



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 October 2023 only.

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Description of Evidence Levels Definitions Used in this Review

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

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

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

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

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Enabling Healthy and Safe Workplaces

Health and Wellbeing

This month we explore the health and wellbeing issues associated with perimenopause, endometriosis, maternal occupations and risk of preterm and small-for-gestational-age birth, dietary patterns and quality of life, risk of coronary heart disease and age at work initiation, HbA1c and height loss, poor sleep quality and work-related motor vehicle safety. In other research we explore the relationship between meaningful work and mental well-being and multidimensional employment precariousness and subjective well-being. In Covid-19 related research we explore the impact of the COVID-19 pandemic on stress and occupational well-being, occupational differences in the prevalence and severity of long-COVID, work conditions and biosafety of health professionals and associations between sociodemographic and health characteristics of workers and possible associations with work affected by Covid-19.

Perimenopause: Symptoms, work ability and health among 4010 Dutch workers

Background: In this study we examined the associations between menopausal symptoms and work ability and health among a general population of Dutch female workers. This nationwide cross-sectional study was a follow-up of the Netherlands Working Conditions Survey 2020. In 2021, 4010 Dutch female employees aged 40-67 years completed an online survey on a variety of topics, including menopausal symptoms, work ability and health. **Methods:** Linear and logistic regression analyses were performed to investigate the association between the degree of menopausal symptoms with work ability, self-rated health and emotional exhaustion, after adjustment for potential confounders. **Results:** Almost one-fifth of participants were in the perimenopause (n = 743). Of these women, 80 % experienced menopausal symptoms: 27.5 % 'often' and 52.5 % 'sometimes'. Experiencing menopausal symptoms was associated with lower work ability, poorer self-rated health, and more emotional exhaustion. These associations were most pronounced among perimenopausal women 'often' experiencing symptoms. **Conclusions:** Menopausal symptoms threaten the sustainable employability of female workers. Interventions and guidelines are needed to support women, employers and (occupational) health professionals.

Oude et al. 2023.

Maturitas, vol. 176.

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Keywords: Emotional exhaustion; menopausal symptoms; menopause; self-rated health; work; work ability.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0378-5122\(23\)00399-7](https://linkinghub.elsevier.com/retrieve/pii/S0378-5122(23)00399-7)

Difference in risk of preterm and small-for-gestational-age birth depending on maternal occupations in Japan

Background: In this study, an association between the mother's occupations with preterm and small-for-gestational-age (SGA) births was investigated using national data in Japan, and individual-level birth data from the Report of Vital Statistics: **Methods:** Occupational and Industrial Aspects in the 2015 fiscal year were used. Preterm and SGA birth rates were calculated for each of infant characteristics, and relative risk of each type of maternal occupations (categorized into 12 types) for the outcomes was estimated using a log binomial regression model. **Results:** Data of 997,600 singleton births were analyzed. Among maternal occupations, preterm birth rate was highest among carrying, cleaning, packaging, and related workers (5.65%) and lowest among security workers (4.24%). SGA birth rate was highest among manufacturing process workers (5.91%) and lowest among security workers (4.00%). **Conclusion:** We found significantly elevated risks for preterm birth among manufacturing process workers compared with unemployed mothers, and significantly elevated risks for SGA birth compared with unemployed mothers were observed among sales workers, service workers, and manufacturing process workers. In contrast, security workers had a significantly decreased risk for SGA birth compared with unemployed mothers.

Okui 2023.

BMC Research Notes, vol. 16, no. 1.

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Keywords: Japan; maternal occupations; preterm birth; small-for-gestational-age.

Evidence Level: 4B

Link: <https://bmresnotes.biomedcentral.com/articles/10.1186/s13104-023-06539-0>

The association between dietary patterns and quality of life: a cross-sectional study among a large sample of industrial employees

Background: considering the diet, as a whole (dietary patterns), can provide more information regarding dietary guidelines to decrease health problems and improve quality of life (QoL) of industrial workers. Therefore, the aims of this study were to identify major dietary patterns and to evaluate their association with quality of life among Iranian industrial employees. **Methods:** This cross-sectional study was conducted on 3,063 employees of Isfahan Steel Company, Isfahan, Iran, in 2015. Dietary data were evaluated through a validated form of a food frequency questionnaire. Exploratory factor analysis was used to extract major dietary patterns. To assess the QoL, Euro-QoL five- dimension questionnaire was used. Latent class analysis was used to classify participants based on QoL. Multivariable logistic regression was employed to evaluate the association between dietary patterns and QoL. **Results:** Three dietary patterns, i.e. western, healthy and traditional, and two classes, i.e. high and low quality of life. were identified from study participants. Lower adherence to the healthy dietary pattern increased the risk of being in low QoL class in which subjects in the lowest tertile of healthy dietary intake had higher odds of being in low QoL class (adjusted OR (AOR): 1.51, 95% CI: 1.19-1.91). However, subjects in the lowest tertile of traditional diet, low adherence, had 30% lower risk of belonging to the low QoL class (AOR:0.70, 95% CI: 0.55-0.88). Higher adherence to western dietary pattern increased the risk of low quality of life, but it was not statistically significant. **Conclusion:** Higher adherence to a healthy diet and lower adherence to traditional dietary pattern were associated with better QoL in manufacturing employees.

Nasab et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Dietary pattern; industrial workers; manufacturing employees; quality of life.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16898-9>

The longitudinal directional associations of meaningful work with mental well-being - Initial findings from an exploratory investigation

Background: An increasing number of studies reveal that more meaning in life is positively related to mental well-being. Meaning in life can be derived from different sources, including the workplace. The aim of this study was to explore the longitudinal directional association of meaningful work with mental well-being. **Methods:** Prospective data from 292 persons at two timepoints (two-week interval) were used to estimate the cross-lagged relationship and directionality of meaningful work with mental well-being. **Results:** The cross-lagged panel model had a good fit to the data ($\chi^2_{ms(90)} = 150.9$; $p < 0.001$; RMSEA = 0.048; $p = 0.576$; CFI = 0.984; TLI = 0.979; SRMR = 0.040) and showed that levels of meaningful work at t_1 had a positive effect on mental well-being at t_2 ($\beta = 0.15$, $p = 0.010$). But mental well-being at t_1 did not affect meaningful work at t_2 ($\beta = 0.02$, $p = 0.652$). Sub-analyses revealed the effects to be mainly driven by women (as opposed to men) and white-collar workers (as opposed to blue-collar workers). **Conclusion:** This study confirmed a directional association of meaningful work on mental well-being, indicating that more meaningful work has beneficial mental well-being effects.

Herr et al. 2023.

BMC Psychology, vol. 11, no. 1.

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Keywords: Cross-lagged model; directional associations; meaning in work; meaningful work; mental well-being; purpose.

Evidence Level: 5B <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10503239/>

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-023-01308-x>

Occupational characteristics and risk factors associated with endometriosis among Korean female workers.

Background: Endometriosis is a chronic and debilitating condition that affects daily working life. Characterization of the factors associated with endometriosis in the working population can facilitate the development of prevention and intervention strategies for those at risk of endometriosis. **Methods:** This population-based retrospective study was conducted using the 2007-2015 National Health Insurance Service-Female Employees database. Overall, 151,386 female workers aged 15-64 years were included in the study. Participants with endometriosis were identified using the diagnosis codes in the claims data. Multivariable Cox regression analyses were used to evaluate the effect of sociodemographic, lifestyle, health, and occupational factors on endometriosis risk. **Results:** Of the 151,386 participants, 4,457 were diagnosed with endometriosis. The risk of endometriosis was significantly higher in 41-60 years group (HR = 1.47 (95% CI, 1.06-2.04)) and in those with body mass index (BMI) < 18.5 kg/m² (HR = 1.16 (95% CI, 1.05-1.27)) than 15-20 years group and those with normal BMI, respectively. According to the international standard industrial classification, occupational groups with financial and insurance activities, public administration and defence, compulsory social security, and manufacturing were at a higher risk of endometriosis. Although there was no significant association between the risk of endometriosis and type of work, the cumulative prevalence of endometriosis from 2007 to 2015 continued to rise in office workers, manual workers, and both types of workers together. The risk of endometriosis was closely linked to the occupational characteristics of female workers. **Conclusions:** This study provides a foundation for developing occupational safety and health guidelines for female workers.

Lee et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Endometriosis; occupational characteristics; Korea; female workers.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292362>

Longitudinal impact of the COVID-19 pandemic on stress and occupational well-being of mental health professionals: An international study

Background: Increased levels of occupational stress among health professionals during the COVID-19 pandemic have been documented. Few studies have examined the effects of the pandemic on mental health professionals despite the heightened demand for their services. **Method:** A multilingual, longitudinal, global survey was conducted at 3 time points during the pandemic among members of the World Health Organization's Global Clinical Practice Network. A total of 786 Global Clinical Practice Network members from 86 countries responded to surveys assessing occupational distress, well-being, and posttraumatic stress symptoms. **Results:** On average, respondents' well-being deteriorated across time while their posttraumatic stress symptoms showed a modest improvement. Linear growth models indicated that being female, being younger, providing face-to-face health services to patients with COVID-19, having been a target of COVID-related violence, and living in a low- or middle-income country or a country with a higher COVID-19 death rate conveyed greater risk for poor well-being and higher level of stress symptoms over time. Growth mixed modeling identified trajectories of occupational well-being and stress symptoms. Most mental health professions demonstrated no impact to well-being; maintained moderate, nonclinical levels of stress symptoms; or showed improvements after an initial period of difficulty. However, some participant groups exhibited deteriorating well-being approaching the clinical threshold (25.8%) and persistently high and clinically significant levels of posttraumatic stress symptoms (19.6%) over time. **Conclusions:** This study indicates that although most mental health professionals exhibited stable, positive well-being and low stress symptoms during the pandemic, a substantial minority of an already burdened global mental health workforce experienced persistently poor or deteriorating psychological status over the course of the pandemic.

Kogan et al. 2023.

International Journal of Neuropsychopharmacology, vol. 26, no. 10.

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Keywords: COVID-19; longitudinal design; mental health workforce; occupational well-being; posttraumatic stress symptoms.

Evidence Level: 4A

Link: <https://academic.oup.com/ijn/article/26/10/747/7235736?login=true>

Prevalence and associated factors of poor sleep quality among industrial workers in Addis Ababa, Ethiopia: Findings from a cross-sectional study

Background: This study aimed to investigate the prevalence and associated factors of poor sleep quality among Bole Lemi Industrial Park workers in Addis Ababa, the capital of Ethiopia.

Methods: Design: An institution-based cross-sectional study was conducted from July to August 2022. The data were collected using a validated and standardised Pittsburgh Sleep Quality Index Questionnaire. The collected data were entered into EpiData V.4.6 and analysed using Stata V.14. A multivariable binary logistic regression analysis was conducted to identify factors associated with poor sleep quality. The association was determined using an adjusted OR (AOR) with a 95% CI at a p value of <0.05. Setting: The study was conducted in Bole Lemi Industrial Park in Addis Ababa. Participants: A total of 370 workers participated in this study. Outcome measures: The primary outcome of the study was the prevalence of poor sleep quality. **Results:** The total response rate was 87.7%. The majority (260, 70.3%) of the participants were female. The mean (\pm SD) age of the participants was 30.5 (\pm 10.6) years. The prevalence of poor sleep quality during the last months was found to be 75.4% (n=279) (95% CI: 70.7% to 79.7%). Undiversified dietary intake (AOR: 1.63; 95% CI (1.09 to 2.78)), caffeine consumption more than 250 mg per day (AOR: 2.57; 95% CI (1.12 to 6.05)) and night shift work (AOR: 2.36; 95% CI (1.27 to 4.41)) were risk factors for poor sleep quality among sampled workers. **Conclusion:** This study detected that poor sleep quality is highly prevalent among garment and textile industry workers, indicating that it is a significant public health issue that requires immediate attention. Therefore, modifications of the work environment involving night shift work and the improvement of workers' personal lifestyles involving dietary diversification and caffeine consumption are needed to minimise the burden of poor sleep quality among workers.

Hailu Tesfaye et al. 2023.

BMJ Open, vol. 13, no. 10.

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Keywords: Occupational & industrial medicine; public health; sleep medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/13/10/e073340.long>

Multidimensional employment precariousness mediates the association between low educational attainment and poor subjective well-being: Results from a nationwide cross-sectional study in South Korea

Background: This paper explored how multidimensional employment precariousness (MEP) mediates the relationship between educational attainment and subjective well-being. **Methods:** A nationwide sample of 46 919 Korean workers participated in surveys between 2017 and 2020. Educational attainment was divided into four categories: elementary school, middle school, high school, and college. Subjective well-being was assessed using the 5-item World Health Organization Well-Being Index, and MEP was evaluated using a modified version of the Employment Precariousness Scale (ERPES-E), with scores ranging from 0 to 100 and higher scores indicating worse employment precariousness. A counterfactual-based logistic mediation analyses were used to estimation. **Results:** The mean MEP score was 36.0 [standard deviation (SD) 12.1] for college education, 44.3 (SD 11.5) for high school, 49.5 (SD 10.1) for middle school, and 51.1 (SD 10.0) for elementary school. The prevalence of poor subjective well-being was 24.0% for college education, 31.3% for high school, 40.6% for middle school, and 44.8% for elementary school. Odds ratios (OR) for the total effect of education on the poor subjective well-being were 1.44 [95% confidence interval (CI) 1.37-1.53] for high school, 2.19 (95% CI 1.98-2.24) for middle school, and 2.40 (95% CI 2.04-2.82) for elementary school when compared to college education. The OR for the indirect effect mediated through

MEP were 1.27 (95% CI 1.25-1.29) for high school, 1.46 (95% CI 1.42-1.51) for middle school, and 1.53 (95% CI 1.48-1.59) for elementary school, accounting for 63.9%, 48.5%, and 48.6% of the total effect, respectively. **Conclusion:** Our study suggests that MEP is an important contributor to the disparities in subjective well-being resulting from educational gradients.

Baek et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 7.

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Keywords: Employment precariousness; low educational attainment; well-being; South Korea.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4109>

Age at job initiation and risk of coronary heart disease: Findings from the UK biobank cohort study

Background: Commencing work at an early age has been linked to various risk factors for coronary heart disease (CHD), such as shift work and intensive job strain. However, the relationship between starting work too early and CHD risk remains largely unclear. We examined the association between age at job initiation and the risk of CHD. **Methods:** UK Biobank participants aged 38 to 70 years without cardiovascular disease who provided data on their age at job initiation were included. The primary outcome was CHD, which was ascertained using hospital and death records. The hazard ratios (HRs) and 95% confidence interval (CIs) for the association between age at job initiation and CHD were calculated using multivariable Cox regression.

Results: Of the 501,971 participants, 114,418 eligible participants were included in the final analysis. The median age at job initiation was 19.0 years. During the mean follow-up of 12.6 years, 6,130 (5.4%) first CHD events occurred. We observed that age at job initiation was inversely associated with CHD (HR 0.98, 95% CI 0.97-0.99), and the association was potentially J-shaped. The HRs for the < 17-year, 17-18-year, and 19-21-year age groups were 1.29 (95%CI 1.18-1.41), 1.12 (95% CI 1.03-1.22) and 1.05 (95% CI 0.97-1.14), respectively, compared with those of the ≥ 22-year group. **Conclusions:** Age at job initiation was associated with incident CHD, which was independent of socioeconomic status. Participants who commenced employment before the age of 19 years exhibited a higher risk of developing CHD later in adulthood.

Zhang et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Coronary heart disease; early work exposure; risk factor; young worker.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-17034-3>

HbA1c and height loss among Japanese workers: A retrospective study

Background: Evaluating the risk of height loss could be an efficient way to evaluate endothelial health, which might be associated with all-cause and cardiovascular mortality. Diabetes is an established risk factor both for intervertebral disk degeneration and osteoporosis-related fractures, which are major risk factors for height loss among adults. Therefore, hemoglobin A1c (HbA1c), as an indicator of the presence of diabetes, could be positively associated with height loss. **Methods:** A retrospective study of 10,333 workers aged 40 to 74 years was conducted. Height loss was defined as being in the highest quintile of height decrease per year. HbA1c in the normal range was positively associated with height loss. **Results:** The known cardiovascular risk factors-adjusted odds ratio (OR) and 95% confidence interval (CI) for height loss with a 1-standard deviation (SD) increase in HbA1c (0.38% for both men and women) was 1.06 (1.02, 1.10) for men and 1.15 (1.07, 1.23) for women, respectively. When limit those analysis among those without diabetes, the magnitude was slightly higher; the fully adjusted OR and 95% CI for height loss with a 1-SD increase in HbA1c was 1.19 (1.11, 1.28) for men and 1.32 (1.20, 1.44) for women, respectively. **Conclusions:** Even when HbA1c is within the normal range, higher HbA1c is a significant risk factor for height loss among workers.

Shimizu et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Height loss; Japanese.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291465>

Applying a health equity lens to work-related motor vehicle safety in the United States

Background: Motor vehicle crashes (MVCs) are the leading cause of fatal work-related injuries in the United States. Research assessing sociodemographic risk disparities for work-related MVCs is limited, yet structural and systemic inequities at work and during commutes likely contribute to disproportionate MVC risk. **Methods:** This paper summarizes the literature on risk disparities for work-related MVCs by sociodemographic and employment characteristics and identifies worker populations that have been largely excluded from previous research. The social-ecological model is used as a framework to identify potential causes of disparities at five levels-individual, interpersonal, organizational, community, and public policy. **Results:** Expanded data collection and analyses of work-related MVCs are needed to understand and reduce disparities for pedestrian workers, workers from historically marginalized communities, workers with overlapping vulnerabilities, and workers not adequately covered by employer policies and safety regulations. In addition, there is a need for more data on commuting-related MVCs in the United States. Inadequate access to transportation, which disproportionately affects marginalized populations, may make travel to and from work less safe and limit individuals' access to employment. **Conclusions:** Identifying and remedying inequities in work-related MVCs, whether during the day or while commuting, will require the efforts of industry and multiple public sectors, including public health, transportation, and labor.

Pratt et al. 2023.

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

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Keywords: Accident prevention; crash disparities; equity; occupational road safety.

Evidence Level: 6B

Link: <https://www.mdpi.com/1660-4601/20/20/6909>

Occupational differences in the prevalence and severity of long-COVID: Analysis of the Coronavirus (COVID-19) Infection Survey

Background: To establish whether prevalence and severity of long-COVID symptoms vary by industry and occupation. **Methods:** We used Office for National Statistics COVID-19 Infection Survey (CIS) data (February 2021-April 2022) of working-age participants (16-65 years). Exposures were industry, occupation and major Standard Occupational Classification (SOC) group. Outcomes were self-reported: (1) long-COVID symptoms and (2) reduced function due to long-COVID. Binary (outcome 1) and ordered (outcome 2) logistic regression were used to estimate odds ratios (OR) and prevalence (marginal means). **Results:** Public facing industries, including teaching and education, social care, healthcare, civil service, retail and transport industries and occupations, had the highest likelihood of long-COVID. By major SOC group, those in caring, leisure and other services (OR 1.44, 95% CIs 1.38 to 1.52) had substantially elevated odds than average. For almost all exposures, the pattern of ORs for long-COVID symptoms followed SARS-CoV-2 infections, except for professional occupations (eg, some healthcare, education, scientific occupations) (infection: OR<1 ; long-COVID: OR>1). The probability of reporting long-COVID for industry ranged from 7.7% (financial services) to 11.6% (teaching and education); whereas the prevalence of reduced function by 'a lot' ranged from 17.1% (arts, entertainment and recreation) to 22%-23% (teaching and education and armed forces) and to 27% (not working). **Conclusions:** The risk and prevalence of long-COVID differs across industries and occupations. Generally, it appears that likelihood of developing long-COVID symptoms follows likelihood of SARS-CoV-2 infection, except for professional occupations. These findings highlight sectors and occupations where further research is needed to understand the occupational factors resulting in long-COVID.

Kromydas et al. 2023.

Occupational and Environmental Medicine, vol. 80, no. 10.

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Keywords: COVID-19; epidemiology; longitudinal studies; materials, exposures or occupational groups; occupational health.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/80/10/545.long>

COVID-19 and health systems in Brazil and around the world: Effects on the working conditions and health of health workers

Background: This article discusses the impacts of the COVID-19 pandemic on health systems and its effects on the working conditions and mental health of health professionals and invisible health workers.

Methods: It presents data on deaths among health professionals, highlighting the need for better and safer working conditions and improvements in public management. **Results:** We emphasize WHO/PAHO recommendations and the need for equitable vaccine distribution, including poor countries and vulnerable populations. **Conclusions:** We also highlight the impacts of interrupting essential health services, such as the treatment of chronic conditions and infectious disease prevention, and the damage caused by the dissemination of fake news, stressing the need to improve access to correct and safe health information.

Machado et al. 2023.

Ciência & Saúde Coletiva, vol. 28, no. 10.

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Keywords: COVID-19; health systems; health workers; working conditions.

Evidence Level: 6B

Link: <https://www.scielo.br/j/csc/a/n9BPZSDnfGzQ4ngNwkNbxqz/?lang=en>

Work conditions and biosafety of health professionals and invisible health workers in the context of COVID-19 in Brazil

Background: The present article addresses the work conditions in health in the context of the COVID-19 pandemic in Brazil. **Methods:** This is a cross-sectional study that used data from the surveys "Working conditions of healthcare professionals in the context of Covid-19 in Brazil" and "Invisible healthcare workers: work conditions and mental health in the context of Covid-19 in Brazil", seeking to better understand the working conditions and biosafety of these two distinct and socially unequal professional contingents. **Results:** Data analysis proves that work conditions were extremely affected due to inadequate infrastructures, strenuous work, biosecurity at risk, exhaustion, fear of contamination and death, strong signs of physical and mental exhaustion, among workers. It also points out the discrimination and inequalities of social rights and professional development that mark the worlds of work highlighted in the surveys, emphasizing the profound inequalities that exist in Brazil and in its regions. **Conclusions:** It concludes by showing the importance of formulating public policies within the scope of work management in SUS, which ensures the protection, appreciation and reduction of inequalities pointed out in this article.

Machado et al. 2023.

Ciência & Saúde Coletiva, vol. 28, no. 10.

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Keywords: Work conditions; biosafety; health professionals; COVID-19; Brazil.

Evidence Level: 6B

Link: <https://www.scielo.br/j/csc/a/7GYcHBQ3mHLbKFY89VQsrHG/?lang=en>

Associations between sociodemographic and health characteristics of Ministry of Health workers and COVID-19

Background: The present study aimed to describe sociodemographic and health characteristics of Ministry of Health workers and possible associations with work affected by COVID-19. **Methods:**

This was an observational, descriptive, and cross-sectional study, conducted between July and October 2021. **Results:** This study counted on the participation of 821 workers (67.6% women and 32.4% men),

53.3% of white race/color, 66.7% with a postgraduate degree, 38.7% with an income of 5 to 10 minimum wages. In addition, 65.4% reported having some form of disease, 69.2% had health insurance, 64.5% consumed alcohol, 6.1% were smokers, 67.4% practiced physical activity, and 53.8% and 52.2%, respectively, considered their physical and mental health to be good. For 81.8%, work was affected by the pandemic. Factors associated with work affected by the pandemic, after controlling for confounding variables, were level of education and mental health. According to 55%, the emotional aspects represent

the variable that most affected their work. The results pointed out characteristics of Ministry of Health workers that can contribute to the planning of health protection and promotion actions. **Conclusions :** Investment in future studies is warranted, especially as regards the issue of health workers that are not directly in the "frontline" of COVID-19 but who are essential for crisis management during a pandemic.

Matielo et al. 2023.

Ciência & Saúde Coletiva, vol. 28, no. 10.

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Keywords: Sociodemographic; health characteristics; health workers; COVID-19.

Evidence Level: 5B

Link: <https://www.scielo.br/j/csc/a/Zx4cmZCD5TZgzhKptJNwZkq/?lang=en>

Work Health and Safety

This month we explore the work health and safety issues associated with construction safety resource allocation based on evolutionary game and genetic algorithm, the perception of malaria among construction workers and peer-led training on lifejacket wear among occupational boaters. In Covid-19 related research we explore the factors associated with healthcare utilization for the treatment of Covid-19 infections and the prototyping of models for Covid-19 outbreak detection in workplaces.

Optimization of construction safety resource allocation based on evolutionary game and genetic algorithm.

Background: In the construction industry, ensuring the safety performance of a project relies heavily on the effective allocation of safety resources. As the importance of mental health in the construction industry increases, evolutionary game theory can be used to analyze the interaction mechanism of various factors affecting safety performance during the construction phase. **Methods:** The objective of this paper is to construct an analytical model that combines evolutionary game theory with genetic algorithms from the perspective of Leader-Member Exchange Ambivalence. The model aims to quantify and compare the various factors that influence achieving the expected safety state and identify the specific necessary constraints. Initially, we analyzed the relationships among construction site employees, divided them into superiors and subordinates, and established a game model and payoff matrix based on the research background. Next, we introduced genetic algorithms into the model via the replicator dynamic equation for optimization. We adjusted the coefficients of safety risk level, psychological expected return, moral identity, and other factors to simulate various construction site scenarios. **Results and**

Conclusions: Simulation and optimization results indicate that genetic algorithms provide more accurate reference values for safety resource allocation compared to preset or manually assigned values.

Peng et al. 2023.

Scientific Reports, vol. 13, no. 1.

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Keywords: Construction safety; resource; algorithm.

Evidence Level: 6B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10564868/>

Peer-led training improves lifejacket wear among occupational boaters: Evidence from a cluster randomized controlled trial on Lake Albert, Uganda

Background: The burden of drowning among occupational boaters in low and middle-income countries is highest globally. In Uganda, over 95% of people who drowned from boating-related activities were not wearing lifejackets at the time of the incident. We implemented and evaluated a peer-led training program to improve lifejacket wear among occupational boaters on Lake Albert, Uganda. **Methods:** We conducted a two-arm cluster randomized controlled trial in which fourteen landing sites were randomized to the intervention and non-intervention arm with a 1:1 allocation ratio. In the intervention arm, a six-month

peer-to-peer training program on lifejacket wear was implemented while the non-intervention arm continued to receive the routine Marine Police sensitizations on drowning prevention through its community policing program. The effect of the intervention was assessed on self-reported and observed lifejacket wear using a test of differences in proportions of wear following the intention to treat principle. The effect of contamination was assessed using mixed effect modified Poisson regression following the As Treated analysis principle at 95% CI. Results are reported according to the CONSORT statement-extension for cluster randomized trials. **Results:** Self-reported lifejacket wear increased markedly from 30.8% to 65.1% in the intervention arm compared to the non-intervention arm which rose from 29.9% to 43.2%. Observed wear increased from 1.0% to 26.8% in the intervention arm and from 0.6% to 8.8% in the non-intervention arm. The test of differences in proportions of self-reported lifejacket wear (65.1% - 43.2% = 21.9%, p-value <0.001) and observed wear (26.8% - 8.8% = 18%, p-value <0.001) showed statistically significant differences between the intervention and non-intervention arm. Self-reported lifejacket wear was higher among boaters who received peer training than those who did not (Adj. PR 1.78, 95% CI 1.38-2.30). **Conclusion:** This study demonstrated that peer-led training significantly improves lifejacket wear among occupational boaters. The government of Uganda through the relevant ministries, and the Landing Site Management Committees should embrace and scale up peer-led training programs on lifejacket wear to reduce drowning deaths.

Oparia et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Peer-led training; lifejacket; occupational boaters.

Evidence Level: 2B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292754>

Rapid prototyping of models for COVID-19 outbreak detection in workplaces

Background: Early case detection is critical to preventing onward transmission of COVID-19 by enabling prompt isolation of index infections, and identification and quarantining of contacts. Timeliness and completeness of ascertainment depend on the surveillance strategy employed. **Methods:** This paper presents modelling used to inform workplace testing strategies for the Australian government in early 2021. We use rapid prototype modelling to quickly investigate the effectiveness of testing strategies to aid decision making. Models are developed with a focus on providing relevant results to policy makers, and these models are continually updated and improved as new questions are posed. Developed to support the implementation of testing strategies in high risk workplace settings in Australia, our modelling explores the effects of test frequency and sensitivity on outbreak detection. We start with an exponential growth model, which demonstrates how outbreak detection changes depending on growth rate, test frequency and sensitivity. From the exponential model, we learn that low sensitivity tests can produce high probabilities of detection when testing occurs frequently. We then develop a more complex Agent Based Model, which was used to test the robustness of the results from the exponential model, and extend it to include intermittent workplace scheduling. **Results:** These models help our fundamental understanding of disease detectability through routine surveillance in workplaces and evaluate the impact of testing strategies and workplace characteristics on the effectiveness of surveillance. **Conclusions:** This analysis highlights the risks of particular work patterns while also identifying key testing strategies to best improve outbreak detection in high risk workplaces.

Abell et al. 2023.

BMC Infectious Diseases, vol. 23, no. 1.

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Keywords: Decision making; Infectious disease modelling.

Evidence Level: 6A

Link: <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-023-08713-y>

Disease and social factors associated with healthcare utilization for the treatment of SARS-CoV-2 infections in a longitudinal cohort of essential workers in Arizona

Background: Demands on health systems due to COVID-19 are substantial, but drivers of healthcare utilization are not well defined in non-severe SARS-CoV-2 infections. Among a prospective cohort of frontline workers from July 2020 to February 2023, we assessed predictors of healthcare utilization during SARS-CoV-2 infection. **Methods:** Weekly specimens tested via real-time reverse transcriptase polymerase chain reaction analysis. Participants reported sociodemographic, health status information, and illness experience information. Primary outcome was healthcare utilization during SARS-CoV-2 infection. Predictors included sociodemographic characteristics, baseline health status, and measures of illness severity. Multivariable logistic regression was utilized to generate odds ratios for predictors of healthcare utilization. **Results:** 1,923 SARS-CoV-2 infections (1,276 first infections and 647 reinfections from 4,208 participants): 1221 (63.5%) individuals were between 40 and 65 years old; 1115 (58.0%) were female; 449 (23.3%) were Hispanic and 1305 (67.9%) non-Hispanic White. 294 (15.3%) individuals sought medical care during first infection, 106 (5.5%) during reinfection. Sociodemographic and baseline health characteristics were not associated with healthcare utilization during infections from any variant for first infections, while age (OR 1.04, 95%CI 1.01-1.07) was during Omicron reinfection. In first infection, number of symptoms (OR 1.16, 95%CI 1.00-1.36 in Origin/Alpha, OR 1.12, 95%CI 1.00-1.49 in Delta, OR 1.09, 95%CI 1.01-1.16 in Omicron), number of days spent in bed (OR 1.13, 95%CI 1.02-1.33 in Origin/Alpha, OR 1.23, 95%CI 1.00-1.59 in Delta, OR 1.12, 95%CI 1.03-1.22 in Omicron), and illness duration (OR 1.01, 95%CI 1.00-1.04 in Origin/Alpha, OR 1.01, 95%CI 1.00-1.03 in Delta, OR 1.01, 95%CI 1.00-1.02 in Omicron) were related to healthcare utilization for all variants. Number of days in bed (OR 1.12, 95%CI 1.01-1.27), illness duration (OR 1.01, 95%CI 1.00-1.02), and hours of work missed (OR 2.24, 95%CI 1.11-4.74) were positively associated with healthcare utilization during Omicron reinfection. **Conclusion:** The main factors associated with healthcare utilization for SARS-CoV-2 infection were symptom severity and duration. Practices and therapeutics aimed at decreasing these factors would be most helpful in easing the burden on health systems.

Rivers et al. 2023.

BMC Health Services Research, vol. 23, no. 1.

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Keywords: COVID-19; healthcare utilization; public health.

Evidence Level: 4B

Link: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-023-10064-y>

The perception and interpretation of malaria among Chinese construction workers in sub-Saharan Africa: A qualitative study

Background: Cooperation between China and Africa is deepening, and business, trade, and people-to-people exchanges are growing closer together, especially in the infrastructure construction field. At the same time, malaria has become a serious health concern for Chinese construction workers in Africa, who are at increased risk of infection and complications due to lack of immunity and exposure to high-transmission environments. One of the biggest challenges in fighting malaria is their lack of knowledge and misinterpretations about the disease, which can impact their need for interventions, adherence to treatments, and health services. This study aims to determine the perception and interpretation of malaria among Chinese construction workers in sub-Saharan Africa. **Methods:** Semi-structured interviews were conducted with 20 Chinese construction workers in sub-Saharan Africa. Some early respondents initially made contact through two Chinese construction companies in Africa, while the rest of the participants were engaged via a snowball method by the early participants. NVivo10, a qualitative research data management software and a thematic approach, was used to analyze the data and create themes. In order to achieve the general study goals, an inductive content analysis was applied. **Results:** The study classified participants' perceptions and interpretations of malaria into four categories: flu-like malaria, the rumors of malaria, the hard-to-explain confusion about malaria, and the special interpretation of malaria. **Conclusion:** Malaria poses major health issues to Chinese construction workers in sub-Saharan Africa who lack immunity and live in an environment of high transmission. Their dearth of awareness and misunderstanding of malaria impacts their prevention and treatment behaviors and health outcomes. This

study adopts qualitative methods to examine their perceptions and interpretations of malaria, which can serve as a source for future health management strategies.

Zou et al. 2023.

Malaria Journal, vol. 22, no. 1.

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Keywords: Chinese workers; Malaria; qualitative study; Sub-Saharan Africa.

Evidence Level: 5B

Link: <https://malariajournal.biomedcentral.com/articles/10.1186/s12936-023-04739-4>

Risk Assessment

This month we explore the risk assessment issues associated with occupational health surveillance in workers exposed to hand-intensive work, and occupational health assessments.

Does occupational health surveillance lead to risk reduction for workers exposed to hand-intensive work?

Background and Methods: This mixed method study aimed to describe what risk-reducing actions were proposed by ergonomists after the execution of a guided process for occupational health surveillance for workers exposed to hand-intensive work in ten companies. Another aim was to describe the exposed workers' proposals for risk-reducing actions, including their perceptions of potential changes in the self-assessed exposure levels and work-related pain. **Results:** Several actions, targeting organizational, technical, and/or individual measures were proposed. Proposals from the ergonomists more often targeted the personal measures, whereas the workers' proposals targeted technology or organizational changes. Six companies implemented at least one of the action proposals. These action proposals were not related to evaluation metrics, nor were they evaluated. **Conclusions:** This study indicates that both ergonomists and companies need guidance on how to improve to work in a participatory process for the implementation and evaluation of risk-reducing actions, e.g., by how to better include workers' experiences.

Eliasson et al. 2023.

Applied Ergonomics, vol. 112.

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Keywords: Musculoskeletal disorders; risk assessment; risk control.

Evidence Level: 5A

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0003-6870\(23\)00112-6](https://linkinghub.elsevier.com/retrieve/pii/S0003-6870(23)00112-6)

Occupational health assessment summary designed for semantic interoperability

Background: Geopolitical and economic crises force a growing number of people to leave their countries and search better employment opportunities abroad. Meanwhile, the highly competitive labor market provides opportunities for employees to change workplaces and job positions. Health assessment data collected during the occupational history is an essential resource for developing efficient occupational disease prevention strategies as well as for ensuring the physical and psychological well-being of newly appointed workers. The diversity in data representation is source for interoperability problems that are insufficiently explored in the existing literature. This research aims to design a worker's occupational health assessment summary (OHAS) dataset that satisfies the requirements of an international standard for semantic interoperability in the use case for exchanging extracts of such data. **Method:** The focus is on the need for a common OHAS standard at EU level allowing seamless exchange of OHAS at both cross-border and at the worker's country of origin level. **Results:** This paper proposes a novelty systematic approach ensuring semantic interoperability in the exchange of OHAS. Two use cases are explored in terms of UML sequence diagram. The OHAS dataset reflects common data requirements established in the national legislation of EU countries. Finally, an EN 13606 archetype of OHAS is designed by satisfying the requirements for semantic interoperability in the exchange of clinical data. Semantic interoperability of OHAS is demonstrated with realistic use case data. **Conclusions:** The designed static, non-volatile and

reusable information model of OHAS developed in this paper allows to create EN 13606 archetype instances that are valid with respect to the Reference model and the datatypes of this standard. Thus, basic activities in the OHAS use case can be implemented in software, for example, by means of a native XML database as well as integrated into existing information systems.

Krastev et al. 2023.

International Journal of Medical Informatics, vol. 178,

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Keywords: Clinical data exchange; EN 13606 archetype; Health assessment summary; Native XML database; Occupational disease; Occupational history; Semantic interoperability; eHealth use case.

Evidence Level: 6B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S1386-5056\(23\)00225-3](https://linkinghub.elsevier.com/retrieve/pii/S1386-5056(23)00225-3)

Chronic Health Issues

This month we explore the chronic health issues associated with hypertension amongst seafarers, irritant asthma and work, and sleep duration and cardiometabolic disease risk in corporate executives.

Risk prediction model of self-reported hypertension for telemedicine based on the sociodemographic, occupational and health-related characteristics of seafarers: A cross-sectional epidemiological study

Background: High blood pressure is a common health concern among seafarers. However, due to the remote nature of their work, it can be difficult for them to access regular monitoring of their blood pressure. Therefore, the development of a risk prediction model for hypertension in seafarers is important for early detection and prevention. This study developed a risk prediction model of self-reported hypertension for telemedicine. **Method:** A cross-sectional epidemiological study was employed. **Setting:** This study was conducted among seafarers aboard ships. Data on sociodemographic, occupational and health-related characteristics were collected using anonymous, standardised questionnaires. **Participants:** This study involved 8125 seafarers aged 18-70 aboard 400 vessels between November 2020 and December 2020. 4318 study subjects were included in the analysis. Seafarers over 18 years of age, active (on duty) during the study and willing to give informed consent were the inclusion criteria. **Outcome measures:** We calculated the adjusted OR (AOR) with 95% CIs using multiple logistic regression models to estimate the associations between sociodemographic, occupational and health-related characteristics and self-reported hypertension. We also developed a risk prediction model for self-reported hypertension for telemedicine based on seafarers' characteristics. **Results:** Among the 4318 participants, 55.3% and 44.7% were non-officers and officers, respectively. 20.8% (900) of the participants reported having hypertension. Multivariable analysis showed that age (AOR: 1.08, 95% CI 1.07 to 1.10), working long hours per week (AOR: 1.02, 95% CI 1.01 to 1.03), work experience at sea (10+ years) (AOR: 1.79, 95% CI 1.33 to 2.42), being a non-officer (AOR: 1.75, 95% CI 1.44 to 2.13), snoring (AOR: 3.58, 95% CI 2.96 to 4.34) and other health-related variables were independent predictors of self-reported hypertension, which were included in the final risk prediction model. The sensitivity, specificity and accuracy of the predictive model were 56.4%, 94.4% and 86.5%, respectively. **Conclusion:** A risk prediction model developed in the present study is accurate in predicting self-reported hypertension in seafarers' onboard ships.

Sagaro et al. 2023.

BMJ Open, vol. 13, no. 10.

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Keywords: Epidemiology; hypertension; public health.

Evidence Level: 4V

Link: <https://bmjopen.bmj.com/content/13/10/e070146.long>

Irritant asthma and work: cases from the UK SWORD reporting scheme from 1999 to 2018

Background: Acute irritant asthma is a preventable health consequence of a workplace exposure and has a number of adverse outcomes. While cases and case series are reported, little is known about the causes

and incidence of this condition over prolonged periods of time. **Aims:** We aimed to estimate the reported incidence of irritant asthma referred to a national reporting scheme, and how this has changed over time.

Methods: Cases of irritant asthma reported to SWORD, the UK-based Surveillance of Work-related Occupational Respiratory Diseases scheme, were grouped into four 5-year time periods from 1999 onwards. Likely causative exposures, job, work sector and incidence rates were analysed over time.

Results: 307 actual cases equated to 1066 estimated cases; actual cases had a mean age of 46 years (SD 17.8); 70.7% were male. The annual incidence fell from 1.98 per million employed in the first 5-year period, to 0.56 in the most recent. Eleven occupational codes were associated with six or more attributed cases, and between them accounted for 38% of all cases. Thirteen exposure categories were associated with five or more cases. These were formaldehyde (n=5), cutting oils and coolants (n=6), isocyanates (n=6), pesticides and herbicides (n=6), welding fumes (n=7), paints (n=7), solder and colophony (n=7), solvents (n=9), fuel oil, diesel and ill-defined fumes (n=10), chlorine and hypochlorites (n=15), acids (n=23), smoke (n=25) and cleaning products and sterilising agents (n=39). **Conclusions:** While the incidence of irritant asthma may have fallen, cases are persistently attributed to well-described causes. A persistence of cases attributed to cleaning agents was seen.

Fishwick et al. 2023.

Occupational and Environmental Medicine, vol. 80, no. 10.

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Keywords: Asthma; epidemiology; occupational health; respiratory; respiratory function tests.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/80/10/553.long>

Longitudinal associations between self-reported sleep duration and cardiometabolic disease risk in corporate executives

Background: This study aimed to determine the longitudinal associations between self-reported sleep duration and cardiometabolic disease (CMD) risk in corporate executives. **Methods:** Self-reported sleep duration and lifestyle, occupational, psychological, and anthropometrical, blood pressure and blood marker variables were obtained from 1512 employees at annual health risk assessments in South Africa between 2016 and 2019. Gender-stratified linear mixed models, adjusting for age, lifestyle, occupational and psychological covariates were used to explore these longitudinal associations. **Results:** Among women, shorter sleep duration was associated with higher body mass index (BMI) covarying for age only (β with 95% confidence intervals: -0.19 [-0.36, -0.03]), age and occupational factors (-0.20 [-0.36, -0.03]) and age and psychological factors (-0.20 [-0.37, -0.03]). Among men, shorter sleep was associated with both BMI and waist circumference (WC) covarying for age only (BMI: -0.15 [-0.22; -0.08]; WC: -0.62 [-0.88; -0.37]); age and lifestyle factors (BMI: -0.12 [-0.21; -0.04]); WC: -0.016 [-0.92; -0.29], age and occupational factors (BMI: -0.20 [-0.22; 0.08]; WC: -0.62 [-0.88; -0.36]), and age and psychological factors (BMI: -0.15 [-0.22; -0.07]; WC: -0.59 [-0.86; -0.33]). Among men, shorter sleep was also longitudinally associated with higher CMD risk scores in models adjusted for age and lifestyle factors (CMD: -0.12 [-0.20; -0.04]) and age and psychological factors (CMD: -0.08 [-0.15; -0.01]). **Conclusion:** Corporate executives who report shorter sleep durations may present with poorer CMD risk profiles, independent of age, lifestyle, occupational and psychological factors. Addressing sleep health in workplace health programmes may help mitigate the development of CMD in such employees.

Pienaar et al. 2023.

Preventative Medicine, vol. 175.

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Keywords: Employees; health promotion; health risk assessment; longitudinal study; sleep quantity; workplace.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0091743523003043?via%3Dihub>

Occupational Exposure

This month we explore the occupational exposure issues associated with dust exposure and smoking on COPD in coal workers, thermal strain in outdoor maintenance and indoor service workers in the mining industry, rheumatoid arthritis and ankylosing spondylitis.

A nested case-control study of the effects of dust exposure, smoking on COPD in coal workers

Background: Chronic obstructive pulmonary disease (COPD) represents a prevalent ailment, progressively surging within the ranks of coal mine laborers. The current study endeavors to elucidate the effects of dust exposure and smoking on COPD incidence amongst coal mine workers, while concurrently devising preventive strategies for this affliction. **Method:** A nested case-control study was conducted encompassing 1,416 participants aged ≥ 18 years, spanning the duration from (2017-2018) until 2020. A meticulous matching process yielded a cohort of 708 COPD patients, each paired with a control subject, forming a harmonious 1:1 ratio. Multiple logistic regression analysis was employed to scrutinize the associations between smoking, dust exposure with COPD among coal workers. **Results:** The COPD prevalence within the cohort of coal workers under investigation amounted to 22.66%, with an accompanying incidence density of 0.09/person-year. Following meticulous adjustment for confounding variables, it was discerned that cumulative dust exposure within the range of 47.19 ~ (OR: 1.90, 95% CI: 1.05, 3.44), 101.27 ~ (OR: 1.99, 95% CI: 1.17, 3.39), as well as smoking indices of 72 ~ (OR: 1.85, 95% CI: 1.19, 2.88), 145 ~ (OR: 1.74, 95% CI: 1.17, 2.61), 310 ~ (OR: 1.85, 95% CI: 1.23, 2.77) engender an escalated vulnerability to COPD among coal workers. Furthermore, interaction analysis discerned an absence of both multiplicative and additive interactions between dust exposure, smoking, and COPD occurrence amidst coal workers. **Conclusion:** Dust exposure and smoking were unequivocally identified as precipitating risk factors for COPD incidence within the population of coal workers, albeit devoid of any discernible interaction between these two causal agents.

Wang et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: COPD; coal workers; dust exposure; interaction; smoking.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16944-6>

Comparing thermal strain in outdoor maintenance and indoor service workers in the mining industry during summer

Background: While working in the heat is a common practice within the Australian mining industry, it can lead to adverse effects on cognitive function, productivity, and physical health. This study aimed to compare the thermal strain experienced by maintenance workers and service workers in the mining industry during summer. **Methods:** Psycho-physiological parameters, manual dexterity, and cognitive function were assessed in maintenance workers ($n = 12$) and service workers ($n = 12$) employed at mine site villages in north-west Australia. Maintenance workers had the freedom to self-select their work intensity and predominantly worked outdoors ($33.9 \pm 4.2^\circ\text{C}$, $38 \pm 18\%$ RH), whereas service workers had to work to a fixed schedule and worked intermittently indoors ($\sim 64\%$ of work shift; $29.5 \pm 3.4^\circ\text{C}$, $48 \pm 8\%$ RH) and outdoors ($\sim 36\%$; $35.4 \pm 4.6^\circ\text{C}$, $47 \pm 21\%$ RH). All workers underwent assessment at the beginning (day 2/3), middle (day 7/8), and end of their swing (day 13/14), at various time points throughout their 11-12 h shift. **Results:** Service workers completed more steps (11282 ± 1794 vs. 7774 ± 2821 ; $p < 0.001$), experienced a higher heart rate ($p = 0.049$) and reported higher ratings of perceived exertion ($p < 0.001$), thermal discomfort ($p < 0.001$), thermal sensation ($p < 0.001$), and fatigue ($p < 0.012$) compared to maintenance workers. Urinary specific gravity values were higher (less hydrated) in service workers (1.024 ± 0.007) compared to maintenance workers (1.018 ± 0.006 ; $p = 0.007$), with USG being overall higher post- compared to pre-shift (1.022 ± 0.008 vs. 1.020 ± 0.006 ; $p < 0.05$). Core temperature, working memory capacity, processing speed and manual dexterity did not differ between occupations. **Conclusions:** Workers in hot environments who cannot self-select their work intensity should be educated about the importance of hydration before, during, and after their work-shifts and provided with more scheduled rest breaks during

their shift. Employers should closely monitor workers for symptoms of heat illness, discomfort, and fatigue to ensure the health and safety of the workers.

Taggart et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Thermal strain; outdoor maintenance; indoor maintenance; mining industry; Summer.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292436>

Causality of occupational exposure on rheumatoid arthritis and ankylosing spondylitis: A two-sample mendelian randomization study

Background: This study aimed to explore the potential causal link between three specific types of occupational exposure on rheumatoid arthritis (RA) and ankylosing spondylitis (AS). **Method:** A Two-sample Mendelian randomization (TSMR) analysis, comprising univariate MR (UVMR) and multivariate MR (MVMR) analyses, was performed to investigate the potential causal association between three types of occupational exposures, jobs involving mainly walking or standing (JWS), jobs involving heavy manual or physical work (JMP), and jobs involving shift work (JSW) on RA and AS. Genetic variants for genome-wide association studies (GWAS) of occupational exposure and AS were obtained from the UK Biobank. GWAS summary data for RA were obtained from FinnGen Biobank analysis. For UVMR, six methods of Inverse Variance Weighted (IVW), MR-Egger, Weighted Mode, Weighted Median, Simple Mode, MR pleiotropy residual sum, and outlier (MR-PRESSO) were used for the analysis. The MVMR was analyzed using the IVW model as well as the MR-Egger model. **Results:** The UVMR suggested no causal relationship between the three occupational exposure and RA [IVW: P=0.59,0.21,0.63] or AS [IVW: P=0.43,0.57,0.04], as did the bidirectional MR [IVW: P=0.73,0.70,0.16], [IVW: P=0.65,0.68,0.74]. Although unadjusted MVMR suggested a causal relationship between JMP and AS [IVW: OR = 1.01, 95% CI = 1.00- 1.02, p = 0.02], the adjusted MVMR denied this relationship and concluded that there was no causal relationship between the other occupational exposure and either RA or AS. **Conclusion:** Our MR analysis did not establish a direct causal relationship between certain occupational exposures and either RA or AS.

Du et al. 2023.

Frontiers in Immunology, vol. 14.

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Keywords: Mendelian randomization; ankylosing spondylitis; occupational exposure; rheumatism; rheumatoid arthritis.

Evidence Level: 4B

Link: <https://www.frontiersin.org/articles/10.3389/fimmu.2023.1223810/full>

Physical Activity

Characterization of upper limb use in health care workers during regular shifts: A quantitative approach based on wrist-worn accelerometers.

Background: Despite the high prevalence of upper limb (UL) work-related musculoskeletal disorders (WRMSD) among health care workers (HCWs), little is known about their relationship with exposure to biomechanical risk factors. **Methods:** This study aimed to assess UL activity features under actual working conditions using two wrist-worn accelerometers. Accelerometric data were processed to obtain duration, intensity, and asymmetry of UL use in 32 HCWs during the execution of commonly performed tasks (e.g., patient hygiene, transfer, and meal distribution) within a regular shift. **Results:** The results show that such tasks are characterized by significantly different patterns of UL use, in particular, higher intensities and larger asymmetries were observed respectively for patient hygiene and meal distribution. The proposed approach appears, thus, suitable to discriminate tasks characterized by different UL motion patterns. **Conclusions:** Future studies could benefit from the integration of such measures with self-reported workers' perception to elucidate the relationship between dynamic UL movements and WRMSD.

Porta et al. 2023.

Applied Ergonomics, vol. 112.

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Keywords: Accelerometer; asymmetry; upper limb.

Evidence Level: 3B

Link: <https://www.sciencedirect.com/science/article/pii/S0003687023000844?via%3Dihub>

Musculoskeletal Health

This month we explore the musculoskeletal health issues associated with workers in the automobile manufacturing industry, and role of psychosocial hazards in differentiating musculoskeletal disease risk levels of workers in high-risk occupations.

Prevalence of work-related musculoskeletal disorders among workers in the automobile manufacturing industry in China: A systematic review and meta-analysis

Background: Work-related musculoskeletal disorders (WMSDs) have become one of the major occupational health problems. Lots of auto workers in China are exposed to WMSDs. However, there are few systematic review and meta-analysis about WMSDs in this field. This study aimed to evaluate the prevalence of WMSDs among these workers. **Methods:** This study was carried out using the Systematic Reviews and Meta-analyses method under the most up to date PRISMA guidelines. A literature search was conducted for studies on the epidemiology of WMSDs among auto workers in China from inception to August 2022, using English and Chinese databases (China National Knowledge Infrastructure, Wanfang Data, China Biology Medicine Disc, China Science and Technology Journal Database, PubMed, and Web of Science). All statistical analyses were performed using STATA V.16.0. **Results:** Out of the 849 references identified, 26 articles were eligible for inclusion, of which 12 reported the overall 12-month prevalence of WMSDs, while 14 stated the 12-month prevalence of WMSDs on body regions. The overall 12-month prevalence rate of WMSDs among workers was 53.1% [95% Confidence Interval (CI) = 46.3% to 59.9%]. The lower back/waist was the body region affected most (36.5%, 95%CI = 28.5% to 44.5%). The definition on WMSDs of "Chinese version" resulted in a high prevalence of WMSDs. Obesity, high educational level, long job tenure, female, logistic workers, and foundry workers are factors that led to a high prevalence rate of WMSDs in the lower back/waist. **Conclusions:** This study showed a high prevalence rate of WMSDs among auto workers in China. Thus, it is necessary to pay particular stress to them. Several effective measures should be taken to prevent these workers from WMSDs.

He et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Automobile manufacturing; Chinese; Musculoskeletal disorders; prevalence; systematic review and meta-analysis. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10503239/>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10503239/>

Evidence Level: 1B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16896-x>

Psychosocial hazards play a key role in differentiating MSD risk levels of workers in high-risk occupations

Background: Workplace management practices targeting risk of musculoskeletal disorders (MSDs) fail to reflect evidence that risk is affected by psychosocial as well as physical hazards. To promote improved practices in occupations where MSD risk is highest, better information is needed on how psychosocial hazards, combined with physical hazards, affect risk of workers in these occupations. **Methods:** Survey ratings of physical and psychosocial hazards by 2329 Australian workers in occupations with high MSD risk were subjected to Principal Components Analysis. Latent Profile Analysis of hazard factor scores identified different combinations of hazards to which latent subgroups of workers were typically exposed. Survey ratings of frequency and severity of musculoskeletal discomfort or pain (MSP) generated a pre-validated MSP score and its relationship with subgroup membership was analysed. Demographic variables associated

with group membership were investigated using regression modelling and descriptive statistics.

Results: Analyses identified three physical and seven psychosocial hazard factors and three participant subgroups with differing hazard profiles. Profile group differences were greater for psychosocial than physical hazards, and MSP scores out of 60 ranged from 6.7 for the low hazard profile (29% of participants) to 17.5 for the high hazard profile (21%). Differences between occupations in hazard profiles were not large. **Conclusions:** Both physical and psychosocial hazards affect MSD risk of workers in high-risk occupations. In workplaces such as this large Australian sample where risk management has focused on physical hazards, actions targeting psychosocial hazards may now be the most effective way to reduce risk further.

Oakman et al. 2023.

Applied Ergonomics, vol. 112.

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Keywords: APHIRM toolkit; latent profile analysis; musculoskeletal disorders; workplace risk management.

Evidence Level: 4A

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0003-6870\(23\)00091-1](https://linkinghub.elsevier.com/retrieve/pii/S0003-6870(23)00091-1)

Guiding and Supporting Mental Health and Wellbeing

Mental Health

This month we explore the mental health issues associated with depression and socioeconomic inequalities, and psychosocial stressors at work, worker interventions for the prevention of mental disorders, determinants of the intention to seek psychotherapeutic consultation at work and the psychological variables associated with post-traumatic stress disorder in firefighters. In covid-19 related research we explore the working conditions and mental health of community health workers and changes in economic activity and mental distress among young adults during the pandemic.

Working conditions and mental health of community health workers in the COVID-19 pandemic

Background: This study examined the prevalence of anxiety and depression associated with Community Health Workers' (CHWs') working conditions in the context of the COVID-19 pandemic. **Methods:** This cross-sectional study was carried out in the north of Minas Gerais, Brazil by applying a questionnaire addressing sociodemographic conditions, command of technologies and working conditions during the pandemic, as well as the State-Trait Anxiety Inventory and the Patient Health Questionnaire-9 (PHQ-9). Descriptive and multiple Poisson regression analyses were performed with robust variance, to a 5% level of significance ($p < 0.05$) for the final model. **Results:** A total of 1,220 CHWs from 36 municipalities participated in the study. Prevalences were 41.8% and 31.6% for anxiety and depression, respectively, while 22.5% of the group displayed symptoms of both conditions. Being female, up to 40 years old, having more than 500 users registered for monitoring, and inadequate supply of personal protective equipment were associated with anxiety and depression among the CHWs. **Conclusions:** Prevalence of anxiety and depression was high among CHWs during the pandemic and working conditions figured prominently among the associated factors.

Fernandes et al. 2023.

Ciência & Saúde Coletiva, vol. 28, no. 10.

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Keywords: Mental health; community health workers; working conditions; COVID-19 pandemic.

Evidence Level: 4B

Link: <https://www.scielo.br/j/csc/a/kRDR7rT64TpC9K8ctDFTPMF/?lang=en>

Determinants of the intention to seek psychotherapeutic consultation at work - A cross-sectional study in Germany

Background: Psychotherapeutic consultation at work (PT-A) provides employees with mental illnesses or subclinical symptoms a short-term and low-threshold access to psychotherapeutic care. However, practical experience shows that the utilisation rate seems low compared to expected demand. Therefore, this study aimed to identify determinants of utilisation by exploring associations between sociodemographic characteristics, psychological well-being, stigma-related barriers and psychosocial safety climate and the intention to seek PT-A. **Methods:** Within a cross-sectional study, 658 participants were recruited via various social media channels in Germany. Participants answered an online questionnaire on potential determinants of (1) intention to seek PT-A in general and of intention to seek PT-A to specifically discuss (2) occupational burden and (3) private burden. Multiple ordinal regression analyses were conducted for the whole study sample and for the subgroups of participants screened positive and negative for current depression. **Results:** Lower stigma-related barriers were associated with higher general intention to seek PT-A among all study groups. Lower psychological well-being was associated with higher general intention to seek PT-A and with higher intention to seek PT-A to discuss occupational and private burden, but only so in the subgroup of employees who were screened negative for current depression. Treatment experience was associated with higher intention to seek PT-A for occupational burden among participants screened negative but not among participants screened positive for current depression. No associations were found between age, gender, education or psychosocial safety climate and any variable of intention to seek PT-A. **Conclusion:** Those results give an overview on potential determinants for the intention to seek PT-A, but future research with longitudinal designs is needed to confirm that those factors also determine actual utilisation of PT-A. Based on the results, practical implications might include antistigma campaigns and promotion of PT-A adapted to the aims of the consultation.

Kohl et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Help-seeking behaviour; mental health; occupational health; psychotherapy; workplace.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16852-9>

Primary-level and community worker interventions for the prevention of mental disorders and the promotion of well-being in low- and middle-income countries

Background: There is a significant research gap in the field of universal, selective, and indicated prevention interventions for mental health promotion and the prevention of mental disorders. Barriers to closing the research gap include scarcity of skilled human resources, large inequities in resource distribution and utilization, and stigma. **Objectives:** To assess the effectiveness of delivery by primary workers of interventions for the promotion of mental health and universal prevention, and for the selective and indicated prevention of mental disorders or symptoms of mental illness in low- and middle-income countries (LMICs). To examine the impact of intervention delivery by primary workers on resource use and costs. **Methods:** We searched CENTRAL, MEDLINE, Embase, CINAHL, Global Index Medicus, PsycInfo, WHO ICTRP, and ClinicalTrials.gov from inception to 29 November 2021. Selection criteria: Randomized controlled trials (RCTs) of primary-level and/or community health worker interventions for promoting mental health and/or preventing mental disorders versus any control conditions in adults and children in LMICs. Data collection and analysis: Standardized mean differences (SMD) or mean differences (MD) were used for continuous outcomes, and risk ratios (RR) for dichotomous data, using a random-effects model. We analyzed data at 0 to 1, 1 to 6, and 7 to 24 months post-intervention. For SMDs, 0.20 to 0.49 represented small, 0.50 to 0.79 moderate, and ≥ 0.80 large clinical effects. We evaluated the risk of bias (RoB) using Cochrane RoB2. **Results:** Description of studies We identified 113 studies with 32,992 participants (97 RCTs, 19,570 participants in meta-analyses) for inclusion. Nineteen RCTs were conducted in low-income countries, 27 in low-middle-income countries, 2 in middle-income countries, 58 in upper-middle-income countries and 7 in mixed settings. Eighty-three RCTs included adults and 30 RCTs included children. Cadres of primary-level workers employed primary care health workers (38 studies), community workers (71 studies), both (2 studies), and not reported (2 studies). Interventions were universal

prevention/promotion in 22 studies, selective in 36, and indicated prevention in 55 RCTs. Risk of bias The most common concerns over risk of bias were performance bias, attrition bias, and reporting bias. Intervention effects 'Probably', 'may', or 'uncertain' indicates 'moderate-', 'low-', or 'very low-'certainty evidence. *Certainty of the evidence (using GRADE) was assessed at 0 to 1 month post-intervention as specified in the review protocol. In the abstract, we did not report results for outcomes for which evidence was missing or very uncertain. Adults Promotion/universal prevention, compared to usual care: - probably slightly reduced anxiety symptoms (MD -0.14, 95% confidence interval (CI) -0.27 to -0.01; 1 trial, 158 participants) - may slightly reduce distress/PTSD symptoms (SMD -0.24, 95% CI -0.41 to -0.08; 4 trials, 722 participants) Selective prevention, compared to usual care: - probably slightly reduced depressive symptoms (SMD -0.69, 95% CI -1.08 to -0.30; 4 trials, 223 participants) Indicated prevention, compared to usual care: - may reduce adverse events (1 trial, 547 participants) - probably slightly reduced functional impairment (SMD -0.12, 95% CI -0.39 to -0.15; 4 trials, 663 participants) Children Promotion/universal prevention, compared to usual care: - may improve the quality of life (SMD -0.25, 95% CI -0.39 to -0.11; 2 trials, 803 participants) - may reduce adverse events (1 trial, 694 participants) - may slightly reduce depressive symptoms (MD -3.04, 95% CI -6 to -0.08; 1 trial, 160 participants) - may slightly reduce anxiety symptoms (MD -2.27, 95% CI -3.13 to -1.41; 1 trial, 183 participants) Selective prevention, compared to usual care: - probably slightly reduced depressive symptoms (SMD 0, 95% CI -0.16 to -0.15; 2 trials, 638 participants) - may slightly reduce anxiety symptoms (MD 4.50, 95% CI -12.05 to 21.05; 1 trial, 28 participants) - probably slightly reduced distress/PTSD symptoms (MD -2.14, 95% CI -3.77 to -0.51; 1 trial, 159 participants) Indicated prevention, compared to usual care: - decreased slightly functional impairment (SMD -0.29, 95% CI -0.47 to -0.10; 2 trials, 448 participants) - decreased slightly depressive symptoms (SMD -0.18, 95% CI -0.32 to -0.04; 4 trials, 771 participants) - may slightly reduce distress/PTSD symptoms (SMD 0.24, 95% CI -1.28 to 1.76; 2 trials, 448 participants). **Conclusions:** The evidence indicated that prevention interventions delivered through primary workers - a form of task-shifting - may improve mental health outcomes. Certainty in the evidence was influenced by the risk of bias and by substantial levels of heterogeneity. A supportive network of infrastructure and research would enhance and reinforce this delivery modality across LMICs.

Purgato et al. 2023.

Cochrane Database of Systematic Reviews, vol. 10, no. 10.

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Keywords: Community; worker interventions; mental health; well-being.

Evidence Level: 1A

Link: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD014722.pub2/full>

Psychological variables associated with post-traumatic stress disorder in firefighters: A systematic review

Background: Firefighters are repeatedly exposed to work-related potential traumatic events and have an increased risk of developing post-traumatic stress disorder (PTSD). However, the mechanisms implicated in this relationship are not clear. The aim of this study was to analyse the risk and protective factors related to the development of PTSD in firefighters. **Methods:** According to PRISMA, a systematic review of scientific literature was conducted in Web of Science, PsycINFO, Scopus, PubMed and the Cochrane Central Register of Controlled Trials. Quality in Prognosis Studies (QUIPS) was used as the methodological quality indicator of the selected articles (PROSPERO reference CRD42020213009). Prognostic studies involving active firefighters with presence of post-traumatic symptomatology, presenting original findings, and written in Spanish or English were included. A total of 1768 potentially eligible articles were identified. According to the inclusion criteria, 87 articles were selected to evaluate the full text. **Results:** Finally, 19 articles were included, comprising 12,298 active firefighters. There is high heterogeneity in the variables evaluated in the different studies. Taking the data for which this review has found more evidence (moderate support), operational stress, job duration, burnout, expressive suppression and rumination could be risk factors of PTSD, and belongingness and dispositional mindfulness could be protective factors. Other variables with weak support (e.g. resilience) were analysed. **Conclusions:** This review analyses the available literature, highlighting its scarcity for future research on the subject. Due to repeated trauma exposure, it is important to continue investigations and bear these variables in mind for the prevention of PTSD in firefighters.

Serrano-Ibáñez et al. 2023.

Trauma, Violence & Abuse, vol. 24, no. 4.

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Keywords: Firefighters; post-traumatic stress disorder; protective factor; review; risk factor.

Evidence Level: 1A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10486174/>

The impact of employment on mental healthcare use among people with disability: Distinguishing between part- and full-time employment

Background: Employment can improve mental health among people with disability (PWD), however, little is known about how different levels of workforce participation influence mental healthcare use. The aim of this study was to estimate the extent to which different levels of working hours are associated with changes in mental healthcare use among PWD. **Methods:** Data on working hours and healthcare use among working age PWD who were receiving government benefits (N=260 825) was obtained from Australian Census-linked administrative records between 2011 and 2019. Individual fixed effects panel models were used to estimate the impact of increased working hours on mental healthcare (services and prescriptions). Heterogeneity analyses by job security and key sociodemographic characteristics were conducted. **Results:** Compared to not working, we found that working 1-14, 15-29, and ≥ 30 hours per week was respectively associated with a 3.3%, 18.0%, and 9.9% reduction in the use of mental healthcare prescriptions as well as a 6.8%, 18.4%, and 22.3% reduction in the use of mental healthcare services by PWD. The effects were larger for PWD in more secure work and those living in rural and disadvantaged areas. **Conclusions:** Working more hours was associated with reduced mental healthcare use among PWD. Policy interventions should consider the broader benefits of enabling part-time and secure work placements for PWD, particularly for those living in rural and disadvantaged regions.

Saxby et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 8.

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Keywords: Employment; mental healthcare; disability; part time employment; full time employment.

Evidence Level: 4A

Link: <https://www.sjweh.fi/article/4123>

Changes in economic activity and mental distress among young adults during the COVID-19 pandemic: Differences between the first and second infection waves in the UK

Background: While infection rates, lockdown policies, and labor market conditions substantially varied across COVID-19 waves, the majority of evidence on young adults' mental health remains focused on initial responses in early 2020. The variability of the relationship between economic activity and mental health over time therefore remains poorly understood in this age group. **Methods:** Using linear mixed models, we investigated the relationship between current activity and changes in activity and mental distress (GHQ-12) among 1,390 young adults aged 16-34 via the UK Household Longitudinal Study COVID-19 survey. The association was explored in the first (from April to July 2020) and second (from September 2020 to March 2021) infection waves. Current activity was defined as "not working", "working <17.5 hours/week", "17.5-35 hours/week", and " ≥ 35 hours/week". Changes in activity were derived from current and pre-pandemic working hours and divided into four categories: "working with no reduced hours", "working fewer hours", "no longer working", and "did not work before the pandemic". **Results:** During the first wave, no association reached statistical significance. During the second wave: 1) compared to "currently not working", working 35 or more hours was associated with decreased distress ($b = -1.54$; 95%CI -2.39, -0.69) and working less than 17.5 hours was not ($b = -0.62$; 95%CI -1.66, 0.41); 2) compared to "working with no reduced hours compared with before the outbreak", no longer working was associated with increased distress ($b = 1.58$, 95%CI 0.61, 2.55) and working with reduced hours was not ($b = 0.47$, 95%CI -0.24, 1.17). **Conclusion:** Above the mental health inequalities experienced at the start of the pandemic, full-time work-even with variation in work hours-continued to be a protective factor against mental distress among young adults during the second wave in the UK. Stable, full-time work can better support this age group's mental well-being over time.

Zhang et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Economic activity; mental distress; COVID-19; infection waves.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292540>

Socioeconomic inequalities, psychosocial stressors at work and physician-diagnosed depression: Time-to-event mediation analysis in the presence of time-varying confounders

Background: There is evidence that both low socioeconomic status (SES) and psychosocial stressors at work (PSW) increase risk of depression, but prospective studies on the contribution of PSW to the socioeconomic gradient of depression are still limited. **Methods:** Using a prospective cohort of Quebec white-collar workers (n = 9188 participants, 50% women), we estimated randomized interventional analogues of the natural direct effect of SES indicators at baseline (education level, household income, occupation type and a combined measure) and of their natural indirect effects mediated through PSW (job strain and effort-reward imbalance (ERI) measured at the follow-up in 1999-2001) on incident physician-diagnosed depression. **Results:** During 3 years of follow-up, we identified 469 new cases (women: 33.1 per 1000 person-years; men: 16.8). Mainly in men, low SES was a risk factor for depression [education: hazard ratio 1.72 (1.08-2.73); family income: 1.67 (1.04-2.67); occupational type: 2.13 (1.08-4.19)]. In the entire population, exposure to psychosocial stressors at work was associated with increased risk of depression [job strain: 1.42 (1.14-1.78); effort-reward imbalance (ERI) 1.73 (1.41-2.12)]. The estimated indirect effects of socioeconomic indicators on depression mediated through job strain ranged from 1.01 (0.99-1.03) to 1.04 (0.98-1.10), 4-15% of total effects, and for low reward from 1.02 (1.00-1.03) to 1.06 (1.01-1.11), 10-15% of total effects. **Conclusion:** Our study suggests that PSW only slightly mediate the socioeconomic gradient of depression, but that socioeconomic inequalities, especially among men, and PSW both increase the incidence of depression.

Pena-Gralle et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Socioeconomic inequalities; psychosocial stressors; depression.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0293388>

Bullying, Harassment and Occupational Violence

This month we explore the issues associated with workplace bullying on work engagement among early career employees, evidence of workplace violence against the primary healthcare workforce worldwide and sexual harassment at work within Defence.

Impact of workplace bullying on work engagement among early career employees

Background: This study aims to measure the impact of workplace bullying on work engagement in terms of employee silence and knowledge sharing. It also helps to explain how psychological contract breach moderates the bullying-silence relationship. **Methods:** For this study, data is collected from 384 early-career employees having experience up to three years from seven banks of Lahore, Pakistan.

Results: Findings of this study reveals that workplace bullying has a positive relationship with employee silence and negative relationship with work engagement. Results of all moderation and mediated variables are significantly related to each other. However, the results explain that a psychological contract breach slightly moderates the bullying-silence relationship. Survey-based questionnaire, cross-sectional research design, and convenience-based sampling technique are some of the limitations of this study. This is the first study that tried to investigate the bullying-engagement relationship among early-career employees in the banking sector of Lahore, Pakistan. This study may help practitioners and policymakers to develop anti-bullying laws that can support the management in overcoming the negative workplace environment. This

study aims to promote an equal opportunity for all employees where they can raise their voices about misconduct. **Conclusions:** This is the first study that investigated the victimization of bullying behavior among early-career employees in a Pakistani cultural context.

Javed et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Workplace bullying; work engagement; early career.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0285345>

Contemporary evidence of workplace violence against the primary healthcare workforce worldwide: A systematic review

Background: Violence against healthcare workers recently became a growing public health concern and has been intensively investigated, particularly in the tertiary setting. Nevertheless, little is known of workplace violence against healthcare workers in the primary setting. Given the nature of primary healthcare, which delivers essential healthcare services to the community, many primary healthcare workers are vulnerable to violent events. Since the Alma-Ata Declaration of 1978, the number of epidemiological studies on workplace violence against primary healthcare workers has increased globally. Nevertheless, a comprehensive review summarising the significant results from previous studies has not been published.

Methods: Thus, this systematic review was conducted to collect and analyse recent evidence from previous workplace violence studies in primary healthcare settings. Eligible articles published in 2013-2023 were searched from the Web of Science, Scopus, and PubMed literature databases. Of 23 included studies, 16 were quantitative, four were qualitative, and three were mixed method. The extracted information was analysed and grouped into four main themes: prevalence and typology, predisposing factors, implications, and coping mechanisms or preventive measures. **Results:** The prevalence of violence ranged from 45.6% to 90%. The most commonly reported form of violence was verbal abuse (46.9-90.3%), while the least commonly reported was sexual assault (2-17%). Most primary healthcare workers were at higher risk of patient- and family-perpetrated violence (Type II). Three sub-themes of predisposing factors were identified: individual factors (victims' and perpetrators' characteristics), community or geographical factors, and workplace factors. There were considerable negative consequences of violence on both the victims and organisations. Under-reporting remained the key issue, which was mainly due to the negative perception of the effectiveness of existing workplace policies for managing violence. Workplace violence is a complex issue that indicates a need for more serious consideration of a resolution on par with that in other healthcare settings. **Conclusions :** Several research gaps and limitations require additional rigorous analytical and interventional research. Information pertaining to violent events must be comprehensively collected to delineate the complete scope of the issue and formulate prevention strategies based on potentially modifiable risk factors to minimise the negative implications caused by workplace violence.

Yusoff et al. 2023.

Human Resources for Health, vol. 21, no. 1.

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Keywords: Workplace violence; primary healthcare workforce; public health.

Evidence Level: 1A

Link: <https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-023-00868-8>

Sexual harassment at work within Belgian Defence: A prevalence study

Background: Sexual harassment (SH) at work can have an impact on the general health and well-being and on the productivity of the employee. To date, the Belgian Armed Forces do not have any accurate data about SH. Therefore, this study assessed the prevalence of SH within Belgian Defence. **Methods:** The prevalence of SH and staff mental well-being was investigated in a sample of 399 female soldiers. Using quantitative analysis, we measured the impact on mental well-being and the relation to demographic characteristics. Using a qualitative analysis in a subsample of eight female soldiers, we investigated barriers to reporting SH and the impact on professional performance and psychosocial well-being. **Results:** The prevalence of non-physical SH is 36.1% over the last 12 months and 64.4% over the course of a career.

Physical SH has a prevalence of 16.1% and 43.4%, respectively. Rape prevalence was reported to be 1.4% over the past 12 months, 9% over the course of their career. One in three female soldiers suffer from reduced mental well-being, which was significantly associated with SH. In the interviews, female employees report an impact of SH on professional and personal performance. The willingness to report is low due to misunderstanding, disinformation and psychosocial insecurity. **Conclusion:** High prevalence numbers were found suggesting an important impact on the professional performance and mental well-being of female military personnel. Organisational changes may create more willingness among victims to report incidents to the designated services.

Buyse et al. 2023.

BMJ Military Health, vol. 169, no. 5.

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Keywords: Health & safety; health policy; mental health; organisation of health services; risk management; sexual medicine.

Evidence Level: 5B

Link: <https://militaryhealth.bmj.com/content/169/5/397.long>

Psychosocial Issues

This month we explore the psychosocial issues associated with all-cause and cause-specific mortality, the role of perceived autonomy support and fear of failure, the impact of stress on prevalence of cardiovascular disease risk factors, the perceived stress by mototaxi drivers and its relationship with sociodemographic and occupational characteristics and gender- and age-specific associations between psychosocial work conditions and perceived work sustainability. In other research we explore interventions for managing work-related stress, effects of consecutive workdays and days off on low back pain, fatigue and stress, the impact of stress appraisals on work engagement, association between high emotional demand at work, burnout symptoms, and sleep disturbance, and relationship between psychological detachment from work and depressive symptoms. We also explore work characteristics and emotional exhaustion among young workers, associations between improvements in psychological variables and subsequent sick leave, and time management practice and associated factors.

Trajectories of psychosocial working conditions and all-cause and cause-specific mortality: A Swedish register-based cohort study

Background: While psychosocial working conditions have been associated with morbidity, their associations with mortality, especially cause-specific mortality, have been less studied. Additionally, few studies considered the time-varying aspect of exposures. We aimed to examine trajectories of job demand-control status in relation to all-cause and cause-specific mortality, including cardiovascular diseases (CVD), suicide, and alcohol-related mortality. **Methods:** The study population consisted of around 4.5 million individuals aged 16–60 years in Sweden in 2005. Job control and demands were respectively measured using job exposure matrices (JEM). Trajectories of job control and demands throughout 2005–2009 were identified using group-based trajectory modelling, and job demand-control categories were subsequently classified. Deaths in 2010–2019 were recorded in the national cause of death register. Cox regression models were used. **Results:** A total of 116 242 individuals died in 2010–2019. For both job control and demands, we identified four trajectories, which were parallel to each other and represented four levels of exposures. Low control and passive jobs were associated with higher all-cause, CVD, and suicide mortality among both men and women. High strain jobs were associated with higher all-cause and CVD mortality among men, while low control, passive jobs, and high strain jobs were associated with higher alcohol-related mortality among women. **Conclusions:** The trajectories identified may suggest stable levels of job control and demands over time. Poor psychosocial working conditions are related to all-cause and cause-specific mortality, and these patterns vary to some extent between men and women.

Pan et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 7.

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Keywords: Psychosocial working conditions; mortality.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4111>

The role of perceived autonomy support and fear of failure: A weekly diary study on work-related rumination

Background: Grounded in self-determination theory, the present study examined the weekly fluctuations in different forms of work-related rumination depending on perceived autonomy support and fear of failure at the workplace. Work-related rumination has three dimensions, affective rumination (negative emotions or affect), problem-solving pondering (thinking over the actions to handle the problems), and psychological detachment (mentally distancing oneself from work during nonwork time). **Methods:** In total, 111 employees (Mage = 34.88, SD = 10.43) from various occupations were followed over the course of three weeks via weekly measurements, resulting in 333 matched observations. **Results:** Multilevel random coefficient modeling showed that on the weeks when employees reported higher levels of perceived autonomy support from the leader, they engaged in affective rumination and problem-solving pondering less. However, weekly fluctuations in psychological detachment from work was not associated with perceived autonomy support. Moreover, on the weeks when employees experienced high fear of failure, they reported less psychological detachment from work during nonwork time. Lastly, within-and and between-person fear of failure moderated the negative link between perceived autonomy support and affective rumination. **Conclusions:** Findings showed that perceived autonomy support is a protective factor for employees high in both state and trait fear of failure in decreasing affective rumination. Directions for future research and implication for practice were discussed.

Manuoglu 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Perceived autonomy; fear of failure; work-related rumination.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291312>

Impact of stress and stress mindset on prevalence of cardiovascular disease risk factors among first responders

Background: Psychological stress is recognized as an important modifiable risk factor for cardiovascular disease (CVD). Despite its potential significance, few to no studies have evaluated the association between stress, stress mindset, and CVD risk factors among rural first responders. The objectives of this study were to identify relationships between general stress, stress mindset, and CVD risk factors. **Methods:** The study sample (n = 148) included those 18 years or older and who currently serve as a first responder, defined as either EMS, firefighter, or law enforcement. Questionnaires captured information on demographics, years of work experience as a first responder, multiple first responder occupations, general stress, stress mindset, and self-reported CVD risk factors. Data were analyzed using regression analyses. **Results:** Findings suggest that first responders with a stress-is-negative mindset have significantly higher general stress levels ($\beta = 2.20$, $p = 0.01$). Of note, general stress was not a significant predictor of CVD risk factors (AOR = 1.00, 95%CI = 0.93, 1.08) included in our study. However, a negative stress mindset was statistically significant predictor of CVD risk factors (AOR = 2.82, 95%CI = 1.29, 6.41), after adjusting for general stress and other potential confounders. **Conclusions:** Findings suggest that stress mindset is an independent predictor of stress and CVD risk factors among rural first responders. These results have the potential to inform educational and organization level interventions targeting stress appraisal for this vulnerable sub population of workers.

Hendricks et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: cardiovascular disease; first responders; rural; stress mindset.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16819-w>

Psychosocial stressors at work and coronary heart disease risk in men and women: 18-year prospective cohort study of combined exposures

Background: Psychosocial stressors at work, like job strain and effort-reward imbalance (ERI), can increase coronary heart disease (CHD) risk. ERI indicates an imbalance between the effort and received rewards. Evidence about the adverse effect of combined exposure to these work stressors on CHD risk is scarce. This study examines the separate and combined effect of job strain and ERI exposure on CHD incidence in a prospective cohort of white-collar workers in Quebec, Canada. **Methods:** Six thousand four hundred sixty-five white-collar workers without cardiovascular disease (mean age, 45.3±6.7) were followed for 18 years (from 2000 to 2018). Job strain and ERI were measured with validated questionnaires. CHD events were retrieved from medico-administrative databases using validated algorithms. Marginal Cox models were used to calculate hazard ratios (HR) stratified by sex. Multiple imputation and inverse probability weights were applied to minimize potential threats to internal validity. **Results:** Among 3118 men, 571 had a first CHD event. Exposure to either job strain or ERI was associated with an adjusted 49% CHD risk increase (HR, 1.49 [95% CI, 1.07-2.09]). Combined exposure to job strain and ERI was associated with an adjusted 103% CHD risk increase (HR, 2.03 [95% CI, 1.38-2.97]). Exclusion of early CHD cases and censoring at retirement did not alter these associations. Among 3347 women, 265 had a first CHD event. Findings were inconclusive (passive job HR, 1.24 [95% CI, 0.80-1.91]; active job HR, 1.16 [95% CI, 0.70-1.94]; job strain HR, 1.08 [95% CI, 0.66-1.77]; ERI HR, 1.02 [95% CI, 0.72-1.45]). **Conclusions:** In this prospective cohort study, men exposed to job strain or ERI, separately and in combination, were at increased risk of CHD. Early interventions on these psychosocial stressors at work in men may be effective prevention strategies to reduce CHD burden. Among women, further investigation is required.

Lavigne-Robichaud et al. 2023.

Circulation: Cardiovascular Quality and Outcomes, vol. 16, no. 10.

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Keywords: Cardiovascular disease; cohort studies; heart disease; men; occupational stress; women.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10573112/>

Perceived stress by mototaxi drivers and its relationship with sociodemographic and occupational characteristics

Background: To investigate the association of sociodemographic and occupational characteristics with a high level of perceived stress in motorcycle taxi drivers. **Method:** Cross-sectional study carried out with motorcycle taxi drivers who answered instruments on sociodemographic and occupational variables - Perceived Stress Scale, Job Content Questionnaire and Effort-Reward Imbalance. Descriptive statistics, Pearson's chi-square test and Poisson regression with robust variance were used. Statistical significance was 5%. **Results:** Of the 800 motorcycle taxi drivers, 46.8% had a high level of perceived stress. In the multivariate analysis, a high level of stress was associated with low control over work (PR=7.76; 95%CI=5.19-11.61), low social support at work (PR=3.87; 95%CI=2.95-5.08), working hours longer than eight hours a day (RP=1.47; 95%CI=1.21-1.78) and monthly income less than or equal to two minimum wages (PR=1.34; 95%CI=1.13-2.58). **Conclusion:** Long working hours, occupational stressors and low income were associated with a high level of perceived stress. Public policies and interventions to minimize occupational stressors are essential.

Cidreira et al. 2023.

Brazilian Journal of Nursing - Revista Brasileira de Enfermagem, vol. 76, no. 4.

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Keywords: Stress; sociodemographic; mototaxi drivers.

Evidence Level: 4B

Link: <https://www.scielo.br/j/reben/a/jJLsqjgQrkCyQc9ZVHb6wgi/?lang=en>

Gender- and age-specific associations between psychosocial work conditions and perceived work sustainability in the general working population in Taiwan

Background: One aspect of work sustainability pertains to workers' intention to remain in their current job until reaching retirement age. Various adverse working conditions are expected to diminish work sustainability among different social groups. This study aims to examine these associations across gender and age groups. **Methods:** The study participants were 19,152 economically-active adults in a national survey conducted in Taiwan. Information concerning psychosocial working conditions were obtained through interviews, using the Job Content Questionnaire. Work sustainability was evaluated by one question that asked whether the participants felt they would be able to do their current job until the age of 60. The association between psychosocial work conditions and work sustainability was examined by logistic regression analysis. We further performed stratified analysis to explore age and gender-specific associations. **Results:** We observed that 14.2% and 17.1% of male and female workers reported low work sustainability. Workers in the electronics industries and female workers in the healthcare and education sectors reported low work sustainability. Gender-specific analyses showed that low job control among men and shift work among women were significantly associated with low work sustainability. Age-specific analyses indicated that having poor health, shift work, and long working hours in younger workers, and having low job control in older workers were associated with low work sustainability.

Conclusion: To retain older workers in the labor market, policies should aim at the improvement of psychosocial work conditions, and gender- and age-specific issues should be taken into consideration.

Cheng et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Gender; age; psychosocial; work sustainability.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0293282>

Organizational and individual interventions for managing work-related stress in healthcare professionals: A systematic review

Background: The workplace represents a relevant source of stress for workers, being a risk factor for many mental disorders and psychological difficulties, including burn-out syndrome. Healthcare workers and other help-professions are particularly susceptible to work-related stress. **Methods:** The present systematic review aims to (1) identify available interventions for managing workplace-related stress symptoms; (2) assess their efficacy; and (3) discuss the current limitations of available interventions. A systematic review has been conducted, searching on PubMed, APA PsycInfo, and Scopus databases. **Results:** Eighteen papers have been identified, which included different interventions for the management of work-related stress in healthcare professionals. These approaches can be grouped as follows: (1) interventions focusing on the individual level using cognitive-behavioral therapy (CBT) approaches; (2) interventions focusing on the individual level using relaxation techniques; and (3) interventions focusing on the organizational level. As regards interventions targeting the individual level using CBT approaches, mindfulness-based interventions were effective in reducing levels of burn-out, stress, and anxiety and in improving quality of life. As regards intervention using relaxation techniques, including art therapy, Emotional Freedom Techniques (ECT) and brief resilience retreats had a positive effect on the levels of anxiety, stress, and burnout. **Conclusions:** As regards interventions at the organizational level, we found no evidence for supporting its effectiveness in reducing the levels of burnout. Furthermore, available studies are heterogeneous in terms of assessment tools, target populations, and type of interventions, which limits the generalizability of findings.

Catapano et al. 2023.

Medicina, vol. 59, no. 10.

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Keywords: Burnout; healthcare workers; intervention; physician; stress; workplace.

Evidence Level: 1A

Link: <https://www.mdpi.com/1648-9144/59/10/1866>

Effects of consecutive workdays and days off on low back pain, fatigue and stress: Prospective cohort study among warehouse and construction workers

Background: Limited knowledge exists about day-to-day changes in physical and mental symptoms in warehouse and construction workers. This study investigated the associations between consecutive workdays and days off with low back pain (LBP) intensity, bodily fatigue and mental stress.

Methods: Participants (n=224) received daily questions for 21 days about LBP, fatigue, stress (outcome, 0-10 scales), and workdays and days off (exposure). We tested associations between 1-3 workdays (n=148) and 1-2 days off (n=158) with LBP intensity, bodily fatigue and mental stress after work and the following morning using linear mixed models with repeated measures controlling for relevant confounders.

Results: Consecutive workdays led to progressively increased LBP intensity, with three workdays increasing LBP intensity by 1.76 (95% CI 1.48 to 2.03) points. Bodily fatigue and mental stress increased after one workday (2.06 (95% CI 1.80 to 2.32) and 0.97 (95% CI 0.77 to 1.17) points, respectively) and remained stable for three workdays. After 1 day off, bodily fatigue and mental stress decreased -1.82 (95% CI -2.03 to -1.61) and -0.88 (95% CI -1.05 to -0.71) points, respectively, without decreasing further. In contrast, LBP intensity decreased progressively -1.09 (95% CI -1.27 to -0.91) and -1.45 (95% CI -1.67 to -1.24) points after 1 and 2 days off, respectively. **Conclusions:** Workdays and days off affected the outcome variables differently. LBP intensity progressively increased with consecutive workdays, while workers needed 2 days off to recover. This study provides valuable knowledge about how to organise the workweek to prevent LBP, fatigue and stress, potentially reducing labour market withdrawal.

Bláfoss et al. 2023.

Occupational and Environmental Medicine, vol. 80, no. 11.

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

Keywords: Back pain; fatigue; occupational health; occupational stress; workload.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/80/11/650.long>

The essential impact of stress appraisals on work engagement

Background: This paper explains the contradictory findings on the relationship between stress and work engagement by including appraisals as a driving mechanism through which job stressors influence engagement. In doing so, it explores whether stressors categorised as either challenging or hindering can be appraised simultaneously as both. Second, it investigates whether stress mindset explains not only how stressors are appraised, but also how appraisals influence engagement. **Methods:** Over five workdays, 487 Canadian and American full-time employees indicated their stress mindset and appraised numerous challenging and hindering stressors, after which they self-reported their engagement at work. **Results:** Results showed that employees rarely appraised stress as uniquely challenging or hindering. Moreover, when employees harbored positive views about stress, stressors overall were evaluated as less hindering and hindrance stressors were particularly more challenging. Stress mindset appears to be critical in modulating the genesis of stress appraisals. In turn, appraisals explained the stressor-engagement relationship, with challenge and hindrance stressors boosting and hampering engagement, respectively. Finally, positive stress mindset buffered the negative effect of hindrance appraisals on engagement.

Conclusions: Our findings clarify misconceptions about how workplace stressors impact engagement and offer novel evidence that stress mindset is a key factor in stress at work.

Al Hajj et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Stress; work engagement; job stressors; stress appraisals.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291676>

Association between high emotional demand at work, burnout symptoms, and sleep disturbance among Korean workers: A cross-sectional mediation analysis

Background: We explored the mediating role of burnout on the association between EDW and sleep disturbances. **Methods:** Our study included 18,744 Korean workers. Respondents were grouped into four levels (none, low, moderate, and high) based on their exposure to two EDW factors: handling angry clients (HAC) and hiding emotion (HE). Mediation models were used to estimate odds ratios (OR) at a 95% confidence interval (CI). **Results:** Compared to those not exposed, low, moderate, and high HAC increased odds of sleep disturbance by 1.52 (95% CI 1.30-1.78), 3.20 (95% CI 2.57-3.98), and 3.28 (95% CI 2.77-3.88) times, respectively. The indirect effect via burnout accounted for 29.9%, 24.1%, and 23.6% of the total effect, respectively, with estimates of 1.13 (95% CI 1.11-1.16), 1.32 (95% CI 1.26-1.39), and 1.32 (95% CI 1.27-1.37). Low, moderate, and high HE increased the odds of sleep disturbance by 1.45 (95% CI 0.93-2.28), 2.38 (95% CI 1.57-3.61), and 3.14 (95% CI 2.08-4.71) times, respectively. The indirect effect via burnout accounted for 10.5%, 29.7%, and 33.1% of the total effect, with estimates of 1.04 (95% CI 0.98-1.10), 1.29 (95% CI 1.22-1.37), and 1.46 (95% CI 1.38-1.55), respectively. **Conclusions:** Effective policies are required to protect the psychological wellbeing of workers who frequently engage in interpersonal tasks.

Baek et al. 2023.

Scientific Reports, vol. 13, no. 1.

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Keywords: Emotional demand; burnout; sleep disturbance.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-023-43451-w>

Relationship between psychological detachment from work and depressive symptoms: Indirect role of emotional exhaustion and moderating role of self-compassion

Background: The importance of psychological detachment during nonwork time has been emphasized, and its effect on depressive symptoms has been identified. However, the mechanism underlying this association remains to be elucidated. This study was conducted to identify the indirect role of emotional exhaustion in the association between psychological detachment and depressive symptoms and the moderating role of self-compassion in the relationship between emotional exhaustion and depressive symptoms on the basis of the recovery-engagement-exhaustion model and emotion regulation theory. **Methods:** Through an online survey, relevant data were collected from 727 university teachers (mean age, 37.65 ± 7.77 years; 38.5% men). Indirect and moderation effect were analyzed through structural equation modeling (Mplus).

Results: Psychological detachment was found to be associated with depressive symptoms through emotional exhaustion. Self-compassion moderated the association between emotional exhaustion and depressive symptoms. The association between emotional exhaustion and depressive symptoms was weaker among university teachers with high levels of self-compassion than among those with low levels of self-compassion. This study improves our understanding of the association between psychological detachment and depressive symptoms by identifying the emotional pathway and protective function of self-compassion. **Conclusions:** Interventions for improving mental health in work context should be designed considering psychological detachment and self-compassion to deal with work-induced emotional strain.

Wu et al. 2023.

BMC Psychology, vol. 11, no. 1.

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Keywords: Depressive symptoms; emotional exhaustion; psychological detachment; self-compassion.

Evidence Level: 5B

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-023-01384-z>

Work characteristics and emotional exhaustion among young workers: A latent class analysis

Background: This study aims to assess the heterogeneity of psychosocial working conditions of young workers by identifying subgroups of work characteristic configurations within young workers and to assess these subgroups' associations with emotional exhaustion. **Methods:** Latent class analysis. Groups were formed based on 12 work characteristics (8 job demands and 4 job resources), educational level and sex. Differences in emotional exhaustion between subgroups were analysed using analysis of variance and post

hoc comparisons. Setting: Data from the 2019 wave of the Netherlands Working Conditions Survey. Participants: 7301 individuals between the age of 18 and 30 years, who worked more than 16 hours per week. Main outcome measure: Emotional exhaustion. **Results:** Five subgroups of work characteristics could be identified and were labelled as: (1) 'low-complexity work' (24.4%), (2) 'office work' (32.3%), (3) 'manual and non-interpersonal work' (12.4%), (4) 'non-manual and interpersonal work' (21.0%), and (5) 'manual and interpersonal work' (9.9%). Mean scores for emotional exhaustion in the two interpersonal work groups (M=3.11, SD=1.4; M=3.45, SD=1.6) were significantly higher than in the first three groups (M=2.05, SD=1.1; M=1.98, SD=1.0; M=2.05, SD=1.1) (all 95% CIs excluding 0). Further, mean scores for emotional exhaustion were significantly higher in the 'manual and interpersonal work' group than in the 'non-manual and interpersonal work' group (95% CI 0.24, 0.45). All results could be replicated in the 2017 and 2021 waves of the Netherlands Working Conditions Survey. **Conclusions:** Young workers reported heterogeneous work characteristic configurations with substantial differences in degrees of emotional exhaustion between the identified subgroups. Preventing emotional exhaustion should focus on the two interpersonal work subgroups, which showed a high degree of emotional exhaustion. In prevention efforts, these groups' configurations of work characteristics should be taken into account.

van Veen et al. 2023.

BMJ Open, vol. 13, no. 10.

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Keywords: Mental health; occupational & industrial medicine; primary prevention.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/13/10/e074386.long>

Associations between improvements in psychological variables and subsequent sick leave among persons receiving a multimodal intervention for exhaustion disorder

Background: The incidence of sick leave due to stress-related disorders such as exhaustion disorder (ED) is high in many economically developed countries. Meanwhile, knowledge about facilitating return to work during clinical interventions for ED patients is still limited. The current study aimed to investigate if improvements in exhaustion symptoms, insomnia, perfectionistic behaviors, psychological flexibility, and perceived work ability during treatment of ED were associated with subsequent sick leave in the year following treatment. **Methods:** Using a cohort of 880 ED patients who had participated in a multimodal intervention based on Cognitive Behavior Therapy, we estimated the association between one standard deviation (SD) improvement in treatment-related variables and the rate of net days of sick leave one-year following treatment. **Results:** Our results showed that improvements in all treatment-related variables were associated with lower sick leave rates one year following treatment. Improvements in exhaustion symptoms (rate ratio (RR): 0.70 [95% CI 0.66; 0.75]) and self-perceived work ability (RR 0.56 [95% CI 0.50; 0.63]) showed the strongest associations to subsequent sick leave. **Conclusions:** These findings suggest that interventions focusing on exhaustion symptoms, insomnia, perfectionistic behaviors, psychological flexibility, and perceived work ability can have a meaningful impact on ED patients' subsequent sick leave.

Trial registration: Clinicaltrials.gov (Identifier: [NCT03360136](https://clinicaltrials.gov/ct2/show/study/NCT03360136)).

van de Leur et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Clinical burnout; exhaustion disorder; return to work; sick leave; work stress.

Evidence Level: 4B

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-023-16799-x>

Time management practice and associated factors among employees working in public health centers, Northwest Ethiopia: A mixed method study

Background: While progressing towards universal health coverage, poor time management in the healthcare system had significant effect on an individual such as imbalance, job dissatisfaction, and work ineffectiveness and finally poor productivity of the organization will be resulted. Information about time management practice in the healthcare system is limited. Therefore, the objective of this study was to assess time management practice and associated factors among employees working in public health

centers, Dabat District, Northwest Ethiopia. **Methods:** A facility-based cross-sectional mixed methods (quantitative and qualitative) study was conducted in Dabat District from May 27 to June 22, 2022. A simple random sampling technique was used to select 413 study subjects and for the qualitative data, six key informants were selected. Self-administered questionnaire was used for the quantitative study, and an interview guide was employed for the qualitative study. Epi-data version 4.6 and SPSS 26 software were used for data entry and analysis, respectively. Open Code 4.6 software was used for qualitative data analysis. Variables with p-value of < 0.05 in multivariable analysis were considered as significant associated factors. **Results:** A total of 396 employees participated in the study with a response rate of 95.8%. The result showed that overall, 54.8% (95% CI: 49.5-59.6) of health employees had practiced good time management. The likelihood of good time management was higher among those health workers who had planning experience (AOR = 2.04, 95% CI: 1.22-3.4), low procrastination habit (AOR = 1.65 95% CI: 1.04-2.65), satisfied with performance appraisal (AOR: 1.7, 95% CI: 1.05-2.81), and satisfied with organizational policy and strategy (AOR: 2.6, 95% CI: 1.6-4.3). The qualitative result also showed that the existing performance appraisal practices were not linked to rewards or sanction planning. **Conclusion:** The overall time management practice of public health center employees was low compared with prior studies. Organizational policies, prior planning experience, procrastination, and performance appraisal were all significantly associated factors with time management practice. Therefore, health center managers need to set an intervention to address all of the following factors to enhance employees' time management skills at public health centers like evidence-based performance appraisals, sharing organizational policies, and engaging in capacity building activities such as training in time management and planning.

Terefe et al. 2023.

BMC Health Services Research, vol. 23, no. 1.

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Keywords: Dabat District; health center; health care workers; time management practice.

Evidence Level: 5B

Link: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-023-10004-w>

Fostering Work Participation

Return to Work

This month we explore the return to work issues associated with radical cystectomy, total hip arthroplasty, hospitalisation for Covid-19 and the effects of a national, agreement for an inclusive working life on work participation following long-term sickness absence.

Prospective evaluation of return to work, health-related quality of life and psychosocial distress after radical cystectomy: 1-year follow-up in 230 employed German bladder cancer patients

Background: To evaluate return to work (RTW), health-related quality of life (HRQoL) and psychosocial distress (PD) after radical cystectomy (RC) and creation of an ileal conduit (IC) or an orthotopic ileal neobladder (NB) for bladder cancer. **Methods:** The study relied on prospectively collected data for 842 patients, who underwent 3 weeks of inpatient rehabilitation (IR) after surgery between April 2018 and December 2019. HRQoL (EORTC QLQ-C30) and PD (Questionnaire on Stress in Cancer Patients [QSC-R10]) were evaluated at the beginning (T1) and end (T2) of IR as well as both 6 (T3) and 12 months after surgery (T4). Regression analyses were performed to identify predictors of HRQoL and RTW, respectively.

Results: Two hundred thirty patients (IC n = 51, NB n = 179) were employed before surgery (27.3%). HRQoL improved steadily, while high PD was present in 51.0% of patients at T4. RTW rate was 86.8 and 80.6% at T3 and T4, respectively. Linear regression analysis identified RTW as the only predictor for better HRQoL at T4 (OR [odds ratio] 12.823, 95% CI [confidence interval] 2.927-22.720, p = 0.012). Multivariate regression analysis identified age ≤ 59 years (OR 7.842; 95% CI 2.495-24.645; p < 0.001) as an independent positive predictor and lymph node metastasis (OR 0.220; 95% CI 0.054-0.893; p = 0.034) as an independent negative predictor of RTW at T4. **Conclusion:** Global HRQoL improved steadily during the follow-up and RTW rates are high. However, patients often reported high PD, reflecting a need for additional psychosocial support within aftercare.

Müller et al. 2023.

World Journal of Urology, vol. 41, no. 10.

User License:

Keywords: Bladder cancer; psychosocial distress; quality of life; radical cystectomy; return to work.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00345-023-04570-1>

Return to work status of patients under 65 years of age with osteonecrosis of the femoral head after total hip arthroplasty.

Background: This aimed to evaluate the status of return to work (RTW) in patients with osteonecrosis of the femoral head (ONFH) after total hip arthroplasty (THA). **Methods:** The baseline characteristics of all patients in this retrospective study were obtained from the hospital patient database. The relevant changes in patients' working conditions, as well as the numerical rating scale (NRS), Harris Hip Score (HHS), self-assessment of work ability, and Likert scale satisfaction assessment were obtained through video call follow-ups. **Results:** 118 patients (response rate: 83%) were ultimately included in this study. The average length of time for the patients to stop working preoperatively was 20.7 weeks. Ninety-four patients (24 women and 70 men) who underwent THA had RTW status, with a mean RTW time of 21.0 weeks. Men had a significantly higher proportion of final RTW and a significantly faster RTW than women. Significant differences in smoking, drinking, cardiovascular diseases, changes in working levels, variations in the types of physical work, changes in working hours, and pain symptoms were observed between the RTW and Non-RTW populations. The patients with a positive RTW status had higher postoperative HHS scores, lower postoperative NRS scores, and higher self-assessment of work ability than patients who had a negative RTW status. **Conclusion:** Ultimately, 80% of patients achieved RTW status. Drinking, sex, change in working level, variation in the type of physical work, change in working hours, post-surgery HHS score and self-assessment of work ability can serve as predictive factors for RTW.

Wang et al. 2023.

Journal of Orthopedic Surgery and Research, vol. 18, no. 1.

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Keywords: Arthroplasty; hip; osteonecrosis of the femoral head (ONFH); return; work.

Evidence Level: 4A

Link: <https://josr-online.biomedcentral.com/articles/10.1186/s13018-023-04283-6>

Return to work and health-related quality of life up to 1 year in patients hospitalized for COVID-19: the CO-FLOW study

Background: Currently, evidence about the long-term consequences of COVID-19 on return to work and health-related quality of life (HRQoL) is limited. We evaluated return to work and its associations with baseline characteristics and physical and mental recovery over time in patients up to 1 year after hospitalization for COVID-19. Secondly, we aimed to evaluate the association between return to work and health-related quality of life (HRQoL). **Methods:** CO-FLOW, a multicenter prospective cohort study, enrolled adult participants hospitalized for COVID-19, aged ≥ 18 years within 6 months after hospital discharge. Return to work and HRQoL were collected at 3, 6, and 12 months after hospital discharge using the iMTA Productivity Cost Questionnaire and the 36-Item Short Form Health Survey, respectively. Data were collected between July 1, 2020, and September 1, 2022. Generalized estimating equations with repeated measurements were used to assess outcomes over time. **Results:** In the CO-FLOW study, 371 participants were employed pre-hospitalization. At 3, 6, and 12 months post-discharge, 50% (170/342), 29% (92/317), and 15% (44/295) of participants had not returned to work, and 21% (71/342), 21% (65/317), and 16% (48/295) only partially, respectively. ICU admission (adjusted odds ratio (95% confidence interval): 0.17 (0.10 to 0.30), $p < 0.001$), persistent fatigue (0.93 (0.90 to 0.97), $p < 0.001$), female sex (0.57 (0.36 to 0.90), $p = 0.017$), and older age (0.96 (0.93 to 0.98), $p < 0.001$) were independently associated with no return to work. ICU patients required a longer time to return to work than non-ICU patients. Patients who did not return or partially returned to work reported lower scores on all domains of HRQoL than those who fully returned. **Conclusions:** One year after hospitalization for COVID-19, only 69% of patients fully returned to work, whereas 15% did not return and 16% partially returned to work. No or partial return to work was

associated with reduced HRQoL. This study suggests that long-term vocational support might be needed to facilitate return to work. **Trial registration:** World Health Organization International Clinical Trials Registry Platform NL8710.

Bek et al. 2023.

BMC Medicine, vol. 21, no. 1.

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Keywords: COVID-19; fatigue; intensive care; mental health; quality of life; rehabilitation; return to work.

Evidence Level: 4A

Link: <https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-023-03083-3>

The effects of a national, voluntary agreement for a more inclusive working life on work participation following long-term sickness absence: A Norwegian cohort study

Background: This study aimed to estimate the average individual effect of the company-level Norwegian Agreement on a More Inclusive Working Life (IA Agreement) on individuals' (i) sustained return to work after a sickness absence (SA) episode, and (ii) recurrent SA. **Methods:** Using register data, 79 253 men and 94 914 women born in Norway 1967-1976 were followed for one year between 2005 and 2010 after returning to work from an SA episode (>16 days). Weighted Cox proportional hazard models analysed time to first exit from work by companies' IA status (IA/non-IA). Weighted cumulative incidence differences between IA and non-IA groups with 95% bootstrapped confidence intervals (CI) were calculated for the competing events of full SA, graded (<100%) SA, unemployment/economic inactivity, education, disability pension, and death/emigration. Stabilised inverse probability of treatment weights balanced IA/non-IA groups according to nine covariates. Analyses were stratified by gender, and separately for two initial SA diagnoses (musculoskeletal and psychological). **Results:** Both men [adjusted hazard ratio (HR) 0.96, 95% CI 0.93-0.99] and women (adjusted HR 0.97, 95% CI 0.94-0.99) in IA companies were less likely to exit work in the year following SA. Similar findings were seen among individuals with musculoskeletal diagnoses and women with psychological diagnoses. Men with psychological diagnoses were more likely to exit work. Recurrent full and graded SA were more likely, and unemployment/economic inactivity less likely, in IA companies. However, the estimated effects were small and the CI often included the null.

Conclusions: Individuals working in IA companies were more likely to remain in work. This was mainly due to reduced unemployment/economic inactivity, suggesting the IA Agreement may have influenced work participation through other means than reduced SA.

Hasting et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 7.

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Keywords: Work participation; long-term sickness absence; Norwegian.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4112>

Presenteeism and Absenteeism

This month we explore issues associated with predicting long-term sickness absence with employee questionnaires and administrative records, sick leave length following distal radius fractures, the relationship between simulation-based team training and sick leave, the impact of adding sickness absence checkpoints on rehabilitation and labour market outcome, and labour market trajectories after part-time sickness absence. In Covid-19 related research we explore sickness presenteeism in healthcare workers during the pandemic.

Predicting long-term sickness absence with employee questionnaires and administrative records: A prospective cohort study of hospital employees

Background: This study aimed to compare the utility of risk estimation derived from questionnaires and administrative records in predicting long-term sickness absence among shift workers. **Methods:** This prospective cohort study comprised 3197 shift-working hospital employees (mean age 44.5 years, 88.0%

women) who responded to a brief 8-item questionnaire on work disability risk factors and were linked to 28 variables on their working hour and workplace characteristics obtained from administrative registries at study baseline. The primary outcome was the first sickness absence lasting ≥ 90 days during a 4-year follow-up. **Results:** The C-index of 0.73 [95% confidence interval (CI) 0.70-0.77] for a questionnaire-only based prediction model, 0.71 (95% CI 0.67-0.75) for an administrative records-only model, and 0.79 (95% CI 0.76-0.82) for a model combining variables from both data sources indicated good discriminatory ability. For a 5%-estimated risk as a threshold for positive test results, the detection rates were 76%, 74%, and 75% and the false positive rates were 40%, 45% and 34% for the three models. For a 20%-risk threshold, the corresponding detection rates were 14%, 8%, and 27% and the false positive rates were 2%, 2%, and 4%. To detect one true positive case with these models, the number of false positive cases accompanied varied between 7 and 10 using the 5%-estimated risk, and between 2 and 3 using the 20%-estimated risk cut-off. The pattern of results was similar using 30-day sickness absence as the outcome. **Conclusions:** The best predictive performance was reached with a model including both questionnaire responses and administrative records. Prediction was almost as accurate with models using only variables from one of these data sources. Further research is needed to examine the generalizability of these findings.

Nyberg et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 8.

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Keywords: Long-term sickness; absence; hospital employees.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4124>

Sick leave length and the costs of operatively and conservatively treated distal radius fractures in the working age population: A retrospective cohort study

Background: Among the working population, a transient loss of working ability due to distal radius fracture (DRF) has a societal impact in terms of sick leave. Non-operative cast immobilization is the most common treatment option for DRF. However, these fractures are increasingly treated operatively. This retrospective cohort study of patients aged 20-64 with DRF compares the effects of different treatment strategies on sick leave length and overall cost of treatment. **Methods:** Multivariable regression analysis was used with treatment modality as an exposure and sick leave length as an outcome. Sick leave data were obtained from a national register. Costs were evaluated by adding the direct cost of the treatment modality to the mean cost of sick leave per patient in different treatment groups. **Results:** Of 614 working-age patients with a DRF who were treated at a tertiary hospital in Finland between January 2013 and December 2014, 521 were primarily treated non-operatively with cast immobilization and 93 were primarily operated. Of the primarily non-operatively treated patients, 48 were operated during follow-up. The mean follow-up was 5 years. The median time lost from work after DRF was 55 days (7.9 weeks), and the separated medians by treatment modality were 49 (7 weeks) and 70 days (10 weeks) for conservative and operative treatment, respectively. Multivariable linear regression analyses were performed for those patients who had sick leave ($n = 292$). Regression analysis also showed that operative treatment correlates with longer sick leave. **Conclusions:** Operative treatment of distal radius fracture led more often to longer time lost from work than conservative treatment. Moreover, due to longer sick leave and the costs of the operation itself, operative treatment is over two times more expensive than conservative treatment.

Trial registration: retrospectively registered.

Palola et al. 2023.

BMC Musculoskeletal Disorders, vol. 24, no. 1.

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Keywords: Costs; distal radius fracture; sick leave; treatment; work.

Evidence Level: 4A

Link: <https://bmcmusculoskeletaldisord.biomedcentral.com/articles/10.1186/s12891-023-06963-0>

Sickness presenteeism in healthcare workers during the coronavirus disease 2019 (COVID-19) pandemic: An observational cohort study

Background: Sickness presenteeism among healthcare workers (HCW) risks nosocomial infection, but its prevalence among HCW with COVID-19 is unknown. **Methods:** Contemporaneous interviews revealed a sickness presenteeism prevalence of 49.8% among 255 HCW with symptomatic COVID-19. **Results and Conclusions:** Presenteeism prevalence did not differ among HCW with and without specific COVID-19 symptoms or direct patient care.

Linsenmeyer et al. 2023.

Infection Control and Hospital Epidemiology, vol. 44, no. 10.

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Keywords: Sickness presenteeism; healthcare workers; COVID-19; pandemic.

Evidence Level: 4B

Link: <https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/sickness-presenteeism-in-healthcare-workers-during-the-coronavirus-disease-2019-covid19-pandemic-an-observational-cohort-study/C20BC892BAF9B9BDF26F9D81A24C7260>

Impact of a Finnish reform adding new sickness absence checkpoints on rehabilitation and labor market outcomes: An interrupted time series analysis

Background: In 2012, new checkpoints were introduced in the Finnish sickness absence system to improve early detection of long-term work disability and hasten return to work after illness. We examined whether the reform affected participation in rehabilitation and labor market outcomes over a one-year period.

Methods: We used interrupted time series analysis among persons who started receiving sickness allowance up to three years before and up to two years after the reform. Separate analyses were conducted among those who passed 30, 60, and 90 sickness allowance days. Poisson regression analysis was used, controlling for seasonal variation, gender, age, and educational level. **Results:** After the reform, participation in rehabilitation within one year of passing 30 sickness allowance days increased by 5.1% [incidence rate ratio (IRR) 1.051, 95% confidence interval (CI) 1.015-1.086]. The increase after 60 and 90 sickness allowance days was slightly larger. Looking at the type of rehabilitation, vocational rehabilitation from the earnings-related pension scheme increased most. Regarding the rehabilitation provided by the Social Insurance Institution of Finland (Kela), vocational rehabilitation, medical rehabilitation, and discretionary rehabilitation increased, but the increase was statistically significant only in the last case. Post-reform changes in employment, unemployment, sickness absence and disability retirement were negligible. **Conclusions:** The introduction of new sickness absence checkpoints was associated with an increase in participation in rehabilitation but did not affect labor market outcomes one year later. The reform thus was only partially successful in achieving its objectives. Future research should focus on identifying the most effective approaches for utilizing rehabilitation to enhance labor market participation after sickness absence.

Laaksonen et al. 2023.

Scandinavian Journal of Work, Environment and Health, vol. 49, no. 8.

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Keywords: Sickness absence; rehabilitation market; Finnish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4122>

Exploring the relationship between simulation-based team training and sick leave among healthcare professionals: A cohort study across multiple hospital sites

Background: Burnout and mental illness are frequent among healthcare professionals, leading to increased sick leave. Simulation-based team training has been shown to improve job satisfaction and mental health among healthcare professionals. This study seeks to investigate the relationship between simulation-based team training and sick leave. **Methods:** Cohort study. Setting and intervention: Five Danish hospitals.

Participants: A total of 15 751 individuals were screened for eligibility. To meet the eligibility criteria, individuals had to be employed in the same group (intervention or control) for the whole study period. A total of 14 872 individuals were eligible for analysis in the study. Intervention: From 2017 to 2019, a simulation-based team training intervention was implemented at two hospital sites. Three hospital sites served as the control group. Outcome measures: Data on sick leave from 2015 to 2020 covered five

hospital sites. Using a difference-in-difference analysis, the rate of sick leave was compared across hospital sites (intervention vs control) and time periods (before vs after intervention). **Results:** Significant alterations in sick leave were evident when comparing the intervention and control groups. When comparing groups over time, the increase in sick leave was -0.3% (95% CI -0.6% to -0.0%) lower in the intervention group than in the control group. The difference-in-difference for the complete case analysis showed that this trend remained consistent, with analysis indicating a comparable lower increase in sick leave by -0.7% (95% CI -1.3% to -0.1%) in the intervention group. **Conclusion:** The increase in sick leave rate was statistically significantly lower in the intervention group, implying that simulation-based team training could serve as a protective factor against sick leave. However, when investigating this simulation intervention over 5 years, other potential factors may have influenced sick leave, so caution is required when interpreting the results.

Schram et al. 2023.

BMJ Open, vol. 13, no. 10.

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Keywords: Epidemiology; health education; medical education & training.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/13/10/e076163.long>

Labour market trajectories after part-time sickness absence: A nationwide cohort study from Finland

Background: The use of part-time sickness absence (pSA) enables return to part-time work from full sickness absence. However, subsequent labour market outcomes of pSA users depend on various individual and work-related characteristics. We investigated labour market paths of private and public sector employees after having a pSA spell. Moreover, we examined individual and work-related factors associated with following them. **Methods:** Longitudinal register-based cohort study. Setting: Finnish employed population. Participants: 9896 receivers of partial sickness allowance aged 45-56 in the years 2010-2014. Outcome: We constructed labour market trajectories based on the proportion of time spent in various labour market statuses measured over 3 years after the end of the pSA spell using multiresponse trajectory analysis. We then examined how different individual and work-related factors were associated with assignment to the different trajectory groups using logistic regression analyses. **Results:** The majority of the pSA users followed paths where work participation was consistently elevated (Sustained Work group, 40.4%), or only slightly reduced (Slightly Reduced Work group, 31.6%). Moreover, more than 1/10th of the users followed a path where receiving partial work disability benefits became predominant (Partial Work Disability group, 12.5%). The rest followed paths where other non-employment (Other Non-Employed group, 7.8%) or full work disability (Full Work Disability group, 7.7%) became the prevailing status. Lower educational level and income predicted assignment to all other groups than the Sustained Work group. Additional predictors were identified, yet these differed between the trajectory groups. **Conclusions:** The majority of the pSA users maintained a connection to working life, yet weaker working life paths were also identified. The paths were determined by various individual and work-related factors that can help health professionals and employers to better target support measures particularly towards individuals whose connection to working life is at risk to weaken after the use of pSA.

Hartikainen et al. 2023.

BMJ Open, vol. 13, no. 10.

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Keywords: Health policy; registries; retrospective studies; risk factors.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/13/10/e075584.long>

Workers Compensation

Neurocognitive and symptom validity testing for post-COVID-19 condition in a workers compensation context

Background: Efficacy of a neurocognitive screening evaluation (NCSE) in assessing symptoms and disability associated with post-COVID-19 condition (PCC) and facilitating employee recovery and return to work was evaluated. **Methods:** An NCSE was administered to 64 employees off work because of neurocognitive complaints attributed to post-COVID-19 condition. Neurocognitive and symptom validity data were analyzed along with recovery and return-to-work timelines. **Results:** A large percentage of the employees gave invalid responses and noncredible effort on psychological and cognitive tests (48%). The NCSEs with invalid profiles suggested more severe cognitive and psychiatric symptoms than valid profiles. Both valid and invalid groups had significant reductions in illness duration and lost workdays after the NCSE.

Conclusions: Post-COVID-19 condition resulted in reports of mild to moderate cognitive and psychiatric symptoms with extensive mean work leave of 11 months before mental health assessment. Regardless of symptom validity, after the NCSE, the employees were released to work at an average of 3 weeks.

LeGoff et al. 2023.

Journal of Occupational and Environmental Medicine, vol. 65, no. 10.

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Keywords: Neurocognitive; testing; symptoms; post-COVID-19; workers compensation.

Evidence Level: 5B

Link:

https://journals.lww.com/joem/fulltext/2023/10000/neurocognitive_and_symptom_validity_testing_for.1.aspx

Working hours

This month we explore working hours issues associated with at-risk work hours among U.S. workers and association between overtime and depressive symptoms.

At-risk work hours among U.S. physicians and other U.S. workers

Background : Systematic reviews by the WHO have shown an increased risk of morbidity and mortality related to ischemic heart disease and stroke among individuals working an average of ≥ 55 hours/week. **Methods:** A cross-sectional survey of U.S. physicians and a probability-based sample of the general U.S. working population ($n=2,508$) was conducted between November 20, 2020, and February 16, 2021 (data analyzed in 2022). Among 3,617 physicians who received a mailed survey, 1,162 (31.7%) responded; among 90,000 physicians who received an electronic survey, 6,348 (7.1%) responded. Mean weekly work hours were assessed. **Results:** The mean reported weekly work hours for physicians and U.S. workers in other fields were 50.8 hours and 40.7 hours, respectively ($p<0.001$). Less than 10% of U.S. workers in other fields (9.2%) reported working ≥ 55 hours/week compared with 40.7% of physicians. Although work hours decreased among physicians working less than full time, the decrease in work hours was smaller than the reported reduction in professional work effort. Specifically, for physicians who worked between half-time and full-time (i.e., full-time equivalent=50%-99%), work hours decreased by approximately 14% for each 20% reduction in full-time equivalent. On multivariable analysis of physicians and workers in other fields adjusting for age, gender, relationship status, and level of education, individuals with a professional/doctorate degree other than an MD/DO (OR=3.74; 95% CI=2.28, 6.09) and physicians (OR=8.62; 95% CI=6.44, 11.80) were more likely to work ≥ 55 hours/week. **Conclusions:** A substantial proportion of physicians have work hours previously shown to be associated with adverse personal health outcomes.

Shanafelt et al. 2023.

American Journal of Preventative Medicine, vol. 65, no. 4.

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Keywords: At-risk; physicians; workers.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0749-3797\(23\)00166-6](https://linkinghub.elsevier.com/retrieve/pii/S0749-3797(23)00166-6)

Association between overtime and depressive symptoms among Chinese employees

Background: This study examines the correlation between overtime and depressive symptoms, and analyzed the moderating effect of age, education level, and income level on their correlation by using a nationally representative sample from the Chinese Family Panel Studies (CFPS) in 2018.

Methods: Participants are divided into three groups: 30-44 h/week, 44.1-61.9 h/week (defined as overtime group), and ≥ 62 h/week (heavy overtime group). The multiple ordered logistic regression models are conducted to estimate the association between overtime and depressive symptoms. The interaction term of overtime and moderators including age, education level, and income level are introduced into the models to test the moderating effect. **Results:** The overtime group have an increased probability of depressive symptoms (OR = 1.11, 95% CI 1.04-1.20) compared with those who reported working hours 30-44 h/week, after controlling for important confounders. What's more, the worsening of depressive symptoms is more pronounced in the heavy overtime group (OR = 1.32, 95% CI 1.22-1.44). The moderating effect results show that younger employees, employees with high education levels, and those with high income level are more likely to be affected by the negative effects of overtime.

Conclusion: Working overtime increased the likelihood of depressive symptoms. Younger employees, high-educated employees and employees with high income level are more vulnerable to the negative effects of overtime on mental health.

Liang et al. 2023.

Frontiers in Public Health, vol. 11.

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Keywords: Age; depressive symptoms; education level; heavy overtime; income level; mental health; overtime.

Evidence Level: 4B

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1241994/full>

Wellness Programs

This month we explore issues associated with a neurofeedback-assisted mindfulness training program using a mobile app on stress reduction, the impact of a mobile app-based corporate sleep health improvement program on productivity, results of a combined multidisciplinary intervention and effectiveness of a worksite health promotion program combining a preventive medical examination with motivational interviewing.

The effectiveness of a neurofeedback-assisted mindfulness training program using a mobile app on stress reduction in employees: Randomized controlled trial

Background: Mindfulness-based training programs have consistently shown efficacy in stress reduction. However, questions regarding the optimal duration and most effective delivery methods remain.

Objective: This research explores a 4-week neurofeedback-assisted mindfulness training for employees via a mobile app. The study's core query is whether incorporating neurofeedback can amplify the benefits on stress reduction and related metrics compared with conventional mindfulness training. **Methods:** A total of 92 full-time employees were randomized into 3 groups: group 1 received mobile mindfulness training with neurofeedback assistance (n=29, mean age 39.72 years); group 2 received mobile mindfulness training without neurofeedback (n=32, mean age 37.66 years); and group 3 were given self-learning paper materials on stress management during their first visit (n=31, mean age 38.65 years). The primary outcomes were perceived stress and resilience scales. The secondary outcomes were mindfulness awareness, emotional labor, occupational stress, insomnia, and depression. Heart rate variability and electroencephalography were measured for physiological outcomes. These measurements were collected at 3 different times, namely, at baseline, immediately after training, and at a 4-week follow-up. The generalized estimating equation model was used for data analysis. **Results:** The 4-week program showed significant stress reduction (Wald $\chi^2=107.167$, $P<.001$) and improvements in psychological indices including resilience, emotional labor, insomnia, and depression. A significant interaction was observed in resilience (time \times

group, Wald $\chi^2=10.846$, $P=.02$). The post hoc analysis showed a statistically significant difference between groups 1 (least squares mean [LSM] 21.62, SE 0.55) and 3 (LSM 19.90, SE 0.61) at the posttraining assessment ($P=.008$). Group 1 showed a significant improvement ($P<.001$) at the posttraining assessment, with continued improvements through the 1-month follow-up assessment period (LSM 21.55, SE 0.61). Physiological indices were analyzed only for data of 67 participants (22 in group 1, 22 in group 2, and 23 in group 3) due to the data quality. The relaxation index (ratio of alpha to high beta power) from the right electroencephalography channel showed a significant interaction (time \times group, Wald $\chi^2=6.947$, $P=.03$), with group 1 revealing the highest improvement (LSM 0.43, SE 0.15) compared with groups 2 (LSM -0.11, SE 0.10) and 3 (LSM 0.12, SE 0.10) at the 1-month follow-up assessment. **Conclusions:** The study demonstrated that the neurofeedback-assisted group achieved superior outcomes in resilience and relaxation during the 4-week mobile mindfulness program. Further research with larger samples and long-term follow-up is warranted.

Min et al. 2023.

JMIR mHealth and uHealth, vol. 11.

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Keywords: Employee; mindfulness; mobile app; neurofeedback; resilience; stress.

Evidence Level: 2A

Link: <https://mhealth.jmir.org/2023/1/e42851>

The impact of a mobile app-based corporate sleep health improvement program on productivity: Validation through a randomized controlled trial

Background: Based on a randomized controlled trial applied to employees of a manufacturing company, this study examines the extent to which a corporate sleep program improves workers' sleep health and productivity. **Methods:** In the three-month sleep improvement program, applicants were randomly divided into a treatment group and a control group, and the treatment group was provided with a noncontact sensing device to visualize their sleep. A smartphone app linked to the device notified them of their sleep data every morning and presented them with advice on behavioral changes to improve their sleep on a weekly basis. **Results:** The results of the analysis revealed the following. First, even after controlling for factors that may cause sleep disturbances and nocturnal awakenings, such as increased workload and the number of days spent working from home during the measurement period, the treatment group showed improved sleep after the program compared to the control group. Second, the treatment group showed statistically significant improvement in presenteeism (productivity). The effect size on presenteeism through sleep improvement was similar regardless of the estimation method used (i.e., ANCOVA estimator of ATT and two 2SLS methods were performed). In particular, we confirmed that productivity was restored through sleep improvement for the participants who diligently engaged in the program. **Conclusions:** These results suggest that promoting sleep health using information technology can improve sleep deficiency and restore productivity.

Kawata et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Sleep health; productivity; mobile app.

Evidence Level: 2B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287051>

Workplace health promotion: Results of a combined multidisciplinary intervention over a long period - Preliminary results

Background: Obesity is a multifactorial disease that is one of the major public health problems. It is the result of the interaction between behavioral, social and endocrine-metabolic components. Already in the 80s, it was highlighted by the World Health Organization (WHO) that the workplace is an ideal setting for introducing health promotion programs. The aim of the present study was to implement a health promotion program among healthcare workers (HCWs) operating in an Emergency Hospital in Southern Italy, combining diet, sports activity and motivational support over a 24-month period.

Methods: Participants were HCWs operating in an Emergency Hospital in Southern Italy. The inclusion

criteria were as follows: overweight or obesity, i.e., body mass index (BMI) >25 kg/m², or waist circumference >102 cm (males), >88 cm (females); dyslipidemia without pharmacological treatment, i.e., total cholesterol >220 mg/dL, or high-density lipoprotein (HDL) cholesterol <35 mg/dL, or low-density lipoprotein cholesterol (LDL) >130 mg/dL, or triglycerides >200 mg/dL; fasting glucose levels >120 mg/dl and/or reduced tolerance to glucose or diabetes mellitus, without pharmacological treatment was determined through HbA1c. **Results:** The analysis was conducted on 36 participants. Follow-up was performed after twelve (T12) and twenty-four months (T24). The average systolic blood pressure (SBP) and diastolic blood pressure (DBP) values decreased during the time period. The average BMI of both male and female HCWs was significantly reduced from T0 to T12 and from T0 to T24. The triglyceride levels gradually decreased, but not significantly, from T0 to T24. The average blood glucose values decreased from T0 to T12 and from T12 to T24. The number of subjects who started to perform physical activity increased significantly between T0 and T12 and between T0 and T24. **Conclusions:** The findings have led to a significant change in HCWs' lifestyles and body perceptions, as well as their ability to work.

Matera et al. 2023.

European Review for Medical and Pharmacological Sciences, vol. 27, no. 19.

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

Keywords: Workplace health promotion; multidisciplinary intervention,

Evidence Level: 3B

Link: <https://www.europeanreview.org/article/33962>

Reach and effectiveness of a worksite health promotion program combining a preventive medical examination with motivational interviewing; A quasi-experimental study among workers in low socioeconomic position

Background: This study aimed to evaluate individual characteristics associated with participation and effectiveness of a worksite health promotion program with motivational interviewing targeting health and health behaviour among Dutch workers in low socioeconomic position. **Methods:** In a production company and a hospital, 838 workers were invited for a Preventive Medical Examination and subsequent coaching with motivational interviewing up to 7 sessions within 6 months. Follow-up information was collected after 6 months. Characteristics associated with participation in coaching were assessed with logistic regression models. The effectiveness of coaching on body mass index (BMI), bodyweight, self-rated health, vigorous physical activity, smoking, alcohol intake, fruit- and vegetable consumption, work ability, and sickness absence was evaluated with linear regression models and on participation in health promotion activities with logistic regression analysis. The analyses on effectiveness were performed without and with propensity score adjustment. **Results:** Of the 838 invited workers, 313 workers participated in the Preventive Medical Examination and follow-up data were available for 176 workers, of whom 100 workers with increased cardiovascular risk attended coaching. The majority of workers with obesity (73%), overweight (60%), and unhealthy behaviours (58%-69%) at baseline participated in motivational interviewing. Males, workers with overweight or obesity, workers at the production company, workers with insufficient vigorous physical activity, and workers with a low educational level were most likely to participate in coaching. Coaching with motivational interviewing after the Preventive Medical Examination was associated with a 4.74 times higher likelihood [95% confidence interval (CI): 1.99;11.32] to participate in health promotion activities and 10.9% (95%CI: 0.6;21.3) more persons who quit smoking compared to workers without coaching. No statistically significant effects were observed on BMI, bodyweight, health, health behaviour, work ability and sickness absence. **Conclusions:** The program combining a Preventive Medical Examination with follow-up coaching reached - as intended - workers with obesity or overweight, those with a low education and with unhealthy behaviours. Adding coaching with motivational interviewing to a Preventive Medical Examination contributed to higher participation in health promotion activities and an increase in smoking cessation after 6 months among workers with a lower socioeconomic position, but was not effective on other outcomes. **Trial registration:** The study was registered retrospectively in the Netherlands Trial Register as NL8178 on 22/11/2019.

van de Ven et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Body mass index; health behaviour; health promotion; motivational interviewing; propensity score; socioeconomic position; workplace.

Evidence Level: 3B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16908-w>

Job Design

This month we explore job design issues associated with biological stress responses to multitasking and work interruption and job demands and job control and their associations with disability pension.

Biological stress responses to multitasking and work interruptions: A randomized controlled trial

Background: In the course of digitalization, new stressors are emerging. In modern working and living environments, two ubiquitous, technology-mediated stressors are multitasking demands and work interruptions. However, biological stress response patterns to multitasking and work interruptions have been sparsely investigated so far. We thus aimed to comprehensively assess biological stress response patterns to both stressors and, additionally, test whether responses differ between digital and partially non-digital settings. **Methods:** A controlled experimental set-up was established and humans' biological markers of the Sympathetic Nervous System (SNS), the hypothalamic-pituitary adrenal (HPA) axis, and the immune system were assessed. **Results:** N = 186 healthy participants (mean age: 23.2 ± 4.3 years, 74.7% female, body mass-index: 22.3 ± 3.1 kg/m²) took part in this pre-registered study. Each participant was randomly assigned to one of 6 experimental conditions (1 digital single-task, 3 dual-tasks [2 parallel tasks and 1 interruption], 1 multitasking, and 1 passive, control condition). Each one of the dual-tasking as well as the multitasking conditions included a non-digital sub-task, i.e., performing a task in presence of an examiner. All other conditions involved digital tasks only. Salivary alpha-amylase (sAA) levels as a marker for SNS reactivity significantly changed in work interruptions, parallel dual-tasking, and multitasking conditions. No changes were found for control conditions. Furthermore, no significant changes over time and no differences between the conditions were identified for three biological markers: cortisol as marker for HPA axis activity as well as for two immune system markers (secretory Immunoglobulin-A, C-reactive protein). A time course similar to sAA was found for perceived stress: with increases during task execution and decreases afterwards in multitasking and parallel dual-tasking. Yet, it did not change for the work interruption, passive control, and single-tasking condition. Overall, our findings show that dual- and multitasking are perceived as stressful and are associated with an activation of the SNS, but not with responses of HPA axis or immune system. This was consistent for digital as well as partially digital task demands. **Conclusions:** Our findings will also inform future research into the differential stress effects of digital and non-digital tasks to advance our understanding of biological stress response-patterns to multitasking and work interruptions. Therefore, our findings are highly relevant for understanding the long-term biological health effects of stress in modern (digitalized) environments.

Becker et al. 2023.

Psychoneuroendocrinology, vol. 156.

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Keywords: Alpha-amylase; cortisol; digital stress; multitasking; technostress; work interruptions.

Evidence Level: 2A

Link: <https://www.sciencedirect.com/science/article/pii/S0306453023003360?via%3Dihub>

Job demands and job control and their associations with disability pension: A register-based cohort study of middle-aged and older Swedish workers

Background: Job demands and control at work and their combination, job strain, have been studied in relation to risk of disability pension (DP) previously. In the present study, based on registry data, we aimed to deepen the knowledge by analyzing major disease groups among the DPs, dose-response shape of the

associations, and potential confounding effects of physical workload. **Methods:** Approximately 1.8 million workers aged 44 or older and living in Sweden in 2005 were followed up for 16 years, up to a maximum of 65 years of age. We linked mean values of job demands and job control, estimated in a job-exposure matrix (JEM) by gender, to individuals through their occupational titles in 2005. These values were categorized by rank order, and, for the construction of job-strain quadrants, we used a median cut-off. Associations with DP were estimated in Cox proportional-hazards models. **Results:** In models accounting for covariates including physical workload, low levels of job control were associated with higher risk of DP among both men and women. This association was most clear for DP with a psychiatric diagnosis, although a dose-response shape was found only among the men. High levels of job demands were associated with decreased risk of DP across diagnoses among men, but the same association varied from weak to non-existing among women. The high- and passive job-strain quadrants both showed increased risk of DP with a psychiatric diagnosis. **Conclusion:** The results suggest that, at the occupational level, low job control, but not high job demands, contributes to an increased incidence of DP, particularly regarding DP with a psychiatric diagnosis.

Falkstedt et al. 2023.

International Archives of Occupational and Environmental Health, vol. 96, no. 8.

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Keywords: Cardiovascular diseases; mental disorders; musculoskeletal diseases; occupational exposure; psychosocial factors; retirement benefits.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-023-01995-4>

Shift Work

This month we explore issues associated with shift work and physical activity levels, rheumatoid arthritis and periodontitis.

Comparison of the physical activity levels between shift workers and non-shift workers in a large-scale cross-sectional study in Iran

Background: Shift work has been related to adverse health outcomes that can partially be attributed to physical inactivity. However, our knowledge of the influence of shift work on physical activity and sedentary behavior is inconclusive. Therefore, this study aimed to assess physical activity levels among shift and non-shift workers among a sample of Iranian adults. **Methods:** Baseline data of the Ravansar Non-Communicable Disease (RaNCD) cohort study were used. All participants of RaNCD except those excluded due to unemployment or considerable disability were included in the study. We evaluated participants' physical activity levels using the PERSIAN cohort questionnaire and examined its associations with being a shift worker. **Results:** A total of 4695 participants with a mean age of 46.1 (SD = 7.74) were included in the study. In total, 1108 (23.6%) participants were shift workers, 1420 (30.2%) had insufficient physical activity levels, and 4283 (91.2%) were male. The prevalence of physical inactivity was significantly lower among shift workers compared to non-shift workers (21% vs. 33.1%, $p < 0.001$). Multiple backward stepwise binary logistic regression tests indicated that being a shift worker was significantly associated with a lower chance of having insufficient physical activity levels (OR = 0.77, 95% CI = 0.65-0.92, $p = 0.003$). **Conclusions:** The prevalence of insufficient physical activity was higher among non-shift workers than shift workers in our study. By providing the factors associated with insufficient physical activity among the workers in a region of Iran, the current study findings might help policymakers target groups at higher risk of physical activity in Iran and design interventions to improve physical activity, especially among non-shift workers.

Najafi et al. 2023.

BMC Public Health, vol. 23, no. 1.

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Keywords: Iran; physical activity; prevalence; shift work.

Evidence Level: 4B

Link: <https://bmcpublikealth.biomedcentral.com/articles/10.1186/s12889-023-16895-y>

The associations of chronotype and shift work with rheumatoid arthritis

Background: The circadian clock regulates multiple aspects of human physiology including immunity. People have a circadian preference termed chronotype. Those with an evening preference may be better suited to shift work, but also carry higher risk of adverse health. Shift work leads to misalignment of circadian rhythms and is associated with increased risk of inflammatory disease such as asthma and cancer.

Methods: Here, we investigate the association between chronotype, shift work, and rheumatoid arthritis (RA). The associations between exposures of shift work and chronotype on risk of RA were studied in up to 444,210 U.K. Biobank participants. Multivariable logistic regression models were adjusted for covariates: age, sex, ethnicity, alcohol intake, smoking history, Townsend Deprivation Index (TDI), sleep duration, length of working week, and body mass index (BMI). **Results:** After adjusting for covariates, individuals with a morning chronotype had lower odds of having rheumatoid arthritis (RA; odds ratio [OR]: 0.93, 95% confidence interval [CI]: 0.88-0.99) when compared to intermediate chronotypes. The association between morning chronotype and RA persisted with a more stringent RA case definition (covariate-adjusted OR: 0.89, 95% CI: 0.81-0.97). When adjusted for age, sex, ethnicity, and TDI, shift workers had higher odds of RA (OR: 1.22, 95% CI: 1.1-1.36) compared to day workers that attenuated to the null after further covariate adjustment (OR: 1.1, 95% CI: 0.98-1.22). Morning chronotypes working permanent night shifts had significantly higher odds of RA compared to day workers (OR: 1.89, 95% CI: 1.19-2.99). These data point to a role for circadian rhythms in RA pathogenesis. **Conclusions:** Further studies are required to determine the mechanisms underlying this association and understand the potential impact of shift work on chronic inflammatory disease and its mediating factors.

Butler et al. 2023.

Journal of Biological Rhythms, vol. 38, no. 5.

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Keywords: Chronotype; circadian; epidemiology; rheumatoid arthritis; shift work.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10475206/>

Influence of shift work on periodontitis according to the occupation group

Background: This study aimed to investigate the effects of shift work on periodontal disease in blue-and white-collar workers and to examine the interaction effects between occupation and work patterns.

Methods: Data were collected from the Korea National Health and Nutrition Examination Survey conducted by the Korean Ministry of Health and Welfare for a total of nine years from 2007 to 2015. Participants with missing outcome variables were excluded from the analysis and a total of 32,336 participants were included in the final analysis. Univariable odds ratios (OR) were calculated using a logistic regression model with 95% confidence interval (CI). A multivariable logistic regression analysis was performed using the backward elimination method. The CONTRAST statement was used to analyze the interaction effect between occupation and work patterns. **Results:** Multivariable logistic regression analysis revealed that interaction effects are present between the terms, occupational type and work pattern. Crude OR of shift work for periodontitis was 1.269 [CI 1.213-1.327, $P < 0.05$]. However, following adjustment for multiple confounding factors and the interaction effect term considered, this OR (1.269) increased to 1.381 [CI 1.253-1.523] in white-collar group while it decreased to 1.198 [1.119-1.283] in blue-collar. Crude OR of blue-collar (OR = 3.123, CI 2.972-3.281, $P < 0.05$) decreased to 1.151 [CI 1.049-1.262] when interaction effect to the shift work was considered. Shift work pattern increases the risk for periodontitis and this adverse effect is greater when white-collar workers are engaged comparing to blue-collar. **Conclusions:** The result of this study suggests that 24/7 lifestyle of the modern society poses health risks to the relevant people and the potential harm can be greater to white-collar workers.

Jung et al. 2023.

Scientific Reports, vol. 13, no. 1.

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Keywords: Shift work; periodontitis; occupation.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-023-45222-z>

Management and Leadership

This month we explore issues associated with employee authenticity and its effect of perceived manager psychopathy and supervisor training.

When it's not safe to be me: employee authenticity mediates the effect of perceived manager psychopathy on employee well-being

Background: Psychopathy in managers is often measured on global scales and associated with detrimental outcomes for subordinates, such as bullying and reduced well-being. Yet some features of psychopathy, like boldness, appear to have beneficial outcomes. Using the triarchic model of psychopathy, we differentiate between adaptive and maladaptive traits in managers and model their effects on employee engagement and burnout. In addition, we test the extent to which authenticity, known to ameliorate the effect of some negative experiences on well-being, might mediate the influence of managers' perceived psychopathic traits on employee well-being. **Methods:** In a two-wave study, full-time employees (N = 246) reported on their manager's psychopathic traits (boldness, meanness, disinhibition), their own authenticity and, six weeks later, their engagement and burnout. **Results:** In support of our hypotheses, manager boldness enhanced engagement and reduced burnout while meanness and disinhibition reduced engagement and increased burnout. Additionally, employee authenticity was a partial mediator of the effect of managerial psychopathy on engagement and burnout. **Conclusions:** Perceived psychopathic traits in managers have the potential to influence whether employees feel able to be their authentic selves at work, which consequently affects their well-being. A work culture that values authenticity can directly improve well-being and help employees to deal with managerial behaviour that stems from maladaptive psychopathic traits. We also highlight the importance of discriminating between constituent psychopathic traits to identify the potentially adaptive nature of the boldness element of psychopathy.

Sutton et al. 2023.

BMC Psychology, vol. 11, no. 1.

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Keywords: Authenticity; burnout; engagement; psychopathy; triarchic.

Evidence Level: 5A

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-023-01333-w>

Supervisor training: A promising approach to addressing impairment in the workplace

Background: This study presents a pilot evaluation of a new online training program created to improve supervisors' ability to protect worker safety by recognizing and responding to signs of impairment from diverse causes. **Methods:** The study design relied on a mixed-methods approach with two waves of surveys and interviews immediately after training completion and after 3 months to gauge changes in participants' perceived knowledge and competencies. **Results:** Participants had a positive reaction to training and found it relevant to their job responsibilities and aligned with existing organizational safety programs, practices, and policies. There was statistically significant improvement in perceived impairment knowledge and competencies. The study also provided early indications of training transfer. **Conclusions:** The study offers encouraging results that may be used to improve the impairment recognition and response training for supervisors and support future investigations of its impact.

Sinelnikov et al. 2023.

Journal of Occupational and Environmental Medicine, vol. 65, no. 10.

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Keywords: Online training; workplace; supervisor.

Evidence Level: 5B

Link:

https://journals.lww.com/joem/fulltext/2023/10000/supervisor_training_a_promising_approach_to.10.aspx

Work Ability

Effect of sense of coherence on long-term work participation among rehabilitation patients: A longitudinal study

Background: To investigate the causal effect of sense of coherence on long-term work participation after rehabilitation, including stratification by age and diagnoses. Design: Longitudinal cohort study. Participants: Patients aged ≤ 60 years, employed and accepted for somatic interprofessional rehabilitation in 2015 (n = 192). **Methods:** Patients reported sense of coherence before rehabilitation in 2015 and mental and physical functioning in 2016. Register data were used to measure work participation during 2018 and days working without social security benefits during 2016-18. Regression models were used to explore the total effect of sense of coherence and the possible mediation of functioning. Results are reported as odds ratios (95% confidence intervals). **Results:** During 2018, 77% of the total study cohort participated in work activities. The subgroup with musculoskeletal diagnoses had the fewest days of working without social security benefits. A causal relationship was found between sense of coherence and long-term work participation. Some of the effect of sense of coherence was mediated by mental functioning. The total effect of sense of coherence was strongest for patients with musculo-skeletal diagnoses (work participation: 1.11 (1.05, 1.17), days working without social security benefits: 1.05 (0.01, 109)). **Conclusion:** Improving coping resources may be beneficial to facilitate long-term work participation after injury or illness, especially for individuals with musculoskeletal diagnoses.

Berget et al. 2023.

Journal of Rehabilitation Medicine, vol. 55.

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Keywords: Rehabilitation; long-term work participation.

Evidence Level: 4B

Link: <https://medicaljournalssweden.se/jrm/article/view/11982>

Adapting to the Future of Work

Aging Workforce

This month we explore issues associated with aging workers and effect of days spent working from home on stress and musculoskeletal pain, midlife cardiovascular health factors as predictors of retirement age, life-course perspective in workplaces undergoing transformative digitalization and impact of employment on the elderly in a super-aging society during the Covid-19 pandemic.

The effect of preference and actual days spent working from home on stress and musculoskeletal pain in older workers

Background: The rapid shift to working from home (WFH) due to the COVID-19 pandemic provided a unique opportunity to examine the relationship between preferred and actual days spent working from home on employees musculoskeletal pain (MSP) and stress in older workers. **Methods:** This study uses three waves of data from the Employees Working from Home (EWFH) study collected in May 2021 (n = 451), November 2021 (n = 358) and May 2022 (n = 320) during the COVID-19 pandemic. A generalised mixed-effect model was used to model the relationships between preference and actual days spent WFH, stress and MSP. Exploratory mediation analysis was conducted to further explore significant relationships between actual days WFH and outcomes. **Results:** WFH was associated with increasing stress levels in older participants, when the actual number of days WFH increased (B: 0.051, 95% CI: 0.008, 0.094) and when the number of days WFH exceeded their preferences (B: 0.218, 95% CI: 0.087, 0.349). Actual number of days

spent WFH and stress in older employees was mediated through their sense of community (Indirect effect: 0.014, 95% CI: 0.003, 0.03; $p = 0.006$). The relationship between WFH and MSP was variable. For older employees, WFH more than their preferred number of days was associated with a higher likelihood of reporting MSP (OR: 4.070, 95% CI: 1.204, 13.757). **Conclusions:** Findings from this study support the need for flexible policies to support WFH which take into account employees preferences. For older workers, a sense of community was found to be important and proactive attempts to restore this will be important for maintain their health and supporting sustainable employment.

Oakman et al. 2023.

International Archives of Occupational and Environmental Health, vol. 96, no. 8.

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Keywords: Ageing; COVID-19; musculoskeletal pain; sense of community; stress; technology.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007/s00420-023-01992-7>

Midlife cardiovascular health factors as predictors of retirement age, work-loss years, and years spent in retirement among older businessmen

Background: Cardiovascular disease (CVD) is one of the leading causes of premature retirement. However, the relationship between CVD risk factors and workforce participation is not well known. **Methods:** We studied the relationship between midlife CVD risk, age at retirement, work-loss years, and survival in retirement. Middle-aged Finnish men (initial $n = 3490$, mean age = 47.8 years) were assessed for CVD risk factors and general health in the 1970s. They worked as business executives and provided information on their retirement status in the year 2000. Survival was followed up to the 9th decade of life with a follow-up of up to 44 years. Work-loss years were calculated as death or retirement occurring at age ≤ 65 years. Smoking, body mass index, and alcohol use were used as covariates, excluding models of CVD risk, which were adjusted for alcohol use only. **Results:** Higher risk of 10-year fatal CVD was associated with 0.32 more years (relative risk < 1 vs. 1, covariate-adjusted $\beta = 0.32$, 95% CI = 0.13, 0.53) of work-loss. Higher risk of 5-year incident (covariate-adjusted time-constant HR = 1.32, 95% CI = 1.19, 1.47) and 10-year fatal (covariate-adjusted time-dependent HR = 1.55, 95% CI = 1.30, 1.85) CVD in midlife were associated with fewer years spent in retirement. Poorer self-rated health and physical fitness and higher levels of triglycerides were associated with increased hazard of earlier retirement, more work-loss years, and fewer years spent in retirement. **Conclusions:** Poorer health and greater midlife CVD risk may be associated with earlier exit from the workforce and fewer years spent in retirement. Management of CVD risk in midlife may support people to work longer.

Haapanen et al. 2023.

Scientific Reports, vol. 13, no. 1.

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Keywords: Cardiovascular health; retirement age; work-loss years; retirement; businessmen.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10545670>

A life-course perspective on older workers in workplaces undergoing transformative digitalization

Background: Workplaces are digitalizing, which leaves many older individuals with the choice between upskilling and early retirement. How they approach this choice influences their financial well-being, the size of the workforce, and the financial sustainability of pension schemes. **Methods:**

The present article explores how the life-course perspective can be used to explore the situation of older workers in workplaces undergoing transformative digitalization. **Results:** The life-course perspective suggests that the transformative digitalization of workplaces does not change what life events older workers encounter. However, it modifies how the events affect older workers and their capabilities for striking a work-life balance. Additionally, digitalization changes life-course structures. It can lead to earlier or later retirement, which changes the length of the life phases of middle age and old age-and possibly creates new social inequalities in life courses. The effects of transformative digitalization on older workers vary across cohorts and countries, which is typical for the principle of anchoring life courses in time and

place. **Conclusions:** Future research can use the present article as a guideline for which concepts may be useful in studies on older workers in digitalizing workplaces.

Komp-Leukkunen 2023.

The Gerontologist, vol. 63, no. 9.

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Keywords: Life-course perspective; retirement; technology; work.

Evidence Level: 6B

Link: <https://academic.oup.com/gerontologist/article/63/9/1413/6889432?login=true>

Impact of employment on the elderly in a super-aging society during the COVID-19 pandemic in Japan

Background: Employment of the elderly is gaining importance in Japan's super-aging society. However, investigating the role of employment on the health of the elderly population during the coronavirus disease 2019 (COVID-19) pandemic, wherein they were susceptible, is necessary. **Methods:** We aimed to investigate whether the presence or absence of employment affected motor and cognitive functions in the elderly during the COVID-19 pandemic. The study involved 144 individuals aged ≥ 65 years who participated in the medical examination project from August to September 2021. The participants were divided into employed and non-employed groups. The motor function was evaluated by determining the walking speed, skeletal muscle mass, 2-step test, and bone density. Cognitive function was evaluated using the Mini Mental State Examination and Trail Making Test-A/B (TMT-A/B). For statistical examination, univariate analysis and logistic regression analysis were performed using significantly differential variables. **Results:** Out of the 144 participants, 33 (22.9%) and 111 (77.1%) were in the employed and non-employed groups, respectively. TMT-A had an odds ratio of 0.96 (95% confidence interval 0.94-0.99) and was an independent factor in the employed group. **Conclusions:** In conclusion, the attention function was significantly higher in the employed group.

Imaoka et al. 2023.

Scientific Reports, vol. 13, no. 1.

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Keywords: Employment; super-aging; society; COVID-19.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-023-45270-5>

Technology

This month we explore issues associated with effective web- and app-based mhealth interventions for stress management and effects of work-related electronic communication on fatigue, psychomotor vigilance performance and sleep.

A literature review to identify effective web- and app-based mhealth interventions for stress management at work

Background: Persistent job-related stress can be harmful to physical and mental health and has a sizable financial burden on society. Face-to-face interventions are effective in reducing stress but have the disadvantage of high costs and time requirements. mHealth solutions may be an effective alternative to provide stress management interventions at work. Occupational health professionals need information on which mHealth apps are effective for employees to manage job-related stress. The aim of this review is to provide an overview of effective web- and app-based interventions for reduction of job-related stress and stress-related symptoms. **Method:** A literature review was conducted in the databases PubMed, PsycINFO, CINAHL Complete, and IEEEExplore. **Results:** A total of 24 articles describing 19 products were found. All products showed effectiveness in trials in improving mental and/or physical health and reducing stress. Most products have a course-like structure with a duration from 1 to 8 weeks. The products use various methods such as psychoeducation and education on stress, cognitive restructuring, emotional regulation, problem-solving, goal setting, gratitude, breathing, or mindfulness techniques. Most products use more than one method and most mixed material such as text on web pages, text messages, videos, reading and

audio material, and games. **Conclusion:** Overall, effective mHealth products were identified for the intervention of acute and chronic stress. Occupational health practitioners can use these 19 evidence-based mHealth products when advising organizations on health promotion of employees to reduce stress symptoms and promote health and well-being.

Egger et al. 2023.

Workplace Health and Safety, vol. 71, no. 10.

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Keywords: App; intervention; mHealth; stress; web-based.

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10503239/>

Effects of work-related electronic communication during non-working hours after work from home and office on fatigue, psychomotor vigilance performance and actigraphic sleep: Observational study on information technology workers

Background: This study examined the effects of work-related electronic communication (WREC) during non-working hours in the work from home or office setting on health. **Methods:** The study recruited 98 information technology workers in a 9-day observational study. They recorded work-life events (eg, work style (working mostly from home or the office) and duration of WREC during non-working hours) and subjective ratings (eg, current fatigue, sleepiness and depression) and wore a sleep actigraph to measure objective sleep variables before bedtime every day. They completed the Brief Psychomotor Vigilance Test (PVT-B) before bedtime for 4 days. **Results:** The frequency of WREC was significantly higher when working mostly from home than in the office ($p<0.01$). In addition, the duration of WREC was longer when working mostly from home than in the office ($p<0.001$). Linear or generalised linear mixed model analysis for fatigue, depression and PVT lapse revealed significant interaction effects between work style and WREC (all $p<0.05$). Post hoc analysis showed that the longer the WREC, the worse the fatigue and depression and the lower the lapse on working mostly from the office (all $p<0.05$). **Conclusions:** Longer WREC is associated with worse fatigue and depression and lower lapse of PVT (higher alertness) before bedtime for working mostly from the office. Workers, especially those working from the office, should minimise WREC during non-working hours to maintain good health. Therefore, companies, managers and other relevant stakeholders should refrain from contacting workers during non-working hours.

Ikeda et al. 2023.

Occupational and Environmental Medicine, vol. 80, no. 11.

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Keywords: Fatigue; occupational health; psychology.

Evidence Level: 5B

Link: <https://oem.bmj.com/content/80/11/627.long>

Work Environment

Future workspace needs flexibility and diversity: A machine learning-driven behavioural analysis of co-working space

Background: The future of workspace is significantly shaped by the advancements in technologies, changes in work patterns and workers' desire for an improved well-being. Co-working space is an alternative workspace solution, for cost-effectiveness, the opportunity for diverse and flexible design and multi-use.

Methods: This study examined the human-centric design choices using spatial and temporal variation of occupancy levels and user behaviour in a flexible co-working space in London. Through a machine-learning-driven analysis, we investigated the time-dependent patterns, decompose space usage, calculate seat utilisation and identify spatial hotspots. The analysis incorporated a large dataset of sensor-detected occupancy data spanning 477 days, comprising more than 140 million (145×106) data points. Additionally, on-site observations of activities were recorded for 13 days spanning over a year, with 110 time instances

including more than 1000 snapshots of occupants' activities, indoor environment, working behaviour and preferences. **Results:** Results showed that the shared working areas positioned near windows or in more open, connected and visible locations are significantly preferred and utilised for communication and working, and semi-enclosed space on the side with less visibility and higher privacy are preferred for focused working. The flexibility of multi-use opportunity was the most preferred feature for hybrid working. **Conclusions:** The findings offer data-driven insights for human-centric space planning and design of office spaces in the future, particularly in the context of hybrid working setups, hot-desking and co-working systems.

Pan et al. 2023.

PLoS One, vol. 18, no. 10.

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Keywords: Future; workspace; flexibility; diversity.

Evidence Level: 5B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292370>