



Workplace Research Monthly

Formerly Emerging Evidence Alert

April 2024

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 March 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 health and wellbeing issues associated with the work environment and hypertension, sudden cardiac death among workers and predictors of adherence during the Covid-19 pandemic.

Work environment and hypertension in industrial settings in Benin in 2019: A cross-sectional study.

Background: To determine the association between occupational factors, particularly psychosocial factors, and hypertension. **Methods:** Design: Descriptive and analytical cross-sectional study using logistic multivariate regression. Setting: Fifteen cotton ginning plants in Benin. Participants Permanent and occasional workers in the cotton ginning industry. Data collection: Data on sociodemographic, occupational, behavioural and clinical history characteristics were collected using a number of standardized, interviewer-administered questionnaires. These questionnaires were based on the WHO's non-communicable disease questionnaire, Karasek questionnaire and Siegrist questionnaire. Weight, height and blood pressure were measured. Any worker with systolic blood pressure ≥ 140 mm Hg and/or diastolic blood pressure ≥ 90 mm Hg according to the WHO criteria was considered hypertensive, as was any subject on antihypertensive treatment even if blood pressure was normal. **Results:** A total of 1883 workers were included, with a male to female ratio of 9.08. Of these, 510 suffered from hypertension (27.1%, 95% CI 25.1 to 29.2). In the multivariate analysis, the risk factors identified were occupational stress (adjusted OR (aOR)=3.96, 95% CI 1.28 to 12.2), age ≥ 25 years (aOR=2.77, 95% CI 1.55 to 4.96), body mass index of 25-30 kg/m² (aOR=1.71, 95% CI 1.32 to 2.2), body mass index >30 kg/m² (aOR=2.74, 95% CI 1.84 to 4.09), permanent worker status (aOR=1.66, 95% CI 1.44 to 2.41) and seniority in the textile sector >5 years (aOR=2.18, 95% CI 1.7 to 2.8). Recognition at work emerged as an effect-modifying factor subject to stratification. **Conclusions:** Occupational factors, particularly job strain and recognition at work, are modifiable factors associated with hypertension in the ginning plants sector and deserve to be corrected through occupational health promotion and prevention.

Adjobimey et al. 2024.

BMJ Open, vol. 14, no. 3.

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Keywords: Blood pressure; hypertension; occupational stress; risk factors.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/14/3/e078433.long>

Sudden cardiac death among workers: A systematic review and meta-analysis.

Background: Sudden cardiac death (SCD) is a rare and yet unexplained condition. The most frequent cause is myocardial infarction, while a small proportion is due to arrhythmogenic syndromes (e.g., channelopathies). This systematic review and meta-analysis aimed to provide a comprehensive overview of the prevalence and risk factors associated with SCD in workers. **Methods:** A search for eligible studies was performed utilizing three databases (PubMed, ISI Web of Knowledge, and Scopus). The inclusion criteria were fulfilled if sudden cardiac death due to channelopathy in workers was mentioned.

Results: Out of the 1408 articles found across three databases, 6 articles were included in the systematic review but the meta-analysis was conducted on 3 studies. The total sample included was 23,450 participants. The pooled prevalence of channelopathies in employees was 0.3% (95% CI 0.07-0.43%), of sudden cardiac death in employees was 2.8% (95% CI 0.37-5.20%), and of sudden cardiac death in employees with a diagnosis of cardiac channelopathies was 0.2% (95% CI 0.02- 0.30%). **Conclusions:** SCD is a serious and potentially preventable condition that can occur among workers. By identifying and addressing work-related risk factors, providing appropriate screening and interventions, and promoting healthy lifestyle behaviours, we can work to reduce the incidence of SCD and improve the cardiovascular health and well-being of workers.

Amantea et al. 2024.

Systematic Reviews, vol. 13, no. 1.

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Keywords: Cardiovascular diseases; occupational health; public health; sudden cardiac death; workers.

Evidence Level: 1A

Link: <https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-024-02504-5>

Predictors of adherence in Austrian employees during the COVID-19 pandemic: Results of an online survey.

Background: Since the beginning of the pandemic in December 2019, Coronavirus disease 2019 (COVID-19) has been a significant challenge to health care systems throughout the world. The introduction of measures to reduce the incidence of infection had a significant impact on the workplace. Overall, companies played a key and adaptive role in coping with the pandemic. **Methods:** Cross-sectional data from an online-survey of 1,183 employees conducted during the COVID-19 pandemic in spring 2021 in Austria were used in the analyses. The influence of health beliefs (e.g., perceived severity), modifying factors (e.g., age) and time-dependent factors (e.g., corona fatigue) on individual adherence were evaluated. The conception of the questionnaire was based on the health belief model. **Results:** The majority of respondents were female (58.3%), worked in companies with more than 250 employees (56.6%) and had been to an academic secondary school or had a university degree (58.3%). Overall, employees were adherent to most of the measures at their company (>80%), except for wearing FFP-2 masks when they were travelling in a car with coworkers (59.3, 95%CI 51.3-66.7%). Overall adherence was associated with high ratings for the meaningfulness of testing (OR: 2.06 95%CI: 1.00-4.22; $p = 0.049$), the extent to which social norms govern behavior (OR: 6.61 95%CI: 4.66-9.36; $p < 0.001$), lower perceived difficulties associated with the adoption of health-promoting measures (OR: 0.37 95%CI: 0.16-0.82; $p = 0.015$) and lower corona fatigue (OR: 0.23 95%CI: 0.10-0.52; $p < 0.001$). Adherence to four single measures was influenced by different predictors. The most important predictors (important for the adherence to three out of four single measures) were social norms and corona fatigue. **Conclusions:** The importance attached to testing and social norms, as well as lower perceived barriers to health-promoting measures and low levels of corona fatigue all increase overall adherence to Covid-19 protective measures in companies. Strategies to improve adherence should be adapted depending on the aim (to raise overall adherence or adherence to individual measures) and on the group of persons that is being targeted.

Avian et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: COVID-19; adherence; barriers to health-promoting measures; corona fatigue; employees; health belief model; online-survey; social norms.

Evidence Level: 4B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1347818/full>

Work Health and Safety

This month we explore work health and safety issues associated with the estimates of the work-related burden of diseases and accidents in 2019 and professional cleaners' and healthcare workers' ability to recognize hand eczema.

Global-, regional- and country-level estimates of the work-related burden of diseases and accidents in 2019.

Background: This study provides the global-, regional- and country-level estimates on the work-related burden of diseases and accidents for 2019, including deaths, disability adjusted life years (DALY) and economic losses. **Methods:** Data on occupational illnesses and injuries from international organizations, institutions, and public websites were used. Risk ratios (RR) and population attributable fractions (PAF) for the risk factor-outcome pairs were derived from the literature. Estimated mortality and DALY for a group of seven major diseases covering 120 risk-outcome pairs attributable to work were calculated for 181 countries. **Results:** Globally, 2.9 million deaths were attributed to work, with 2.58 million deaths due to work-related diseases and 0.32 million related to occupational injuries. Globally, work-related diseases with a long latency period are increasing, while the number of occupational injuries has decreased. Work-related circulatory diseases were the major cause of 912 000 deaths globally, followed by 843 000 work-

related malignant neoplasms. In high-income, American, Eastern European and Western Pacific World Health Organization (WHO) regions, however, work-related malignant neoplasms comprised the biggest disease group. DALY attributable to work were estimated to be 180 million in 2019, with an associated economic loss of 5.8% of global GDP. New estimates of psychosocial factors increased the global loss.

Conclusions: The burden of work-related diseases and injuries increased by 26% from 2.3 million annual deaths in 2014 to 2.9 million in 2019. The DALY attributable to work have also substantially increased from 123 million in 2014 to 180 million in 2019 (47% increase). We found large regional and country variations.

Takala et al. 2024.

Scandinavian Journal of Work, Environment and Health, vol. 50, no. 2.

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Keywords: Work-related burden; diseases; global; country; regional; accidents.

Evidence Level: 6B

Link: <https://www.sjweh.fi/article/4132>

Professional cleaners' and healthcare workers' ability to recognize hand eczema.

Background: Timely intervention reduces the risk of a poor prognosis in hand eczema, making early recognition of symptoms important in high-risk professions. However, limited data exist regarding the ability of cleaners and healthcare workers to recognize hand eczema. The aim of this study was to examine cleaners' and healthcare workers' ability to recognize hand eczema in clinical photographs and to assess the severity of the disease. **Methods:** Cleaners and healthcare workers completed a questionnaire consisting of 16 questions and participated in a structured interview referring to a validated photographic severity guide for chronic hand eczema, which comprised clinical photographs of hand eczema at varying levels of severity. Eighty cleaners and 201 healthcare workers (total N = 281) participated in the study. **Results:** The rates of correctly identified hand eczema in clinical photographs (cleaners/ healthcare workers) were: 41.2%/57.7% (mild hand eczema), 81.2%/92.0% (moderate hand eczema), 85.0%/94.5% (severe hand eczema) and 82.5%/97.0% (very severe hand eczema). The proficiency of healthcare workers in recognizing hand eczema was significantly higher than that of cleaners. **Conclusions:** The results indicate that a large proportion of cleaners and healthcare workers fail to recognize mild hand eczema in clinical photographs. Healthcare workers had higher success rates in recognizing hand eczema in all severity categories. Symptom underestimation may lead to under-reporting of the true prevalence of hand eczema, with consequent loss of opportunities for prevention.

Glenn Ullum et al. 2024.

Acta Dermato-Venereologica, vol. 19.

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Keywords: Professional cleaners; healthcare workers; hand eczema.

Evidence Level: 5B

Link: <https://medicaljournalssweden.se/actadv/article/view/27985>

Chronic Health Issues

This month we explore chronic health issues related to stroke, chronic spontaneous or inducible urticaria, advanced chronic kidney disease and metabolic syndrome.

Factors associated with fatigue among people who have returned to work after stroke: An exploratory study.

Background: To explore the associations between fatigue impact and (a) personal and stroke-related characteristics, (b) functional impairments and (c) work-related factors among individuals who have returned to work after stroke. **Methods:** A cross-sectional exploratory study. Subjects: 87 working stroke survivors. This study comprises data from a postal survey targeting work ability and perceived stroke-related consequences 1 year after stroke. Fatigue was evaluated using the Fatigue Severity Scale (FSS). Factors associated with having fatigue (FSS total score ≥ 4) were identified using univariable and multivariable logistic regression analyses. Three domain-specific multivariable models and 1 final combined model were created. **Results:** Fatigue was reported by 43% of the participants. Several factors representing

all the investigated domains were associated with fatigue. In the final combined regression model, self-perceived low cognitive functioning, low decision control at work and high quantitative job demands had the strongest independent effects on the odds of having fatigue. **Conclusions:** Among people who were working 1 year after stroke, fatigue was associated with both personal and stroke-related characteristics as well as functional impairments and work-related factors. This highlights the complex nature of post-stroke fatigue. Fatigue management interventions should have a comprehensive approach and also consider the work environment.

Norlander et al. 2024.

Journal of Rehabilitation Medicine, vol. 56.

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Keywords: Fatigue; return to work; stroke.

Evidence Level: 4A

Link: <https://medicaljournalssweden.se/jrm/article/view/18668>

Impact of chronic spontaneous or inducible urticaria on occupational activity.

Background: The impact of chronic urticaria on work has been scarcely reported, whereas its peak incidence is between the ages of 20 and 40. The aim of this study was to assess the occupational impact of chronic urticaria and its treatment, by combining objective and patient-reported data. **Methods:** A monocentric observational study was performed using questionnaires over a 1-year period from 2021 to 2022 in chronic urticaria patients who were in a period of professional activity and agreed to participate. **Results:** Of the 88 patients included, 55.7% assessed the occupational impact of their chronic urticaria as significant, and even more severe when chronic urticaria was poorly controlled. Some 86% of patients had symptoms at work, in a third of cases aggravated by work. However, occupational physical factors were not associated with an aggravation of inducible chronic urticaria. A total of 20% reported treatment-related adverse effects affecting their work. Despite low absenteeism, presenteeism and reduced productivity were important (> 20%). Six patients (6.8%) had difficulties keeping their work. For 72.7% of the patients, the occupational physician was not informed. **Conclusions:** The occupational impact of chronic urticaria should be discussed during consultations, particularly when it is insufficiently controlled. The occupational physician should be informed in order to support patients' professional project.

Baudy et al. 2024.

Acta Dermato-Venereologica, vol. 29.

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

Keywords: Chronic urticaria; occupational activity.

Evidence Level: 4B

Link: <https://medicaljournalssweden.se/actadv/article/view/36122>

Work disability and employment status among advanced chronic kidney disease patients.

Background: Chronic kidney disease (CKD) is a major public health issue with significant socioeconomic impacts. In Malaysia, the prevalence of CKD in 2018 was 15%. Complications of CKD such as anaemia, mineral bone disease, and infections led to frequent hospitalizations resulting in work disability and unemployment. To date, there is no data of employment status of CKD patients in Malaysia.

Methods: A cross-sectional study of patients with advanced CKD (stage 4 and 5 non-dialysis) treated in our centre. We interviewed those aged 18 to 60 years old who were selected based on random sampling of their employment status and associated factors. Work disabilities and quality of life were assessed using work productivity and activity impairment (WPAI-GH) questionnaire and kidney disease and quality of life (KDQOL-36) questionnaire. These questionnaires were assisted by the main investigators to aid participants in facilitating their response process. **Results:** A total of 318 patients recruited, 53.5% were males, with a mean age of 49.0 ± 9.0 years old. The main cause of CKD was diabetes (67.0%) followed by hypertension (11.3%). Majority of them were obese (55.3%) with a mean body mass index of 28.81 ± 6.3 kg/m². The mean household income was RM 4669.50 ± 3034.75 (USD1006.27 ± 653.99). The employment rate was 50% (n = 159). 86% of the unemployed patients were in B40 income category. Multiple Logistic Regression

was performed on the significant factors affecting employment status showed one year increase in age increased 6.5% odds to be unemployed. Female and dyslipidaemia had 2.24- and 2.58-times higher odds respectively to be unemployed. Meanwhile, patients with tertiary level of education were 81% less odds to be unemployed. Patients with advanced CKD had a mean percentage of 24.35 ± 15.23 work impairment and 13.36 ± 32.34 mean percentages of face absenteeism due to the disease burden. Furthermore, patients who were unemployed had significant perceived symptoms and problem lists, effects, and burden of kidney disease ($p < 0.01$) and showed poor mental and physical composites ($p < 0.01$) as compared with those who were employed. **Conclusions:** The employment rate of advanced CKD patients was low with half of patients lost their jobs due to the disease burden and had poor mental and physical composites of quality of life. This raises the concern for financial support for long term renal replacement therapy.

Bay et al. 2024.

PLoS One, vol. 19, no. 3.

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Keywords: Work disability; employment status; chronic kidney disease.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297378>

Correlation analysis between occupational stress and metabolic syndrome in workers of a petrochemical enterprise: Based on two assessment models of occupational stress.

Background: Occupational stress is becoming a common phenomenon around the world. Being in a high occupational stress state for a long time may destroy the metabolic balance of the body, thereby increasing the risk of metabolic diseases. There is limited evidence regarding the correlation between occupational stress and metabolic syndrome (MetS), particularly in the petrochemical workers. **Methods:** A total of 1683 workers of a petrochemical enterprise in China were included in the survey by cluster sampling method. The occupational stress assessment was carried out by the Job Content Questionnaire and the Effort-Reward Imbalance Questionnaire, and the general demographic characteristics, work characteristics, occupational hazards, lifestyle, and health examination data of the participants were collected. Logistic regression and multiple linear regression were used to analyse the correlations and influencing factors between occupational stress and its dimensions with MetS and its components. **Results:** A total of 1683 questionnaires were sent out, and 1608 were effectively collected, with an effective recovery rate of 95.54%. The detection rates of occupational stress in Job Demand-Control (JDC) and Effort-Reward Imbalance (ERI) models were 28.4% and 27.2%, respectively. In this study, 257 participants (16.0%) were diagnosed with MetS. Compared with the non-MetS group, body mass index (BMI), waist circumference (WC), systolic blood pressure (SBP), diastolic blood pressure (DBP), triglycerides (TG) and fasting blood-glucose (FBG) levels were significantly higher in the MetS group, and high density lipoprotein-cholesterol (HDL-C) levels were significantly lower ($P < 0.001$). The results of multiple linear regression showed that after adjusting for nation, marital status, education, work system, smoking and drinking, and further adjusting for occupational hazards, the D/C ratio was significantly negatively correlated with SBP in the JDC model. Social support was negatively correlated with WC. In the ERI model, there was a significant positive correlation between over-commitment and FBG. **Conclusions:** The detection rates of occupational stress and MetS were high in workers of a petrochemical enterprise. In the JDC model, occupational stress was negatively correlated with SBP, and social support was negatively correlated with WC. In the ERI model, there was a significantly positive correlation between over-commitment and FBG.

Zhang et al. 2024.

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

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Keywords: Effort-reward imbalance; job demand-control; metabolic syndrome; occupational stress; petrochemical enterprise.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18305-3>

Occupational Exposure

This month we explore issues associated with occupational exposure to radon, particulate matter, occupational asbestos, heat, ionizing radiation, diesel engine emissions, respiratory dust, manganese, polycyclic aromatic hydrocarbons, hazardous pollutants, silica and polychlorinated biphenyls.

Lifetime excess absolute risk for lung cancer due to exposure to radon: Results of the pooled uranium miners cohort study PUMA.

Background: The Pooled Uranium Miners Analysis (PUMA) study is the largest uranium miners cohort with 119,709 miners, 4.3 million person-years at risk and 7754 lung cancer deaths. Excess relative rate (ERR) estimates for lung cancer mortality per unit of cumulative exposure to radon progeny in working level months (WLM) based on the PUMA study have been reported. The ERR/WLM was modified by attained age, time since exposure or age at exposure, and exposure rate. This pattern was found for the full PUMA cohort and the 1960 + sub-cohort, i.e., miners hired in 1960 or later with chronic low radon exposures and exposure rates. **Methods:** The aim of the present paper is to calculate the lifetime excess absolute risk (LEAR) of lung cancer mortality per WLM using the PUMA risk models, as well as risk models derived in previously published smaller uranium miner studies, some of which are included in PUMA. The same methods were applied for all risk models, i.e., relative risk projection up to <95 years of age, an exposure scenario of 2 WLM per year from age 18-64 years, and baseline mortality rates representing a mixed Euro-American-Asian population. **Results:** Depending upon the choice of model, the estimated LEAR per WLM are 5.38×10^{-4} or 5.57×10^{-4} in the full PUMA cohort and 7.50×10^{-4} or 7.66×10^{-4} in the PUMA 1960 + sub-cohort, respectively. **Conclusions:** The LEAR per WLM estimates derived from risk models reported for previously published uranium miners studies range from 2.5×10^{-4} to 9.2×10^{-4} . PUMA strengthens knowledge on the radon-related lung cancer LEAR, a useful way to translate models for policy purposes.

Kreuzer et al. 2024.

Radiation and Environmental Biophysics, vol. 63, no. 1.

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Keywords: Cohort study; lifetime risk; lung cancer; mortality; radon; uranium miners.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00411-023-01049-w>

Occupational exposure to particulate matter and staff sickness absence on the London underground.

Background: The London Underground (LU) employs over 19,000 staff, some of whom are exposed to elevated concentrations of particulate matter (PM) within the network. **Methods:** This study quantified the occupational exposure of LU staff to subway PM and investigated the possible association with sickness absence (SA). A job exposure matrix to quantify subway PM_{2.5} staff exposure was developed by undertaking measurement campaigns across the LU network. The association between exposure and SA was evaluated using zero-inflated mixed-effects negative binomial models. **Results:** Staff PM_{2.5} exposure varied by job grade and tasks undertaken. Drivers had the highest exposure over a work shift (mean: 261 $\mu\text{g}/\text{m}^3$), but concentrations varied significantly by LU line and time the train spent subway. Office staff work in office buildings separate to the LU network and are unexposed to occupational subway PM_{2.5}. They were found to have lower rates of all-cause and respiratory infection SA compared to non-office staff, those who work across the LU network and are occupational exposed to subway PM_{2.5}. Train drivers on five out of eight lines showed higher rates of all-cause SA, but no dose-response relationship was seen. Only drivers from one line showed higher rates of SAs from respiratory infections (incidence rate ratio: 1.24, 95% confidence interval 1.10-1.39). Lower-grade customer service (CS) staff showed higher rates of all-cause and respiratory infection SA compared to higher grade CS staff. Doctor-certified chronic respiratory and cardiovascular SAs were associated with occupational PM_{2.5} exposure in CS staff and drivers. While some groups with higher occupational exposure to subway PM reported higher rates of SA, no evidence suggests that subway PM is the main contributing factor to SA. **Conclusions:** This is the largest subway study on health effects of occupational PM_{2.5} exposure and may have wider implications for subway workers, contributing to safer working environments.

Mak et al. 2024.

Environment International, vol. 185.

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Keywords: Occupational exposure; particulate matter; staff; sickness absence.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0160412024001156?via%3Dihub>

Global, regional, and national burden of non-communicable diseases attributable to occupational asbestos exposure 1990-2019 and prediction to 2035: Worsening or improving?

Background: Understanding the burden associated with occupational asbestos exposure on a global and regional scale is necessary to implement coordinated prevention and control strategies. **Methods:** By the GBD Study 2019, we conducted a comprehensive assessment of the non-communicable diseases burden attributable to occupational asbestos exposure. **Results:** In 2019, 239,330 deaths and 4,189,000 disability-adjusted life years (DALYs) worldwide due to occupational asbestos exposure occurred. 1990-2019, deaths and DALYs attributed to occupational asbestos exposure increased by 65.65% and 43.66%, respectively. Age-standardized mortality rate (ASMR) and age-standardized DALYs rate (ASDR) decreased, with the most rapid declines in high Socio-Demographic Index (SDI) regions, with average annual percent change (AAPC) of -1.05(95%CI: -1.2, -0.89) and -1.53(95%CI: -1.71, -1.36), respectively. Lung cancer, mesothelioma and ovarian cancer were the top three contributors to the increase in deaths and DALYs, accounting for more than 96%. AAPCs of ASMR and ASDR were positively associated with SDI. Global deaths from occupational asbestos exposure were predicted to increase and ASMR to decrease by 2035, mostly in males.

Conclusions: Due consideration should be given to the susceptibility of the elderly, the lag of asbestos onset, and the regional differences, and constantly improve the prevention and control measures of occupational asbestos exposure and related diseases.

Miao et al. 2024.

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

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Keywords: Disease burden; epidemiology; exposed to asbestos; noninfectious diseases; prevention.

Evidence Level: 4A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18099-4>

Heat exposure as a cause of injury and illness in mine industry workers.

Background: The objective of this study was to explore the association between ambient temperature and injuries and illnesses experienced by mine industry workers. **Methods:** Eleven years of de-identified data from a mine industry company in Australia was explored in regards to injuries and illnesses occurring due to outdoor exposure. Each case was filtered for reported symptoms, and meteorological data to match the location of the mine site and date reported were sourced. **Results:** Of the 18 931 injuries and illnesses observed over the 11-year period, 151 cases of heat-related illness due to outdoor exposure were reported. Twenty-five conditions/symptoms of heat-illness were found, with the most prevalent being dehydration (n = 81), followed by heat rash (n = 40), dizziness (n = 24), and headache (n = 23). The mean number of symptoms reported by each worker was 2 ± 1 . There was a positive correlation between ambient temperature and injuries/illnesses ($r^2 = 0.89$, $P < 0.001$), where, as temperature increased so did the number of reported heat-related illnesses. **Conclusions:** Underreporting of heat-related illness and injury in the mining industry is likely, which is a risk to the health and wellbeing of employees. Workers require industry specific training about the severity of heat stress and the associated prevention strategies.

Taggart et al. 2024.

Annals of Work Exposures and Health, vol. 68, no. 3.

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Keywords: Dehydration; heat exposure; heat-related illness; injury; mining industry.

Evidence Level: 4A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10941724/>

Cancer mortality in workers at risk of occupational exposure to ionizing radiation in a company in the nuclear sector headquarters in São Paulo.

Background: To compare cancer mortality among workers exposed to gamma and X radiation and the general population of the city of São Paulo, as well as that of the subgroup monitored with those not monitored for gamma and X radiation in a work unit with ionizing radiation based in the city of São Paulo.

Methods: Between 2016 and 2021, a retrospective open cohort study was carried out with workers who were employed from 08/31/1956 to 12/31/2016 based on data collected at the company and in official institutions. Standardized mortality ratios (SMR) were calculated by sex, age and calendar period of cancers grouped according to type, risk factor and organ system in two analyses: in the external analysis, the mortality of the study population was compared with that of the general population of the city of São Paulo; In the internal analysis, the mortality of the monitored subgroup was compared with that of the subgroup not monitored for gamma and X radiation. **Results:** The external mortality analysis showed SMR=0.224 (95%CI 0.208-0.240) and the healthy worker effect, while the internal mortality analysis showed SMR=0.685 (95%CI 0.618-0.758). **Conclusions:** This study showed lower cancer mortality among exposed workers when compared to mortality in the general population and the healthy worker effect. Among workers monitored for gamma and X radiation, cancer mortality was lower when compared to those not monitored.

Vieira et al. 2024.

Revista Brasileira de Epidemiologia, vol. 18.

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Keywords: Cancer mortality; occupational exposure; radiation.

Evidence Level: 4B

Link: <https://www.scielo.br/j/rbepid/a/RcnbC4CjsZJL59Ncfjdm9J/?lang=en>

Dose-response-relationship between occupational exposure to diesel engine emissions and lung cancer risk: A systematic review and meta-analysis.

Background: In 2012, the International Agency for Research on Cancer (IARC) concluded that diesel engine emissions (DEE) emissions cause cancer in humans. However, there is still controversy surrounding this conclusion, due to several studies since the IARC decision citing a lack of evidence of a dose-response relationship. **Objectives:** Through a systematic review, we aimed to evaluate all evidence on the association between occupational DEE and lung cancer to investigate whether there is an increased risk of lung cancer for workers exposed to DEE and if so, to describe the dose-response relationship. **Methods:** We registered the review protocol with PROSPERO and searched for observational studies in relevant literature databases. Two independent reviewers screened the studies' titles/abstracts and full texts, and extracted and assessed their quality. Studies with no direct DEE measurement but with information on length of exposure for high-risk occupations were assigned exposure values based on the DEE Job-Exposure-Matrix (DEE-JEM). After assessing quality and informativeness, we selected appropriate studies for the dose-response meta-analysis. **Results:** Sixty-five reports (from thirty-seven studies) were included in the review; one had a low risk of bias (RoB) (RR per 10 µg/m³-years: 1.014 [95%CI 1.007-1.021]). There was an increased, statistically significant risk of lung cancer with increasing DEE exposure for all studies (RR per 10 µg/m³-years = 1.013 [95%CI 1.004-1.021]) as well as for studies with a low RoB in the exposure category (RR per 10 µg/m³-years = 1.008 [95% CI 1.001-1.015]). We obtained a doubling dose of 555 µg/m³-years for all studies and 880 µg/m³-years for studies with high quality in the exposure assessment. **Conclusions** We found a linear positive dose-response relationship for studies with high quality in the exposure domain, even though all studies had an overall high risk of bias. Current threshold levels for DEE exposure at the workplace should be reconsidered.

Romero Starke et al. 2024.

International Journal of Hygiene and Environmental Health, vol. 256.

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Keywords: Diesel engine emissions; diesel motor emissions; dose-response relationship; lung cancer; occupational exposure.

Evidence Level: 1A

Link: <https://www.sciencedirect.com/science/article/pii/S1438463923001906?via%3Dihub>

Diesel exhaust and respiratory dust exposure in miners and chronic obstructive pulmonary disease (COPD) mortality in DEMS II.

Background: Diesel exhaust and respirable dust exposures in the mining industry have not been studied in depth with respect to non-malignant respiratory disease including chronic obstructive pulmonary disease (COPD), with most available evidence coming from other settings. **Objectives:** To assess the relationship between occupational diesel exhaust and respirable dust exposures and COPD mortality, while addressing issues of survivor bias in exposed miners. **Methods:** The study population consisted of 11,817 male workers from the Diesel Exhaust in Miners Study II, followed from 1947 to 2015, with 279 observed COPD deaths. We fit Cox proportional hazards models for the relationship between respirable elemental carbon (REC) and respirable dust (RD) exposure and COPD mortality. To address healthy worker survivor bias, we leveraged the parametric g-formula to assess effects of hypothetical interventions on both exposures.

Results: Cox models yielded elevated estimates for the associations between average intensity of REC and RD and COPD mortality, with hazard ratios (HR) corresponding to an interquartile range width increase in exposure of 1.46 (95 % confidence interval (CI): 1.12, 1.91) and 1.20 (95 % CI: 0.96, 1.49), respectively for each exposure. HRs for cumulative exposures were negative for both REC and RD. Based on results from the parametric g-formula, the risk ratio (RR) for COPD mortality comparing risk under an intervention eliminating REC to the observed risk was 0.85 (95 % CI: 0.55, 1.06), equivalent to an attributable risk of 15 %. The corresponding RR comparing risk under an intervention eliminating RD to the observed risk was 0.93 (95 % CI: 0.56, 1.31). **Conclusions:** Our findings, based on data from a cohort of nonmetal miners, are suggestive of an increased risk of COPD mortality associated with REC and RD, as well as evidence of survivor bias in this population leading to negative associations between cumulative exposures and COPD mortality in traditional regression analysis.

Neophytou et al. 2024.

Environment International, vol. 185.

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Keywords: COPD mortality; diesel exhaust; respiratory dust; survivor bias.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0160412024001144?via%3Dihub>

Whole-brain mapping of increased manganese levels in welders and its association with exposure and motor function.

Background: Although manganese (Mn) is a trace metal essential for humans, chronic exposure to Mn can cause accumulation of this metal ion in the brain leading to an increased risk of neurological and neurobehavioral health effects. This is a concern for welders exposed to Mn through welding fumes. While brain Mn accumulation in occupational settings has mostly been reported in the basal ganglia, several imaging studies also revealed elevated Mn in other brain areas. **Methods:** Since Mn functions as a magnetic resonance imaging (MRI) T1 contrast agent, we developed a whole-brain MRI approach to map in vivo Mn deposition differences in the brains of non-exposed factory controls and exposed welders. This is a cross-sectional analysis of 23 non-exposed factory controls and 36 exposed full-time welders from the same truck manufacturer. We collected high-resolution 3D MRIs of brain anatomy and R1 relaxation maps to identify regional differences using voxel-based quantification (VBQ) and statistical parametric mapping.

Furthermore, we investigated the associations between excess Mn deposition and neuropsychological and motor test performance. **Results and Conclusions:** Our results indicate that: (1) Using whole-brain MRI relaxometry methods we can generate excess Mn deposition maps in vivo, (2) excess Mn accumulation due to occupational exposure occurs beyond the basal ganglia in cortical areas associated with motor and cognitive functions, (3) Mn likely diffuses along white matter tracts in the brain, and (4) Mn deposition in specific brain regions is associated with exposure (cerebellum and frontal cortex) and motor metrics (cerebellum and hippocampus).

Monsivais et al. 2024.

NeuroImage, vol. 288.

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Keywords: Contrast enhancement; MRI; Manganese; neurotoxicity; R1 mapping; T1 relaxation time; welding.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S1053811924000181?via%3Dihub>

Healthy lifestyle and essential metals attenuated association of polycyclic aromatic hydrocarbons with heart rate variability in coke oven workers.

Background: Whether adopting healthy lifestyles and maintaining moderate levels of essential metals could attenuate the reduction of heart rate variability (HRV) related to polycyclic aromatic hydrocarbons (PAHs) exposure are largely unknown. **Methods:** In this study, we measured urinary metals and PAHs as well as HRV, and constructed a healthy lifestyle score in 1267 coke oven workers. Linear regression models were used to explore the association of healthy lifestyle score and essential metals with HRV, and interaction analysis was performed to investigate the potential interaction between healthy lifestyle score, essential metals, and PAHs on HRV. **Results:** Mean age of the participants was 41.9 years (84.5% male). Per one point higher healthy lifestyle score was associated with a 2.5% (95% CI, 1.0%-3.9%) higher standard deviation of all normal to normal intervals (SDNN), 2.1% (95% CI, 0.5%-3.6%) higher root mean square of successive differences in adjacent NN intervals (r-MSSD), 4.3% (95% CI, 0.4%-8.2%) higher low frequency, 4.4% (95% CI, 0.2%-8.5%) higher high frequency, and 4.4% (95% CI, 1.2%-7.6%) higher total power, respectively. Urinary level of chromium was positively associated with HRV indices, with the corresponding β (95% CI) (%) was 5.17 (2.84, 7.50) for SDNN, 4.29 (1.74, 6.84) for r-MSSD, 12.26 (6.08, 18.45) for low frequency, 12.61 (5.87, 19.36) for high frequency, and 11.31 (6.19, 16.43) for total power. Additionally, a significant interaction was found between healthy lifestyle score and urinary total hydroxynaphthalene on SDNN (Pinteraction = 0.04), and higher level of urinary chromium could attenuate the adverse effect of total hydroxynaphthalene level on HRV (all Pinteraction < 0.05). **Conclusions:** Findings of our study suggest adopting healthy lifestyle and maintaining a relatively high level of chromium might attenuate the reduction of HRV related to total hydroxynaphthalene exposure.

Liu et al. 2024.

International Journal of Hygiene and Environmental Health, vol. 256.

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Keywords: Essential metals; healthy lifestyle; heart rate variability; interaction; PAHs.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S143846392400004X?via%3Dihub>

Increase in sick leave episodes from short-term fine particulate matter exposure: A case-crossover study in Stockholm, Sweden.

Background: Air pollution's short-term effects on a wide range of health outcomes have been studied extensively, primarily focused on vulnerable groups (e.g., children and the elderly). However, the air pollution effects on the adult working population through sick leave have received little attention.

Methods: This study aims to 1) estimate the associations between particulate matter $\leq 2.5 \mu\text{m}^3$ (PM_{2.5}) and sick leave episodes and 2) calculate the attributable number of sick leave days and the consequential productivity loss in the City of Stockholm, Sweden. Individual level daily sick leave data was obtained from Statistics Sweden for the years 2011-2019. Daily average concentrations of PM_{2.5} were obtained from the main urban background monitoring station in Stockholm. A case-crossover study design was applied to estimate the association between short-term PM_{2.5} and onset of sick leave episodes. Conditional logistic regression was used to estimate the relative increase in odds of onset per 10 $\mu\text{g}/\text{m}^3$ of PM_{2.5}, adjusting for temperature, season, and pollen. A human capital method was applied to estimate the PM_{2.5} attributable productivity loss. **Results:** In total, 1.5 million (M) individual sick leave occurrences were studied. The measured daily mean PM_{2.5} concentration was 4.2 $\mu\text{g}/\text{m}^3$ (IQR 3.7 $\mu\text{g}/\text{m}^3$). The odds of a sick leave episode was estimated to increase by 8.5% (95% CI: 7.8-9.3) per 10 $\mu\text{g}/\text{m}^3$ average exposure 2-4 days before. Sub-group analysis showed that private sector and individuals 15-24 years old had a lower increase

in odds of sick leave episodes in relation to PM2.5 exposure. In Stockholm, 4% of the sick leave episodes were attributable to PM2.5 exposure, corresponding to €17 M per year in productivity loss.

Conclusions: Our study suggests a positive association between PM2.5 and sick leave episodes in a low exposure area.

Kriit et al. 2024.

Environmental Research, vol. 1.

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Keywords: Air pollution; case-crossover; economic evaluation; health impact assessment; PM2.5; sick leave episode.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0013935123027548?via%3Dihub>

Long-term exposure to PM(10) and respiratory health among Parisian subway workers.

Background: Exposure to ambient PM10 may increase the risk of chronic obstructive pulmonary disease (COPD) and lung function decline. **Methods:** We evaluated the long-term exposure to PM10 and its relationship with COPD prevalence and lung function in Parisian subway workers. Participants were randomly selected from a 15,000-subway worker cohort. Individual annual external exposure to PM10 (ePM10) was estimated using a company-specific job-exposure-matrix based on PM10 measurements conducted between 2004 and 2019 in the Parisian subway network. Mean annual inhaled PM10 exposure (iPM10) was modelled as function of ePM10 exposure, inhalation rate, and filtration efficiency of the respiratory protection used. COPD diagnosis was performed in March-May 2021 based on post-bronchodilator spirometry. The relationship between iPM10 and outcomes was assessed using logistic and linear regression models, adjusted for exposure duration and potential confounders. **Results:** Amongst 254 participants with complete data, 17 were diagnosed as COPD. The mean employment duration was 23.2 ± 7.3 years, with annual mean ePM10 of $71.8 \pm 33.7 \mu\text{g}/\text{m}^3$ and iPM10 of $0.59 \pm 0.27 \mu\text{g}/\text{shift}$, respectively. A positive but statistically non-significant association was found for COPD prevalence with iPM10 (OR = 1.034, 95%-CI = 0.781; 1.369, per 100 ng/shift) and ePM10 (OR = 1.029, 95%-CI = 0.879; 1.207, per 10 $\mu\text{g}/\text{m}^3$). No decline in lung function was associated with PM10 exposure. However, forced expiratory volume during the first second and forced vital capacity lower than normal were positively associated with exposure duration (OR = 1.125, 95%-CI = 1.004; 1.260 and OR = 1.171, 95%-CI = 0.989; 1.386 per year, respectively). Current smoking was strongly associated with COPD prevalence (OR = 6.85, 95%-CI = 1.87; 25.10) and most lung function parameters. **Conclusions:** This is the first study assessing the relationship between long-term exposure to subway PM10 and respiratory health in subway workers. The risk estimates related with subway PM10 exposure are compatible with those related to outdoor PM10 exposure in the large recent studies. Large cohorts of subway workers are necessary to confirm these findings.

Guseva Canu et al. 2024.

International Journal of Hygiene and Environmental Health, vol. 256.

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Keywords: COPD; inhalation; metro; occupational exposure; particles; spirometry.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S1438463923002079?via%3Dihub>

Occupational exposure of firefighters to hazardous pollutants during prescribed fires in Portugal.

Background: Firefighters perform high-risk activities and during the course of their functions are highly exposed to a wide range of occupational hazards, including air pollution. Thus, this study aimed to assess the exposure of firefighters in prescribed wildland fires and their occupational exposure, as well as to identify and chemically characterize the particles collected during wildland firefighting and inside fire stations. **Methods:** Exposure to wildfire smoke was evaluated in 7 prescribed fires in Portugal, 2 in the north and 5 in the south of Viseu district. The concentrations of PM2.5, NO2, SO2, CO and VOCs were monitored and exceedances to occupational exposure limit values were identified. Moreover, the chemical composition of PM2.5 was analysed. **Results:** The results showed that firefighters were exposed to high

concentrations of these pollutants during prescribed fires and that, in some cases, exceeded occupational exposure limits, both for time-weighted average concentrations for an 8-h working day (a time-weighted average, TWA) of PM_{2.5}, and for short-term exposure values (STEL) of NO₂ and SO₂. Despite being exposed to very high concentrations of CO, no exceedances to the occupational exposure values were observed. FT-IR and SEM-EDS allowed to chemically characterise the composition of the particles collected inside the fire stations and also during wildland fires, identifying mainly quartz, aluminium and magnesium silicates, characteristic of earth's crust constituents. and also, fibres that have undergone combustion. **Conclusions:** Concluding, firefighters' exposure to high concentrations of harmful pollutants, can lead to the degradation of their respiratory health. It is therefore extremely important to increase existing knowledge and conduct further studies, especially longitudinal ones, that can assess their lung function. This will allow an understanding of the impacts of smoke on firefighters' health and develop effective strategies to protect them during wildland firefighting operations.

Barbosa et al. 2024.

Chemosphere, vol. 352.

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Keywords: Air quality; health effects; occupational exposure; prescribed fire; wildland firefighters.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0045-6535\(24\)00248-0](https://linkinghub.elsevier.com/retrieve/pii/S0045-6535(24)00248-0)

Baseline data and associations between urinary biomarkers of polycyclic aromatic hydrocarbons, blood pressure, hemogram, and lifestyle among wildland firefighters.

Background: Available literature has found an association between firefighting and pathologic pathways leading to cardiorespiratory diseases, which have been linked with exposure to polycyclic aromatic hydrocarbons (PAHs). PAHs are highlighted as priority pollutants by the European Human Biomonitoring Initiative in occupational and non-occupational contexts. **Methods:** This cross-sectional study is the first to simultaneously characterize six creatinine-adjusted PAHs metabolites (OHPAHs) in urine, blood pressure, cardiac frequency, and hemogram parameters among wildland firefighters without occupational exposure to fire emissions (> 7 days), while exploring several variables retrieved via questionnaires. **Results:** Overall, baseline levels for total OHPAHs levels were 2 to 23-times superior to the general population, whereas individual metabolites remained below the general population median range (except for 1-hydroxynaphthalene+1-hydroxyacenaphtene). Exposure to gaseous pollutants and/or particulate matter during work-shift was associated with a 3.5-fold increase in total OHPAHs levels. Firefighters who smoke presented 3-times higher total concentration of OHPAHs than non-smokers ($p < 0.001$); non-smoker females presented 2-fold lower total OHPAHs ($p = 0.049$) than males. 1-hydroxypyrene was below the recommended occupational biological exposure value (2.5 µg/L), and the metabolite of carcinogenic PAH (benzo(a)pyrene) was not detected. Blood pressure was above 120/80 mmHg in 71% of subjects. Firefighters from the permanent intervention team presented significantly increased systolic pressure than those who performed other functions ($p = 0.034$). Tobacco consumption was significantly associated with higher basophils ($p = 0.01-0.02$) and hematocrit ($p = 0.03$). No association between OHPAHs and blood pressure was found. OHPAHs concentrations were positively correlated with monocyte, basophils, large immune cells, atypical lymphocytes, and mean corpuscular volume, which were stronger among smokers. Nevertheless, inverse associations were observed between fluorene and pyrene metabolites with neutrophils and eosinophils, respectively, in non-smokers. Hemogram was negatively affected by overworking and lower physical activity. **Conclusions:** This study suggests possible associations between urinary PAHs metabolites and health parameters in firefighters, that should be further assessed in larger groups.

Barros et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: Biomarkers of effect; biomarkers of exposure; biomonitoring; firefighters health; hydroxylated polycyclic aromatic hydrocarbons; smoking.

Evidence Level: 4B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1338435/full>

Dose-response relationship between lung function and chest imaging response to silica exposures in artificial stone manufacturing workers.

Background: Occupational exposure to artificial stone, a popular material used for countertops, can cause accelerated silicosis, but the precise relationship between silica dose and disease development is unclear. **Objectives:** This study evaluated the impact of silica exposure on lung function and chest imaging in artificial stone manufacturing workers. **Methods:** Questionnaire and spirometry assessments were administered to workers in two plants. A high-exposure subset underwent further evaluation, including chest CT and DLco. Weighting factors, assigned as proxies for silica exposure, were based on work tasks. Individual cumulative exposures were estimated using area concentration measurements and time spent in specific areas. Exposure-response associations were analyzed using linear and logistic regression models. **Results:** Among 65 participants, the mean cumulative silica exposure was 3.61 mg/m³-year (range 0.0001 to 44.4). Each 1 mg/m³-year increase was associated with a 0.46% reduction in FVC, a 0.45% reduction in FEV1, and increased lung function abnormality risk (aOR = 1.27, 95% CI = 1.03-1.56). Weighting factors correlated with cumulative exposures (Spearman correlation = 0.59, p < 0.0001), and weighted tenure was associated with lung function abnormalities (aOR = 1.04, 95% CI = 1.01-1.09). Of 37 high-exposure workers, 19 underwent chest CT, with 12 (63%) showing abnormal opacities. Combining respiratory symptoms, lung function, and chest X-ray achieved 91.7% sensitivity and 75% specificity for predicting chest CT abnormalities. **Conclusions:** Lung function and chest CT abnormalities occur commonly in artificial stone workers. For high-exposure individuals, abnormalities on health screening could prompt further chest CT examination to facilitate early silicosis detection.

Chen et al. 2024.

Environmental Health, vol. 23, no. 1.

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Keywords: Artificial stone; chest CT; diffusion capacity; exposure; lung function; respiratory symptoms.

Evidence Level: 5B

Link: <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-024-01067-1>

Occupational exposure to polychlorinated biphenyls: Development of neuropsychological functions over time.

Background: Occupational exposure to polychlorinated biphenyls (PCBs) continues to affect the health of exposed individuals until today. This study aims to expand previous findings by examining the development of neuropsychological functions of occupationally exposed participants over time. Especially verbal fluency and sensorimotor processing, found to be impaired in a previous study, were thus of particular interest.

Methods: A total of 116 participants, who were part of the HELPCB cohort, underwent a neuropsychological test battery covering a multitude of cognitive functions. Plasma PCB levels were determined for each participant and classified as elevated or normal based on comparative values drawn from the German general population. Two structural equation models were then used to examine the effects of elevated PCB levels on neuropsychological functions. **Results:** Results suggest that participants who displayed increased PCB plasma levels continued to show impairments in verbal fluency but not in sensorimotor processing after a second examination one year after the first measurement. Specifically, low chlorinated PCBs are associated with impaired verbal fluency, as compared to high-chlorinated and dioxin-like congeners. **Conclusions:** Alteration of dopamine concentration in response to PCB exposure might be a potential explanation of this result.

Cromberg et al. 2024.

Neurotoxicology, vol. 101.

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Keywords: HELPCB; neuropsychology; polychlorinated biphenyls; verbal fluency.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0161813X24000019?via%3Dihub>

Physical Activity

Occupational daily walking steps have inverse relationship with papillary thyroid cancer risk and progression: A retrospective analysis.

Background: Investigate the impact of daily occupational walking steps on the progression of papillary thyroid cancer (PTC), a topic hitherto under-researched. **Methods:** The authors analysed the data from 800 individuals with PTC across stages 0-IV. Participants were evenly divided into 2 distinct occupational groups: office workers and construction workers (N = 400 each). Data included comprehensive records of daily walking steps, demographic information, and clinical indicators. Pearson's correlation coefficients or analysis of variance (ANOVA) were employed to assess the linkage between daily walking steps and PTC risk and stage, as well as associated biochemical markers. **Results:** The analysis revealed a significant inverse relationship between daily walking steps and PTC risk. A higher frequency of daily steps was associated with reduced chances of PTC onset and a lower diagnostic stage of the disease. This protective effect of physical activity was particularly pronounced in the construction worker cohort. Subsequent evaluations showed that construction workers who consistently logged higher daily steps had markedly lower levels of thyroid-stimulating hormone (TSH), free triiodothyronine, free thyroxine, thyroid peroxidase antibody, thyroglobulin antibody, and thyroglobulin (Tg). Notably, daily walking steps exhibited a strong inverse correlation with body mass index (BMI), age, PTC volumes, and levels of TSH and Tg across both occupational groups ($p < -0.37$). The increase in daily steps was associated with the reduction in PTC stages ($p < 0.001$). **Conclusions:** The research underscores the potential benefits of increased daily walking steps, suggesting that they may play a protective role in reducing PTC risk and moderating its progression.

Zhang et al. 2024.

International Journal of Occupational Medicine and Environmental Health, vol. 37, no. 1.

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Keywords: PTC stages; biochemical markers; construction workers; daily step counts; office workers; papillary thyroid cancer.

Evidence Level: 4A

Link: <https://ijomeh.eu/Occupational-daily-walking-steps-have-inverse-relationship-with-papillary-thyroid,176496,0,2.html>

Musculoskeletal Health

This month we explore musculoskeletal health issues associated with office workers with symptoms of carpal tunnel syndrome, sick-listed LBP, the in vivo joint loads during manual materials handling and the effect of musculoskeletal pain and age of retirement.

Effectiveness of prevention exercises protocol among office workers with symptoms of carpal tunnel syndrome.

Background: Carpal tunnel syndrome (CTS) is common among office workers and limits functional hand ability and the ability to work. Carpal tunnel syndrome prevention programs implementation are still insufficient among office workers. In view of the fact that physical activity is the best method of preventing musculoskeletal complaints the aim of the study was to evaluate the effectiveness of prevention exercises protocol for hand and wrist pain among office workers. **Methods:** Study group consists form 62 office workers, reporting complaints of hand and wrist pain. Exercise group it was 49 subjects who performed the exercise protocol and the non-exercise group consisted of 13 subjects. An exercises program, consisting of 7 exercises. The program was planned for daily routine during 8 weeks. The effectiveness of the exercise program was assessed by physical parameters (hand grip and pinch grip strength, force of forearm muscles) and questionnaires (Visual Analog Scale pain scale, Carpal Tunnel Syndrome Symptom Severity Scale, and Carpal Tunnel Syndrome Functional Status Scale functional hand assessment questionnaires) were performed. Assessment was performed before and after the intervention. **Results:** Statistical analysis of the data showed significant changes in the value of measured hand grip of the right hand ($Z = -2.85$, $p < 0.01$). For pinch grip, changes were significant for both the right ($Z = -2.12$, $p < 0.05$) and the left hands ($Z = -2.35$, $p < 0.05$). Functional performance improved significantly in bought groups. There was no statistically significant change in the intensity of experienced pain. **Conclusions:** The results of the study indicate that performing a preventive exercise program regularly has an effect on increasing forearm muscle strength in

a group of office workers. Office workers with symptoms of CTS who exercised regularly had higher results in hand grip and pincer grip strength. Exercises do not affect the level of pain complaints, which may indicate a more complex etiology of pain perception in this study group.

Łach et al. 2024.

International Journal of Occupational Medicine and Environmental Health, vol. 37, no. 1.

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Keywords: Carpal tunnel syndrome; functional ability; hand grip; office workers; pain; physical activity.

Evidence Level: 3A

Link: <https://ijomeh.eu/Effectiveness-of-prevention-exercises-protocol-among-office-workers-with-symptoms,175642,0,2.html>

Rehabilitation of sick-listed LBP patients in occupational health with collaboration of the workplace.

Background: The aim was to evaluate if rehabilitation procedures including occupational health (OH) and workplace participation increase return to work (RTW) rates among patients with subacute and chronic low back pain (LBP). **Methods:** A systematic review of randomized controlled trials was conducted using the PubMed and Cochrane databases. Main outcomes were RTW and days of sick leave. Interventions needed to be multidisciplinary including both OH and active workplace involvement in rehabilitation. **Results:** Out of 1073 potentially eligible references, 8 met the inclusion criteria. Three studies had OH and 5 case managers involved in rehabilitation. Rehabilitation involving both OH and workplace improved RTW and decreased the number of sick leave days among LBP patients. Having case managers involved had no effect in RTW. In order to improve RTW, workplace visits and work ability meetings (WAMs) between OH and workplace are essential components in the rehabilitation process among patients with chronic LBP. Based on the study results, the authors suggest utilizing these co-operative interventions with workplaces in OH. **Conclusions:** High quality research investigating only the effect of WAMs in OH setting is needed in future.

Kokkonen et al. 2024.

International Journal of Occupational Medicine and Environmental Health, vol. 37, no. 1.

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Keywords: Intervention; low back pain; rehabilitation; return to work; sick leave; workplace.

Evidence Level: 1A

Link: <https://ijomeh.eu/Rehabilitation-of-sick-listed-LBP-patients-in-occupational-health-with-collaboration,175826,0,2.html>

Comparing risk assessment methods for work-related musculoskeletal disorders with in vivo joint loads during manual materials handling.

Background: The validity of observational methods in ergonomics is still challenging research. Criterion validity in terms of concurrent validity is the most commonly studied. However, studies comparing observational methods with biomechanical values are rare. **Methods:** Thus, the aim of this study is to compare the Ovako Working Posture Analysing System (OWAS) and the Rapid Entire Body Assessment (REBA) with in vivo load measurements at hip, spine, and knee during stoop and squat lifting of 14 participants. **Results and Conclusions:** The results reveal that OWAS and REBA action levels (AL) can distinguish between different in vivo load measurements during manual lifting. However, the results also reveal that the same OWAS- and REBA-AL do not necessarily provide equal mean values of in vivo load measurements. For example, resultant contact force in the vertebral body replacement for squat lifting ranged from 57% body weight (%BW) in OWAS-AL1 to 138%BW in OWAS-AL3 compared to 46%BW in REBA-AL0 and 173%BW in REBA-AL3. Furthermore, the results suggest that the performed squat lifting techniques had a higher risk for work-related musculoskeletal disorders than the performed stoop lifting techniques.

Brandi et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Ergonomics; hip joint; knee joint; musculoskeletal diseases; posture; vertebral body.

Evidence Level: 5B

Link: <https://www.nature.com/articles/s41598-024-56580-7>

Musculoskeletal pain affects the age of retirement and the risk of work cessation among older people.

Background: Many people with chronic pain cannot work, while working despite chronic pain is linked to absenteeism and presenteeism and a host of other deleterious effects. This disproportionately affects older adults, who are closer to retirement, while the exact relationship between pain and work cessation as well as retirement among older adults is not known. We explore longitudinally the relationship between chronic pain and the risk of ceasing work and entering retirement. **Methods:** Data from 1156 individuals 50 years or older living in England taking part in the English Longitudinal Study of Ageing were used in this study. Cox proportional hazards regression analyses were used to examine the nature of the relationship between musculoskeletal pain and work cessation as well as retirement longitudinally over the course of fourteen years. **Results:** Suffering from frequent musculoskeletal pain was associated with an increased risk of ceasing work and retiring at an earlier age, as did work dissatisfaction, higher perceived social status, female gender, and not receiving the recognition they felt they deserved in their job. Severity of depressive symptoms, psychosocial job demands, decision authority, and social support did not influence the age at which participants reported work cessation or retirement. **Conclusions:** Frequent musculoskeletal pain may increase the risk of earlier work exit and earlier retirement. Further research should establish the mechanisms and decision making involved in leaving the workforce in people with frequent musculoskeletal pain.

Niederstrasser et al. 2024.

PLoS One, vol. 19, no. 3.

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Keywords: Musculoskeletal pain; retirement age; risk of work; older people.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297155>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

This month we explore mental health issues in the workplace associated with a stigma awareness intervention on reemployment of people with mental health issues/mental illness, meeting the accommodation needs of people working with mental or cognitive conditions, the impact of psychosocial work factors on risk of medically certified sick leave and the working conditions and mental health of migrants and refugees. In other research we explore job boredom as an antecedent of four states of mental health, harassment and mental ill-health, associations between work factors and depression, job flexibility, job security, and mental health and occupation-specific risk estimates for suicide and non-fatal self-harm.

Effectiveness of a stigma awareness intervention on reemployment of people with mental health issues/mental illness: A cluster randomised controlled trial.

Background A barrier for reemployment of people with mental health issues/mental illness (MHI) is workplace stigma and discrimination. In this RCT the effectiveness of a stigma-awareness intervention addressing finding work, retaining work and decisional stress were evaluated. **Methods:** A cluster RCT was conducted in 8 Dutch municipal practices. Randomisation took place at practice level. Participants were unemployed people with MHI, receiving social benefits. The intervention consisted of a decision aid for workplace disclosure for participants and a 2 × 3 h stigma-awareness training for their employment specialists. Primary outcomes were measured at baseline, 3-, 6- and 12-months. Multilevel analyses, containing random intercepts of participants nested in organizations, were conducted to analyse the effects of the intervention. **Results:** Participants (N = 153) were randomized to an experimental (n = 76) or control group (n = 77). At six months, significantly more participants of the experimental group (51%) had found work compared to the control group (26%). At twelve months, significantly more participants of the experimental group (49%) had retained work compared to the control group (23%). Intention-to-treat analyses showed that randomization to the experimental group was associated with finding (OR(95%CI) =

7.78(1.33-45.53), $p = 0.02$) and retaining (OR(95%CI) = 12.15(2.81-52.63), $p < 0.01$) work more often at twelve months. Analyses showed that the experimental and control group did not differ in decisional stress. **Conclusions:** Our stigma awareness intervention was effective for finding and retaining work. As the percentage of people who found and retained work almost doubled, this suggests that on a societal level, a vast number of unemployed people could be reemployed with a relatively simple intervention. Trial registration: The study was retrospectively registered at the Dutch Trial Register (TRN: NL7798, date: 04-06-2019).

Janssens et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Discrimination; employment rates; mental health issues; mental illness; stigma.

Evidence Level: 2B

Link: <https://link.springer.com/article/10.1007/s10926-023-10129-z>

Understanding the unmet accommodation needs of people working with mental or cognitive conditions: The importance of gender, gendered work, and employment factors.

Background: Workplace support needs for women and men living with mental health conditions are not well understood. This study examined workplace accommodation and support needs among women and men with and without mental health or cognitive conditions and individual and workplace factors associated with having unmet needs. **Methods:** A cross-sectional survey of 3068 Canadian workers collected information on disability, gender, gendered occupations, job conditions, work contexts, and workplace accommodations. Multivariable logistic regression analyses examined gender- and disability-based differences in unmet needs for workplace flexibility, work modifications, and health benefits, and the association of work context (i.e., work schedule, job sector) and job conditions (i.e., precarious work) on the likelihood of unmet accommodation needs. The additive (i.e., super- or sub-additive) and multiplicative effects of disability, gender, and occupational gender distribution on the probability of unmet accommodation needs were also assessed. **Results:** The most common unmet workplace accommodation was work modifications reported by 35.9% of respondents with mental/cognitive disability and workplace flexibility reported by 19.6% of individuals without a mental/cognitive disability. Women, employees in female dominant occupations, and participants with mental/cognitive disabilities were more likely to report unmet needs compared with men, employees in non-female dominant occupations, and participants without disabilities but these findings were largely explained by differences in job conditions and work contexts. No interacting effects on the likelihood of reporting unmet needs for workplace accommodations were observed. **Conclusions:** To support employee mental health, attention is needed to address work contexts and job conditions, especially for people working with mental/cognitive disabilities, women, and workers in female-dominated occupations where unmet accommodation needs are greatest.

Jessiman-Perreault et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Accommodations; disability; employment; gender; mental health.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s10926-023-10132-4>

Impact of psychosocial work factors on risk of medically certified sick leave due to common mental disorders: A nationwide prospective cohort study of Norwegian home care workers.

Background: The Norwegian home care services experience a high level of sick leave, a large proportion of which is due to common mental disorders. A substantial number of such cases can be attributed to psychosocial factors at work, but more knowledge about occupation-specific risk factors is needed to develop targeted preventive measures to reduce sick leave levels. The aim of this study is to identify the most prominent psychosocial work factors influencing the risk of sick leave spells due to common mental disorders. **Methods:** Employees from a random sample of 130 Norwegian home care services (N = 1.819) completed a baseline survey on 15 psychosocial work factors. Participants were subsequently followed up for 26 months using registry data on sick leave. The outcome measure was the number of medically

certified sick leave spells due to common mental disorders during follow-up in the Norwegian social insurance database. Incidence risk ratios (IRR) and 95% confidence intervals (CIs) were calculated using negative binomial regression with robust standard errors. **Results:** Emotional dissonance (IRR 1.30, 95% CI 1.05-1.60) and emotional demands (IRR 1.35, 95% CI 1.14-1.58) were associated with an excess risk of sick leave, while control over work pacing (IRR 0.78, 95% CI 0.62-0.98) was associated with a reduced risk. An estimated 30% (95% CI 8.73-48.82) of sick leave cases were attributable to emotional dissonance and 27% (95% CI 4.80-46.33) were attributable to emotional demands. Control over work pacing was estimated to have prevented 20% (95% CI 1.32-37.78) of the sick leave cases. **Conclusions:** This study found that emotional dissonance and emotional demands were robust risk factors for sick leave due to common mental disorders, and that control of work pacing constituted a robust protective factor against sick leave. **Knutsen et al. 2024.**

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

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Keywords: Common mental disorders; home care; mental health; psychosocial work factors; sick leave; sickness absence.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18299-y>

Working conditions and mental health of migrants and refugees in Europe considering cultural origin: A systematic review.

Background: Migrants and refugees/asylum seekers, as a large part of the European work force, are often confronted with unfavourable working conditions in the host country. Main aim of this systematic review was to compare the association of these working conditions with mental health between migrants and refugees/asylum seekers due to their diverse migration experiences and cultural origins, and between different European host countries. **Methods:** Systematic search for eligible primary studies was conducted in three electronic databases (PubMed/MEDLINE, PsycINFO and CINAHL) using quantitative study designs written in English, German, French, Italian, Polish, Spanish or Turkish and published from January 1, 2016 to October 27, 2022. Primary health outcomes were diagnosed psychiatric and psychological disorders, suicide and suicide attempts, psychiatric and psychological symptoms, and perceived distress. Secondary health outcomes were more general concepts of mental health such as well-being, life satisfaction and quality of life. Two reviewers independently completed screening, data extraction and the methodological quality assessment of primary studies using the Newcastle-Ottawa-Scale. Descriptive summary of primary studies on working conditions and their relationship with mental health were conducted, comparing migrants and refugees/asylum seekers, migrants and refugees/asylum seekers of different cultural backgrounds (collectivistic and individualistic) and migrants and refugees/asylum seekers living in different host countries. **Results:** Inclusion criteria were met by 19 primary studies. Voluntary migrants are more likely to experience overqualification in the host country than refugees. In all examined host countries, migrants and refugees suffer from unfavourable working conditions, with migrants from collectivistic countries being slightly at risk compared to migrants from individualistic countries. Most unfavourable working conditions are related to poor mental health, regardless of migrant status, cultural origin or host country.

Conclusions: Although the results should be interpreted with caution due to the small number of studies, it is evident that to maintain both the mental health and labour force of migrants and refugees/asylum seekers, their working conditions in host countries should be controlled and improved. Special attention should be paid to specific subgroups such as migrants from collectivistic societies. Ethics and dissemination: This systematic review is excluded from ethical approval because it used previously approved published data from primary studies.

Trial registration number: CRD42021244840.

Herold et al. 2024.

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

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Keywords: Collectivism; cultural origin; Europe; individualism; mental health; migrants; refugees; well-being; working conditions.

Evidence Level: 1B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18096-7>

Job boredom as an antecedent of four states of mental health: Life satisfaction, positive functioning, anxiety, and depression symptoms among young employees – A latent change score approach.

Background: Job boredom has been generally associated with poorer self-rated health, but the evidence is mainly cross-sectional and there is a lack of a holistic mental health approach. We examined the temporal relationships between job boredom and mental health indicators of life satisfaction, positive functioning, anxiety, and depression symptoms. **Methods:** We analysed a two-wave postal survey data of adults aged 23 to 34 that was collected from the Finnish working population between 2021 and 2022 (n = 513). Latent change score modelling was used to estimate the effects of prior levels of job boredom on subsequent changes in mental health indicators, and of prior levels of mental health indicators on subsequent changes in job boredom. **Results:** Job boredom was associated with subsequent decreases in life satisfaction and positive functioning and increases in anxiety and depression symptoms. Of these associations, job boredom was more strongly associated with changes in positive functioning and anxiety symptoms than with changes in life satisfaction. **Conclusions:** Our two-wave study suggests that job boredom, a motivational state of ill-being in the work domain, spills over into general mental health by decreasing life satisfaction and positive functioning and increasing anxiety and depression symptoms. Our findings contribute to the understanding of the potential detrimental effects of job boredom and its nomological network. From a practical perspective, workplaces are advised to improve working conditions that mitigate job boredom and thus promote employees' mental health.

Li et al. 2024.

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

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Keywords: Anxiety; depression; job boredom; latent change score modelling; life satisfaction; positive mental health.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18430-z>

Reported harassment and mental ill-health in a Canadian prospective cohort of women and men in welding and electrical trades.

Background: Experience of psychosocial environments by workers entering trade apprenticeships may differ by gender. We aimed to document perceived harassment and to investigate whether this related to mental ill-health. **Methods:** Cohorts of workers in welding and electrical trades were established, women recruited across Canada and men from Alberta. Participants were recontacted every 6 months for up to 3 years (men) or 5 years (women). At each contact, they were asked about symptoms of anxiety and depression made worse by work. After their last regular contact, participants received a "wrap-up" questionnaire that included questions on workplace harassment. In Alberta, respondents who consented were linked to the administrative health database that recorded diagnostic codes for each physician contact. **Results:** One thousand eight hundred and eighty five workers were recruited, 1,001 in welding trades (447 women), and 884 in electrical trades (438 women). One thousand four hundred and nineteen (75.3%) completed a "wrap up" questionnaire, with 1,413 answering questions on harassment. Sixty percent of women and 32% of men reported that they had been harassed. Those who reported harassment had more frequently recorded episodes of anxiety and depression made worse by work in prospective data. In Alberta, 1,242 were successfully matched to administrative health records. Those who reported harassment were more likely to have a physician record of depression since starting their trade. **Conclusions:** Tradeswomen were much more likely than tradesmen to recall incidents of harassment. The results from record linkage, and from prospectively collected reports of anxiety and depression made worse by work, support a conclusion that harassment resulted in poorer mental health.

Galarneau et al. 2024.

Annals of Work Exposures and Health, vol. 68, no. 3.

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Keywords: Anxiety; depression; harassment; prospective studies; workplace.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10941725/>

Associations between psychosocial work environment factors and first-time and recurrent treatment for depression: A prospective cohort study of 24,226 employees.

Background: Adverse factors in the psychosocial work environment are associated with the onset of depression among those without a personal history of depression. However, the evidence is sparse regarding whether adverse work factors can also play a role in depression recurrence. This study aimed to prospectively examine whether factors in the psychosocial work environment are associated with first-time and recurrent treatment for depression. **Methods:** The study included 24,226 participants from the Danish Well-being in Hospital Employees study. We measured ten individual psychosocial work factors and three theoretical constructs (effort-reward imbalance, job strain and workplace social capital). We ascertained treatment for depression through registrations of hospital contacts for depression (International Statistical Classification of Diseases and Related Health Problems version 10 [ICD-10]: F32 and F33) and redeemed prescriptions of antidepressant medication (Anatomical Therapeutic Chemical [ATC]: N06A) in Danish national registries. We estimated the associations between work factors and treatment for depression for up to 2 years after baseline among those without (first-time treatment) and with (recurrent treatment) a personal history of treatment for depression before baseline. We excluded participants registered with treatment within 6 months before baseline. In supplementary analyses, we extended this washout period to up to 2 years. We applied logistic regression analyses with adjustment for confounding. **Results:** Among 21,156 (87%) participants without a history of treatment for depression, 350 (1.7%) had first-time treatment during follow-up. Among the 3070 (13%) participants with treatment history, 353 (11%) had recurrent treatment during follow-up. Those with a history of depression generally reported a more adverse work environment than those without such a history. Baseline exposure to bullying (odds ratio [OR] = 1.72, 95% confidence interval [95% CI]: 1.30-2.32), and to some extent also low influence on work schedule (OR = 1.27, 95% CI: 0.97-1.66) and job strain (OR = 1.24, 95% CI: 0.97-1.57), was associated with first-time treatment for depression during follow-up. Baseline exposure to bullying (OR = 1.40, 95% CI: 1.04-1.88), lack of collaboration (OR = 1.31, 95% CI: 1.03-1.67) and low job control (OR = 1.27, 95% CI: 1.00-1.62) were associated with recurrent treatment for depression during follow-up. However, most work factors were not associated with treatment for depression. Using a 2-year washout period resulted in similar or stronger associations. **Conclusions:** Depression constitutes a substantial morbidity burden in the working-age population. Specific adverse working conditions were associated with first-time and recurrent treatment for depression and improving these may contribute to reducing the onset and recurrence of depression.

Mathisen et al. 2024.

Epidemiology and Psychiatric Sciences, vol. 33.

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Keywords: Depression; epidemiology; occupational psychiatry; prospective study.

Evidence Level: 4B

Link: <https://www.cambridge.org/core/journals/epidemiology-and-psychiatric-sciences/article/associations-between-psychosocial-work-environment-factors-and-firsttime-and-recurrent-treatment-for-depression-a-prospective-cohort-study-of-24226-employees/8D149B96C0FA417012788B019A9ED294>

Job flexibility, job security, and mental health among US working adults.

Background: Understanding the association between job characteristics and mental health can inform policies and practices to promote employee well-being. **Objective:** To investigate associations between job characteristics and mental health, work absenteeism, and mental health care use among US adults. **Methods:** This cross-sectional study analysed data from the 2021 National Health Interview Survey and included adults aged 18 years or older who reported employment during the past 12 months. Data were analysed from May 2023 to January 2024. **Exposures:** Job flexibility was assessed as a summative variable to 3 questions: perceived ease of changing one's work schedule to do things important to oneself or their family, regularity of work schedule changes, and advance notice of work hours. Job security was

measured as perceived likelihood of losing one's job. Main outcomes and measures: Mental health outcomes included self-reported serious psychological distress and frequency of anxiety. Work absenteeism was assessed using the number of missed workdays due to illness. Mental health care use was examined for both current and past year use. Multivariable logistic and binomial regression analyses were used to examine associations of interest. **Results:** The analytic sample consisted of 18 144 adults (52.3% [95% CI, 51.5%-53.2%] male; mean age, 42.2 [95% CI, 41.9-42.6] years). Greater job flexibility was associated with decreased odds of serious psychological distress (odds ratio [OR], 0.74 [95% CI, 0.63-0.86]; $P < .001$) and lower odds of weekly anxiety (OR, 0.89 [95% CI, 0.81-0.97]; $P = .008$) or daily anxiety (OR, 0.87 [95% CI, 0.79-0.96]; $P = .005$). Greater job security was associated with decreased odds of serious psychological distress (OR, 0.75 [95% CI, 0.65-0.87]; $P < .001$) and lower odds of anxiety weekly (OR, 0.79 [95% CI, 0.71-0.88]; $P < .001$) or daily (OR, 0.73 [95% CI, 0.66-0.81]; $P < .001$). Greater job flexibility (incidence rate ratio [IRR], 0.84 [95% CI, 0.74-0.96]; $P = .008$) and job security (IRR, 0.75 [95% CI, 0.65-0.87]; $P < .001$) were each associated with decreased number of days worked despite feeling ill over the past 3 months. Greater job security was associated with decreased absenteeism in the past year (IRR, 0.89 [95% CI, 0.82-0.98]; $P < .014$). **Conclusions:** Organizational policies that enhance job flexibility and security may facilitate a healthier work environment, mitigate work-related stress, and ultimately promote better mental health.

Wang et al. 2024.

JAMA Network Open, vol. 7, no. 3.

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Keywords: Job flexibility; job security; mental health.

Evidence Level: 4B

Link: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2816735>

Occupation-specific risk estimates for suicide and non-fatal self-harm from a Swedish cohort of male construction workers followed 1987-2018.

Background: While suicidal behaviour has become less prevalent in non-manual workers in recent decades, rates have increased in manual workers. We aimed to identify occupations within the construction industry with excess risk of suicide and non-fatal self-harm. **Methods:** This cohort of Swedish construction workers comprises 389 132 individuals examined 1971-1993 and followed 1987-2018 using national hospital and cause of death registers. More than 200 job titles were merged into 22 occupational groups. For 296 891 men alive in 1987 and active in the construction sector, survival was calculated from baseline to first event of non-fatal self-harm or suicide and censored for emigration, long-term unemployment, disability pension, retirement, death from other causes or end of follow-up. HRs with 95% CIs were obtained from multiple Cox proportional hazard regression. **Results:** Overall, 1618 cases of suicide and 4774 events of non-fatal self-harm were registered. Self-harm before baseline was the single largest risk factor for suicide, HR 9.3 (95% CI 7.5 to 11.6). Compared with the overall mean, labourers and rock workers had excess risk for suicide, HR 1.4 (95% CI 1.1 to 1.7) and 1.5 (95% CI 1.0 to 2.3), respectively, while electricians, clerks and foremen had reduced risk. Labourers, concrete workers, sheet metal workers, painters, glaziers and the group 'other construction workers' were at increased risk for non-fatal self-harm. Almost all categories of manual workers were at increased risk for suicidal behaviour relative to clerks and foremen.

Conclusions: Specific occupations within the construction sector were associated with excess risk for suicidal behaviour. Future studies should identify underlying risk factors to inform tailored interventions.

Mehlig et al. 2024.

Occupational and Environmental Medicine, vol. 81, no. 3.

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Keywords: Construction Industry; epidemiology; men; mental health; occupational health.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/81/3/142.long>

Bullying, Harassment and Occupational Violence

This month we explore the effect of workplace ostracism on turnover intentions and the associations between workplace bullying and sickness absence due to common mental disorders.

Workplace ostracism influencing turnover intentions: Moderating roles of perceptions of organizational virtuousness and authentic leadership.

Background: Workplace Ostracism is known to be a physically and emotionally painful experience. Even if it has a temporary and minor impact, it strongly predicts employee turnover intentions. Therefore, the purpose of this paper is to examine the moderating effects of perceptions of Organizational Virtuousness (OV) and Authentic Leadership (AL) in explaining the relationship between Workplace Ostracism (WO) and employees' Turnover Intentions (TI). **Methods:** Data were collected from 686 full-time employees using a non-probabilistic convenience sampling in India's Information Technology (IT) companies. **Results:** The reliability and validity of scales were assessed using confirmatory factor analysis. Multiple hierarchical regression modeling was used to test the proposed hypotheses using IBM SPSS 23.0 with Process Macro 3.5. The present study's findings suggest that workplace ostracism is significantly related to employees' turnover intentions. Furthermore, perceptions of organizational virtuousness and authentic leadership moderated the relationship between workplace ostracism and employee turnover intentions. Employee turnover is a gigantic problem for IT firms in India. **Conclusions:** The present study offers valuable insights to managers to create awareness of workplace ostracism. Implementing managerial strategies rooted in positive psychology can help organizations create a more inclusive, supportive, and psychologically healthy work environment. This, in turn, can reduce the occurrence of workplace ostracism and turnover intentions.

Singh et al. 2024.

Acta Psychologica, vol. 243.

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Keywords: Authentic leadership; information technology; organizational virtuousness; turnover intention; workplace ostracism.

Evidence Level: 5B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0001-6918\(24\)00013-1](https://linkinghub.elsevier.com/retrieve/pii/S0001-6918(24)00013-1)

Bidirectional associations between workplace bullying and sickness absence due to common mental disorders: A propensity-score matched cohort study.

Background: The link between workplace bullying and poor mental health is well-known. However, little is known about the prospective and potentially reciprocal association between workplace bullying and mental health-related sickness absence. This 2-year prospective study examined bidirectional associations between exposure to workplace bullying and sickness absence due to common mental disorders (SA-CMD) while controlling for confounding factors from both work and private life. **Methods:** The study was based on propensity score-matched samples (N = 3216 and N = 552) from the Swedish Longitudinal Occupational Survey of Health, using surveys from years 2012, 2014 and 2016. Self-reported exposure to workplace bullying was linked to registry-based information regarding medically certified SA-CMD (≥ 14 consecutive days). The associations were examined by means of Cox proportional hazards regression and via conditional logistic regression analysis. Hazard ratios and odds ratios with 95% confidence intervals were estimated. **Results:** Exposure to workplace bullying was associated with an increased risk of incident SA-CMD (HR: 1.3, 95% CI: 1.0-1.8), after accounting for the influence of job demands, decision authority, previous SA-CMD, as well as other sociodemographic covariates. However, we found no statistically significant association between SA-CMD and subsequent workplace bullying (OR 1.2, 95% CI 0.7-1.9). **Conclusions:** The results support an association between self-reported workplace bullying and SA-CMD, independent of other sociodemographic factors and workplace stressors. Preventing workplace bullying could alleviate a share of the individual and societal burden caused by SA globally.

Holmgren et al. 2024.

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

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Keywords: Bullying; mental disorders; occupational stress; propensity score; sick leave.

Evidence Level: 4B

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-024-18214-5>

Psychosocial Issues

This month we explore psychosocial issues associated with exposure to stress and burnout syndrome in workers in social service institutions, associations of technostress at work, burnout symptoms, hair cortisol, and chronic low-grade inflammation and the prevalence and associated factors of burnout among working adults. In other studies, we explore the labour market costs of work-related stress, the psychosocial hazards in the Northern Territory building and construction industry, social media use in the workplace and the association between an appreciation at work and cardiovascular risk in male employees.

Exposure to stress and burnout syndrome in healthcare workers, expert workers, professional associates, and associates in social service institutions.

Background: Workplace burnout syndrome is often associated with particular aspects of certain job positions, especially those that entail working with people with special needs. The burnout syndrome in healthcare jobs is a serious problem that has grown into an epidemic among healthcare workers and associates. The aim of this research is to assess the presence of stress and burnout syndrome at work with healthcare workers, expert workers, professional associates, and associates in social service institutions in Belgrade. **Methods:** This research was conducted in the form of a cross-sectional study of a representative sample in social institutions in Belgrade. It was conducted from March to the end of June of 2023. The sample of the study had 491 participants. The questionnaires used were a structured instrument with social-demographic and social-economic characteristics, workplace characteristics, lifestyle characteristics, and the following questionnaires: DASS-21, Copenhagen, Brief Resilience Scale, and Brief Resilient Coping Scale. **Results:** The end results indicate the following to be significant risk factors for the occurrence of workplace burnout syndrome: overtime (OR = 2.62; CI = 1.50-4.56), BRS average score (OR = 0.28; CI = 0.17-0.44), DASS21 D heightened depression (OR = 2.09; CI = 1.1-4.04), DASS21 A heightened anxiety (OR = 2.38; CI = 1.34-4.21), and DASS21 S heightened stress (OR = 2.08; CI = 1.11-3.89). The only protective risk factor that stood out was the self-assessment of health levels (OR = 0.60; CI = 0.42-0.85). **Conclusions:** Overtime is a significant factor associated with workplace burnout. Apart from it, other significant factors associated with workplace burnout were heightened depression, anxiety, and stress levels.

Marković et al. 2024.

Medicina, vol. 60, no. 3.

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Keywords: Burnout syndrome; job-professional person; resilience; social institutions; stress.

Evidence Level: 4B

Link: <https://www.mdpi.com/1648-9144/60/3/499>

Prevalence and associated factors of burnout among working adults in Southeast Asia: Results from a public health assessment.

Background: The COVID-19 pandemic has spotlighted the mental health crisis among employees worldwide. However, burnout research is often industry- or occupation-specific, and limited knowledge currently exists on the prevalence of burnout in the general working population of Southeast Asia.

Methods: This study aims to examine the prevalence of employee burnout and its associated factors among working adults in Southeast Asia using secondary data. 4,338 full-time employees aged 18-65 years old living in Malaysia, Singapore, Philippines, and Indonesia were assessed for burnout, depression, anxiety, stress, and sociodemographic characteristics as part of an online public health assessment in October 2022.

Results: The prevalence of burnout in the region was 62.91%. Burnout was highest among employees in the Philippines (70.71%) and lowest in Malaysia (58.13%). Experiencing burnout was associated with severe or extremely severe depression (AOR = 6.48 [95% CI = 5.06-8.33]), anxiety (AOR = 2.22 [1.74-2.85]), and stress (AOR = 5.51 [4.13-7.39]). Working more than 50 hours a week (AOR = 1.38 [1.04-1.82]) and being very dissatisfied with the job led to higher odds of burnout (AOR = 16.46 [8.99-30.53]). Alarming, more

than half of working adults in the region are reporting increased levels of burnout, and improving employee mental health and work conditions may be key to improving employee burnout in the region.

Conclusions: Findings contribute to existing research on burnout prevalence in the region and provide more comprehensive insights into understanding the factors driving employee burnout in the working population of Southeast Asia 2 years after the onset of the pandemic.

Aziz et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: Southeast Asia (SEA); burnout; employee burnout; employee mental Health; mental health.

Evidence Level: 4B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1326227/full>

Taking appreciation to heart: Appreciation at work and cardiovascular risk in male employees.

Background: While perceived appreciation at work has been associated with self-reported health and wellbeing, studies considering biological health markers are lacking. In this study, we investigated whether appreciation at work would relate to coronary heart disease (CHD) risk as well as the specificity of this proposed association. **Methods:** Our study comprised a total of 103 male participants, including apparently healthy, medication-free, non-smoking men in the normotensive to hypertensive range ($n = 70$) as well as medicated hypertensive and CHD patients ($n = 33$). CHD risk was assessed by blood pressure [mean arterial pressure (MAP)], the diabetes marker glycated hemoglobin A1c (HbA1c), blood lipids [total cholesterol (TC)/high-density lipoprotein-cholesterol (HDL-C) ratio], coagulation activity (D-dimer and fibrinogen), and inflammation [interleukin (IL)-6, tumor necrosis factor-alpha (TNF- α), and C-reactive protein (CRP)].

Perceived appreciation at work, as well as potentially confounding psychological factors (social support, self-esteem, and work strain due to a lack of appreciation), were measured by self-report questionnaires.

Results: We found higher appreciation at work to relate to lower overall composite CHD risk (p 's ≤ 0.011) and, in particular, to lower MAP (p 's ≤ 0.007) and lower blood lipids (p 's ≤ 0.031) in medication-free participants as well as all participants. This overall association was independent of confounding factors, including related psychological factors (p 's ≤ 0.049). **Conclusions:** Our findings indicate that appreciation at work might be an independent health-promoting resource in terms of CHD risk. Implications include that encouraging appreciation at work may help reduce the development and progression of CHD.

Auer et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: HbA1c; appreciation at work; blood lipids; blood pressure; coagulation; coronary heart disease; inflammation; positive cardiovascular health.

Evidence Level: 5A

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1284431/full>

Social media use in the workplace: The role of social comparison in negative behaviors.

Background: The pervasive use of social media in professional environments has become a focal point of contemporary research. Particularly, the routine engagement of employees with platforms like Facebook and WeChat during work hours exposes them to peers' achievements, potentially triggering upward social comparisons. **Methods:** This study investigates the often-overlooked psychological and behavioral consequences of such comparisons among employees in workplace settings. Specifically, we address a significant research gap by examining how upward social comparisons on social media influence employees' emotions and subsequent workplace behaviors. Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis, this research analyzes responses from 477 high-tech employees in China. **Results:** Our findings reveal that upward social comparisons can engender feelings of workplace envy and ego depletion. These emotional states, in turn, adversely impact employee behavior, manifesting in diminished job performance, increased tendency towards knowledge hiding, and heightened engagement in cyber loafing. **Conclusions:** This study contributes to the broader understanding of social media's impact on employee psychology and behavior, offering valuable insights for both academic research and practical management within the context of technology-enhanced workplace environments.

Chen et al. 2024.

Acta Psychologica, vol. 243.

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

Keywords: Negative behavior; social comparison; social media; workplace.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0001691824000210?via%3Dihub>

Psychosocial hazards in the Northern Territory building and construction industry: A profile of job demands and job resources in a jurisdiction and industry with high rates of suicide.

Background: The work environment for building workers in Australia's Northern Territory (NT) is characterised by concerning high rates of distress and suicide at both a jurisdictional and an industry level. Work-related psychosocial hazards are known antecedents of work-related distress and suicide, and more research is required to understand how these hazards impact workers in this unique building context.

Methods: This paper examines the unique work environment in the NT building industry by comparing psychosocial hazards in the NT with those in the broader Australian building and construction industry.

Results: When comparing 330 NT self-report survey responses about psychosocial hazards in the workplace to 773 broader Australian building industry responses, supervisor task conflict for NT workers was more concerning, at 10.9% higher than the broader Australian cohort. Within the NT sample, comparisons between fly-in and fly-out/drive-in and drive-out (FIFO/DIDO) workers and non-FIFO/DIDO workers were also performed to determine specific local psychosocial hazards. When comparing FIFO/DIDO workers' responses to their NT peers, role overload and supervisor task conflict were significantly higher, and co-worker and supervisor support were lower. In FIFO/DIDO environments, praise and recognition, procedural justice, and change consultation were at concerning lower averages than the broader NT building and construction industry. **Conclusions:** These results suggest that the NT building and construction industry, and particularly FIFO/DIDO operations, require greater resourcing, investment, and focus on workplace mental health initiatives to improve the work environment and wellbeing of this workforce and mitigate hazards that can lead to distress and the high rates of occupational suicide found in this jurisdiction and industry.

Thompson et al. 2024.

International Journal of Environmental Research and Public Health, vol. 21, no. 3.

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Keywords: Building; construction; drive-in drive-out; fly-in fly-out; job control; peer support; psychosocial hazards; suicide prevention; supervisor task conflict; work health and safety.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/21/3/334>

The labor market costs of work-related stress: A longitudinal study of 52 763 Danish employees using multi-state modeling.

Background: Work-related stress is an important public health concern in all industrialized countries and is linked to reduced labor market affiliation and an increased disease burden. We aimed to quantify the labor market costs of work-related stress for a large sample of Danish employees. **Methods:** We linked four consecutive survey waves on occupational health and five national longitudinal registers with date-based information on wage and social benefits payments. From 2012 to 2020, we followed survey participants for two year-periods, yielding 110 559 person-years. We identified work stress by combining three dichotomous stress indicators: (i) self-perceived work stress, (ii) Cohen 4-level perceived stress scale, and (iii) job strain. Using the multi-state expected labor market affiliation (ELMA) method, we estimated the labor market expenses associated with work-related stress. **Results:** Of the employees, 26-37% had at least one work-stress indicator. Men aged 35-64 years and women aged 18-64 years with work-related stress had up to 81.6 fewer workdays and up to 50.7 more days of sickness absence during follow-up than similarly aged men without work stress. The average annual work absenteeism loss per employee linked to work-related stress was €1903 for men and €3909 for women, corresponding to 3.3% of men's average annual wages and 9.0% of women's average annual wages, respectively. The total annual expenses were

€305.2 million for men and €868.5 million for women. **Conclusions:** Work-related stress was associated with significant labor market costs due to increased sickness absence and unemployment. The prevention of work-related stress is an important occupational health concern, and the development of effective interventions should be given high priority.

Pedersen et al. 2024.

Scandinavian Journal of Work, Environment and Health, vol. 50, no. 2.

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Keywords: Labour costs; work related stress; Danish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4131>

Prospective associations of technostress at work, burnout symptoms, hair cortisol, and chronic low-grade inflammation.

Background: Working conditions in the age of digitalization harbor risks for chronic stress and burnout. However, real-world investigations into biological effects of technostress, that is stress in the context of digital technology use, are sparse. This study prospectively assessed associations between technostress, general work stress, burnout symptoms, hair cortisol, and chronic low-grade inflammation. **Methods:** Hospital employees (N = 238, 182 females, M_{age} = 28.5 years) participated in a prospective cohort study with two follow-ups six months apart (T₂, T₃). Participants answered standardized questionnaires on general job strain (job demand-control ratio), techno stressors (work interruptions, multitasking, information overload), burnout symptoms (exhaustion, mental distance), and relevant confounders. Moreover, they provided capillary blood samples for C-reactive protein (CRP) and hair strands for hair cortisol concentration (HCC) analysis. Structural equation modelling was performed. **Results:** The factorial structure of survey measures was confirmed. Burnout symptoms (M_{T₂} = 2.17, M_{T₃} = 2.33) and HCC (M_{T₂} = 4.79, M_{T₃} = 9.56; pg/mg) increased over time, CRP did not (M_{T₂} = 1.15, M_{T₃} = 1.21; mg/L). Adjusted path models showed that technostress was negatively associated with HCC ($\beta = -0.16$, $p = .003$), but not with burnout and CRP. General work stress in contrast, was not significantly associated with burnout, HCC or CRP. Furthermore, there were reciprocal effects of CRP on HCC ($\beta = 0.28$, $p = .001$) and of HCC on CRP ($\beta = -0.10$, $p \leq .001$). Associations were robust in additional analyses including further confounders. **Conclusions:** This is the first study on prospective effects of technostress on employees' endocrine and inflammatory systems. Results suggest differential effects of technostress on the hypothalamic-pituitary-adrenocortical axis activity. Given its key role for long-term health, the findings have important implications for occupational health and safety in digitalized work environments.

Kaltenegger et al. 2024.

Brain, Behavior, and Immunity, vol. 117.

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

Keywords: Burnout; C-reactive protein; chronic low-grade inflammation; digital stress; hair cortisol; technostress; work stress.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0889159124002344?via%3Dihub>

Fostering Work Participation

Return to Work

This month we explore return to work issues associated with workers with breast and gynecologic cancer, police, workers with a long-term work disability and pregnant employees on preventive leave. In other studies, we explore the return-to-work issues following orthopedic surgery including operated distal radial fracture, lumbar discectomy and hip and knee arthroplasty.

Coping with breast cancer during medical and occupational rehabilitation: A qualitative study of strategies and contextual factors.

Background: This study aimed to gain a deeper understanding of the coping processes of breast cancer survivors (BCSs) during medical and occupational rehabilitation after acute treatment. **Methods:** This study is part of the mixed-methods Breast Cancer Patients' Return to Work study conducted in Germany. Data were collected through semi structured interviews with 26 female BCSs 5-6 years after their diagnosis. A qualitative content analysis was conducted to investigate the coping strategies and contextual factors of coping of BCSs. **Results:** The participants used different strategies for coping with their breast cancer, namely, approach- versus avoidance-oriented coping and emotion- versus problem-focused coping. During the medical rehabilitation process, coping behaviour was used mainly to address disease management and its consequences. During the occupational rehabilitation process, most coping strategies were used to overcome discrepancies between the patient's current work capacity and the job requirements. The contextual factors of coping were in the health, healthcare, work-related, and personal domains.

Conclusions: The study findings provide in-depth insights into the coping processes for BCSs during the rehabilitation phase and highlight the importance of survivorship care after acute cancer treatment. **Implications for cancer survivors:** The results indicate that BCSs employ approach- and avoidance-oriented strategies to cope with their cancer during rehabilitation. As both attempts are helpful in the short term to cope with physical and emotional consequences of the cancer, healthcare and psychosocial personnel should respect the coping strategies of BCSs while also being aware of the potential long-term negative impact of avoidance-oriented coping on the rehabilitation process.

Heidkamp et al. 2024.

BMC Women's Health, vol. 24, no. 1.

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Keywords: Cancer; cancer survivorship; coping; oncology; qualitative; rehabilitation; return to work.

Evidence Level: 5B

Link: <https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-024-03012-3>

Effectiveness of the coordinated return to work model after orthopaedic surgery for lumbar discectomy and hip and knee arthroplasty: A register-based study.

Background: This study examined the effectiveness of an individualised Coordinated Return to Work (CRtW) model on the length of the return to work (RTW) period compared with a standard prescription of 2-3 months RTW during recovery after lumbar discectomy and hip and knee arthroplasty among Finnish working-age population. **Methods:** Cohorts on patients aged 18-65 years old with lumbar discectomy or hip or knee arthroplasty were extracted from the electronic health records of eight Finnish hospital districts in 2015-2021 and compiled with retirement and sickness benefits. The overall effect of the CRtW model on the average RTW period was calculated as a weighted average of area-specific mean differences in RTW periods between 1 year before and 1 year after the implementation. Longer-term effects of the model were examined with an interrupted time series design estimated with a segmented regression model.

Results: During the first year of the CRtW model, the average RTW period shortened by 9.1 days (95% CI 4.1 to 14.1) for hip arthroplasty and 14.4 days (95% CI 7.5 to 21.3) for knee arthroplasty. The observed differences were sustained over longer follow-up times. For lumbar discectomy, the first-year decrease was not statistically significant, but the average RTW had shortened by 36.2 days (95% CI 33.8 to 38.5) after 4.5 years. **Conclusions:** The CRtW model shortened average RTW periods among working-age people during the recovery period. Further research with larger samples and longer follow-up times is needed to ensure the effectiveness of the model as a part of the Finnish healthcare system.

Lavikainen et al. 2024.

Occupation and Environmental Medicine, vol. 81, no. 3.

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Keywords: interrupted time series analysis; occupational health services; rehabilitation.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/81/3/150.long>

Not taking sick leave for gynecologic cancer treatment is negatively associated with returning to the same workplace.

Background: Gynaecologic cancers are one of the most common types of malignancies in working-age women. We aimed to determine the factors that impede women from returning to the same workplace after treatment for such cancers. **Methods:** A questionnaire-based survey was conducted on 194 women who underwent treatment for gynaecologic cancer at the Okayama University (≥ 1 year after cancer treatment and < 65 years of age). We performed a logistic regression analysis to determine the relationship between returning to the same workplace and not taking sick leave. **Results:** The median age at diagnosis was 49.0 years, and the median time from cancer treatment to questionnaire completion was 3.8 years. Not returning to the same workplace was positively associated with not being regularly employed ($P = 0.018$), short work time per day ($P = 0.023$), low personal income ($P = 0.004$), not taking sick leave ($P < 0.001$), advanced cancer stage ($P = 0.018$) and long treatment time ($P = 0.032$). Interestingly, not taking sick leave was strongly associated with not returning to the same workplace in the multivariable analysis ($P < 0.001$). **Conclusions:** Not taking sick leave likely was negatively associated with returning to the same workplace after the treatment for gynaecologic cancer. Therefore, we suggest that steps be taken to formally introduce a sick leave system over and above the paid leave system in Japan.

Nakamura et al. 2024.

Japanese Journal of Clinical Oncology, vol. 54, no. 3.

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Keywords: Gynecologic neoplasms; returning to the same workplace; sick leave.

Evidence Level: 5B

Link: https://academic.oup.com/jjco/article/54/3/292/7441964?login=false#google_vignette

The adequacy of workplace accommodation and the incidence of permanent employment separations after a disabling work injury or illness.

Background: This study aimed to estimate the influence of the adequacy of employer accommodations of health impairments in predicting permanent separation from the employment relationship in a cohort of workers disabled by a work-related injury or illness. **Methods:** The study used data from a retrospective, observational cohort of 1793 Ontario workers who participated in an interviewer-administered survey 18 months following a disabling injury or illness. The relative risks (RR) of a permanent employment separation associated with inadequate employer accommodations were estimated using inverse probability of treatment weights to reduce confounding. **Results:** Over the 18-month follow-up, the incidence of permanent separation was 30.1/100, with 49.2% of separations related to health status. Approximately 51% of participants experiencing a separation were exposed to inadequate workplace accommodations, compared to 27% of participants in continuing employment. The propensity score adjusted RR of a health-related separation associated with inadequate accommodation was substantial [RR 2.72; 95% confidence interval (CI) 2.20-3.73], greater than the RR of separations not related to health (RR 1.68; 95% CI 1.38-2.21). **Conclusions:** Incidence of permanent separation in this cohort of Ontario labor force participants was approximately two times more frequent than would be expected. The adequacy of employer accommodation was a strong determinant of the risk of permanent separation. These findings emphasize the potential for strengthened workplace accommodation practices in this setting.

Mustard et al. 2024.

Scandinavian Journal of Work, Environment and Health, vol. 50, no. 3.

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Keywords: Workplace accommodation; permanent employment; work injury; illness.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4149>

Predictors of the return to work for pregnant employees on preventive leave: Patients from an occupational medicine consultation in Switzerland.

Background: According to the Swiss legislation on maternity protection in the workplace (OProMa), if pregnant workers are exposed to occupational hazards and no protective measures are taken, a gynecologist will prescribe a certificate of preventive leave and the women must stop working. Returning to

work is only possible if job adjustments are made. **Methods:** This study aims to evaluate the burden of absences on companies and to examine the predictors of the return to work for pregnant workers on preventive leave, by examining both the probability of return to work and the time required to return to work. The study sample includes data on 258 workplaces of pregnant workers on preventive leave, collected during an occupational medicine consultation aimed at supporting the implementation of the OProMa. Information is available on the worker (age, date of consultation), the hazards to which she is exposed, the company's knowledge of the OProMa and whether a risk analysis exists. Descriptive statistics and multivariate regression analysis are carried out. **Results:** In 58% of the workplaces, it was not possible to return to work before the end of the pregnancy. This corresponds to an average absence of 4.5 months. In 42% of the workplaces, a return to work was possible thanks to workplace adaptations. A conforming risk analysis and a full knowledge of the OProMa for companies, and an early visit to the occupational medicine consultation for workers are good predictors of the likelihood of returning to work. Younger age and exposure to certain types of risks are factors that influence the duration of preventive leave. **Conclusions:** The implementation of OProMa in Switzerland poses serious challenges, but early identification of occupational hazards and practices that anticipate compliance with the law in the company increase the return to work in safety for pregnant workers.

Moschetti et al. 2024.

PLoS One, vol. 19, no. 3.

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Keywords: Return to work; pregnant; parental leave; occupational medicine.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0300686>

Duration of sick leave after operated and non-operated distal radial fracture: A Finnish cohort study of 19,995 patients.

Background: The purpose of this study was to investigate whether operative treatment for distal radial fracture reduces the length of sick leave and the costs of treatment. **Methods:** We identified 19,995 patients from a registry who received a state sick leave allowance between 2010 and 2019 owing to distal radial fractures. We compared these patients to a registry of operations and identified 4346 operated patients. **Results:** Operated patients had a mean sick leave of 75 days, whereas non-operated patients had a sick leave of 63 days. In the operated group, the cost of sick leave was €7505 (UK£6419; US\$8070), which was 34% higher than in the non-operated group. Over the analysed period, the duration of sick leave decreased. **Conclusions:** Although several studies have shown better early functional outcomes after operation, this does not seem to shorten sick leave.

Ax et al. 2024.

Journal of Hand Surgery, vol. 49, no. 3.

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Keywords: Distal radius fracture; absence from work; absenteeism; non-operative treatment; operative treatment; return to work.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10882944/>

A decision aid to support vocational rehabilitation professionals offering tailored care to benefit recipients with a long-term work disability: A feasibility study.

Background: This feasibility study focusses on the implementation and use of a decision aid, which supports vocational rehabilitation (VR) professionals in helping clients with a disability pension return to work in practice. The decision aid shows an overview of the clients' return to work barriers and suggests suitable VR interventions based on these barriers. **Methods:** The study population consisted of VR professionals working at the Dutch Social Security Institute and their clients receiving a (partial) work disability pension. The feasibility was measured with concepts of the Linnan and Steckler framework and the attitude, social norm and self-efficacy model. Data were collected using questionnaires, checklists and qualitative interviews. **Results:** Ten professionals participated in this study. Fifty-four clients were asked to fill in the questionnaire of the decision aid and 32 clients received VR care based on the decision aid. In

general, VR professionals and clients were satisfied with the decision aid and perceived a few barriers for using the decision aid. **Conclusions:** This study showed that it is feasible to implement and use the decision aid. To improve the implementation of this decision aid, it should be implemented in digital systems used by professionals to improve efficiency of working with the decision aid.

de Geus et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Decision aid; long-term sick leave; return to work; vocational rehabilitation; work disability pension.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s10926-023-10105-7>

Return-to-work experiences in ontario policing: Injured but not broken.

Background: Police officers and others working in police services are exposed to challenging and traumatic situations that can result in physical and/or psychological injuries requiring time off work. Safely returning to work post-injury is critical, yet little is known about current return-to-work (RTW) practices in police services. This study examines RTW practices and experiences in police services from the perspective of RTW personnel and workers with physical and/or psychological health conditions. **Methods:** We used a purposive sampling approach to recruit sworn and civilian members from several police services in Ontario, Canada. The recruited members had experienced RTW either as a person in a RTW support role or as a worker with a work-related injury/illness. We conducted and transcribed interviews for analysis and used qualitative research methods to identify themes in the data. **Results:** Five overarching themes emerged. Two pointed to the context and culture of police services and included matters related to RTW processes, injury/illness complexity, the hierarchical nature of police organizations, and a culture of stoicism and stigma. The remaining three themes pointed to the RTW processes of accommodation, communication and trust-building. They included issues related to recovery from injury/illness, meaningful accommodation, timely and clear communication, malingering and trust. **Conclusions:** Our findings point to potential areas for improving RTW practices in police services: greater flexibility, more clarity, stricter confidentiality and reduced stigma. More research is needed on RTW practices for managing psychological injuries to help inform policy and practice.

Van Eerd et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Police; qualitative research; return to work; work-related injury.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s10926-023-10135-1>

Presenteeism and Absenteeism

This month we explore a gendered analysis of the duration of sick leave, worker and workplace determinants of employment exit, associates of urinary incontinence with work ability, the vocational advice provided to workers off work due to ill-health, the effect of caring for older parents on absence from work and the effects of number of pain sites and role conflicts on medically certified sickness absence.

Pain, conflicted feelings about work, and sickness absence: A prospective study of the effects of number of pain sites and role conflicts on medically certified sickness absence.

Background: We investigated associations between the number of pain sites (NPS) and role conflict with medically certified, pain-related sickness absence (SA) in employees of Norwegian enterprises (N = 5,654). **Methods:** Latent profile analyses identified exposure profiles based on 3 types of role conflict (work-role conflict, work-life conflict, and emotional dissonance). Multinomial logistic regressions estimated effects on absence (short-term absence of less than 56 days, long-term absence of more than 56 days) during 1 year after survey. Effects of the NPS on absence were compared across exposure profiles. **Results:** Results suggested the NPS and all types of role conflict predicted absences separately. Mutually adjusted

regressions revealed unique contributions of the NPS to the short-term and long-term absence (odds ratio [OR] 1.24, 95% confidence interval [CI] 1.18, 1.30 and OR 1.51, 95% CI 1.37, 1.66) and of work-role conflict to the short-term absence (OR 1.18, 95% CI 1.03, 1.35). Latent profile analyses identified 4 exposure profiles ("1 unconflicted," "2 dissonant, otherwise medium," "3 conflicted, medium dissonance," "4 conflicted and dissonant"). Profiles 3 and 4 exhibited elevated risk of SA, with the strongest baseline-adjusted effects for profile 4 (short-term absence OR 1.90, 95% CI 1.40, 2.57, long-term absence OR 1.95, 95% CI 1.15, 3.31). Effects of the NPS on short-term absence were stronger for profile 4 versus profile 1 (OR 1.38 vs 1.24, $P < .001$). Our findings suggest that addressing role conflicts may prevent pain-related absence, possibly also for individuals already experiencing pain. **Conclusions:** This article elucidates the connections between role conflicts associated with work roles, the NPS, and SA due to pain. This should help organizations prevent pain-related absences from work and improve working conditions for workers who remain occupationally active in spite of pain problems.

Christensen et al. 2024.

The Journal of Pain, vol. 25, no. 3.

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Keywords: Number of pain sites; emotional dissonance; psychosocial work environment; role conflict; sickness absence.

Evidence Level: 4B

Link: [https://www.jpain.org/article/S1526-5900\(23\)00550-3/fulltext](https://www.jpain.org/article/S1526-5900(23)00550-3/fulltext)

Caring for older parents in Norway - How does it affect labor market participation and absence from work?

Background: As the population ages, younger generations will increasingly be called upon to provide informal care to their aging parents. To prepare for this development, it is essential to understand how employees combine the dual responsibilities of work and caring for aging parents. **Methods:** By analyzing data collected in Norway in 2022 from a nationally representative sample of 6049 respondents, aged 35 to 67, we investigated how caring for older parents affects labor market participation and work absence. We provide descriptive statistics and conduct analyses with structural equation modeling. **Results:** These analyses indicated that caregiving had no substantial impact on overall participation in the workforce. However, employees did use work absences to assist their parents. We differentiate between using holidays, compensatory time, and three types of formal leave: paid, unpaid, and sick leave. More than a third of the formal leave was taken as sick leave. Women were moderately more likely to use work absence to care for their parents. We conclude that caregiving for older parents currently has little effect on work participation in Norway and attribute the favorable situation in Norway to its comprehensive public elderly care system. However, a contributing factor is Norway's generous sick leave policy. Although intended for use when employees are sick themselves, sick leave is used by employees to provide care to aging parents. Sick leave seems to act as a safety valve. **Conclusions:** To mitigate the effects of informal care on work participation, welfare states may create conditions that allow employees to combine work and informal care without resorting to unauthorized sick leave. A solution could be to extend the existing support scheme for employees with young children to those providing care for their aging parents.

Gautun et al. 2024.

Social Science and Medicine, vol. 346.

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Keywords: Absence from work; family care; labor market participation; Norway; older parents; sick leave.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0277953624001667?via%3Dihub>

Constructing therapeutic support and negotiating competing agendas: A discourse analysis of vocational advice provided to individuals who are absent from work due to ill-health.

Background: Work participation is known to benefit people's overall health and wellbeing, but accessing vocational support during periods of sickness absence to facilitate return-to-work can be challenging for many people. **Methods:** In this study, we explored how vocational advice was delivered by trained

vocational support workers (VSWs) to people who had been signed-off from work by their General Practitioner (GP), as part of a feasibility study testing a vocational advice intervention. We investigated the discursive and interactional strategies employed by VSWs and people absent from work, to pursue their joint and respective goals. Theme-oriented discourse analysis was carried out on eight VSW consultations. **Results:** These consultations were shown to be complex interactions, during which VSWs utilised a range of strategies to provide therapeutic support in discussions about work. These included signalling empathy with the person's perspective; positively evaluating their personal qualities and prior actions; reflecting individuals' views back to them to show they had been heard and understood; fostering a collaborative approach to action-planning; and attempting to reassure individuals about their return-to-work concerns. Some individuals were reluctant to engage in return-to-work planning, resulting in back-and-forth interactional negotiations between theirs and the VSW's individual goals and agendas. This led to VSWs putting in considerable interactional 'work' to subtly shift the discussion towards return-to-work planning. **Conclusions:** The discursive strategies we have identified have implications for training health professionals to facilitate work-orientated conversations with their patients and will also inform training provided to VSWs ahead of a randomised controlled trial.

Saunders et al. 2024.

Health, vol. 28, no. 2.

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Keywords: Theme-oriented discourse analysis; therapeutic support; work absence.

Evidence Level: 5B

Link: <https://journals.sagepub.com/doi/full/10.1177/13634593221148446>

Urinary incontinence associates with poor work ability in middle-aged women: A Northern Finland Birth cohort 1966 study.

Background: Urinary incontinence is a common ailment in women and is likely to affect their work ability. We investigated the associations between the different subtypes of urinary incontinence and several dimensions of perceived work ability in middle-aged general population. **Methods:** Cross-sectional survey at age 46 among participants of the Northern Finland Birth Cohort 1966 study (n = 3706, response rate 72%). Urinary incontinence symptoms and several items of Work Ability Index were collected by postal questionnaire. Work ability was dichotomized as good or poor work ability in general, in relation to physical job demands, to diseases and own 2-year prospect of work ability. The associations between urinary incontinence and work ability measures were assessed using logistic regression models, with further adjustments for biological, behavioural and work-related factors as well as general health. **Results:** The odds ratio (OR), from lowest to highest, for poor work ability were 1.4-fold among women with stress urinary incontinence (OR 1.37, 95% confidence interval [CI] 1.09-1.72), 2.5-fold with mixed urinary incontinence (OR 2.51, 95% CI 1.68-3.74) and 3.3-fold with urgency urinary incontinence (OR 3.34, 95% CI 1.95-5.70). We note that our results reflect work ability in a Nordic society. **Conclusions:** Especially urgency and mixed types of urinary incontinence are associated with poor work ability among middle-aged women.

Salo et al. 2024.

Acta Obstetrica et Gynecologica Scandinavica, vol. 103, no. 3.

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Keywords: Cohort study; general population; urinary incontinence; work ability.

Evidence Level: 4B

Link: <https://obgyn.onlinelibrary.wiley.com/doi/10.1111/aogs.14743>

Worker and workplace determinants of employment exit: A register study.

Background: Workers with chronic illness are in higher risk of unemployment. This article investigated the worker and workplace characteristics associated with labour market inclusion for workers with a diagnosed chronic illness. **Methods:** Linked employer-employee register data covering all Norwegian employers and employees each month from February 2015 to December 2019 were merged with patient data from specialist healthcare (136 196 observations (job spells); 70 923 individual workers). Survival analysis was used to estimate the risk of employment exit, with age, gender, chronic illness, full-time/part-time

employment, skill level, marital status, children in household, branch, share of chronically ill workers, firm size and unemployment rate as covariates. **Results:** 85% of the study population was employed in December 2019; 58% remain employed throughout the follow-up period. Mental illness, male gender, young age, part-time employment and lower skill levels were the worker-level predictors of labour market exit. Employments in secondary industries, in firms with high shares of chronically ill workers and, to some extent, in larger firms were the significant workplace-level determinants. **Conclusions:** Only a minority of our sample of workers with chronic illness experienced labour market exclusion. Targeted measures should be considered towards workers with poor mental health and/or low formal skills. Chronically ill workers within public administration have the best labour market prospects, while workplaces within the education branch have an unfulfilled potential.

Rydland et al. 2024.

BMJ Open, vol. 14, no. 3.

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Keywords: Chronic disease; epidemiology; health economics; occupational & industrial medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/14/3/e080464.long>

Are women breaking the glass ceiling? A gendered analysis of the duration of sick leave in Spain.

Background and Methods: We study the gender gap in the duration of sick leave in Spain by splitting this duration into two types of days - those which are related to biological characteristics and those derived from behavioral reasons. **Results:** Using the Statistics of Accidents at Work for 2011-2019, we found that women presented longer standard durations (i.e., purely attached to physiological reasons) compared to men. However, when estimating individuals' efficiency as the ratio between actual and standard durations, we found that women were more inefficient at lower levels of income, whereas in case of men, this occurred at higher levels of income. **Conclusions:** These results were reinforced when considering that men and women do not recover from the same injury at the same rate. Women were more efficient than men across all the compensation distribution, especially at higher income levels.

Martín-Román et al. 2024.

International Journal of Health Economics and Management, vol. 24, no. 1.

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Keywords: Gender; glass ceiling; moral hazard; stochastic frontiers; workplace injuries.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10124936/>

Workers Compensation

This month we explore employment outcomes of vocational rehabilitation services and pre-job loss grief reactions and work attachment among sick-listed employees.

Pre-job loss grief reactions and work attachment among sick-listed employees: Introduction of the imminent Job Loss Scale

Background: With this study, we aimed to explore the emotional experiences of sick-listed employees facing imminent job loss, as this emotional distress may hinder successful job search outcomes. The study had two objectives: (1) to develop and validate the Imminent Job Loss Scale (IJLS) for assessing pre-job loss grief reactions and (2) to examine its relationship to work attachment. **Methods:** Development of the 9-item IJLS was carried out using feedback from an expert panel, consisting of five academic experts in grief and labour, five re-integration specialists, and five sick-listed employees facing imminent job loss. The psychometric properties of the IJLS were evaluated, and its association with work attachment was examined using data from 200 sick-listed employees facing imminent job loss. **Results:** The IJLS demonstrated strong internal consistency and temporal stability, distinctiveness from depression and anxiety symptoms, and solid convergent validity. Work-centrality and organizational commitment were positively related to pre-job loss grief reactions, while work engagement and calling showed no significant associations. **Conclusions:** This study provides valuable insights into pre-job loss grief reactions and shows

the potential utility of the IJLS for screening and monitoring purposes. Understanding pre-job loss grief reactions can improve the re-integration and job prospects of sick-listed employees. In future research, explorations of these dynamics should continue to provide better support to sick-listed employees during this challenging period.

van Eersel et al. 2024.

BMC Psychology, vol. 12, no. 1.

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Keywords: Imminent job loss; organizational commitment; pre-loss grief; re-integration; sick-listed employees; work attachment.

Evidence Level: 5B

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-024-01626-8>

Evaluation of active labor market policy reform: Employment outcomes of vocational rehabilitation services.

Background: The purpose of this study is to examine the effect of the Estonian active labor market reform in 2016, which introduced a new policy concerning vocational rehabilitation services. As a research question, we investigate how such services may have affected the employment outcomes of people with mental and/or physical impairments. **Methods:** Our sample includes 9244 people from 2016 to 2020, with a mean age of 46 years. Due to multiple entries to the services, we have more than 11,000 cases with over 100,000 monthly observations. We use propensity score matching in combination with fixed effects panel regressions to analyze how the completion of the scheduled rehabilitation plan affected monthly employment duration. **Results:** Our findings indicate that completing the rehabilitation service results on average in 2.6 months longer post-rehabilitation employment, compared to matched individuals who discontinued the service. This effect was larger when already employed and male participants entered the service, while weaker effects were observed in the case of individuals with only mental disabilities.

Conclusions: Overall, we conclude that while completing the scheduled rehabilitation plan has a positive effect on employment outcomes, still maintaining employment status seems to remain a challenge, based on the relatively modest effect sizes. Thus, we question the economic arguments behind the reform.

Pesor et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Employment; health economics; rehabilitation; social policy; work.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s10926-023-10102-w>

Wellness Programs

Barriers and facilitators to implementation of healthy food and drink policies in public sector workplaces: A systematic literature review.

Background: Many countries and institutions have adopted policies to promote healthier food and drink availability in various settings, including public sector workplaces. Objective: The objective of this review was to systematically synthesize evidence on barriers and facilitators to implementation of and compliance with healthy food and drink policies aimed at the general adult population in public sector workplaces.

Methods: Data sources, Nine scientific databases, 9 grey literature sources, and government websites in key English-speaking countries along with reference lists. Data extraction: All identified records (N = 8559) were assessed for eligibility. Studies reporting on barriers and facilitators were included irrespective of study design and methods used but were excluded if they were published before 2000 or in a non-English language. Data analysis: Forty-one studies were eligible for inclusion, mainly from Australia, the United States, and Canada. **Results:** The most common workplace settings were healthcare facilities, sports and recreation centers, and government agencies. Interviews and surveys were the predominant methods of data collection. Methodological aspects were assessed with the Critical Appraisal Skills Program Qualitative Studies Checklist. Generally, there was poor reporting of data collection and analysis methods. Thematic

synthesis identified 4 themes: (1) a ratified policy as the foundation of a successful implementation plan; (2) food providers' acceptance of implementation is rooted in positive stakeholder relationships, recognizing opportunities, and taking ownership; (3) creating customer demand for healthier options may relieve tension between policy objectives and business goals; and (4) food supply may limit the ability of food providers to implement the policy. **Conclusions:** Findings suggest that although vendors encounter challenges, there are also factors that support healthy food and drink policy implementation in public sector workplaces. Understanding barriers and facilitators to successful policy implementation will significantly benefit stakeholders interested or engaging in healthy food and drink policy development and implementation.

Rosin et al. 2024.

Nutrition Reviews, vol. 82, no. 4.

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Keywords: Barrier; challenge; enabler; facilitator; food environment; healthy food policy; implementation; workplace.

Evidence Level: 1A

Link: <https://academic.oup.com/nutritionreviews/article/82/4/503/7202070?login=false>

Organisational Issues

Team climate and job satisfaction in a mobile emergency service: A multilevel study.

Background: to investigate the relationship between team climate and job satisfaction among professionals working in mobile pre-hospital care. **Methods:** this is a quantitative, correlational study carried out in a mobile pre-hospital care service in the São Paulo Metropolitan Region. The participants were 95 professionals, allocated to 40 teams, who answered three questionnaires: sociodemographic/labor data, Team Climate Scale and S20/23 Job Satisfaction Scale. Descriptive statistics and multilevel linear models were used for the analysis, including moderation effects. The Backward method was used to ascertain the order of significance. **Results:** in the models, the relationships between satisfaction with hierarchical relationships and the factor "support for new ideas" moderated for men and "task orientation" for women were significant. For satisfaction with the physical environment, "working hours" and "participation in the team" were significant and, for intrinsic satisfaction, the regime, working hours and the factors "team objectives", "participation in the team" and "support for new ideas" remained significant, as did the moderation effect between length of service, "participation in the team" and "support for new ideas". **Conclusions:** Team climate is influenced by job satisfaction in a heterogeneous way and the moderating effect of this relationship is associated with gender and length of service.

Carmo et al. 2024.

Revista Latino-Americana de Enfermagem, vol. 15.

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Keywords: Team; climate; job satisfaction; mobile emergency service.

Evidence Level: 4B

Link: <https://www.scielo.br/j/rlae/a/ZHvT8YMY88GXj7bNjNZWt5s/?lang=en>

Management and Leadership

This month we explore managers' perspectives and responses when employees burn out, and the influence of the managerial position on stress and job satisfaction.

Line managers' perspectives and responses when employees burn out.

Background: Little is known about whether burnout can be stopped at an emerging stage. To develop this knowledge, we focus on line managers' perspectives and responses when an employee who seems to be heading for burnout is still at work. **Methods:** We interviewed 17 line managers working in the educational and health care sectors, who had been confronted with the sickness absence of at least one employee due to burnout in the past. Interviews were transcribed, coded, and analysed thematically. **Results:** During the period that the employee seemed to be developing burnout while still at work, line managers experienced three different, successive phases: picking up signals, role-taking, and re-evaluation. Line managers' personal frame of reference (e.g., having experience with burnout) seemed to influence whether and how

they picked up signals of burnout. Line managers not picking up signals, did not take any action. When picking up the signals, the managers however generally took an active role: they started a conversation, changed work tasks, and - at a later stage - adapted the employee's job description, sometimes without consulting the employee. The managers felt powerless yet learned from the experience when subsequently re-evaluating the period during which employees developed symptoms of burnout. These re-evaluations resulted in an adapted personal frame of reference. **Conclusions:** This study shows that improving line managers' frame of reference, e.g., by organizing meetings and/or training, may help them to detect early signals of burnout and take action. This is a first step to prevent the further development of early burnout symptoms.

Claeys et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Burnout; mental health; occupations; qualitative research; role; secondary prevention.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s10926-023-10117-3>

Stress and job satisfaction over time, the influence of the managerial position: A bivariate longitudinal modelling of Wittyfit data.

Background: The managerial position affects stress and job satisfaction of workers, but these influences have always been studied separately. **Objective:** We aimed to assess bivariate influence of the managerial position on workers' stress and job satisfaction and the inter-relationship of these indicators over time.

Methods: We have analysed data from workers who use the Wittyfit software, collected annually between 2018 and 2021. Stress and job satisfaction were evaluated by self-report questionnaires. Job position (manager or employee) was provided by the software's client companies. **Results:** Data of 704 workers were included in the study. Cross-sectional and longitudinal multivariate analyses revealed that managerial position improves job satisfaction ($p < 0.001$), but not stress ($p = 0.4$). Overall, while workers' job satisfaction has improved ($p < 0.001$), stress has remained stable over time ($p = 0.3$). Three latent groups, with specific evolutionary multi-trajectory of stress and job satisfaction were identified in the sample (entropy = 0.80).

Age and seniority, but not gender tended to influence managers' and employees' indicators. Over time, stress and job satisfaction have tended to negatively interconnect, in cross-section and in a cross-lagged manner ($p < 0.001$). **Conclusions:** The managerial position improves workers' job satisfaction but has no effect on stress. Sociodemographics including age and seniority, but not gender, can affect this relationship. Stress and job satisfaction can influence each other, both cross-sectionally and over time. To be more effective, organizations should implement holistic strategies targeting multiple indicators.

Colin-Chevalier et al. 2024.

PLoS One, vol. 19, no. 3.

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Keywords: Stress; job satisfaction; managerial.

Evidence Level: 4A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0298126>

Work Ability

This month we explore work productivity among younger breast cancer survivors, improving sustainable employment of employees with a work disability and work for people with intellectual disabilities.

Work productivity among younger breast cancer survivors: The impact of behavioral interventions for depression.

Background: The Pathways to Wellness randomized controlled trial found that 2 behavioural interventions, mindfulness awareness practices and survivorship education, reduced depressive symptoms in younger breast cancer survivors (BCSs) compared with wait-list control. This secondary analysis examines whether the interventions led to reduced loss of work productivity among younger BCSs and whether such reductions were mediated by reductions in depressive symptoms. **Methods:** The Work Productivity and

Activity Impairment scale was used to measure work productivity loss at 4 assessment time points. Correlates of productivity loss at enrolment were examined using multivariable linear regression. Differences in change over time in productivity loss between each intervention group and control were assessed using linear mixed models. Reduced depressive symptoms were tested as a mediator of reduced productivity loss. **Results:** Of 247 trial participants, 199 were employed and included in the analyses. At enrolment, higher productivity loss was associated with chemotherapy receipt ($P = .003$), younger age ($P = .021$), more severe cognitive problems ($P = .002$), higher musculoskeletal pain severity ($P = .002$), more depressive symptoms ($P = .016$), and higher fatigue severity ($P = .033$). The mindfulness intervention led to significantly less productivity loss compared with control at all 3 postintervention assessment points (all $P < .05$), with about 54% of the effect mediated by reduction in depressive symptoms. Survivorship education was not associated with reduced loss of productivity. **Conclusions:** These findings suggest that addressing depressive symptoms through behavioural interventions, such as mindfulness, may mitigate impacts on work productivity in younger BCSs.

Crespi et al. 2024.

Value in Health, vol. 27, no. 3.

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

Keywords: Behavioral interventions; breast cancer survivorship; depressive symptoms; longitudinal study; mediation; mindfulness; randomized trial; work productivity loss.

Evidence Level: 4A

Link: [https://www.valueinhealthjournal.com/article/S1098-3015\(23\)06236-8/fulltext](https://www.valueinhealthjournal.com/article/S1098-3015(23)06236-8/fulltext)

Informal network members' perspectives and experiences on work for people with intellectual disabilities: A thematic synthesis.

Background: The level of participation of people with intellectual disabilities (ID) in various forms of work, including daytime activities, appears to be suboptimal. Informal networks of people with ID constitute crucial forms of support, as they can significantly influence occupational choices and opportunities. This review aims to synthesize existing research for the purpose of examining how informal network members perceive the meaning of employment or daytime activities for their relatives with ID. **Methods:** Following the PRISMA guideline, a systematic search of scientific literature published between 1990 and July 2022 was conducted. The qualitative results from twenty-seven studies (qualitative and mixed-method) were analysed using thematic synthesis. **Results:** Four overarching themes and several subthemes were identified: (I) Ensuring customized work for my relative; (II) The ongoing need to collaborate and share care responsibilities with professionals; (III) The meaning of work for both my relative and myself; and (IV) Achieving full work participation for my relative is neither straightforward nor self-evident.

Conclusions: Informal networks place great value upon customized and sustainable work opportunities for their relatives with ID, particularly community-based work. While network members play an important role in creating these opportunities, they encounter obstacles resulting from both collaboration difficulties with professionals and employers and public and structural forms of stigma. Researchers, professionals, policy makers, and employers are encouraged to collaborate with individuals with ID as well as their networks to increase the meaningful work opportunities available to them.

Voermans et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Daytime activities; employment; informal networks; intellectual disabilities; work.

Evidence Level: 5A

Link: <https://link.springer.com/article/10.1007/s10926-023-10128-0>

Training for supervisors to improve sustainable employment of employees with a work disability: A longitudinal effect and process evaluation from an intervention study with matched controls.

Background: Supervisors play a crucial role in sustainable employment of employees with a work disability. The 'Mentorwijs' (literal translation: Mentorwise) training was developed to train supervisors in knowledge, attitudes and skills needed to guide these employees. This study evaluated the effect of 'Mentorwijs' on

employees' employment and supervisors' behavioral outcomes. **Methods:** Register- and questionnaire data were obtained from 73 employees and 1,526 matched controls to measure employment (≥ 1 /month, ≥ 12 h/week and ≥ 3 consecutive months (≥ 1 h/month)) during a 12-month follow-up period. Questionnaire data were obtained from 127 supervisors who followed the 'Mentorwijs' training, to assess their knowledge, self-efficacy, intention to adopt and applied behaviors. **Results:** Employment for ≥ 1 h/month did not significantly improve after 3 ($\beta = 0.05$; CI=-0.07-0.16), 6 ($\beta = 0.07$; CI=-0.04-0.18), 9 ($\beta = 0.08$; CI=-0.02-0.18) and 12 ($\beta = 0.01$; CI=-0.08-0.10) months among employees whose supervisors followed 'Mentorwijs' compared to those who did not. Significant effects were found after 8 months ($\beta = 0.11$; CI = 0.01-0.21). Comparable effects were found for employment ≥ 12 hour/week and ≥ 3 consecutive months (≥ 1 hour/month). Supervisors' knowledge and self-efficacy significantly improved as a result of 'Mentorwijs', but no effects were found for intention to adopt and applied behaviors. **Conclusions:** 'Mentorwijs' is a promising training to improve the guidance of employees with a work disability. Further research is needed to examine how long-term effects of 'Mentorwijs' on employment can be sustained.

Schaap et al. 2024.

Journal of Occupational Rehabilitation, vol. 34, no. 1.

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Keywords: Effect evaluation; employees; supervisors; sustainable employment; work disability.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s10926-023-10118-2>

Adapting to the Future of Work

Aging Workforce

This month we explore who continues to work after retirement age and workplace factors associated with lower healthy working life expectancy and life expectancy at age 50.

Demographic, health, physical activity, and workplace factors are associated with lower healthy working life expectancy and life expectancy at age 50.

Background: Although retirement ages are rising in the United Kingdom and other countries, the average number of years people in England can expect to spend both healthy and work from age 50 (Healthy Working Life Expectancy; HWLE) is less than the number of years to the State Pension age. **Methods:** This study aimed to estimate HWLE with the presence and absence of selected health, socio-demographic, physical activity, and workplace factors relevant to stakeholders focusing on improving work participation. Data from 11,540 adults in the English Longitudinal Study of Ageing were analysed using a continuous time 3-state multi-state model. Age-adjusted hazard rate ratios (aHRR) were estimated for transitions between health and work states associated with individual and combinations of health, socio-demographic, and workplace factors. **Results:** HWLE from age 50 was 3.3 years fewer on average for people with pain interference (6.54 years with 95% confidence interval [6.07, 7.01]) compared to those without (9.79 [9.50, 10.08]). Osteoarthritis and mental health problems were associated with 2.2 and 2.9 fewer healthy working years respectively (HWLE for people without osteoarthritis: 9.50 years [9.22, 9.79]; HWLE with osteoarthritis: 7.29 years [6.20, 8.39]; HWLE without mental health problems: 9.76 years [9.48, 10.05]; HWLE with mental health problems: 6.87 years [1.58, 12.15]). Obesity and physical inactivity were associated with 0.9 and 2.0 fewer healthy working years respectively (HWLE without obesity: 9.31 years [9.01, 9.62]; HWLE with obesity: 8.44 years [8.02, 8.86]; HWLE without physical inactivity: 9.62 years [9.32, 9.91]; HWLE with physical inactivity: 7.67 years [7.23, 8.12]). Workers without autonomy at work or with inadequate support at work were expected to lose 1.8 and 1.7 years respectively in work with good health from age 50 (HWLE for workers with autonomy: 9.50 years [9.20, 9.79]; HWLE for workers lacking autonomy: 7.67 years [7.22, 8.12]; HWLE for workers with support: 9.52 years [9.22, 9.82]; HWLE for workers with inadequate support: 7.86 years [7.22, 8.12]). This study identified demographic, health, physical activity, and workplace factors associated with lower HWLE and life expectancy at age 50. Identifying the extent of the impact on healthy working life highlights these factors as targets and the potential to mitigate against premature work exit is encouraging to policymakers seeking to extend working life as well as people with musculoskeletal and mental health conditions and their employers.

Conclusions: The HWLE gaps suggest that interventions are needed to promote the health, wellbeing and work outcomes of subpopulations with long-term health conditions.

Lynch et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Demographic; health; physical activity; life expectancy.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-53095-z>

Who continues to work after retirement age?

Background: Demographic changes in all industrialized countries have led to a keen interest in extending working lives for older workers. To achieve this goal, it is essential to understand the patterns of retirement and specifically what characterizes individuals who continue to work beyond retirement age. Thus, the aim of this paper was to contribute to the international body of empirical knowledge about individuals who continue in the workforce after retirement age. We present evidence from Denmark and examine what characterizes individuals who continue in the workforce after retirement age and investigate the likelihood of continued work after retirement age while controlling for a set of socio-economic and lifestyle factors.

Methods: The study population consisted of 5,474 respondents to the Copenhagen Aging and Midlife Biobank (CAMB) 2021 survey, divided into two groups. The first group included subjects (n = 1,293) who stayed longer in the workforce even though they had the possibility to retire. The second group consisted of subjects who had retired full-time at the time of the survey (n = 4,181). Survey data was linked to register data to provide a broader dataset. In order to investigate the heterogeneity between the two groups in terms of important socio-economic, work-related and health-related variables, t-test, Mann-Whitney U (Wilcoxon Rank) test, and chi-square tests were employed. Further, to examine the probability of an individual working after retirement age a logit model with step-wise inclusion was utilized.

Results: Overall, individuals who continue to work even though they could retire tend to be wealthier, healthier, and males compared to individuals who are retired full-time. Further, there are more older workers who have partners and are co-habitants than retirees. The likelihood of continuing in the workforce past retirement age is affected by several work-related factors as well as life-style factors. The likelihood of working past retirement age decreases by years spent in the workforce (marginal effect of -0.003), if you have a partner (-0.080) and if your partner is outside of the workforce (marginal effect of -0.106). The likelihood increases by health (marginal effect of -0.044 of moving from excellent/very good health to good health or to fair/poor health, physical working capability (marginal effect of -0.083 of moving from no/some problems to severe problems or cannot work at all) and income (marginal effect of 0.083 from moving from the lowest income-quantile to higher quantiles). **Conclusions:** These results are in line with the previous literature and suggest the importance of designing retirement policies that tailor the transition toward retirement according to specific characteristics of both the individual and the segment of occupation.

Zaccagni et al. 2024.

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

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Keywords: Extending working life; retirement; survey data.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18161-1>

Technology

Workplace digitalization and workload: changes and reciprocal relations across 3 years.

Background: This article reports the results of a 33-wave longitudinal study of changes in, and reciprocal relations between, workplace digitalization and workload. **Methods:** Monthly data were collected between April 2020 and December 2022 from n = 1661 employees in Germany. Based on theoretical models of workplace information and communication technology use, stress, and coping, we hypothesized both positive and negative within-person effects of digitalization on workload, and vice versa. **Results:** Results of

an autoregressive latent trajectory model with structured residuals (ALT-SR) showed on-average positive linear trajectories in digitalization, but not in workload over time. Moreover, higher digitalization was associated with subsequently higher levels of workload, and vice versa. This pattern of results suggests a dynamic, reciprocal process wherein positive deviations from one's average trajectory of digitalization (workload) are associated with subsequently higher levels of workload (digitalization). We additionally find evidence for linear trends in these within-person processes, suggesting that the strength of the within-person effects of digitalization on workload, and of workload on digitalization, becomes more strongly positive over time. **Conclusions:** Practitioners developing work design interventions could focus on ways to reduce the detrimental impact of digitalization on increased workload, while simultaneously encouraging the potential of digitalization to help employees cope effectively with their workload.

Zacher et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Digitalization; information communication technology; longitudinal study; workload.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-56537-w>

Work Environment

This month we explore the work environment issues associated with sleep and working remotely and the role of informal support systems during illness in solo self-employed workers.

Distribution of sleep components while working remotely.

Background: The circadian system is the main regulator of almost all human physiological processes. The aim of this study was to assess sleep in the working population, in relation to the share of remote working.

Methods: An online survey was conducted among students and staff representing 3 universities in Łódź, Poland (N = 1209). The participants were divided into 3 groups according to the percentage of time they worked remotely. Group I consisted of respondents performing tasks remotely for ≤45% of their working time; group II included respondents performing their duties remotely for >45-75% of their working time, and group III included those working >75% of their time remotely. **Results:** Performing their duties remotely for >45-75% of their working time, and group III included those working >75% of their time remotely. In the study, the authors found the association between the length of time spent on a computer, the percentage of time working remotely, and the occurrence of physical symptoms and the prevalence of sleep disorders. The most significant difference between working days and days off in terms of the midpoint of sleep (1.5 h) was observed in group I, where there was the greatest variability in the form of work performance. The participants who worked most of their time remotely (group III) shifted their bedtime to midnight, both on working days and on days off. **Conclusions:** The study highlights that increased remote computer use leads to a shift in sleeping patterns towards midnight. The participants with later midpoint of sleep hours were found to have a higher incidence of sleep disorders. The prevalence of sleep disorders was significantly impacted by prolonged mobile phone use before bedtime and long hours of computer use. Thus, limiting both the time spent in front of a computer and the use of mobile phones before bedtime is recommended. *Int J Occup Med Environ Health. 2024;37(1):34-44.*

Janc et al. 2024.

International Journal of Occupational Medicine and Environmental Health, vol. 37, no. 1.

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Keywords: Circadian system; sleep; remote work; online survey.

Evidence Level: 4B

Link: <https://ijomeh.eu/Distribution-of-sleep-components-while-working-remotely,175005,0,2.html>

The role of informal support systems during illness: A qualitative study of solo self-employed workers in Ontario, Canada.

Background: Today's labor market has changed over time, shifting from mostly full-time, secure, and standard employment relationships to mostly entrepreneurial and precarious working arrangements. In this context, self-employment (SE), a prominent type of precarious work, has been growing rapidly due to

globalization, automation, technological advances, and the rise of the 'gig' economy, among other factors. Employment precarity profoundly impacts workers' health and well-being by undermining the comprehensiveness of social security systems, including occupational health and safety systems. **Methods:** This study examined how self-employed (SE'd) workers sought out support from informal support systems following illness, injury, and income reduction or loss. **Results:** Based on in-depth interviews with 24 solo SE'd people in Ontario, Canada, narrative analysis was conducted of participants' experiences with available informal supports following illness or injury. We identified three main ways that SE'd workers managed to sustain their businesses during periods of need: (i) by relying on savings; (ii) accessing loans and financial support through social networks, and (iii) receiving emotional and practical support. **Conclusions:** We conclude that SE'd workers managed to survive despite social security system coverage gaps by drawing on informal support systems.

Khan et al. 2024.

PLoS One, vol. 19, no. 3.

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Keywords: Informal support; illness; self-employed.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297770>