psychiatric disease-free days were compared among the groups by survival analysis and Cox regression. **Results:** We included a total of 12,528 patients for final analysis, with 4,176 in each group. Compared with the control group, the OI group had an increased occurrence of trauma and stress-related disorder, depressive disorders, anxiety disorders, and alcohol and other substance dependence. These increases were similar to those in the NOI group. Elevated cumulative incidence rate of any psychiatric disorders was observed among those with OI or NOI up to 10 years after injury. **Conclusion:** We confirmed that OI and NOI induced psychiatric disorders. These findings highlight the need for workers' compensation mechanisms to consider long-term psychological care among injured workers.

Chin et al. 2020.

Journal of Epidemiology.

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Keywords: Psychiatric disorders; depression; occupational injury; trauma and stress-related disorder.

Evidence Level: 4B

Link: https://www.jstage.jst.go.jp/article/jea/advpub/0/advpub_JE20200374/_pdf

Maladaptive rumination mediates the relationship between self-esteem, perfectionism, and work addiction: A largescale survey study

Background: Empirical evidence suggests that low self-esteem and high perfectionism are significant personality correlates of work addiction, but the mechanisms underlying these relationships are still unclear. Consequently, exploring cognitive mechanisms will help to better understand work addiction. For instance, rumination is one of the under-researched topics in work addiction, although it may explain specific thinking processes of work-addicted individuals. The purpose of the study was to test the mediating role of maladaptive rumination (i.e., brooding) in the relationship between personality and addiction. **Methods:** In a largescale cross-sectional, unrepresentative, online study, 4340 adults with a current job participated. The following psychometric instruments were used: Work Addiction Risk Test Revised, Rosenberg Self-Esteem Scale, Multidimensional Perfectionism Scale, and Ruminative Response Scale. **Results:** It was found that self-oriented perfectionism, socially prescribed perfectionism, and self-esteem had both direct and indirect relationships with work addiction via the mediating effect of maladaptive rumination. The two paths involving brooding explained 44% of the direct relationship. **Conclusions:** The study demonstrated that brooding type of rumination as a putatively maladaptive strategy explains why individuals characterized by low self-esteem and high perfectionism may have a higher risk of work addiction. The results suggest that cognitive-affective mechanisms in work addiction are similar to those found in other addictive disorders.

Kun et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 19.

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Keywords: Perfectionism; rumination; self-esteem; work addiction; workaholism.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/17/19/7332>

Interventions for common mental disorders in the occupational health service: A systematic review with a narrative synthesis

Introduction: Common mental disorders (CMD) are leading causes of decreased workability in Sweden and worldwide. Effective interventions to prevent or treat such disorders are important for public health.

Objective: To synthesize the research literature regarding occupational health service (OHS) interventions targeting prevention or reduction of CMD among employees. The effect on workability (sickness absence, return-to-work and self-reported workability) and on CMD symptoms was evaluated in a narrative analysis.

Data sources: The literature search was performed in four electronic databases in two searches, in 2014 and in 2017. **Eligibility criteria (using pico):** Population: studies investigating employees at risk or diagnosed with CMD, as well as preventive workplace intervention targeting mental health.

Intervention: studies where the recruitment or the intervention was delivered by the OHS or OHS personnel were included. **Control:** individuals or groups who did not receive the target intervention.

Outcome: all types of outcomes concerning sickness absence and psychological health were included.

Study quality was assessed using a Swedish AMSTAR-based checklist, and results from studies with low or medium risk of bias were narratively synthesized based on effect or absence thereof. **Results:** Thirty-three studies were included and assessed for risk of bias. Twenty-one studies had low or medium risk of bias. In 18 studies, rehabilitation interventions were evaluated, 11 studies concerned interventions targeting employees at risk for developing CMD and four studies investigated preventive interventions. Work-focused cognitive behavioral therapy and problem-solving skill interventions decreased time to first return-to-work among employees on sick leave for CMD in comparison with treatment-as-usual. However, effect on return to full-time work was not consistent, and these interventions did not consistently improve CMD symptoms. Selective interventions targeting employees at risk of CMD and preventive interventions for employees were heterogeneous, so replication of these studies is necessary to evaluate effect.

Limitations: Other workplace interventions outside the OHS may have been missed by our search. There was considerable heterogeneity in the included studies, and most studies were investigating measures targeting the individual worker. Interventions at the workplace/organizational level were less common.

Conclusions and implication of key findings: Return-to-work and improvement of CMD symptoms are poorly correlated and should be addressed simultaneously in future interventions. Further, interventions

for CMD administered through the occupational health service require further study. Rehabilitative and preventive strategies should be evaluated with scientifically robust methods, to examine the effectiveness of such interventions.

Axen et al. 2020.

International Archives of Occupational and Environmental Health, vol. 93, no. 7.

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Keywords: Common mental disorders; occupational health service; workability.

Evidence Level: 1A

Link: <https://link.springer.com/article/10.1007/s00420-020-01535-4>

A workplace well-being game intervention for health sciences librarians to address burnout

Objective: The authors measured burnout among health sciences librarians at their institution and determined whether a serious game intervention could improve personal and workplace well-being.

Methods: A modified American Medical Association Mini-Z burnout survey was administered to library faculty in 2016 and both library faculty and staff in 2017. A three-month team-based game was implemented and assessed as an intervention to improve well-being among library employees. After the game, the burnout survey was re-administered to employees in 2018. **Results:** Library faculty scored poorly on burnout indicators, with 38%-73% of faculty reporting emotional exhaustion and 54%-91% reporting job-related stress over the years. In 2017, 62% of library staff members reported experiencing burnout and 38% indicated they felt a great deal of stress because of their jobs. Regarding the game intervention, 70% of post-game survey respondents reported that the game encouraged them to socialize with colleagues. Qualitative coding of survey responses resulted in 4 themes describing the most enjoyable aspects of the game: sociability, motivation, game play, and fun. Employees found that the game was a useful strategy for encouraging a more social culture with fun activities. **Conclusions:** Similar to previous studies of librarians and health professionals, health sciences librarians at our institution experienced burnout. Although the game intervention did not significantly reduce burnout or increase job satisfaction, it improved collegiality and recognition. Therefore, a workplace well-being game can encourage team building but may not sufficiently address the root causes of health sciences librarian burnout.

Casucci et al. 2020.

Journal of the Medical Library Association, vol. 108, no. 4.

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Keywords: Workplace intervention; well-being; game; librarians; burnout

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7524620/>

Bullying and Harassment

Evaluation of the effects of a bullying at work intervention for middle managers

The aim of the study is to evaluate the effects of a workplace bullying intervention based on the training of middle managers regarding bullying awareness, the consequences of bullying, strategies in conflict resolution and mediation/negotiation abilities. Overall, 142 randomly selected middle managers participated in the study. First, participants completed an information record and two scales assessing *bullying strategies*, *role conflict* and *role ambiguity*. The last two scales were completed again in a second phase three months after the intervention had finished. The intervention produced a decrease in the following bullying strategies: *effects on self-expression and communication*, *effects on personal reputation and effects on occupational situation and quality of life*, with all of the mentioned bullying strategies being suffered by part of the sample. In addition, the *conflict role* decreased in the group which received the intervention. Moreover, the decrease in the effects of the bullying strategy *effects on occupational situation and quality of life* was especially important in managers with higher responsibilities within the workplace. Results are discussed in the framework that (1) leadership practices and, more specifically, conflict resolution skills are strongly responsible for bullying at work; and (2) the importance of

intervening in the early stages of the bullying process as a key element in the correction, but also as a potential prevention element, of bullying in the workplace.

Baixauli et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Intervention; middle managers; psychosocial safety climate; workplace bullying.

Evidence Level: 5A

Link: <https://www.mdpi.com/1660-4601/17/20/7566>

Psychosocial Issues – Risk Factors

Influence of the work-family relationship on perceived health 5-years later: The moderating role of job insecurity

Previous studies on the work-family relationship have analyzed the influence of work-family conflict and work-family enrichment on an individuals' lives, namely on their well-being and health. Besides, attempts have been made to analyze the influence of other aspects of the labor context on this relationship, such as job insecurity. However, few have analyzed this relationship and interaction from a longitudinal perspective. Thus, the main purpose of this study is to analyze the moderating role of job insecurity in the work-family relationship and the perceived health of 373 workers of a Portuguese bank, across time. The results showed a negative influence of work-family conflict on perceived health 5 years after. Also, job insecurity was found to offset the relationship between work-family enrichment and perceived health, acting as a buffer. This research allows for a better understanding of how job insecurity, a characteristic of modern-day employment, can impact workers' quality of life. This paper also refers to some practical implications, in addition to the limitations of the study, and presents suggestions for future research in this context.

Bandeira et al. 2020.

Social Indicators Research.

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Keywords: Health perceptions; job insecurity; work-family conflict; work-family enrichment.

Evidence Level: 4A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7552594/>

Is a CSR policy an equally effective vaccine against workplace mobbing and psychosocial stressors?

In this study, the problem question was raised whether corporate social responsibility (CSR) is/can be an effective tool against workplace mobbing and psychosocial stressors in organizations. Therefore, the purpose of the study is to determine the prevalence of workplace mobbing in Lithuanian and Polish organizations in order to compare in which organizations the manifestation of the phenomenon is the strongest and analyzing psychosocial stressors in parallel. To achieve the purpose, 823 employees of three types of organizations were surveyed. The respondents belonged to organizations that implement the principles of corporate social responsibility, organizations that intend to become socially responsible and organizations that do not implement corporate social responsibility and do not seek to become socially responsible. The empirical study was conducted using the questionnaire "Mobbing as a Psychosocial Stressor in the Organizations Accessing and Implementing Corporate Social Responsibility-MOB-CSR". This questionnaire is valid and reliable; the correlation relationships between subscales show interconnectedness and statistically reliable relationships. The research results were calculated using the chi-squared test and the linear regression model. Statistically reliable relationships were found between the prevalence of workplace mobbing, psychosocial work stressors and corporate social responsibility. The results of the study show that along with the weakening of variables of corporate social responsibility, the probability of workplace mobbing is increasing but CSR in itself does not ensure the prevention of workplace mobbing in the case of Lithuanian and Polish organizations. If the findings of the study are considered by the managers of organizations, this can affect both employees' quality of life towards

improvement and more transparent/purposeful implementation of corporate social responsibility, i.e., responding to the true meaning of CSR.

Sroka et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 19.

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Keywords: Corporate social responsibility; Lithuania; Poland; psychosocial stressors; workplace mobbing.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/17/19/7292>

Work-related psychosocial stress in small and medium-sized enterprises: An integrative review

Background: Work-related psychosocial stress can cause mental and physical illnesses resulting in high costs for the individual, the economy and society. Small and medium-sized enterprises (SMEs) employ the majority of the world's workforce and often have fewer financial and human resources compared to larger businesses. The aim of this review is to summarize current knowledge on work-related stress in SMEs according to well-established guidelines categorizing psychosocial factors at work. **Methods:** A systematic database search was carried out in PubMed, PsycINFO, PSYINDEX and Business Source Premiere from March to June 2019, updated in January 2020. Data of included studies were analyzed and mapped into five themes: "work content and task", "organization of work", "social relations", "working environment" and "new forms of work". **Results:** After full-text screening, 45 out of 116 studies were included for data extraction. Studies were very heterogeneous and of varying quality, mostly applying a cross-sectional study design. Psychosocial factors in SMEs have been researched with a focus on the work patterns "work organization" and "work content and task". **Conclusions:** This review underlines the need for more and better quality research of psychosocial factors in SMEs, particularly in relation to ongoing and new challenges in the workplace, including stressors related to the process of digitalization or the development of safe working conditions during the emerge of new infectious diseases.

Schreibauer et al. 2020.

International Journal of Environmental Health and Public Research, vol. 17, no. 20.

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Keywords: Integrative review; psychosocial factors; small and medium-sized enterprises; work patterns; work-related stress.

Evidence Level: 1A

Link: <https://www.mdpi.com/1660-4601/17/20/7446>

Exploring the link between work addiction risk and health-related outcomes using job-demand-control model

Purpose of the study: Work addiction risk is a growing public health concern with potential deleterious health-related outcomes. Perception of work (job demands and job control) may play a major role in provoking the risk of work addiction in employees. We aimed to explore the link between work addiction risk and health-related outcomes using the framework of job-demand-control model. **Methods:** Data were collected from 187 out of 1580 (11.8%) French workers who agreed to participate in a cross-sectional study using the WittyFit software online platform. The self-administered questionnaires were the Job Content Questionnaire by Karasek, the Work Addiction Risk Test, the Hospital Anxiety and Depression scale and socio-demographics. Data Analysis: Statistical analyses were performed using the Stata software (version 13). **Results:** There were five times more workers with a high risk of work addiction among those with strong job demands than in those with low job demands (29.8% vs. 6.8%, $p = 0.002$). Addiction to work was not linked to job control ($p = 0.77$), nor with social support ($p = 0.22$). We demonstrated a high risk of work addiction in 2.6% of low-strain workers, in 15.0% of passive workers, in 28.9% of active workers, and in 33.3% of high-strain workers ($p = 0.010$). There were twice as many workers with a HAD-Depression score ≥ 11 compared with workers at low risk (41.5% vs. 17.7%, $p = 0.009$). Sleep quality was lower in workers with a high risk of work addiction compared with workers with a low risk of work addiction (44.0 ± 27.3 vs. 64.4 ± 26.8 , $p < 0.001$). Workers with a high risk of work addiction exhibited greater stress at work (68.4 ± 23.2 vs. 47.5 ± 25.1) and lower well-being (69.7 ± 18.3 vs. 49.3 ± 23.0) compared with workers at low risk ($p < 0.001$). **Conclusions:** High job demands are strongly associated with the risk of work addiction. Work

addiction risk is associated with greater depression and poor quality of sleep. Preventive strategies should benefit from identifying more vulnerable workers to work addiction risk.

Dutheil et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Depression; mental health; public health; quality of sleep; work addiction risk; workaholism.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/17/20/7594>

The effects of service employee resilience on emotional labor: Double-mediation of person-job fit and work engagement

This study examined the effect of service employees' resilience on deep acting in the job demands-resources model (JD-R model). It set and verified person-job fit and work engagement as double-mediation factors between service employees' resilience and deep acting. To accomplish this, surveys targeting service employees working in the retail finance industry in Korea were administered. The analysis showed that resilience significantly increased person-job fit, and person-job fit improved work engagement. Additionally, it showed that work engagement improved deep acting. With regard to the double-mediation effect, the direct effect of resilience on deep acting was not statistically significant, but the double-mediation effect through person-job fit and work engagement was significant. In other words, person-job fit and work engagement fully mediated the relationship between resilience and deep acting. Additionally, person-job fit alone did not mediate the relationship between resilience and deep acting, but the independent mediation effect of work engagement was significant.

Lee et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 19.

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Keywords: Emotional labour; person–job fit; resilience; work engagement.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/17/19/7198>

Enabling Healthy and Safe Workplaces

Health and Wellbeing

The health effects of work-family conflict in men and women Japanese civil servants: A longitudinal study

High level of work-family conflict (WFC) is an important risk factor for stress-related health outcomes. However, many studies are cross-sectional studies. In this study, we aimed to clarify how changes in WFC levels over a period 5 yr can affect workers' mental and physical health, and to clarify whether there are gender differences of them. This study examined 1,808 civil servants (1,258 men and 550 women) aged 20-65 yr working in a local government in the west coast of Japan from 2003 to 2008. Logistic regression analyses were used to examine whether the change in WFC contributes to workers' health problems and whether there are gender differences. This study revealed association sustained high WFC and deterioration of WFC conflict with poor mental health and poor job satisfaction for both men and women. In men high WFC conflict and deterioration was associated with poor mental health (OR=2.74). On the other hand, women had strong relationship between WFC changes and poor physical health (OR=2.64). WFC was an important factor as a social determinant of health of Japanese civil servants, and the change in WFC affects subsequent health problems with different trends in men and women.

Koura et al. 2020.

Industrial Health, vol. 58, no. 5.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Job satisfaction; mental health; physical health; self-rated health; work-family conflict.

Evidence Level: 4B

Link: https://www.istage.jst.go.jp/article/indhealth/58/5/58_2019-0189/article

Effect of concussion on salary and employment: A population-based event time study using a quasi-experimental design

Objective: Concussions are the most frequent traumatic brain injuries. Yet, the socioeconomic impact of concussions remains unclear. Socioeconomic effects of concussions on working-age adults were studied on a population scale. **Design:** This population-based, event time study uses administrative data as well as hospital and emergency room records for the population of Denmark. **Setting:** We study all Danish patients, aged 20-59 years, who were treated at a public hospital or at an emergency room between 2003 and 2017 after suffering a concussion without other intracranial or extracranial injuries (n=55 424 unique individuals). None of the patients had a prior diagnosis of intracranial or extracranial injuries within the past 10 years leading up to the incident. **Primary and secondary outcome measures:** As primary endpoint, we investigate the mean effect of concussion on annual salaried income within a 5-year period after trauma. In an exploratory analysis, we study whether the potential impact of concussion on annual salaried income is driven by patient age, education or economic cycle. **Results:** Concussion was associated with an average change in annual salary income of -€1223 (95% CI: -€1540 to -905, p<0.001) corresponding to a salary change of -4.2% (95% CI: -5.2% to -3.1 %). People between 30 and 39 years and those without high school degrees suffered the largest salary decreases. Affected individuals leaving the workforce drove the main part of the decrease. Absolute annual effect sizes were countercyclical to the unemployment rate. **Conclusions:** Concussions have a large and long-lasting impact on salary and employment of working-age adults on a nationwide scale.

Fallesen et al. 2020.

BMJ Open, vol. 10, no. 10.

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Keywords: Health economics; neurosurgery; trauma management.

Evidence Level: 4A

Link: <https://bmjopen.bmj.com/content/10/10/e038161.long>

Dynamics in typewriting performance reflect mental fatigue during real-life office work

Mental fatigue has repeatedly been associated with decline in task performance in controlled situations, such as the lab, and in less controlled settings, such as the working environment. Given that a large number of factors can influence the course of mental fatigue, it is challenging to objectively and unobtrusively monitor mental fatigue on the work floor. We aimed to provide a proof of principle of a method to monitor mental fatigue in an uncontrolled office environment, and to study how typewriting dynamics change over different time-scales (i.e., time-on-task, time-of-day, day-of-week). To investigate this, typewriting performance of university employees was recorded for 6 consecutive weeks, allowing not only to examine performance speed, but also providing a natural setting to study error correction. We show that markers derived from typewriting are susceptible to changes in behavior related to mental fatigue. In the morning, workers first maintain typing speed during prolonged task performance, which resulted in an increased number of typing errors they had to correct. During the day, they seemed to readjust this strategy, reflected in a decline in both typing speed and accuracy. Additionally, we found that on Mondays and Fridays, workers adopted a strategy that favored typing speed, while on the other days of the week typing accuracy was higher. Although workers are allowed to take breaks, mental fatigue builds up during the day. Day-to-day patterns show no increase in mental fatigue over days, indicating that office workers are able to recover from work-related demands after a working day.

De Jong et al. 2020.

PLoS One, vol. 15, no. 10.

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Keywords: Typewriting; performance; mental fatigue; office work.

Evidence Level: 5A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239984>

The association between occupational categories and incidence of cardiovascular events: A cohort study in Iranian male population

Background: Besides the traditional cardiovascular risk factor, some novel risk factors like occupation and career can play an important role in cardiovascular disease (CVDs) incidence. **Objective:** To assess the association between occupational categories and their positions with cardiovascular events (CVEs) in an Iranian male population. **Methods:** We followed 2134 men aged 35-65 years for 14 years during the Isfahan Cohort Study (2001-2015) for CVEs including ischemic heart disease and stroke. Firstly, Occupations were classified into 10 categories of International Standard Classification of Occupation (ISCO). Each category was then classified into one of the 4 pre-specified categories, namely high/low skilled white collars and high/low skilled blue collars. White-collar workers referred to managerial and professional workers in contrast with blue collar workers, whose job requires manual labor. **Results:** The mean age of studied participants was 46.9 (SD 8.3) years. 286 CVE incidents were recorded; unstable angina had the highest rate (46%); fatal stroke, the lowest (3%). There were no significant difference observed between white and blue collars in terms of CVE incidence, as well as their high and low skilled subgroups. Hazard ratio analysis indicated a significantly higher risk of CVEs only for low-skilled white-collar workers (crude HR 1.47, 95% CI 1.01 to 2.13); this was not significant after adjustment for confounding variables. **Conclusion:** There is no association between occupational categories and incidence of cardiovascular events among Iranian male population.

Ghahramani et al. 2020.

International Journal of Occupational and Environmental Medicine, vol. 11, no. 4.

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Keywords: Adult; cohort study; coronary artery disease; myocardial ischemia; occupational groups; occupations; risk factors; stroke.

Evidence Level: 4B

Link: <https://www.theijoem.com/ijoem/index.php/ijoem/article/view/2053>

Work Health and Safety

The Italian national surveillance system for occupational injuries: Conceptual framework and fatal outcomes, 2002-2016

Background: A national database of work-related injuries has been established in Italy since 2002, collecting information on the injured person, his/her work tasks, the workplace and the risk factors contributing to incident dynamics, according to a model called Infor.Mo. **Methods:** A descriptive study of occupational fatal injuries, excluding work-related fatal traffic injuries, that occurred in Italy from 2002 to 2016 (15 years) was performed. **Results:** Among 4874 victims involved, all were males, mainly >51 years of age (43.2%), predominantly self-employed (27.8%) or workers with non-standard contracts (25%). About 18.4% and 17.3% of fatal events occurred in micro-enterprises belonging to, respectively, construction and agriculture. A wide range of nationalities (59 countries in addition to Italy) was identified. Overall, 18.9% of work-related fatal injuries were due to some form of hazardous energy-mechanical, thermal, electrical or chemical-that was normally present in the workplace. Workers' falls from height (33.5%), heavy loads falling on workers from height (16.7%) and vehicles exiting their route and overturning (15.9%) were the events causing the greatest proportion of occupational fatal injuries in the present study (from 2002 to 2016) and in the initial pilot phase, focused on years 2002-2004, with a similar distribution of fatal events between the two time periods. The activity of the injured person made up 43.3% of 9386 risk factors identified in 4874 fatalities. Less common risk factors were related to work equipment (20.2%), work environment (14.9%), third-party activity (9.8%), personal protective equipment/clothing (8.0%) and materials (3.7%). The activity of the injured person remained the most relevant contributing factor even when the incident was caused by two or more risk factors. **Discussion:** Occupational fatal injuries occurred mainly in small size firms (up to nine employees) in hazardous workplaces. Small companies, which account for 68% (2888/4249) of all firms in the present study, generally have fewer resources to remain current with the continuously evolving health and safety at work regulations; moreover, these firms tend to be less compliant with health and safety at work regulations since they are less likely to be inspected by

occupational vigilance services. **Perspectives:** An approach being introduced in Italy relies on the use of economic incentives to promote safe and healthy workplaces. The comparison of pre-intervention and post-intervention rates of work-related injuries by means of interrupted time series analyses could detect whether the intervention will have an effect significantly greater than the underlying secular trend.

Campo et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Agriculture; construction; economic incentives; fatal events; health and safety at work; occupational incidents; occupational regulations; surveillance; vigilance; work related injuries; workplace.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/17/20/7631>

Health behaviours and psychosocial working conditions as predictors of disability pension due to different diagnoses: A population-based study

Background: To investigate whether the clustering of different health behaviours (i.e. physical activity, tobacco use and alcohol consumption) influences the associations between psychosocial working conditions and disability pension due to different diagnoses. **Methods:** A population-based sample of 24,987 Swedish twins born before 1958 were followed from national registers for disability pension until 2013. Baseline survey data in 1998-2003 were used to assess health behaviours and psychosocial Job Exposure Matrix for job control, job demands and social support. Cox proportional hazards models were used to calculate hazard ratios (HR) with 95% confidence intervals (CI). **Results:** During follow-up, 1252 disability pensions due to musculoskeletal disorders (5%), 601 due to mental diagnoses (2%) and 1162 due to other diagnoses (5%) occurred. In the models controlling for covariates, each one-unit increase in job demands was associated with higher (HR 1.16, 95%CI 1.01-1.33) and in job control with lower (HR 0.87, 95%CI 0.80-0.94) risk of disability pension due to musculoskeletal disorders among those with unhealthy behaviours. Among those with healthy behaviours, one-unit increase of social support was associated with a higher risk of disability pension due to mental and due to other diagnoses (HRs 1.29-1.30, 95%CI 1.04-1.63). **Conclusions:** Job control and job demands were associated with the risk of disability pension due to musculoskeletal disorders only among those with unhealthy behaviours. Social support was a risk factor for disability pension due to mental or other diagnoses among those with healthy behaviours. Workplaces and occupational health care should acknowledge these simultaneous circumstances in order to prevent disability pension.

Ropponen et al. 2020.

BMC Public Health, vol. 20, no. 1.

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Keywords: Cohort study; disability pension; health behavior; musculoskeletal disorders; physical activity; sick leave.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09567-8>

Risk Assessment

Cancer risks of firefighters: A systematic review and meta-analysis of secular trends and region-specific differences

Purpose: The objective of this study was to conduct a systematic review and meta-analysis to evaluate the cancer risks among firefighters in the time course and from different geographical areas. **Method:** A PubMed search was performed to identify cohort studies about cancer risk and firefighting presented with standardized incidence ratios (SIRs) or standardized mortality ratios (SMRs). Using random-effect models, meta-relative risk estimates (mSIRs, mSMRs) and 95% confidence intervals (CI) were assessed. Cohort studies with employment starting before 1950 were classified as "old", studies starting between 1950 and 1970 as "medium", and later studies as "new". **Results:** The general cancer risk of firefighters was similar to the general population, but mSMR decreased over time (new studies: mSMR = 0.81, 95% CI 0.70-0.92). We

observed an increase of mSIR for melanoma of the skin and prostate cancer as well as a decrease of mSIR for stomach cancer with later employment onset. For those cancer sites, we did not observe a secular trend of mSMRs. Regional differences between relative cancer risks were particularly observed for bladder cancer. **Conclusions:** Among other things, innovative firefighting techniques and better personal protective equipment have provided a safer and healthier working environment for firefighters over time leading to a reduction of overall cancer incidence and mortality ratios. Increased general preventive medical checkups and possible additional screenings for firefighters might have led to more findings of malignant melanoma of the skin and prostate cancer in the recent past.

Casjens et al. 2020.

International Archives of Occupational and Environmental Medicine, vol. 93, no. 7.

User License: *Creative Commons Attribution (CC BY 4.0)* (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Cancer; firefighting; incidence; mortality; region-specific differences; secular trend.

Evidence Level: 1A

Link: <https://link.springer.com/article/10.1007%2Fs00420-020-01539-0>

Occupational assessments of risk factors for cardiovascular diseases in labors: An application of metabolic syndrome scoring index

Unlike a traditional diagnosis of metabolic syndrome (MS), a numerical MS index can present individual fluctuations of health status over time. This study aimed to explore its value in the application of occupational health. Using a database of physiological and biochemical tests and questionnaires, data were collected from 7232 participants aged 20 to 64 years who received occupational health screenings at a health screening institution in 2018. Using confirmatory factor analysis, five components of MS were used to design an MS severity scoring index, which was then used to evaluate the risks of occupation factors. Waist circumference was the largest loading factor compared with the other MS components. Participants who worked in the traditional industrial, food processing, or electronic technology industries had higher MS severity than those in the logistics industry. Those who worked as a manager or over five years had a relatively high severity. The research showed that assessments based on an MS severity score are applicable when the risk factors of suboptimal health are involved. By monitoring the scores over time, healthcare professionals can propose preventive strategies in time, thus enhancing the effectiveness of occupational health examination services.

Lin et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Labor health examination; metabolic syndrome; occupational risk; severity score.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/17/20/7539>

The impact of a change in employment on three work-related diseases: A retrospective longitudinal study of 10,530 Belgian employees

Background: The literature that has investigated to what extent a change in employment contributes to good health is contradictory or shows inconsistent results. The aim of this study was to investigate whether an association exists between a change in employment and cardiovascular, musculoskeletal and neuropsychological diseases in a sample of 10,530 Belgian workers in a seven-year follow-up study period.

Methods: The following factors were analysed: Demographic variables, a change in employment and the work-related risks. Individuals being on medication for cardiovascular, musculoskeletal, and neuropsychological diseases were used as proxies for the three health issues. Logistic regression models for autocorrelated data with repeated measures were used to examine each medication type. **Results:** A change in employment and psychosocial load can have an important effect on the health of cardiovascular employees. Demographic variables, such as BMI and age, are risk factors for all three medications. Repetitive, manual tasks, handling static, exposure to noise levels of 87 dB, mechanical and/or manual handling with loads, and shift work were found to be positively associated with medications taken for musculoskeletal diseases. Exposure to noise 80 dB(A), managing physical loads and night work were found to be associated with being on medication for neuropsychological diseases. Physical activity and skill levels

were considered to be protective factors for being on medication for neuropsychological diseases.

Conclusions: Change in employment and psychosocial load were found as two important risk factors for being on medication for cardiovascular (CVD). Dealing with loads, doing shift work and being daily exposed to the noise of 87 dB correlated with being on medication for musculoskeletal (MSD). Dealing with physical loads, doing night work and being exposed to the noise of 80 dB were risk factors for being on medication for neuropsychological (NPD). While doing physical activity and reporting higher skill levels were found to be protective factors for NPD.

Maniscalco et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: Cardiovascular diseases; chronic diseases; musculoskeletal diseases; neuropsychological diseases; work-related risks.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/17/20/7477>

Description of the epidemiological characteristics of work-related eye injuries in Spain: A retrospective study

Objective: To describe the epidemiological characteristics and trends of work-related eye injuries (WREIs) in Spain over a 10-year period by sex, age and occupational sector. **Design and settings:** A descriptive, retrospective and longitudinal study based on data from workers insured by a labour insurance company in Spain from 2008 to 2018 was presented. The study considered the ratio of the number of WREI per 100 000 population and the relative risk of suffering an ocular injury. WREIs were characterised by sex, age and occupational sector of injured workers. **Primary and secondary outcome measures:** Ratio of the number of WREI. **Participants:** In Spain, all workers are insured by a labour insurance company that provides cover in the event of work-related accidents. In this study, we have included all workers insured by one of these insurance companies, IBERMUTUA, with workers in all areas of Spain. **Results:** The study included 50 265 WREI in the company over the 10-year period. Most of the injuries occurred in males (44 445; 88.4%), in 35-44 age group (15 992; 31.8%) and in industry workers (18 899; 42.6%). The average incidence was 429.75 per 100 000 workers insured and 4273.36 per 100 000 IBERMUTUA accidents (related and not related to eyes). Males, 16-24 age group and industry occupational sector group, have the highest incidence for WREI. The incidence of WREI decrease over the study period in all variables. Males have 6.56 (95% CI 6.38 to 6.75) times more risk of suffering WREI than females. 16-24 age group have 1.77 (95% CI 1.71 to 1.83) times more risk than in the group of workers older than 55. Finally, industry workers have 7.73 (95% CI 7.55 to 7.92) times more risk than services workers. **Conclusions:** The risks of suffering WREI is higher for males, younger and less experienced workers, and for those who works in a manual task.

Martin-Prieto et al. 2020.

BMJ Open, vol. 10, no. 10.

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Keywords: Accident & emergency medicine; epidemiology; health & safety; medical ophthalmology; occupational & industrial medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/10/10/e035696.long>

Chronic Health Issues

Interventions on cognitions and perceptions that influence work participation of employees with chronic health problems: A scoping review

Background: Cognitions and perceptions, such as motivation and return to work (RTW) expectations, can influence work participation of employees with chronic health problems. This makes these cognitions and perceptions important factors for occupational health professionals to intervene upon in order to increase work participation. There is, however, no overview of interventions that influence these factors and are aimed at increasing work participation. Therefore, the purpose of this scoping review is to explore available

interventions that are focused on cognitions and perceptions of employees with chronic health problems and aimed at increasing work participation. **Methods:** A scoping review was carried out following the framework of Arksey and O'Malley. Ovid MEDLINE and PsycINFO were searched for original papers published between January 2013 and June 2020. We included studies that describe interventions that focus on at least one of ten cognitions and perceptions and on work participation. The risk of bias of the studies included was assessed using quality assessment tools from the Joanna Briggs Institute. **Results:** In total, 29 studies were identified that studied interventions aimed at changing at least one of ten cognitions and perceptions in order to change work participation. The interventions that were included mainly focused on changing recovery and RTW expectations, self-efficacy, feelings of control, perceived health, fear-avoidance beliefs, perceived work-relatedness of the health problem, coping strategies and catastrophizing. No interventions were found that focused on changing motivation or on optimism/pessimism. Four interventions were judged as effective in changing coping, self-efficacy, fear-avoidance beliefs, or perceived work-relatedness and work participation according to results of randomized controlled trials.

Conclusions: This review provides an overview of interventions that focus on changing cognitions and perceptions and work participation. Evidence was found for four effective interventions focused on changing these factors and increasing work participation. Occupational health professionals may use the overview of interventions to help employees with chronic health problems to increase their work participation.

De Wit et al. 2020.

BMC Public Health, vol. 20, no. 1.

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Keywords: Cognitions; occupational health professionals; perceptions; person-related factors; return to work.

Evidence Level: 6A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09621-5>

A cross-sectional study on the burden and impact of migraine on work productivity and quality of life in selected workplaces in the Philippines

Background: Migraine imposes a substantial personal and economic burden to many working age individuals. This study aimed to evaluate the burden and impact of migraine on work productivity in selected workplaces in the Philippines. **Methods:** A cross-sectional survey was conducted among employees suspected or diagnosed with migraine February to May 2020. Volunteer employees were screened for migraine using the ID-Migraine™ test. Eligible employees were tested for migraine severity and impact on work productivity using the Migraine Disability Assessment (MIDAS) questionnaire. Quality of life was measured using the Short Form-36 (SF-36) questionnaire and additional questions on triggers, coping mechanisms, workplace assistance, and health care utilization were asked. Multiple logistic regression was used to identify significant predictors of migraine disability (high - MIDAS Grade III/IV vs. low - MIDAS Grade I/II). Differences in quality of life scores by migraine disability were measured using multiple linear regression. Productivity costs lost to migraine disability were calculated as the number of days lost to migraine multiplied by the self-reported wage rate, and costs according to migraine severity were measured using a two-part generalized linear model. **Results:** From around 24,000 employees who were invited to participate in the survey, 954 respondents provided consent and attempted to respond to the survey resulting to a response rate of around 4.1%. A total of 511 positive migraine screens were included in the final sample. Females comprised two-thirds of all positive migraine screens and were more likely to have high migraine disability (odds ratio: 1.60, 95% CI: 1.03-2.49) than males. Those with high migraine disability scored lower on role limitations compared to those with low migraine disability. Stress and looking at computer screens were cited as the top trigger for migraine, while sleeping enough hours and getting a massage were cited as top coping mechanisms. Three in four (77%) visited their company clinic within the past 3 months, which meant that most doctors seen for migraine-related symptoms were general practitioners. Five in six (85%) took medication for migraine, almost all of which were over-the-counter medications. Mean annual productivity costs lost due to migraine disability were PHP27 794 (USD556) per person. **Conclusion:** Migraine poses a significant threat to work productivity in the

Philippines. Many opportunities, such as disease management and introduction of alternative options for migraine treatment, may be introduced to help address these issues.

Haw et al. 2020.

Journal of Headache Pain, vol. 21, no. 1.

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Keywords: Burden of disease; cost of illness; health care utilization; migraine; Philippines; quality of life; workplace.

Evidence Level: 4B

Link: <https://thejournalofheadacheandpain.biomedcentral.com/articles/10.1186/s10194-020-01191-6>

Work-related asthma: A position paper from the Thoracic Society of Australia and New Zealand and the National Asthma Council Australia

Work-related asthma (WRA) is one of the most common occupational respiratory conditions, and includes asthma specifically caused by occupational exposures (OA) and asthma that is worsened by conditions at work (WEA). WRA should be considered in all adults with asthma, but especially those with new-onset or difficult to control asthma. Improvement in asthma symptoms when away from work is suggestive of WRA. Clinical history alone is insufficient to diagnose WRA; therefore, objective investigations are required to confirm the presence of asthma and the association of asthma with work activities. Management of WRA requires pharmacotherapy similar to that of non-WRA, however, also needs to take into account control of the causative workplace exposure. Ongoing exposure will likely lead to decline in lung function and worsening asthma control. WRA is a preventable condition but this does rely on increased awareness of WRA and thorough identification and control of all potential occupational respiratory hazards.

Hoy et al. 2020.

Respirology.

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Keywords: Asthma; occupational asthma; occupational health; preventative medicine; work-exacerbated asthma.

Evidence Level: 6A

Link: <https://onlinelibrary.wiley.com/doi/10.1111/resp.13951>

Occupational Exposure

Self-reported disease symptoms of stone quarry workers exposed to silica dust in Ghana

Background and aims: Understanding the importance of using personal protective equipment (PPE) and the influence of work-post (working distance to main dust source-crusher) in stone quarries is vital for designing tailored interventions in minimizing workers' exposure to silica dust. Nonetheless, studies on silica dust and disease symptoms in Ghana are nascent. This study assessed how work-post and use of required PPE jointly influence exposure to silica dust and disease symptoms in Ghana.

Methods: Generalized linear models (complementary log-log regression) were fitted to cross-sectional survey data of 524 stone quarry workers in Ghana to assess the joint effect of work-post and PPE usage on self-reported disease symptoms while controlling for relevant compositional and contextual factors.

Results: Stone quarry workers who work between 1-100 m and beyond 100 m from the crusher with the required PPE were 90% and 87% respectively less likely to report eye irritation compared with their counterparts who work between 1 and 100 m from the crusher without the required PPE. Individuals who work between 1-100 m and beyond 100 m from the crusher with the required PPE were 94% and 95% respectively less likely to report breathing difficulty compared with the reference group. Workers who work between 1-100 m and beyond 100 m from the crusher with the required PPE were 97% and 99% respectively less likely to report coughing compared with the reference group. Workers who work between 1-100 m and beyond 100 m from the crusher with the required PPE were 93% and 97% respectively less likely to report common cold compared with their counterparts who work between 1 and 100 m from the crusher without the required PPE. **Conclusion:** There are adverse health implications for people who work

in silica dust polluted environments, suggesting the need for a national safety and health policy to target them.

Ahadzi et al. 2020.

Health Sciences Reports, vol. 3, no. 4.

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Keywords: Ghana; disease symptoms; occupational; self-reported; silica dust; stone quarry.

Evidence Level: 5B

Link: <https://onlinelibrary.wiley.com/doi/10.1002/hsr2.189>

Two-year responses of office and ambulatory blood pressure to first occupational lead exposure

Lead exposure causing hypertension is the mechanism commonly assumed to set off premature death and cardiovascular complications. However, at current exposure levels in the developed world, the link between hypertension and lead remains unproven. In the Study for Promotion of Health in Recycling Lead (URL: <https://www.clinicaltrials.gov>; Unique identifier: [NCT02243904](https://clinicaltrials.gov/ct2/show/study/NCT02243904)), we recorded the 2-year responses of office blood pressure (average of 5 consecutive readings) and 24-hour ambulatory blood pressure to first occupational lead exposure in workers newly employed at lead recycling plants. Blood lead (BL) was measured by inductively coupled plasma mass spectrometry (detection limit 0.5 µg/dL). Hypertension was defined according to the 2017 American College of Cardiology/American Heart Association guideline. Statistical methods included multivariable-adjusted mixed models with participants modeled as a random effect and interval-censored Cox regression. Office blood pressure was measured in 267 participants (11.6% women, mean age at enrollment, 28.6 years) and ambulatory blood pressure in 137 at 2 follow-up visits. Geometric means were 4.09 µg/dL for baseline BL and 3.30 for the last-follow-up-to-baseline BL ratio. Fully adjusted changes in systolic/diastolic blood pressure associated with a doubling of the BL ratio were 0.36/0.28 mm Hg (95% CI, -0.55 to 1.27/-0.48 to 1.04 mm Hg) for office blood pressure and -0.18/0.11 mm Hg (-2.09 to 1.74/-1.05 to 1.27 mm Hg) for 24-hour ambulatory blood pressure. The adjusted hazard ratios of moving up across hypertension categories for a doubling in BL were 1.13 (0.93-1.38) and 0.84 (0.57-1.22) for office blood pressure and ambulatory blood pressure, respectively. In conclusion, the 2-year blood pressure responses and incident hypertension were not associated with the BL increase on first occupational exposure.

Yu et al. 2020.

Hypertension, vol. 76, no. 4.

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Keywords: Ambulatory blood pressure monitoring; environmental exposure; hypertension; lead; occupational exposure.

Evidence Level: 4B

Link: <https://www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.120.15590>

Dust exposure and the impact on hospital readmission of farming and wood industry workers for asthma and chronic obstructive pulmonary disease (COPD)

Objectives It is still not well established how occupational air pollutants affect the prognosis of asthma or chronic obstructive pulmonary disease (COPD). This study uses nationwide Danish registers and quantitative dust industry exposure matrices (IEM) for the farming and wood industries to estimate whether previous year dust exposure level impacts hospital readmissions for workers diagnosed with asthma or COPD. **Methods** We identified all individuals with a first diagnosis of either asthma (769 individuals) or COPD (342 individuals) between 1997 and 2007 and followed them until the next hospital admission for asthma or COPD, emigration, death or 31 December 2007. We included only individuals who worked in either the wood or farming industries at least one year during follow-up. We used logistic regression analysis to investigate associations between dust exposure level in the previous year and hospital readmission, adjusting for sex, age, time since first diagnosis, socioeconomic status, and labor force participation. **Results** Asthma readmissions for individuals with low and high dust exposure were increased [adjusted rate ratio (RR_{adj}) 2.52, 95% confidence interval (CI) 1.45-4.40] and RR_{adj}2.64 (95% CI 1.52-4.60), respectively. For COPD readmission, the risk estimates were RR_{adj}1.36 (95% CI 0.57-3.23) for

low and $RR_{adj} 1.20$ (95% CI 0.49-2.95) for high exposure level in the previous year. For asthma readmission, stratified analyses by type of dust exposure during follow-up showed increased risks for both wood dust [$RR_{adj} 2.67$ (95% CI 1.35-5.26) high exposure level] and farming dust [$RR_{adj} 3.59$ (95% CI 1.11-11.59) high exposure level]. No clear associations were seen for COPD readmissions. **Conclusions** This study indicates that exposure to wood or farm dust in the previous year increases the risk of hospital readmission for individuals with asthma but not for those with COPD.

Vested et al. 2020.

Scandinavian Journal of Work and Environmental Health.

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Keywords: COPD; asthma; industry workers; farming; hospital; readmission; dust exposure.

Evidence Level: 4A

Link: https://www.sjweh.fi/show_abstract.php?abstract_id=3926

Occupational exposure to whole-body vibrations and pregnancy complications: A nationwide cohort study in Sweden

Objectives: Pregnancy complications are common contributors to perinatal mortality and morbidity. Still, the cause(s) of gestational hypertensive disorders and diabetes are largely unknown. Some occupational exposures have been inconsistently associated with pregnancy complications, but exposure to whole-body vibrations (WBV) has been largely overlooked even though it has been associated with adverse birth outcomes. Therefore, the aim was to assess whether occupational WBV exposure during pregnancy is associated with pregnancy complications in a nationwide, prospective cohort study. **Methods:** The Fetal Air Pollution Exposure cohort was formed by merging multiple Swedish, national registers containing information on occupation during pregnancy and diagnosis codes, and includes all working women who gave birth between 1994 and 2014 ($n=1\ 091\ 044$). WBV exposure was derived from a job-exposure matrix and was divided into categories (0, 0.1-0.2, 0.3-0.4 and $\geq 0.5\ m/s^2$). ORs with 95% CIs were calculated using logistic regression adjusted for potential confounders. **Results:** Among women working full time ($n=646\ 490$), we found increased risks of all pregnancy complications in the highest exposure group ($\geq 0.5\ m/s^2$), compared with the lowest. The adjusted ORs were 1.76 (95% CI 1.41 to 2.20), 1.55 (95% CI 1.26 to 1.91) and 1.62 (95% CI 1.07 to 2.46) for preeclampsia, gestational hypertension and gestational diabetes, respectively, and were similar in all sensitivity analyses. There were no clear associations for part-time workers. **Conclusions:** The results suggest that women should not be exposed to WBV at/above the action limit value of $0.5\ m/s^2$ (European directive) continuously through pregnancy. However, these results need further confirmation.

Skroder et al. 2020.

Occupational and Environmental Medicine, vol. 77, no. 10.

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Keywords: Epidemiology; female reproductive effects and adverse pregnancy outcomes; hygiene / occupational hygiene; vibration.

Evidence Level: 4A

Link: <https://oem.bmj.com/content/77/10/691.long>

Occupational risk resulting from exposure to mineral wool when installing insulation in buildings

Mineral wool is widely used for thermal and sound insulation. The subject of the study is to identify hazards for employees resulting from exposure to mineral wool, when it is used to insulate buildings, and to assess the risk arising from this exposure. When installing mineral wool insulation, respirable mineral fibers, dust, and volatile organic compounds may pose a hazard at workplaces. Based on the results of concentration measurements, it was assessed that the probability of adverse health effects related to the work of insulation installers, resulting from exposure to mineral wool fibers, is low, but for dust associated with exposure, an average health risk was estimated. An additional threat may be the sensitizing effect of substances used as binders and additives improving the utility properties of mineral wool, for example, phenol formaldehyde resins. The paper also contains some information on the labeling of mineral wool;

this is very important because the label allows downstream users to recognize mineral wools, the composition and properties of which cause that they are not classified as carcinogens.

Kupczewska-Dobecka et al. 2020.

International Journal of Occupational Medicine and Environmental Health, vol. 33, no. 6.

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Keywords: Fibers; health effects; insulation; labeling; mineral wool; toxicity.

Evidence Level: 6A

Link: <http://ijomeh.eu/Occupational-risk-resulting-from-exposure-to-mineral-wool-when-installing-insulation,124790,0,2.html>

Risk assessment and evaluation of heavy metals concentrations in blood samples of plastic industry workers in Dhaka, Bangladesh

This study collected blood samples from plastic industry workers in Dhaka, Bangladesh to explore the health risk caused by heavy metals such as Lead (Pb), Cadmium (Cd), Nickel (Ni), and Zinc (Zn). The average heavy metal concentrations in blood samples of smoking workers show a narrow range of fluctuation than that of non-smoking workers. The results indicated a lower cancer risk compared to EPA limit value for exposed industrial workers.

Ahmed et al. 2020.

Toxicology Reports, vol. 7.

Keywords: Carcinogenic risk; hazard index; heavy metals; human blood; industrial dust.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S221475002030411X?via%3Dihub>

Occupation versus environmental factors in hypersensitivity pneumonitis: Population attributable fraction

Background: Despite well-documented case series of hypersensitivity pneumonitis (HP), epidemiological data delineating relative contributions of risk factors are sparse. To address this, we estimated HP risk in a case-referent study of occupational and nonoccupational exposures. **Methods:** We recruited cases of HP by ICD-9 codes from an integrated healthcare delivery system (IHCDs) and a tertiary medical care centre. We drew referents, matched for age and sex, from the IHCDs. Participants underwent comprehensive, structured telephone interviews eliciting details of occupational and home environmental exposures. We employed a hierarchical analytic approach for data reduction based on the false discovery rate method within clusters of exposures. We measured lung function and selected biomarkers in a subset of participants. We used multivariate logistic regression to estimate exposure-associated odds ratios (ORs) and population attributable fractions (PAFs) for HP. **Results:** We analysed data for 192 HP cases (148 IHCDs; 44 tertiary care) and 229 referents. Occupational exposures combined more than doubled the odds of developing HP (OR 2.67; 95% CI 1.73-4.14) with a PAF of 34% (95% CI 21-46%); nonoccupational bird exposure also doubled the HP odds (OR 2.02; 95% CI 1.13-3.60), with a PAF of 12% (3-21%). Lung function and selected biomarkers did not substantively modify the risk estimates on the basis of questionnaire data alone. **Discussion:** In a case-referent approach evaluating HP risk, identifiable exposures accounted, on an epidemiological basis, for approximately two in three cases of disease; conversely, for one in three, the risk factors for disease remained elusive.

Barnes et al. 2020.

ERL Open Research, vol. 6, no. 4.

User License:

Keywords: Occupation factors; environmental factors; hypersensitivity; pneumonitis

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7533383/>

Estimating the burden of lung cancer in Canada attributed to occupational radon exposure using a novel exposure assessment method

Objective: Exposure to radon causes lung cancer. The scope and impact of exposure among Canadian workers have not been assessed. Our study estimated occupational radon exposure in Canada and its

associated lung cancer burden. **Methods:** Exposed workers were identified among the working population during the risk exposure period (1961-2001) using data from the Canadian Census and Labour Force Survey. Exposure levels were assigned based on 12,865 workplace radon measurements for indoor workers and assumed to be 1800 mg/m³ for underground workers. Lung cancer risks were calculated using the Biological Effects of Ionizing Radiation (BEIR) VI exposure-age-concentration model. Population attributable fractions were calculated with Levin's equation and applied to 2011 Canadian lung cancer statistics.

Results: Approximately 15.5 million Canadian workers were exposed to radon during the risk exposure period. 79% of exposed workers were exposed to radon levels < 50 Bq/m³ and 4.8% were exposed to levels > 150 Bq/m³. We estimated that 0.8% of lung cancers in Canada were attributable to occupational radon exposure, corresponding to approximately 188 incident lung cancers in 2011. **Conclusions:** The lung cancer burden associated with occupational radon exposure in Canada is small, with the greatest burden occurring among those exposed to low levels of radon.

Ge et al. 2020.

International Archives of Occupational and Environmental Medicine, vol. 93, no. 7.

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Keywords: Disease burden; lung cancer; occupational exposure; radon.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007%2Fs00420-020-01537-2>

Projections of heat stress and associated work performance over India in response to global warming

Summertime heat stress future projections from multi-model mean of 18 CMIP5 models show unprecedented increasing levels in the RCP 4.5 and RCP 8.5 emission scenarios over India. The estimated heat stress is found to have more impact on the coastal areas of India having exposure to more frequent days of extreme caution to danger category along with the increased probability of occurrence. The explicit amount of change in temperature, increase in the duration and intensity of warm days along with the modulation in large scale circulation in future are seemingly connected to the increasing levels of heat stress over India. A decline of 30 to 40% in the work performance is projected over India by the end of the century due to the elevated heat stress levels which pose great challenges to the country policy makers to design the safety mechanisms and to protect people working under continuous extreme hot weather conditions.

Rao et al. 2020.

Scientific Reports, vol. 10, no. 1.

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Keywords: Heat stress; work performance; India; global warming

Evidence Level: 5B

Link: <https://www.nature.com/articles/s41598-020-73245-3>

Decreased pulmonary function over 5 years in US firefighters

Objective: To examine changes in pulmonary function over a 5-year period in US firefighters.

Methods: Spirometry values from occupational medical examinations separated by 5 years (2009 to 2016) were examined from 662 career firefighters in Virginia. Predicted values and expected 5-year changes in one-second forced expiratory volume (FEV1), forced vital capacity (FVC), and FEV1/FVC were estimated using reference equations generated from the Third National Health and Nutrition Examination Survey (NHANES III) data. Paired t-tests were used to identify significant changes over time and between the observed and expected changes. **Results:** FEV1 and FVC (percentage of predicted) decreased ($P < 0.001$) from $100.9 \pm 0.6\%$ to $92.3 \pm 0.5\%$ and $99.0 \pm 0.6\%$ to $91.9 \pm 0.5\%$, respectively. The observed decreases in FEV1, FVC, and FEV1/FVC were two to four times greater ($P < 0.001$) than the expected decrease over 5 years. **Conclusion:** Increased efforts are needed to ensure respiratory protection for US firefighters to minimize their risk of pulmonary damage.

Mathias et al. 2020.

Journal of Occupational and Environmental Medicine, vol. 62, no. 10.

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Keywords: Pulmonary function; decline; firefighters.

Evidence Level: 5A

Link:

https://journals.lww.com/joem/Fulltext/2020/10000/Decreased_Pulmonary_Function_Over_5_Years_in_US.7.aspx

Asbestosis and Mesothelioma

Occurrence of asbestos-related occupational diseases in the Czech Republic in the last 20 years

This retrospective study explored the occurrence of asbestos-related diseases in the Czech Republic, through analyses of data from the Institute of Health Information and Statistics of the Czech Republic and data from the Czech National Cancer Registry. The study identified that in the past 20 years, there were 512 new cases of occupational diseases from asbestos reported. The overall incidence of occupational mesotheliomas was significantly different than the incidence of mesothelioma in a general population. Occupational causes were acknowledged in 11.3% of cases of mesothelioma. The trend in incidence of mesothelioma is not declining.

Janosikova et al. 2020.

Central Europe Journal of Public Health, vol. 28.

Keywords: Asbestos-related disease; incidence; malignant mesothelioma; occupational disease.

Evidence Level: 4B

Link: http://cejph.szu.cz/artkey/cjp-202088-0007_occurrence-of-asbestos-related-occupational-diseases-in-the-czech-republic-in-the-last-20-years.php

Sedentary Practices Efficacy of the 'Stand and Move at Work' multicomponent workplace intervention to reduce sedentary time and improve cardiometabolic risk: A group randomized clinical trial

Background: Sedentary time is associated with chronic disease and premature mortality. We tested a multilevel workplace intervention with and without sit-stand workstations to reduce sedentary time and lower cardiometabolic risk. **Methods:** Stand and Move at Work was a group (cluster) randomized trial conducted between January 2016 and December 2017 among full-time employees; ≥ 18 years; and in academic, industry/healthcare, and government worksites in Phoenix, Arizona and Minneapolis/St. Paul, Minnesota, USA. Eligible worksites were randomized to (a) MOVE+, a multilevel intervention targeting reduction in sedentary time and increases in light physical activity (LPA); or (b) STAND+, the MOVE+ intervention along with sit-stand workstations to allow employees to sit or stand while working. The primary endpoints were objectively-measured workplace sitting and LPA at 12 months. The secondary endpoint was a clustered cardiometabolic risk score (blood pressure, glucose, insulin, triglycerides, and HDL-cholesterol) at 12 months. **Results:** Worksites (N = 24; academic [n = 8], industry/healthcare [n = 8], and government [n = 8] sectors) and employees (N = 630; 27 ± 8 per worksite; 45 ± 11 years of age, 74% female) were enrolled. All worksites were retained and 487 participants completed the intervention and provided data for the primary endpoint. The adjusted between arm difference in sitting at 12 months was -59.2 (CI: -74.6,-43.8) min per 8 h workday, favoring STAND+, and in LPA at 12 months was +2.2 (-0.9,5.4) min per 8 h workday. Change in the clustered metabolic risk score was small and not statistically significant, but favored STAND+. In an exploratory subgroup of 95 participants with prediabetes or diabetes, the effect sizes were larger and clinically meaningful, all favoring STAND+, including blood glucose, triglycerides, systolic blood pressure, glycosylated hemoglobin, LDL-cholesterol, body weight, and body fat.

Conclusions: Multilevel workplace interventions that include the use of sit-stand workstations are effective for large reductions in sitting time over 12 months. Among those with prediabetes or diabetes, clinical improvements in cardiometabolic risk factors and body weight may be realized.

Pererira et al. 2020.

International Journal of Behavioral Nutrition and Physical Activity, vol. 17, no. 1.

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Keywords: Stand and Move at Work; workplace; intervention; sedentary time; cardiometabolic risk.

Evidence Level: 2A

Link: <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-020-01033-3>

Physical Activity

Physical activity moderates the association between parenting stress and quality of life in working mothers during the COVID-19 pandemic

Statement of problem: Working mothers are a population experiencing heightened levels of parenting stress during the COVID-19 pandemic. The purpose of the current study was to evaluate the associations between parenting stress, quality of life, and physical activity in a national sample of working mothers who endorsed having been forced to work from home full-time due to the COVID-19 pandemic and examine if physical activity moderates the association between parenting stress and quality of life in this sample of working mothers. **Methods:** Participants in this cross-sectional study were 200 full-time working mothers from the United States (mean age = 33.50 years; SD = 6.25; 70.0% White). Participants were recruited from a Qualtrics research panel and completed the International Physical Activity Questionnaire Short-Form, the World Health Organization Quality of Life Scale-Brief Version, the Parental Stress Scale, and a demographic questionnaire. **Results:** After controlling for socio-demographic variables (i.e., maternal marital status, annual income, maternal highest level of education), greater parenting stress was associated with poorer maternal quality of life across domains (standardized beta coefficients ranged from -0.26 to -0.47; $p < .001$). The interaction between parenting stress and moderate intensity physical activity was associated with social relationships quality of life and environment quality of life (standardized beta coefficients ranged from 0.15 to 0.17; $p < .05$) in our sample of working mothers. The negative effect of parenting stress on maternal social relationships and environmental quality of life was weaker for working mothers who engaged in higher levels of moderate intensity physical activity. **Conclusions:** Our findings suggest that moderate intensity physical activity may attenuate the negative impact of parenting stress on social relationships and satisfaction with one's environment in working mothers during the COVID-19 pandemic. **Limbers et al. 2020.**

Mental Health and Physical Activity.

User License: Elsevier Connect COVID-19 resource centre

Keywords: COVID-19; parenting stress; physical activity; quality of life; working mothers.

Evidence Level: 4A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7548083/>

Musculoskeletal Health

The prevention of musculoskeletal complaints: Long-term effect of a work-related psychosocial coaching intervention compared to physiotherapy alone-a randomized controlled trial

Purpose: Research shows that psychosocial factors play a significant role in the emergence of musculoskeletal complaints (MSC). The aim of this study was to determine the long-term effects on unspecific MSC by a combined physiotherapy and coaching intervention compared to physiotherapy alone. The coaching intervention focussed on enabling better strategies for coping with work stressors.

Methods: The participants of a previous randomized controlled intervention were invited to participate again in a third follow-up survey 22 months after the end of the intervention. In 2014, 65 nurses completed a 10-week personalised physiotherapy. Additionally, the intervention group ($n = 33$) passed five individual coaching sessions, plus an opening and closing session. 44 nurses (IG: $n = 24$; CG: $n = 20$) passed again a physical examination as well as another questionnaire assessment in 2016. The primary outcome was MSC, secondary outcomes were work ability and work-related well-being. Due to missing data, multiple imputations were conducted using the mice package in R. Data were analysed by ANOVA with two-way repeated measures, t tests for independent samples and Chi-squared tests. **Results:** In respect of MSC, stronger improvement of movement in the vertebral column was observed in the IG compared to the CG. No differences between the IG and CG regarding other long-term effects were observed. **Conclusions:** The results suggest that the combined intervention of work-related coaching and physiotherapy had only a marginally stronger long-term effect with respect to MSC than physiotherapy alone.

Becker et al. 2020.

International Archives of Occupational and Environmental Medicine, vol. 93, no. 7.

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Keywords: Coaching; long-term effect; musculoskeletal complaints; nurses; selection; stress prevention; and compensation; optimization.

Evidence Level: 2A

Link: <https://link.springer.com/article/10.1007%2Fs00420-020-01538-1>

Occupation and risk of knee osteoarthritis and knee replacement: A longitudinal, multiple-cohort study

Objectives: To examine the effect of occupation on knee osteoarthritis (OA) and total knee replacement (TKR) in working-aged adults. **Methods:** We used longitudinal data from the Chingford, Osteoarthritis Initiative (OAI) and Multicentre Osteoarthritis (MOST) studies. Participants with musculoskeletal disorders and/or a history of knee-related surgery were excluded. Participants were followed for up to 19-years (Chingford), 96-months (OAI) and 60-months (MOST) for incident outcomes including radiographic knee OA (RKO), symptomatic RKO and TKR. In those with baseline RKO, progression was defined as the time from RKO incidence to primary TKR. Occupational job categories and work-place physical activities were assigned to levels of workload. Logistic regression was used to examine the relationship between workload and incident outcomes with survival analyses used to assess progression (reference group: sedentary occupations). **Results:** Heavy manual occupations were associated with a 2-fold increased risk (OR: 2.07, 95% CI 1.03 to 4.15) of incident RKO in the OAI only. Men working in heavy manual occupations in MOST (2.7, 95% CI 1.17 to 6.26) and light manual occupations in OAI (2.00, 95% CI 1.09 to 3.68) had a 2-fold increased risk of incident RKO. No association was observed among women. Increasing workload was associated with an increased risk of symptomatic RKO in the OAI and MOST. Light work may be associated with a decreased risk of incident TKR and disease progression. **Conclusion:** Heavy manual work carries an increased risk of incident knee OA; particularly among men. Workload may influence the occurrence of TKR and disease progression.

Perry et al. 2020.

Seminars in Arthritis and Rheumatism, vol. 50, no. 5.

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Keywords: Knee osteoarthritis; Occupation; Work-place activity.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S0049017220302237?via%3Dihub>

COVID 19

Fostering Work Participation

Effects of work status changes and perceived stress on glycaemic control in individuals with type 1 diabetes during COVID-19 lockdown in Italy

This Italian study explored the effects of COVID-19 lockdown on blood glucose control in 50 individuals with type 1 diabetes (T1D) and the determinants of glucose variability. The study found that in T1D patients, blood glucose control significantly worsened during the COVID-19 lockdown; with work instability and related issues (lockdown-associated work loss/suspension) representing the main determinant of impaired glucose variability in this population.

Barchetta et al. 2020.

Diabetes Research and Clinical Practice, vol. 170.

Keywords: COVID-19; Glycaemic control; Lockdown; Stress; Type 1 diabetes.

Evidence Level: 5B

Link: [https://www.diabetesresearchclinicalpractice.com/article/S0168-8227\(20\)30770-1/fulltext](https://www.diabetesresearchclinicalpractice.com/article/S0168-8227(20)30770-1/fulltext)

Slowly coming out of COVID-19 restrictions in Australia: Implications for working from home and commuting trips by car and public transport

With the onset of COVID-19 restrictions and the slow relaxing of many restrictions, it is imperative that we understand what this means for the performance of the transport network. In going from almost no

commuting, except for essential workers, to a slow increase in travel activity with working from home (WFH) continuing to be both popular and preferred, this paper draws on two surveys, one in late March at the height of restrictions and one in late May as restrictions are starting to be partially relaxed, to develop models for WFH and weekly one-way commuting travel by car and public transport. We compare the findings as one way to inform us of the extent to which a sample of Australian residents have responded through changes in WFH and commuting. While it is early days to claim any sense of a new stable pattern of commuting activity, this paper sets the context for ongoing monitoring of adjustments in travel activity and WFH, which can inform changes required in the revision of strategic metropolitan transport models as well as more general perspectives on future transport and land use policy and planning.

Beck et al. 2020.

Journal of Transport Geography, vol. 88.

User License: Elsevier Connect COVID-19 resource centre

Keywords: Australian evidence; COVID-19; coronavirus; frequency of modal commuting; household surveys; ordered logit WFH model; poisson regression; travel activity; working from home (WFH).

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7462783/>

Is digital technology the magic bullet for performing work at home? Lessons learned for post COVID-19 recovery in hospitality management

Purpose: The COVID-19 pandemic has suddenly brought about a number of disruptions to when and where work is undertaken for hospitality employees. The rapid spread of COVID-19 forced many hospitality managers to use digital technologies to perform work from home, termed digital work connectivity. Yet little is known about how hospitality employees cope with it. The purpose of this study is to investigate an important yet underspecified issue as to how digital work connectivity can be detrimental for employees' work behavior. **Design/methodology/approach:** We test our hypotheses using multi-wave and multi-source data collected from 467 middle managerial-level hospitality employees in China. **Findings:** The findings show that digital work connectivity can lead to self-control depletion, which in turn is associated with disengagement from work. Further, the findings show that relational energy is an important resource that can buffer the detrimental effects of digital work connectivity on hospitality employees. **Practical implications:** The association of digital work connectivity with employee withdrawal behavior highlights the urgent need for hospitality enterprises to have clear guidelines that regulate technology use at home for work purposes. **Social implications:** Our research shows that the absence of clear guidelines in relation to the use of digital technology for work at home risks producing unintended consequences for both hospitality employees and their enterprises. **Originality/value:** Our research draws from recent advances in resource allocation theories of self-control and adopts a more nuanced approach to uncover a counterintuitive reality that while people use digital technology to remain connected with work, doing so can actually contribute to their withdrawal behavior.

Chadee et al. 2020.

International Journal of Hospitality Management, vol. 92.

User License: Elsevier Connect COVID-19 resource centre

Keywords: COVID-19; digital technology; hospitality; relational energy; withdrawal behavior; work at home.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7552983/>

Guiding and Supporting Mental Health and Wellbeing

Employee engagement practices during COVID-19 lockdown

In the present business situation during the COVID-19 pandemic, employee engagement has become one of the utmost prominent primacies for human resource managers and practitioners in organizations due to lockdown. The paper is to determine the engagement of employees by various companies during coronavirus pandemic. Organizations nowadays are constantly developing innovative and effective means to engage the employees during this tough time. This paper is a conceptual paper that is based on various

research papers, articles, blogs, online newspapers, and reports of World Health Organization. During this pandemic situation, organizations are evolving many engagement activities like online family engagement practices, virtual learning and development, online team building activities, webinars with industry experts, online conduct weekly alignment sessions, team meet-ups over video conference for lunch, short online game sessions, virtual challenges and competitions, online courses, appreciation sessions, communication exercises, live sessions for new-skill training, online counseling sessions, recognition and acknowledgment session, webinars dealing with anxiety and stress, providing online guidance for exercise and meditation, social interactions in a virtual office, classrooms training modules digitally, e-learning modules, and many more creative learning sessions. Work-from-home regime engagement activities are very fruitful for employees as well as for organizations. Those organizations doing these kinds of engagement activities for their employees are learning new skills and developing themselves. Employees are feeling committed to the organization and stay motivated during this tough time of COVID-19 pandemic.

Chanana et al. 2020.

Journal of Public Affairs.

Keywords: Employee engagement; engagement practices; COVID-19; lockdown

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7536939/>

Associations of mental health and personal preventive measure compliance with exposure to COVID-19 information during work resumption following the COVID-19 outbreak in China: Cross-sectional survey study

Background: Risk and crisis communication plays an essential role in public health emergency responses. The COVID-19 pandemic has triggered spontaneous and intensive media attention, which has affected people's adoption of personal preventive measures and their mental health. **Objective:** The aim of this study was to investigate the associations between exposure to COVID-19-specific information and mental health (depression and sleep quality) and self-reported compliance with personal preventive measures (face mask wearing and hand sanitizing). We also tested whether these associations were moderated by thoughtful consideration of the veracity of the information to which people were exposed. **Methods:** A cross-sectional, closed web-based survey was conducted among a sample of 3035 factory workers at the beginning of work resumption following the COVID-19 outbreak in Shenzhen, China. A stratified two-stage cluster sampling design was used for recruitment. Multivariate linear and logistic regression models were used for the analyses. **Results:** The prevalence of probable moderate-to-severe depression was 170/3035 (5.6%), while that of good or excellent sleep quality was 2110/3035 (69.5%). The prevalence of self-reported consistent face mask wearing in public places was 2903/3035 (95.7%), while that of sanitizing hands every time after returning from public spaces or touching public installations was 2151/3035 (70.9%). Of the 3035 respondents, 1013 to 1638 (33.3% to 54.0%) reported >1 hour of daily exposure to COVID-19-specific information through web-based media and television. After controlling for significant background variables, higher information exposure via television and via newspapers and magazines was associated with better sleep quality and higher compliance with hand sanitizing. Higher exposure via unofficial web-based media was associated with higher compliance with hand sanitizing but was also associated with higher depressive symptoms. In contrast, higher exposure through face-to-face communication was associated with higher depressive symptoms, worse sleep quality, and lower compliance with hand sanitizing. Exposure to information about positive outcomes for patients with COVID-19, development of vaccines and effective treatments, and heroic stories about frontline health care workers were associated with both better mental health and higher compliance with preventive measures. Higher overall information exposure was associated with higher depressive symptoms among participants who were less likely to carefully consider the veracity of the information to which they were exposed; it was also associated with better sleep quality among people who reported more thoughtful consideration of information veracity. **Conclusions:** This study provides empirical evidence of how the amount, sources, and contents of information to which people were exposed influenced their mental health and compliance with personal preventive measures at the initial phase of work resumption in China. Thoughtful consideration of information quality was found to play an important moderating role. Our findings may inform strategic risk communication by government and public health authorities during the COVID-19 pandemic.

Pan et al. 2020.

Journal of Medical Internet Research, vol. 22, no. 10.

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Keywords: COVID-19; China; communication; cross-sectional; information exposure; mental health; personal preventive measures; prevention; public health; risk.

Evidence Level: 5B

Link: <https://www.jmir.org/2020/10/e22596/>

A less objectionable greed? Work-life conflict and unjust pay during a pandemic

Perceptions of unjust pay represent a central feature in research on distributive justice. Prior studies document that work-life conflict (WLC) is a strong predictor of unjustly low pay. We extend that work by asking: Did the social and economic changes associated with the coronavirus pandemic 2019 (COVID-19) modify the relationship between WLC and perceptions of unjust pay? In September 2019, we collected data from a nationally representative sample of workers to profile the quality of work and economic life. Then, during a critical period of widespread economic and social shockwaves, we re-interviewed these same study participants in May 2020 to evaluate change. We observe that the strong positive association between WLC and unjustly low pay decreased overall in the population-but the strength and direction of that association differed significantly across several dimensions of social stratification. Specifically, we found a weaker relationship among visible minorities, younger workers, and individuals with lower socioeconomic status. We interpret these patterns as suggesting that-at least among more vulnerable groups-the "greed" represented in the process of work interfering with non-work was unevenly experienced during peak period of the COVID-19 pandemic.

Schieman et al. 2020.

Research and Social Stratification and Mobility, vol. 71.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19; distributive justice; unjust pay; work-home interface; work-life conflict.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7577259/>

Psychological tolls of COVID-19 on industry employees

Highlights: Lack of social support and panic about the pandemic result in impaired well-being.

Unemployed and furloughed employees are more negatively impacted by the crisis.

Women and younger employees experience more psychological distress.

Chen et al. 2020.

Annals of Tourism Research.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19, social isolation, pandemic-induced panic, well-being, unemployment

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7574898/>

Depression, anxiety, and lifestyle among essential workers: A web survey from Brazil and Spain during the COVID-19 pandemic

Background: Essential workers have been shown to present a higher prevalence of positive screenings for anxiety and depression during the COVID-19 pandemic. Individuals from countries with socioeconomic inequalities may be at increased risk for mental health disorders. **Objective:** We aimed to assess the prevalence and predictors of depression, anxiety, and their comorbidity among essential workers in Brazil and Spain during the COVID-19 pandemic. **Methods:** A web survey was conducted between April and May 2020 in both countries. The main outcome was a positive screening for depression only, anxiety only, or both. Lifestyle was measured using a lifestyle multidimensional scale adapted for the COVID-19 pandemic (Short Multidimensional Inventory Lifestyle Evaluation-Confinement). A multinomial logistic regression model was performed to evaluate the factors associated with depression, anxiety, and the presence of both conditions. **Results:** From the 22,786 individuals included in the web survey, 3745 self-reported to be essential workers. Overall, 8.3% (n=311), 11.6% (n=434), and 27.4% (n=1027) presented positive screenings

for depression, anxiety, and both, respectively. After adjusting for confounding factors, the multinomial model showed that an unhealthy lifestyle increased the likelihood of depression (adjusted odds ratio [AOR] 4.00, 95% CI 2.72-5.87), anxiety (AOR 2.39, 95% CI 1.80-3.20), and both anxiety and depression (AOR 8.30, 95% CI 5.90-11.7). Living in Brazil was associated with increased odds of depression (AOR 2.89, 95% CI 2.07-4.06), anxiety (AOR 2.81, 95% CI 2.11-3.74), and both conditions (AOR 5.99, 95% CI 4.53-7.91).

Conclusions: Interventions addressing lifestyle may be useful in dealing with symptoms of common mental disorders during the strain imposed among essential workers by the COVID-19 pandemic. Essential workers who live in middle-income countries with higher rates of inequality may face additional challenges.

Ensuring equitable treatment and support may be an important challenge ahead, considering the possible syndemic effect of the social determinants of health.

De Boni et al. 2020.

Journal of Medical Internet Research, vol. 22, no. 10.

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Keywords: Brazil; COVID-19; Spain; anxiety; depression; lifestyle.

Evidence Level: 5B

Link: <https://www.jmir.org/2020/10/e22835/>

Prevalence of stress in healthcare professionals during the COVID-19 pandemic in Northeast Mexico: A remote, fast survey evaluation, using an adapted COVID-19 stress scales

The world is currently subjected to the worst health crisis documented in modern history: an epidemic led by the novel coronavirus disease 2019 (COVID-19). At the epicenter of this crisis, healthcare professionals continue working to safeguard our well-being. To the regular high levels of stress, COVID-19 adds even more so to healthcare professionals in particular, depending on their area, specialty, and type of work. Here we investigated what are the tendencies or areas most affected. Through an adaptation of the original COVID-stress scales, we developed a remote, fast test designed for healthcare professionals in the northeastern part of Mexico, an important part of the country with economic and cultural ties to the United States. Our results showed four key correlations as highly dependent: work area-xenophobia ($p < 0.045$), work with COVID patients-traumatic stress ($p < 0.001$), total number of COVID patients per day-traumatic stress ($p < 0.027$), and total number of COVID patients-compulsive checking and reassurance. Overall, we concluded that normal levels of stress have increased (mild-moderate). Additionally, we determine that the fear of being an asymptomatic patient (potential to spread without knowing) continues being a concern.

Delgado-Gallegos et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: COVID-19 Mexico; COVID-19 stress scales; stress in healthcare professionals.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/17/20/7624>

The motherhood penalty and the fatherhood premium in employment during covid-19: Evidence from the United States

In this paper, we present evidence from the Current Population Survey examining the effects of the COVID-19 crisis on parental status and gender inequalities in employment in the United States. We show that the drop in the employment rate in post-outbreak months was largely driven by mass layoffs and not by workers quitting their jobs. Results from fixed-effects regression models show a strong fatherhood premium in the likelihood of being laid off for post-outbreak months compared to mothers, men without children, and women without children. We also found that the "fatherhood premium" was higher among lower-educated and mid-educated workers. These findings show that gaps in layoff rates exacerbated pre-existing forms of parental status and gender inequality in employment. Possible mechanisms are discussed, but more work is needed to explain why employers were less likely to lay off fathers following the outbreak, and the short- and long-term consequences of the COVID-19 pandemic in reinforcing parental status and gender inequality in employment in the United States.

Dias et al. 2020.

Research in Social Stratification and Mobility, vol. 69.

User License: Elsevier Connect COVID-19 resource centre

Keywords: COVID-19; fatherhood premium; gender; labor market inequality; motherhood penalty.

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7431363/>

The combined effect of perceived COVID-19 infection risk at work and identification with work community with psychosocial wellbeing among Finnish social sector and health care workers

It has been well documented that both risk perception and group identification are related to psychosocial well-being. However, their combined effect has rarely been analyzed. We examined the combined effect of perceived risk associated with COVID-19 infection at work and work community identification on psychosocial well-being (i.e., frequency of stress symptoms) among health care and social sector workers in Finland ($N = 1\,279$). Data were collected via an online questionnaire in June 2020 and analyses of covariance were conducted. Perceived COVID-19 infection risk at work was classified into high, medium and low risk. In total, 41% of participants reported a high risk. After all background variables were included, participants who reported high perceived infection risk and low work community identification reported stress symptoms more often than those who reported high perceived risk and high identification ($p = 0.010$). Similarly, the former differed significantly from all other comparison groups (medium and low risk, $p < 0.001$), being the most stressed. We found that perceived infection risk and work community identification were not related to each other. Our conclusion is that high work community identification can buffer employee stress when faced with a high perceived health risk. In the context of the COVID-19 pandemic, work organizations with a high infection risk should advance the possibility of employees' identification with their work community.

Finell et al. 2020.

International Journal of Environmental Research and Public Health, vol. 17, no. 20.

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Keywords: COVID-19; coronavirus pandemic; health care workers; psychosocial well-being; risk perception; shared identity; social workers; stress; work identification.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/17/20/7623>

Social distancing and public health guidelines at workplaces in Korea: Responses to coronavirus disease-19

Background: In the absence of a vaccine or treatment, the most pragmatic strategies against an infectious disease pandemic are extensive early detection testing and social distancing. This study aimed to summarize public and workplace responses to Coronavirus Disease-19 (COVID-19) and show how the Korean system has operated during the COVID-19 pandemic. **Method:** Daily briefings from the Korean Center for Disease Control and the Central Disaster Management Headquarters were assembled from January 20 to May 15, 2020. **Results:** By May 15, 2020, 11,018 COVID-19 cases were identified, of which 15.7% occurred in workplaces such as health-care facilities, call centers, sports clubs, coin karaoke, and nightlife destinations. When the first confirmed case was diagnosed, the Korean Center for Disease Control and Central Disaster Management Headquarters responded quickly, emphasizing early detection with numerous tests and a social distancing policy. This slowed the spread of infection without intensive containment, shut down, or mitigation interventions. After entering the public health blue alert level, a business continuity plan was distributed. After entering the orange level, the Ministry of Employment and Labor developed workplace guidelines for COVID-19 consisting of social distancing, flexible working schedules, early identification of workers with suspected infections, and disinfection of workplaces. Owing to the intensive workplace social distancing policy, workplaces remained safe with only small sporadic group infections. **Conclusion:** The workplace social distancing policy with timely implementation of specific guidelines was a key to preventing a large outbreak of COVID-19 in Korean workplaces. However, sporadic incidents of COVID-19 are still ongoing, and risk assessment in vulnerable workplaces should be continued.

Kim et al. 2020.

Safety and Health at Work, vol. 11, no. 3.

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Keywords: COVID-19; public health; public health surveillance; social distance; workplace.

Evidence Level: 6B

Link: <https://www.sciencedirect.com/science/article/pii/S2093791120303103?via%3Dihub>

Mindfulness and the challenges of working from home in times of crisis

Many employees unexpectedly were required to work from home during the COVID-19 pandemic of 2020. With this abrupt change came the challenge of blurred lines between career and personal life. Lacking designated home office spaces, countless individuals had to create improvised work setups in living rooms, kitchens, bedrooms-wherever there was space. Moreover, the closure of schools forced many working parents to attempt productivity while concurrently supervising their children. As a result of these changes, numerous employees have experienced lower work productivity, lessened motivation, increased stress, and poorer mental health. One approach that may help employees going through the challenges associated with working from home is mindfulness. Mindfulness may be particularly beneficial as it can (1) help employees mentally disconnect from work when they need to; (2) improve individuals' attention to work tasks and thereby improve their performance; and (3) allow workers to better manage screen fatigue. In this installment of Work/Life Balance, we elaborate on how mindfulness may help employees deal with these work issues, explain how mindfulness can be cultivated, and provide a list of mindfulness techniques. We also provide a set of recommendations for managers and team leaders responsible for their employees' well-being and productivity.

Toniolo-Barrios et al. 2020.

Business Horizons.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19; crisis; mindfulness; pandemic; productivity; telecommuting; telework; well-being; working from home.

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7535863/>

Enabling Healthy and Safe Workplaces

COVID-19: Protection of workers at the workplace in Singapore

The COVID-19 pandemic has resulted in movement restrictions being instituted globally and the cessation of work at many workplaces. However, during this period, essential services such as healthcare, law enforcement and critical production and supply chain operations have been required to continue to function. In Singapore, measures were put in place to protect the workers from infection at the workplace, as well as to preserve the operational capability of the essential service in a COVID-19 pandemic environment. This paper critically analyses the measures that were implemented and discusses the extension to broader general industry.

Ng et al. 2020.

Safety and Health at Work.

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Keywords: COVID-19; workers; protection; workplace; pandemic.

Evidence Level: 6A

Link: <https://www.sciencedirect.com/science/article/pii/S2093791120303437?via%3Dihub>

Estimated association of construction work with risks of COVID-19 infection and hospitalization in Texas

Importance: Policy makers have relaxed restrictions for certain nonessential industries, including construction, jeopardizing the effectiveness of social distancing measures and putting already at-risk populations at greater risk of coronavirus disease 2019 (COVID-19) infection. In Texas, Latinx populations are overly represented among construction workers, and thus have elevated rates of exposure that are

compounded by prevalent high-risk comorbidities and lack of access to health care. **Objective:** To assess the association between construction work during the COVID-19 pandemic and hospitalization rates for construction workers and the surrounding community. **Design, setting, and participants:** This decision analytical model used a mathematical model of COVID-19 transmission, stratified by age and risk group, with construction workers modeled explicitly. The model was based on residents of the Austin-Round Rock metropolitan statistical area, with a population of 2.17 million. Based on 500 stochastic simulations for each of 15 scenarios that varied the size of the construction workforce and level of worksite transmission risk, the association between continued construction work and hospitalizations was estimated and then compared with anonymized line-list hospitalization data from central Texas through August 20, 2020. **Exposures:** Social distancing interventions, size of construction workforce, and level of disease transmission at construction worksites. **Main outcomes and measures:** For each scenario, the total number of COVID-19 hospitalizations and the relative risk of hospitalization among construction workers was projected and then compared with relative risks estimated from reported hospitalization data. **Results:** Allowing unrestricted construction work was associated with an increase of COVID-19 hospitalization rates through mid-August 2020 from 0.38 per 1000 residents to 1.5 per 1000 residents and from 0.22 per 1000 construction workers to 9.3 per 1000 construction workers. This increased risk was estimated to be offset by safety measures (such as thorough cleaning of equipment between uses, wearing of protective equipment, limits on the number of workers at a worksite, and increased health surveillance) that were associated with a 50% decrease in transmission. The observed relative risk of hospitalization among construction workers compared with other occupational categories among adults aged 18 to 64 years was 4.9 (95% CI, 3.8-6.2). **Conclusions and relevance:** The findings of this study suggest that unrestricted work in high-contact industries, such as construction, is associated with a higher level of community transmission, increased risks to at-risk workers, and larger health disparities among members of racial and ethnic minority groups.

Pasco et al. 2020.

JAMA Network Open, vol. 3, no. 10.

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Keywords: Construction work; COVID-19; infection; hospitalisation.

Evidence Level: 5B

Link: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2772346>

Assessing and managing the risks of COVID-19 in the workplace: Applying industrial hygiene (IH)/occupational and environmental health and safety (OEHS) frameworks

As businesses attempt to reopen to varying degrees amid the current coronavirus disease (COVID-19) pandemic, industrial hygiene (IH) and occupational and environmental health and safety (OEHS) professionals have been challenged with assessing and managing the risks of COVID-19 in the workplace. In general, the available IH/OEHS tools were designed to control hazards originating in the workplace; however, attempts to tailor them specifically to the control of infectious disease outbreaks have been limited. This analysis evaluated the IH decision-making framework (Anticipate, Recognize, Evaluate, Control, and Confirm ("ARECC")) as it relates to biological hazards, in general, and to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), specifically. Available IH/OEHS risk assessment and risk management tools (e.g. control banding and the hierarchy of controls) are important components of the ARECC framework. These conceptual models, however, were primarily developed for controlling chemical hazards and must be adapted to the unique characteristics of highly infectious and virulent pathogens, such as SARS-CoV-2. This assessment provides an overview of the key considerations for developing occupational infection control plans, selecting the best available controls, and applying other emerging tools (e.g. quantitative microbial risk assessment), with the ultimate goal of facilitating risk management decisions during the current global pandemic.

Zisook et al. 2020.

Toxicology and Industrial Health.

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Keywords: COVID-19; IH/OEHS frameworks; SARS-CoV-2; risk assessment; risk management.

Evidence Level: 6A

Link: <https://journals.sagepub.com/doi/full/10.1177/0748233720967522>

Assessment of workers' personal vulnerability to covid-19 using 'covid-age'

This review presents the issues associated with determining a worker's susceptibility to COVID-19 because of their age, ethnicity and/or comorbidities. The risk of contracting COVID-19 at work depends on its prevalence; the extent to which the job entails close proximity to people or material that might be contaminated by the virus; the effectiveness of any measures to reduce transmission (such as barriers or personal protective equipment); and personal immunity (e.g. as a consequence of previous infection, or perhaps in the future, immunization).

Coggon et al. 2020.

Occupational Medicine (Oxford, England), vol. 70, no. 7.

Keywords: COVID-19; COVID-age; workers; vulnerability.

Evidence Level: 6A

Link: <https://academic.oup.com/occmed/article/70/7/461/5881715>

Covid-19: Statutory means of scrutinizing workers' deaths and disease

Background: By law, covid-19 disease and deaths in workers may lead to coroners' inquests and/or Health and Safety Executive (HSE) investigations. **Aims:** This study assesses the adequacy of these statutory means to yield recommendations for prevention of acquiring covid-19 infection from work. **Methods:** Covid-19 guidance from the chief coroner and the HSE was appraised, including using Office for National Statistics (ONS) data. Practitioners were asked to estimate the likelihood that covid-19 disease may have arisen from 'near-miss' scenarios. Data from the judiciary and the HSE were analysed. **Results:** The coroners' guidance allowed a wider range of reports of death than did the HSE and conformed better with ONS data on covid-19 mortality by occupation. In the practitioner survey, 62 respondents considered a higher likelihood that reported covid-19 cases would have arisen from the scenario deemed unreportable as a 'dangerous occurrence' by HSE than the reportable scenario ($P < 0.001$). On average there was only one coroner's report to prevent future death from occupational disease every year in England and Wales. The HSE dealt with a yearly average of 1611 reports of work-related disease including 104 on biological agents, but has received about 9000 covid-19 reports. **Conclusions:** Current HSE guidance for reporting work-related covid-19 may miss many thousands of cases and needs further iteration. Coroners have very limited experience of inquiry into occupational disease caused by biological agents compared with the HSE. Concerns regarding national policy such as on protective equipment warrant a full public inquiry.

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