



This Workplace Research Monthly 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 that were published in August 2024 only.

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## 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

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## Enabling Healthy and Safe Workplaces

### Health and Wellbeing

*This month we explore the health and wellbeing issues associated with sleep patterns and alcohol use disorders and the relationship between physical and psychosocial workplace exposures and life expectancy free of musculoskeletal and cardiovascular disease*

#### Association between sleep patterns and alcohol use disorders in workers

**Background:** Alcohol use among workers that is intended to aid sleep may lead to alcohol use disorders. This study aimed to explore the association between sleep patterns and alcohol use disorders in workers. **Method:** Data from the Korea National Health and Nutrition Examination Survey conducted in 2014, 2016, 2018, and 2020 were used for this study. We included only workers aged 19 years and older. The final analysis comprised 11,972 respondents (6,472 male and 5,500 female). Multiple logistic regression analysis was used to investigate the relationship between sleep patterns and alcohol use disorders. **Results:** Workers with poor sleep patterns were more likely to develop alcohol use disorders compared to those with good sleep patterns (male: adjusted odds ratio [OR] 1.22, 95% confidence interval 1.07-1.39; female: adjusted OR 1.21, 95% CI 1.03-1.41). Workers with both poor sleep quality and less than seven hours of sleep had the highest odds of alcohol use disorders in both male (adjusted OR 1.73, 95% CI 1.38-2.17) and female (adjusted OR 1.44, 95% CI 1.13-1.84). Poor sleep patterns were associated with alcohol use disorders in male who work night shift (OR: 1.74, 95% CI: 1.25-2.42) and in female who worked more than 52 hours per week (adjusted OR: 1.71, 95% CI: 1.04-2.80). **Conclusion:** Customized sleep management programs should be provided to workers in sleep-deprived working environments to prevent them from developing alcohol use disorders.

**Kim et al. 2024.**

**PLoS One, vol. 19, no. 8.**

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**Keywords:** Sleep patterns; alcohol use; disorders.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0308418>

#### The relationship between physical and psychosocial workplace exposures and life expectancy free of musculoskeletal and cardiovascular disease in working life - an analysis based on German health insurance data

**Background:** Against the backdrop of the debate on extending working life, it is important to identify vulnerable occupational groups by analysing inequalities in healthy life years. The aim of the study is to analyse partial life expectancy (age 30-65) [1] free of musculoskeletal diseases (MSD) and [2] free of cardiovascular diseases (CVD) in occupational groups with different levels of physical and psychosocial exposures. **Methods:** The study is based on German health insurance claims data from 2015 to 2018. The study population comprises all employed insured persons aged 18 to 65 years (N = 1,528,523). Occupational exposures were assessed using a Job Exposure Matrix. Life years free of MSD / CVD and life years with MSD / CVD during working age were estimated using multistate life tables. **Results:** We found inequalities in MSD-free and CVD-free life years, with less disease-free years among men and women having jobs with high levels of physical and psychosocial exposures. Men with low physical exposures had 2.4 more MSD-free and 0.7 more CVD-free years than men with high physical exposures. Women with low psychosocial exposures had 1.7 MSD-free and 1.0 CVD-free years more than women with high psychosocial exposures. **Conclusions:** Employees in occupations with high physical and psychosocial demands constitute vulnerable groups for reduced life expectancy free of MSD and CVD. Given the inequalities and high numbers of disease-affected life years during working age, the prevention potential of occupational health care and workplace health promotion should be used more extensively.

**Mond et al. 2024.**

**BMC Public Health, vol. 24, no. 1.**

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**Keywords:** Cardiovascular diseases; claims data; disease-free life expectancy; job exposure matrix; musculoskeletal diseases; physical workplace exposures; psychosocial workplace exposures.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19721-1>

## Work Health and Safety

*This month we explore workplace health and safety issues associated with gender and sex differences in occupation-specific infectious diseases, the effects of safety incentives on worker safety behaviour, wearable sensor node for safety improvement in workplaces and trends, work sectors, and causes of fatal workplace accidents.*

### **Gender and sex differences in occupation-specific infectious diseases: A systematic review**

**Background:** Occupational infectious disease risks between men and women have often been attributed to the gendered distribution of the labour force, with limited comparative research on occupation-specific infectious disease risks. The objective of this study was to compare infectious disease risks within the same occupations by gender. **Method:** A systematic review of peer-reviewed studies published between 2016 and 2021 was undertaken. To be included, studies were required to report infectious disease risks for men, women or non-binary people within the same occupation. The included studies were appraised for methodological quality. A post hoc power calculation was also conducted. 63 studies were included in the systematic review. **Results:** Among high-quality studies with statistical power (9/63), there was evidence of a higher hepatitis risk for men than for women among patient-facing healthcare workers (HCWs) and a higher parasitic infection risk for men than for women among farmers (one study each). The rest of the high-quality studies (7/63) reported no difference between men and women, including for COVID-19 risk among patient-facing HCWs and physicians, hepatitis risk among swine workers, influenza risk among poultry workers, tuberculosis risk among livestock workers and toxoplasmosis risk among abattoir workers. **Conclusion:** The findings suggest that occupational infectious disease risks are similarly experienced for men and women within the same occupation with a few exceptions showing a higher risk for men. Future studies examining gender/sex differences in occupational infectious diseases need to ensure adequate sampling by gender.

**Biswas et al. 2024.**

**Occupational and Environmental Medicine, vol. 81, no. 8.**

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**Keywords:** Communicable diseases; occupational health; risk assessment; sexual and gender disorders.

**Evidence Level:** 1A

**Link:** <https://oem.bmj.com/content/81/8/425.long>

### **Evaluating the effects of safety incentives on worker safety behaviour control through image-based activity classification**

**Background:** Construction worker safety remains a major concern even as task automation increases. Although safety incentives have been introduced to encourage safety compliance, it is still difficult to accurately measure the effectiveness of these measures. A simple count of accident rates and lower numbers do not necessarily mean that workers are properly complying with safety regulations. To address this problem, this study proposes an image-based approach to monitor moment-by-moment worker safety behaviour and evaluate the effects of different safety incentive scenarios. **Methods:** By capturing workers' safety behaviours using a model integrated with OpenPose and spatiotemporal graph convolutional network, this study evaluated the effects of safety-incentive scenarios on workers' compliance with rules while on the job. The safety incentive scenarios in this study were designed as 1) varying the type (i.e., providing rewards and penalties) of incentives and 2) varying the frequency of feedback about ones' own compliance status during tasks. The effects of the scenarios were compared to the average compliance rates of three safety regulations (i.e., personal protective equipment self-monitoring hazard avoidance, and arranging the safety hook) for each scenario. **Results:** The results show that 1) rewarding a good-

compliance is more effective when there is no feedback on compliance status, and 2) penalizing non-compliance is more effective when there are three feedbacks during the tasks. **Discussion:** This study provides a more accurate assessment of safety incentives and their effectiveness by focusing on safe behaviours to promote safety compliance among construction workers.

**Lee et al. 2024.**

**Frontiers in Public Health, vol. 12.**

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**Keywords:** Activity recognition; computer-vision; construction safety incentive program; safety regulations; spatiotemporal graph convolutional network.

**Evidence Level:** 5B

**Link:** <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1430697/full>

### **Wearable sensor node for safety improvement in workplaces: Technology assessment in a simulated environment**

**Background:** Personal protective equipment (PPE) has been universally recognized for its role in protecting workers from injuries and illnesses. Smart PPE integrates Internet of Things (IoT) technologies to enable continuous monitoring of workers and their surrounding environment, preventing undesirable events, facilitating rapid emergency response, and informing rescuers of potential hazards. This work presents a smart PPE system with a sensor node architecture designed to monitor workers and their surroundings.

**Methods:** The sensor node is equipped with various sensors and communication capabilities, enabling the monitoring of specific gases (VOC, CO<sub>2</sub>, CO, O<sub>2</sub>), particulate matter (PM), temperature, humidity, positional information, audio signals, and body gestures. The system utilizes artificial intelligence algorithms to recognize patterns in worker activity that could lead to risky situations. Gas tests were conducted in a special chamber, positioning capabilities were tested indoors and outdoors, and the remaining sensors were tested in a simulated laboratory environment. **Results:** This paper presents the sensor node architecture and the results of tests on target risky scenarios. **Conclusion:** The sensor node performed well in all situations, correctly signaling all cases that could lead to risky situations.

**Formisano et al. 2024.**

**Sensors, vol. 24, no. 15.**

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**Keywords:** IoT; gas exposure; indoor outdoor localization; particulate matter (PM); safety; sensor node; smart personal protective equipment (PPE); wearable.

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1424-8220/24/15/4993>

### **Two decades of fatal workplace accidents in Milan and Monza, Italy: trends, work sectors, and causes from autoptic data**

**Background:** Work-related fatalities represent an important global public health threat, accounting for over 300,000 deaths annually. Despite preventive strategies, fatalities persist, necessitating comprehensive investigations. Autoptic investigations, when ordered, offer comprehensive data on fatal accidents, in particular with detailed information about the type of accident, lesions, and type of work, enabling a thorough analysis of various factors contributing to workplace deaths. This study investigates work-related fatalities in Milan and Monza Brianza, Lombardy, analysing patterns, industries, and factors leading to death among workers. **Methods:** This retrospective study analysed all fatal work accident data from the Autopsy Database of the Legal Medicine Institute of Milan from January 2000 to December 2022. We also estimated the risk of fatal accidents per 1.00.000 workers using ISTAT data for the different work sectors.

**Results:** Of the 17,841 violent deaths in Milan and Monza Brianza, 308 resulted from work-related accidents. The majority were male (95.1%). The secondary sector showed the higher estimated risk (27 /106 vs. 19/106 in primary and 2.3/106 in tertiary sector) accounted for 78.5% of fatalities, with specialized workers (35.1%) and construction workers (25%) being the most affected. Falls from above were the leading cause of death (36.7%). A decreasing trend in fatal accidents over the study period was observed, with July having the greatest frequency. The most common causes of death were polytrauma (36.4%) and head injuries (19.2%). Non-Italian workers constitute a noteworthy percentage of fatal cases (24%).

**Conclusions:** The secondary sector has the most fatal accidents at work despite a decrease in accidents over the observed time period. There is a need for rigorous analysis and interventions, using forensic autopsy case data to help understand causes, and collaboration between institutions is encouraged to develop effective preventive policies.

**Antonangeli et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 4.**

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**Keywords:** Work related fatalities; work; public health.

**Evidence Level:** 4B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/15872>

## Chronic Health Issues

*This month we explore chronic health issues associated with allergy, asthma, and occupational lung disease, multiple sclerosis, traumatic brain injury, gout and rheumatoid arthritis/axial spondylarthritis.*

### The role of the microbiome in allergy, asthma, and occupational lung disease

**Background:** The human commensal microbiota is now widely accepted as a key regulator of human health and disease. The composition of the mucosal associated microbiota has been shown to play a critical role in the lung health. The role of the mucosal microbiota in the development and severity of allergy, asthma, and occupational lung disease is only beginning to take shape. However, advances in our understanding of these links have tremendous potential to lead to new clinical interventions to reduce allergy, asthma, and occupational lung disease morbidity. **Recent findings:** We review recent work describing the relationship and role of the commensal microbiota in the development of allergy, asthma, and occupational lung disease. Our review primarily focuses on occupational exposures and the effects of the microbiome, both in composition and function. Data generated from these studies may lead to the development of interventions targeted at establishing and maintaining a healthy microbiota. We also highlight the role of environmental exposures and the effects on the commensal microbial community and their potential association with occupational lung disease. This review explores the current research describing the role of the human microbiome in the regulation of pulmonary health and disease, with a specific focus on the role of the mucosal microbiota in the development of allergy, asthma, and occupational lung disease.

**Peer et al. 2024.**

**Current Allergy and Asthma Reports, vol. 24, no. 8.**

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**Keywords:** Allergy; asthma; exposures; lung disease; microbiota.

**Evidence Level:** 6A

**Link:** <https://link.springer.com/article/10.1007/s11882-024-01156-8>

### Exploring the workplace factors and their influence on the employment outcomes for people with multiple sclerosis

**Background:** High unemployment rate of people with multiple sclerosis (PwMS) is associated with substantial economic costs. Whilst the impact of MS symptoms and other disease-related factors on employment outcomes of PwMS has been assessed, limited evidence exists on the impacts of workplace factors. **Objective:** To investigate the most common individual and group workplace factors associated with unemployment or a perceived risk of unemployment in PwMS, and to identify patient subgroups that are more susceptible to changes in employment status due to such factors. **Methods:** Data from the Australian MS Longitudinal Study (AMSLS) on employment status and workplace factors were used. Fifteen workplace factors were classified under four groups: organisational, commuting, moving around at work, and equipment usage factors. Participants answered 'Yes' to each factor if it related to their unemployment and/or perceived risk of becoming unemployed and a group factor was considered "Yes" if at least one individual factor within it was answered as "Yes". The proportions of "Yes" responses were calculated for

both individual and group factors. Total number of individual factors was calculated and descriptive analyses and ordered logistic regression were used to summarize the total number of factors affecting each participant, and their association with participants' occupations, sex, disability severity and disease duration. **Results:** Common workplace factors influencing employment were organisational (39.8 % perceived risk, 44.0 % lost employment), commuting (28.9 % perceived risk) and equipment usage difficulty (30.9 % lost employment). Common individual factors included inflexible working conditions, lack of suitable work, commuting difficulties, architectural barriers, and requirement to stand for long periods to use equipment. Professionals, blue-collar workers, and those with moderate/severe disability were more likely to report a higher number of workplace factors risking their employment. **Conclusions:** Workplace factors undermine PwMS employment, with variations among subgroups based on occupation and disability severity. Understanding these barriers is crucial for supporting PwMS in the workforce.

**Zhao et al. 2024.**

**Multiple Sclerosis and Related Disorders, vol. 88.**

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**Keywords:** Employment status; multiple sclerosis; risk of leaving employment; unemployment; workplace factors.

**Evidence Level:** 4A

**Link:** [https://www.msard-journal.com/article/S2211-0348\(24\)00331-6/fulltext](https://www.msard-journal.com/article/S2211-0348(24)00331-6/fulltext)

### **Traumatic brain injury and long-term associations with work, divorce and academic achievement**

**Background:** Traumatic brain injuries (TBI), irrespective of severity, may have long-term social implications. This study explores the relationships between TBI severity and outcomes related to work stability, divorce, and academic achievement. **Methods:** Using a Danish nationwide sample of persons with and without TBI, we employed case-control and longitudinal cohort designs. The case-control design utilized individuals aged 18 to 60 years and examined work stability. Each case, employed at time of TBI, was compared with 10 matched controls. The cohort design utilized individuals alive from 1980 to 2016 with and without TBI and assessed the likelihood of 1) divorce and 2) higher-level education. TBI exposures included concussion, skull fractures, or confirmed TBI. **Results:** TBI cases exhibited higher odds ratios (OR) for work instability at all follow-ups compared to controls. Increased TBI severity was associated with a higher risk of work instability at 2-year follow-up (concussion: OR = 1.83; skull fracture: OR = 2.22; confirmed TBI: OR = 4.55), and with a higher risk of not working at 10-year follow-up (confirmed TBI: OR = 2.82; concussion: OR = 1.63). The divorce incidence rate ratio (IRR) was elevated in individuals with TBI (males: IRR = 1.52; females: IRR = 1.48) compared to those without TBI. Individuals with childhood TBI had reduced chances of attaining high school degree or higher (males: IRR = 0.79; females: IRR = 0.85) compared to those without TBI.

**Conclusion:** TBI is associated with an increased long-term risk of social consequences, including work instability, divorce, and diminished chances of higher education, even in cases with concussion.

**Rytter et al. 2024.**

**Preventative Medicine, vol. 185.**

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**Keywords:** Academic achievement; concussion; marital stability; mild traumatic brain injury; nationwide register-based study; social consequences; traumatic brain injury; work instability.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0091743524002172?via%3Dihub>

### **Brazilian Thoracic Society recommendations for the diagnosis and monitoring of asbestos-exposed individuals**

**Background:** Asbestos was largely used in Brazil. It is a mineral that induces pleural and pulmonary fibrosis, and it is a potent carcinogen. Our objective was to develop recommendations for the performance of adequate imaging tests for screening asbestos-related diseases. **Method:** We searched peer-reviewed publications, national and international technical documents, and specialists' opinions on the theme.

**Results and Conclusion:** Based on that, the major recommendations are: Individuals exposed to asbestos at the workplace for  $\geq 1$  year or those with a history of environmental exposure for at least 5 years, all of those with a latency period  $> 20$  years from the date of initial exposure, should initially undergo HRCT of

the chest for investigation. Individuals with pleural disease and/or asbestosis should be considered for regular lung cancer monitoring. Risk calculators should be adopted for lung cancer screening, with a risk estimate of 1.5%.

**Santos et al. 2024.**

**Jornal Brasileiro de Pneumologia, vol. 50, no. 3.**

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**Keywords:** Asbestos; diagnosis; carcinogen.

**Evidence Level:** 6B

**Link:** <https://www.scielo.br/j/jbpneu/a/x3dvJJySp5Z7vXq7qrgCbTD/?lang=en>

### **'Gout was like the boss'. A qualitative study exploring the impact of gout on employment**

**Background:** Previous research has identified that gout impacts various domains of daily life. However, there have been no qualitative studies focusing on employment. This study aimed to understand the impact of gout on employment.

**Methods:** Semi structured interviews were conducted in Spain and Aotearoa/New Zealand, in people with gout (according to the 2015 American College of Rheumatology/European Alliance of Associations for Rheumatology criteria) who had experienced a gout flare during their employment. The interviews were guided by questions exploring the impact on employment, job changes, disclosure and co-workers' reactions. Data were analysed thematically.

**Results:** Eighteen participants were interviewed (89% male, mean age 52.9 years). Six themes were identified. The characteristics of the disease (pain intensity, tophi and joints affected) and the job itself (including physical job requirement and workplace flexibility) determined the experience of working with gout. The experiences were divided into physical (from total incapacity to working despite pain), emotional (feeling responsible, embarrassment, guilt and depression) and social (including disclosure responses and financial impact). Gout management strategies including rapid gout flare management and urate-lowering therapy reduced the number of flares and the intensity of pain, and allowed work attendance and participation. **Conclusion:** Both gout and work characteristics influence the employment experience for people with gout. Effective management of gout led to improved work experiences in all its domains.

**Diaz-Torne et al. 2024.**

**RMD Open, vol. 10, no. 3.**

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(<https://creativecommons.org/licenses/by-nc/4.0/>)

**Keywords:** Crystal arthropathies; gout; qualitative research.

**Evidence Level:** 5B

**Link:** <https://rmdopen.bmj.com/content/10/3/e004443.long>

### **Work-related support for employed and self-employed people with rheumatoid arthritis or axial spondylarthritis: A cross-sectional online survey of patients**

**Background:** Little is known about the provision of work-related support for (self-)employed people with rheumatoid arthritis (RA) or axial spondylarthritis (axSpA) by healthcare providers (HCPs) or employers.

**Objective:** This study aims to explore the experiences of (self-)employed people with RA or axSpA regarding work-related support from HCPs and employers in the Netherlands. **Methods:** This cross-sectional study concerned an online survey for (self-)employed people, aged  $\geq 16$  years and diagnosed with RA or axSpA.

The survey focused on experiences with HCPs and employers' work-related support and included questions on sociodemographic factors, health and work characteristics and work-related problems. **Results:** The survey was completed by 884 participants, 56% with RA and 44% with axSpA, of whom 65% were employed, 8% self-employed and 27% not employed. In total, 95% (589/617) of (self-)employed participants reported work-related problems. Sixty-five percent of employed and 56% of self-employed participants had discussed these work-related problems with rheumatologists and/or other HCPs. Whereas 69% of employees with their employer. Both employed and self-employed participants reported that work-related advices or actions were more often provided by other HCPs (53%) than rheumatologists (29%). Fifty-six percent of employees reported this work-related support by the employer. **Conclusion:** This survey among (self-)employed people with RA or axSpA found that the majority reported work-related problems, but only half of them received any work-related support for these problems. Discussion of work-related



problems with HCPs was more often reported by employed than self-employed participants. More attention from especially rheumatologists and other HCPs is important to identify and address work-related problems promptly.

**Bakker et al. 2024.**

**Rheumatology International, vol. 44, no. 8.**

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**Keywords:** Axial spondylarthritis; cross-sectional study; rheumatoid arthritis; surveys and questionnaires; vocational rehabilitation; work.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s00296-024-05643-z>

## Occupational Exposure

*This month we explore occupational exposure issues associated with hand-arm vibration exposure, wood dust and risk of leukemia, particulate and gaseous straight and water-based metalworking fluids, hexavalent chromium and circulating lung-cancer-related non-coding RNAs, benzene and cancer, aluminium, welding fumes and asbestos exposure and malignant mesothelioma incidence.*

### Blood biomarkers for occupational hand-arm vibration exposure

**Background:** Hand-arm vibration is a common occupational exposure that causes neurological impairment, myalgia, and vibration-induced Raynaud's phenomena or vibration white fingers (VWF). The pathological mechanism is largely unknown, though several mechanisms have been proposed, involving both immunological vascular damage and defective neural responses. The aim of this study was to test whether the substances interleukin-33 (IL-33), macrophage-derived chemokine (MDC), interleukin-10 (IL-10), endothelin-1 (ET-1), C-C motif chemokine ligand 20 (CCL20), calcitonin, and thromboxane (TXA<sub>2</sub>) changed before and after occupational hand-arm vibration exposure. **Method:** 38 full-time shift workers exposed to hand-arm vibration were recruited. All the participants underwent medical examinations regarding symptoms of Raynaud's phenomena. **Results:** In 29 of the participants, the concentration of IL-33, MDC, IL-10, ET-1, CCL20, calcitonin, and TXA<sub>2</sub> was measured before and after a workday. There was a significant increase in ET-1 and calcitonin concentration and a decrease in the CCL20 concentration after the work shift in all participants. In the group suffering from VWF, but not in the non-VWF group, MDC was statistically significantly lower before the work shift ( $p = .023$ ). The VWF group also showed a significant increase in MDC after the work shift. **Conclusion:** Exposure to occupational hand-arm vibration is associated with changes in ET-1, calcitonin, and MDC concentration in subjects suffering from vibration white fingers, suggesting a role of these biomarkers in the pathophysiology of this condition.

**Vihlborg et al. 2024.**

**Toxicology and Industrial Health, vol. 40, no. 8.**

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**Keywords:** Hand-arm vibration; Raynauds syndrome; vibration exposure; vibration white fingers.

**Evidence Level:** 5A

**Link:** <https://journals.sagepub.com/doi/10.1177/07482337241253996>

### Wood dust and risk of leukemia: Systematic review and meta-analysis

**Background:** This study aimed to perform a systematic review and meta-analysis to investigate the relationship between wood dust exposure and leukemia. The objectives included synthesizing available evidence, assessing its quality, identifying potential sources of heterogeneity, and drawing conclusions regarding the association between wood dust and leukemia. **Methods:** A systematic literature search was conducted to identify studies meeting that report on the association between wood dust and leukemia. The Joanna Briggs Institute Critical Appraisal tools were employed to ensure robust quality assessment. Meta-analysis, using random-effects models, synthesized evidence from studies with low risk of bias. Overall odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Subgroup analyses explored potential sources of heterogeneity. **Results:** The meta-analysis included a comprehensive review of various study types, encompassing 7 studies that examined the association between wood dust exposure and

leukemia risk. The analysis revealed a statistically significant positive association, with an overall odds ratio (OR) of 1.56 (95% CI: 1.15-2.12). This indicates that individuals exposed to wood dust are 1.56 times more likely to develop leukemia compared to those not exposed, with the 95% confidence interval ranging from 1.15 to 2.12, highlighting a substantial risk elevation across different study designs. Quality assessment using The Joanna Briggs Institute Critical Appraisal tools demonstrated a low risk of bias across all included studies, enhancing the credibility of the observed association. Subgroup analyses were conducted to explore potential sources of heterogeneity within the studies. Notably, subgroup analysis based on the year of the study revealed significant differences, as indicated by an I<sup>2</sup> value of 87%. The robustness of these results underscores the importance of addressing wood dust exposure as an occupational hazard, particularly in industries related to woodworking and forestry. **Conclusion:** This meta-analysis provides robust evidence supporting an increased risk of leukemia associated with wood dust exposure implying proactive measures in people exposed to dust.

**Soleimani et al. 2024.**

**PLoS One, vol. 19, no. 8.**

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**Keywords:** Wood dust; leukemia.

**Evidence Level:** 1A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0307444>

### **Characterization of occupational inhalation exposures to particulate and gaseous straight and water-based metalworking fluids**

**Background:** Exposure assessments to metalworking fluids (MWF) is difficult considering the complex nature of MWF. **Method:** This study describes a comprehensive exposure assessment to straight and water-based MWFs among workers from 20 workshops. Metal and organic carbon (OC) content in new and used MWF were determined. Full-shift air samples of inhalable particulate and gaseous fraction were collected and analysed gravimetrically and for metals, OC, and aldehydes. Exposure determinants were ascertained through observations and interviews with workers. Determinants associated with personal inhalable particulate and gaseous fractions were systematically identified using mixed models. **Results:** Similar inhalable particle exposure was observed for straight and water-based MWFs (64-386 µg/m<sup>3</sup>). The gaseous fraction was the most important contributor to the total mass fraction for both straight (322-2362 µg/m<sup>3</sup>) and water-based MWFs (101-699 µg/m<sup>3</sup>). The aerosolized particles exhibited low metal content irrespective of the MWF type; however, notable concentrations were observed in the sumps potentially reaching hazardous concentrations. Job activity clusters were important determinants for both exposure to particulate and gaseous fractions from straight MWF. Current machine enclosures remain an efficient determinant to reduce particulate MWF but were inefficient for the gaseous fraction. Properly managed water-based MWF meaning no recycling and no contamination from hydraulic fluids minimizes gaseous exposure. Workshop temperature also influenced the mass fractions. **Conclusion:** These findings suggest that exposures may be improved with control measures that reduce the gaseous fraction and proper management of MWF.

**Levilly et al. 2024.**

**Scientific Reports, vol. 14, no. 1.**

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**Keywords:** Aerosol; aldehyde; exposure determinants; metals; metalworking fluid; organic carbon.

**Evidence Level:** 5B

**Link:** <https://www.nature.com/articles/s41598-024-69677-w>

### **Circulating lung-cancer-related non-coding RNAs are associated with occupational exposure to hexavalent chromium - A cross-sectional study within the SafeChrom project**

**Background:** Hexavalent chromium (Cr(VI)) is classified as a group 1 human carcinogen and increases the risk of lung cancer. Non-coding RNAs (ncRNAs) have key regulatory roles in lung cancer, but less is known about their relation to Cr(VI) exposure. **Objectives:** We aimed to 1) measure the expression of lung cancer-related circulating ncRNAs in exposed workers and controls; 2) assess associations between ncRNAs expression and Cr concentrations in red blood cells (RBC) and urine; and 3) evaluate correlations between

the ncRNAs. **Methods:** The study included 111 Cr(VI) exposed workers and 72 controls recruited from the SafeChrom project. Cr concentrations were measured in RBC (biomarker of long-term exposure) and urine (biomarker of short-term exposure) samples. Long ncRNA (lncRNA) and microRNA (miRNA) were extracted from plasma followed by deoxyribonuclease treatment, complementary DNA synthesis, and quantitative real-time polymerase chain reaction using target-specific assays for three lncRNAs (H19, MALAT1, NORAD), and four miRNAs (miR-142-3p, miR-15b-5p, miR-3940-5p, miR-451a). **Results:** Expression levels of lncRNAs MALAT1 and NORAD, and all four miRNAs, were significantly lower in Cr(VI) exposed workers compared with controls, and correlated significantly with RBC-Cr concentrations ( $r_s = -0.16$  to  $-0.38$ ). H19 was non-significantly increased in exposed workers but significantly correlated with miR-142-3p ( $r_s = -0.33$ ) and miR-15b-5p ( $r_s = -0.30$ ), and NORAD was significantly positively correlated with all four miRNAs ( $r_s = 0.17$  to  $0.46$ ). In multivariate regression models adjusting for confounders, expressions of lncRNAs MALAT1 and NORAD and all miRNAs were still significantly lower in the exposed group compared with controls, and the expression decreased with increasing RBC-Cr concentrations. **Conclusions:** Cr(VI) exposure was inversely and in a dose-response manner associated with the expression of circulating non-coding RNA, which suggests ncRNAs as potential biomarkers for Cr(VI)-induced toxicity. Correlations between miRNAs and lncRNAs suggest that they participate in the same lncRNA-miRNA-messenger RNA regulatory axes, which may play important roles in Cr(VI) carcinogenesis.

**Jiang et al. 2024.**

**Environment International, vol. 190.**

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**Keywords:** Biomarkers; hexavalent chromium; lung cancer; RBC chromium; lncRNA; miRNA.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0160412024004604?via%3Dihub>

### **Cancer incidence in Swedish oil refinery workers exposed to benzene**

**Background:** Oil refinery workers are exposed to benzene, which is a well-known cause of leukaemia, but results on leukaemia in oil refinery workers have been mixed, and the data on workers' exposure is limited. Oil refinery workers are also exposed to asbestos and several studies have shown increased risk of mesothelioma. Aim: The objective was to investigate cancer incidence, especially leukaemia, at low to moderate exposure to benzene in an update of a previous study of employees at three Swedish oil refineries. **Methods:** Cancer incidence was followed up in 2264 men (1548 refinery operators) employed at three oil refineries in Sweden for at least one year. Job types and employment times were collected from complete company files. A retrospective assessment of the benzene exposure was performed by occupational hygienists in collaboration with the refineries using historic measurements as well as detailed information on changes in the industrial hygiene and technological developments. Cases of cancer were retrieved by a linkage with the Swedish Cancer Register through 35-47 years of follow-up and standardized incidence ratios (SIR) with 95% confidence intervals (CI) were calculated. **Results:** In total, 258 tumours had occurred versus 240 expected (SIR 1.07; 95% CI 0.95-1.21). There were 10 cases of leukaemia, all in refinery operators (SIR 2.4; 95% CI 1.18-4.51). There were three cases of pleural mesothelioma, two of which in refinery operators. The mean estimated cumulative benzene exposure for the cases of leukaemia was 7.9 ppm-years (median 4.9, range 0.1-31.1). **Discussion:** The study suggests that low to moderate average cumulative benzene exposure increases the risk of leukaemia. Limitations include the modest number of cases and potential misclassification of exposure. **Conclusion:** The present study indicated an increased risk of leukaemia in male oil refinery workers with low to moderate exposure to benzene.

**Andersson et al. 2024.**

**International Journal of Hygiene and Environmental Health, vol. 261.**

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**Keywords:** Benzene; leukaemia; oil refinery; retrospective exposure assessment.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S1438463924001019?via%3Dihub>

### **Toxicity and biokinetics following pulmonary exposure to aluminium (aluminum): A review**

**Background:** During the manufacture and use of aluminium (aluminum), inhalation exposure may occur.

**Methods:** We reviewed the pulmonary toxicity of this metal including its toxicokinetics. The normal serum/plasma level based on 17 studies was  $5.7 \pm 7.7 \mu\text{g Al/L}$  (mean  $\pm$  SD). The normal urine level based on 15 studies was  $7.7 \pm 5.3 \mu\text{g/L}$ . Bodily fluid and tissue levels during occupational exposure are also provided, and the urine level was increased in aluminium welders ( $43 \pm 33 \mu\text{g/L}$ ) based on 7 studies. Some studies demonstrated that aluminium from occupational exposure can remain in the body for years. Excretion pathways include urine and faeces. Toxicity studies were mostly on aluminium flakes, aluminium oxide and aluminium chloralhydrate as well as on mixed exposure, e.g. in aluminium smelters. **Results:** Endpoints affected by pulmonary aluminium exposure include body weight, lung function, lung fibrosis, pulmonary inflammation and neurotoxicity. In men exposed to aluminium oxide particles ( $3.2 \mu\text{m}$ ) for two hours, lowest observed adverse effect concentration (LOAEC) was  $4 \text{ mg Al}_2\text{O}_3/\text{m}^3$  ( $= 2.1 \text{ mg Al}/\text{m}^3$ ), based on increased neutrophils in sputum. With the note that a similar but not statistically significant increase was seen during control exposure. In animal studies LOAECs start at  $0.3 \text{ mg Al}/\text{m}^3$ . In intratracheal instillation studies, all done with aluminium oxide and mainly nanomaterials, lowest observed adverse effect levels (LOAELs) started at  $1.3 \text{ mg Al}/\text{kg}$  body weight (bw) (except one study with a LOAEL of  $\sim 0.1 \text{ mg Al}/\text{kg}$  bw). **Conclusion:** The collected data provide information regarding hazard identification and characterisation of pulmonary exposure to aluminium.

**Hadrup et al. 2024.**

**Toxicology, vol. 506.**

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**Keywords:** Alumina; aluminum; inhalation; intratracheal instillation; pneumoconiosis; potroom; welding.

**Evidence Level:** 6A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0300483X24001550?via%3Dihub>

### **Characterization of particle exposure during tunnel excavation by tunnel boring machines**

**Background:** Tunnel boring machines (TBMs) are used to excavate tunnels in a manner where the rock is constantly penetrated with rotating cutter heads. Fine particles of the rock minerals are thereby generated. Workers on and in the vicinity of the TBM are exposed to particulate matter (PM) consisting of bedrock minerals including  $\alpha$ -quartz. Exposure to respirable  $\alpha$ -quartz remains a concern because of the respiratory diseases associated with this exposure. The particle size distribution of PM and  $\alpha$ -quartz is of special importance because of its influence on adverse health effects, monitoring and control strategies as well as accurate quantification of  $\alpha$ -quartz concentrations. The major aim of our study was therefore to investigate the particle size distribution of airborne PM and  $\alpha$ -quartz generated during tunnel excavation using TBMs in an area dominated by gneiss, a metamorphic type of rock. **Method:** Sioutas cascade impactors were used to collect personal samples on 3 separate days. The impactor fractionates the dust in 5 size fractions, from  $10 \mu\text{m}$  down to below  $0.25 \mu\text{m}$ . The filters were weighted, and the  $\alpha$ -quartz concentrations were quantified using X-ray diffraction (XRD) analysis and the NIOSH 7500 method on the 5 size fractions. Other minerals were determined using Rietveld refinement XRD analysis. The size and elemental composition of individual particles were investigated by scanning electron microscopy. The majority of PM mass was collected on the first 3 stages (aerodynamic diameter =  $10$  to  $0.5 \mu\text{m}$ ) of the Sioutas cascade impactor. **Results:** No observable differences were found for the size distribution of the collected PM and  $\alpha$ -quartz for the 3 sampling days nor the various work tasks. However, the  $\alpha$ -quartz proportion varied for the 3 sampling days demonstrating a dependence on geology. The collected  $\alpha$ -quartz consisted of more particles with sizes below  $1 \mu\text{m}$  than the calibration material, which most likely affected the accuracy of the measured respirable  $\alpha$ -quartz concentrations. This potential systematic error is important to keep in mind when analyzing  $\alpha$ -quartz from occupational samples. **Conclusion:** Knowledge of the particle size distribution is also important for control measures, which should target particle sizes that efficiently capture the respirable  $\alpha$ -quartz concentration.

**Ervik et al. 2024.**

**Annals of Work, Exposures and Health, vol. 68, no. 7.**

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**Keywords:** TBM; Tunnel excavation; impactor; particulate matter; quartz.

**Evidence Level:** 5B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11306322/>

### **Occupational exposure to welding fume in Australia: An online survey**

**Objective:** This survey aimed to investigate exposure to welding fume in Australian workplaces and the use of protective and control measures among workers. **Methods:** Data were collected via a cross-sectional online survey of workers and employers involved in welding in Australia. Survey questions focused on the determinants of exposure to welding fume, welding experience and qualifications, and use of control measures. **Results:** There were 634 respondents to the survey across Australia of whom 577 (91%) were assessed as being exposed to welding fume, most at high levels. Welders undertook a wide range of types of welding, and higher-risk welding such as in confined and restricted spaces was common. Most workplaces did not have any form of mechanical ventilation, and use of air-supplied respiratory protection was poor even when ventilation was not used. **Conclusion:** Welders in Australia are exposed to several carcinogens, particularly welding fume, hexavalent chromium (CrVI) and nickel, and the use of control measures is sub-optimal. Implications for public health: Higher-order controls are the best way to reduce exposure to carcinogens in the workplace. The lack of use of these controls by Australian welders is concerning and needs to be a focus of attention by regulators and companies.

**Fritschi et al. 2024.**

**Australian and New Zealand Journal of Public Health**, vol. 48, no. 4.

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**Keywords:** Carcinogens; exposure control; occupational health; welding.

**Evidence Level:** 4A

**Link:** <https://www.sciencedirect.com/science/article/pii/S1326020024000402?via%3Dihub>

### **Trends in Asbestos Exposure and Malignant Mesothelioma Incidence in Emilia-Romagna Italy: A Retrospective Study 1996-2023**

**Background:** Malignant mesothelioma (MM) is a rare but lethal cancer strongly associated with asbestos exposure. **Method:** This retrospective study examines trends in asbestos exposure in Emilia-Romagna, Northern Italy. Between 1996 and 2023, 3,513 cases of MM were recorded, predominantly in males (72%) and in older than 65 years (79%). **Results:** Occupational exposure accounted for 82% of cases, with a significant increase observed over time from 71% to 88% in the most recent period. A greater definition of professional exposure indicates that certain exposure has gone from 49% in the first period to 62% and 58% in the last two periods; probable exposure showed a decrease from 21% to 16% while possible exposure decreased from 16% to 13%. Familiar exposure remained relatively constant at around 8%, environmental exposure showed a slight decrease from 4% to 2%, while non-occupational exposure remained stable at 2%. Among patients with exclusively occupational exposure (1,826 cases), 87% were male and aged between 65 and 75 years (36%) and 75+ (41%). The exposure rates for the province of residence see the province of Reggio Emilia with the highest occupational exposure rate (2.5 x 100,000 residents), followed by Ravenna (2.3 x 100,000 residents) and Parma and Piacenza which have similar exposure rates with 2.2 x 100,000 residents. **Conclusion:** Professional sectors such as construction, railway maintenance and metalworking are identified as high-risk industries. Despite efforts to mitigate exposure, non-occupational and environmental exposures persist. The study highlights the importance of continuous surveillance and exposure monitoring to guide effective interventions and legal recognition of MM.

**Giacomino et al. 2024.**

**La Medicina del Lavoro**, vol. 115, no. 4.

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**Keywords:** Asbestos; exposure; Malignant Mesothelioma.

**Evidence Level:** 4B

Link: <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/16005>

## Physical Activity

### Joint associations of leisure time physical activity and screen sitting time with long-term sickness absence due to mental and musculoskeletal diseases: A registry linked follow-up study

**Background:** To examine joint associations of leisure-time physical activity (LTPA) and screen sitting time with subsequent sickness absence among the adult population. **Study design:** Registry linked follow-up study. **Methods:** A representative sample of Finnish adults (n = 10,300) were asked to fill out a questionnaire for the FinHealth 2017 survey. Self-reported LTPA was classified into three groups: inactive, moderately active, and active, and screen sitting time into two groups: 3 h or less and over three hours a day, yielding a six-category variable for the joint analyses. Questionnaire data were linked to the Finnish Social Insurance Institution's register data on sickness benefits (over 9 days), including diagnoses (follow-up 2.9 years). The analytical samples were restricted to working age (18-64 years), which included 5098 participants. Associations were examined using logistic regression analysis adjusting for covariates with SPSS 29. **Results:** The inactive and high sitting time had a higher risk for sickness absence due to mental disorders (OR 2.07, 95% CI 1.03-4.18) compared with the physically active, low-sitting time group. Additionally, the inactive and low sitting time (OR 1.69 95% CI 1.12-2.55) and the moderately active and high-sitting time groups (OR 2.06 95% CI 1.15-3.67) had a higher risk. No significant associations were found for all-cause and musculoskeletal diseases sickness absence. **Conclusion:** Employers and policymakers could support reducing sitting in front of a screen and increase LTPA outside working hours to prevent mental health problems and related sickness absences.

Sarttila et al. 2024.

Public Health, vol. 233.

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**Keywords:** Exercise; population-based study; sedentary behavior; sick leave; work ability.

**Evidence Level:** 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0033350624002129?via%3Dihub>

## Musculoskeletal Health

### Global pattern, trend, and cross-country inequality of early musculoskeletal disorders from 1990 to 2019, with projection from 2020 to 2050

**Background:** This study aims to estimate the burden, trends, forecasts, and disparities of early musculoskeletal (MSK) disorders among individuals ages 15 to 39 years. **Methods:** The global prevalence, years lived with disabilities (YLDs), disability-adjusted life years (DALYs), projection, and inequality were estimated for early MSK diseases, including rheumatoid arthritis (RA), osteoarthritis (OA), low back pain (LBP), neck pain (NP), gout, and other MSK diseases (OMSKDs). **Findings:** More adolescents and young adults were expected to develop MSK disorders by 2050. Across five age groups, the rates of prevalence, YLDs, and DALYs for RA, NP, LBP, gout, and OMSKDs sharply increased from ages 15-19 to 35-39; however, these were negligible for OA before age 30 but increased notably at ages 30-34, rising at least 6-fold by 35-39. The disease burden of gout, LBP, and OA attributable to high BMI and gout attributable to kidney dysfunction increased, while the contribution of smoking to LBP and RA and occupational ergonomic factors to LBP decreased. Between 1990 and 2019, the slope index of inequality increased for six MSK disorders, and the relative concentration index increased for gout, NP, OA, and OMSKDs but decreased for LBP and RA. **Conclusions:** Multilevel interventions should be initiated to prevent disease burden related to RA, NP, LBP, gout, and OMSKDs among individuals ages 15-19 and to OA among individuals ages 30-34 to tightly control high BMI and kidney dysfunction. **Funding:** The Global Burden of Disease study is funded by the Bill and Melinda Gates Foundation. The project is funded by the Scientific Research Fund of Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital (2022QN38).

GBD 2019 MSK in Adolescents Collaborators et al. 2024.

**Med, vol. 5, no. 8.**

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**Keywords:** Global Burden of Disease study; Translation to population health; gout; inequality; low back pain; musculoskeletal disorders; neck pain; osteoarthritis; pattern; rheumatoid arthritis; trend.

**Evidence Level:** 4A

**Link:** [https://www.cell.com/med/fulltext/S2666-6340\(24\)00179-](https://www.cell.com/med/fulltext/S2666-6340(24)00179-X?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS266663402400179X%3Fsho%3Dtrue)

[X?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS266663402400179X%3Fsho%3Dtrue](https://www.cell.com/med/fulltext/S2666-6340(24)00179-X?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS266663402400179X%3Fsho%3Dtrue)

## Guiding and Supporting Mental Health and Wellbeing

### Mental Health

*This month we explore mental health issues associated with employment status and depressive symptoms and the prevalence and risk factors of depression, anxiety, and stress among construction workers.*

#### **Employment status and depressive symptoms in Taiwanese older adults: An 11-year prospective cohort study**

**Background:** Taiwan became an aged society in March 2018, and it is expected to become a super-aged society by 2025. The trend of increasing proportions of older adults continuing to work is inevitable. However, few studies have been conducted to investigate the effects of employment on the mental health of older adults. Therefore, we longitudinally explored the relationship between employment status and depressive symptoms in Taiwanese older adults. **Methods:** The study included 5,131 individuals aged 50 and above, of which 55.6% were men, who had participated in the national-wide Taiwan Longitudinal Study of Aging in 1996, 1999, 2003, and 2007. Of them, 1,091 older adults had completed all four surveys. Depressive symptoms were assessed using the Centre for Epidemiological Studies of Depression scale; the total score on this scale ranges from 0 to 30. Employment status was assessed during each survey wave. Logistic regression was performed using a cross-sectional design. The effects of unemployment on depressive symptoms were analysed using a generalized estimating equation model with a repeated measures design. **Results:** In each survey wave, employed older adults exhibited better mental health than did unemployed ones. After adjustments for potential confounders, unemployment was found to exert a significant adverse effect on depressive symptoms. The repeated measures analysis revealed that employment protected against depressive symptoms, as noted in the subsequent surveys conducted after 3 to 4 years (aOR [95% CI] = 0.679 [0.465-0.989]). **Conclusion:** Employment may reduce the risk of depressive symptoms in community-dwelling older adults in Taiwan.

**Shih et al. 2024.**

**BMC Geriatrics, vol. 24, no. 1.**

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**Keywords:** Depressive symptom; mental health; older adult; repeated measures; working status.

**Evidence Level:** 4B

**Link:** <https://bmgeriatr.biomedcentral.com/articles/10.1186/s12877-024-05258-w>

#### **Prevalence and risk factors of depression, anxiety, and stress among the Bangladeshi construction workers: A cross-sectional study**

**Background:** Construction workers are a population that is at risk for mental illnesses such as depression, anxiety, and even suicide due to the high stress and physical demands of their work. This study aimed to determine the prevalence and risk factors for depression, anxiety, and stress among Bangladeshi construction workers. **Methods:** From February 2022 to June 2022, community-based cross-sectional research was conducted among construction workers. Survey data was gathered using interviewer administered questionnaires with 502 participants from the construction sites. Data were collected based on the information related to socio-demographics, lifestyle, occupation, health hazards, and mental health (i.e., depression, anxiety, and stress). The results were interpreted using the chi-square test and logistic

regression utilizing SPSS statistical software. **Results:** The study revealed the prevalence rates of depression, anxiety, and stress among construction workers to be 17.9%, 30.3%, and 12%, respectively. Key findings indicate that construction workers who maintained a healthy sleep duration were 64% less likely to be depressed compared to those with poor sleep (AOR = 0.36; 95% CI: 0.21-0.61,  $p < 0.001$ ). Workers who did not experience breathing issues upon starting construction work had a 45% lower likelihood of experiencing depression (AOR = 0.55; 95% CI: 0.32-0.97,  $p = 0.037$ ) and an 82% lower likelihood of experiencing anxiety (AOR = 0.18; 95% CI: 0.11-0.30,  $p < 0.001$ ). Bricklayer construction workers were 72% less likely to experience stress (AOR = 0.28; 95% CI: 0.08-0.95,  $p = 0.041$ ), and workers without breathing issues after starting construction work were 66% less likely to experience stress (AOR = 0.34; 95% CI: 0.17-0.66,  $p = 0.001$ ). **Conclusions:** The study found that depression, anxiety, and stress are prevalent among construction workers in Bangladesh, with breathing issues as a significant risk factor. Thus, there is a need for effective measures to reduce these problems and provide a safe working environment for construction workers to ensure their productivity and the country's overall growth.

**Roy et al. 2024.**

**PLoS One, vol. 19, no. 8.**

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**Keywords:** Depression; anxiety; stress.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0307895>

## **Bullying, Harassment and Occupational Violence**

*This month we explore bullying, harassment and occupational violence issues associated with sexual harassment and sexual assault in the mining industry; and mild traumatic brain injury caused by workplace violence*

### **Sexual harassment and sexual assault in the Western Australian mining industry: A qualitative examination of the perceptions of key stakeholders**

**Background:** The prevalence, pervasiveness, and minimization of sexual harassment and sexual assault (SHSA) within the Western Australian mining industry has been revealed in recent Australian reports and inquiries. However, there remains a gap in scholarship focusing on SHSA within the mining sector, specifically that engages with mining employees to understand this issue. **Methods:** This study aimed to fill this gap by exploring the experiences and perspectives of Western Australian mining employees in relation to SHSA. Through qualitative research methods, stakeholders ( $n = 30$ ) from various industry roles (e.g., front-line operations, administrative staff) participated in semi-structured interviews. A deductive thematic analysis was conducted to analyse the data. **Results:** The study revealed diverse perspectives of SHSA among participants, highlighting how this issue is understood, addressed, and discussed within the workplace. While some participants recognized positive shifts in workplace culture, it became apparent that additional efforts are needed to tackle the underlying and persistent factors that contribute to sexism, misogyny, and, ultimately, SHSA. Participants shared their perspectives regarding strategies and initiatives that could effectively combat SHSA within the industry. **Discussion:** This study constitutes a significant contribution to the limited body of research on SHSA in the Western Australian mining sector, offering valuable insights and recommendations for future prevention initiatives.

**Vrankovich et al. 2024.**

**Frontiers in Public Health, vol. 12.**

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**Keywords:** Australia; assault; harassment; mining; qualitative data; sexual violence; workplace.

**Evidence Level:** 5A

**Link:** <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1432990/full>

### **Mild traumatic brain injury caused by workplace violence in a US workers' compensation system**

**Background:** Approximately 81% of traumatic brain injury cases are considered to be mild (mTBI), but few studies have reviewed mTBI caused by workplace violence (WPV). This study aimed to (1) determine the



incidence of mTBI secondary to WPV in a statewide workers' compensation system using International Classification of Disease codes and (2) analyse and compare factors associated with return-to-work outcomes between WPV mTBI cases versus other mechanisms. **Methods:** Using a retrospective cohort of claims data from the California Workers' Compensation Information System during 2015-2019, cases with a return-to-work date were classified as WPV if the injury description contained keywords such as assault, gunpoint, harassed, intimidated, punch, threat, robbery, violent or verbal abuse. **Results:** Of the 14 089 mTBI claims analysed in this study, 11.2% were caused by WPV. When comparing WPV to non-WPV claims, the variables with statistically significant ( $p \leq 0.001$ ) differences were age, income, industry and job class. There were no significant differences between groups for leave duration. In a linear mixed model, the variable of interest (WPV) was not associated with recovery duration after adjusting for other factors. **Conclusion:** To our knowledge, this is the first study to examine WPV mTBI claims in the USA. The findings suggest that the public administration, education and healthcare and social services industries are at higher risk for WPV mTBI. WPV and job class were the only modifiable factors in the model and therefore should be the focus of additional research.

**Wizner et al. 2024.**

**Occupational and Environmental Medicine, vol. 81, no. 8.**

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**Keywords:** Occupational Health; occupational health services; primary health care; public health; violence.

**Evidence Level:** 4B

**Link:** <https://oem.bmj.com/content/81/8/395.long>

## Psychosocial Issues

*This month we explore psychosocial issues associated with psychosocial stressors at work and atrial fibrillation incidence, social marketing and happiness in employment, task interdependence and dispositional workplace anxiety and workplace tele pressure after hours, work-related factors and pain perceptions and psychosocial working conditions and health.*

### **Psychosocial stressors at work and atrial fibrillation incidence: An 18-year prospective study**

**Background:** Psychosocial stressors at work, defined by the job strain and effort-reward imbalance at work (ERI) models, were shown to increase coronary heart disease risk. No previous study has examined the adverse effect of psychosocial stressors at work from both models on atrial fibrillation (AF) incidence. The objective of this study was to examine the separate and combined effect of psychosocial stressors at work from the job strain and ERI models on AF incidence in a prospective cohort study. **Methods and results:** A total of 5926 white-collar workers (3021 women and 2905 men) free of cardiovascular disease at baseline were followed for an average of 18 years. Job strain (high psychological demands combined with low decision latitude) and ERI were assessed using validated instruments. AF events were identified in medical databases with universal coverage. Hazard ratios (HRs) with 95% CIs were estimated using Cox regression models, controlling for socioeconomic characteristics and lifestyle-related and clinical risk factors. A total of 186 AF incident events were identified over 18 years. Workers exposed to job strain (HR, 1.83 [95% CI, 1.14-2.92]) and ERI (HR, 1.44 [95% CI, 1.05-1.98]) had a higher risk of AF in fully adjusted models. Combined exposure to job strain and ERI was associated with a 2-fold AF risk increase (HR, 1.97 [95% CI, 1.26-3.07]).

**Conclusions:** Psychosocial stressors at work from the job strain and ERI models are associated with an increased risk of AF, separately and in combination. Workplace prevention strategies targeting these psychosocial stressors at work may be effective to reduce the burden associated with AF.

**Tiwa Diffo et al. 2024.**

**Journal of the American Heart Association, vol. 13, no. 16.**

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**Keywords:** Atrial fibrillation; heart disease risk factors; occupational epidemiology; psychosocial stressors; workplace.

**Evidence Level:** 4A

Link: <https://www.ahajournals.org/doi/10.1161/JAHA.123.032414>

### **Social marketing and happiness in employment: Evidences from Glassdoor**

**Background:** With the increasing role of the Internet and social media, there are more significant opportunities for employees to express their opinions about the companies they work for more directly. A recognized job review website is Glassdoor.com, which collects employees' opinions anonymously and the scores they give to companies. This descriptive study analyzes the assessment that employees give to companies by studying the advantages in their comments from the perspective of Happiness Management and Social Marketing. In this sense, this research aims to analyze how the main benefits offered by companies, are linked to the happiness of employees and to the actions of social marketing that companies develop affect the general satisfaction of employees. **Methods:** This study has used in the worker comments, text mining, and inferential analysis techniques. The sample was divided into two blocks, with comments that refer to issues about social marketing and happiness. In each one, an inferential analysis was carried out using the Student's T-test. This analysis allowed us to identify, in each sample of comments, in which advantages the differences in the mean ratings were significant depending on whether they were mentioned. **Results:** The main results indicate that social marketing and happiness are linked to the advantages employees comment on in reviews on Glassdoor. Significant differences exist in the average ratings of certain advantages depending on whether they are mentioned or not in the comments. Likewise, the differentiation between comments on social marketing and happiness offers scientific evidence of the most valued advantages in each cluster. Specifically, the advantages grouped into the following dimensions are working conditions, company image, and social relations. **Discussion:** This research contributes to happiness management theories by empirically demonstrating how positive work environments enhance productivity, loyalty, and creativity. These insights show how leadership quality, work-life balance, and recognition contribute to workplace happiness, enhancing productivity, loyalty, and creativity. Such feedback aids job seekers in making informed decisions, helps companies improve practices and attract talent, and provides researchers with valuable data on employment trends and corporate culture's effect on employee well-being.

**Galiano-Coronil et al. 2024.**

**BMC Psychology, vol. 12, no. 1.**

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**Keywords:** Glassdoor; happiness management; laboral satisfaction; social marketing; text mining.

**Evidence Level:** 5B

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-024-01882-8>

### **"Always online": How and when task interdependence and dispositional workplace anxiety affect workplace telepressure after hours**

**Background:** Information and communication technology (ICT) provides employees with convenience in communication. However, it also creates a preoccupation with and urges to respond quickly to work-related ICT messages during nonworking time, which is defined as workplace telepressure after hours (WTA). Drawing on the job demand-resource model, conservation of resource theory, and workplace anxiety theory, this study explores how and when task interdependence and dispositional workplace anxiety affect WTA and how individuals cope with WTA. **Methods:** A total of 269 full-time workers from an online survey panel completed questionnaires at three time-points. **Results:** We found that both task interdependence and dispositional workplace anxiety are positively related to WTA. The perception of pay-for-responsiveness moderates the relationship between task interdependence and WTA, such that the relationship is significant only for employees with a strong perception of pay-for-responsiveness. Others' approval contingency of self-worth moderates the relationship between dispositional workplace anxiety and WTA, and the relationship is significant only for employees with high degrees of others' approval contingency of self-worth. Finally, WTA arising from external work requirements or the internal pursuit of achieving work goals prompts employees to generate responsiveness coping strategies. **Conclusion:** Overall, these findings suggest that task interdependence and dispositional workplace anxiety are important factors affecting employees' WTA and highlight the importance of being responsive to WTA.

**He et al. 2024.**

PsyCH Journal, vol. 13, no. 4.

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**Keywords:** Dispositional workplace anxiety; others' approval contingency of self-worth; perception of pay-for-responsiveness; task interdependence; workplace telepressure after hours.

**Evidence Level:** 4B

**Link:** <https://onlinelibrary.wiley.com/doi/10.1002/pchj.747>

### **Identifying pain profiles in employees including work-related factors and pain perceptions: A cross-sectional study in Belgian companies**

**Objectives:** Studies usually investigate a limited number or a predefined combinations of risk factors for sickness absence in employees with pain. We examined frequently occurring combinations across a wide range of work-related factors and pain perceptions. **Design:** Cross-sectional study. **Setting:** Belgian companies that are under supervision of IDEWE, an external service for prevention and protection at work. **Participants:** In total, 249 employees experiencing pain for at least 6 weeks were included and filled out an online survey. **Outcomes:** Latent profile analysis was used to differentiate profiles of work-related factors (physical demands, workload, social support and autonomy) and pain perceptions (catastrophising, fear-avoidance beliefs and pain acceptance). Subsequently, profiles were compared on sociodemographic (age, gender, level of education, work arrangement, duration of complaints, multisite pain and sickness absence in the previous year) and predictors of sickness absence (behavioural intention and perceived behavioural control). **Results:** Four profiles were identified. Profile 1 (38.2%) had favourable scores and profile 4 (14.9%) unfavourable scores across all indicators. Profile 2 (33.3%) had relatively high physical demands, moderate autonomy levels and favourable scores on the other indicators. Profile 3 (13.7%) showed relatively low physical demands, moderate autonomy levels, but unfavourable scores on the other indicators. Predictors of profiles were age (OR 0.93 and 95% CI (0.89 to 0.98)), level of education (OR 0.28 and 95% CI (0.1 to 0.79)) and duration of sickness absence in the previous year (OR 2.29 and 95% CI (0.89 to 5.88)). Significant differences were observed in behavioural intention ( $\chi^2=8.92$ ,  $p=0.030$ ) and perceived behavioural control ( $\chi^2=12.37$ ,  $p=0.006$ ) across the four profiles. **Conclusion:** This study highlights the significance of considering the interplay between work-related factors and pain perceptions in employees. Unfavourable scores on a single work factor might not translate into maladaptive pain perceptions or subsequent sickness absence, if mitigating factors are in place. Special attention must be devoted to employees dealing with unfavourable working conditions along with maladaptive pain perceptions. In this context, social support emerges as an important factor influencing sickness absence.

**Keyaerts et al. 2024.**

**BMJ Open, vol. 14, no. 8.**

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**Keywords:** Chronic pain; health workforce; occupational & industrial medicine; social support.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/14/8/e082804.long>

### **Fifty years of research on psychosocial working conditions and health: From promise to practice**

**Background:** This paper presents an overview of 50 years of research on psychosocial working conditions and health with regards to conceptualization, interventions and policy. We reflect on the promise of past and current research on psychosocial working conditions and, in addition, discuss current progress in translating this research into workplace practice and improvements in people's working lives.

**Methods:** We conducted a narrative review of meta-reviews and key publications on psychosocial working conditions and health. The review covers a historical overview of theories of the past 50 years, measurement of psychosocial working conditions, health effects, intervention research, and policy development on psychosocial working conditions. **Results:** Psychosocial working conditions are conceptualized in different ways, with increasing complexity in the understanding developing over time. Exposures related to psychosocial working conditions are associated with a wide range of health outcomes, in particular cardiovascular disease and mental health conditions. In response to growing evidence on associations between psychosocial working conditions and health outcomes, intervention research has expanded rapidly, but for various reasons the evidence base is stronger and more extensive for individual-

than organizational-level interventions. This individual/organizational imbalance is reflected in practice, and may partly explain why policy interventions have yet to show reductions in exposures to psychosocial work factors and associated adverse outcomes. **Conclusions:** Pressing needs for advancing the field include improvements in capturing exposure dynamics, developing objective measures of exposure, methodologic advancements to optimize causal inference in etiologic studies, and alternatives to randomized controlled trials for intervention evaluation.

**Boot et al. 2024.**

**Scandinavian Journal of Work, Environment and Health, vol. 50, no. 6.**

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**Keywords:** Research; psychosocial; working conditions; health.

**Evidence Level:** 6A

**Link:** <https://www.sjweh.fi/article/4180>

## Fostering Work Participation

### Return to Work

*This month we explore return to work issues in workers following spinal surgery, breast cancer, common mental disorders and major burns*

#### **Predictors of return to work after spinal surgery: Systematic review and meta-analysis**

**Background:** To analyse the situation and influencing factors of patients returning to work after spinal surgery, and to provide reference for clinical intervention measures of patients returning to work after spinal surgery. **Methods:** A computer search was conducted in Chinese and English database on the situation and influencing factors of patients returning to work after spinal surgery from the establishment of the database to February 2023. Meta-analysis was performed using Reman 5.3 and StataMP 17.0 software. **Results:** A total of 10 literatures were included, involving 11,548 subjects. Meta-analysis results showed that 58% of patients returned to work after spinal surgery [95%CI (0.47-0.69)]. Gender [OR = 2.41, 95%CI (1.58-3.37)], age [OR = 1.32, 95%CI (1.03-1.51)], job nature [OR = 5.94, 95%CI (3.54-9.62)], education level [OR = 0.23, 95%CI (0.06-0.48)], fear of disease progression [OR = 0.82, 95%CI (0.84-0.95)], and social support [OR = 1.21, 95%CI (1.12-1.37)] were the influencing factors for patients returning to work after spinal surgery. **Conclusion:** The rate of patients returning to work after spinal surgery is low, and is affected by many factors. Medical personnel should pay comprehensive attention to the above high-risk groups and give timely intervention and support.

**Tang et al. 2024.**

**Journal of Orthopaedic Surgery and Research, vol. 19, no. 1.**

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**Keywords:** Meta-analysis; return to work; spinal surgery.

**Evidence Level:** 1A

**Link:** <https://josr-online.biomedcentral.com/articles/10.1186/s13018-024-04988-2>

#### **Supporting the return to work of breast cancer survivors: Perspectives from Canadian employer representatives**

**Background:** A significant proportion of women with breast cancer want to RTW (return to work) after treatment. Employers play a key role in facilitating RTW for these employees who face distinct challenges. However, the portrait of these challenges remains to be documented from the perspective of employer representatives. The purpose of this article is to describe the perceptions of Canadian employer representatives regarding the management of the RTW of BCSs (breast cancer survivors).

**Methods:** Thirteen qualitative interviews were conducted with representatives from businesses of various sizes (< 100 employees, 100-500 employees, > 500 employees). Transcribed data were subjected to iterative data analysis. **Results:** Three major themes emerged to describe employer representatives' perceptions of managing RTW of BCS. These are (1) providing tailored support; (2) remaining 'human' while managing RTW; and (3) facing the challenges of RTW management after breast cancer. The first two

themes were perceived as facilitating RTW. The challenges identified concern uncertainty, communication with the employee, maintaining a supernumerary work position, balancing employee and organizational interests, reconciling with colleagues' complaints, and collaboration among stakeholders.

**Conclusions:** Employers can adopt a humanistic management style by offering flexibility and increased accommodation for BCS who RTW. They can also be more sensitive to this diagnosis, leading some to seek more information from those around them who have experienced it. Employers require increased awareness about diagnosis and side effects, be more confident to communicate, and improved collaboration between stakeholders to facilitate the RTW of BCS. Implications for cancer survivors: Employers who focus on the individual needs of cancer survivors during RTW can facilitate creative and personalized solutions for a sustainable RTW and help survivors recover their lives after cancer.

**Bilodeau et al. 2024.**

**Journal of Cancer Survivors, vol. 18, no. 4.**

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**Keywords:** Breast cancer; Canada; cancer survivors; employer; qualitative research; return to work.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s11764-023-01382-5>

### **Effects of work-directed interventions on return-to-work in people on sick-leave for to common mental disorders: A systematic review**

**Purpose:** To evaluate the body of evidence of the effects of work-directed interventions on return-to-work for people on sick leave due to common mental disorders (i.e., mild to moderate depression, anxiety, adjustment disorders and reactions to severe stress). **Methods:** The systematic review was conducted in accordance with an a priori developed and registered protocol (Prospero CRD42021235586). The certainty of evidence was assessed by two independent reviewers using the Grading of Recommendations, Assessment, Development and Evaluations. **Results:** We reviewed 14,794 records published between 2015 and 2021. Of these, eight RCTs published in eleven articles were included in the analysis.

**Population:** Working age adults (18 to 64 years), on sick leave due to mild to moderate depression, anxiety, adjustment disorders or reactions to severe stress. **Intervention:** Work-directed interventions.

**Comparator:** No comparator, Standard care, or other measures. **Outcome:** return to work, number of days on sick leave, income. Overall, the effects of work-focused CBT and work-focused team-based support on RTW resulted in increased or faster return-to-work compared with standard care or no intervention (low certainty of evidence). The effects of Individual Placement and Support showed no difference in RTW compared with standard care (very low certainty of evidence). **Conclusion:** Interventions involving the workplace could increase the probability of RTW. Areas in need of improvement in the included studies, for example methodological issues, are discussed. Further, suggestions are made for improving methodological rigor when conducting large scale trials.

**Bramberg et al. 2024.**

**In Arch Occup Environ Health, vol. 97, no. 6.**

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**Keywords:** Adjustment disorder; Anxiety; Depression; Reactions to severe stress; Return-to-work; Systematic review.

**Evidence Level:** 1A

**Link:** <https://pubmed.ncbi.nlm.nih.gov/38710801/>

### **Recovery of functional independence following major burn: A systematic review**

**Background:** Major burn injury, despite advancements in care and prevention, can have a profound impact on long-term morbidity, affecting quality of life and socioeconomic standing. We aim to explore factors predicting recovery of independence, the expected rate and time in majorly burned patients, and the measures of progress used. **Method:** A systematic search of four databases (MEDLINE, EMBASE, COCHRANE, CINAHL) was conducted for studies reporting outcomes pertaining to physical ability indicative of independent function in adult (>15 y) cohorts who had suffered a major burn (>20% TBSA) up to 30 years

after treatment in a developed specialised burn service. Data extracted included factors affecting rate of and time to achievement of function in five independence domains, as well as the outcome measures used. **Results:** 21 eligible studies were included comprising 1298 major burns survivors with a combined mean age of 39.6 y and a mean TBSA of 25.8%. The most significant recurring factors impacting recovery of independent function were older age, female gender, burn severity, prolonged ICU and hospital admission, preceding mental health conditions, and post-acute psychological issues. Exercise-based rehabilitation conferred benefits on major burn patients even over 2 years following injury. Discharge to independent living from hospital occurred in 27% to 97% of patients, while reported return to work rates varied from 52% to 80%. Burns Specific Health Scale-Brief, Functional Independence Measure, and Physical Composite Score (SF-36) were the most widely used outcome scoring systems. **Conclusion:** Major burn survivors have protracted recovery with potential for persistent chronic impairments, remaining consistently below baseline levels of function. Non-modifiable factors such as age and gender, and disease characteristics such as burn size with associated physical, physiological and psychosocial sequelae are contributory. Further research is required to explore achievement of specific milestones of major burn and polytrauma critical care patients, while early targeted rehabilitation addressing physical, psychological, and vocational needs has promising potential benefit.

**Jawad et al. 2024.**

**Burns, vol. 50, no. 6.**

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**Keywords:** Baseline; burn; function; independence; major; PROM; recovery; rehabilitation; severe; systematic; vocation.

**Evidence Level:** 1A

**Link:** [https://linkinghub.elsevier.com/retrieve/pii/S0305-4179\(24\)00049-4](https://linkinghub.elsevier.com/retrieve/pii/S0305-4179(24)00049-4)

### **Cognition and return to work status 2 years after breast cancer diagnosis**

**Background:** Return to work after breast cancer (BC) treatment depends on several factors, including treatment-related adverse effects. While cancer-related cognitive impairment is frequently reported by patients with BC, to date, no longitudinal studies have assessed its association with return to work.

**Objective:** To examine whether cognition, assessed using objective and subjective scores, was associated with return to work 2 years after BC diagnosis. **Design, setting, and participants:** In a case series of the French Cancer Toxicities (CANTO) cohort, a study of patients with stage I to III BC investigated cognition from April 2014 to December 2018 (2 years' follow-up). Participants included women aged 58 years or younger at BC diagnosis who were employed or looking for a job. **Main outcomes and measures:** The outcome was return to work assessed 2 years after BC diagnosis. Objective cognitive functioning (tests), cognitive symptoms, anxiety, depression, and fatigue were prospectively assessed at diagnosis (baseline), 1 year after treatment completion, and 2 years after diagnosis. Multivariable logistic regression models were used to explain return to work status at year 2 according to each cognitive measure separately, adjusted for age, occupational class, stage at diagnosis, and chemotherapy. **Results:** The final sample included 178 women with BC (median age: 48.7 [range, 28-58] years), including 37 (20.8%) who did not return to work at year 2. Patients who returned to work had a higher (ie, professional) occupational class and were less likely to have had a mastectomy (24.1% vs 54.1%;  $P < .001$ ). Return to work at year 2 was associated with lower overall cognitive impairment (1-point unit of increased odds ratio [1-pt OR], 0.32; 95% CI, 0.13-0.79;  $P = .01$ ), higher working memory (1-pt OR, 2.06; 95% CI, 1.23-3.59;  $P = .008$ ), higher processing speed (1-pt OR, 1.97; 95% CI, 1.20-3.36;  $P = .01$ ) and higher attention performance (1-pt OR, 1.63; 95% CI, 1.04-2.64;  $P = .04$ ), higher perceived cognitive abilities (1-pt OR, 1.12; 95% CI, 1.03-1.21;  $P = .007$ ), and lower depression (1-pt OR, 0.83; 95% CI, 0.74-0.93;  $P = .001$ ) at year 2 assessment. Return to work at year 2 was associated with several measures assessed at baseline and year 1: higher processing speed (1-pt OR, 2.38; 95% CI, 1.37-4.31;  $P = .003$  and 1.95; 95% CI, 1.14-3.50;  $P = .02$ ), higher executive performance (1-pt OR, 2.61; 95% CI, 1.28-5.75;  $P = .01$ , and 2.88; 95% CI, 1.36-6.28;  $P = .006$ ), and lower physical fatigue (10-pt OR, 0.81; 95% CI, 0.69-0.95;  $P = .009$  and 0.84; 95% CI, 0.71-0.98;  $P = .02$ ). **Conclusions and relevance:** In this case series study of patients with BC, return to work 2 years after diagnosis was associated with higher cognitive speed performance before and after BC treatment. Cognitive difficulties should be assessed before return to work to propose suitable management.

Lange et al. 2024.

JAMA Network Open, vol. 7, no. 8.

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Keywords: Breast cancer; Return to work.

Evidence Level: 4B

Link: [https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2822402#google\\_vignette](https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2822402#google_vignette)

## Workers Compensation

### Workplace injury compensation and mental health and self-harm outcomes: A systematic review

**Background:** Workers' compensation systems aim to financially support injured workers. However, seeking compensation often leads to poorer physical and mental health outcomes. This review examines previous studies to investigate the relationship between workers' compensation and mental health and self-harm outcomes. **Methods:** A three-tiered search strategy across five databases identified studies that examined workers' compensation claims as an exposure or risk factor, with outcomes related to mental health, self-harm and suicidality. Nine full-text studies were included; however, heterogeneity limited generalizability. **Results:** Most studies supported an association between pursuing compensation and poorer mental health and self-harm outcomes. Some studies attributed this to specific aspects of the system such as justice perception and navigation of the claims system. Findings suggest an association between workers' compensation and mental health or self-harm outcomes. Inconclusive findings highlight the need for further research. **Conclusion:** Understanding the psychiatric impacts of pursuing compensation is crucial to help formulate a more accessible compensation system.

Wadhwa et al. 2024.

New Solutions, vol. 34, no. 2.

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Keywords: Mental health; occupational injury; self-harm; suicidality; workers compensation.

Evidence Level: 1A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11331669/>

## Wellness Programs

*This month we explore issues associated with wellness programs including the barriers and facilitators to implementing a provincial PPE safety coach program and user perceptions and utilisation of features of an AI-enabled workplace digital mental wellness platform.*

### "We could have used a lot more of this before...": A qualitative study understanding barriers and facilitators to implementing a provincial PPE safety coach program during the COVID-19 pandemic

**Background:** A Provincial PPE Safety Coach Program was introduced to support appropriate use of personal protective equipment by health care workers. The objective was to understand barriers and facilitators to implementation. **Methods:** A qualitative study was conducted mid-2021. Participants were recruited using a purposive sampling strategy. Interviews were conducted using a guide informed by the Theoretical Domains Framework and Consolidated Framework for Implementation Research. Analysis was conducted using the Theoretical Domains Framework. **Results:** Prominent domains identified by staff were "social influences and skills", "environmental context and resources", "social/professional role and identity", "emotion", and "belief of consequences". Prominent domains identified by safety coaches were "knowledge", "social/professional role and identity", "environmental context and resources", and "memory". Only "environmental context and resources" and "social/professional role and identity" were similar. The main facilitators were fear of COVID-19 and leadership commitment, while the main barriers were lack of clarity and balancing the role. **Discussion:** Understanding the local context of a health care environment influenced the success of safety coaches. The role allowed individuals to develop leadership skills and help staff improve their perceived competence in using personal protective equipment.

**Conclusions:** Safety coaches were well received. Influencing factors provide a basis for strategies to embed this approach throughout a health care system.

**Gagnon et al. 2024.**

**American Journal of Infection Control, vol. 52, no. 8.**

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**Keywords:** Coaching; Consolidated Framework for Implementation Research (CIFR); health care workers; Interviews; Theoretical Domains Framework (TDF).

**Evidence Level:** 5B

**Link:** [https://www.ajicjournal.org/article/S0196-6553\(24\)00127-5/fulltext](https://www.ajicjournal.org/article/S0196-6553(24)00127-5/fulltext)

### **User perceptions and utilisation of features of an AI-enabled workplace digital mental wellness platform 'mindline at work'**

**Background:** The working population encounters unique work-related stressors. Despite these challenges, accessibility to mental healthcare remains limited. Digital technology-enabled mental wellness tools can offer much-needed access to mental healthcare. However, existing literature has given limited attention to their relevance and user engagement, particularly for the working population. **Aim:** This study aims to assess user perceptions and feature utilisation of *mindline at work*, a nationally developed AI-enabled digital platform designed to improve mental wellness in the working population. **Methods:** This study adopted a mixed-methods design comprising a survey (n=399) and semi structured interviews (n=40) with office-based working adults. Participants were asked to use *mindline at work* for 4 weeks. We collected data about utilisation of the platform features, intention for sustained use and perceptions of specific features. **Results:** Participants under 5 years of work experience reported lower utilisation of multimedia resources but higher utilisation of emotion self-assessment tools and the AI chatbot compared with their counterparts (p<0.001). The platform received a moderate level of satisfaction (57%) and positive intention for sustained use (58%). Participants regarded *mindline at work* as an 'essential' safeguard against workplace stress, valuing its secure and non-judgmental space and user anonymity. However, they wanted greater institutional support for office workers' mental wellness to enhance the uptake. The AI chatbot was perceived as useful for self-reflection and problem-solving, despite limited maturity. **Conclusion:** Identifying the unique benefits of specific features for different segments of working adults can foster a personalised user experience and promote mental well-being. Increasing workplace awareness is essential for platform adoption.

**Yoon et al. 2024.**

**BMJ Health and Care Informatics, vol. 31, no. 1.**

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**Keywords:** Artificial intelligence; online systems; public health; public health informatics.

**Evidence Level:** 5B

**Link:** <https://informatics.bmj.com/content/31/1/e101045>

## **Shift Work**

*This month we explore issues associated with shiftwork including the risk of non-alcoholic fatty liver disease in young, healthy workers, female breast cancer, and the link to insomnia symptoms.*

### **Shift work and non-alcoholic fatty liver disease in young, healthy workers**

**Background:** Non-alcoholic fatty liver disease (NAFLD) is a relatively common disease, and preventing its occurrence is important for both individual health and reducing social costs. Shift work is reported to have several negative effects on health. An association has been observed between NAFLD and both sleep time and quality; however, this association remains unclear in night shift workers. We aimed to evaluate the relationship between shift work and the incidence of NAFLD. **Methods:** Overall, 45,149 Korean workers without NAFLD were included at baseline. NAFLD was defined as the presence of a fatty liver observed on ultrasonography without excessive alcohol use. Incidence rate ratios for incident NAFLD were estimated using negative binomial regression according to age groups (20s, 30s, 40s, and 50s). **Results:** In the 20s age



group, shift work showed a significant incidence rate ratio (IRR) for NAFLD in all models. After adjusting for all variables, the IRR (95% confidence interval) was 1.24 (1.08-1.43) in the 20s age group. In their 20s, a significant association between shift work and incident NAFLD was consistently observed among women and workers with poor sleep quality. **Conclusion:** In this large-scale cohort study, shift work was significantly associated with the development of NAFLD among young workers in their 20s.

**Lee et al. 2024.**

**Scientific Reports, vol. 14, no. 1.**

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**Keywords:** Cohort studies; fatty liver; longitudinal studies; non-alcoholic fatty liver disease; shift work.

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-024-70538-9>

### **Night shift work and female breast cancer: A two-stage dose-response meta-analysis for the correct risk definition**

**Background:** The hypothesis of this study is night shift work exposure can increase the risk of female breast cancer. To validate this hypothesis, the authors conducted a two-stage dose-response meta-analysis with improved quality on this topic. **Methods:** The medical librarian searched PubMed, EMBASE, and the Cochrane Library on December 30th, 2022. The eight inclusion criteria were determined and strictly applied to the selection process. A reliable dose-response meta-analysis methodology was applied.

**Results:** Reliable 10 cohort (total cases: 15,953, and total person-years: 6,812,138) and 11 case-control reports (total cases: 9196, and total controls:12,210) were included in the final analysis. The pooled risk ratio (RR) of female breast cancer (from cohort studies) for 1, 10, 20, and 30 years of night shift work exposure was 1.0042 (95% CI 1.0014-1.0070), 1.0425 (95% CI 1.0138-1.0719), 1.0867 (95% CI 1.0278-1.1490), and 1.1328 (95% CI 1.0419-1.2317), respectively. The pooled odds ratio (OR) of female breast cancer (from case-control studies) for 1, 10, 20, and 30 years of night shift work exposure was 1.0213 (95% CI 1.0108-1.0319), 1.2346 (95% CI 1.1129-1.3695), 1.5242 (95% CI 1.2386-1.8756), and 1.8817 (95% CI 1.3784-2.5687), respectively. **Discussion:** This study has several strengths from the perspective of a dose-response meta-analysis: Strictly applied eight inclusion criteria, separately synthesized RRs from cohort studies and ORs from case-control studies, clearly defined exposure dose, years of night shift work for each risk estimate, a reliable dose-response meta-analysis methodology, and careful considering of selection, exposure, and outcome biases and confounder adjustment for each study. This careful consideration of potential biases and confounding led to the exclusion of unreliable two cohort and five case-control studies.

**Moon et al. 2024.**

**BMC Public Health, vol. 24, no. 1.**

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**Keywords:** Breast cancer; case-control study; cohort study; dose-response meta-analysis; night shift work.

**Evidence Level:** 1A

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19518-2>

### **Commuting time, working time, and their link to insomnia symptoms among Korean employees: A cross-sectional study**

**Background:** Although commuting time is an extension of working hours, few studies have examined the relationship between commuting time and insomnia symptoms in relation to working time. Thus, this study investigated the relationship between commuting time and working time and their link to sleep disturbance. **Methods:** This study included employees with  $\geq 35$  weekly working hours ( $n = 30,458$ ) using data from the Sixth Korean Working Conditions Survey conducted in Korea between October 2020 and April 2021. The association between commuting time ( $\leq 60$ , 61-120, and  $>120$  minutes) and insomnia symptoms based on working hours (35-40, 41-52, and  $>52$  h/wk) or shift work was investigated using survey-weighted logistic regression analysis. **Results:** Long commuting time ( $>120$  min/d) combined with  $>52$  working hours/week (OR: 7.88, 95% CI: 2.51-24.71) or combined with 41-52 h/wk (OR: 3.64, 95% CI: 2.15-6.14) was associated with a higher risk of insomnia symptoms compared with the reference group (working hours: 35-40 h/wk; daily commuting time:  $\leq 60$  minutes), after controlling for sex, age, socioeconomic factors, and

work-related factors. Among shift workers, those with daily commuting time  $\leq 60$  minutes (OR: 1.71, 95% CI: 1.39-2.09), 61-120 minutes (OR: 2.63, 95% CI: 1.21-5.74), and  $>120$  minutes (OR: 5.16, 95% CI: 2.14-12.44) had higher odds of insomnia symptoms than nonshift workers with  $\leq 60$  minutes daily commuting time. **Conclusion:** Long working hours and shift work are associated with greater risk of insomnia symptoms.

**Ryu et al. 2024.**

**Sleep Health, vol. 10, no. 4.**

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**Keywords:** Commuting; shift work; sleep disturbance; working hours.

**Evidence Level:** 4B

**Link:** [https://www.sleephealthjournal.org/article/S2352-7218\(24\)00111-6/fulltext](https://www.sleephealthjournal.org/article/S2352-7218(24)00111-6/fulltext)

## Management and Leadership

*This month we explore management and leadership issues including the effects of face-pressure and benevolent leadership on work-related identity discrepancy and employee proactive behaviour, and the role of leadership emergence and job autonomy in how perceived overqualification promotes employees' creative deviance.*

### **Work-related identity discrepancy and employee proactive behavior: The effects of face-pressure and benevolent leadership**

**Background:** Based on social exchange theory and social cognition theory, this paper studies the effect of work-related identity discrepancy on proactive behaviour of close-leadership employees through hierarchical regression analysis and examines the mediating effect of face-pressure and the moderating effect of benevolent leadership. **Methods:** This work surveyed 516 employees by questionnaire. The first round of survey mainly investigated employees in Changsha City, and the second round of survey mainly investigated employees' work-related identity discrepancy, face-pressure, benevolent leadership and proactive behaviour in  $>10$  regions. By tracking and matching, 396 valid questionnaires were finally obtained. Spss 22.0 was used to describe all the study variables; Mplus 7.0 is used to carry out a confirmatory factor analysis and a multi-path regression model. **Results:** The difference in work-related identity discrepancy had a significant negative impact on proactive behaviour. Face-pressure partially mediated the relationship between work-related identity discrepancy and proactive behaviour. Benevolent leadership moderated the indirect relationship between work-related identity discrepancy, proactive behaviour and face-pressure. We hope that the findings and discussions from this study will spark further exploration and practical application of enterprise management theories. **Conclusion:** In the context of leadership change, employee identity differences in perception can affect employee proactive behaviour, especially for some close-leadership employees. Face-pressure in traditional Chinese culture has a prominent place. Managers should strive to foster an open and inclusive organizational atmosphere that promotes interaction and communication among employees, reduces the impact of negative factors like face pressure, and thereby stimulates employees' work initiative and innovative spirit. This enriches and deepens our understanding within the fields of organizational behaviour and cross-cultural management.

**Wang et al. 2024.**

**Acta Psychologica, vol. 248.**

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**Keywords:** Benevolent leadership; close-leadership employees; face-pressure; proactive behavior; work-related identity discrepancy.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0001691824002312?via%3Dihub>

### **How does perceived overqualification promote employees' creative deviance: The role of leadership emergence and job autonomy**

**Background:** Inspiring the creative potential of overqualified employees can facilitate a mutually beneficial outcome for both the company and the employees. However, further investigation is required to ascertain how to stimulate the perceived overqualification of employees to carry out creative deviance. Drawing upon role theory, this study explores the impact mechanism of perceived overqualification on employee creative deviance, with leadership emergence as the mediating variable, and further examines the moderating role of job autonomy. **Methods:** Adopting a two-stage design, 362 valid data samples were collected from various companies, and analysis was conducted using partial least squares structural equation modelling. **Results:** The results indicate a positive correlation between perceived overqualification and creative deviance. Perceived overqualification not only positively influences leadership emergence but it also indirectly affects creative deviance through leadership emergence. Furthermore, when individuals with perceived overqualification and possess a greater level of job autonomy, they are more likely to engage in creative deviant behaviour. **Conclusion:** The findings contribute to understanding the mediating mechanisms and boundary conditions of employees' perceived overqualification influencing creative deviance from a positive perspective, offering valuable managerial insights for organizations.

**Zheng et al. 2024.**

**Acta Psychologica, vol. 248.**

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**Keywords:** Creative Deviance; job autonomy; leadership emergence; perceived overqualification; role theory.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0001691824002592?via%3Dihub>

### **Work Ability**

#### **'Too young to sit at home': A qualitative study conducted among employees with young-onset dementia and their relatives**

**Background:** Young-onset dementia (YOD) symptoms often first present in the workplace, resulting in work performance challenges and eventually loss of employment. This study aims to investigate the experiences, work values, and support needs of employees with YOD and their relatives. **Method:** Semi-structured interviews were conducted to explore the experiences, work values, and support needs of (former) employees with YOD and their relatives. Subsequently, separate focus group discussions were conducted for employees and relatives to review and prioritize interview findings. Inductive thematic analysis was applied to both datasets. **Results:** A total of 15 interviews (six employees; nine relatives) and four focus group discussions (ten employees; six relatives) were conducted. Six themes emerged, with five revolving around the central theme: desire to work. The other themes represent essential contributing factors, including importance of receiving a YOD diagnosis; knowledge, awareness, and understanding regarding YOD; open communication, joint decision making, and collaboration; work adjustments, involvement, and support; phasing out work and future perspectives. **Conclusion:** The findings highlight a strong desire to work post-YOD diagnosis, serving as a foundation for developing workplace support tools and guidance. This has the potential to help individuals with YOD preserve their self-confidence and identity while working within their capabilities.

**Smeets et al. 2024.**

**Aging and Mental Health, vol. 28, no. 8.**

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**Keywords:** Young-onset dementia; continued employment; employees with dementia; perspectives; relatives; support needs; work.

**Evidence Level:** 5A

**Link:** <https://www.tandfonline.com/doi/full/10.1080/13607863.2024.2345132>

## Adapting to the Future of Work

### Technology

*This month we explore technological issues including the use of a novel light weight minimal support lifting exoskeleton in people without low back pain, countering technostress in virtual work environments and artificial intelligence, workers, and future of work skills*

#### **Can a novel light weight minimal support lifting exoskeleton modify lifting movement in people without low back pain?**

**Background:** Low back pain (LBP) is a major contributor to lifting-related disabilities. To minimize the risk of back pain, emerging technologies known as lifting exoskeletons were designed to optimize lifting movements. However, it is currently unknown whether a minimally supportive exoskeleton can alter the lifting movement in people without LBP. This study aims to investigate if wearing a novel lightweight exoskeleton that minimally supports the back, hip, and knee can alter the lifting range of motion and movement variations in people without LBP. This study also aims to investigate if wearing this novel exoskeleton can result in a reliable between-day lifting movement. In two separate sessions (each one week apart), fourteen participants lifted a box (that weighed 10% of their body weight) ten times, once while wearing an exoskeleton and once while not wearing an exoskeleton. Wearing the novel exoskeleton during lifting produced moderate-high, test-retest reliability (Trunk: ICC<sub>3,1</sub> = 0.89, 95% CI [0.67, 0.96], SEM = 9.34°; Hip: ICC<sub>3,1</sub> = 0.63, 95% CI [0.22, 0.88], SEM = 2.57°; Knee: ICC<sub>3,1</sub> = 0.61, 95% CI [0.23, 0.87], SEM = 2.50°). Wearing an exoskeleton significantly decreased the range of motion of the knee (F<sub>1,4</sub> = 4.83, p = 0.031, η<sup>2</sup> = 0.06). Additionally, wearing an exoskeleton significantly decreased hip (diff = 8.38, p = 0.045) and knee (diff = -8.57, p = 0.038) movement variability; however, wearing an exoskeleton did not decrease the movement variability of the body's trunk (diff = 0.60, p = 1.00). Therefore, minimally supported lifting through the use of exoskeletons can modify movement in people without LBP and produce reliable lifting movements. Wearing the novel exoskeleton is also desirable for monitoring lifting movements. Future studies should investigate the use of sensors and IMU to monitor lifting movement at work with the least amount of intrusion on an individual's movement.

**Burjawi et al. 2024.**

**Sensors, vol. 24, no. 15.**

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**Keywords:** Exoskeleton; kinematics; lifting; low back pain; movement.

**Evidence Level:** 4A

**Link:** <https://www.mdpi.com/1424-8220/24/15/5067>

#### **Countering technostress in virtual work environments: The role of work-based learning and digital leadership in enhancing employee well-being**

**Background:** Virtual work has been highlighted as an important business trend nowadays. Technostress caused by information and communication technology threatens employee well-being in a virtual context. We integrate insights from the Job Demands-Resources theory to explore the impact of technostress on employee well-being and examine work-based learning and digital leadership capability as buffers of this negative impact via the attenuating effect of work exhaustion. **Methods:** We collected multi-wave survey data from 300 virtual employees to test the theoretical model. **Results:** revealed a significant negative impact of technostress on employee well-being. However, work-based learning and digital leadership capability buffered employees' well-being from this negative effect by reducing their work exhaustion. **Conclusion:** Our findings extend our understanding of work design and shed light on how to cope with virtual work demands.

**Alkhayyal et al. 2024.**

**Acta Psychologica, vol. 248**

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**Keywords:** Digital leadership capability; employee well-being; job demands-resources theory; technostress; work-based learning.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0001691824002543?via%3Dihub>

### **Artificial intelligence, workers, and future of work skills**

**Background:** Historically, the use of technology in organizations has reshaped the nature of human work.

**Method:** In this article, we overview how current waves of artificially intelligent (AI) technologies are following this trend, showing how its uses can both automate and complement human labor, alongside creating new forms of human work. **Results:** However, AI can also generate both upsides and downsides for workers' experiences, which are dependent upon a range of factors such as how the technology is used and the support employees receive during digital transitions. **Conclusion:** We conclude by outlining how AI literacy and other human-centered skills will play an increasingly important role in future workplaces.

**Bankins et al. 2024.**

**Current Opinion in Psychology, vol. 58.**

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**Keywords:** AI and skills; AI and work; AI literacy; artificial intelligence; future of work.

**Evidence Level:** 6A

**Link:** <https://www.sciencedirect.com/science/article/pii/S2352250X24000411?via%3Dihub>

### **Work Environment**

*This month we explore work environment issues associated with telework and 24-hour movement behaviours, working from home and an activity-based flex office.*

#### **Telework and 24-hour movement behaviours among adults living in Canada during the COVID-19 pandemic**

**Background:** To assess the association between work location and movement behaviours (physical activity [PA], screen time, sleep) and adherence to the Canadian 24-Hour Movement Guidelines (24-H Guidelines) among Canadian workers during the COVID-19 pandemic. **Methods:** Using cross-sectional data from the 2021 Canadian Community Health Survey (n = 10,913 working adults 18-75 years), primary work location was categorized as: worked outside the home at a fixed location (fixed workplace), worked at home (telework), and worked outside the home at no fixed location (non-fixed workplace). Recreational, transportation and occupational/household PA, as well as leisure screen time and sleep duration were self-reported. Logistic regression assessed associations between work location and adherence to movement behaviour recommendations, adjusting for covariates. **Results:** Compared to a fixed workplace, those teleworking reported more recreational PA (21.1 vs 17.0 min/day, p < 0.0001) and sleep (7.2 vs 7.1 h/night, p = 0.026) and were more likely to meet sleep duration recommendations (adjusted odds ratio [aOR] = 1.28, 95% CI: 1.08-1.51) and the 24-H Guidelines (aOR = 1.25, 95% CI: 1.04-1.51). Compared to fixed workplaces, those at non-fixed workplaces reported more occupational PA (62.7 vs 32.8 min/day, p < 0.0001) and less leisure screen time (2.5 vs 2.7 h/day, p = 0.021), and were more likely to meet the PA recommendation (aOR = 1.46, 95% CI: 1.15-1.85) and the 24-H Guidelines (aOR = 1.38, 95% CI: 1.09-1.75). **Conclusions:** Results suggest that adherence to the 24-H Guidelines varies by work location, and work location should be considered when developing strategies to promote healthy movement behaviours. Future studies could explore hybrid work arrangements, and longitudinal study designs.

**Prince et al. 2024.**

**Preventive Medicine, vol. 185.**

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**Keywords:** Physical activity; screen time; sedentary behaviour; sleep; telework; work.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0091743524002081?via%3Dihub>

**Does working from home work? That depends on the home**

**Background:** Working from home (WFH) has risen in popularity since the COVID-19 pandemic. There is an ongoing debate about the productivity implications of WFH, but the physical climate of the home office has received only limited attention. This paper investigates the effect of home office satisfaction and environment-improving behaviour on productivity and burnout tendency for WFH employees. **Method:** We surveyed over 1,000 Dutch WFH individuals about their home office and perceived WFH performance. We fit logistic regressions and structural equation models to investigate the effect of home office satisfaction and characteristics on self-reported productivity, burnout tendency, and willingness to continue WFH. **Results:** Our results reveal that individual differences in WFH productivity are explained by heterogeneity in the physical home office environment. Higher satisfaction with home office factors is significantly associated with increased productivity and decreased burnout tendency. We continue by showing that more ventilation during working hours is associated with increased productivity, willingness to continue WFH, and burnout resilience. This effect is fully mediated by satisfaction with the home office. We find that higher home office satisfaction is associated with WFH success and air-quality-improving behaviour is associated with higher satisfaction. **Conclusion:** Our results underline a holistic perspective such that investing in a healthy and objectively measured physical climate is a key aspect of the bright future of working from home. The move from the work office to the home office needs to be accompanied by careful design and investment in the quality of the office and its climate.

**Stroom et al. 2024.**

**PLoS One, vol. 19, no. 8.**

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**Keywords:** Working from home; WFH.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0306475>

### **Physical work environment in an activity-based flex office: A longitudinal case study**

**Background:** This study aimed to investigate and explore Occupational Health and Safety (OHS) management, office ergonomics, and musculoskeletal symptoms in a group of office workers relocating from cell offices to activity-based flex offices (AFOs). **Methods:** The analysis was based on qualitative interview data with 77 employees and longitudinal questionnaire data from 152 employees.

**Results:** Results indicate that there was a need to clarify roles and processes related to the management of OHS. Self-rated sit comfort, working posture, and availability of daylight deteriorated and symptoms in neck and shoulders increased after the relocation and seemed to be influenced by many factors, such as difficulties adjusting the workstations, the availability of suitable workplaces, and age, sex, and individual needs. **Conclusion:** Research on the long-term effects of physical work environments and management of (OHS) issues after implementing activity-based flex offices is sparse. This study demonstrates the importance of planning and organising OHS issue management when implementing an AFO, and to carefully implement office ergonomics among office workers.

**Wahlström et al. 2024.**

**International Archives of Occupational and Environmental Health, vol. 97, no. 6.**

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**Keywords:** Ergonomics; flexible office; occupational health and safety; office design; office workers; work environment.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s00420-024-02073-z>