



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 February 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 including the association between work-related factors and lifestyle behaviours in teachers, vitamin D concentrations and blood lipid profiles in agriculture, forestry, and fishing occupations, motivational processes in workers' adoption of healthy behavior, the contributions of job demands and resources to well-being and turnover intention, factors underpinning the menopausal experience and the relationship between cumulative exposure to occupational lifting and risk of ischemic heart disease. In Covid-19 related research we explore the impact of the pandemic on employees' workplace health promotion preferences.

A cross-sectional study of Australian teachers' health: Are work-related factors associated with lifestyle behaviours?

Background: Teacher's lifestyle behaviours are important because they lead to positive health outcomes for teachers themselves and because teachers model behaviour to their students. **Methods:** This cross-sectional study examined the lifestyle behaviours of a large sample of teachers in New South Wales (NSW), Australia and assessed the association between work-related factors and lifestyle behaviours. From February to October 2021, data were collected on the lifestyle behaviours, work-related factors and socio-demographics of primary and secondary school teachers in NSW, via an online survey. Associations between individual work-related factors and lifestyle behaviours were modelled using logistic regression and adjusted for sex, age, number of children and geographic location. **Results:** Most of our survey sample (n = 1136) were women (75%) and 53% were reported as having overweight or obesity. Only 23% of teachers met the recommended physical activity guidelines, 39% met fruit intake guidelines, 9% met vegetable intake guidelines and 58% met healthy sleep guidelines. Most teachers (78%) met the recommendation of sugar-sweetened beverage consumption, 89% were not current smokers, but only 46% met the recommended alcohol consumption guidelines. Hours worked, teaching load, school sector and teacher role were associated with one or more lifestyle behaviours after adjusting for the demographic variables. **Conclusions:** This study highlights the need for additional support to improve the health-related behaviours of teachers in NSW. Policymakers should recognize the negative impact of high workloads on teachers' health-related behaviours, increasing their risk of chronic disease.

Corbett et al. 2024.

Health Promotion International, vol. 39, no. 1.

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Keywords: Exercise; health behaviour; lifestyle; occupational diseases; school teachers.

Evidence Level: 4A

Link: <https://academic.oup.com/heapro/article/39/1/daad192/7515054>

The unique association between serum 25-hydroxyvitamin D concentrations and blood lipid profiles in agriculture, forestry, and fishing occupations: Insights from NHANES 2001-2014.

Background: The relationship of serum 25(OH)D levels and hyperlipidemia has not been explored in the Agriculture, Forestry, and Fishing (AFF) occupation. We aimed to explore the impact of serum 25(OH)D levels on lipid profiles in AFF workers, traffic drivers, and miners. **Methods:** Data from 3937 adults aged 18-65 years old with completed information were obtained from the National Health and Examination Survey from 2001 to 2014. Multivariate linear regression models were used to examine the associations between serum 25(OH)D concentrations and triglycerides (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and HDL-C/LDL-C ratio. Subgroup analyses for AFF workers considered age, sex, BMI, work activity, months worked, and alcohol consumption. Non-linear relationships were explored using curve fitting. **Results:** Serum 25(OH)D levels differed between groups (AFF: 60.0 ± 21.3 nmol/L, drivers: 56.6 ± 22.2 nmol/L, miners: 62.8 ± 22.3 nmol/L). Subgroup analysis of the AFF group showed that participants with serum 25(OH)D ≥50 nmol/L, females, and BMI <30 kg/m² demonstrated improved HDL-C levels correlating with higher serum 25(OH)D. Serum 25(OH)D in AFF

workers had a reversed U-shaped relationship with TG and TC, and a U-shaped relationship with HDL-C, with HDL-C, with inflection points at 49.5 nmol/L for TG and TC, and 32.6 nmol/L for HDL-C.

Conclusions: Serum 25(OH)D levels are associated with lipid profiles, and the relationship varies among occupational groups. AFF workers, facing unique occupational challenges, may benefit from maintaining adequate serum 25(OH)D levels to mitigate adverse lipid profiles and reduce cardiovascular risk.

Zhang et al. 2024.

PLoS One, vol. 19, no. 2.

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Keywords: Serum 25-hydroxyvitamin D concentrations; blood lipid; agriculture; forestry; fishing.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297873>

Mixed-methods research of motivational processes in workers' adoption of healthy behaviour.

Background: In occupational health, the maintenance and promotion of workers' health, especially lifestyle motivation-based interventions, have gained considerable attention and are actively implemented.

Motivational theories include self-determination theory, and some studies focus on healthy lifestyles.

However, the effectiveness of health promotion interventions varies depending on the health awareness and motivation of the participants. Therefore, this study aimed to clarify the processes by which workers

are motivated to improve their health and to identify the need for and type of support according to their

motivation. **Methods:** Using a mixed-research design, an initial questionnaire survey of 94 employees

(mean age = 40.97 ± 9.65) at a multicentre company in Japan, followed by semi-structured interviews with 16 employees (mean age = 40.13 ± 9.45) from the high- and low-motivation groups, were conducted.

Multiple regression analysis followed by modified grounded theory-based analysis of the results of the first stage was used and the quantitative and qualitative results were integrated. **Results:** In the first stage,

autonomous motivation scores were predicted by the behavioural change stage and relatedness

satisfaction/frustration. The second stage revealed that "the process of reflecting and managing one's own health while receiving support and feedback for maintaining and improving health" was the motivational

process of workers. Result integration revealed that motivation increased through repeatedly escaping and adjusting to real problems and situational coping until the behavioural change. Despite interruptions during

behavioural change, receiving feedback from others could increase motivation and continued behavioural change. **Conclusions:** Regardless of their level of motivation for health behaviours, workers indicated that

support from others was essential. The nature of this support was found to range from providing information to offering feedback. Interventions individualized by the identified process could enable

customized motivation-driven health guidance.

Ishii et al. 2024.

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

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Keywords: Behavioral change; health behavior; lifestyle; motivation; occupational health.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18081-0>

Exploring the impact of the COVID-19 pandemic on employees' workplace health promotion preferences.

Background: The COVID-19 pandemic has led to profound changes in the workplace as well as increases in stress, missed preventive care, and other health concerns. There is limited research since the onset of the

pandemic on employees' primary health concerns and their willingness to engage with workplace health promotion (WHP) programs to address these needs. We conducted this survey about employees' current

health priorities as a first step to exploring whether WHP programs need to evolve to be responsive to employees' needs at this stage of the pandemic. **Methods:** Design: National cross-sectional survey.

Setting: United States, April 29-May 5, 2022. Subjects: 2053 Americans employed part or full time.

Measures: 17-item online survey assessing demographics, health priorities, and impact of the pandemic on health. Analysis: Descriptive statistics, SPSS Version 19. **Results:** Employees' most common health concerns

included work/life balance and stress (each cited by 55%). Nearly half (46%) said their health or well-being was affected by the pandemic; within this group, the most common concerns were stress (66%), anxiety

(61%), sleep (49%), and depression (48%). Almost all (94%) indicated they would be open to receiving support from their employers. **Conclusions:** This research is a first step in learning about employees' current health priorities and how they may have changed. WHP researchers and practitioners can determine how their programs align with current priorities. Our future research will explore employees' preferences, health behaviors, and their current workplace environments in more depth.

Hammerback et al. 2024.

American Journal of Health Promotion, vol. 38, no. 2.

User License: *PMC Open Access Subset*

Keywords: COVID-19; health promotion; interventions; mental health; weight management; workplace; worksite.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10291210/>

Are they created equal? A relative weights analysis of the contributions of job demands and resources to well-being and turnover intention.

Background: Building upon the Job Demands-Resources (JD-R) model (Demerouti et al., 2001) and the extensive research on employee turnover intention and well-being, we examined various demands and resources in relation to these outcomes. **Methods:** This study examined the differential relationship between job demands, and personal and job resources, and two organizational outcomes: turnover intention and emotional exhaustion. **Results:** The job demands were role overload, role conflict, role ambiguity, and work-life balance. The job resources were resilience, servant leadership, relatedness, autonomy, job opportunities, pay satisfaction, and person-organization fit. An online questionnaire was administered to full-time employees via Qualtrics panel (N = 364). Job demands were positively related to emotional exhaustion, and personal and job resources were negatively related to turnover intention. Using relative weights analysis, demands and resources were found to account for different amounts of variance in the outcome variables. **Conclusions:** This study informs our understanding of and contributes to the advancement of the JD-R model to encompass various job demands and personal and job resources and their differential relationship to emotional exhaustion and turnover intention.

Hoare et al. 2024.

Psychological Reports, vol. 127, no. 1.

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Keywords: Emotional exhaustion; job demands-resources model; personal resources; relative weights analysis; turnover intention.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10782655/>

"I can't be dealing with this brain fog": A workplace focus group study investigating factors underpinning the menopausal experience for NHS staff.

Background: Multiple studies highlight that individuals undergoing menopause are not receiving sufficient support at work. An improved menopausal experience in the workplace has been found to be associated with increased job satisfaction, increased economic participation and reduced absenteeism. This work was undertaken to explore the impact of menopause on the working lives of NHS staff working in Wales, with specific emphasis on their experience of menopausal symptoms and management strategies in the workplace. **Methods:** Study Design: This was a qualitative study using semi-structured focus groups and thematic analysis. 14 women working in the NHS in Wales attended four focus groups, lasting up to 1.5 h. Stem questions focused on participants' positive and negative experiences in the workplace, and their receipt of support. Transcripts were analysed using the framework approach. **Results:** Three major themes were identified: experiences of menopausal symptoms and symptom management, the impact of menopause on work and the impact of work on the menopause. Menopause symptom experience in the workplace was multifaceted and varied, depending on factors such as ongoing or past symptom experience, expectations, social support and effectiveness of management strategies. Inconsistent information was highlighted as a reason why some participants felt confused both about the symptoms that they could attribute to the menopause and the management strategies available to them. A variety of

symptom management strategies had been used by participants, including hormone replacement therapy, flexible working hours, working from home, changes to uniform, peer support and lifestyle changes, with varying levels of success. Some women were reticent to ask for support at work even though they felt the workplace response was likely to be supportive. Almost all the women felt that they had to persuade their GP to prescribe HRT and felt that their doctors were too reticent in prescribing this treatment.

Conclusions: Employers have a key role in supporting their staff experiencing menopausal symptoms, and such support has the potential to reduce sickness absence and boost retention. Based on the findings we recommend creating an open culture to break down taboos; protected time for peer support around shared experiences and effective symptom management techniques; and maximising the impact of non-menopause-specific policies such as flexible working to help all staff manage fatigue and become more productive in their roles.

Hobson et al. 2024.

Maturitas, vol. 180.

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Keywords: Female; menopause; wellbeing; workability; workforce; workplace.

Evidence Level: 5B

Link: [https://www.maturitas.org/article/S0378-5122\(23\)00495-4/fulltext](https://www.maturitas.org/article/S0378-5122(23)00495-4/fulltext)

Relationship between cumulative exposure to occupational lifting throughout working life and risk of ischemic heart disease in men and women. The Copenhagen Aging and Midlife Biobank.

Background: Ischemic heart disease (IHD) causes mortality and morbidity. High levels of occupational physical activity (OPA) increases IHD risk, and occupational lifting (OL) is suggested as a detrimental OPA exposure. This study investigated the association between accumulated OL throughout working life, and risk for IHD, and potential sex and hypertension differences. **Methods:** Data from Copenhagen Ageing and Midlife Biobank linked to register-based information on incident IHD during 9 years follow-up in the Danish National Patient Registry were included. The outcome was the odds of IHD from baseline (2009-2011) to end of follow-up (2018), among participants without IHD at baseline. Accumulated OL was assessed by linking occupational codes to a Job Exposure Matrix, creating a measure in ton-years (lifting 1,000 kg/day/year). Multivariable logistic regression tested associations between level of accumulated OL and IHD, among the 6,606 included individuals (68% men). **Results:** During follow-up, 7.3% men and 3.6% women were hospitalized with IHD. Among all participants, the odds for IHD were 47% (OR 1.47, 95% CI 1.05-2.06) higher among those with ≥ 5 to < 10 ton-years, 39% (OR 1.39, 95% CI 1.06-1.83) higher among those with ≥ 10 to < 30 ton-years, and 62% (OR 1.62, 95% CI 1.18-2.22) higher among those with ≥ 30 ton-years, compared to no accumulated OL. However, these increased odds were in the same direction in the fully-adjusted model but statistically insignificant, ≥ 5 to < 10 ton-years OR 1.28, 95% CI 0.88-1.88; ≥ 10 to < 30 ton-years OR 1.20, 95% CI 0.85-1.69; and ≥ 30 ton-years OR 1.22, 95% CI 0.81-1.84. **Conclusions:** No statistically significant interactions, nor any associations, between OL and sex, or hypertension were seen.

Korshøj et al. 2024.

Annals of Work Exposures and Health, vol. 68, no. 2.

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Keywords: IHD; cardiovascular disease; cardiovascular risk; heavy lifting; occupational exposure; occupational medicine; occupational physical activity; prevention of cardiovascular disease.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10877461/>

Work Health and Safety

This month we explore Work Health and Safety issues including health hazard evaluations of occupational cancer clusters, advance notice periods for unpredictable work, evaluation of fatigue at work to enhance the safety performance in the construction industry, infectious disease in the workplace and the decision-making of work safety investment in industrial park enterprises. In Covid-19 related research we explore Covid-19 risk to essential workers by occupational group, determinants of infection among financial institution employees, effectiveness of vaccination mandates for healthcare workers effective, identifying employee, workplace and population characteristics associated with Covid-19 outbreaks in the workplace and pandemic preparedness from the perspective of Occupational Health professionals.

Health Hazard Evaluations of occupational cancer cluster concerns: The USA, January 2001-December 2020.

Background: To describe recent investigations of potential workplace cancer clusters. **Methods:** We identified Health Hazard Evaluations (HHEs) of cancer concerns during 2001-2020. We described information about industry, requestors, cancer characteristics, investigative procedures, and determinations about the presence of a cluster (ie, presence of excess cases, unusual case distribution or exposure). **Results:** Of 5754 HHEs, 174 included cancer concerns, comprising 1%-5% of HHEs per year. In 123 HHEs, the cancer cluster concerns involved different cancer primary sites. Investigation procedures varied but included record review (n=63, 36%) and site visits (n=22, 13%). Of 158 HHEs with a cluster determination by investigator(s), 151 (96%) were not considered cancer clusters. In seven HHEs, investigators found evidence of a cluster, but occupational exposure to a carcinogen was not identified. **Conclusions:** The proportion of HHEs on workplace cancer cluster concerns remained steady over time; most did not meet the definition of a cluster or uncover an occupational cause. Public health practitioners can use this information to provide updated context when addressing workplace cancer cluster concerns and as motivation to refine investigative approaches. More broadly, this review highlights an opportunity to identify best practices on how to apply community cluster investigation methods to the workplace.

Shi et al. 2024.

Occupational and Environmental Medicine, vol. 81, no. 2.

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Keywords: Occupational health; public health surveillance; public health.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/81/2/109.long>

How much advance notice do workers need? A review and theoretical framework for determining advance notice periods for unpredictable work.

Background: Regulatory guidance materials for fatigue management typically advise that employees be provided with days or weeks of advance notice of schedules/rosters. However, the scientific evidence underpinning this advice is unclear. **Methods:** A systematic search was performed on current peer reviewed literature addressing advance notice periods, which found three relevant studies. A subsequent search of grey literature to determine the quality of evidence for the recommendation for advance notice periods returned 37 relevant documents. **Results:** This review found that fatigue management guidance materials frequently advocated advance notice for work shifts but did not provide empirical evidence to underpin the advice. Although it is logical to suggest that longer notice periods may result in increased opportunities for pre-work preparations, improved sleep, and reduced worker fatigue, the current guidance appears to be premised on this reasoning rather than empirical evidence. Paradoxically, it is possible that advance notice could be counterproductive, as too much may result in frequent alterations to the schedule, particularly where adjustments to start and end times of the work period are not uncommon (e.g., road transport, rail). **Conclusions:** To assist organisations in determining the appropriate amount of advance notice to provide, we propose a novel theoretical framework to conceptualise advance notice.

Sprajcer et al. 2024.

Industrial Health, vol. 62, no. 1.

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Keywords: Hours of work; on-call; predictability; sleep; work scheduling.

Evidence Level: 1A

Link: [https://www.jstage.jst.go.jp/article/indhealth/62/1/62_2022-0140/ article](https://www.jstage.jst.go.jp/article/indhealth/62/1/62_2022-0140/article)

Individual evaluation of fatigue at work to enhance the safety performance in the construction industry: A systematic review.

Background: The construction industry is recognized as one of the most hazardous industries globally due to the dynamic on site activities and labour-intensive characteristics. The construction tasks are physically and cognitively demanding therefore the construction workers are prone to work fatigue which compromises safety performance. The evaluation of fit for duty, or fitness for work (FFW) aims to determine if workers are at risk of adverse impacts of ill-health, injury or accidents. **Methods:** This systematic review aimed to critically summarize up-to-date measures and evaluation tools that were employed to monitor work fitness or fatigue specifically among construction workers. Adhering with the PRISMA protocol, three databases were searched from the inception to 2022, with a total combination of 37 keywords, concluding to the selection of 20 relevant articles. The Mixed Method Appraisal Tool (MMAT) was used as the guide for the study appraisal. **Results:** A total of 20 articles were reviewed, published from 2008-2022. Majority of the studies employed experimental design. The review identified the subjective evaluation scales and objective measurement tool. The subjective self-response questionnaires can be categorized into single dimension or multidimension covering both physical and mental fitness; whereas the objective measurement tool can be categorized into physiological metrics, physical and cognitive performance measure. **Conclusions:** The available scientific evidence has raised the relevant issues for on-site practicality and potentially guide the formulation of evidence-based guidelines for the FFW assessment in the construction industry.

Heng et al. 2024.

PLoS One, vol. 19, no. 2.

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Keywords: Fatigue; safety performance; construction industry.

Evidence Level: 1A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287892>

Infectious disease in the workplace: Quantifying uncertainty in transmission.

Background: Understanding disease transmission in the workplace is essential for protecting workers. To model disease outbreaks, the small populations in many workplaces require that stochastic effects are considered, which results in higher uncertainty. The aim of this study was to quantify and interpret the uncertainty inherent in such circumstances. **Methods:** We assessed how uncertainty of an outbreak in workplaces depends on i) the infection dynamics in the community, ii) the workforce size, iii) spatial structure in the workplace, iv) heterogeneity in susceptibility of workers, and v) heterogeneity in infectiousness of workers. To address these questions, we developed a multiscale model: A deterministic model to predict community transmission, and a stochastic model to predict workplace transmission. We extended this basic workplace model to allow for spatial structure, and heterogeneity in susceptibility and infectiousness in workers. **Results:** We found a non-monotonic relationship between the workplace transmission rate and the coefficient of variation (CV), which we use as a measure of uncertainty. Increasing community transmission, workforce size and heterogeneity in susceptibility decreased the CV. Conversely, increasing the level of spatial structure and heterogeneity in infectiousness increased the CV. However, when the model predicts bimodal distributions, for example when community transmission is low and workplace transmission is high, the CV fails to capture this uncertainty. **Conclusions:** Overall, our work informs modellers and policy makers on how model complexity impacts outbreak uncertainty. In particular: workforce size, community and workplace transmission, spatial structure and individual heterogeneity contribute in a specific and individual manner to the predicted workplace outbreak size distribution.

Hamley et al. 2024.

Bulletin of Mathematical Biology, vol. 86, no. 3.

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Keywords: Coefficient of variation; epidemiology; multiscale modelling; stochastic modelling; uncertainty.

Evidence Level: 6B

Link: <https://link.springer.com/aicle/10.1007/s11538-023-01249-x>

Evaluating COVID-19 risk to essential workers by occupational group: A case study in Massachusetts.

Background: Occupational exposure to SARS-CoV-2 varies by profession, but "essential workers" are often considered in aggregate in COVID-19 models. This aggregation complicates efforts to understand risks to specific types of workers or industries and target interventions, specifically towards non-healthcare workers. **Methods:** We used census tract-resolution American Community Survey data to develop novel essential worker categories among the occupations designated as COVID-19 Essential Services in Massachusetts. Census tract-resolution COVID-19 cases and deaths were provided by the Massachusetts Department of Public Health. We evaluated the association between essential worker categories and cases and deaths over two phases of the pandemic from March 2020 to February 2021 using adjusted mixed-effects negative binomial regression, controlling for other sociodemographic risk factors. **Results:** We observed elevated COVID-19 case incidence in census tracts in the highest tertile of workers in construction/transportation/buildings maintenance (Phase 1: IRR 1.32 [95% CI 1.22, 1.42]; Phase 2: IRR: 1.19 [1.13, 1.25]), production (Phase 1: IRR: 1.23 [1.15, 1.33]; Phase 2: 1.18 [1.12, 1.24]), and public-facing sales and services occupations (Phase 1: IRR: 1.14 [1.07, 1.21]; Phase 2: IRR: 1.10 [1.06, 1.15]). We found reduced case incidence associated with greater percentage of essential workers able to work from home (Phase 1: IRR: 0.85 [0.78, 0.94]; Phase 2: IRR: 0.83 [0.77, 0.88]). Similar trends exist in the associations between essential worker categories and deaths, though attenuated. **Conclusions:** Estimating industry-specific risk for essential workers is important in targeting interventions for COVID-19 and other diseases and our categories provide a reproducible and straightforward way to support such efforts.

Haley et al. 2024.

Journal of Community Health, vol. 49, no. 1.

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Keywords: COVID-19; community health; essential workers; geospatial data; occupational health.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s10900-023-01249-x>

Determinants of COVID-19 infection among employees of an Italian financial institution.

Background: Understanding the trend of the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) is becoming crucial. Previous studies focused on predicting COVID-19 trends, but few papers have considered models for disease estimation and progression based on large real-world data.

Methods: We used de-identified data from 60,938 employees of a major financial institution in Italy with daily COVID-19 status information between 31 March 2020 and 31 August 2021. We consider six statuses: (i) concluded case, (ii) confirmed case, (iii) close contact, (iv) possible-probable contact, (v) possible contact, and (vi) no-COVID-19 or infection. We conducted a logistic regression to assess the odds ratio (OR) of transition to confirmed COVID-19 case at each time point. We also fitted a general model for disease progression via the multi-state transition probability model at each time point, with lags of 7 and 15 days.

Results: Employment in a branch versus in a central office was the strongest predictor of case or contact status, while no association was detected with gender or age. The geographic prevalence of possible-probable contacts and close contacts was predictive of the subsequent risk of confirmed cases. The status with the highest probability of becoming a confirmed case was concluded case (12%) in April 2020, possible-probable contact (16%) in November 2020, and close contact (4%) in August 2021. The model based on transition probabilities predicted well the rate of confirmed cases observed 7 or 15 days later.

Conclusions: Data from industry-based surveillance systems may effectively predict the risk of subsequent infection.

De Vito et al. 2024.

La Medicina del Lavoro, vol. 115, no. 1.

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

Keywords: COVID-19; infection; employees; financial institution.

Evidence Level: 4B

Link: <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/14690>

Are COVID-19 vaccination mandates for healthcare workers effective? A systematic review of the impact of mandates on increasing vaccination, alleviating staff shortages and decreasing staff illness.

Background: The rapid development of COVID-19 vaccines is a cornerstone in the global effort to combat the pandemic. Healthcare workers (HCWs), being at the forefront of the pandemic response, have been the focus of vaccine mandate policies. This review aims to evaluate the impacts of COVID-19 vaccine mandates among HCWs, a critical step in understanding the broader implications of such policies in healthcare settings.

Objective: The review seeks to synthesize available literature to contribute to greater understanding of the outcomes associated with COVID-19 vaccine mandates for HCWs including vaccine uptake, infection rates, and staffing. **Methods:** A systematic search of relevant literature published from March 2020 to September 2023 was conducted. The Newcastle-Ottawa scale was employed for quality assessment of the included articles. A total of 4,779 publications were identified, with 15 studies meeting the inclusion criteria for the review. A narrative synthesis approach was used to analyze these studies.

Results: COVID-19 vaccine mandates for HCWs were broadly successful in increasing vaccine uptake in most settings. Although the penalties imposed on unvaccinated HCWs did not lead to major disruption of health services, less well-resourced areas may have been more impacted. Furthermore, there is insufficient literature on the impact of the vaccine mandate on reducing SARS-CoV-2 infection among HCWs.

Conclusions: COVID-19 vaccine mandates for HCWs have significant implications for public health policy and healthcare management. The findings underscore the need for tailored approaches in mandate policies, considering the specific contexts of healthcare settings and the diverse populations of HCWs. While mandates have shown potential in increasing vaccine uptake with minimal impacts to staffing, more work is needed to investigate the impacts of mandates across various contexts. In addition to these impacts, future research should focus on long-term effects and implications on broader public health strategies.

Okpani et al. 2024.

Vaccine, vol. 42, no. 5.

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Keywords: Absenteeism; healthcare professionals; novel coronavirus 2019; occupational health; vaccination impact; vaccination policy.

Evidence Level: 1A

Link: <https://www.sciencedirect.com/science/article/pii/S0264410X24000525?via%3Dihub>

Identifying employee, workplace and population characteristics associated with COVID-19 outbreaks in the workplace: A population-based study.

Background: To identify risk factors that contribute to outbreaks of COVID-19 in the workplace and quantify their effect on outbreak risk. **Methods:** We identified outbreaks of COVID-19 cases in the workplace and investigated the characteristics of the individuals, the workplaces, the areas they work and the mode of commute to work, through data linkages based on Middle Layer Super Output Areas in England between 20 June 2021 and 20 February 2022. We estimated population-level associations between potential risk factors and workplace outbreaks, adjusting for plausible confounders identified using a directed acyclic graph. **Results:** For most industries, increased physical proximity in the workplace was associated with increased risk of COVID-19 outbreaks, while increased vaccination was associated with reduced risk. Employee demographic risk factors varied across industry, but for the majority of industries, a higher proportion of black/African/Caribbean ethnicities and living in deprived areas, was associated with increased outbreak risk. A higher proportion of employees in the 60-64 age group was associated with reduced outbreak risk. There were significant associations between gender, work commute modes and staff contract type with outbreak risk, but these were highly variable across industries. **Conclusions:** This study has used novel national data linkages to identify potential risk factors of workplace COVID-19

outbreaks, including possible protective effects of vaccination and increased physical distance at work. The same methodological approach can be applied to wider occupational and environmental health research.

Overton et al. 2024.

Occupational and Environmental Medicine, vol. 81, no. 2.

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Keywords: COVID-19; disease outbreaks; epidemiology; public health; statistics.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/81/2/92.long>

Pandemic preparedness from the perspective of Occupational Health professionals.

Background: Prior to any infectious disease emergence as a public health concern, early occupational preparedness is crucial for protecting employees from novel pathogens- coronavirus disease 2019 (COVID-19) is no different. **Aims:** This study ascertains how occupational safety and health (OSH)/Human Resource (HR) professionals in the Republic of Ireland had managed to prepare their workplaces prior to the advent of COVID-19. **Methods:** As part of a larger COVID-19 workplace study, online focus groups were conducted with OSH/HR professionals. Collected data were transcribed verbatim and entered into NVivo for thematic analysis incorporating intercoder reliability testing. **Results:** Fifteen focus groups were conducted with OSH/HR professionals (n = 60) from various occupational settings. Three levels of organizational preparedness were identified: 'early awareness and preparation'; 'unaware and not ready' and 'aware, but not ready'. Most organizations were aware of the COVID-19 severity, but not fully prepared for the pandemic, especially stand-alone enterprises that may not have sufficient resources to cope with an unanticipated crisis. The experiences shared by OSH professionals illustrate their agility in applying risk management and control skills to unanticipated public/occupational health crises that arise.

Conclusions: General pandemic preparedness such as the availability of work-from-home policies, emergency scenario planning and prior experience in workplace outbreaks of infectious diseases were helpful for workplace-associated COVID-19 prevention. This is the first study conducted with OSH/HR professionals in Ireland regarding COVID-19 preparedness in workplaces, which provides valuable insights into research literature, as well as empirical experience for the preparation of future public health emergencies.

Chen et al. 2024.

Occupational Medicine, vol. 74, no. 1.

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Keywords: Occupational health; pandemic; COVID-19.

Evidence Level: 6B

Link: <https://academic.oup.com/occmed/article/74/1/93/7471353?login=false>

Research on the decision-making of work safety investment in industrial park enterprises: Evidence from behavioural experiments.

Background: Due to the clustering of risk factors, industrial park safety accidents can easily trigger a domino effect. Work safety investment is the foundation of enterprise work safety in industrial parks. Therefore, increasing the work safety investment of enterprises in industrial parks is the key condition to prevent accidents. However, due to the typical negative externalities of industrial park work safety accidents, the decision-making process of work safety in park enterprises is influenced by other enterprises within the park, including imitation behaviors. This makes the decision-making of work safety in park enterprises very specific. **Methods:** In order to clarify the influencing factors and effects of work safety investment in industrial park enterprises, this study uses a behavioral experiment method and conducts decision-making experiments using the experimental platform O-Tree. The study recruits 76 participants who play the role of decision-makers in park enterprises. This study uses a lottery price experiment and a dictator experiment to measure the risk preference and altruism preference of the participants, respectively. The study introduces the real background of work safety investment in industrial park enterprises and collects data on work safety investment by the participants in different experimental

scenarios. **Results:** The research results show that the safety attitudes of decision-makers, altruism preference, accident experience, government work safety supervision, park management measures, and safety benefits positively influence work safety investment in park enterprises. The risk preference of decision-makers and the resource capability of work safety negatively influence work safety investment in park enterprises. **Conclusions:** Work safety investment in park enterprises is influenced by the work safety investment of other enterprises within the park.

Liu et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: Altruistic preference; behavioral experiments; industrial park enterprises; risk preference; work safety investment.

Evidence Level: 5B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1295536/full>

Risk Assessment

This month we explore Risk Assessment issues including machine learning prediction of footwear slip resistance and an updated job-exposure matrix for occupational noise.

Machine learning prediction of footwear slip resistance on glycerol-contaminated surfaces: A pilot study

Background: Slippery surfaces due to oil spills pose a significant risk in various environments, including industrial workplaces, kitchens, garages, and outdoor areas. These situations can lead to accidents and falls, resulting in injuries that range from minor bruises to severe fractures or head trauma. To mitigate such risks, the use of slip resistant footwear plays a crucial role. **Methods:** In this study, we aimed to develop an Artificial Intelligence model capable of classifying footwear as having either high or low slip resistance based on the geometric characteristics and material parameters of their outsoles. Our model was trained on a unique dataset comprising images of 37 indoor work footwear outsoles made of rubber. To evaluate the slip resistant property of the footwear, all samples were tested using a cart-type friction measurement device, and the static and dynamic Coefficient of Frictions (COFs) of each outsole was determined on a glycerol-contaminated surface. Machine learning techniques were implemented, and a classification model was developed to determine high and low slip resistant footwear. **Results:** Among the various models evaluated, the Support Vector Classifier (SVC) obtained the best results. This model achieved an accuracy of 0.68 ± 0.15 and an F1-score of 0.68 ± 0.20 . Our results indicate that the proposed model effectively yet modestly identified outsoles with high and low slip resistance. **Conclusions:** This model is the first step in developing a model that footwear manufacturers can utilize to enhance product quality and reduce slip and fall incidents.

Lau et al. 2024.

Applied Ergonomics, vol. 117.

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Keywords: Coefficient of friction; machine learning; shoe friction assessment; shoe safety; slip resistant.

Evidence Level: 6B

Link: <https://www.sciencedirect.com/science/article/pii/S0003687024000267?via%3Dihub>

An updated job-exposure matrix for occupational noise: Development and validation.

Background: The aim of this study was to create a quantitative job-exposure matrix (JEM) for noise including a large set of measurements for the Swedish workforce, a detailed exposure-level assessment, spanning over an extensive time period from 1970 to 2014. **Methods:** The JEM was developed by 2 teams, each with an experienced occupational hygienist and an occupational safety engineer. Each pair assessed the exposure using measurements performed and reported by occupational hygienists, occupational safety engineers, or similar, from 1970 to 2014. The measurements included either the original LAeq(8h) measurements or an LAeq(8h) levels calculated from partial measurements of the working day, provided

that the measurement targeted a regular task usually performed during a full workday. The collection of measurement reports was done in 2008 and 2012 by contacting clinics working in the area of occupational health or occupational safety engineers and their submitted reports were added to our own material. Noise exposure assessments were inserted at the appropriate time period for the relevant job family. The final matrix was developed in a consensus procedure and the validity was investigated by comparison of the 2 team's individual results. **Results:** The noise JEM contains 321 job families with information regarding occupational noise from 1970 to 2014. The time-period label has a 5-yr scale starting in 1970. The estimated average 8 h (TWA) noise level in decibels [dB(A)] for every job family and 5-yr period was coded as 1: <70 dB(A), 2: 70 to 74 dB(A), 3: 75 to 79 dB(A), 4: 80 to 84 dB(A) or 5: 85(+) dB(A). The validation showed no systematic difference in relative position and very high agreement in the ordering of paired ordinal classifications. The JEM has also successfully been applied in several epidemiological studies. **Conclusions:** We present a JEM for occupational noise using Swedish data from 1970 to 2014 with a higher degree of sensitivity in assessed noise exposure compared with the previously existing version. Repeated application of the JEM, in epidemiological studies, has shown consistent results and contributed to yielding important findings.

Sjöström et al. 2024.

Annals of Work Exposures and Health, vol. 68, no. 2.

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Keywords: Job exposure matrix (JEM); occupational noise.

Evidence Level: 6B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10877457/>

Ergonomics

Identification of movement phenotypes from occupational gesture kinematics: Advancing individual ergonomic exposure classification and personalized training.

Background: The identification of personalized preventive strategies plays a major role in contrasting the occurrence of work-related musculoskeletal disorders. This requires the identification of distinct movement patterns within large samples and the attribution of a proper risk level to each identified movement phenotype. **Methods:** We assessed the feasibility of this approach by exploiting wearable inertial measurement units to estimate the whole-body kinematics of 43 healthy participants performing 18 reach-to-manipulate movements, which differed based on the object's position in the space and the type of manipulation required. **Results:** Through unsupervised clustering, we identified multiple movement phenotypes graded by ergonomic performance. Furthermore, we determined which joints mostly contributed to instantiating the ergonomic differences across clusters, emphasizing the importance of monitoring this aspect during occupational gestures. **Conclusions:** Overall, our analysis suggests that movement phenotypes can be identified within occupational motor repertoires. Assigning individual performance to specific phenotypes has the potential to inform the development of more effective and tailored interventions.

Scalona et al. 2024.

Applied Ergonomics, vol. 115.

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[\(https://creativecommons.org/licenses/by-nc-nd/4.0/\)](https://creativecommons.org/licenses/by-nc-nd/4.0/)

Keywords: Ergonomics assessment; movement phenotypes; wearable technologies.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S000368702300220X?via%3Dihub>

Chronic Health Issues

This month we explore Chronic Health issues including the effect of cardiovascular disease on work productivity and financial loss, factors affecting work productivity and activity impairment among chronic obstructive pulmonary disease patients, prospective health care costs and lost workdays associated with diabetes-related distress and depression symptoms and inflammatory markers in world trade centre workers with asthma.

Assessing the effect of cardiovascular disease on work productivity and financial loss among school teachers in Peninsular Malaysia: A nested case-control study.

Background: School teachers may have an increased risk of cardiovascular disease (CVD), potentially affecting their work productivity. However, limited data exists on the impact of CVD on teachers' productivity in Malaysia. Our objectives were to assess work productivity loss (absenteeism and presenteeism) as well as to determine the associated annual monetary loss among schoolteachers who experienced incident CVD in Peninsular Malaysia. **Methods:** We adopted a nested case-control design within a cohort of schoolteachers. Working teachers from six states of Peninsular Malaysia and had experienced incident CVD before a right-censored date (31st December 2021) were defined as cases. Incident CVD was operationally defined as the development of non-fatal acute coronary syndrome (ACS), stroke, congestive cardiac failure, deep vein thrombosis or peripheral arterial disease before the censored date. Controls were working teachers who did not acquire an incident CVD before the similar right-censored date. All controls were randomly selected, with a ratio of one case to four controls, from among the working teachers in one of the states in Peninsular Malaysia. We used a shortened version of the Malay-validated World Health Organization-Health and Work Performance Questionnaire (WHO-HPQ) to estimate the workplace productivity effect among teachers with incident CVD (cases). The same questionnaire was distributed to teachers in a single state of Peninsular Malaysia who did not experience incident CVD (controls). Absenteeism, presenteeism and annual monetary loss were computed based on the scoring rules in the WHO-HPQ. Analysis of covariance was performed with covariate adjustment using propensity scores. The bootstrapping method was applied to obtain better estimates of marginal mean differences, along with standard errors (SE) and appropriate effect sizes. **Results:** We recruited 48 cases (baseline mean age = 42.4 years old, 54.2% females) and 192 randomly selected controls (baseline mean age = 36.2 years old, 99.0% females). The majority of the cases had ACS (73.9%). No significant difference was observed in absenteeism between cases and controls. The mean self-rated job performance score was lower for cases (7.63, SE = 0.21) compared to controls (8.60, SE = 0.10). Marginal mean scores of absolute presenteeism among cases (76.30) were lower ($p < 0.05$, eta squared = 0.075) than controls (85.97). The marginal mean annual cost of presenteeism was higher in cases (MYR 21,237.52) compared to controls (MYR 12,089.74) ($p < 0.05$, eta squared = 0.082). **Conclusions:** Absolute presenteeism was lower among school teachers who experienced incident CVD and the annual cost of presenteeism was substantial. Implementing supportive work strategies in school settings is recommended to increase absolute presenteeism, which can lead to a reduction in the annual cost of presenteeism among teachers experiencing incident CVD.

Yap et al. 2024.

PeerJ, vol. 12.

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Keywords: Cardiovascular disease; work productivity; financial loss; school teachers.

Evidence Level: 4B

Link: <https://peerj.com/articles/16906/>

Factors affecting work productivity and activity impairment among chronic obstructive pulmonary disease patients.

Background: Chronic obstructive pulmonary disease (COPD) can negatively affect patients' employment and work-life activities with a significant indirect economic impact. The current study aimed to measure unemployment, work productivity, activity impairment, and their associated factors among COPD patients.

Methods: A cross-sectional study was conducted in the Chest outpatient clinic, Mansoura University

Hospital, Egypt. COPD patients completed an interviewer-administered questionnaire including sociodemographic, occupational data, clinical history, medical research council (mMRC) dyspnea scale, the COPD assessment test (CAT), and work productivity and activity impairment Questionnaire (WPAI-COPD).

Results: A total 140 patients were included in the study and 22.1% of them gave up their jobs because of their COPD. Due to COPD, the mean percentage of daily activity impairment was 39.8 among all patients. The mean percentages of absenteeism, presenteeism, and overall work impairment among the 84 working patients were 0.07, 24.4, and 24.5. The CAT score was the significant predictor of all components of WPAI.

Conclusions: In conclusion, COPD causes early retirement, high work productivity loss, and impaired daily activities. Higher CAT scores and increased disease severity significantly increase absenteeism, presenteeism, overall work, and activity impairment. Thus, timely diagnosis of COPD with appropriate management can help improve outcomes and lower the disease burden and economic impact.

Abdelwahab et al. 2024.

Industrial Health, vol. 62, no. 1.

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Keywords: COPD assessment test (CAT); Chronic obstructive pulmonary disease (COPD); Modified medical research council (mMRC); Productivity; Work productivity and activity impairment questionnaire (WPAI).

Evidence Level: 5B

Link: https://www.istage.jst.go.jp/article/indhealth/62/1/62_2022-0174/article

Prospective health care costs and lost work days associated with diabetes-related distress and depression symptoms among 1488 individuals with diabetes.

Background: The aim of this study was to investigating the impact of major depression symptoms and diabetes-related distress on future health care costs and lost workdays in individuals with diabetes.

Methods: We linked survey data from a random sample of a German statutory health insurance (SHI) with diabetes (n = 1488, 63.0% male, mean age 66.9 years) with their SHI data one year after the survey. Within the survey data we identified major depression symptoms (Patient Health Questionnaire-9) and diabetes-related distress (Problem Areas in Diabetes Scale). We retrieved health care costs and lost workdays from SHI data. To assess the impact of major depression symptoms and diabetes-related distress on health care costs and lost workdays, we adjusted regression models for age, sex, education, employment status, and diabetes duration, type, and severity. **Results:** Major depression symptoms were associated with significantly higher costs (by a factor of 1.49; 95% CI: 1.18-1.88). Lost workdays were also more likely for respondents with depression symptoms (RR 1.34; 0.97-1.86). Health care costs (by a factor of 0.81; 0.66-1.01) and the risk of lost workdays (RR 0.86; 0.62-1.18) may be lower among respondents with high diabetes-related distress. **Conclusions:** While major depression and diabetes-related distress have overlapping indicators, our results indicate different impacts on health care costs.

Sommer et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Health care costs; work days; diabetes-related distress; depression; diabetes.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-52361-4>

Inflammatory markers in world trade centre workers with asthma: Associations with post traumatic stress disorder.

Background: Post-traumatic stress disorders (PTSD) is associated with worse asthma outcomes in individuals exposed to the World Trade Center (WTC) site. Research question: Do WTC workers with coexisting PTSD and asthma have a specific inflammatory pattern that underlies the relationship with increased asthma morbidity? **Methods:** We collected data on a cohort of WTC workers with asthma recruited from the WTC Health Program. Diagnosis of PTSD was ascertained with a Structured Clinical Interview for DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) and the severity of PTSD symptoms was assessed with the PTSD Checklist 5. We obtained blood and sputum samples to measure cytokines levels in study participants. **Results:** Of the 232 WTC workers with diagnosis of asthma in the

study, 75 (32%) had PTSD. PTSD was significantly associated with worse asthma control ($p = 0.002$) and increased resource utilization ($p = 0.0002$). There was no significant association ($p > 0.05$) between most blood or sputum cytokines with PTSD diagnosis or PCL-5 scores both in unadjusted and adjusted analyses. **Conclusions:** Interpretation: Our results suggest that PTSD is not associated with blood and sputum inflammatory markers in WTC workers with asthma. These findings suggest that other mechanisms likely explain the association between PTSD and asthma control in WTC exposed individuals.

Wisnivesky et al. 2024.

PLoS One, vol. 19, no. 2.

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Keywords: Inflammatory markers; World Trade Center; asthma; post traumatic stress disorder.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297616>

Occupational Exposure

This month we explore Occupational Exposure issues including the association between occupational noise and arthritis and hypertension, lung cancer risk and occupational pulmonary fibrosis, use of a mobile application for the assessment of cleaning workers' exposure to cleaning products, factors influencing occupational exposure to pyrethroids and glyphosate and occupational farm work activities influence workers' indoor home microbiome.

Is occupational noise associated with arthritis? Cross-sectional evidence from US population.

Background: The impact of occupational noise exposure on various diseases, including ear and cardiovascular diseases, has been studied extensively. Nevertheless, the connection between osteoarthritis (OA) and rheumatoid arthritis (RA) and occupational noise exposure remains largely unexplored in real-world scenarios. This study assessed the association between occupational noise exposure and the prevalence of two types of arthritis. **Methods:** This study used database data from 2005 to 2012 and 2015-March 2020 from the prepandemic National Health and Nutrition Examination Survey (NHANES) related to occupational noise exposure and arthritis. Multivariate logistic regression analysis was used to estimate the association between occupational noise exposure and RA/OA, adjusting for age, gender, race, education level, marital status, the ratio of family income to poverty, trouble sleeping, smoking status, alcohol consumption, diabetes, hypertension, body mass index (BMI), metabolic equivalents (METs), and thyroid disease. **Results:** This study included 11,053 participants. Multivariate logistic regression analysis demonstrated that previous exposure to occupational noise was positively associated with self-reported RA (OR = 1.43, 95% CI = 1.18-1.73) and OA (OR = 1.25, 95% CI = 1.07-1.46). Compared to individuals without a history of occupational noise exposure, those with an exposure duration of 1 year or greater exhibited higher odds of prevalent RA, though there was no apparent exposure response relationship for noise exposure durations longer than 1 year. The results of our subgroup analyses showed a significant interaction between age and occupational noise exposure on the odds of self-reported prevalent OA. **Conclusions:** Our findings suggest an association between occupational noise exposure and the prevalence of RA and OA. Nevertheless, further clinical and basic research is warranted to better explore their associations.

Wu et al. 2024.

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

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Keywords: Arthritis; cross-sectional study; NHANES; occupational noise exposure; osteoarthritis; rheumatoid arthritis.

Evidence Level: 4B

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-024-17897-0>

Surveillance of noise exposure level in industrial enterprises-Jiangsu Province, China, 2022.

Background: Occupational noise exposure is the most prominent problem in industrial enterprises in Jiangsu Province. Since 2019, China has established the National Surveillance System for Occupational Hazards in the workplace to grasp the current occupational hazards in critical industries, including occupational noise. **Methods:** According to the Work Plan for Surveillance of Occupational Hazards in the Workplace (2022) issued by the National Health Commission of the People's Republic of China, the noise exposure level of 3,142 enterprises in our province was monitored, the median and interquartile range (IQR) were calculated, and the distribution of noise exposure level was described by industry classification, enterprise-scale and ownership type of the enterprise. **Results:** The railway, shipping, aerospace, and other transportation equipment manufacturing industries exhibited the highest proportion (42.9%) of individual noise exposure levels exceeding 85 dB(A), followed by the motor vehicles manufacturing industry (36.4%). The proportion of individual noise exposure levels exceeding 85 dB(A) was higher in medium and small enterprises, with rates of 28.1 and 28.6%, respectively. The highest proportion of personal noise exposure levels exceeding 85 dB(A) was observed in Hong Kong, Macao and Taiwan investment enterprises (37.5%), followed by incorporated companies (34.6%) and limited liability companies (28.1%), the lowest was state-owned enterprises (15.5%). The areas with excessive noise are primarily concentrated in grinding, welding, machining, cutting, and other related operations, accounting for 61.2% of the total. Among these operations, grinding accounts for 29.8%. The highest environmental noise and individual noise intensity were found in sandblasting and grinding positions, with individual noise intensities of 115.5 dB(A) and 108.4 dB(A), respectively. **Conclusions:** The noise exposure risk is so high that cannot be ignored in the manufacturing industry, especially in Hong Kong, Macao, and Taiwan investment enterprises, incorporated companies and medium and small enterprises.

Zhang et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: China; Jiangsu Province; exposure level; industrial enterprises; noise.

Evidence Level: 4B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1230481/full>

Occupational noise and hypertension in Southern Chinese workers: A large occupational population-based study.

Background: An increasing number of original studies suggested that occupational noise exposure might be associated with the risk of hypertension, but the results remain inconsistent and inconclusive. In addition, the attributable fraction (AF) of occupational noise exposure has not been well quantified. We aimed to conduct a large-scale occupational population-based study to comprehensively investigate the relationship between occupational noise exposure and blood pressure and different hypertension subtypes and to estimate the AF for hypertension burden attributable to occupational noise exposure. **Methods:** A total of 715,135 workers aged 18-60 years were included in this study based on the Key Occupational Diseases Surveillance Project of Guangdong in 2020. Multiple linear regression was performed to explore the relationships of occupational noise exposure status, the combination of occupational noise exposure and binaural high frequency threshold on average (BHFTA) with systolic and diastolic blood pressure (SBP, DBP). Multivariable logistic regression was used to examine the relationship association between occupational noise exposure status, occupational noise exposure combined with BHFTA and hypertension. Furthermore, the attributable risk (AR) was calculated to estimate the hypertension burden attributed to occupational exposure to noise. **Results:** The prevalence of hypertension among occupational noise-exposed participants was 13.7%. SBP and DBP were both significantly associated with the occupational noise exposure status and classification of occupational noise exposure combined with BHFTA in the crude and adjusted models (all $P < 0.0001$). Compared with workers without occupational noise exposure, the risk of hypertension was 50% greater among those exposed to occupational noise in the adjusted model (95% CI 1.42-1.58). For participants of occupational noise exposed with BHFTA normal, and occupational noise exposed with BHFTA elevated, the corresponding risks of hypertension were 48% (1.41-1.56) and 56% (1.46-1.63) greater than those of occupational noise non-exposed with BHFTA normal, respectively. A similar association was found in isolated systolic hypertension (ISH) and prehypertension. Subgroup analysis by sex and age

showed that the positive associations between occupational noise exposure and hypertension remained statistically significant across all subgroups (all $P < 0.001$). Significant interactions between occupational noise status, classification of occupational noise exposure combined with BHFTA, and age in relation to hypertension risk were identified (all P for interaction < 0.001). The associations of occupational noise status, classification of occupational noise exposure combined with BHFTA and hypertension were most pronounced in the 18-29 age groups. The AR% of occupational noise exposure for hypertension was 28.05% in the final adjusted model. **Conclusions:** Occupational noise exposure was positively associated with blood pressure levels and the prevalence of hypertension, ISH, and prehypertension in a large occupational population-based study. A significantly increased risk of hypertension was found even in individuals with normal BHFTA exposed to occupational noise, with a further elevated risk observed in those with elevated BHFTA. Our findings provide epidemiological evidence for key groups associated with occupational noise exposure and hypertension, and more than one-fourth of hypertension cases would have been prevented by avoiding occupational noise exposure.

Zhou et al. 2024.

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

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Keywords: Bilateral high-frequency average hearing loss; bilateral high-frequency hearing threshold on average; blood pressure; hypertension; occupational noise.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18040-9>

Lung cancer risk and occupational pulmonary fibrosis: Systematic review and meta-analysis.

Background: Molecular pathways found to be important in pulmonary fibrosis are also involved in cancer pathogenesis, suggesting common pathways in the development of pulmonary fibrosis and lung cancer. Research question: Is pulmonary fibrosis from exposure to occupational carcinogens an independent risk factor for lung cancer? **Methods:** A comprehensive search of PubMed, Embase, Web of Science and Cochrane databases with over 100 search terms regarding occupational hazards causing pulmonary fibrosis was conducted. After screening and extraction, quality of evidence and eligibility criteria for meta-analysis were assessed. Meta-analysis was performed using a random-effects model. **Results:** 52 studies were identified for systematic review. Meta-analysis of subgroups identified silicosis as a risk factor for lung cancer when investigating odds ratios for silicosis in autopsy studies (OR 1.47, 95% CI 1.13-1.90) and for lung cancer mortality in patients with silicosis (OR 3.21, 95% CI 2.67-3.87). Only considering studies with an adjustment for smoking as a confounder identified a significant increase in lung cancer risk (OR 1.58, 95% CI 1.34-1.87). However, due to a lack of studies including cumulative exposure, no adjustments could be included. In a qualitative review, no definitive conclusion could be reached for asbestosis and silicosis as independent risk factors for lung cancer, partly because the studies did not take cumulative exposure into account. **Conclusions:** Interpretation: This systematic review confirms the current knowledge regarding asbestosis and silicosis, indicating a higher risk of lung cancer in exposed individuals compared to exposed workers without fibrosis. These individuals should be monitored for lung cancer, especially when asbestosis or silicosis is present.

Krabbe et al. 2024.

European Respiratory Review, vol. 33, no. 171.

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Keywords: Lung cancer; occupational pulmonary fibrosis.

Evidence Level: 1A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10865097/>

The application of the mobile application for the assessment of cleaning workers' exposure to cleaning products: A pilot study.

Background: Cleaning product use has been associated with adverse respiratory health effects such as asthma in cleaning staff and healthcare workers. Research in health effects from cleaning products has largely depended upon collecting exposure information by questionnaires which has limitations such as

recall bias and underestimation of exposure. The aim of this study was to develop a Cleaning and Hazardous Products Exposure Logging (CHaPEL) app with a barcode scanner and to test the feasibility of this app with university cleaners. **Methods:** The CHaPEL app was developed to collect information on demographics, individual product information, and exposure information. It also included an ease-of-use survey. A pilot study with university cleaning workers was undertaken in which cleaning workers scanned each product after use and answered the survey. Respiratory hazards of cleaning substances in the scanned cleaning products were screened by safety data sheets, a Quantitative Structure-Activity Relationship model and an asthmagen list established by an expert group in the US. **Results:** Eighteen university cleaners participated in this study over a period of 5 weeks. In total, 77 survey responses and 6 cleaning products were collected and all reported that using the app was easy. The most frequently used product was a multi-surface cleaner followed by a disinfectant. Out of 14 substances in cleaning products, ethanolamine and Alkyl (C12-16) dimethyl benzyl ammonium chloride were found as respiratory hazardous substances. **Conclusions:** The CHaPEL app is a user-friendly immediate way to successfully collect exposure information using the barcodes of cleaning products. This tool could be useful for future epidemiological studies focused on exposure assessment with less interruption to the workers.

Lee et al. 2024.

Annals of Work Exposures and Health, vol. 68, no. 2.

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Keywords: Barcode; cleaning product; respiratory health; smartphone.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10877463/>

Factors influencing occupational exposure to pyrethroids and glyphosate: An analysis of urinary biomarkers in Malaysia, Uganda and the United Kingdom.

Background: Long-term exposure to pesticides is often assessed using semi-quantitative models. To improve these models, a better understanding of how occupational factors determine exposure (e.g., as estimated by biomonitoring) would be valuable. **Methods:** Urine samples were collected from pesticide applicators in Malaysia, Uganda, and the UK during mixing/application days (and also during non-application days in Uganda). Samples were collected pre- and post-activity on the same day and analysed for biomarkers of active ingredients (AIs), including synthetic pyrethroids (via the metabolite 3-phenoxybenzoic acid [3-PBA]) and glyphosate, as well as creatinine. We performed multilevel Tobit regression models for each study to assess the relationship between exposure modifying factors (e.g., mixing/application of AI, duration of activity, personal protective equipment [PPE]) and urinary biomarkers of exposure. **Results:** From the Malaysia, Uganda, and UK studies, 81, 84, and 106 study participants provided 162, 384 and 212 urine samples, respectively. Pyrethroid use on the sampling day was most common in Malaysia (n = 38; 47%), and glyphosate use was most prevalent in the UK (n = 93; 88%). Median pre- and post-activity 3-PBA concentrations were similar, with higher median concentrations post-compared to pre-activity for glyphosate samples in the UK (1.7 to 0.5 µg/L) and Uganda (7.6 to 0.8 µg/L) (glyphosate was not used in the Malaysia study). There was evidence from individual studies that higher urinary biomarker concentrations were associated with mixing/application of the AI on the day of urine sampling, longer duration of mixing/application, lower PPE protection, and less education/literacy, but no factor was consistently associated with exposure across biomarkers in the three studies. **Conclusions:** Our results suggest a need for AI-specific interpretation of exposure modifying factors as the relevance of exposure routes, levels of detection, and farming systems/practices may be very context and AI-specific.

Mueller et al. 2024.

Environmental Research, vol. 242.

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Keywords: Biomarkers; exposure assessment; occupational epidemiology; pesticides.

Evidence Level: 3B

Link: <https://www.sciencedirect.com/science/article/pii/S0013935123024556?via%3Dihub>

Occupational farm work activities influence workers' indoor home microbiome.

Background: Farm work entails a heterogeneous mixture of exposures that vary considerably across farms and farmers. Farm work is associated with various health outcomes, both adverse and beneficial. One mechanism by which farming exposures can impact health is through the microbiome, including the indoor built environment microbiome. It is unknown how individual occupational exposures shape the microbial composition in workers' homes. Objectives: We investigated associations between farm work activities, including specific tasks and pesticide use, and the indoor microbiome in the homes of 468 male farmers. **Methods:** Participants were licensed pesticide applicators, mostly farmers, enrolled in the Agricultural Lung Health Study from 2008-2011. Vacuumed dust from participants' bedrooms underwent whole-genome shotgun sequencing for indoor microbiome assessment. Using questionnaire data, we evaluated 6 farm work tasks (processing of either hay, silage, animal feed, fertilizer, or soy/grains, and cleaning grain bins) and 19 pesticide ingredients currently used in the past year, plus 7 persistent banned pesticide ingredients ever used. **Results:** All 6 work tasks were associated with increased within-sample microbial diversity, with a positive dose-response for the sum of tasks ($p=0.001$). All tasks were associated with altered overall microbial compositions (weighted UniFrac $p=0.001$) and with higher abundance of specific microbes, including soil-based microbes such as *Haloterrigena*. Among the 19 pesticides, only current use of glyphosate and past use of lindane were associated with increased within-sample diversity ($p=0.02-0.04$). Ten currently used pesticides and all 7 banned pesticides were associated with altered microbial composition ($p=0.001-0.04$). Six pesticides were associated with differential abundance of certain microbes. **Conclusions:** Discussion: Specific farm activities and exposures can impact the dust microbiome inside homes. Our work suggests that occupational farm exposures could impact the health of workers and their families through modifying the indoor environment, specifically the microbial composition of house dust, offering possible future intervention targets.

Dalton et al. 2024.

medRxiv, vol. 21.

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Keywords: Occupational; farm work; indoor home; microbiome.

Evidence Level: 5A

Link: <https://www.medrxiv.org/content/10.1101/2023.08.17.23293194v1>

Physical Activity

This month we explore Physical Activity issues including the role of physical exercise in the prevention of musculoskeletal disorders in manual workers, physical activity interventions in workplace health promotion and effect of leisure-time physical activity and work-related physical activity on mood profile in men and women of all ages.

The role of physical exercise in the prevention of musculoskeletal disorders in manual workers: A systematic review and meta-analysis.

Background: Work-related musculoskeletal disorders (WMSDs) are the most common occupational health problem in the European Union. Physical exercise interventions have been investigated in the prevention of WMSDs in many sectors. Therefore, our aim was to assess the effect of physical exercise in manual workers for the primary and secondary prevention of WMSDs. **Methods:** We conducted a systematic search of the literature and papers were included if: the participants were adult employees exclusively engaged in manual labor tasks; non-acute physical exercise intervention; pain, disability, physical functioning, or health-related quality of life outcome, with pre-post intervention measurements. **Results:** We retrieved 10419 unique records and included 23 studies. **Conclusions:** A random effect meta-analysis was conducted on the studies with a control group design, using a three level model to estimate the pooled effect for pain outcomes ($g = 0.4339$, 95% CI : 0.1267 - 0.7412, $p < 0.01$), and a two-level model for disability outcomes ($g = 0.6279$, 95% CI : 0.3983 - 0.8575, $p < 0.0001$). Subset analysis revealed a moderate-to-large effect on the VAS outcome ($g = 0.5866$, 95% CI: 0.3102 - 0.8630, $p < 0.0001$). Meta-regression on pain outcomes revealed a significant effect for sex, age, study quality, and body segments tested. The analyses on all outcomes except VAS showed substantial heterogeneity ($I^2_{\text{pain}} = 93\%$, of which 72% at the study level, $I^2_{\text{disability}} =$

78%, and I2vas = 56%, of which 44% at the study level). Physical exercise programs seem to have a positive effect on pain and disability stemming from WRMSDs in manual workers.

Bullo et al. 2024.

La Medicina del Lavoro, vol. 115, no. 1.

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Keywords: Physical exercise; musculoskeletal disorders; manual workers.

Evidence Level: 1A

Link: <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/15404>

Physical activity interventions in workplace health promotion: objectives, related outcomes, and consideration of the setting - Scoping review of reviews.

Background: The workplace is a recognized setting for promoting health among adults, and physical activity (PA) interventions are an integral part of workplace health promotion (WHP). Objectives: The present review of reviews aims to provide an overview of the main objectives and related outcomes addressed in WHP-related PA interventions, as well as the setting-specific aspects considered in the research field.

Methods: A scoping review of reviews was conducted. Reviews were included if they were peer-reviewed, written in English, and focused on PA interventions conducted in the context of WHP. A literature search was conducted in PubMed, SPORTDiscus, and Web of Science. Reviews were included if they had been published after the year 2000. Information on the following dimensions was extracted: author, region, number of primary studies included, target group(s), PA interventions included, main objective(s), related outcomes, and setting-specific aspects. **Results:** A total of 17 reviews were included. Six reviews aimed at solely identifying the effectiveness of promoting daily PA and reducing sedentary behavior. Eleven reviews showed a combined approach considering physical activity behavior and/or health and job-related outcomes. Outcomes in the primary studies were heterogeneous. None of the reviews had an explicit definition of WHP and setting-specific information was very general and sparse. The reported setting-specific information was referred to the general importance of the workplace setting, the specific importance as an access route to target groups, and implementation aspects. Regarding the additional characteristics of the reviews, the selection of primary studies was restricted to a specific region in 2 of the 17 reviews in advance. Three reviews restricted the target group (sedentary workers, women, desk-based workers), while eleven reviews included working adults in general and, three reviews gave no information about the target group. Eleven intervention approaches of the reviews were behaviorally oriented, two focused solely on environmental interventions, and four reviews can be attributed to a combined approach considering behavioral and environmental interventions. **Conclusions:** For sustainable future developments, the present results indicate a strong need for conceptual consolidation of WHP in the research field of PA interventions. Therefore, both WHP and health-related PA interventions need to take a comprehensive approach comprising behavioral and environmental interventions.

Schaller et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: Behavioral approach; environmental approach; physical activity; systematic review; workplace health promotion.

Evidence Level: 6A

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1353119/full>

Mood profile in men and women of all ages is improved by leisure-time physical activity rather than work-related physical activity.

Background: The aim of our study was to determine how six mood indicators (vigor, fatigue, depression, anger, confusion, tension) depend on moderate to vigorous physical activity, walking time and sedentary time at work, after working hours and during leisure time, in men and women of different age groups.

Methods: A total of 1,140 individuals aged 18 to 64 years participated in the study. The participants were enrolled in this cross-sectional survey using a snowball sampling method. An online questionnaire was shared through popular social networks and emails within the period October 2019 to June 2020. Mood

responses were assessed using The Brunel Mood Scale-LTU. Physical activity was assessed using the long International Physical Activity Questionnaire. Descriptive analysis, a two-way analysis of variance, and linear regression analysis were used to interpret the data. **Results:** The survey results showed that vigour and fatigue correlated significantly only with leisure-time moderate to vigorous physical activity. The present results show a significant positive correlation between women and men moods and leisure-time moderate to vigorous physical activity, the length of time walking to work and back home, and negative correlation between moods and leisure-time sedentary behaviour. However, there was no significant correlation between moods and work-related moderate to vigorous physical activity and household moderate to vigorous physical activity, walking at work, and sitting duration at work. **Conclusions:** This study provides theoretical implications of the physical activity paradox, justifying the benefits of moderate to vigorous physical activity practiced in different circumstances. According to the regression analysis, exercising men in all age groups moved the most (had a higher moderate to vigorous physical activity level) during leisure time, the highest work-related moderate to vigorous physical activity was observed in men and women with lower education, and the highest household moderate to vigorous physical activity was observed in older age men and women living in rural areas. Clinicians and leaders at all levels of health care should consider the greater importance of leisure-time physical activity for mental health when choosing the most targeted physical activity recommendations for mood profile improvement in men and women of different age groups.

Skurvydas et al. 2024.

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

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Keywords: Fatigue; household; leisure-time; mood; occupational; physical activity; vigor; work-related.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17806-5>

Musculoskeletal Health

This month we explore Musculoskeletal Health issues including musculoskeletal pain among high-speed boat operators, schoolteachers, hospital cleaners, and agricultural workers. in-hospital complications of work-related musculoskeletal injuries and the relationship between work-related musculoskeletal disorders and occupational stress in construction workers and firefighters.

Systematic review of injuries and chronic musculoskeletal pain among high-speed boat operators.

Background: High-speed boat operators constitute a population at risk of work-related injuries and disabilities. This review aimed to summarize the available knowledge on workplace-related injuries and chronic musculoskeletal pain among high-speed boat operators. **Methods:** In this systematic review, we searched Medline, Embase, Scopus, and the Cochrane Library Database for studies, published from 1980 to 2022, on occupational health and hazards onboard high-speed boats. Studies and reports were eligible for inclusion if they evaluated, compared, used, or described harms associated with impact exposure onboard high-speed boats. Studies focusing on recreational injuries and operators of non-planning boats were excluded. The primary outcome of interest was the incidence of acute injuries. The secondary outcome measures comprised the presence of chronic musculoskeletal disorders, pain medication use, and days off work. **Results:** Of the 163 search results, 5 (2 prospective longitudinal and 3 cross-sectional cohort studies) were included in this systematic review. A total of 804 cases with 3,312 injuries sustained during 3,467 person-years onboard high-speed boats were included in the synthesis of the results. The pooled incidence rate was 1.0 per person-year. The most common injuries were related to the lower back (26%), followed by neck (16%) and head (12%) injuries. The pooled prevalence of chronic pain was 74% (95% CI: 73-75%) and 60% (95% CI: 59-62%) of the cohort consumed analgesics. **Conclusions:** Despite very limited data, this review found evidence that high-speed boat operators have a higher rate of injuries and a higher prevalence of chronic pain than other naval service operators and the general workforce. Given the low certainty of these findings, further prospective research is required to verify the injury incidence and chronic pain prevalence among high-speed boat operators.

Ullman et al. 2024.

Military Medicine, vol. 189, no. 3-4.

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

Keywords: Injuries; chronic musculoskeletal pain; high-speed boat operators.

Evidence Level: 1A

Link: <https://academic.oup.com/milmed/article/189/3-4/e573/7313444?login=false>

Work-related musculoskeletal disorders among United Arab Emirates schoolteachers: An examination of physical activity.

Background: To estimate the prevalence of work-related musculoskeletal disorders and their association with physical activity among schoolteachers in the United Arab Emirates. **Methods:** This observational cross-sectional study involved 209 schoolteachers (aged 20-60) with a minimum of two years of experience. Data, including demographics (gender, age), Nordic Musculoskeletal Questionnaire (NMQ) for WMSD prevalence and pain sites, and Global Physical Activity Questionnaire (GPAQ) for physical activity levels, were collected. Six schools were visited for data collection, with consent from school heads and participants. Schedules were tailored to participant availability, allowing up to three attempts for participation. Non-respondents were identified after three unsuccessful attempts. **Results:** Of the total 206 participants, 149 were female, while the remaining 57 were male. Age distribution analysis revealed that 18% of individuals were within the 20 to 30 years range, 26.2% fell within the 30 to 40 years, and 36.9% had 40 to 50 years age brackets. The responses were obtained in Arabic (90%) and English (10%). The study identified a high prevalence (71.4%) of work-related musculoskeletal disorders (WMSD) in UAE schoolteachers, with neck pain being the most common (74.3%). Major risk factors included age, workload, and low physical activity. The data was normally distributed, and Pearson's Correlation test revealed weak positive correlation ($r: 0.14$), but statistically significant (p value = 0.04) between WMSD and PA, indicating that it was a contributing factor but other factors beyond PA influenced WMSD prevalence in this cohort. The findings of the study are based on certain limitations such as cross-sectional design and convenient sampling which could have potential selection bias and affect generalizability of the results.

Conclusions: Findings suggest the need to promote physical activity and reduce workload for teachers, considering their age and gender. Additionally, there is a need to raise awareness regarding ergonomics and the importance of taking short breaks for stretching or physical movement to enhance the overall well-being of schoolteachers in the UAE and similar contexts. Diverse prevalence rates across different body areas underscore the necessity for individualized treatments.

Zohair et al. 2024.

BMC Musculoskeletal Disorders, vol. 25, no. 1.

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Keywords: Physical activity; prevalence; schoolteachers; united arab emirates; work related musculoskeletal disorders.

Evidence Level: 4B

Link: <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-024-07256-w>

In-hospital complications of work-related musculoskeletal injuries.

Background: Work-related musculoskeletal (MSK) injuries are a major contributor to morbidity worldwide and frequently result in hospitalisation. Hospital complications are common, costly, and largely preventable, but relevant data is required to address this. This study aimed to identify the incidence and factors associated with in-hospital complications of work-related MSK injuries. **Methods:** This study is based on work-related MSK hospital admission data from Victorian Admitted Episodes Database, 2016-2022. Complications were identified based on ICD-10-AM coding using CHADx (Classification of Hospital Acquired Diagnoses). Negative binomial and logistic regression analyses were performed to identify factors related to in-hospital complications. **Results:** In-hospital complications occurred in 6.3 % of work-related MSK injury admissions. In the adjusted models, ages ≥ 45 years, female sex, and area-level disadvantage were associated with in-hospital complications. Stay at public (vs private) hospitals, comorbidity, emergency admissions, and general anaesthesia were also associated. Complication rates were higher in hospitalised workers with direct head, neck, and trunk injuries and cumulative MSK disorders than those

with direct extremities injuries and acute MSK conditions. The most common complications were cardiovascular, gastrointestinal complications and adverse drug events. **Conclusions:** This study identified patient, injury and hospital-related characteristics associated with in-hospital complications of work-related MSK injuries for informing prevention strategies and risk estimation by hospital staff and workers' compensation schemes. The results demonstrate a sizable rate of complications given the relatively young and healthy study population.

Wah et al. 2024.

Injury, vol. 55, no. 2.

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Keywords: In-hospital complications; work-related musculoskeletal injuries

Evidence Level: 4A

Link: [https://www.injuryjournal.com/article/S0020-1383\(23\)00928-2/fulltext](https://www.injuryjournal.com/article/S0020-1383(23)00928-2/fulltext)

Musculoskeletal disorders and its associated factors among hospital cleaners in Addis Ababa, Ethiopia.

Background: There is a paucity of published evidence about musculoskeletal disorders among hospital cleaners in Ethiopia. **Methods:** Therefore, this study was conducted to assess the prevalence of musculoskeletal disorders and its associated factors among hospital cleaners in Addis Ababa, Ethiopia. A total of 437 hospital cleaners participated in the study. A standardized questionnaire adapted from the Nordic musculoskeletal questionnaire was used for data collection. Bivariate and multivariable logistic regression analyses were used to determine factors associated with musculoskeletal disorders. **Results:** The prevalence of work-related musculoskeletal disorders among hospital cleaners was 57.2% with 95% CI (52.6-62.0). Occupational safety training [AOR: 2.34, 95% CI (1.47-3.73)], repetitive tasks [AOR: 3.09, 95% CI (1.61-5.94)], heavy lifting [AOR: 5.21, 95% CI (3.20-8.48)], work-related stress [AOR: 2.42, 95% CI (1.48-3.97)] and work-related dissatisfaction [AOR: 1.97, 95% CI (1.23-3.13)] were identified as associated factors for the development of musculoskeletal disorders. **Conclusions:** In conclusion the study revealed a high prevalence of musculoskeletal disorder. Notably, work related and organizational factors emerged as key contributing factors to the development of disorders. The identified associations underscore the importance of targeted interventions promoting organizational change involving managers to mitigate the risk of musculoskeletal disorders and enhance overall occupational health and well-being.

Afewerk et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Musculoskeletal disorders; hospital cleaners; Ethiopia.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-53531-0>

The moderating effect of work-related musculoskeletal disorders in relation to occupational stress and health-related quality of life of construction workers: A cross-sectional research.

Background: This study aimed to investigate work-related musculoskeletal disorders (WMSDs), occupational stress, and health-related quality of life (HRQoL); identify the factors that affect HRQoL; and investigate the moderating effects of WMSDs on occupational stress and HRQoL. **Methods:** The participants were construction workers who had worked in the construction industry for over three months. A total of 178 construction workers voluntarily participated and anonymously completed the musculoskeletal symptoms questionnaire, the Korean Occupational Stress Scale, short-form 36. The moderation effect of WMSDs on occupational stress and HRQoL were analysed by Haye's Process Macro Model. **Results:** The results of the study showed that 96 subjects (53.9%) had WMSDs, and the most common pain site was the lower back (33.3%). The group with WMSDs had higher occupational stress than did the group without WMSDs ($p < 0.01$). Compared with the group without WMSDs, the group with WMSDs displayed significant differences in HRQoL ($p < 0.001$). Furthermore, the factor affecting HRQoL was WMSDs ($p < 0.001$). In the impact of occupational stress on HRQoL, WMSDs had a significant moderating effect ($p < 0.001$). **Conclusions:** The results of this study indicate that construction workers' WMSDs significantly impact occupational stress and HRQoL, and WMSDs have a significant moderating effect on the relationship between occupational stress and HRQoL. Therefore, to improve the HRQoL of

workers in the construction industry, it is necessary to develop methods to reduce occupational stress and prevent and treat WMSDs.

Jeong et al. 2024.

BMC Musculoskeletal Disorders, vol. 25, no. 1.

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Keywords: Construction workers; health-related quality of life; occupational stress; work-related musculoskeletal disorder.

Evidence Level: 4B

Link: <https://bmcmusculoskeletaldisord.biomedcentral.com/articles/10.1186/s12891-024-07216-4>

Musculoskeletal disorders and pain in agricultural workers in Low- and Middle-Income Countries: A systematic review and meta-analysis.

Background: Agricultural workers constitute two-thirds of the population of Low- and Middle-Income Countries (LMIC) and are at increased risk of developing musculoskeletal disorders (MSD) due to high-risk activities. This systematic review and meta-analysis aim to synthesise the prevalence, predictors, and outcomes of musculoskeletal pain amongst agricultural workers to identify priority areas for prevention and development of early interventions. **Methods:** This systematic review and meta-analysis included Studies published from the inception of global electronic databases until 30 September 2022 were included. Prevalence estimates for MSDs among agricultural workers aged over 18 years in LMIC were extracted. **Results:** Narrative synthesis summarized study findings and pooled estimates for 12-month pain prevalence were calculated. 7502 potential studies were identified. 64 studies (68,684 participants from 23 countries) were included in the systematic review; 33 studies were included in the meta-analysis. Low back pain was the most widely investigated symptom. The 12-month pooled prevalence of low back pain was highest in Africa [61.96% (45.69-76.22)] compared to Asia [54.16% (47.76-60.50)] and South/Central America [28.52%(10.91-50.33)]. Narrative synthesis found associations between MSDs, particular activities including heavy lifting and repetitive movements, and outcomes including reduced productivity.

Conclusions: MSDs are common in agriculture workers in LMIC. Global prevalence of low back pain in farmers, particularly in Africa, is greater than in previously reported global prevalence in the general population. This may be attributed to environmental factors and high-risk activities which could be targeted for prevention and early intervention strategies to support individuals, prevent disability, and reduce loss of productivity.

Shivakumar et al. 2024.

Rheumatology International, vol. 44, no. 2.

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Keywords: Agricultural workers; farmers; low back pain; low- and middle-income countries; musculoskeletal diseases.

Evidence Level: 1A

Link: <https://link.springer.com/article/10.1007/s00296-023-05500-5>

Occupational stress and musculoskeletal disorders in firefighters: The mediating effect of depression and job burnout.

Background: The firefighting profession carries a heightened risk of musculoskeletal disorders. A firefighter's job is physically demanding and includes activities such as running, climbing, dragging, and lifting. Often, these tasks are unpredictable, performed in harsh environments, and have been found to cause psychological stress. The purpose of this study was to investigate the effects of occupational stress on work-related musculoskeletal disorders (WRMSD) in firefighters. In addition, the mediating effects of depression and job burnout on proposed relationships were examined. **Methods:** Data informing this study were collected using a survey questionnaire. The survey questionnaire included the Beck Depression Inventory, the Center for Epidemiological Studies Depression Scale (CES-D), the Maslach Burnout Inventory, the Post Traumatic Stress Disorder Inventory (PCL), and the Nordic Musculoskeletal Questionnaire. Collected data were analyzed using structural equation modeling approach in AMOS. **Results:** The results of the 2339 responding firefighters suggest that work related stress is positively related to WRMSDs in firefighters and can lead to musculoskeletal symptoms through four paths, being emotional exhaustion,

personal accomplishment, CES-D total score, and depersonalization. Through depersonalization, job stress had the most significant impact on musculoskeletal symptoms (coefficient = 0.053). Furthermore, the results showed that post-traumatic stress disorders (PTSD) can affect musculoskeletal symptoms through ten paths, again through depersonalization, PTSD had the most significant impact on musculoskeletal symptoms (coefficient = 0.141). **Conclusions:** The results of this study suggest that organizations should design interventions and policies to prevent and manage occupational stress, depression, and job burnout to negate its undesired consequences on firefighters' health (i.e. WRMSD).

Khoshakhlagh et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Burnout; depression; firefighters; job stress; PTSD; work-related musculoskeletal disorders.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-55468-w>

Relationships between job stress, post-traumatic stress and musculoskeletal symptoms in firefighters and the role of job burnout and depression mediators: A Bayesian network model.

Background: Job stress, post-traumatic stress disorder (PTSD), and negative psychological outcomes in firefighters can be caused, or aggravated, by their work. These mental disorders can impart musculoskeletal symptoms. This study aimed to investigate relationships between musculoskeletal and psychological disorders in a population of firefighters using a Bayesian network model. **Methods:** This cross-sectional study, conducted in 2022, included 2339 firefighters who completed questionnaires during their rest periods. The questionnaires comprised of demographical information, the Occupational Stress Questionnaire-HSE, the PTSD Checklist, Maslach Burnout Inventory, Centre for Epidemiologic Studies - Depression scale (CES-D), and Nordic Musculoskeletal Questionnaire. GeNIe academic software was used to analyse the Bayesian network. **Results:** High job stress and high PTSD each increased the probability of musculoskeletal symptoms by 34%. When combined, high job stress and high PTSD increased the probability of musculoskeletal symptoms by 37%. Among the mediator's burnout and depression, depression had the highest association with musculoskeletal symptoms. **Conclusions:** Job stress and PTSD can increase musculoskeletal symptoms and are influenced by psychological mediators (like burnout and depression). Adopting preventive and therapeutic measures to mitigate job stress and PTSD, mitigate and rehabilitate WMSD, and manage associated mediators are critical for the mental and physical health of firefighters.

Khoshakhlagh et al. 2024.

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

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Keywords: First responder; job stress; musculoskeletal injury; PTSD.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17911-5>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

This month we explore Mental Health issues including challenges from a problem-solving intervention with workplace involvement in employees with common mental disorders, characteristics of mental disorders among information technology workers, prevalence of occupational moral injury and post-traumatic embitterment disorder and the relationship between decent work and burnout.

Ethical challenges from a problem-solving intervention with workplace involvement: A qualitative study among employees with common mental disorders, first-line managers, and rehabilitation coordinators.

Background: This study aims to explore ethical challenges potentially arising from a problem-solving intervention with workplace involvement (PSI-WPI) in primary health care (with first-line manager involvement) for employees on sickness absence due to common mental disorders. **Methods:** A qualitative

design guided by the theoretical framework for systematic identification of ethical aspects of healthcare technologies. Semi-structured interviews were performed with coordinators ($n = 6$), employees ($n = 13$), and first-line managers ($n = 8$). Reflexive thematic analysis was used to analyse and interpret themes.

Results: A main theme was identified "the workplace and healthcare hold different organizational value logics" and four sub-themes: "the PSI-WPI challenged the organizational goals and values of the workplace and healthcare", "the PSI-WPI challenged organizational values on fairness", "the PSI-WPI challenged the professional roles of first-line managers and rehabilitation coordinators" and "the PSI-WPI introduced a need for the employee to juggle the employee and patient roles". **Conclusions:** Different organizational value logics, values, and goals can introduce ethical challenges. We advise clarifying stakeholders' roles and preparing employees and managers for the return to work process by providing sufficient information. The ethical challenges and suggested measures to minimize them, should be considered when planning return to work interventions that involve several stakeholders.

Karlsson et al. 2024.

International Journal of Qualitative Studies on Health and Well-being, vol. 19, no. 1.

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Keywords: Problem-solving; adjustment disorder; anxiety; common mental disorders; depression; ethical challenges; sickness absence; work-directed interventions.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10851822/>

Characteristics of mental disorders among information technology workers in 238 compensated cases in Japan.

Background: This study aimed to investigate the circumstances, characteristics, and background factors of mental disorders within the information technology (IT) industry, which is known for the frequent occurrence of mental disorders from overwork and poor psychosocial work environment. **Methods:** The study analyzed 238 cases of mental disorders and suicides in the IT industry from fiscal years 2010 to 2018 on the database constructed by the Japan Research Center for Overwork-Related Disorders. **Results:** The results showed a higher number of cases among men ($n=178$, 74.8%) and an increasing number among women. The data for diagnosis of mental diseases indicated a high number of depressive episodes (150 cases, 63.0%). Regarding work-induced psychological burden, 37 cases (15.5%) reported "extremely long working hours" for "special events" and 65 cases (27.3%) reported "constantly long working hours". For "specific events", 87 cases (36.6%) reportedly "caused (major) changes in the content and amount of work". Among women, 13 cases (21.7%) of "sexual harassment" (SH), which showed an increasing trend. Therefore, in the IT industry, the working hours must be properly managed. **Conclusions:** Mental health measures should also accompany improved psychosocial environment in the workplace, and prohibition of SH at work in particular.

Takahashi et al. 2024.

Industrial Health, vol. 62, no. 1.

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Keywords: Information technology (IT) industry; mental disorders; mental health; psychology; sexual harassment.

Evidence Level: 4B

Link: https://www.jstage.jst.go.jp/article/indhealth/62/1/62_2022-0197/article

Prevalence of occupational moral injury and post-traumatic embitterment disorder: A systematic review and meta-analysis.

Background: Occupational moral injury and post-traumatic embitterment disorder (PTED) describe the psychological distress caused by exposure to injustice at work. This meta-analysis aims to determine the prevalence of occupational moral injury and PTED and establish whether prevalence estimates differ depending on occupation. **Methods:** Design: A systematic review and meta-analysis. Data sources: Google Scholar, PubMed, APA PsycINFO, Web of Science Core Collection, Scopus, ScienceDirect and Sage Journals Online were searched in June 2020 and updated in November 2022. Eligibility criteria for selecting

studies: Observational studies that measured prevalence or average scores of moral injury, or PTED in any occupational group and any geographical location. Data extraction and synthesis: Two independent reviewers screened and coded eligible studies. Study design, participant demographics, sampling method, location, measurement tool and prevalence or average scores were extracted. Risk of bias was assessed using the Quality Assessment Checklist for Prevalence Studies tool. Meta-analysis was conducted using random effects models. Results that could not be combined were summarised qualitatively in a narrative synthesis using the Guidance for Systematic Reviews. **Results:** In total, 88 studies across armed forces and veterans, healthcare, first responders, educators, journalists, child protection service employees, the unemployed, public-sector employees and mixed occupations were included. Studies included in each separate meta-analysis based on the measure used ranged from 2 to 30. The pooled prevalence of clinically relevant moral injury in healthcare professionals was 45%, and exposure to any potentially morally injurious event (PMIE) across occupations was 67%. Exposure to transgressions by others and betrayal was significantly lower in the armed forces than civilian occupations. Pooled prevalence of PTED across occupations was 26%. **Conclusions:** Exposure to PMIEs, moral injury symptoms and PTED are prevalent at work and exposure to transgressions by others and betrayal are more likely in civilian occupations than the armed forces.

Brennan et al. 2024.

BMJ Open, vol. 14, no. 2.

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Keywords: Epidemiology; mental health; occupational & industrial medicine; psychiatry; systematic review.

Evidence Level: 1A

Link: <https://bmjopen.bmj.com/content/14/2/e071776.long>

Decent work and burnout: A profile study with academic personnel.

Background: This research explores the relationship between Decent Work (DW) and Burnout in Portuguese and Brazilian academic personnel. We focus on identifying profiles resulting from the relationship between these variables. **Methods:** Seven hundred twenty-seven participants composed the sample (Portuguese = 334; Brazilian = 393), and data were collected online using the Decent Work Questionnaire (DWQ) and the Personal Burnout subscale from the Copenhagen Burnout Inventory (CBI). **Results:** Results of multiple linear regressions showed that two DW dimensions were significant and negatively related to Burnout: Fundamental Principles and Values at Work and Adequate Working Time and Workload. We found four profiles by performing a cluster analysis: Low Decent Work; High Decent Work; and two other profiles with DW deficit in at least one DW dimension: Low Fundamental Principles and Values at Work and Low Adequate working time and workload. Moreover, 71% of the total sample showed some decent work deficit. Differences between Burnout and the DW dimensions were analyzed through a MANOVA. **Conclusions:** In our sample, considering the broad dimensions of DW, Burnout seems to be mainly dependent on the deficit of aspects related to the quality of treatment and interpersonal relationships at work (e.g., perceptions of fairness, participation, non-discrimination) as well as the balance of the workload and the adequacy of the working hours. Interventions aiming at improvements must focus on those two dimensions.

Dinis et al. 2024.

Psychological Reports, vol. 127, no. 1.

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Keywords: Academic personnel; cluster analysis; decent work; organizational and personnel psychology; personal burnout; work.

Evidence Level: 4B

Link: <https://journals.sagepub.com/doi/full/10.1177/00332941221100454>

Bullying, Harassment and Occupational Violence

This month we explore Bullying, Harassment and Occupational Violence issues including the impact of workplace violence on job burnout, workplace ostracism, assessing and measuring workplace violence.

The impact of workplace violence on job burnout among Chinese correctional officers: The chain mediating effects of stress and insomnia

Background: The risk of workplace violence and job burnout among Chinese correctional officers is high. Stress and insomnia may influence the relationship between workplace violence and job burnout; however, this influence has been rarely studied. This study aimed to explore the effect of workplace violence on job burnout among Chinese correctional officers and to assess the contribution of stress and insomnia to this effect. **Methods:** In this study, the workplace violence scale, the Assens insomnia scale, the 21-item Depression Anxiety Stress Scale, and the Maslach Burnout Inventory-General Survey scale were used to assess the workplace violence, insomnia, stress, and job burnout experienced by the 472 correctional officers, respectively. **Results:** The results showed that (1) workplace violence was significantly and positively predictive of job burnout, (2) workplace violence affected job burnout through the mediation of stress, (3) workplace violence affected job burnout through the mediation of insomnia, and (4) stress and insomnia played fully interlocking mediating roles in the effect of workplace violence on job burnout. **Conclusions:** Stress and insomnia may play a full mediating role in the relationship between workplace violence and job burnout. This suggested that correctional officers may take measures to reduce stress and improve insomnia, thereby reducing their job burnout. Further research may focus on the development of effective interventions to reduce stress and improve insomnia among correctional officers.

Wang et al. 2024.

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

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Keywords: Correctional officers; insomnia; job burnout; stress; workplace violence.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18048-1>

Paradox mindset as an equalizer: A moderated mediated perspective on workplace ostracism.

Background: Incorporating the conservation of resources theory as a comprehensive framework, this study investigates a cohesive conceptual model analyzing the impact of workplace ostracism on employees' innovative work behavior (IWB). The investigation further delves into the mediating influence of perceived control and the moderating roles of paradox mindset and support for innovation. **Methods:** Data collection employed a survey approach involving three-time lags through questionnaires administered to 513 employees within Pakistan's public sector organizations. The hypothesized relationships were evaluated using conditional process modeling. **Results:** Our research sheds light on how perceived control mitigates the negative impact of ostracism. The paradox mindset is identified as a key moderator influencing cognitive resources and navigating ostracism. **Conclusions:** Support for innovation enhances the link between perceived control and innovative work behavior. In addition, limitations, future research directions, and implications of our findings for fostering creative workplaces are also discussed.

Ahmad et al. 2024.

PLoS One, vol. 19, no. 2.

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Keywords: Workplace ostracism; employees; paradox mindset.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0294163>

Identifying quality indicators to measure workplace violence in healthcare settings: A rapid review.

Background: Workplace violence (WPV) in healthcare is a growing challenge posing significant risks to patient care and employee well-being. Existing metrics to measure WPV in healthcare settings often fail to provide decision-makers with an adequate reflection of WPV due to the complexity of the issue. This

increases the difficulty for decision-makers to evaluate WPV in healthcare settings and implement interventions that can produce sustained improvements. **Objective:** This study aims to identify and compile a list of quality indicators that have previously been utilized to measure WPV in healthcare settings. The identified quality indicators serve as tools, providing leadership with the necessary information on the state of WPV within their organization or the impact of WPV prevention interventions. This information provides leadership with a foundation for planning and decision making related to addressing WPV. **Methods:** Ovid databases were used to identify articles relevant to violence in healthcare settings, from which 43 publications were included for data extraction. Data extraction produced a total of 229 quality indicators that were sorted into three indicator categories using the Donabedian model: structure, process, and outcome. **Results:** A majority of the articles (93%) contained at least 1 quality indicator that possessed the potential to be operationalized at an organizational level. In addition, several articles (40%) contained valuable questionnaires or survey instruments for measuring WPV. In total, the rapid review process identified 84 structural quality indicators, 121 process quality indicators, 24 outcome quality indicators, 57 survey-type questions and 17 survey instruments. **Conclusions:** This study provides a foundation for healthcare organizations to address WPV through systematic approaches informed by quality indicators. The utilization of indicators showed promise for characterizing WPV and measuring the efficacy of interventions. Caution must be exercised to ensure indicators are not discriminatory and are suited to specific organizational needs. While the findings of this review are promising, further investigation is needed to rigorously evaluate existing literature to expand the list of quality indicators for WPV.

Lyver et al. 2024.

BMC Emergency Medicine, vol. 24, no. 1.

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Keywords: Emergency department; pandemic recovery; quality improvement; quality indicators; workplace violence in health care.

Evidence Level: 6A

Link: <https://bmcemergmed.biomedcentral.com/articles/10.1186/s12873-024-00943-w>

Assessing workplace violence: Methodological considerations.

Background: The risk of violence is present in all workplaces. It must be accurately assessed to establish prevention and protection measures tailored to the features of each situation. The risk management process requires compliance in a sequential order: 1) risk identification, 2) quantitative risk assessment, and 3) impact assessment. Gathering workers' experiences using lists, focus groups, or participatory ergonomics groups is necessary to identify the phenomenon. For risk assessment, spontaneous reporting of events is often insufficient. It may be complemented with two methods: systematic recording of violent events that occurred in the past year during periodic medical examinations of workers and targeted surveys. **Conclusions:** The epidemiological analysis of data from individual interviews and surveys provides the phenomenon's prevalence, incidence, and evolution. Moreover, reporting the harm suffered by victims of violence allows constructing impact matrices to allocate resources where they are most needed.

Magnavita et al. 2024.

La Medicina del Lavoro, vol. 115, no. 1.

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Keywords: Workplace violence; prevention; protection.

Evidence Level: 5B

Link: <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/15186>

Psychosocial Issues

This month we explore Psychosocial Issues including analysis of occupational stress by the New Brief Job Stress Questionnaire, associations of lifestyle with burnout risk and recovery, social media use in the workplace, association of work-related psychosocial factors and day-to-day home blood pressure variation, psychosocial risks and their consequences on health and job satisfaction and psychological health and non-attachmental work in the digitalization era.

Multidimensional analysis of schoolteachers' occupational stress by the New Brief Job Stress Questionnaire: Focusing on gender differences.

Background: This study investigated teachers' occupational stress using a comprehensive job stress questionnaire, or the New Brief Job Stress Questionnaire, while considering gender differences.

Methods: A total of 1,825 elementary and junior high school teachers participated in the study. **Results:** The results revealed that female teachers significantly exhibited more psychological and physical stress reactions and perceived less job resource availability than did male teachers. Moreover, multiple regression analyses demonstrated that support from family and friends was a larger factor associated with mental health outcomes among female teachers than among male teachers. The impacts of marital status also differed between male and female teachers. Job demands were strongly associated with psychological and physical stress reactions among teachers. Meanwhile, job resources were more strongly associated with positive workplace outcomes, such as workplace engagement and social capital, than were job demands. Administrators should consider the distinctive nature of teachers' occupational stress in addition to its gender specific influence. **Conclusions:** Organizational support, such as securing teachers' autonomy, encouraging their career development, and acknowledging diversity, should be considered to foster teachers' work engagement and create a cohesive environment in the school workplace.

Tsubono et al. 2024.

Industrial Health, vol. 62, no. 1.

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Keywords: Family support; gender differences; job demands; job resources; new brief job stress questionnaire; occupational stress; teachers.

Evidence Level: 4B

Link: https://www.istage.jst.go.jp/article/indhealth/62/1/62_2023-0018/article

Associations of lifestyle with burnout risk and recovery need in Flemish secondary schoolteachers: A cross-sectional study.

Background: Teacher burnout and high recovery need are a topic of concern for educational institutions. This cross-sectional study assesses the association between lifestyle (including physical activity (PA), sedentary behavior (SB), dietary behavior and sleep), burnout risk and recovery need in 1878 secondary schoolteachers in Flanders. **Methods:** In September-October 2019, an online-questionnaire assessing burnout (i.e., emotional exhaustion, depersonalization, personal accomplishment), recovery need, PA-domains, SB-domains, dietary behavior (including fruit and vegetable intake and diet quality) and sleep during the week and the weekend was completed. Multiple linear regression models were applied.

Results: More emotional exhaustion was associated with more domestic and garden PA, work-related SB and sleep during the weekend, whereas higher scores of emotional exhaustion were associated with lower fruit intake, diet quality and less sleep during the week. More depersonalization was associated with more leisure-time PA and work-related SB and with lower fruit intake. Teachers showing more recovery need, showed more domestic and garden PA and work-related SB, but less leisure-time PA and sleep during the week. **Conclusions:** Future research should use longitudinal or experimental designs to get more insight into causality. Despite the low effect sizes, education networks and schools might benefit from promoting and facilitating a healthy lifestyle in secondary schoolteachers.

Verhavert et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Burnout risk; recovery; schoolteachers.

Evidence Level: 4B4

Link: <https://www.nature.com/articles/s41598-024-53044-w>

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

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. **Results:** Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis, this research analyzes responses from 477 high-tech employees in China. 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.

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

Evidence Level: 5B

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

Association of work-related psychosocial factors and day-to-day home blood pressure variation: The Finn-Home study.

Background: Stress, and particularly job strain, has been found to associate with ambulatory blood pressure (BP). Moreover, BP is known to vary between days. One potential over-looked factor underlying this day-to-day BP variation could be work-related psychosocial factors. Thus, we aimed to study the association between job strain, job demands, job control and day-to-day BP variation. **Methods:** The home BP of 754 regularly working participants (mean age 50.9 ± 4.8 , women 51%) of the Finn-Home Study was measured twice in the morning and twice in the evening over seven days. Average SBP and DBP were calculated for each day. Work-related psychosocial factors were measured with survey. Multivariable-adjusted generalized linear models were used for statistical analysis. **Results:** We found a greater SBP/DBP decrease between weekdays and weekend among participants with high job strain (-1.8 [95% confidence interval, 95% CI, -2.7 to -0.8]/-1.7 [95% CI, -2.3 to -1.1] mmHg) compared to participants with low job strain (-0.7 [95% CI, -1.1 to -0.2]/-0.7 [95% CI, -1.0 to -0.4] mmHg). The participants with high job demands showed a higher BP decrease between weekdays and weekend (-1.4 [95% CI, -2.0 to -0.8]/-1.3 [95% CI, -1.6 to -0.9] mmHg) than the participants with low job demands (-0.5 [95% CI, -1.1 to 0.0]/-0.6 [95% CI, -1.0 to -0.3] mmHg). We did not find BP differences regarding job control. **Conclusions:** High job strain and high job demands were associated with a greater BP reduction from weekdays to the weekend. Work-related psychosocial factors should be considered when assessing day-to-day BP variation.

Karelius et al. 2024.

Journal of Hypertension, vol. 42, no. 2.

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Keywords: Psychosocial factors; blood pressure.

Evidence Level: 4B

Link:

https://journals.lww.com/jhypertension/fulltext/2024/02000/association_of_work_related_psychosocial_factors.17.aspx

Psychosocial risks and their consequences on health and job satisfaction among Spanish police officers.

Background: Police officers are exposed to risk and violence, which makes their work highly stressful. According to the Job Demand-Resource model, the working conditions of police officers may affect their health and job satisfaction. The aims of this research were to evaluate the psychosocial factors at work in a sample of municipal police officers from the Valencian Community (Spain) to identify the prevalence of psychosocial risks and their consequences and analyse the influence of psychosocial factors (resource and demands) at work on job satisfaction and health. **Methods:** The Unidad de Investigación Psicosocial de la Conducta Organizacional (UNIPSIICO) battery was used to evaluate the prevalence and distribution of different levels of risk and their consequences in police officers (n=103). The influence of psychosocial factors (resource and demands) at work on psychosomatic disorders and job satisfaction was examined using stepwise regression analysis. **Results:** All considered variables showed moderate levels of psychosocial risk for the whole sample. As for the consequences of psychosocial risks, moderate levels of psychosomatic disorders and job satisfaction were also observed. Perceived stress levels and organizational stressors have a negative effect on health and job satisfaction. **Conclusions:** To create positive conditions for the health and well-being of police officers, real commitment is required when evaluating psychosocial risks in local police organizations and the establishment of prevention and intervention measures where psychosocial risk factors are detected.

Grau-Alberola et al. 2024.

Anales del Sistema Sanitario de Navarra, vol. 47, no. 1.

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Keywords: Psychosocial risks; health; job satisfaction.

Evidence Level: 4B

Link: <https://recyt.fecyt.es/index.php/ASSN/article/view/100787/76042>

The blessing and curse of "no strings attached": An automated literature analysis of psychological health and non-attachmental work in the digitalization era.

Background: Amidst tremendous changes in the worlds of work in light of digitalization, non-attachmental work designs, where individuals gain income without being bound by a fixed administrative attachment to an employer, hold promises of self-actualization along with threats of insecurity. Today's technology boom and the consequent flexibility and uncertainty it brings into workers' lives may translate into inspiring growth opportunities or overloading pressure, contingent upon mental health and wellbeing impacts.

Methods: This paper first provides a conceptualization of the non-attachmental work designs of the 21st century, before proceeding to an extensive mapping of literature at their intersection with psychological health. This involves a machine-learning-driven review of 1094 scientific articles using topic modeling, combined with in-depth manual content analyses and inductive-deductive cycles of pattern discovery and category building. **Results:** The resulting scholarly blueprint reveals several tendencies, including a prevalence of positive psychology concepts in research on work designs with high levels of autonomy and control, contrasted with narratives of disempowerment in service- and task-based work. We note that some psychological health issues are researched with respect to specific work designs but not others, for instance neurodiversity and the role of gender in ownership-based work, self-image and digital addiction in content-based work, and ratings-induced anxiety in platform-mediated task-based work. We also find a heavy representation of 'heroic' entrepreneurs, quantitative methods, and western contexts in addition to a surprising dearth of analyses on the roles of policy and technological interventions. **Conclusions:** The results are positioned to guide academics, decision-makers, technologists, and workers in the pursuit of healthier work designs for a more sustainable future.

Rashid et al. 2024.

PLoS One, vol. 19, no. 2.

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Keywords: Psychological health; work; digitalization.

Evidence Level: 6B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0298040>

Fostering Work Participation

Return to Work

This month we explore Return to Work including an exploration of managers' and employees' views of return-to-work after sick leave due to common mental disorders, return to work in people with chronic health conditions and persistent symptoms, functional impact, quality of life, return to work, and indirect costs 12 months after Covid-19 infection.

Navigating work and life: A qualitative exploration of managers' and employees' views of return-to-work after sick leave due to common mental disorders.

Background: Incorporating multiple perspectives and contexts in knowledge mobilisation for return-to-work after sick leave due to common mental disorders can promote interprofessional and organisational strategies for facilitating the return-to-work process. This study aimed to explore the facilitators of and barriers to return-to-work after common mental disorders. This exploration considered the perspectives of employees and managers and the realms of work and private life. **Methods:** A qualitative approach was used with data from 27 semi-structured telephone interviews. The strategic sample consisted of employees who returned to work after sick leave due to common mental disorders (n = 17) and managers responsible for their return-to-work process (n = 10). Thematic analysis conducted in a six-step process was used to generate themes in the interview data. **Results:** The analysis generated three main themes with subthemes, illustrating experiences of barriers to and facilitators of return-to-work positioned in the employees' private and work contexts: (1) Getting along: managing personal difficulties in everyday life; (2) Belonging: experiencing social connectedness and support in work and private life; and (3) Organisational support: fostering a supportive work environment. The results contribute to a comprehensive understanding of the return-to-work process, including the challenges individuals face at work and in private life. **Conclusions:** The study suggests that return-to-work after sick leave due to CMDs is a dynamic and ongoing process embedded in social, organisational, and societal environments. The results highlight avenues for an interprofessional approach and organisational learning to support employees and managers, including space for the employee to recover during the workday. Trial registration: This study recruited employees from a two-armed cluster-randomised controlled trial evaluating a problem-solving intervention for reducing sick leave among employees sick-listed due to common mental disorders (reg. NCT3346395). Trial registration: ClinicalTrials.gov NCT03346395.

Holmlund et al. 2024.

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

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Keywords: Common mental disorders; everyday life; return-to-work; work-family conflict; work-home interference; work-life balance.

Evidence Level: 5A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17765-x>

Post-COVID-19 syndrome: persistent symptoms, functional impact, quality of life, return to work, and indirect costs - A prospective case study 12 months after COVID-19 infection.

Background: The persistent symptoms of post-COVID-19 syndrome negatively impact health, quality of life, and productivity. This study aimed to describe the persistent symptoms of post-COVID-19 syndrome (especially neurological ones) and their 12-month post-infection cognitive, emotional, motor, quality of life, and indirect cost repercussions. **Methods:** Patients showing the first symptoms of COVID-19 from January to June 2021 who developed post-COVID-19 syndrome and sought care at the Fortaleza Unit (Ceará, Brazil) of the SARA Network of Rehabilitation Hospitals were included in this study. Information was obtained at the baseline follow-up and by telephone interview 12 months post-infection. **Results:** In total, 58 people participated in this study with an average age of 52.8±10.5 years, of which 60% required an ICU. The most frequent symptoms on admission included fatigue (64%), arthralgia (51%), and dyspnea (47%), whereas, after 12 months, fatigue (46%) and memory impairment (39%). The following scales/functional tests

showed alterations: PCFS, MoCA, HAD, FSS, SF-36, TLS5x, timed up and go, 6-minute walk, and handgrip. Indirect costs totaled USD 227,821.00, with 11,653 days of absenteeism. Moreover, 32% of patients were unable to return to work. Better TLS5x and higher SF-36 scores in the functional capacity, physical functioning, vitality, and pain dimensions were associated with return to work ($p \leq 0.05$). **Conclusions:** The most frequent persistent symptoms referred to fatigue, arthralgia, dyspnea, anxiety, and depression, which negatively affected cognitive, emotional, and motor function and quality of life. These symptoms lasted for over a year, especially fatigue and memory alteration, the latter of which being the most reported after COVID-19 infections. Results also show a significant difficulty returning to work and indirect costs of USD 4,847.25 per person/year.

Ida et al. 2024.

Cadernos de Saude Publica, vol. 40, no. 2.

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Keywords: COVID-19; symptoms; functional impact; quality of life; return to work; costs.

Evidence Level: 5B

Link: <https://www.scielo.br/j/csp/a/wwLTHJKnvz5qJTzdHZT4pDp/?lang=en>

A mega-ethnography of qualitative meta-syntheses on return to work in people with chronic health conditions.

Background: The aim of this study was to synthesize the findings of qualitative meta-syntheses (QMS) on return to work (RTW) of people with different chronic illnesses and to develop a generic RTW model that can provide advice on how to improve RTW interventions and strategies. **Methods:** We conducted a systematic literature search in PubMed, Epistemonikos, CENTRAL, and PsycARTICLES to find relevant QMS, published in English or German between 2000 and 2021, and adapted the meta-ethnographic approach of Noblit and Hare to synthesize their findings. **Results:** Nineteen QMS (five focusing on musculoskeletal disorders or chronic pain, four on acquired or traumatic brain injuries, four on cancer, two on mental disorders, one on spinal cord injury, and three on mixed samples) met our inclusion criteria for the meta-ethnographic synthesis. Through systematic comparison and reciprocal translation of the single QMS findings, we could identify a set of key cross-cutting themes/concepts, which formed the basis for four RTW principles and a generic RTW model. **Conclusions:** RTW is a multifactorial and highly interactive multistakeholder process, embedded in an individual's life and working history, as well as in a determined social and societal context. It runs parallel and interdependently to the process of coping with the disease and realigning one's own identity, thus emphasizing the significance of RTW for the person. Besides symptoms and consequences of the disease, individual coping strategies, and RTW motivation, the course and success of RTW are strongly affected by the adaptability of the person's working environment and the social support in their private and working life. Thus, RTW is not only a problem of the individual, but also a matter of the social environment, especially the workplace, requiring a holistic, person-centered, and systemic approach, coordinated by a designated body, which considers the interests of all actors involved in the RTW process.

Schwarz et al. 2024.

Rehabilitation, vol. 63, no. 1.

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Keywords: Return to work; chronic health conditions; chronic illness.

Evidence Level: 1A

Link: <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/a-2129-2731>

Presenteeism and Absenteeism

This month we explore Presenteeism and Absenteeism including productivity losses from short-term work absence due to neoplasms, the effect of lowering psychosocial risks on sickness absence and the sociodemographic patterning of sick leave and determinants of longer sick leave after mild and severe Covid-19.

Productivity losses from short-term work absence due to neoplasms in Poland.

Background: Previous evidence on productivity losses from neoplasms focuses mostly on the economic burden from mortality, covers single cancer diagnoses and neglects non-malignant neoplasms.

Methods: This study aims to broaden this perspective by analysing losses resulting from work absence and all neoplasm diagnoses. The analysis applies the human capital method and social insurance data to estimate productivity losses attributable to neoplasm-related short-term work absence in Poland in the period 2012-2022. **Results:** The productivity losses due to work absence attributable to all neoplasms in Poland were €583 million in 2012 (0.143% of gross domestic product) and they increased to €969 million in 2022 (0.164%). Around 60% of the losses were associated with cancers while the remaining part of the burden was due to non-malignant neoplasms. The neoplasms that led to the highest losses were benign neoplasms, breast cancer, colorectum cancer and prostate cancer. The cancer sites characterised by the greatest losses per absence episode were brain cancer, lung cancer and oesophageal cancer. For most of the neoplasms, we observed increasing losses in an 11-year period analysed. **Conclusions:** Investing in effective public health policies that tackle neoplasms has the potential to reduce both the health burden and economic losses resulting from these diseases.

Łyszczarz 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Absence; short-term; neoplasms.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-024-53878-4>

How does lowering psychosocial risks influence sickness absence? A prospective cohort study analyzed as a quasi-experiment.

Background: We examined how reducing work-related psychosocial stressors affected long-term sickness absence of younger and older employees. **Methods:** We used data from 43 843 public sector employees in Finland who participated in surveys in 2018 and 2020. We assessed psychosocial factors, such as job demands, job control, work effort, job rewards and worktime control. We obtained sickness absence data from registers for spells longer than 10 consecutive working days. We applied age-specific propensity score weighting and generalized linear models to estimate the effects of changes in psychosocial factors between 2018 and 2020 on sickness absence in 2020. **Results:** Among employees under 50 years, increasing job rewards by 1 SD reduced the risk of sickness absence by 17% [risk ratio (RR) 0.83, 95% CI 0.72-0.96]. Among employees aged 50 years or older, decreasing job demands by 1 SD reduced the risk of sickness absence by 13% (RR 0.87, 95% CI 0.78-0.98), and increasing job control by 1 SD reduced the risk by 12% (RR 0.88, 95% CI 0.76-1.01). Changes in efforts and worktime control had no significant associations with sickness absence. **Conclusions:** Reducing psychosocial stressors can lower the occurrence of long-term sickness absence, but the associations differ by age group. Younger workers benefit more from enhancing job rewards, while older workers benefit more from lowering job demands and increasing job control. To establish the causal impact of psychosocial risk reduction on sickness absence across age groups, future research should employ randomized controlled trials as the methodological approach.

Shiri et al. 2024.

European Journal of Public Health, vol. 34, no. 1.

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Keywords: Psychosocial; sickness absence; employee.

Evidence Level: 4B

Link: <https://academic.oup.com/eurpub/article/34/1/136/7457890?login=false>

The sociodemographic patterning of sick leave and determinants of longer sick leave after mild and severe COVID-19: A nationwide register-based study in Sweden.

Background: Studies on sociodemographic differences in sick leave after coronavirus disease 2019 (COVID-19) are limited and research on COVID-19 long-term health consequences has mainly addressed hospitalized individuals. The aim of this study was to investigate the social patterning of sick leave and determinants of longer sick leave after COVID-19 among mild and severe cases. **Methods:** The study population, from the Swedish multi-register observational study SCIFI-PEARL, included individuals aged 18-64 years in the Swedish population, gainfully employed, with a first positive polymerase chain reaction (PCR) test for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from 1 January 2020 until 31 August 2021 (n = 661 780). Using logistic regression models, analyses were adjusted for sociodemographic factors, vaccination, prior sick leave, comorbidities and stratified by hospitalization. **Results:** In total, 37 420 (5.7%) individuals were on sick leave due to COVID-19 in connection with their first positive COVID-19 test. Individuals on sick leave were more often women, older, had lower income and/or were born outside Sweden. These differences were similar across COVID-19 pandemic phases. The highest proportion of sick leave was seen in the oldest age group (10.3%) with an odds ratio of 4.32 (95% confidence interval 4.18-4.47) compared with the youngest individuals. Among individuals hospitalized due to COVID-19, the sociodemographic pattern was less pronounced, and in some models, even reversed. The intersectional analysis revealed considerable variability in sick leave between sociodemographic groups (range: 1.5-17.0%). **Conclusions:** In the entire Swedish population of gainfully employed individuals, our findings demonstrated evident sociodemographic differences in sick leave due to COVID-19. In the hospitalized group, the social patterning was different and less pronounced.

Spetz et al. 2024.

European Journal of Public Health, vol. 34, no. 1.

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Keywords: Sick leave; COVID-19; Sweden.

Evidence Level: 4B

Link: <https://academic.oup.com/eurpub/article/34/1/121/7331116?login=false>

Wellness Programs

This month we explore Wellness Programs including the effectiveness of STAPP@Work in reducing work stress and preventing burnout, the effect of the Emory healthy kitchen collaborative on employee health habits and body weight and workplace health promotion programs targeting smoking, nutrition, physical activity, and obesity in men.

Assessing the effectiveness of STAPP@Work, a self-management mobile app, in reducing work stress and preventing burnout: Single-case experimental design study.

Background: Work-related stress and burnout remain common problems among employees, leading to impaired health and higher absenteeism. The use of mobile health apps to promote well-being has grown substantially; however, the impact of such apps on reducing stress and preventing burnout is limited. **Objective:** This study aims to assess the effectiveness of STAPP@Work, a mobile-based stress management intervention, on perceived stress, coping self-efficacy, and the level of burnout among mental health employees. **Methods:** The study used a single-case experimental design to examine the use of STAPP@Work among mental health employees without a known diagnosis of burnout (N=63). Participants used the app for 1 week per month repeatedly for a period of 6 months. Using a reversal design, the participants used the app 6 times to assess replicated immediate (1 week after use) and lasting (3 weeks after use) effects. The Perceived Stress Scale, the Coping Self-Efficacy Scale, and the Burnout Assessment Tool were used to measure the outcomes. Linear mixed models were used to analyze the data. **Results:** After 6 months of app use for 1 week per month, the participants showed a statistically significant decrease in perceived stress (b=-0.38, 95% CI -0.67 to -0.09; P=.01; Cohen d=0.50) and burnout symptoms

($b=-0.31$, 95% CI -0.51 to -0.12; $P=.002$; Cohen $d=0.63$) as well as a statistically significant improvement in problem-focused coping self-efficacy ($b=0.42$, 95% CI 0-0.85; $P=.049$; Cohen $d=0.42$). Long-term use of the app provided consistent reductions in burnout symptoms over time, including in the level of exhaustion and emotional impairment. **Conclusions:** The use of an app-based stress management intervention has been shown to reduce burnout symptoms and enhance coping self-efficacy among mental health workers. Prevention of burnout and minimization of work-related stress are of utmost importance to protect employee health and reduce absenteeism.

Demirel et al. 2024.

Journal of Medical Internet Research, vol. 26.

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Keywords: Burnout; coping; digital intervention; health promotion; mHealth; mental health; mental health professionals; mobile apps; mobile health; stress; stress management.

Evidence Level: 3B

Link: <https://www.jmir.org/2024/1/e48883>

Effect of the Emory healthy kitchen collaborative on employee health habits and body weight: A 12-month workplace wellness trial.

Background: Teaching kitchens are being used to facilitate lifestyle changes with a focus on culinary and nutrition programs to improve health behaviours. Less is known regarding their use as a worksite wellness program and their influence on employees' quality of life, body weight, and adoption of healthy behaviours. We evaluated changes in self-reported healthy behaviours, overall health, and weight during a one-year multidisciplinary teaching kitchen program. **Methods:** Thirty-eight benefits-eligible employees were recruited, screened based on a priori eligibility criteria that prioritized elevated body mass index (BMI), co-morbid conditions, and high levels of motivation to make lifestyle changes, and consented to participate in The Emory Healthy Kitchen Collaborative. This 12-month program included a 10-week didactic and experiential curriculum followed by continued support and access to health coaching implemented in an academic health system university hospital workplace between 2019 and 2020. Comparative statistics, paired t -test, McNemar's tests, and Wilcoxon signed-rank tests were used to assess changes at four time points. **Results:** Participants improved diet quality ($p \leq 0.0001$), increased confidence in tasting new foods ($p = 0.03$), and increased mindful eating habits ($p = 0.00002$). Significant changes were seen in physical activity levels; aerobic activities ($p = 0.007$), strength resistance activities ($p = 0.02$), and participation in yoga ($p = 0.002$). Most participants weighed within 5 lbs. of their starting weight at 3 months ($p = 0.57$). **Conclusions:** A teaching kitchen intervention is an innovative model for improving employee health behaviours and general health self-perception.

Bergquist et al. 2024.

Nutrients, vol. 16, no. 4.

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

Keywords: Culinary medicine; health behaviors; nutrition; teaching kitchen; worksite wellness.

Evidence Level: 3B

Link: <https://www.mdpi.com/2072-6643/16/4/517>

Workplace health promotion programs targeting smoking, nutrition, physical activity, and obesity in men: A systematic review and meta-analysis of randomized controlled trials.

Background: The workplace has been highlighted as a potential setting to deliver health promotion programs to target modifiable health behaviors that contribute to chronic disease. **Methods:** This review evaluated the effectiveness of interventions implemented within the workplace that targeted either smoking, nutrition, alcohol, physical activity, and/or overweight and obesity in men. A review protocol was prospectively registered through PROSPERO (CRD42021293398). Five electronic bibliographic databases were searched for randomized controlled trials conducted in the workplace assessing chronic disease risk factors in men from January 2010 to August 2021. **Results:** Eleven studies were included, reporting on overweight and obesity $n = 8$, physical activity $n = 7$, nutrition $n = 4$, alcohol $n = 3$, smoking $n = 3$, with eight studies assessing multiple outcomes. Results were mixed. Narrative synthesis highlighted studies reporting improvements to snacking frequency, sugar sweetened beverage consumption, and physical activity (METs

and Vo2 max). Meta-analysis highlighted pooled mean decrease in body weight of -0.28 kg up to 3 months; -1.38 kg for >3 months, and pooled mean decrease in body mass index 0.06 kg/m² up to 3 months; -0.27 kg/m² for >3 months. Despite the encouraging direction of the relationship, results were not statistically significant ($p > .05$). **Conclusions:** Findings underscore the potential of workplace health promotion programs targeting certain chronic disease risk factors in men; however, future research should consider long-term study designs to assess the efficacy of workplace health programs as a solution to the growing burden of global disease.

Bezzina et al. 2024.

Health, Education and Behavior, vol. 51, no. 1.

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Keywords: Alcohol; men; nutrition; obesity; physical activity; review; smoking; workplace.

Evidence Level: 1A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10785566/>

Job Design

This month we explore Job Design including truck drivers' attitudes toward a transition to platooning systems and the effect of feedback on behavioral focus during self-regulated computer-based work.

Qualitative data collection to identify truck drivers' attitudes toward a transition to platooning systems.

Background: The platooning technology allows for two or more trucks running in convoy at a pre-defined distance between each other, being virtually connected using connectivity technology and automated driving support systems. It is recognized that truck platooning systems bring economical and environmental advantages. Thus, it is time for a transition from the existing truck freight activity towards truck platooning systems. This requires an important improvement in terms of in-vehicle technology, together with infrastructure improvement and truck drivers' acquisition of new technology-related skills. **Methods:** A holistic approach is previewed to identify both the requirements for the development of truck platooning services and the requests for their safe deployment in the real world. Then, qualitative data were collected from truck drivers working for two different Portuguese freight companies using Focus Groups (FG). Thus, three FG sessions were organized and carried out with a total of 22 truck drivers. **Results:** Considering that age and experience on the job are important factors to take into consideration for technological changes on the job, their potential impact on truck drivers' activity was addressed on the focus group discussions. Anyway, the potential users' attitudes regarding any innovation on the job were addressed as a prevention of further negative attitudes or misuse. **Conclusions:** Having safety in mind as a permanent attitude toward on job innovation is actually the most important factor toward success.

Neta et al. 2024.

Accident Analysis & Prevention, vol. 195,

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Keywords: Automation support technology; connectivity; cooperative system (CACC); truck driver's mental representation; truck platooning.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0001457523004529?via%3Dihub>

Optimal feedback improves behavioral focus during self-regulated computer-based work.

Background: Distractions are omnipresent and can derail our attention, which is a precious and very limited resource. To achieve their goals in the face of distractions, people need to regulate their attention, thoughts, and behavior; this is known as self-regulation. How can self-regulation be supported or strengthened in ways that are relevant for everyday work and learning activities? **Methods:** To address this question, we introduce and evaluate a desktop application that helps people stay focused on their work and train self-regulation at the same time. **Results:** Our application lets the user set a goal for what they want to do during a defined period of focused work at their computer, then gives negative feedback when

they get distracted, and positive feedback when they reorient their attention towards their goal. After this so-called focus session, the user receives overall feedback on how well they focused on their goal relative to previous sessions. While existing approaches to attention training often use artificial tasks, our approach transforms real-life challenges into opportunities for building strong attention control skills. **Conclusions:** Our results indicate that optimal attentional feedback can generate large increases in behavioral focus, task motivation, and self-control-benefitting users to successfully achieve their long-term goals.

Wirzberger et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Feedback; behavioral focus; computer-based work.

Evidence Level: 6B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10850098/>

Shift Work

Circadian adaptation of melatonin and cortisol in police officers working rotating shifts.

Background: Misalignment of behavior and circadian rhythms due to night work can impair sleep and waking function. While both simulated and field-based studies suggest that circadian adaptation to a nocturnal schedule is slow, the rates of adaptation in real-world shift-work conditions are still largely unknown. **Methods:** The aim of this study was to evaluate the extent of adaptation of 24-h rhythms with 6-sulfatoxymelatonin (aMT6s) and cortisol in police officers working rotating shifts, with a special attention to night shifts. A total of 76 police officers (20 women; aged 32 ± 5.4 years, mean \pm SD) from the province of Quebec, Canada, participated in a field study during their 28- or 35-day work cycle. Urine samples were collected for ~ 32 h before a series of day, evening, and night shifts to assess circadian phase.

Results: Before day, evening, and night shifts, 60%-89% of officers were adapted to a day schedule based on aMT6 rhythms, and 71%-78% were adapted based on cortisol rhythms. To further quantify the rate of circadian adaptation to night shifts, initial and final phases were determined in a subset of 37 officers with suitable rhythms for both hormones before and after 3-8 consecutive shifts (median = 7). Data were analyzed with circular and linear mixed-effects models. After night shifts, 30% and 24% of officers were adapted to a night-oriented schedule for aMT6s and cortisol, respectively. Significantly larger phase-delay shifts (aMT6s: -7.3 ± 0.9 h; cortisol: -6.3 ± 0.8 h) were observed in police officers who adapted to night shifts than in non-adapted officers (aMT6s: 0.8 ± 0.9 h; cortisol: 0.2 ± 1.1 h). **Conclusions:** Consistent with prior research, our results from both urinary aMT6s and cortisol midpoints indicate that a large proportion of police officers remained in a state of circadian misalignment following a series of night shifts in dim-light working environments.

Kosmadopoulos et al. 2024.

Journal of Biological Rhythms, vol. 39, no. 1.

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Keywords: Circadian adaptation; circadian misalignment; cortisol; melatonin; shift work.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10785562/>

Management and Leadership

This month we explore Management and Leadership including the role of leadership in remote work during the Covid-19 pandemic and the significance of managers' knowledge of common mental disorders on managerial stigma towards employee depression.

"The magic triangle between bed, office, couch": A qualitative exploration of job demands, resources, coping, and the role of leadership in remote work during the COVID-19 pandemic.

Background: The COVID-19 pandemic has necessitated many employees to work from home with immediate effect for several months, regardless of their workplace preference or situation at home. Against this backdrop, this study explores perceived job demands and resources as well as the role of leadership and coping strategies of employees and managers with little or no prior experience with working from home in the altered work environment. **Methods:** Based on the job demands-resources model, we developed an interview guide and conducted thirty-four semi-structured interviews. The interviews were transcribed and analyzed deductively-inductively using qualitative content analysis. **Results:** Experienced job demands include, e.g., challenging, insufficient digital communication, and lack of social exchange, while greater flexibility and work-life balance were identified as valuable resources. Regarding the role of leadership, signaling trust, keeping regular contact, and supporting employees are important. To cope with the unforeseen yet persistent work situation, participants applied creative strategies by setting up offices at home with what they had at disposal. Differences were observed between employee and managerial perceptions as well as over time during the pandemic. **Conclusions:** The results expand our knowledge about healthy remote work by adding specific demands, resources, and coping strategies employees and managers experienced during the extreme situation of the COVID-19 pandemic to the picture as well as specifying the role of leadership. Moreover, our findings provide a foundation for guidelines for healthy remote work design and collaboration in times of abrupt change and crises.

Rohwer et al. 2024.

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

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Keywords: Coping; Coronavirus; interview study; job demands; leadership; qualitative analysis; remote work; resources; work from home.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17995-z>

The significance of managers' knowledge of common mental disorders on managerial stigma towards employee depression: A cross-sectional study in Sweden.

Background: Common mental disorders (CMD) such as depression, anxiety and stress-related disorders have increased in the working-age population in many countries but are still often associated with social stigma in workplaces. Managers have a key role in supporting employees with impaired health. Identifying factors that can improve stigmatizing attitudes among managers towards CMD is crucial. The aim of this study was to investigate managers' knowledge of CMD on managerial stigma; more specifically knowledge acquired through training and education and through occupational and personal experience of CMD on low managerial stigma towards employee depression. **Methods:** Data from a web-based survey conducted in 2017 among 3038 managers in Sweden were used. Managers' attitudes towards employee depression were measured using the Swedish version of the Managerial Stigma towards Employee Depression questionnaire. Binary logistic regression analysis, with adjustments for work setting and managerial experience, was conducted for associations between sources of knowledge of CMD and low managerial stigma. **Results:** With regard to knowledge acquired through training, medical training on CMD was significantly associated with a higher probability for low managerial stigma towards employee depression after adjustments (odds ratio [OR], 1.95; 95% confidence interval [CI], 1.26-3.01), whereas no significant associations were found between knowledge acquired through managerial training on CMD or level of formal education and low managerial stigma. With regard to knowledge acquired through professional and personal experience, occupational experience of treating people with CMD was significantly associated with a higher probability for low managerial stigma (OR, 2.03; 95% CI, 1.40-2.94) as was occupational

experience of employees with CMD (1 employee: OR, 1.31; 95% CI, 1.04-1.66); >1 employee, OR 1.35 (CI 1.05-1.73). Personal experience of CMD was significantly associated with low managerial stigma (OR, 1.98; 95% CI, 1.60-2.46). **Conclusions:** Managers' knowledge and understanding of CMD may increase the probability of a low level of managerial stigma towards employees with depression. Managers' professional and/or personal experiences of CMD were important sources of knowledge in relation to a low level of stigmatizing attitudes. Organizations should encourage the use of managers' experience-based knowledge of CMD in addition to training on CMD to reduce managerial stigma.

Staland-Nyman et al. 2024.

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

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Keywords: Attitudes; common mental disorders (CMD); employees; experience-based knowledge; knowledge and understanding; managerial stigma; managers; working-age population.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-17577-5>

Work Ability

This month we explore Work Ability including occupational health literacy and work ability, work ability following total hip or knee arthroplasty, pain severity, cannabis use, and benefit expenditures in work disability, psychiatric work disability evaluations and the reproducibility of work capacity estimates, seasonal comparisons of a 14-day swing on cognitive function and psycho-physiological responses, using self-concept clarity as a resource to maintain the working state of firefighters and what workers can tell us about post-Covid-19 workability.

Occupational health literacy and work ability: A moderation analysis including interpersonal and organizational factors in healthy organizations.

Background: Healthy organizations approach to occupational safety and health should holistically include individual, interpersonal, and organizational levels. There is an empirical research gap in considering different levels in organizations for health promotion in the context of maximizing work ability. This study aims to investigate the association of (1) occupational health literacy (on an individual level), (2) health-oriented leadership (interpersonal level), (3) participation possibilities in health, and (4) values of health in companies (both organizational levels) on work ability. Additionally, we examined the potentially moderating role of health-oriented leadership, participation possibilities in health, and values of health between occupational health literacy and work ability. **Methods:** Cross-sectional data were obtained from 828 employers and employees in small and medium-sized enterprises. Self-report measures included occupational health literacy, health-oriented leadership, work ability, participation possibilities in health at work, and values of health in the company. Occupational health literacy comprises two factors: a knowledge-/skill-based approach to occupational health and a willingness/responsibility for occupational health. Participation possibilities in health are measured regarding participatory opportunities and co-creation of health at work. Values of health in the company capture the importance of health in the workplace and the scope for improving employees' health. Data were analyzed using latent regression and latent moderation analyses controlling for age, gender, and educational level. **Results:** Occupational health literacy (knowledge-/skill-based), health-oriented leadership, participation possibilities in health, and values of health in companies showed positive associations with work ability. Health-oriented leadership on an interpersonal level was found to moderate the positive relationship between (knowledge-/skill-based) occupational health literacy and work ability. Participation possibilities in health on an organizational level acted as a moderator on the relationship between both occupational health literacy factors and work ability. **Conclusions:** Individual, interpersonal, and organizational factors play important roles in maintaining work ability in healthy organizations. This study highlights the importance of promoting occupational health literacy among employees and leaders, creating a healthy workplace through health-oriented leadership, and providing participatory opportunities for co-creation in health promotion at work. Future research should further explore these factors' roles in different industries and contexts and how they may be addressed effectively in tailored workplace interventions.

Friedrich et al. 2024.

Frontiers in Public Health, vol. 12.

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Keywords: Health; health promotion; health-oriented leadership; latent regression analysis; occupational health literacy; participation; values of health; work and occupation.

Evidence Level: 4B

Link: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1243138/full>

Three out of four working-age patients have fulfilled expectations towards paid employment six months after total hip or knee arthroplasty: A multicentre cohort study.

Background: To investigate factors associated with fulfilment of expectations towards paid employment after total hip/knee arthroplasty (THA/TKA). **Methods:** Cohort study including preoperatively employed patients aged 18-64 scheduled for THA/TKA. Expectations were collected preoperatively, and 6 and 12 months postoperatively with the paid employment item of the Hospital-for-Special-Surgery Expectations Surveys (back-to-normal = 1; large improvement = 2; moderate improvement = 3; slight improvement = 4; not applicable = 5). Patients scoring not applicable were excluded. Fulfilment was calculated by subtracting preoperative from postoperative scores (< 0: unfulfilled; ≥ 0: fulfilled). Multivariable logistic regression analyses were conducted separately for THA/TKA at 6 and 12 months postoperatively. **Results:** Six months postoperatively, 75% of THA patients (n = 237/n = 316) and 72% of TKA patients (n = 211/n = 294) had fulfilled expectations. Older age (TKA:OR 1.08, 95% CI 1.01-1.15) and better postoperative physical functioning (THA:OR 1.10, 95% CI 1.06-1.14; TKA:OR 1.03, 95% CI 1.01-1.06) increased the likelihood of fulfilment. Physical work tasks (THA:OR 0.12, 95% CI 0.03-0.44), preoperative sick leave (TKA:OR 0.33, 95% CI 0.17-0.65), and difficulties at work (THA:OR 0.10, 95% CI 0.03-0.35; TKA:OR 0.41, 95% CI 0.17-0.98) decreased the likelihood of fulfilment. Twelve months postoperatively similar risk factors were found. Three out of four working-age THA/TKA patients had fulfilled expectations towards paid employment at 6 months postoperatively. **Conclusions:** Preoperative factors associated with fulfilment were older age, mental work tasks, no sick leave, postoperative factors were better physical functioning, and no perceived difficulties at work.

Kamp et al. 2024.

Rheumatology International, vol. 44, no. 2.

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Keywords: Arthroplasty; hip; knee; motivation; patient satisfaction; replacement; work.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007/s00296-023-05437-9>

An observational study of pain severity, cannabis use, and benefit expenditures in work disability.

Background: This study pools two cohorts of workers in Ontario interviewed 18 months following a disabling work-related injury to estimate the association between pain severity, cannabis use, and disability benefit expenditures. **Methods:** Among 1650 workers, disability benefit expenditures obtained from administrative records were combined with self-reported measures of pain symptoms and cannabis use. Disability benefit expenditures comprised wage replacement benefits and expenditures on healthcare services. **Results:** Past-year cannabis use was reported by 31% of participants, with approximately one third of cannabis use attributed to the treatment of conditions arising from the work-related injury. Condition-related cannabis use was elevated among the 34% of participants reporting severe pain symptoms. In regression models adjusted for age, sex, nature of injury, opioid prescription, and pre-injury chronic conditions, participants reporting condition-related cannabis use had equivalent wage replacement benefit expenditures ($\beta = 0.254$, ns) and higher healthcare benefit expenditures ($\beta = 0.433$, $p = 0.012$) compared to participants who did not use cannabis. Participants reporting cannabis use unrelated to conditions arising from their work-related injury had lower wage replacement benefit expenditures ($\beta = -0.309$, $p = 0.002$) and equivalent healthcare benefit expenditures ($\beta = -0.251$, ns) compared to participants not using cannabis. **Conclusions:** This novel study of workers' compensation claimants interviewed at 18 months post-injury did not observe a substantial relationship between cannabis use and disability benefit expenditures, suggesting that neither harm nor significant benefit is associated with cannabis use. These

findings contribute to understanding the potential benefits and risks associated with cannabis use in settings that have legalized cannabis use.

Mustard et al. 2024.

Canadian Journal of Public Health, vol. 115, no. 1.

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Keywords: Cannabis; disability insurance; occupational health; pain severity; public health.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.17269/s41997-023-00821-1>

Patient-centeredness in psychiatric work disability evaluations and the reproducibility of work capacity estimates.

Background: To evaluate the extent of patient-centeredness in psychiatric work disability evaluations and its association with the reproducibility of work capacity (WC) estimates. **Methods:** In our mixed methods study, 29 video-taped interviews conducted in psychiatric work disability evaluations were coded with the Roter Interaction Analysis System (RIAS) and different measures of patient-centeredness were derived from these codings, including a summary patient-centred communication ratio. Four experts each estimated a claimant's WC on a scale from 0% to 100%. **Results:** Patient-centred communication ratios were always >1, suggesting a preponderance of psychosocial information exchange. In contrast, utterances reflecting empathy were rare e.g., the expert did not address the claimant's emotions in 25 of 29 interviews. None of the derived patient-centeredness measures showed a significant association with WC reproducibility.

Conclusions: Many of the experts' questions addressed the claimant's lifestyle and psychosocial situation. However, this likely reflected factual requirements for the expert opinion, rather than patient-centeredness. Indeed, the experts rarely showed empathy, which is a hallmark characteristic of patient-centeredness. The reproducibility of work capacity estimates was not modulated by patient-centeredness, irrespective of its quantification. Practice implications: Patient-centeredness in work disability evaluations should find its entry in continuing education of experts.

Rosburg et al. 2024.

Patient Education and Counseling, vol. 119.

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Keywords: Assessment; biopsychosocial; communication; disability benefits; empathy; interaction analysis; interview techniques; patient-centeredness; work disability.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0738399123004743?via%3Dihub>

A seasonal comparison of a 14-day swing on cognitive function and psycho-physiological responses in mine service workers.

Background: This study assessed the effect of season on cognitive function and psycho-physiological responses during a 14-day swing in mine-service workers. **Methods:** Cognitive function, thermal sensation and comfort, rating of perceived exertion, fatigue, hydration, core temperature and heart rate were assessed throughout a shift, on three separate days over a swing. **Results:** Working memory and processing efficiency did not differ between seasons ($p > 0.05$), however counting and recall latencies improved throughout the swing ($p < 0.05$). Participants reported greater fatigue post-shift compared to pre-shift ($p < 0.05$). Thermal sensation, thermal comfort, and hydration were significantly elevated in summer compared to winter ($p < 0.05$). Specifically, workers were significantly/minimally dehydrated in summer/winter (urinary specific gravity = $1.025 \pm 0.007/1.018 \pm 0.007$). Although cognitive function and thermal strain were not impaired in summer compared to winter, it is essential to reinforce worker's knowledge regarding hydration requirements. **Conclusions:** Additional education and/or incorporating scheduled rest breaks for hydration should be considered to ensure the health and safety of mine workers.

Taggart et al. 2024.

Applied Ergonomics, vol. 117.

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: Dehydration; fatigue; mining industry; thermal strain; work.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S0003687024000188?via%3Dihub>

Maintaining the working state of firefighters by utilizing self-concept clarity as a resource.

Background: The working state of firefighters is important for their own safety as well as that of the general public. **Methods:** The purpose of this study is to investigate the correlations between self-concept clarity, resilience, work engagement, and job burnout among firefighters, as well as the impacts of self-concept clarity and resilience as resources that can maintain their working state. **Results:** Based on data from 2,156 firefighters, analysis showed that self-concept clarity was negatively associated with job burnout and positively associated with work engagement. The results also showed that self-concept clarity had a direct effect on job burnout and work engagement, and an indirect effect by improving the firefighters' resilience. **Conclusions:** Maintaining and improving their self-concept clarity and resilience promises to be an effective strategy for guaranteeing the working state of firefighters.

Wu et al. 2024.

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

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Keywords: Job burnout; job demand–resource theory; resilience; self-concept clarity; work engagement.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-17896-1>

What workers can tell us about post-COVID workability.

Background: The apparent functional impact of post-COVID-19 syndrome has workability implications for large segments of the working-age population. **Aims:** To understand obstacles and enablers around self-reported workability of workers following COVID-19, to better guide sustainable workplace accommodations. **Methods:** An exploratory online survey comprising quantitative and qualitative questions was disseminated via social media and industry networks between December 2020 and February 2021, yielding usable responses from 145 workers. Qualitative data were subjected to content analysis. **Results:** Over half of the sample (64%) were from the health, social care, and education sectors. Just under 15% had returned to work, and 53% and 50% reported their physical and psychological workability respectively as moderate at best. Leading workability obstacles were multi-level, comprising fatigue, the interaction between symptoms and job, lack of control over job pressures, inappropriate sickness absence management policies, and lack of COVID-aware organizational cultures. Self-management support, modified work, flexible co-developed graded return-to-work planning, and improved line management competency were advocated as key enablers. **Conclusions:** Assuming appropriate medical management of any pathophysiological complications of COVID-19, maintaining or regaining post-COVID workability might reasonably follow a typical biopsychosocial framework enhanced to cater to the fluctuating nature of the symptoms. This should entail flexible, regularly reviewed and longer-term return-to-work planning addressing multi-level workability obstacles, co-developed between workers and line managers, with support from human resources, occupational health professionals (OHP's), and a COVID-aware organizational culture.

Lunt et al. 2024.

Occupational Medicine, vol. 74, no. 1.

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Keywords: Accommodations; biopsychosocial; long-COVID; return-to-work; vocational rehabilitation; workability.

Evidence Level: 5A

Link: <https://academic.oup.com/occmed/article-abstract/74/1/15/6667515?redirectedFrom=fulltext&login=false>

Adapting to the Future of Work

Technology

Wearables for monitoring and postural feedback in the work context: A scoping review.

Background: Wearables offer a promising solution for simultaneous posture monitoring and/or corrective feedback. The main objective was to identify, synthesise, and characterise the wearables used in the workplace to monitor and postural feedback to workers. **Methods:** The PRISMA-ScR guidelines were followed. Studies were included between 1 January 2000 and 22 March 2023 in Spanish, French, English, and Portuguese without geographical restriction. The databases selected for the research were PubMed®, Web of Science®, Scopus®, and Google Scholar®. Qualitative studies, theses, reviews, and meta-analyses were excluded. **Results:** Twelve studies were included, involving a total of 304 workers, mostly health professionals (n = 8). The remaining studies covered workers in the industry (n = 2), in the construction (n = 1), and welders (n = 1). For assessment purposes, most studies used one (n = 5) or two sensors (n = 5) characterised as accelerometers (n = 7), sixaxial (n = 2) or nonaxialinertial measurement units (n = 3). The most common source of feedback was the sensor itself (n = 6) or smartphones (n = 4). Haptic feedback was the most prevalent (n = 6), followed by auditory (n = 5) and visual (n = 3). Most studies employed prototype wearables emphasizing kinematic variables of human movement. **Conclusions:** Healthcare professionals were the primary focus of the study along with haptic feedback that proved to be the most common and effective method for correcting posture during work activities.

Figueria et al. 2024.

Sensors, vol. 24, no. 4.

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Keywords: Feedback; posture; wearables; work-related musculoskeletal disorders; workstation.

Evidence Level: 6A

Link: <https://www.mdpi.com/1424-8220/24/4/1341>

Work Environment

This month we explore Work Environment including a platform for detecting workers' stress using minimally intrusive multisensory devices and cardiac autonomic profile, perceived stress and environmental comfort in healthy employees during remote and in-office work.

A deep learning-based platform for workers' stress detection using minimally intrusive multisensory devices.

Background: The advent of Industry 4.0 necessitates substantial interaction between humans and machines, presenting new challenges when it comes to evaluating the stress levels of workers who operate in increasingly intricate work environments. Undoubtedly, work-related stress exerts a significant influence on individuals' overall stress levels, leading to enduring health issues and adverse impacts on their quality of life. **Methods:** Although psychological questionnaires have traditionally been employed to assess stress, they lack the capability to monitor stress levels in real-time or on an ongoing basis, thus making it arduous to identify the causes and demanding aspects of work. To surmount this limitation, an effective solution lies in the analysis of physiological signals that can be continuously measured through wearable or ambient sensors. Previous studies in this field have mainly focused on stress assessment through intrusive wearable systems susceptible to noise and artifacts that degrade performance. **Results:** One of our recently published papers presented a wearable and ambient hardware-software platform that is minimally intrusive, able to detect human stress without hindering normal work activities, and slightly susceptible to artifacts due to movements. A limitation of this system is its not very high performance in terms of the accuracy of detecting multiple stress levels; therefore, in this work, the focus was on improving the software performance of the platform, using a deep learning approach. **Conclusions:** To this purpose, three neural networks were implemented, and the best performance was achieved by the 1D-convolutional neural network with an accuracy of 95.38% for the identification of two levels of stress, which is a significant improvement over those obtained previously.

Rescio et al. 2024.

Sensors, vol. 24, no. 3.

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Keywords: Deep learning; sensors; smart systems; stress detection; workers' health.

Evidence Level: 6B

Link: <https://www.mdpi.com/1424-8220/24/3/947>

Cardiac autonomic profile, perceived stress and environmental comfort in healthy employees during remote and in-office work.

Background: Remote work (REMOTE) causes an overlap between working and domestic demands. The study of the cardiac autonomic profile (CAP) by means of heart rate variability (HRV) provides information about the impact of REMOTE on workers' health. The primary aim was to determine whether CAP, self-perceived stress, environmental and workstation comfort are modified during REMOTE. The secondary aim was to explore how these indices are influenced by individual and environmental work-related factors.

Methods: Fifty healthy office employees alternating REMOTE and in-office (OFFICE) working were enrolled, rated self-perceived stress, environmental and workstation comfort using a visual analogue scale and performed a 24-h electrocardiogram during REMOTE and OFFICE. **Results:** Stress was lower (5.6 ± 2.2 vs. 6.4 ± 1.8), environmental comfort higher (7.7 ± 1.9 vs. 7.0 ± 1.5), and the workstation comfort poorer (6.2 ± 1.8 vs. 7.5 ± 1.2) during REMOTE. CAP was similar during REMOTE and OFFICE. CAP was influenced by some work-related factors, including the presence of offspring, absence of a dedicated workspace during REMOTE and number of working hours. All these variables determined a decreased vagal modulation.

Conclusions: The working setting seems to impact the levels of perceived stress and comfort, but not the CAP. However, individual and environmental work-related factors reduce cardiac vagal modulation during REMOTE, potentially increasing the risk of developing cardiovascular diseases.

Perego et al. 2024.

Scientific Reports, vol. 14, no. 1.

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Keywords: Autonomic nervous system; cardiovascular prevention; heart rate variability; remote working; stress.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-024-54283-7>