

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 June 2024 only.

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## Description of Evidence Levels Definitions Used in this Review

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

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

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

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

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## Enabling Healthy and Safe Workplaces

### Health and Wellbeing

*This month we explore the health and wellbeing issues associated with stabilizing sleep hours, different commute modes, practicing yoga, precision prevention, and the effect of paid employment for well-being in autistic adults.*

#### **Just-in-time adaptive intervention for stabilizing sleep hours of Japanese workers: Microrandomized trial**

**Background:** Sleep disturbance is a major contributor to future health and occupational issues. Mobile health can provide interventions that address adverse health behaviours for individuals in a vulnerable health state in real-world settings (just-in-time adaptive intervention). **Objective:** This study aims to identify a subpopulation with vulnerable sleep state in daily life (study 1) and, immediately afterward, to test whether providing mobile health intervention improved habitual sleep behaviours and psychological wellness in real-world settings by conducting a microrandomized trial (study 2). **Methods:** Japanese workers (n=182) were instructed to collect data on their habitual sleep behaviours and momentary symptoms (including depressive mood, anxiety, and subjective sleep quality) using digital devices in a real-world setting. In study 1, we calculated intraindividual mean and variability of sleep hours, midpoint of sleep, and sleep efficiency to characterize their habitual sleep behaviours. In study 2, we designed and conducted a sleep just-in-time adaptive intervention, which delivered objective push-type sleep feedback messages to improve their sleep hours for a subset of participants in study 1 (n=81). The feedback messages were generated based on their sleep data measured on previous nights and were randomly sent to participants with a 50% chance for each day (microrandomization). **Results:** In study 1, we applied hierarchical clustering to dichotomize the population into 2 clusters (group A and group B) and found that group B was characterized by unstable habitual sleep behaviours (large intraindividual variabilities). In addition, linear mixed-effect models showed that the interindividual variability of sleep hours was significantly associated with depressive mood ( $\beta=3.83$ ;  $P=.004$ ), anxiety ( $\beta=5.70$ ;  $P=.03$ ), and subjective sleep quality ( $\beta=-3.37$ ;  $P=.03$ ). In study 2, we found that providing sleep feedback prolonged subsequent sleep hours (increasing up to 40 min;  $P=.01$ ), and this effect lasted for up to 7 days. Overall, the stability of sleep hours in study 2 was significantly improved among participants in group B compared with the participants in study 1 ( $P=.001$ ). **Conclusions:** This is the first study to demonstrate that providing sleep feedback can benefit the modification of habitual sleep behaviours in a microrandomized trial. The findings of this study encourage the use of digitalized health intervention that uses real-time health monitoring and personalized feedback.

**Takeuchi et al. 2024.**

**Journal of Medical Internet Research, vol 26.**

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**Keywords:** Just-in-time adaptive intervention; microrandomized trial; mobile phone; objective push-type sleep feedback; stability of habitual sleep behaviors.

**Evidence Level:** 5B

**Link:** <https://www.jmir.org/2024/1/e49669>

#### **Precision prevention in worksite health: A scoping review on research trends and gaps**

**Background:** To map the current state of precision prevention research in the workplace setting, specifically to study contexts and characteristics, and to analyse the precision prevention approach in the stages of risk assessment/data monitoring, data analytics, and the health promotion interventions implemented. **Methods:** Six international databases were searched for studies published between January 2010 and May 2023, using the term "precision prevention" or its synonyms in the context of worksite health promotion. **Results:** After screening 3,249 articles, 129 studies were reviewed. Around three-quarters of the studies addressed an intervention (95/129, 74%). Only 14% (18/129) of the articles primarily focused on risk assessment and data monitoring, and 12% of the articles (16/129) mainly included data analytics studies. Most of the studies focused on behavioural outcomes (61/160, 38%), followed by psychological (37/160, 23%) and physiological (31/160, 19%) outcomes of health (multiple answers were

possible). In terms of study designs, randomized controlled trials were used in more than a third of all studies (39%), followed by cross-sectional studies (18%), while newer designs (e.g., just-in-time-adaptive-interventions) are currently rarely used. The main data analyses of all studies were regression analyses (44% with analyses of variance or linear mixed models), whereas machine learning methods (e.g., Algorithms, Markov Models) were conducted only in 8% of the articles. **Conclusion:** Although there is a growing number of precision prevention studies in the workplace, there are still research gaps in applying new data analysis methods (e.g., machine learning) and implementing innovative study designs. In the future, it is desirable to take a holistic approach to precision prevention in the workplace that encompasses all the stages of precision prevention (risk assessment/data monitoring, data analytics and interventions) and links them together as a cycle.

**Mess et al. 2024.**

**PLoS One, vol. 19, no. 6.**

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**Keywords:** Precision prevention; worksite health; research.

**Evidence Level:** 6A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0304951>

### **Associations between commute mode use and self-rated health and work ability among Finnish public sector employees**

**Background:** To determine the extent to which level of active commute mode use is associated with self-rated health and work ability. **Methods:** The data were sourced from the Finnish Public Sector Study survey in 2020 ( $n = 38,223$ ). The associations between active commuting - assessed with the frequency of using active commute modes - and self-rated health and work ability were examined with negative binomial regression analyses. Passive commuting and low-to-moderate levels of active commuting were compared with active commuting, and the models were adjusted for sociodemographic factors, working time mode, and lifestyle risk factors. We also assessed separate associations between walking and cycling as a mode of commuting by additionally considering the commuting distance and the outcomes. **Results:** After adjustment, when using active commuters as a reference, passive commuters had a 1.23-fold (95% confidence intervals (CI) 1.19 to 1.29) risk of suboptimal self-rated health and a 1.18-fold (95% CI 1.13 to 1.22) risk of suboptimal work ability. More frequent and/or longer distance by foot and especially by bicycle, was positively associated with health and work ability. Never commuting by bicycle was associated with a 1.65-fold (95% CI 1.55 to 1.74) risk of suboptimal health and a 1.27-fold (95% CI 1.21 to 1.34) risk of suboptimal work ability when using high-dose bicycle commuting as a reference. **Conclusions:** Passive commuting was associated with suboptimal self-rated health and suboptimal work ability. Our results suggest that using active commute modes, particularly cycling, may be beneficial for employee health and work ability.

**Kalliolahti et al. 2024.**

**Scandinavian Journal of Public Health, vol. 52, no. 4.**

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**Keywords:** Active commuting; commute mode; occupational health; self-rated health; work ability.

**Evidence Level:** 4B

**Link:** <https://journals.sagepub.com/doi/epub/10.1177/14034948231159212>

### **The impact of yoga on occupational stress and wellbeing: Exploring practitioners' experiences**

**Background:** Workplace stress is a serious problem globally. It represents a major threat to the UN's sustainability goal of good health and wellbeing (SDG 3). The purpose of this article is to explore how yoga may be a tool for increased wellbeing and stress management at work and in everyday life. **Methods:** To examine how yoga can facilitate employees' wellbeing and ability to cope with stress, we performed qualitative interviews with practitioners who did yoga regularly. We focused on how yoga was experienced by each of our interviewees and what practicing yoga meant to them. Our data material consists of 13 semi-structured lifeworld interviews. The sample consisted of 10 female and 3 male in the age range of 20-55 years old. The data were analysed through a thematic analysis. **Results:** The themes identified in the thematic analysis include: (1) yoga as a tool for increased wellbeing, (2) yoga for coping with stress and

dealing with challenges, (3) the role of breathing, and (4) contextual factors. While confirming other research findings, this article elaborates on aspects informants described as induced by yoga, like self-awareness, calmness, balance, mood-lifting, focus, presence, self-care, and mastery. The reported positive outcomes of yoga constituted increased wellbeing, and also facilitated the ability to cope with stress and experience less stress. Informants also emphasized that yogic breathing was a central factor in inducing wellbeing and feeling less stressed. They also expressed that contextual factors, such as time, teacher, and location, influenced how practicing yoga was experienced and made sense of. **Conclusion:** The study concludes that the interviewees experienced practicing yoga as positive, by reducing their occupational stress. Moreover, yoga increased their wellbeing, as well as their ability to cope with stress. These experienced changes were especially facilitated by yogic breathing, and influenced by contextual factors. **Hagen et al. 2024.**

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

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**Keywords:** Occupational yoga; practitioners' experiences; qualitative research; yoga; yoga and wellbeing; yoga for coping with stress; yogic breathing.

**Evidence Level:** 5B

**Link:** <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1352197/full>

### **What is the meaning of paid employment for well-being? A focus group study on differences and similarities between autistic adults with and without employment**

**Background:** The aim of the present study was to explore the meaning of work for the subjective well-being of autistic adults with and without paid (competitive) employment and to evaluate the differences and similarities between these groups. **Methods:** Eight focus groups were conducted, including a total of 64 autistic adults. Four groups entailed participants with current paid employment (including part-time) and four groups entailed participants without paid employment. All discussions were audiotaped and transcribed verbatim to enable inductive thematic content analysis. Data were analysed using ATLAS.ti 9.

**Results:** Generally, both groups viewed paid employment as very important for well-being, albeit for different reasons. Three themes were found: (1) Not having paid employment was associated with lacking societal recognition, and subsequent low self-esteem, which was a dominant theme in those without work; (2) Work can seriously damage (mental) health and well-being, found in both groups; and (3) Paid employment provides many benefits for well-being, with subthemes: 'purpose,' 'social contacts,' 'growth and use of talents,' 'structure and calmness,' and 'income and freedom', which was a dominant theme in those with paid employment. **Conclusions:** Both groups found paid employment highly important for their well-being, albeit for different reasons. However, both also agreed that paid employment can be very harmful to (mental) health and well-being. Suitable, well-supported jobs are important for well-being, may help to buffer stress in other life areas, and may even prevent autistic burnout. More studies are needed on how healthy jobs can be created where autistic individuals get positive energy and experience high well-being. This will also help to reduce socio-economic inequality.

**Brouwers et al. 2024.**

**Journal of Occupational Rehabilitation, vol. 34, no. 2.**

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**Keywords:** Autism; Autistic burnout; employment; meaning; mental health; well-being.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10136-0>

## **Work Health and Safety**

### **Fungal and bacterial species on biowaste workers' hands and inhalation zone, and potential airway deposition**

**Background:** This study aims to investigate the microbiological working environment of biowaste workers, focusing on airborne fungal and bacterial species exposure, size distribution, and species on workers' hands. **Method and Results:** The research, conducted across six plants with 45 personal exposure

assessments, revealed a total of 150 bacterial species and 47 fungal species on workers' hands, including 19 and 9 species classified in risk class 2 (RC2), respectively. Workers' exposure analysis identified 172 bacterial and 32 fungal species, with several in RC2. In work areas, 55 anaerobic bacterial species belonging to RC2 were found. Different species compositions were observed in various particle size fractions, with the highest species richness for anaerobic bacteria in the fraction potentially depositing in the secondary bronchi and for fungi in the pharynx fraction. The geometric mean aerodynamic diameter (DG) of RC2 anaerobic bacteria was 3.9 µm, <1.6 µm for *Streptomyces*, 3.4 µm for *Aspergillus*, and 2.0 µm for *Penicillium*. Overlapping species were identified on workers' hands, in their exposure, and in work areas, with *Bacillus amyloliquefaciens*, *Leuconostoc mesenteroides*, *Bacillus cereus*, *Enterococcus casseliflavus*, and *Aspergillus niger* consistently present. While the majority of RC2 bacterial species lacked documented associations with occupational health problems, certain bacteria and fungi, including *Bacillus cereus*, *Escherichia coli*, *Enterobacter*, *Klebsiella pneumonia*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus flavus*, *Lichtheimia corymbifera*, *Lichtheimia ramosa*, and *Paecilomyces variotii*, have previously been linked to occupational health issues. **Conclusion:** In conclusion, biowaste workers were exposed to a wide range of microorganisms including RC2 species which would deposit in different parts of the airways.

**Madsen et al. 2024.**

**Waste Management, vol. 183.**

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**Keywords:** Fungal; bacterial; biowaste; inhalation; airway deposition.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0956053X24003040?via%3Dihub>

## Risk Assessment

### Risk assessment industry driven approach in occupational health and safety

**Background:** Risk assessment and management in companies plays a significant role in the prevention section of any field. In the field of Occupational Health and Safety (OHS), its inconsistent or incorrect application has a direct impact on the life and health of employees. In some companies, even today, it is not properly implemented and adequate procedures and methods are not used. The article discusses the development of a step-by-step procedure for risk assessment in industrial environments in the area of OHS.

**Methods:** Main parts of the model and its steps present the partial results of a survey conducted on a sample of 500 small and micro enterprises in the field of risk assessment and the systematic procedure developed following the main survey results. The survey covered only enterprises located in the construction, manufacturing, transport and storage and agriculture, forestry and fishing sectors, which is also a significant statistical feature. Within the structure of respondents, statistical features such as: size of enterprise, sector, region by work are identified. Only enterprises with size by number of employees - micro enterprises from 1 to 9 employees and small enterprises from 10 to 49 employees - were included for the survey. **Results:** New elements of the methods were integrated into the developed systematic procedure, which was subsequently validated in 7 plants of the one company on the same position. The application of the developed model was verified by an expert group consisting of 7 members, an odd number, and the developed checklists and risk register were applied. On the basis of the verification, the model, checklist and risk register were corrected. In addition, the scoring method and the risk matrix were also used, but they did not contain new elements. **Conclusion:** The procedure is still in use today and employees have been trained to use it. On the basis of the developed methodology and the Checklist, the procedure has been transposed into the European OiRA tool and can be used by companies throughout the European Union.

**Hollá et al. 2024.**

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

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**Keywords:** Checklist; hazards; methods; occupational safety and health; risk assessment; risk matrix; risks.

**Evidence Level:** 5B

**Link:** <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1381879/full>

## Chronic Health Issues

*This month we explore the chronic health issues associated with chronic pain, multiple sclerosis, and long Covid-19 symptoms.*

### **Productivity outcomes from chronic pain management interventions in the working age population; A systematic review**

**Background:** Productivity loss because of chronic pain in the working age population is a widespread concern internationally. Interventions for chronic pain in working age adults might be expected to achieve enhanced productivity in terms of reduced costs of workers' compensation insurance, reduced disability support, and improved rates of return to work for injured workers. This would require the use of measures of productivity in the evaluation of chronic pain management interventions. The aim of this review was to identify and interpret the productivity outcomes of randomised controlled trials reported by studies that conducted economic evaluations (eg, cost-effectiveness and cost-utility) of chronic pain management interventions in the working age population published from database inception to March 2023. **Method:** Econlit, Embase, and Pubmed electronic databases were searched, yielding 12 studies that met the selection criteria. All 12 studies used absenteeism to measure productivity, translating return to work measures into indirect costs. Only one study included return to work as a primary outcome. Ten studies found no statistically significant improvements in productivity-related costs. **Results and Conclusion:** Despite evidence for reduced pain-related disability after pain management interventions, this review suggests that the use of measures for assessing productivity gains is lacking. Including such measures would greatly assist administrators and payers when considering the broader societal benefits of such interventions.

**Chowdhury et al. 2024.**

**Pain, vol. 165, no. 6.**

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**Keywords:** Productivity loss; chronic pain; pain management.

**Evidence Level:** 1A

**Link:**

[https://journals.lww.com/pain/fulltext/2024/06000/productivity\\_outcomes\\_from\\_chronic\\_pain\\_management.6.aspx](https://journals.lww.com/pain/fulltext/2024/06000/productivity_outcomes_from_chronic_pain_management.6.aspx)

### **Work adjustments by types of occupations amongst people with Multiple Sclerosis: A survey study**

**Background:** To explore the occurrence of work adjustments for people with multiple sclerosis (MS) across types of occupations (managerial, office, and manual workers). **Methods:** All working-aged (20-50 years) residents in Sweden diagnosed with MS were invited to participate in a web-based survey in 2021. Responses were linked to individual-level nationwide registers. Descriptive analyses were conducted to compare sociodemographic and clinical variables across occupations as well as other responses. The odds ratio of having any adjustment at work was determined using multinomial logistic regression. **Results:** From all 4412 respondents (52% response rate), 3313 employees were included. The majority were women (72%) and had low (24.2%) or mild disease severity (44.7%). Nevertheless, different work adjustments across occupations were observed. Compared to the other occupations, office workers reported more invisible symptoms, more work adjustments and considered adapted schedules as the most important adjustment. On the contrary, more managers reported having no limiting symptoms and consequently, disclosed their diagnosis less often. They also reported having fewer work adjustments and more opportunities to modify their work than office and manual workers. Manual workers had a higher likelihood to report needing more support at work than office workers and managers. Further, a higher likelihood of having work adjustments was associated with progressive MS, higher MS severity, and invisible symptoms. **Conclusion:** A more severe clinical profile of MS was associated with having work adjustments. The physical demands and responsibilities of an occupation play an important role when requesting and getting work adjustments amongst employees with MS.

**Machado et al. 2024.**

**Journal of Occupational Rehabilitation, vol. 34, no. 2.**

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**Keywords:** Chronic disease; multiple sclerosis; occupations; work adjustments.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10142-2>

### **Job retention by people with disabilities: A qualitative study of the perspectives of people with multiple sclerosis**

**Background:** Multiple sclerosis (MS), because of its early age at onset, greatly impacts the working lives of those affected by it in ways linked to different factors, both professional and personal. It has been observed that only a small percentage (20-40%) of workers with MS retain their jobs after the diagnosis. When identifying factors determining job retention or loss in this setting, it is essential to consider the direct perspectives of people with MS (PwMS). **Methods:** A qualitative study, based on the conduction of two focus groups, was conducted to explore the personal experiences of PwMS who work. **Results:** The results show that there are numerous factors, both positive and negative, that can influence these people's ability to retain their jobs. The climate established in the workplace and the relationship between workers with MS and their colleagues were fundamentally important aspects, as was knowledge of the disease at the level of public opinion. **Conclusions:** Managing work is a complex undertaking for people with a disabling condition like MS. There needs to be greater awareness of the employment rights of PwMS. Improving these knowledge-based aspects could undoubtedly improve the quality of the working lives of PwM.

**Ponzio et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 3.**

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**Keywords:** Job retention; disabilities; multiple sclerosis.

**Evidence Level:** 5A

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/15947>

### **Employment outcomes of people with Long Covid symptoms: Community-based cohort study**

**Background:** Evidence on the long-term employment consequences of SARS-CoV-2 infection is lacking. We used data from a large, community-based sample in the UK to estimate associations between Long Covid and employment outcomes. **Methods:** This was an observational, longitudinal study using a pre-post design. We included survey participants from 3 February 2021 to 30 September 2022 when they were aged 16-64 years and not in education. Using conditional logit modelling, we explored the time-varying relationship between Long Covid status  $\geq 12$  weeks after a first test-confirmed SARS-CoV-2 infection (reference: pre-infection) and labour market inactivity (neither working nor looking for work) or workplace absence lasting  $\geq 4$  weeks. **Results:** Of 206 299 participants (mean age 45 years, 54% female, 92% white), 15% were ever labour market inactive and 10% were ever long-term absent during follow-up. Compared with pre-infection, inactivity was higher in participants reporting Long Covid 30 to  $<40$  weeks [adjusted odds ratio (aOR): 1.45; 95% CI: 1.17-1.81] or 40 to  $<52$  weeks (aOR: 1.34; 95% CI: 1.05-1.72) post-infection. Combining with official statistics on Long Covid prevalence, and assuming a correct statistical model, our estimates translate to 27 000 (95% CI: 6000-47 000) working-age adults in the UK being inactive because of Long Covid in July 2022. **Conclusions:** Long Covid is likely to have contributed to reduced participation in the UK labour market, though it is unlikely to be the sole driver. Further research is required to quantify the contribution of other factors, such as indirect health effects of the pandemic.

**Ayoubkhani et al. 2024.**

**European Journal of Public Health, vol. 34, no. 3.**

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**Keywords:** Long Covid; symptoms; employment outcomes.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/eurpub/article/34/3/489/7616634?login=false>

## **Impacts of Long COVID on workers: A longitudinal study of employment exit, work hours and mental health in the UK**

**Background:** The COVID-19 pandemic has had enormous implications for the world of work. However, there has been relatively little focus on the employment and workforce challenges of the virus in relation to workforce health, beyond the immediate management of the spread of the disease. There is an important gap in understanding the ongoing workforce issues created by the significant incidence of Long COVID in the population. **Objectives:** This paper examines the effects of Long COVID on employment and workers' mental health to contribute to understanding of work-limiting health conditions and to offer policy implications for COVID-19 and similar health conditions on employment and the workforce. **Methods:** A large national panel study for the UK is used to estimate the likelihood of exiting employment as well as on changes in working hours and general mental health and happiness of those who remain in work. The sample includes individuals 16 years and older who were in employment in January/February 2020 and followed during the pandemic 2020-2021. Long COVID is self-reported in the data. Informed by conceptual consideration of employment protection in the UK, two groups of individuals with Long COVID are defined based on the duration of symptoms. Group 1 has Long COVID 5-28 weeks after an infection with COVID-19, which is up to the maximum length of Statutory Sick Pay in the UK. Group 2 has symptoms for 29+ weeks, which is beyond the statutory entitlement to sickness pay. Panel regression models are fitted both with fixed-effects and random-effects. Individual and job characteristics are used as controls. Those with no COVID-19 symptoms are the reference group. **Results:** In between-person comparison, Group 2 is at higher risk of exiting employment compared to those with no COVID-19 symptoms. Between-person estimates of mental health and well-being show negative effects of Long COVID for both groups but these are greatest in Group 2. Within-person estimates suggest that factors associated with earnings mediate the negative Long COVID effects on mental health in Group 1 and that Group 2 adapts to working with Long COVID. Group 1 is at risk of working zero hours (i.e. being on sick leave) but neither Group 1 nor Group 2 have a higher probability of working fewer hours compared to those with no COVID-19 symptoms. The negative impact of Long COVID on working hours stems primarily from working zero hours (sickness leave) rather than working fewer hours, suggesting a lack of accommodation by employers of Long COVID at work. **Conclusion:** The extension of Statutory Sickness Pay and greater flexibility to manage partial (returns to) work would help preserve employment and mental health. Those with Long COVID for 12 months are likely to meet the definition of disability and so have a right to receive reasonable workplace adjustments.

**Reuschke et al. 2024.**

**PLoS One, vol. 19, no. 6.**

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**Keywords:** Long COVID; employment exit; work hours; mental health.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0306122>

## **Occupational Exposure**

*This month we explore the Occupational exposure issues associated with silica dust, cadmium, second-hand smoke, diesel exhaust, Benzene, 1,3-butadiene, environmental viruses, occupational particles and metalworking fluid aerosols. In other studies, we explore issues associated with occupational noise, hand/arm vibration, and heat stress. In condition related research we explore occupational exposure issues associated with chronic headaches, Parkinson's disease and workers with small airways obstruction.*

## **A prospective exploration of the urban exposome in relation to headache in the Dutch population-based Occupational and environmental health cohort study (AMIGO)**

**Background:** Headache is one of the most prevalent and disabling health conditions globally. We prospectively explored the urban exposome in relation to weekly occurrence of headache episodes using data from the Dutch population-based Occupational and Environmental Health Cohort Study (AMIGO).

**Methods:** Participants (N = 7,339) completed baseline and follow-up questionnaires in 2011 and 2015, reporting headache frequency. Information on the urban exposome covered 80 exposures across 10

domains, such as air pollution, electromagnetic fields, and lifestyle and socio-demographic characteristics. We first identified all relevant exposures using the Boruta algorithm and then, for each exposure separately, we estimated the average treatment effect (ATE) and related standard error (SE) by training causal forests adjusted for age, depression diagnosis, painkiller use, general health indicator, sleep disturbance index and weekly occurrence of headache episodes at baseline. **Results:** Occurrence of weekly headache was 12.5 % at baseline and 11.1 % at follow-up. Boruta selected five air pollutants (NO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, silicon in PM<sub>10</sub>, iron in PM<sub>2.5</sub>) and one urban temperature measure (heat island effect) as factors contributing to the occurrence of weekly headache episodes at follow-up. The estimated causal effect of each exposure on weekly headache indicated positive associations. NO<sub>2</sub> showed the largest effect (ATE = 0.007 per interquartile range (IQR) increase; SE = 0.004), followed by PM<sub>10</sub> (ATE = 0.006 per IQR increase; SE = 0.004), heat island effect (ATE = 0.006 per one-degree Celsius increase; SE = 0.007), NO<sub>x</sub> (ATE = 0.004 per IQR increase; SE = 0.004), iron in PM<sub>2.5</sub> (ATE = 0.003 per IQR increase; SE = 0.004), and silicon in PM<sub>10</sub> (ATE = 0.003 per IQR increase; SE = 0.004). **Conclusion:** Our results suggested that exposure to air pollution and heat island effects contributed to the reporting of weekly headache episodes in the study population.

**Traini et al. 2024.**

**Environmental International, vol. 188.**

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**Keywords:** Boruta; causal forest; headache; urban exposome.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0160412024003623?via%3Dihub>

### **Risk of hand and forearm conditions due to vibrating hand-held tools exposure: A retrospective cohort study from Sweden**

**Background:** The occurrence of hand and forearm disorders related to vibration exposure, adjusted for relevant background factors, is scarcely reported. We analysed the prevalence of such conditions in a large population cohort, stratified by sex, and associations with exposure to vibrating hand-held tools.

**Method:** This is a retrospective cohort study. Setting: Individuals in the Malmö Diet and Cancer Study cohort (MDCS; inclusion 1991-1996; followed until 2018) were asked, 'does your work involve working with vibrating hand-held tools?' (response: 'not at all', 'some' and 'much'). Data were cross-linked with national registers to identify treatment for carpal tunnel syndrome (CTS), ulnar nerve entrapment (UNE), Dupuytren's disease, trigger finger or first carpometacarpal joint (CMC-1) osteoarthritis (OA). Cox regression models, unadjusted and adjusted (age, sex, prevalent diabetes, smoking, hypertension and alcohol consumption), were performed to analyse the effects of reported vibration exposure.

Participants: Individuals in the MDCS who had answered the questionnaire on vibration exposure (14 342 out of the originally 30 446 individuals in MDCS) were included in the study. **Results:** In total, 12 220/14 342 individuals (76%) reported 'no' exposure, 1392/14 342 (9%) 'some' and 730/14 342 (5%) 'much' exposure to vibrating hand-held tools. In men, 'much' exposure was independently associated with CTS (HR 1.71 (95% CI 1.11 to 2.62)) and UNE (HR 2.42 (95% CI 1.15 to 5.07)). 'Some' exposure was independently associated with UNE in men (HR 2.10 (95% CI 1.12 to 3.95)). 'Much' exposure was independently associated with trigger finger in women (HR 2.73 (95% CI 1.49 to 4.99)). We found no effect of vibration exposure on Dupuytren's disease or CMC-1 OA. 'Much' vibration exposure predicted any hand and forearm diagnosis in men (HR 1.44 (95% CI 1.08 to 1.80)), but not in women. **Conclusions:** Vibration exposure by hand-held tools increases the risk of developing CTS and UNE and any common hand and forearm conditions in men, whereas women only risk trigger finger and CMC-1 OA. Adjustment for relevant confounders in vibration exposure is crucial.

**Zimmerman et al. 2024.**

**BMJ Open, vol. 14, no. 6.**

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**Keywords:** Aged; general diabetes; hand & wrist; hypertension; musculoskeletal disorders.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/14/6/e080777.long>

### **Association between exposure to metalworking fluid aerosols, occupational noise and chronic kidney disease: A cross-sectional study in China**

**Background:** Chronic kidney disease (CKD) carries a high public health burden yet little is known about the relationship between metalworking fluid (MWF) aerosols, occupational noise and CKD. We aimed to explore the relationship between occupational MWF aerosols, occupational noise and CKD.

**Methods:** A total of 2,738 machinists were sampled from three machining companies in Wuxi, China, in 2022. We used the National Institute for Occupational Safety and Health (NIOSH) method 5524 to collect individual samples for MWF aerosols exposure, and the Chinese national standard (GBZ/T 189.8-2007) method to test individual occupational noise exposure. The diagnostic criteria for CKD were urinary albumin/creatinine ratio (UACR) of  $\geq 30$  mg/g and reduced renal function ( $\text{eGFR} < 60 \text{ mL}\cdot\text{min}^{-1}\cdot 1.73 \text{ m}^{-2}$ ) lasting longer than 3 months. Smooth curve fitting was conducted to analyze the associations of MWF aerosols and occupational noise with CKD. A segmented regression model was used to analyze the threshold effects. **Results:** Workers exposed to MWF aerosols (odds ratio [OR] = 2.03, 95% confidence interval [CI]: 1.21-3.41) and occupational noise (OR = 1.77, 95%CI: 1.06-2.96) had higher prevalence of CKD than nonexposed workers. A nonlinear and positive association was found between increasing MWF aerosols and occupational noise dose and the risk of CKD. When daily cumulative exposure dose of MWF aerosols exceeded  $8.03 \text{ mg}/\text{m}^3$ , the OR was 1.24 (95%CI: 1.03-1.58), and when occupational noise exceeded 87.22 dB(A), the OR was 1.16 (95%CI: 1.04-1.20). In the interactive analysis between MWF aerosols and occupational noise, the workers exposed to both MWF aerosols (cumulative exposure  $\geq 8.03 \text{ mg}/\text{m}^3\cdot\text{day}$ ) and occupational noise ( $L_{\text{EX},8\text{h}} \geq 87.22 \text{ dB(A)}$ ) had an increased prevalence of CKD (OR = 2.71, 95%CI: 1.48-4.96). MWF aerosols and occupational noise had a positive interaction in prevalence of CKD.

**Conclusions:** Occupational MWF aerosols and noise were positively and nonlinearly associated with CKD, and cumulative MWF aerosols and noise exposure showed a positive interaction with CKD. These findings emphasize the importance of assessing kidney function of workers exposed to MWF aerosols and occupational noise. Prospective and longitudinal cohort studies are necessary to elucidate the causality of these associations.

**Zhou et al. 2024.**

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

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**Keywords:** CKD; Interaction; metalworking fluid aerosols; occupational noise exposure; threshold effect.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19006-7>

### **Prevalence and risk factors for obstructive pulmonary dysfunction caused by silica dust exposure: A multicenter cross-sectional study**

**Background:** To understand the prevalence rate of obstructive pulmonary dysfunction in workers exposed to silica dust and analyze its risk factors, so as to provide reference for the formulation of diagnostic criteria for chronic obstructive pulmonary disease caused by occupational dust. **Methods:** Data collection and structured questionnaire were used to collect the data of 2064 workers exposed to silica dust who underwent health examination in Hunan Occupational Disease Prevention and Control Hospital and Yuanling Second People's Hospital from January 1, 2021 to June 30, 2022. The prevalence rate of obstructive pulmonary ventilation dysfunction was analyzed and the risk factors were analyzed.

**Results:** The prevalence rate of obstructive pulmonary ventilation dysfunction ( $\text{FEV1}/\text{FVC} < 70\%$ ) was 2.3% in 2064 silica dust exposed workers. The prevalence of restrictive pulmonary ventilation dysfunction ( $\text{FVC}/\text{Pre} < 80\%$ ) was 8.1%. The prevalence of obstructive pulmonary ventilation dysfunction in the high level exposure group was higher than that in the low level exposure group, 8.2 vs 0.9% ( $P < 0.05$ ). The rate of obstructive pulmonary ventilation dysfunction in female group was higher than that in male group (5.3% vs. 1.7%,  $p = 0.00$ ). Workers with obstructive pulmonary dysfunction were older and worked longer than workers without obstructive pulmonary dysfunction, but there was no statistical difference. Multivariate regression analysis showed that high exposure level was a risk factor for obstructive pulmonary ventilation dysfunction in silica dust exposed workers ( $P < 0.05$ ). Females were the risk factors for obstructive pulmonary ventilation dysfunction ( $P < 0.05$ ). **Conclusion:** Silica dust exposure can cause obstructive pulmonary ventilation dysfunction and lead to chronic obstructive pulmonary disease. High level of

exposure is a risk factor for obstructive pulmonary ventilation dysfunction. Women exposed to dust are more prone to obstructive pulmonary ventilation dysfunction than men. Early diagnosis of chronic obstructive pulmonary disease caused by silica dust and timely intervention measures are very important to delay the decline of lung function and protect the health of workers.

**Xin et al. 2024.**

**BMC Pulmonary Medicine**, vol. 24, no. 1.

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**Keywords:** Obstructive pulmonary dysfunction; silica dust exposure; risk.

**Evidence Level:** 4B

**Link:** <https://bmcpulmed.biomedcentral.com/articles/10.1186/s12890-024-03106-6>

### **Occupational carcinogens in Italy: An overview on exposure to cadmium and its compounds**

**Background:** Given the recognized carcinogenicity of cadmium, several regulatory interventions have been carried out over the years to protect exposed workers. The aim of the study is to investigate the prevalence and extent of exposure to cadmium among Italian workers. **Method:** Data was collected from a nation-wide occupational exposure registry (SIREP, 1996-2022). Gender-specific statistical analysis was carried out for some exposure-related variables (cadmium compound, activity sector, occupational group, firm size). Potentially exposed workers were estimated for some industrial sectors. Concurrent exposures were investigated using cluster analysis. **Results:** Overall 4,264 measurements were analyzed. Four industrial sectors were found to be most involved by cadmium exposure: base metal manufacturing, fabricated metal products, machinery and equipment, and other transport equipment (55% of measurements). Jewelry/precious-metal workers, and glass/ceramic plant operators were found to be most at exposure risk. A total of 26,470 workers potentially exposed was estimated (69% men). Concurrent exposures to other occupational carcinogens were detected quite frequently (52% of workers). **Conclusion:** Several situations of exposure and co-exposure to cadmium deserve attention and awareness in order to minimize the risks associated with workers' health. Recognition of potentially hazardous exposure conditions is an important step in prevention strategies to better protect workers against cancer-causing agents.

**Scarselli et al. 2024.**

**Industrial Health**, vol. 62, no. 3.

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**Keywords:** Carcinogenic risk; database; exposure assessment; occupational health; prevention.

**Evidence Level:** 4B

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/62/3/62\\_2023-0128/article](https://www.jstage.jst.go.jp/article/indhealth/62/3/62_2023-0128/article)

### **Mortality risk associated with occupational exposures in people with small airways obstruction**

**Background:** Small airways obstruction (SAO) has been associated with occupational exposures. Whether exposure to harmful occupational agents impacts the survival of people with SAO is unknown. Our aim was to estimate the mortality risk associated with occupational exposures among people with SAO.

**Methods:** We used data from UK Biobank participants with SAO, defined as a ratio of forced expiratory volume in three seconds to forced expiratory volume in six seconds (FEV3/FEV6) below the lower limit of normal. We assigned lifetime occupational exposures to participants with available occupational histories using the ALOHA+ Job Exposure Matrix. Mortality data were provided by the National Death Registries. We used Cox regression to assess the association of all-cause mortality with lifetime occupational exposures (vapours, gases, dusts, fumes-VGDF; solvents; pesticides; metals), adjusting for potential confounders.

**Results:** The 13,942 participants with SAO had a mean age of 56±7 years, 59% were females and 94.2% were of White ancestry. Overall, there were 457 deaths over a median follow-up of 12.8 years. A greater mortality risk was associated with exposure to VGDF, with hazard ratios of 1.32 (95%CI: 1.04-1.78) for low levels and 1.41 (95%CI: 1.11-1.78) for moderate levels of cumulative exposure. There was no evidence of association for the other occupational exposures. **Conclusion:** Lifetime occupational exposure to VGDF in people with SAO may have a detrimental effect on their survival. Future respiratory health surveillance programmes of people exposed to VGDF should consider assessment for SAO and focus on primary prevention through adequate exposure control.

Quintero-Santofimio et al. 2024.

PLoS One, vol. 19, no. 6.

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Keywords: Mortality risk; small airways obstruction.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0305125>

### Occupational second-hand smoke exposure: A comparative shotgun proteomics study on nasal epithelia from healthy restaurant workers

**Background:** Non-smokers exposed to second-hand smoke (SHS) present risk of developing tobacco smoke-associated pathologies. To investigate the airway molecular response to SHS exposure that could be used in health risk assessment, **Method:** comparative shotgun proteomics was performed on nasal epithelium from a group of healthy restaurant workers, non-smokers (never and former) exposed and not exposed to SHS in the workplace. **Results:** HIF1 $\alpha$ -glycolytic targets (GAPDH, TPI) and proteins related to xenobiotic metabolism, cell proliferation and differentiation leading to cancer (ADH1C, TUBB4B, EEF2) showed significant modulation in non-smokers exposed. In never smokers exposed, enrichment of glutathione metabolism pathway and EEF2-regulating protein synthesis in genotoxic response were increased, while in former smokers exposed, proteins (LYZ, ATP1A1, SERPINB3) associated with tissue damage/regeneration, apoptosis inhibition and inflammation that may lead to asthma, COPD or cancer, were upregulated.

**Conclusion:** The identified proteins are potential response and susceptibility/risk biomarkers for SHS exposure.

Neves et al. 2024.

Environmental Toxicology and Pharmacology, vol. 108.

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Keywords: Cigarette smoke; mass spectrometry; nasal epithelium; protein network; proteomics; second-hand smoke.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S1382668924000991?via%3Dihub>

### Oxidative Stress Assessment of Noise Exposure in the Workers Using Hearing Protection in a Pressing Industry

**Background:** Exposure to noise by generation of free radicals causes oxidative stress in the body. The aim of this study was the evaluation of oxidative stress in workers who have used hearing protection devices during working time. **Method:** Pressing workers (n=24) of a home appliance industry were studied using hearing protection devices to reduce noise exposure. Twenty two office staff (without exposure to noise) were considered as a control group. Two groups were matched for age, work experience and smoking. Exposure to noise was measured by dosimeter method at workstations. By obtaining 3 ml blood sample, Malondialdehyde levels, Thiol groups and total antioxidant capacity were evaluated in all subjects.

**Results:** Exposure to sound pressure level in pressing workers by considering the noise reduction factor of the earplug was observed in 77.65 dB with minimum 75.1 dB and Maximum 81.22 dB. Plasma thiol groups (0.076 (0.041-0.119) vs (0.110 (0.076-0.197), mmol/l P =0.0001) and total antioxidant capacity (361.33 $\pm$  54.65 vs 414.14 $\pm$  96.82,  $\mu$ mol/ml P = 0.026) in pressing workers significantly decreased than control group. Pearson correlation showed significant results between exposure to noise and oxidative stress parameters.

**Conclusion:** Exposure to noise wave cause oxidative stress in different site of body. Oxidative stress is an intermediate way for different disease due to noise exposure. Reducing of noise exposure by earplug in pressing workers is not efficient protection for oxidative stress generation. Therefore, hearing protection devices are not a barrier to the harmful effects of noise in occupational exposure.

Moradpour et al. 2024.

Asian Pacific Journal of Cancer Prevention, vol. 25, no. 6.

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Keywords: Hearing Protection Devices; noise; oxidative stress; pressing industry.

**Evidence Level:** 5B

**Link:** <https://journal.waocp.org/?sid=Entrez:PubMed&id=pmid:38918653&key=2024.25.6.1929>

### **Occupational particle exposure and chronic kidney disease: A cohort study in Swedish construction workers**

**Background:** Increasing epidemiological and experimental evidence suggests that particle exposure is an environmental risk factor for chronic kidney disease (CKD). However, only a few case-control studies have investigated this association in an occupational setting. Hence, our objective was to investigate associations between particle exposure and CKD in a large cohort of Swedish construction workers. **Methods:** We performed a retrospective cohort study in the Swedish Construction Workers' Cohort, recruited 1971-1993 (n=286 089). A job-exposure matrix was used to identify workers exposed to nine different particulate exposures, which were combined into three main categories (inorganic dust and fumes, wood dust and fibres). Incident CKD and start of renal replacement therapy (RRT) were obtained from validated national registries until 2021 and analysed using adjusted Cox proportional hazards models. **Results:** Exposure to inorganic dust and fumes was associated with an increased risk of CKD and RRT during working age (adjusted HR for CKD at age <65 years 1.15, 95% CI 1.05 to 1.26). The elevated risk did not persist after retirement age. Exposure to cement dust, concrete dust and diesel exhaust was associated with CKD. Elevated HRs were also found for quartz dust and welding fumes. **Conclusions:** Workers exposed to inorganic particles seem to be at elevated risk of CKD and RRT. Our results are in line with previous evidence of renal effects of ambient air pollution and warrant further efforts to reduce occupational and ambient particle exposure.

**Kilbo Edlund et al. 2024.**

**Occupational and Environmental Medicine, vol. 81, no. 5.**

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**Keywords:** Dust; epidemiology; kidney diseases.

**Evidence Level:** 4B

**Link:** <http://oem.bmj.com/lookup/pmidlookup?view=long&pmid=38811167>

### **Adjustment for duration of employment in occupational epidemiology**

**Background:** In occupational epidemiology, the healthy worker survivor effect can manifest as a time-dependent confounder because healthier workers can accrue greater amounts of exposure over longer periods of employment. For example, in occupational studies of radiation exposure that focus on cumulative annualized radiation dose, workers can accrue greater amounts of cumulative radiation exposure over longer periods of employment, while workers with longer periods of employment can transition into jobs with a reduced potential for annualized radiation exposure. The extent to which confounding arising from the healthy worker survivor effect impacts radiation risk estimates is unknown.

**Methods:** We assessed the impact of the healthy worker survivor effect on estimates of radiation risk among nuclear workers in a Million Person Study cohort. In simulation studies, we contrasted the ability of marginal structural Cox models with inverse probability weighting and Cox proportional hazards models to account for time-dependent confounding arising from the healthy worker survivor effect. **Results:** Marginal structural Cox models and Cox proportional hazards models with flexible functional forms for duration of employment provided reliable results. **Conclusions:** It is crucial to flexibly adjust for duration of employment to account for confounding arising from the healthy worker survivor effect in occupational epidemiology.

**Ko et al. 2024.**

**Annals of Epidemiology, vol. 94**

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**Keywords:** Healthy worker effect; occupational health; radiation; survival analysis.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S1047279724000577?via%3Dihub>

### Cross-sectional study on the health of workers exposed to occupational noise in China

**Background:** This study aimed to understand the health of workers exposed to occupational noise and explore the influencing factors related to workers' health, especially the impact of noise on workers' hearing. This work can provide a basis for formulating relevant measures for occupational noise prevention and control in the future. **Methods:** On the basis of the key occupational disease monitoring project in Chongqing, China, in 2021, the data of 1125 workers exposed to occupational noise were analyzed. Data included demographic information, occupational history, clinical physical examination information, and noise detection information of the working environment. Chi-square test and multifactorial logistic regression were used for statistical analysis. **Results:** The prevalence rates of abnormal electrocardiogram (ECG), blood pressure (BP), and pure tone audiometry (PTA) were 21.9% (246/1125), 27.8% (313/1125), and 18.0% (202/1125), respectively. Male workers accounted for 78.8%. Compared with male workers, female workers had a lower prevalence of abnormal PTA (OR = 0.28, 95% CI = 0.16-0.50). Workers working in medium enterprises had a lower prevalence of abnormal BP than workers in micro enterprises (OR = 0.36, 95% CI = 0.19-0.66). The prevalence of abnormal BP and PTA of workers increased with age. After adjusting for age, sex, and body mass index, the prevalence of abnormal ECG of mining workers was higher than that of manufacturing workers (OR = 1.54, 95% CI = 1.07-2.24), and the prevalence of abnormal PTA had a rising trend with the increase in noise exposure value. **Conclusion:** Noise-exposed workers have a high prevalence of abnormal ECG, BP, and PTA, and factors such as age, enterprise size, and workplace noise exposure are correlated with the aberrant health of workers. Governments, enterprises, and individuals need to attach great importance to the possible adverse effects of noise. They must also actively adopt various effective measures to protect the occupational safety and health of workers.

Jin et al. 2024.

PLoS One, vol. 19, no. 6.

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**Keywords:** Occupational noise; exposure; China.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0305576>

### Assessing environmental exposure to viruses in wastewater treatment plant and swine farm scenarios with next-generation sequencing and occupational risk approaches

**Background:** Occupational exposure to pathogens can pose health risks. This study investigates the viral exposure of workers in a wastewater treatment plant (WWTP) and a swine farm by analyzing aerosol and surfaces samples. **Method:** Viral contamination was evaluated using quantitative polymerase chain reaction (qPCR) assays, and target enrichment sequencing (TES) was performed to identify the vertebrate viruses to which workers might be exposed. Additionally, Quantitative Microbial Risk Assessment (QMRA) was conducted to estimate the occupational risk associated with viral exposure for WWTP workers, choosing Human Adenovirus (HAdV) as the reference pathogen. In the swine farm, QMRA was performed as an extrapolation, considering a hypothetical zoonotic virus with characteristics similar to Porcine Adenovirus (PAdV). The modelled exposure routes included aerosol inhalation and oral ingestion through contaminated surfaces and hand-to-mouth contact. **Results:** HAdV and PAdV were widespread viruses in the WWTP and the swine farm, respectively, by qPCR assays. TES identified human and other vertebrate viruses WWTP samples, including viruses from families such as Adenoviridae, Circoviridae, Orthoherpesviridae, Papillomaviridae, and Parvoviridae. In the swine farm, most of the identified vertebrate viruses were porcine viruses belonging to Adenoviridae, Astroviridae, Circoviridae, Herpesviridae, Papillomaviridae, Parvoviridae, Picornaviridae, and Retroviridae. QMRA analysis revealed noteworthy risks of viral infections for WWTP workers if safety measures are not taken. The probability of illness due to HAdV inhalation was higher in summer compared to winter, while the greatest risk from oral ingestion was observed in workspaces during winter. **Conclusion:** Swine farm QMRA simulation suggested a potential occupational risk in the case of exposure to a hypothetical zoonotic virus. This study provides valuable insights into WWTP and swine farm worker's occupational exposure to human and other vertebrate viruses. QMRA and NGS analyses conducted in this study will assist managers in making evidence-based decisions, facilitating the implementation of protection measures, and risk mitigation practices for workers.

Itarte et al. 2024.

International Journal of Hygiene and Environmental Health, vol. 259.

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**Keywords:** Aerosol sampling; occupational exposure; quantitative microbial risk assessment; sticker-based surface sampling; target enrichment sequencing; viral metagenomics.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S1438463924000415?via%3Dihub>

### Higher exposure to 1,3-butadiene is associated with more severe hearing loss

**Background:** While volatile organic compounds (VOCs) impair various organs, their influence on hearing loss (HL) has not been extensively researched. We aimed to identify the association between VOCs and HL or high-frequency hearing loss (HFHL). **Method:** We extracted data on age, sex, pure tone audiometry, hypertension, occupational noise exposure, and creatinine-corrected urine VOC metabolite concentrations from the eighth Korea National Health and Nutrition Survey. **Results:** Among the VOC metabolites, N-acetyl-S-(benzyl)-L-cysteine (BMA,  $P = 0.004$ ), N-acetyl-S-(phenyl)-L-cysteine (SPMA,  $P = 0.027$ ), and N-acetyl-S-(3,4-dihydroxybutyl)-L-cysteine (DHBMA,  $P < 0.001$ ) showed associations with HL. Additionally, HFHL exhibited significant associations with BMA ( $P = 0.005$ ), 3- and 4-methylhippuric acid (3, 4 MHA,  $P = 0.049$ ), mandelic acid (MA,  $P = 0.015$ ), SPMA ( $P < 0.001$ ), N-acetyl-S-(3-hydroxypropyl)-L-cysteine (3-HPMA,  $P < 0.001$ ), and DHBMA ( $P < 0.001$ ). After controlling other factors, DHBMA were associated with HL ( $P = 0.021$ ) and HFHL ( $P = 0.014$ ) and exhibited a linear association with the mean hearing level ( $\beta = 0.054$ ,  $P = 0.024$ ) and high-frequency hearing level ( $\beta = 0.045$ ,  $P = 0.037$ ). **Conclusion:** Since 1,3-butadiene may act as an ototoxic material, early screening for workers exposed to 1,3-butadiene and reducing exposure to 1,3-butadiene in everyday life may be helpful to prevent further HL.

Han et al. 2024.

Scientific Reports, vol. 14, no. 1.

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**Keywords:** Environmental pollutants; high-frequency hearing loss; noise; sensorineural hearing loss; volatile organic compounds.

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-024-63757-7>

### Climate change and heat stress resilient outdoor workers: Findings from systematic literature review

**Background:** Global warming has led to an increase in the number and intensity of extreme heat events, posing a significant threat to the health and safety of workers, especially those working outdoors, as they often have limited access to cooling strategies. The present systematic literature review (a) summarizes the current knowledge on the impacts of climate change on outdoor workers, (b) provides historical background on this issue, (c) explores factors that reduce and increase thermal stress resilience, (d) discusses the heat mitigation strategies, and (e) provides an overview of existing policy and legal frameworks on occupational heat exposure among outdoor workers. **Methods:** In this systematic review, we searched scientific databases including Scopus ( $N = 855$ ), Web of Science ( $N = 828$ ), and PubMed ( $N = 202$ ). Additionally, we identified relevant studies on climate change and heat-stress control measures through Google Scholar ( $N = 116$ ) using specific search terms. In total, we monitored 2001 articles pertaining to worker populations (men = 2921; women = 627) in various outdoor climate conditions across 14 countries. After full-text assessment, 55 studies were selected for inclusion, and finally, 29 eligible papers were included for data extraction. **Results:** Failure to implement effective control strategies for outdoor workers will result in decreased resilience to thermal stress. The findings underscore a lack of awareness regarding certain adaptation strategies and interventions aimed at preventing and enhancing resilience to the impact of climate change on heat stress prevalence among workers in outdoor tropical and subtropical environments. However, attractive alternative solutions from the aspects of economic and ecological sustainability in the overall assessment of heat stress resilience can be referred to acclimatization, shading, optimized clothing properties and planned breaks. **Conclusion:** The integration of climate change adaptation strategies into occupational health programs can enhance occupational heat

resilience among outdoor workers. Conducting cost-benefit evaluations of health and safety measures for thermal stress adaptation strategies among outdoor workers is crucial for professionals and policymakers in low- and middle-income tropical and subtropical countries. In this respect, complementary measures targeting hydration, work-rest regimes, ventilated garments, self-pacing, and mechanization can be adopted to protect outdoor workers. Risk management strategies, adaptive measures, heat risk awareness, practical interventions, training programs, and protective policies should be implemented in hot-dry and hot-humid climates to boost the tolerance and resilience of outdoor workers.

**Habibi et al. 2024.**

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

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**Keywords:** Adaptation strategies; climate change; occupational heat stress; outdoor workers; resilience.

**Evidence Level:** 1A

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19212-3>

### **Benzene exposure in workers from a waste oil regeneration plant during ordinary activities by air and biological monitoring**

**Background:** In the regeneration of waste oil, a strategical technological process for the European Union circular economy action plan, exhausted oils are regenerated to produce high performing oil bases. Aim of this work was to assess the exposure to benzene in plant workers during ordinary activities. **Methods:** 59 workers, potentially exposed to benzene, and 9 administrative workers from an Italian plant were monitored for the whole work shift with personal air samplers; urinary benzene (BEN-U) and S-phenyl mercapturic acid (SPMA) were measured by mass spectrometry methods in end-shift urine samples. Different job tasks were identified among workers. **Results:** Median (minimum-maximum) airborne exposures to benzene were <0.9 (<0.9-6.3) and <0.9 (<0.9-0.9) µg/m<sup>3</sup>, BEN-U and SPMA levels were 0.094 (<0.015-3.095) µg/L and 0.15 (<0.10-9.67) µg/g crt and 0.086 (0.034-0.712) µg/L and <0.10 (<0.10-3.19) µg/g creatinine in workers and administrative workers, respectively. No differences were found among job tasks and between workers and administrative workers, while higher levels were found in smokers than in non-smokers. For all job tasks, the exposure to benzene was always below occupational limit values.

**Conclusions:** This study has investigated for the first time the exposure to benzene of workers employed in the re-refining of exhaust oil. The results showed that normal production activities in regenerating used oils do not pose a risk of exposure to benzene in workers.

**Campo et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 3.**

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**Keywords:** Benzene exposure; waste oil.

**Evidence Level:** 5B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/15863>

### **Risk of gynaecological and breast cancers in workers exposed to diesel exhaust: A systematic review and meta-analysis of cohort studies**

**Background:** This study aimed to explore the association between occupational exposure to diesel exhaust (DE) and gynaecological and breast cancers. **Methods:** A systematic review was performed to identify cohort studies reporting results on the association between occupational exposure to DE and risk of gynaecological and breast cancers. STROBE guidelines and PECOS criteria were followed. We identified 6 studies for breast cancer (BC), 4 for cervical cancer (CC), 4 for endometrial cancer (EC) and 7 for ovarian cancer (OC). Random-effects meta-analyses were conducted on the relationship between DE exposure and BC, CC, EC, and OC risk; 95% confidence intervals (CI) and prediction intervals (PI) were reported. We investigated between-study heterogeneity and potential publication bias using Egger's test. **Results:** No associations were observed between occupational DE exposure and risk of BC [RR=0.93; CI: 0.77-1.13; PI:0.50-1.73, I<sup>2</sup>=80.31%], EC [RR=0.89; CI: 0.75-1.05; PI:0.61-1.30, I<sup>2</sup>=0.78%], and OC [RR=1.08; CI: 0.89-1.32, PI: 0.76-1.56, I<sup>2</sup>=11.87%]. A weak association was observed for CC [RR=1.41; CI: 1.17-1.17; PI:0.85-2.30, I<sup>2</sup>=6.44%]. No between-study heterogeneity or publication bias was detected. **Conclusions:** This study

identified an association between DE exposure and CC, which was not adjusted for potential confounders. No evidence of an association was found with BC, EC, and OC.

**D'Agostini et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 3.**

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**Keywords:** Gynaecological cancers; breast cancers; diesel exhaust.

**Evidence Level:** 1A

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/15568>

### **Literature review and meta-analysis of environmental toxins associated with increased risk of Parkinson's disease**

**Background:** Parkinson's disease (PD) is a neurodegenerative disorder and leading cause of death worldwide, whose pathogenesis has been linked to toxic environmental exposures. **Method:** We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (i) to compile, and group by exposure setting (non-specified general; residential; occupational), environmental factors reported to modulate the risk of developing PD and (ii) to map and geospatially analyze global regions of both research activity and paucity. **Results:** Among the broader environmental settings, occupational exposures had the highest average odds ratio value at 3.82, followed by general (non-specified or mixed) exposures at 3.07, and residential exposures at 2.36. Occupational exposure to industrial toxins was the highest ranked subset of exposures with an odds ratio of 10.74. Among the studies meeting the inclusion criteria, 75 % were conducted in Europe or the Western United States. The number of individuals partaking per study ranged from a high of 55,585 (Taiwan) to a low of 233 (Faroe Islands), with a mean of n = 14,462. The top three environmental factors associated with high odds ratios for increased risk of developing PD were (i) exposure to dyes (25.33), (ii) methylene chloride (16.5) and specifically in adult men (iii) consumption of fatty whale meat (10.57), which is known to harbor a broad spectrum of so called persistent, bioaccumulative, toxic (PBT) pollutants. Geospatially, the highest odds ratio values were identified in European countries, whereas notable data gaps were revealed for South America, Australia, Africa, and the majority of Asia with the exception of Taiwan. Whereas occupational exposures to industrial chemicals, such as harmful dyes and methylene chloride, ranked highest in risk values, available data suggest notable opportunities for reducing PD cases globally by limiting harmful environmental exposures to a spectrum of toxic chemicals, particularly via the food intake route. **Conclusion:** Thus, current efforts in improving environmental quality globally by limiting toxic emission may deliver the added benefit of helping to reign in PD. Agents of concern in this respect include pesticides (e.g., paraquat, demeton, monocrotophos), particulate matter associated with air pollution, and a spectrum of organic and inorganic neurotoxins including heavy metals.

**Aravindan et al. 2024.**

**Science of The Total Environment, vol. 931.**

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**Keywords:** Case-control studies; cohort studies; environmental factors; geographic distribution; Parkinson's disease.

**Evidence Level:** 1B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0048969724029851?via%3Dihub>

### **Sedentary Practices**

**"Are we working (too) comfortably?": A focus group study to understand sedentary behaviour when working at home and identify intervention strategies**

**Background:** The Covid-19 pandemic initiated an enduring shift in working patterns, with many employees now working at home (w@h). This shift has exacerbated existing high levels of occupational sedentary behaviour (SB) in office workers, which is a recognised risk to health and well-being. This study aimed to use the Capability-Opportunity-Motivation-Behaviour (COM-B) model to better understand both employees' SB, and line managers behaviour to assist employees to reduce SB when w@h, and identify

how employees can best be supported to reduce SB. **Methods:** Three online focus groups with employees aged 18-40 working in desk-based roles (e.g. administrative / sales / customer services) (n = 21), and three with line managers (n = 21) were conducted. The focus groups facilitated discussion regarding participants' current behaviour, what impacts it, and what could be done to reduce employee SB when w@h. The focus group data were thematically analysed guided by the COM-B framework to understand influences on behaviour, and to identify promising intervention strategies. **Results:** Most participants recognised that w@h had elevated employee occupational SB, and line managers reported the importance of supporting employees to manage their workload, and encouraging and modelling taking breaks. There were multiple influences on both employee and line manager behaviour with capability, opportunity and motivation all perceived as influential, although not equally. For example, a major theme related to the reduced physical opportunities for employees to reduce their SB when w@h, including blurred work-life boundaries. Changes in physical opportunities also made supporting employees challenging for line managers. Additionally, the w@h environment included unique social opportunities that negatively impacted the behaviour of both groups, including an expectation to always be present online, and social norms. A range of strategies for reducing SB when w@h at both individual and organisational level were suggested. **Conclusions:** It was evident that SB when w@h is influenced by a range of factors, and therefore multi-component intervention strategies are likely to be most effective in reducing SB. Future intervention research is a priority to evaluate and refine strategies, and inform w@h guidance to protect both the short-term and long-term health consequences of elevated SB for those who continue to w@h.

**Morton et al. 2024.**

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

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**Keywords:** COM-B; health; home-working; occupational; sedentary; sitting; teleworking; work.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18892-1>

## Musculoskeletal Health

*This month we explore the musculoskeletal issues associated with gabapentinoid dispensing by compensated workers with low back pain, impact of prescription medicines on work-related outcomes in workers with musculoskeletal disorders, ergonomic risks and musculoskeletal pain in cleaning workers and work-related interventions in physiotherapy management of lower limb osteoarthritis.*

### Secular trends in gabapentinoid dispensing by compensated workers with low back pain: A retrospective cohort study

**Background:** The increase in gabapentinoid prescribing is paralleling the increase in serious harms. To describe the low back pain workers compensation population whose management included a gabapentinoid between 2010 and 2017, and determine secular trends in, and factors associated with gabapentinoid use. **Methods:** We analysed claim-level and service-level data from the Victorian workers' compensation programme between 1 January 2010 and 31 December 2017 for workers with an accepted claim for a low back pain injury and who had programme-funded gabapentinoid dispensing. Secular trends were calculated as a proportion of gabapentinoid dispensings per year. Poisson, negative binomial and Cox hazards models were used to examine changes over time in incidence and time to first dispensing.

**Results:** Of the 17 689 low back pain claimants, one in seven (14.7%) were dispensed at least one gabapentinoid during the first 2 years (n=2608). The proportion of workers who were dispensed a gabapentinoid significantly increased over time (7.9% in 2010 to 18.7% in 2017), despite a reduction in the number of claimants dispensed pain-related medicines. Gabapentinoid dispensing was significantly associated with an opioid analgesic or anti-depressant dispensing claim, but not claimant-level characteristics. The time to first gabapentinoid dispensing significantly decreased over time from 311.9 days (SD 200.7) in 2010 to 148.2 days (SD 183.1) in 2017. **Conclusions:** The proportion of claimants dispensed a gabapentinoid more than doubled in the period 2010-2017; and the time to first dispensing halved during this period.

**Mathieson et al. 2024.**

**Occupational and Environmental Medicine, vol. 81, no. 5.**

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**Keywords:** Back pain; health services research; veterans.

**Evidence Level:** 4A

**Link:** <https://oem.bmj.com/content/81/5/245.long>

### **Impact of prescription medicines on work-related outcomes in workers with musculoskeletal disorders or injuries: A systematic scoping review**

**Background:** Medicines are often prescribed to workers with musculoskeletal disorders (MSDs) and injuries to relieve pain and facilitate their recovery and return to work. However, there is a growing concern that prescription medicines may have adverse effects on work function. This scoping review aimed to summarize the existing empirical evidence on prescription medicine use by workers with MSD or injury and its relationship with work-related outcomes. **Methods:** We identified studies through structured searching of MEDLINE, EMBASE, PsycINFO, CINAHL Plus, Scopus, Web of Science and Cochrane library databases, and via searching of dissertations, theses, and grey literature databases. Studies that examined the association between prescription medicine and work-related outcomes in working age people with injury or MSDs, and were published in English after the year 2000 were eligible. **Results:** From the 4884 records identified, 65 studies were included for review. Back disorders and opioids were the most commonly studied musculoskeletal conditions and prescription medicines, respectively. Most studies showed a negative relationship between prescription medicines and work outcomes. Opioids, psychotropics and their combination were the most common medicines associated with adverse work outcomes. Opioid prescriptions with early initiation, long-term use, strong and/or high dose and extended pre- and post-operative use in workers' compensation setting were consistently associated with adverse work function. We found emerging but inconsistent evidence that skeletal muscle relaxants and non-steroidal anti-inflammatory drugs were associated with unfavourable work outcomes. **Conclusion:** Opioids and other prescription medicines might be associated with adverse work outcomes. However, the evidence is conflicting and there were relatively fewer studies on non-opioid medicines. Further studies with more robust design are required to enable more definitive exploration of causal relationships and settle inconsistent evidence.

**Tefera et al. 2024.**

**Journal of Occupational Rehabilitation, vol. 34, no. 2.**

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**Keywords:** Injuries; musculoskeletal disorders; prescription medicine; work outcomes.

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10138-y>

### **Ergonomic risks and musculoskeletal pain in hospital cleaning workers: Convergent care research with mixed methods**

**Background:** to analyze exposure to ergonomic risks and the occurrence of musculoskeletal pain in workers in the Hospital Cleaning Service. **Method:** Convergent Care Research, with data production designed using mixed methods, implemented with 149 hospital cleaning workers. The methodological strategy of the convergent parallel project was employed, using observation, photographic records, questionnaires and convergence groups. The results were integrated through joint display. Data analysis with descriptive and inferential statistics and content analysis. **Results:** The mixing of data highlighted the multifactorial nature of exposure to ergonomic risks (uncomfortable work postures; repetitive movements; prolonged orthostatism; use of equipment not adapted to the psychophysiological needs of workers) and musculoskeletal pain in the population investigated. The latter was prevalent in the lumbar spine, ankles or feet, wrists or hands, thoracic spine and shoulders. The concept of ergonomic risk was expanded and was influenced by the psychosocial aspects of work. **Conclusion:** the workers investigated are exposed to modifiable multifactorial ergonomic risks related to musculoskeletal pain. It is possible to promote innovations and teaching-learning actions to minimize them, such as the continuing education program, collectively constructed with recommendations for improvements.

**Luz et al. 2024.**

**Revista Latino-Americana de Enfermagem, vol. 32.**

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**Keywords:** Musculoskeletal pain; hospital cleaning workers; ergonomic risks.

**Evidence Level:** 5B

**Link:** <https://www.scielo.br/j/rlae/a/hzZsrR5hsYVMfpXsWRYybMH/?lang=en>

### **Work-related interventions are not commonly included in physiotherapy management of lower limb osteoarthritis: A cross-sectional survey of Australian Physiotherapists**

**Background:** Lower limb osteoarthritis (OA) is a leading cause of disability and can affect an individual's ability to work. **Objectives:** To explore Australian physiotherapists' use of work-related interventions in managing patients with lower limb OA, and identify current management practices.

**Methods:** Physiotherapists with at least two years of experience treating patients with lower limb OA were invited to complete an online survey to understand how physiotherapists manage patients with lower limb OA, specifically regarding interventions related to work. **Results:** A total of 132 physiotherapists completed the survey. In free text responses, only 1.5% and 2.3% of physiotherapists nominated work-related items in their key components of treatment or educational topics discussed with patients with lower limb OA, respectively. From a range of work-related activities presented, over half of physiotherapists indicated they regularly/always provided education about the benefits of remaining in work (63.5%) and advice on managing symptoms at work (57.4%). Less than 10% of physiotherapists regularly/always used a validated scale to identify barriers for work (9.6%), discussed absences from work (9.6%), conducted a workplace assessment (4.4%), and discussed submitting workers' compensation claims (2.6%). Exercise and patient education were the most frequently nominated physiotherapy treatments in free text (96.2% and 86.3%, respectively) and fixed response (99.2% and 93.9%, respectively) questions. **Conclusion:** Many physiotherapists do not address work-related activities in their management of patients with lower limb OA. In light of work-related challenges commonly experienced by individuals with lower limb OA, this is an important aspect of management of this condition.

**Alyousef et al. 2024.**

**Musculoskeletal Science and Practice, vol. 71.**

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**Keywords:** Lower limb; osteoarthritis; physiotherapy; work-related management.

**Evidence Level:** 4A

**Link:** <https://www.sciencedirect.com/science/article/pii/S2468781224000377?via%3Dihub>

## **Guiding and Supporting Mental Health and Wellbeing**

### **Mental Health**

*This month we explore mental health issues associated with workplace stigma and discrimination among individuals with major depressive disorder, sleep quality and mental disorder symptoms, the working life expectancy of adults experiencing depression and the impact of stress perception on job burnout.*

### **Anticipated and experienced stigma and discrimination in the workplace among individuals with major depressive disorder in 35 countries: Qualitative framework analysis of a mixed-method cross-sectional study**

**Background:** Workplace stigmatization and discrimination are significant barriers to accessing employment opportunities, reintegration and promotion in the workforce for people with mental illnesses in comparison to other disabilities. This paper presents qualitative evidence of anticipated and experienced workplace stigma and discrimination among individuals with major depressive disorder (MDD) in 35 countries, and how these experiences differ across countries based on their Human Development Index (HDI) level.

**Method:** Mixed-method cross-sectional survey. Participants, setting and measures: The qualitative data were gathered as part of the combined European Union Anti-Stigma Programme European Network and global International Study of Discrimination and Stigma Outcomes for Depression studies examining stigma

and discrimination among individuals with MDD across 35 countries. Anticipated and experienced stigma and discrimination were assessed using the Discrimination and Stigma Scale version 12 (DISC-12). This study used responses to the open-ended DISC-12 questions related to employment. Data were analysed using the framework analysis method. **Results:** The framework analysis of qualitative data of 141 participants identified 6 key 'frames' exploring (1) participants reported experiences of workplace stigma and discrimination; (2) impact of experienced workplace stigma and discrimination; (3) anticipated workplace stigma and discrimination; (4) ways of coping; (5) positive work experiences and (6) contextualization of workplace stigma and discrimination. In general, participants from very high HDI countries reported higher levels of anticipated and experienced discrimination than other HDI groups (eg, less understanding and support, being more avoided/shunned, stopping themselves from looking for work because of expectation and fear of discrimination). Furthermore, participants from medium/low HDI countries were more likely to report positive workplace experiences. **Conclusions:** This study makes a significant contribution towards workplace stigma and discrimination among individuals with MDD, still an under-researched mental health diagnosis. These findings illuminate important relationships that may exist between countries/contexts and stigma and discrimination, identifying that individuals from very high HDI countries were more likely to report anticipated and experienced workplace discrimination.

**Van Bortel et al. 2024.**

**BMJ Open**, vol. 14, no. 6.

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**Keywords:** Depression & mood disorders; mental health; public health; qualitative research; social interaction; surveys and questionnaires.

**Evidence Level:** 5B

**Link:** <https://bmjopen.bmj.com/lookup/pmidlookup?view=long&pmid=38904137>

### **Sleep quality and mental disorder symptoms among correctional workers in Ontario, Canada**

**Background:** Correctional workers (CWs) report high levels of work stressors, frequent exposures to potentially psychologically traumatic events (PPTs), and substantial mental health challenges. There is evidence of associations between sleep disturbances and diverse mental health challenges, including preliminary evidence from public safety personnel; however, replications and extensions would better inform interventions to support mental health. The current study was designed to examine associations between quality of sleep, work stress, and mental health disorders in a sample of diverse CWs employed in a provincial correctional service in Ontario, Canada. **Method:** Data were analyzed from 943 CWs who participated in the cross-sectional, web-based Ontario Provincial Correctional Worker Mental Health and Well-Being Study conducted from December 2017 to June 2018. Sleep quality indicators included symptoms of insomnia, total hours of sleep per night on work nights and off-shift nights, number of days feeling rested per week, and overall sleep quality. Descriptive statistics, analyses of variance, correlational analyses, and logistic regression were used to examine relationships among sleep quality, stress of shift work, and mental health disorder symptoms. **Results:** CWs slept an average of 6.0 h per night when working and 7.2 h during off-shift nights. CWs reported waking up feeling rested an average of 2.6 days per week and rated their overall quality of sleep in the fair to poor range. Many CWs (64.9%) screened positive for clinically significant symptoms of insomnia. There were also differences across occupational groups such that CWs working as correctional officers reported the most sleep problems. There were statistically significant relationships between insomnia and mental health disorder symptoms. Higher levels of stress from shift work were associated with worse sleep quality. CWs, especially those working as correctional officers in a provincial prison, reported many indicators consistent with poorer quality of sleep. **Conclusion:** Poor quality of sleep was also associated with work stress and mental health disorders.

**Ricciardelli et al. 2024.**

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

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**Keywords:** Canada; correctional workers; mental health and well-being; sleep.

**Evidence Level:** 5B

**Link:** <https://www.nature.com/articles/s41598-024-65891-8>

### **Impacts of sleep disturbance and work-related life stress on depression among Japanese and Chinese workers**

**Background:** The present study investigated how life stress and sleep disturbance impact depressive symptoms among Chinese (N = 185) and Japanese (N = 464) workers. **Method:** Based on a hypothesis that sleep disturbance can cause depression, a statistical model is established, expecting that work-related life stress indirectly increases depressive symptoms by worsening sleep disturbance rather than initiating depression directly. The study also examined the buffering effects of social support on depression. The extent of depressive symptoms, sleep disturbance symptoms (insomnia, hypersomnia, and nightmare), work-related stressors, and available social support were measured. **Result:** The result revealed that the extent of depression was equivalent for both groups, but the Chinese reported more stress, less social support, and more severe sleep disturbance symptoms than the Japanese. **Conclusion:** Despite those differences, the statistical model fitted both groups well, suggesting that addressing sleep disturbance at the earliest opportunity can effectively prevent depression onset for workers.

**Matsuda et al. 2024.**

**PLoS One**, vol. 19, no. 6.

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**Keywords:** Sleep disturbance; stress; depression.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0305936>

### **The working life expectancy of American adults experiencing depression**

**Background:** To estimate the working life expectancies (WLE) of men and women with depression, examining depression by symptom trajectories from the late 20s to early 50s, and to estimate WLE by race/ethnicity and educational attainment. **Methods:** Data from 9206 participants collected from 1979 to 2018 in the US National Longitudinal Survey of Youth 1979 cohort were used. Depression was measured using the Centre for Epidemiologic Studies Depression Scale Short Form at four time points (age 28-35, age 30-37, age 40, and age 50). Labor force status was measured monthly starting at age 30 until age 58-62. Depressive symptom trajectories were estimated using growth mixture modelling and multistate modelling estimated WLE from age 30-60 for each gender and depressive symptom trajectory. **Results:** Five latent symptom trajectories were established: a persistent low symptom trajectory (n = 6838), an episodic trajectory with high symptoms occurring before age 40 (n = 995), an episodic trajectory with high symptoms occurring around age 40 (n = 526), a trajectory with high symptoms occurring around age 50 (n = 570), and a persistent high symptom trajectory (n = 277). The WLE for men at age 30 was 30.3 years for the persistent low symptom trajectory, 22.8 years for the episodic before 40 trajectory, 19.6 years for the episodic around age 40 trajectory, 18.6 years for the episodic around age 50 trajectory, and 13.2 years for the persistent high symptom trajectory. Results were similar for women. WLE disparities between depression trajectories grew when stratified by race/ethnicity and education level. **Conclusions:** Roughly a quarter of individuals experienced episodic depressive symptoms. However, despite periods of low depressive symptoms, individuals were expected to be employed ~5-17 years less at age 30 compared to those with low symptoms. Accessible employment and mental health disability support policies and programs across the working life course may be effective in maintaining work attachment and improving WLE among those who experience depression.

**Dobson et al. 2024.**

**Social Psychiatry and Psychiatric Epidemiology**, vol. 59, no. 6.

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**Keywords:** Depression; employment; growth mixture modeling; Markov Model; mental illness; multistate modeling; unemployment; working life expectancy.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s00127-023-02547-4>

### **The impact of telecom industry employees' stress perception on job burnout: Moderated mediation model**

**Background:** The rapid development of the telecommunications industry in the post-COVID-19 era has brought tremendous pressure to employees making them a high-risk group for job burnout. However, prior research paid less attention to the burnout of employees. Furthermore, social support and gender have separate effects on job burnout. This study explores the mechanism of stress perception on job burnout and examines the roles of social support and gender amid it. **Method:** This cross-sectional study was conducted from June 2023 to August 2023 in mainland China. A total of 39,507 were recruited by random sampling and online questionnaires, and 28,204 valid questionnaires were retained. SPSS (version 26.0) and PROCESS (Model 4 & 7) were used for correlation analysis, mediation analysis, and mediated moderation analysis. **Result:** Stress perception can positively predict the level of job burnout of employees in the telecommunications industry, and social support plays a partial mediating role, accounts for 8.01% of the total effect, gender moderates the first half of the path in this mediation model. At the same pressure level, female can perceive more social support than male. **Conclusions:** Under high pressure background, employees' job burnout varies depending on gender and the perception of social support. Therefore, telecommunications industry managers should adopt decompression measures and targeted social support resources for different groups.

**Liu et al. 2024.**

**BMC Public Health, vol. 101, no. 3.**

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**Keywords:** Gender; job burnout; social support; stress perception; telecom industry employees.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-18704-6>

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

*This month we explore the impact of workplace bullying on turnover intention and psychological distress, offensive behaviours at work and sexual violence in the workplace and associated health outcomes.*

### **The impact of workplace bullying on turnover intention and psychological distress: The indirect role of support from supervisors**

**Background:** Workplace bullying is characterized by negative, repetitive, and frequent behaviours towards a person, affecting his/her physical and mental health. The present study aimed to assess the relationship between bullying, turnover intention, and psychological distress, considering the potential mediating effect of perceived supervisor support. **Method:** A questionnaire was completed by 252 women and 172 men ( $n = 424$ ) from 70 French companies and institutions. **Results and Conclusions:** They were working in private (70%), public (28%), and parapublic (2%) sectors. Finally, 33 trades are represented in this study: commercial (21%), educational (12%), medical (8.3%), and industry (8.3%) were the most prominently represented. Regression analyses showed that bullying was significantly linked to turnover intention ( $\beta = 0.52, p < 0.05$ ) and psychological distress ( $\beta = 0.78, p < 0.001$ ). Moreover, supervisor support played a mediating role between workplace bullying and turnover intention, as well as between workplace bullying and psychological distress. The implications and perspectives of the present research were subsequently discussed.

**Malola et al. 2024.**

**International Journal of Environmental Research and Public Health, vol. 21, no. 6.**

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**Keywords:** Psychological distress; supervisor support; turnover intention; workplace bullying.

**Evidence Level:** 5B

**Link:** <https://www.mdpi.com/1660-4601/21/6/751>

### **The role of familial factors and neuroticism in the association between exposure to offensive behaviors at work and long-term sickness absence due to common mental disorders: A prospective twin study**

**Background:** The aim of this study was to investigate associations between exposure to work-related violence/threats and harassment, and future sickness absence (SA) due to common mental disorders (CMDs), taking familial factors (shared genetics and early-life environment) and neuroticism into account.

**Methods:** The study sample included 8795 twin individuals from the Swedish Twin Project of Disability Pension and Sickness Absence (STODS), including survey data from the Study of Twin Adults: Genes and Environment (STAGE). Self-reported work-related violence and/or threats as well as work-related harassment (including bullying) and national register data on SA due to CMDs were analyzed using standard logistic regression, and conditional logistic regression among complete twin pairs discordant on exposures. Individuals were followed for a maximum of 13 years. Interactions between neuroticism and exposures were assessed using both multiplicative and additive interaction analyses. **Results:** Exposure to work-related violence/threats was associated with higher odds of SA due to CMDs when adjusting for age, sex, marital status, children, education, type of living area, work characteristics, and symptoms of depression and burnout (OR 2.11, 95% CI 1.52-2.95). Higher odds of SA due to CMDs were also found for exposure to harassment (OR 1.52, 95% CI 1.10-2.11) and a combined indicator of exposure to violence/threats and/or harassment (OR 1.98, 95% CI 1.52-2.59), compared with the unexposed. Analyses of twins discordant on exposure, using the unexposed co-twin as reference, showed reduced ORs. These ORs were still elevated but no longer statistically significant, potentially due to a lack of statistical power. No multiplicative interaction was found between neuroticism and exposure to work-related violence/threats, or harassment. However, a statistically significant additive interaction was found between neuroticism and exposure to violence/threats, indicating higher odds of SA due to CMDs in the group scoring lower on neuroticism.

**Conclusions:** Exposure to work-related offensive behaviours was associated with SA due to CMDs. However, the results indicated that these associations may be partly confounded by familial factors. In addition, an interaction between exposure and neuroticism was suggested. Thus, when possible, future studies investigating associations and causality between offensive behaviours at work and mental health-related outcomes, should consider familial factors and neuroticism.

**Wijkander et al. 2024.**

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

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**Keywords:** Mental disorders; neuroticism; personality; sick leave; sickness absence; twin study; work-related bullying; work-related harassment; work-related violence.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19000-z>

### **Sexual violence in the workplace and associated health outcomes: A nationwide, cross-sectional analysis of women in Iceland**

**Background:** Workplace sexual violence against women is a pressing global issue with scarce knowledge on its health implications. Existing research is largely limited to specific occupations, which calls for comprehensive, population-based studies. This study aimed to examine the associations between self-labelled workplace sexual violence and a variety of health outcomes in a nationally representative sample of Icelandic women aged 18-69 years. **Methods:** Participants in this cross-sectional study were women in the Stress-And-Gene-Analysis (SAGA) cohort who answered the question regarding workplace sexual violence, defined in our study as encompassing all work sectors, academic settings, and other school environments. Eligible participants were women, aged 18-69 years, residing in Iceland, who spoke Icelandic and were listed in the Icelandic Population Register or had a contact number registered with the online 1819 service. Poisson and binomial regressions were used to assess the associations between workplace sexual violence and validated measures of current mental and physical health outcomes (eg, probable depression, general anxiety, and severe sleep problems). Multiple imputation was performed to account for missing values in the dataset. **Results:** The study was conducted from March 1, 2018, to July 1, 2019. Of the 113 814 women deemed eligible for study inclusion, 104 197 were invited to take part in the online survey. Of those invited, 30 403 women completed the survey and were included in the SAGA cohort. Among these participants, 15 812 provided answers to the question regarding exposure to workplace

sexual harassment or violence. Exposure to sexual violence was associated with an increased prevalence of probable depression (prevalence ratio [PR] 1.50 [95% CI 1.41-1.60]), general anxiety (PR 1.49 [1.40-1.59]), social phobia (PR 1.62 [1.48-1.78]), self-harm (PR 1.86 [1.53-2.28]), suicidal ideation (PR 1.68 [1.44-1.68]), suicide attempts (PR 1.99 [1.62-2.44]), binge drinking (PR 1.10 [1.01-1.20]), sleep problems (PR 1.41 [1.48-1.91]), physical symptoms (PR 1.59 [1.48-1.70]), and sick leave (PR 1.20 [1.12-1.28]). The prevalence of the health outcomes among those exposed show age-related differences: younger women report anxiety or depression more frequently, while older women report sleep problems after experiencing workplace sexual violence. **Conclusion:** In this cross-sectional study self-reported experiences of sexual violence in the workplace were associated with several self-reported health outcomes. The findings suggest a need for targeted interventions to promote workplace safety and to mitigate adverse health implications among people who have experienced workplace sexual violence. Future research should explore factors such as the frequency, duration, and relationship dynamics of workplace sexual violence, as well as the effect on different genders and sexual orientations, to deepen our understanding of these experiences and inform effective prevention strategies.

**Jonsdottir et al. 2024.**

**The Lancet Public Health, vol. 9, no. 6.**

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**Keywords:** Sexual violence; workplace; outcomes; Iceland.

**Evidence Level:** 4B

**Link:** [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(24\)00075-6/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(24)00075-6/fulltext)

## Psychosocial Issues

*This month we explore psychosocial issues including the relationship between religious practices and work stress, stress and safety attitudes, workplace health promotion service utilisation and depressive symptoms, gamification and employee well-being, work addiction and social functioning, and social media addiction and depression, stress, and anxiety. In other research we explore web-based occupational stress prevention, work conditions for employees driving for work, workplace emotional demands and risk of disability pension, face-to-face work vs. telework, perceived overqualification and the workplace support in promoting employees' work-life balance*

### Are religious practices indirectly related to stress at work through the tendency to forgive? A sample of Polish employees

**Background:** Religiosity has been a neglected factor in studies regarding the workplace in comparison to spirituality. Some available studies have indicated positive outcomes of religious commitment and intrinsically religious-oriented employees. There is however a lack of research explaining how religious commitment is related to occupational well-being. This study aimed to examine the mechanism of the relationship between religious practices and stress at work and the role of forgiveness as a moral virtue underlying this link. **Method:** The participants in the study were 754 employees from Poland. The research used a cross-sectional design. The mechanism controlled for gender, denomination, age, education, and the level of position held, and the indirect relationship between prayer and mass attendance and stress at work through forgiveness was confirmed. **Results:** Religious practices were positively related to a lack of revenge and avoidance motivation, which, in turn, was negatively correlated with stress at work.

**Conclusion:** The role of religious commitment in occupational well-being was discussed, considering socio-cultural conditioning, and the theoretical and practical implications were presented.

**Wnuk 2024.**

**Journal of Religious and Health, vol. 63, no. 3.**

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**Keywords:** Forgiveness; mass attendance; polish employees; prayer; religious practices; stress at work.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s10943-022-01710-6>

### **The mechanisms linking perceived stress to pilots' safety attitudes: A chain mediation effect of job burnout and cognitive flexibility**

**Background:** Pilots' safety attitude is crucial for aviation safety. Current research shows a correlation between perceived stress and safety attitude, yet the mechanism underlying this association remains unclear. Against the backdrop of heightened attention to pilots' stress, this study aims to thoroughly explore the inherent connection between pilot safety attitudes and their perceived stress, offering targeted insights into preventing and addressing safety attitude issues arising from pilot stress. **Methods:** Through path analysis of questionnaire data from 106 civil aviation pilots in China, this study systematically investigates the roles of job burnout and cognitive flexibility in the relationship between perceived stress and safety attitude. The study reveals the chain-mediated mechanism of these two factors. **Results:** The results demonstrate a significantly negative correlation between pilots' perceived stress and safety attitude, with cognitive flexibility and job burnout fully mediating this relationship, and cognitive flexibility affecting job burnout. A detailed analysis of the three dimensions of job burnout reveals varying impacts of emotional exhaustion, depersonalization, and reduced personal accomplishment on the aforementioned path. The research model exhibits a good fit (GFI=0.902), providing new theoretical perspectives on the association between pilots' perceived stress and safety attitude. **Conclusion:** The findings offer practical implications for improving pilots' safety attitude by proposing targeted measures to alleviate the adverse impacts of perceived stress on safety attitude, thereby promoting aviation safety.

**Yanzeng et al. 2024.**

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

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**Keywords:** Cognitive flexibility; job burnout; mediation effect; perceived stress; pilots; safety attitudes.

**Evidence Level:** 5B

**Link:** <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1342221/full>

### **Association between workplace health promotion service utilisation and depressive symptoms among workers: A nationwide survey**

**Background:** Workplace-related factors are associated with the risk of depression. Despite implementation of workplace health promotion (WHP) programmes in China to promote the physical and mental well-being of workers, the relationship between WHP and depression has received limited attention. This study investigated the association between WHP service utilisation and depressive symptoms among workers. This was a cross-sectional survey. **Methods:** A researcher-designed questionnaire was used to collect information on socio-demographic and occupational characteristics, WHP service utilisation, and mental health status. The Lasso method was used for variable selection to achieve dimension reduction, and logistic regression was used to assess the association between WHP service utilisation and depressive symptoms. **Results:** The analysis included 11,710 workers, of whom 17.0% had depressive symptoms. Lasso regression resulted in 6 of 18 WHP services showing significant negative associations with depressive symptoms, including occupational safety training, mental health services, health check-ups, sports activities, fitness rooms, and healthy canteens. The logistic regression results showed that, after adjusting for sociodemographic and occupational factors, utilisation of these six services was associated with a decreased likelihood of depressive symptoms. The adjusted odds ratio (aOR) was 0.84 (95% confidence interval [CI]: 0.73-0.96) for occupational safety training, aOR: 0.82 (95% CI: 0.68-0.99) for mental health services, aOR: 0.80 (95% CI: 0.71-0.90) for health check-ups, aOR: 0.68 (95% CI: 0.57-0.80) for sports activities, aOR: 0.59 (95% CI: 0.47-0.74) for fitness rooms and aOR: 0.72 (95% CI: 0.59-0.87) for healthy canteens. **Conclusions:** Utilisation of WHP services was associated with a lower prevalence of depressive symptoms. Implementation of WHP services and the provision of a supportive workplace environment should be prioritised to benefit the mental health of workers.

**Yang et al. 2024.**

**Public Health, vol. 231.**

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**Keywords:** Depressive symptoms; service utilisation; workers; workplace health promotion.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0033350624001033?via%3Dihub>

### **Gamification in hospitality: Enhancing workplace thriving and employee well-being**

**Background:** This study examines the effect of gamification on workplace thriving and employee well-being in the hospitality and tourism organizations, investigating the mediating effects of conflict resolution and working relationships while assessing the moderating influence of top management support. **Method:** We conducted a time-lagged study with 451 employees from various hospitality and tourism organizations. Our research aimed to understand how gamification affects workplace thriving and employee well-being, with a focus on the mediating roles of conflict resolution and working relationships. We also examined the moderating effect of top management support. **Results and Conclusions:** Our results demonstrate a positive link between gamification and workplace thriving, as well as a connection between gamification and employee well-being. Conflict resolution was found to mediate the relationship between gamification and workplace thriving, while working relationships mediated the connection between gamification and employee well-being. Additionally, top management support significantly moderated the relationships between gamification, conflict resolution, and workplace thriving.

**Khan et al. 2024.**

**Acta Psychologica, vol. 246.**

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**Keywords:** Conflict resolution; gamification; top management support; working relationship; workplace thriving and employee well-being.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0001691824001203?via%3Dihub>

### **Work addiction and social functioning: A systematic review and five meta-analyses**

**Background:** As theoretical models suggest, work addiction has several adverse correlates and consequences, such as unfavorable personality traits, physical and psychological symptoms, and social conflicts. Both early and recent concepts emphasize that individuals with work addiction have more problematic social life due to obsessive overwork. This includes negative impacts on family, workplace, and other relationships. The present study aimed to systematically review and meta-analyze all the empirical studies that examined the association between work addiction and any dimension of social life, as such an analysis has never been conducted before. **Method:** Studies published from 1995 to 2022 were identified through a systematic search. 102 eligible studies were included in the review, with 75 studies contributing to five different meta-analyses. **Results:** The results indicated significant associations between work addiction and: (1) lower work-life balance, (2) reduced social functioning, and increased difficulties in (3) family relationships, (4) intimate relationships, and (5) relationships with the community, friends, and colleagues. The associations were found to be independent of gender and age. **Conclusion:** The meta-analytic study highlights research gaps in the field and suggests future directions, including exploring attachment styles and early social relationships in work addiction, investigating the association between social and emotional competencies and work addiction, examining the role of escape motivation, and exploring the characteristics of the partners (spouses) of workaholics. Since the quality of social relationships and social support are crucial factors in physical and mental health, the prevention and intervention of work addiction should be prioritized in organizational and clinical settings.

**Kenyhercz et al. 2024.**

**PLoS One, vol. 19, no. 6.**

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**Keywords:** Work addition; social functioning.

**Evidence Level:** 1A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0303563>

### **Assessment of the impact of social media addiction on psychosocial behaviour like depression, stress, and anxiety in working professionals**

**Background:** Social media (SM), with its addictive nature and the accompanying psychosocial challenges such as stress, anxiety, and depression, is the primary factor exacerbating mental health problems and

adversely impacting individuals' wellbeing. Our study's goal was to determine how SM affects employees' psychosocial behaviours and assess the various factors that contributed to the employee's excessive use of SM. **Methods:** A cross-sectional correlational analysis was conducted. Using a relevant questionnaire on employees, the study was assessed to establish the relationship or association between SM addiction and psychosocial disorders like depression, anxiety, and stress. 200 people with a minimum age of 24 were enrolled in the study. The questionnaire contained the social networking addiction scale (SNAS) and the depression, anxiety, and stress-21 (DASS-21) scales; the data were statistically assessed. **Results:** The association between SM addiction and psychosocial behaviours has been examined using statistical tools including descriptive statistics and the Chi-square analysis. SM addiction has a strong, statistically significant correlation with depression ( $p = 0.001$ ), stress ( $p = 0.001$ ), and anxiety ( $p = 0.001$ ).

**Conclusion:** This study discovered a connection between SM use and depression, stress, and anxiety among working employees, raising questions regarding worries about overuse and addiction to SM. Various factors influencing excessive usage included revealed that employees also majorly over used SM for entertainment, boredom avoidance, constant knowledge sharing, and relationship-building.

**Jahagirdar et al. 2024.**

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

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**Keywords:** Anxiety; depression; mental health; psychological behaviours; social media addiction; stress.

**Evidence Level:** 4B

**Link:** <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-024-01850-2>

### **Web-based occupational stress prevention in German micro- and small-sized enterprises - process evaluation results of an implementation study**

**Background:** Structural and behavioural interventions to manage work-related stress are effective in employees. Nonetheless, they have been implemented insufficiently, particularly in micro- and small-sized enterprises (MSE). Main barriers include a lack of knowledge and limited resources, which could potentially be overcome with simplified web-based alternatives for occupational stress prevention. However, there is a lack of implementation research about web-based prevention in realistic settings of MSE. **Objective:** The aim of this study is to evaluate the implementation process and success of an integrated web-based platform for occupational stress prevention ("System P") and to identify potential barriers for its uptake and use in MSE in Germany. **Methods:** This study with a mixed-methods approach investigates eight process-related outcomes in a quantitative part I (adoption, reach, penetration, fidelity/dose, costs, acceptability) and a qualitative part II (acceptability, appropriateness and feasibility). Part I has a pre-post design with two measurements (6 months apart) with 98 individual participants and part II consists of 12 semi-structured interviews with managers and intercorporate stakeholders. **Results:** Part I revealed shortcomings in the implementation process. Adoption/Reach: Despite extensive marketing efforts, less than 1% of the contacted MSE responded to the offer of System P. A total of 40 MSE registered, 24 of which, characterized by good psychosocial safety climate, adopted System P. Penetration: Within these 24 MSE, 15% of the employees used the system. Fidelity/Dose: 11 MSE started a psychosocial risk-assessment (PRA), and no MSE finished it. The stress-management training (SMT) was started by 25 users and completed by 8. Costs: The use of System P was free of charge, but the time required to engage with was an indirect cost. Part II added insights on the perception of the web-based intervention: Acceptance of System P by users and stakeholders was good and it was assessed as appropriate for MSE. Results for feasibility were mixed. **Conclusions:** Although System P was generally perceived as useful and appropriate, only a small number of contacted MSE implemented it as intended. Prior experience and sensitivity for occupational (stress) prevention were mentioned as key facilitators, while (perceived) indirect costs were a key barrier. Enabling MSE to independently manage stress prevention online did not result in successful implementation. Increasing external support could be a solution. Trial registration: German Register of Clinical Studies (DRKS) DRKS00026154, date of registration 2021-09-16.

**Engels et al. 2024.**

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

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**Keywords:** Micro- and small-sized enterprises; occupational health; psychosocial risk assessment, stress management; web-based intervention.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19102-8>

### **Evolution of work conditions for employees driving for work in France based on data from the 2003, 2010 and 2017 SUMER surveys (Surveillance Médicale des expositions aux risques Professionnels)**

**Background:** The occupational road-accident risk on public roads and the work conditions for professional driving is still an important issue in occupational health despite lower road-accident rates. This study presents the evolution over time of the work-related constraints for these employees based on the Sumer surveys carried out in 2003, 2010 and 2017. **Method:** Data from the 2010 and 2017 surveys were restricted to match the scope of the 2003 survey in order to enable prevalence data to be compared in equivalent populations. The main variable of interest was "driving (car, truck, bus, and other vehicles) on public thoroughfares" for work (during the last week of work: yes/no). Work time characteristics, work rhythm, autonomy and scope for initiative, collective work group, standards and evaluations variables were completed by the occupational health physicians. A self-administered questionnaire was also provided to employees and contained the Job Content Questionnaire, which assesses decision latitude, social support and psychological demands, the reward scale of Siegrist questionnaire, the hostile behaviour with inspired questions for Leymann, sick leave and work accidents during the past 12 months and job satisfaction. Finally, prevention in the workplace was also completed by the occupational health physicians.

**Results:** About 25% of employees in France were exposed to work-related driving in 2017, which was stable in comparison with 2003 and 2010. However, the population was older and there were more females, more often from the clerical staff/middle manager category and working in companies with fewer than 10 employees. Employees exposed to work-related driving were also more frequently exposed to sustained work schedules and physical constraints, but less exposed to psychosocial risks. **Conclusions:** The percentage of employees exposed to occupational road accident risk, i.e., exposure to work-related driving, remained stable at about 25% in 2017 compared with previous surveys. These employees were also more frequently exposed to sustained work schedules and physical constraints, but less exposed to psychosocial risks. Practical applications: Prevention campaigns on work-related road accident risk should be provided to all employees in all companies since all jobs can be concerned.

**Fort et al. 2024.**

**Journal of Safety Research, vol. 89.**

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**Keywords:** Professional exposure; psychosocial risks; work-related road exposure; working conditions.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0022437524000458?via%3Dihub>

### **Emotional demands at work and risk of disability pension: A nationwide cohort study in Denmark**

**Background:** Working in emotionally demanding jobs is associated with an increased risk of temporarily leaving the labour market due to long-term sickness absence. We tested whether employees working in emotionally demanding jobs are also at higher risk of permanently leaving the labour market due to disability pension compared with employees working in jobs that are not emotionally demanding.

**Methods:** We conducted a 10-year cohort study in the workforce in Denmark (n=1 670 825), aged 30-59 years at baseline, by linking job exposure matrices with nationwide registries on social transfer payments and covariates. Using Cox regression, we analysed the risk of disability pension in relation to emotional demands in the full population and sex stratified. Multivariable adjusted models included sex, age, cohabitation, migration background, household disposable income and other work environmental factors (physical workload, influence, possibilities for development and role conflicts). **Results:** We identified 67 923 new cases of disability pension during 15 649 743 person-years of follow-up (mean follow-up: 9.4 years). We found an increasing risk of disability pension with higher levels of emotional demands, with HRs of 1.20, 1.23 and 1.73 for medium-low, medium-high and high emotional demands, respectively, compared with low emotional demands in the most adjusted model. There was an exposure-response association in

women and a tendency towards an exposure-response association in men. **Conclusion:** In this nationwide cohort study, we found an increased risk of permanent exit from the labour market due to disability pension in women and men working in emotionally demanding jobs.

**Framke et al. 2024.**

**Occupational and Environmental Medicine, vol. 81, no. 5.**

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**Keywords:** Occupational health; occupational stress.

**Evidence Level:** 4B

**Link:** <https://oem.bmj.com/content/81/5/262.long>

### **Comparing exposure to psychosocial risks: Face-to-face work vs. Telework**

**Background:** In recent years, substantial changes have occurred in the work organization and arrangements. One of the main ones has been the popularization of teleworking among non-manual workers. This paper aims to assess the exposure of psychosocial risks among non-manual Spanish wage-earners, depending on the working modality (mainly telework, combining teleworking with onsite work, or onsite work). **Methods:** Based on an online survey conducted between April and May 2021, a cross-sectional study was carried out among n=11,519 members of a trade union where Psychosocial Risks (PSR) were measured through COPSOQ Questionnaire Scales. All analyses were performed stratifying by sex.

**Results:** Women who combine telework and face-to-face work (aPR: 1.21; 95%CI 1.07-1.37) and men who mainly telework (aPR: 1.26; 95%CI 1.11-1.43) and that combine (aPR: 1.27; 95%CI 1.11-1.45) are more exposed to quantitative demands than men and women who do not telework. On the other hand, women who telework, either entirely (aPR: 0.89; 95%CI 0.82-0.97) or combining (aPR: 0.89; 95%CI 0.81-0.98), are less exposed to emotional demands than women who do not telework, and the same occurs among men who mainly telework (aPR: 0.84; 95%CI 0.76-0.92). Telework and horizontal or vertical social support are not associated, except for supervisor support among males, nor with work-life conflict. **Conclusions:** Except for quantitative demands, employees who combine telework and face-to-face work are less exposed to psychosocial risks than those who mainly telework or work face-to-face only. More studies with a gender and class perspective are needed in this area.

**Gomez-Dominguez et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 3.**

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**Keywords:** Psychosocial risks; exposure.

**Evidence Level:** 4B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/15265>

### **Perceived overqualification as a double-edged sword for employee creativity: The mediating role of job crafting and work withdrawal behaviour**

**Background:** With the continuous development of education level and the downturn of economic situation, employment competition is intensifying, more and more high-quality talents appear, and the misfit between people and posts has become a common phenomenon. However, there is no consensus on the relationship between perceived overqualification and employee creativity. Based on the conservation of resource theory, this study reveals the micro mechanism and boundary conditions of the influence of excessive qualification on employee creativity. **Method:** This study analyzed 487 valid samples obtained in three stages. **Results:** The results show that: (1) Job crafting has a positive mediating effect on perceived overqualification and creativity, and the path of the two halves is positive; (2) Work withdrawal behavior plays a negative mediating role between the perceived overqualification and creativity. The path in the first half is positive, and the path in the second half is negative; (3) Organizational identity moderates the effect of perceived overqualification on job crafting and work withdrawal behavior. Specifically, the higher the sense of organizational identification, the stronger the positive effect of perceived overqualification on job crafting and the weaker the positive effect on work withdrawal behavior; (4) Organizational identification moderates the mediating role of job crafting and work withdrawal behavior in the relationship between

overqualification and creativity. Specifically, the higher the organizational identity, the stronger the indirect positive effect of perceived overqualification on creativity through job crafting, and the weaker the indirect negative impact of perceived overqualification on creativity through work withdrawal behavior.

**Conclusion:** The study conclusion deepens the research on the mechanism of the influence of the perceived overqualification on employees' work behavior, and provides practical enlightenment for the organization and management of employees with excess qualification.

**Jiang et al. 2024.**

**PLoS One, vol. 19, no. 6.**

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**Keywords:** Overqualification; employee creativity; job crafting; withdrawal behaviour.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0304529>

### **Feeling supported as a remote worker: The role of support from leaders and colleagues and job satisfaction in promoting employees' work-life balance**

**Background:** Due to the increasing use of remote work, understanding the dynamics of employee support and its implications for job satisfaction and work-life balance is crucial. Utilizing the Conservation of Resources (COR) theory as a theoretical framework, this research investigated how feeling supported by leaders and colleagues at work fosters work-life balance and job satisfaction among remote employees.

**Method:** The study involved 635 remote workers (females = 61%, mean age, 46.7, SD = 11) from various service-based industries and public administration in Italy. **Results** from the structural equation model showed a total mediating effect of job satisfaction in the link between colleague support and work-life balance ( $\chi^2(22) = 68.923$ ,  $p = 0.00$ , CFI = 0.973, TLI = 0.955, RMSEA = 0.059 (90% CI = 0.044-0.075,  $p = 0.158$ ), SRMR = 0.030), emphasizing the role of interpersonal relationships within the workplace in enhancing remote workers' job satisfaction and, consequently, their work-life balance. **Conclusion:** Contrary to expectations, the study found no significant direct or indirect link between leader support and work-life balance. This research highlights the significance of fostering strong social connections and ensuring employee satisfaction to promote well-being and work-life balance in remote work arrangements.

**Buonomo et al. 2024.**

**International Journal of Environmental Research and Public Health, vol. 21, no. 6.**

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**Keywords:** COR theory; job satisfaction; remote working; social support; work-life balance.

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1660-4601/21/6/770>

## **Fostering Work Participation**

### **Return to Work**

*This month we explore return to work issues associated with common mental disorders, occupational therapy and following proximal interphalangeal joint arthroplasty for osteoarthritis.*

### **Collaboration in the return-to-work process after sick leave due to common mental disorders: A qualitative study of stakeholders' views on goals and roles**

**Background:** This study explores how the goals of collaboration in the return-to-work (RTW) process for people with common mental disorders are described by the stakeholders involved, and how they experience stakeholders' roles and responsibilities in relation to these goals. **Methods:** Interviews were conducted with 41 participants from three Swedish regions. Nine of the participants were workers, six employer representatives, four occupational health professionals, four social insurance officers, 18 RTW coordinators and five physicians. Thematic analysis was conducted. **Results:** Three main themes and overarching goals when collaborating on RTW were identified. In the first theme, 'creating an informative environment', all stakeholders emphasised clear roles and responsibilities. The second theme, 'striving for consensus in an environment of negotiations', addressed negotiations about when and how to collaborate,

on what and with whom, and reveal different views on stakeholders' goals, roles and responsibilities in collaboration. The third theme identified goals for 'creating a supportive environment' for both workers and other stakeholders. Coordinators are found to have an important role in achieving a supportive environment, and in neutralising power imbalances between workers and their employers and social insurance officers. **Conclusions:** Competing goals and priorities were identified as hindering successful collaboration, contributing to a spectrum of complex versus easy RTW collaboration. This study suggests some basic conditions for achieving a collaborative arena that is neutral in terms of power balance, where all stakeholders can share their views.

**Svärd et al. 2024.**

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

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**Keywords:** Collaboration; common mental disorders; coordination; goal; rehabilitation; responsibility; return to work; role; sick leave.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19063-y>

### **Occupational therapy and public safety personnel: Return to work practices and experiences**

**Background:** Public safety personnel (PSP) are frequently exposed to psychological trauma through their work. Evidence shows that worker's compensation claims for work-related psychological injuries are on the rise for PSP. Occupational therapists increasingly provide return to work (RTW) services for this population. **Purpose:** To explore the therapeutic practices and personal experiences of occupational therapists working with PSP who have work-related psychological injuries. **Method:** This mixed methods descriptive study included a chart review of available occupational therapy client records from 2016 to 2020 for PSP with work-related psychological injuries from two Ontario companies. Additionally, a web-based self-report survey for Ontario occupational therapists providing RTW services to this same population was available from November 1, 2021 to June 1, 2022. **Results:** The chart review included 31 client records and the online survey was completed by 49 Ontario occupational therapists. Therapists commonly provided services in clients' homes, workplaces, and communities, and focused on functional activities. The evidence base drawn on by therapists was not always occupation-based. Barriers to RTW included challenges with interprofessional collaboration, stigma, and the COVID-19 pandemic. **Conclusions:** Occupational therapists are commonly working with PSP with work-related psychological injuries and have the opportunity to contribute to the evidence base for occupational approaches to RTW.

**Edgelow et al. 2024.**

**Canadian Journal of Occupational Therapy, vol. 91, no. 2.**

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**Keywords:** First responders; Occupational health; PTSD; Premiers répondants; Psychological trauma; TSPT; santé occupationnelle; traumatisme psychologique.

**Evidence Level:** 5B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11088207/>

### **Type of work and preoperative ability to perform work affect return to usual work following proximal interphalangeal joint arthroplasty for osteoarthritis**

**Background:** The time until return to work (RTW) and possible factors affecting this time after proximal interphalangeal (PIP) joint arthroplasty are unknown. Therefore, we aim to evaluate the RTW after PIP joint arthroplasty for osteoarthritis and assess factors affecting the time until return to their usual work.

**Methods:** We used prospectively gathered data from 74 patients undergoing PIP joint arthroplasty with daily hand surgery practice routine outcome collection. Standardized RTW questionnaires were completed at 6 weeks and 3, 6, and 12 months after surgery. Return to work was defined as the first time a patient reported returning to work and performing the original work for a minimum of 50% of the original hours a week, as stated in the patient's contract. Second, we evaluated baseline factors affecting the time until RTW. **Results:** The probability of RTW within 12 months after surgery was 88%. The median time until RTW was 8 weeks (interquartile range: 4-10). Physical occupational intensity (hazard ratio [HR]: 0.36,  $P = .001$ ) and the baseline Michigan Hand Outcomes Questionnaire work scores (HR: 1.02,  $P = .005$ ) were

independently associated with RTW. **Conclusion:** In conclusion, patients returned to work after a median of 8 weeks following PIP arthroplasty. Patients with medium or heavy physical occupations returned to work later than patients with light physical occupations. Better patient-reported work outcomes at baseline also led to an earlier RTW. This information can be valuable for providing adequate information during the preoperative consultation.

**Notermans et al. 2024.**

**HAND, vol. 19, no. 4.**

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**Keywords:** PIP; arthroplasty; implant; osteoarthritis; return to work.

**Evidence Level:** 4A

**Link:** <https://journals.sagepub.com/doi/10.1177/15589447221141485>

## Presenteeism and Absenteeism

### Exploring work absences and return to work during social transition and following gender-affirming care, a mixed-methods approach: 'Bridging support actors through literacy'

**Background:** Research on return to work (RTW) following transition-related gender-affirming care (GAC) is lacking. We aim to study the RTW outcomes and experiences of transgender and gender diverse (TGD) people during social and medical transition to understand their needs better and provide tailored support.

**Methods:** In this convergent mixed-methods study, the questionnaires of 125 employed TGD people, who took steps in transition (social and GAC), were analyzed for personal- and work characteristics, medical work absences, RTW, support at work, and health literacy. In-depth interviews were held with twenty TGD people to explore perceived facilitators and barriers to RTW. **Results:** One hundred and nine participants reported an average of 38 sick days after GAC. The majority (90.2%) resumed their job at the same employer. Although TGD workers felt supported, their health literacy (55.1%) was lower compared to the general population. The qualitative data analysis revealed four major themes: (1) the need and access to information; (2) having multidisciplinary TGD allies; (3) the influence of the occupational position; (4) the precarious balance between work, life, and GAC. Especially participants with a low health literacy level experienced RTW barriers by struggling: (1) to find and/or apply information; (2) to navigate (occupational) health and insurance services. **Conclusion:** Our research has shown that RTW for TGD individuals is a multifaceted process, affected by personal factors, work-related elements, and the characteristics of the healthcare and social insurance system. Enhancing support for TGD people at work and their RTW requires a high need for centralized information and promoting health literacy while engaging relevant stakeholders, such as prevention services and employers.

**Van der Cauter et al. 2024.**

**Journal of Occupational Rehabilitation, vol. 34, no. 2.**

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**Keywords:** Gender identity; health literacy; occupational health; return to work; transgender people.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10139-x>

## Workers Compensation

*This month we explore return to workers compensation issues associated with the digital economy and hybrid work call and health literacy, physical health and past rehabilitation utilization.*

### The digital economy and hybrid work call for a review of compensation criteria for musculoskeletal disorders

**Background:** Work-related musculoskeletal disorders (WRMSD) pose a significant occupational health challenge in Europe. The digitization of the economy substantially reshaped the nature and organization of work. The proliferation of hybrid working, characterized by a combination of office-based and remote work, has been accelerated by the COVID-19 pandemic. **Method:** This review covers hybrid forms of work, their impact on WRMSDs, and the potential implications for WRMSD compensation. **Results:** Approximately 30-40% of the European workforce could potentially transition to hybrid forms of work.

Hybrid work arrangements can result in prolonged static postures of the trunk, neck, and upper limbs without adequate breaks, thereby increasing the risk of neck and lower back pain. As teleworking and hybrid working become more prevalent, an increase in non-specific WRMSDs is anticipated among the working population. In many countries, claims for WRMSDs necessitate a formal diagnosis by a healthcare professional. However, cases of non-specific WRMSDs, such as cervicgia or chronic shoulder pain, - commonly observed in sedentary workers engaged in predominantly low-intensity, prolonged static work amid visually and cognitively demanding tasks - often do not meet the criteria for compensation as occupational diseases. **Conclusion:** The compensation system and/or the criteria for compensation must be adapted to accommodate the rise of telework, necessitating evolving criteria for compensation that address both medical and risk exposure considerations.

**Roquelaure et al. 2024.**

**La Medicina del Lavoro, vol. 115, no. 3.**

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**Keywords:** Digital economy; musculoskeletal disorders; compensation criteria.

**Evidence Level:** 6A

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/16072>

### **Do health literacy, physical health and past rehabilitation utilization explain educational differences in the subjective need for medical rehabilitation? Results of the lidA cohort study**

**Background:** Medical rehabilitation can be helpful for maintaining workers' health and work ability. Its contribution to longer working lives is of high economic relevance in aging populations. In Germany, individuals must apply for rehabilitative measures themselves. Therefore, the subjective need for rehabilitation (SNR) is a prerequisite for rehabilitation access. A low education level is associated with poor health, lower health literacy and more frequent utilization of health services. In the present study, we investigated whether lower educational levels are also associated with a greater SNR and whether health literacy, past rehabilitation utilization and physical health play a mediating role in this path in older employees. **Methods:** 3,130 socially insured older employees (born in 1959 or 1965) who participated in the German prospective lidA (leben in der Arbeit) cohort-study in 2011, 2014 and 2018 were included. A causal mediation analysis with an inverse odds weighting approach was performed with the SNR as the dependent variable; educational level as the independent variable; and health, health literacy and past rehabilitation utilization as the mediating variables. Sociodemographic variables were adjusted for.

**Results:** The SNR was significantly greater in subjects with a low education level, poor physical health, inadequate health literacy and those who had utilized rehabilitation in the past. For health literacy, past rehabilitation utilization and physical health, a significant partial mediating effect on the SNR was found for employees with low compared to those with high education levels. However, the combined mediating effect of all the mediators was lower than the sum of their individual effects. Among those with medium or high education levels, none of the variables constituted a significant mediator. **Conclusions:** The path between a low education level and a high SNR is mediated by inadequate health literacy, past rehabilitation utilization and poor physical health; these factors do not act independently of each other. Promoting health education may lower the SNR by improving physical health and health literacy. While improving physical health is beneficial for individuals, improved health literacy can be economically advantageous for the health system by reducing inappropriate expectations of rehabilitation benefits and subsequent applications for rehabilitation.

**Prel et al. 2024.**

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

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**Keywords:** Behavioral model; causal mediation; education; health literacy; past rehabilitation utilization; subjective health; subjective need for rehabilitation.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19086-5>

## Working hours

### **An organizational working time reduction and its impact on three domains of mental well-being of employees: A panel study**

**Background:** Work hours are an important aspect of one's job and these in turn have the potential to impact people's well-being. Much research investigating the link between working hours and well-being uses cross-sectional data. Longitudinal studies, especially those studying the same subjects changing their working time, can study the impact of work time more clearly. Using panel data, this study aims to explore the impact of a reduction in working time on three domains of well-being: general well-being, job-related well-being (positive work experience) and work-family well-being (work-family conflict). In addition, our study offers insights into the role of concomitant changes in work and private circumstances of employees as we investigate whether the impact of shorter working hours for well-being is mediated by changes in the participants' and circumstances related to paid and unpaid work resources. **Method:** An organization of about 60 (female) employees trialled a shorter workweek for one calendar year in 2019. All full-time employees reduced their hours. The part-time working employees can be used as a control group. Panel data (survey and time-use diary data) of a 30-h workweek trial in Belgium was collected in four waves over two years in a pre- and post-intervention design. Change over time (waves) was analyzed through multilevel growth models. **Result:** A decrease in work-family conflict was observed during the shorter workweek. Part of this decrease is explained by concomitant changes in work and private circumstances, such as sufficiency in free time, schedule control, and satisfaction with work pressure. Positive work experience and general well-being tend to have decreased during the shorter workweek, although this could partly be explained by other organizational changes and not by the reduction in working hours per se. Schedule control helped suppress these somewhat negative effects of organizational changes on positive work experience. **Conclusion:** Reduced working hours have the largest and most positive impact on work-family conflict. The feeling of having enough leisure time contributes to this increased well-being. Especially for women, who were the majority in this study, a reduction in working time might be beneficial as they often bear more responsibility for household work and care tasks. Next to the duration of working time, schedule control/autonomy has an important impact on well-being.

**Mullens et al. 2024.**

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

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**Keywords:** Shorter workweek; time-use; well-being; work-family conflict; working hours; working time reduction.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19161-x>

## Wellness Programs

*This month we explore the utility of an online well-being assessment in targeting employee well-being programmes, a workplace health promotion intervention for occupational back health and participatory approaches in workplace health promotion to improve physical activity levels and reduce sedentary behaviour.*

### **Utility of an online well-being assessment in targeting employee well-being programmes: a cross-sectional survey study in Finland**

**Background:** Occupational health challenges are changing, emphasising the need for a more comprehensive approach. This study examines how a subjective well-being assessment can be used to identify target groups for work well-being interventions and brings insight into how survey-based well-being evaluations are linked to clinical health indicators (ie, anthropometric measurements and blood tests). **Method:** A cross-sectional survey study using results from the Virta1 randomised controlled trial and a third-party well-being questionnaire database. Setting and participants: Online well-being survey data from 2990 respondents was used to identify target groups for work well-being interventions and clinical health indicator data from 713 respondents was used to examine how subjective evaluations are linked to physical health. **Results:** We identified five groups of employees with different well-being

challenges and presenteeism levels: *Good well-being*, *Hard on oneself*, *Lifestyle challenges*, *Recovery challenges* and *Multiple challenges*. The subjective evaluations correlated with clinical health indicators, showing that the well-being groups differed significantly in their average clinical health profiles. Especially people in the *Multiple challenges* group had multiple physical health challenges, while people in the *Good well-being* and *Hard on oneself* groups did not. **Conclusions:** Our results show that a subjective well-being assessment can identify different groups with distinct characteristics and health risks and that subjective evaluations of well-being correlate strongly with physical health. Online well-being assessment offers potentially a cost-effective way for occupational health providers to screen large populations to target physical health examinations to groups that need them the most and simultaneously get a better understanding of their well-being needs.

**Kauppi et al. 2024.**

**BMJ Open**, vol. 14, no. 6.

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**Keywords:** Mass screening; occupational & industrial medicine; risk management.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/14/6/e079708.long>

### **"Back health 24/7/365"- A novel, comprehensive "one size fits all" workplace health promotion intervention for occupational back health among hospital employees**

**Background:** Projects for workplace health promotion (WHP) for back pain traditionally focus exclusively on work-related but not on leisure-time stress on the spine. We developed a comprehensive WHP project on the back health of hospital workers regardless of the physical characteristics of their work and compared its effects on sedentary and physically active hospital workers. **Methods:** Study assessments were carried out before and six months after participation in the WHP intervention. The primary outcome parameter was back pain (Oswestry Disability Index, ODI). Anxiety (Generalized Anxiety Disorder-7), work ability (Work Ability Index), depression (Patient Health Questionnaire-9), stress (Perceived Stress Scale-10), and quality of life (Short Form-36) were assessed via questionnaires as secondary outcome parameters. Physical performance was measured via the 30 seconds Sit-to-Stand test (30secSTS). **Results:** Sixty-eight healthcare workers with non-specific back pain were included in the evaluation study of the WHP project "Back Health 24/7/365". After six months, back pain, physical performance, and self-perceived physical functioning (SF-36 Physical Functioning subscale) improved significantly in both groups. Not a single parameter showed an interaction effect with the group allocation. **Conclusions:** A comprehensive WHP-intervention showed significant positive effects on hospital workers regardless of the physical characteristics of their work.

**Hasenoehri et al. 2024.**

**International Journal of Environmental Research and Public Health**, vol. 21, no. 6.

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**Keywords:** Back pain; compensatory exercises; core stability; education; manual material handling; office work; weight lifting.

**Evidence Level:** 3B

**Link:** <https://www.mdpi.com/1660-4601/21/6/772>

### **Participatory approaches in the context of research into workplace health promotion to improve physical activity levels and reduce sedentary behaviour among office-based workers: Scoping review**

**Background:** Participatory research (PR) involves engaging in cocreation with end users and relevant stakeholders throughout the research process, aiming to distribute power equitably between the end users and research team. Engagement and adherence in previous workplace health promotion (WHP) studies have been shown to be lacking. By implementing a PR approach, the insights of end users and stakeholders are sought in the co-design of feasible and acceptable intervention strategies, thereby increasing the relevance of the research. This scoping review aims to explore, identify, and map PR techniques and their impact when used in office-based WHP interventions designed to improve physical activity (PA) or reduce sedentary behaviour (SB). **Methods:** The reporting of this scoping review followed the PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews). A

systematic literature search of 5 electronic databases-Web of Science, PubMed, Scopus, Google Scholar, and OpenGrey-was conducted, searching from January 1, 1995, to February 8, 2023. In total, 2 independent reviewers first screened the retrieved articles by title and abstract, and then assessed the full texts based on the inclusion and exclusion criteria. The search strategy and eligibility criteria were developed and guided by an a priori population (office-based working adults), intervention (a PA WHP intervention that took a PR approach), comparison (no comparison required), and outcome (PA or SB) framework. Data were charted and discussed via a narrative synthesis, and a thematic analysis was conducted. The included studies were evaluated regarding the degree of end user engagement throughout the research process and power shared by the researchers, using Arnstein's ladder of citizen participation. **Results:** The search retrieved 376 records, of which 8 (2.1%) met the inclusion criteria. Four key strategies were identified: (1) end user focus groups, (2) management involvement, (3) researcher facilitators, and (4) workplace champions. The degree of engagement and power shared was relatively low, with 25% (2/8) of the studies determined to be nonparticipation studies, 25% (2/8) determined to be tokenistic, and 50% (4/8) determined to provide citizen power. **Conclusions:** This review provides a foundation of evidence on the current practices when taking a PR approach, highlighting that previous office-based PA WHP studies have been largely tokenistic or nonparticipative, and identified that the end user is only engaged with in the conception and implementation of the WHP studies. However, a positive improvement in PA and reduction in SB were observed in the included studies, which were largely attributed to implementing a PR approach and including the end user in the design of the WHP intervention. Future studies should aim to collaborate with workplaces, building capacity and empowering the workforce by providing citizen control and letting the end users "own" the research for a sustainable WHP intervention.

**Buffey et al. 2024.**

**JMIR Public Health and Surveillance, vol. 19.**

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**Keywords:** Cocreation; desk based; end user involvement; intervention; office based; participatory research approach; physical activity; public and patient involvement; sedentary behavior; workplace health promotion.

**Evidence Level:** 6A

**Link:** <https://publichealth.jmir.org/2024/1/e50195>

## Shift Work

*This month we explore shiftwork issues associated with sleep, mental health and physical health, blood pressure and mixed shift rotations, sleep, burnout and well-being.*

### Sleep, mental health and physical health in new shift workers transitioning to shift work: Systematic review and meta-analysis

**Background and Method:** This systematic review and meta-analysis (PROSPERO registration CRD42022309827) aimed to describe how shift work impacts new workers' sleep, mental health, and physical health during the transition to shift work and to consolidate information regarding predictors of shift work tolerance (SWT) during this transition period. Inclusion criteria included: new shift workers; sleep, mental health, or physical health outcomes; prospective study design with the first timepoint assessing workers within three months of starting shift work; and written in English. Searches from six databases returned 12,172 articles as of August 2023. **Results:** The final sample included 48 papers. Publication quality and risk of bias was assessed using the critical appraisal skills program. Forty-five studies investigated longitudinal changes in sleep, mental health, or physical health outcomes and 29 studies investigated predictors of SWT (i.e., better sleep, mental and physical health). Sleep and mental health outcomes worsened following the onset of shift work, while physical health did not significantly change. Pre-shift work mental health, sleep, and work characteristics predicted SWT later in workers' careers. **Conclusions:** Shift work adversely impacts new workers' sleep and mental health early in their career, and interventions before beginning shift work are needed to promote better SWT.

**Harris et al. 2024.**

**Sleep Medicine Reviews, vol. 75.**

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**Keywords:** Mental health; physical health; shift work; shift work tolerance; sleep.

**Evidence Level:** 1A

**Link:** <https://www.sciencedirect.com/science/article/pii/S1087079224000315?via%3Dihub>

### **The effect of night shift on blood pressure in healthcare workers**

**Background:** Individuals across all age groups may experience elevated blood pressure due to a combination of internal and environmental factors. Factors influencing arterial pressure include diet, stress, sleep patterns, and lifestyle. This study aims to investigate the susceptibility to high blood pressure among occupational groups working night shifts. **Method:** The study included healthcare worker participants who had at least six night shifts per month. A control group consisted of participants performing the same roles during daytime. Participants with chronic diseases or those taking blood pressure-affecting medication were excluded. Holter recordings were made over a minimum of 48 hours, including both a free day and a work day. **Results:** The study involved 114 participants-55 in the study group and 59 in the control group. Statistically significant differences were noted between the groups in the daylight-night ratios of systolic and diastolic pressures, with P values of 0.006 and 0.005, respectively. The systolic daylight-night difference was  $-5.7 \pm 5.5\%$  in the study group and  $-9.0 \pm 7.0\%$  in the control group. The diastolic daylight-night difference was  $-7.9 \pm 9.6\%$  in the study group and  $-12.7 \pm 8.2\%$  in the control group.

**Conclusion:** Occupations with nighttime work schedules are often associated with non-dipping blood pressure patterns due to sleep disturbances. It is crucial to consider the blunted dipping of blood pressure induced by night shift work when assessing and monitoring hypertension and related medical conditions.

**Torun et al. 2024.**

**Turkish Society of Cardiology, vol. 52, no. 4.**

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**Keywords:** Night shift; blood pressure; healthcare workers.

**Evidence Level:** 5B

**Link:** <https://archivestsc.com/jvi.aspx?un=TKDA-55484&volume=52&issue=4>

### **Mixed shift rotations, sleep, burnout and well-being in professions similar to radiographers: A systematic review**

**Background:** Delivering 24 h healthcare requires rotational shift work from doctors and the medical imaging team, while contributing to safe and timely care of patients. Additional service pressure and staff shortfall leads to workload pressures, adjusted shift patterns and risk of burnout. Evidence should be sought to the effects of this work on staff. **Methods:** This systematic review followed PRISMA reporting guidelines, using a convergent mixed methods approach according to Guidance from Joanna Briggs International. Quantitative trends and results were qualified in order to thematically analyse in conjunction with qualitative data and discussed together in context. Following initial searching, returned articles were screened by title and abstract. A team of 3 reviewers undertook blinded critical appraisal of those suitable, with quality assurance from a 4th team member. Papers passing a threshold of 75% on JBI appraisal tools were accepted for synthesis. Data extraction of appropriate articles retrieved was undertaken in parallel.

**Results:** Following screening and critical appraisal, 13 studies were returned focusing exclusively on Non Consultant Doctors. No studies investigated diagnostic radiographers. 85% (n = 11) reported negative association between shift work and the three themes of sleep/fatigue, burnout and wellbeing: including after the introduction of shift pattern control or adjusted shift patterns. The remainder showed no change, or any improvement nullified by countermeasures to maintain service delivery. **Conclusion:** Current working practices and shift plans in the target population showed detrimental effects on the participants - this can be suggested that Diagnostic Radiographers may suffer fatigue, burnout and poor mental health from stretched shift working patterns. Implications for practice: Further study into the effects of shift work on Diagnostic Radiographers and other allied health professionals is indicated - relating to the above themes in the context of errors and patient safety. Additional research into Non Consultant Doctors, shift work effects and the context of wider service delivery required; with suitable interventions and education to maximise understanding of legal working practices, monitoring and self-management of symptoms.

**Elliott et al. 2024.**

**Radiography, vol. 30, no. 4.**

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**Keywords:** Burnout; safety; service delivery; shift working; workforce.

**Evidence Level:** 1A

**Link:** [https://www.radiographyonline.com/article/S1078-8174\(24\)00147-0/fulltext](https://www.radiographyonline.com/article/S1078-8174(24)00147-0/fulltext)

## Management and Leadership

### **Initial leadership concerns and availability of tobacco cessation services moderate changes in employee-reported concerns about tobacco-free workplace policy implementation over time**

**Background:** Tobacco-free workplace policies (TFWPs) are underused evidence-based interventions that reduce the elevated use of tobacco among substance use treatment center (SUTC) employees and patients. SUTC employees' anticipated concerns about stakeholder pushback are barriers to TFWP adoption. Examination of discrepancies between anticipated and actualized employee-reported TFWP concerns arising from coworkers, patients, and community members in the context of leadership concerns and tobacco cessation care availability for employees may inform strategies to increase TFWP uptake. **Method:** This study analyzed changes in employee-reported TFWP concerns from before to after a comprehensive tobacco-free workplace intervention that included TFWP implementation, using Chi-square/Fisher's exact tests. Preimplementation leadership policy concerns and tobacco cessation care availability were examined as moderators in generalized linear mixed models. **Results:** Overall, 452 employees and 13 leaders provided data from 13 SUTCs collectively serving >82 000 patients annually. Results revealed significant decreases over time in employee-reported concerns about TFWP resistance from coworkers. Moderation analyses indicated that employee-anticipated concerns from coworkers and patients, respectively, were less likely to be actualized in SUTCs where leadership endorsed preimplementation TFWP concerns, whereas employee-reported patient concerns rose over time in SUTCs where leadership had no initial implementation concerns. Additionally, employee-anticipated concerns from coworkers were overestimated in SUTCs that did not offer tobacco cessation care to employees. **Conclusions:** Results supporting the nonactualization of anticipated employee concerns following TFWP implementation can be used to engage other SUTCs for TFWP adoption. Furthermore, moderation effects may suggest that center characteristics translate to greater attention to rollout, ultimately enhancing TFWP stakeholder acceptance.

**Siddiqi et al. 2024.**

**Translational Behavioral Medicine, vol. 14, no. 7.**

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**Keywords:** Employee concerns; health disparity; leadership; substance use treatment centers; tobacco cessation services; tobacco-free workplace policy.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/tbm/article/14/7/394/7675864?login=false>

## Work Ability

*This month we explore work ability issues associated with acquired brain injury, acute myocardial infarction, autism and disclosing non-visible disabilities*

### **Risk factors and service gaps affecting a sustainable work: A qualitative multi-stakeholder analysis in the context of persons with acquired brain injury living in Switzerland**

**Background:** Along with the social and economic challenges posed by an aging society, creating work conditions that allow persons to stay healthy and work into old age has become a major task of Western societies. Retaining employment after returning to work is particularly difficult for individuals with a disability, as evidenced by the high rate of premature labour market dropout. Individuals with acquired brain injury (ABI) exemplify this challenge, as it often impairs cognitive, technical, and interpersonal abilities that are crucial in today's labour market. To effectively support these individuals, vocational integration practitioners require comprehensive knowledge of risk factors for premature labour market dropout and effective strategies for sustainable work. **Objective:** This study aimed to identify perceived risk factors and

related service gaps regarding sustainable work for people with ABI, as reported by affected individuals, employers, vocational integration professionals, and health professionals. **Methods:** Secondary data analysis. Data that was originally collected through seven focus groups and two interviews with persons with ABI, 15 interviews with employers, and 13 interviews with vocational integration and health professionals in the context of the project 'Sustainable employment' was re-analysed thematically.

**Results:** Two major themes of risk factors were identified: (1) person-related factors (including the subthemes: post-ABI impairments; lack of understanding of post-ABI impairments; poor health management) and (2) environment-related factors (including the subthemes: challenges related to the service structure; insufficient knowledge and education about ABI; challenges at the workplace; difficulties in private life). While stakeholders noted the variety of the currently available services, they particularly pointed to the missing long-term monitoring and counselling services for persons with ABI following the initial return-to-work, reflecting a major challenge for sustainable work. An overarching gap related to the fragmentation of the service structure and the lack of case coordination along the working life.

**Conclusions:** Multiple stakeholders emphasized the importance of empowering individuals, ensuring easy access to professional support, and providing a suitable work environment to address key risk factors and facilitate sustainable work for individuals with ABI. Continuous coaching, long-term monitoring and counselling following return-to-work, were identified as potential strategies to achieve these goals.

**Karcz et al. 2024.**

**BMC Health Services Research, vol. 24, no. 1.**

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**Keywords:** Acquired brain injury; multi-stakeholder analysis; qualitative research; sustainable work; vocational integration.

**Evidence Level:** 5B

**Link:** <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-024-11128-3>

### **Predictors of work inability after acute myocardial infarction in Switzerland**

**Background:** This study aimed to examine whether acute myocardial infarction (AMI) patients in Switzerland return to work and identify factors associated therewith. **Methods:** Data of 4315 working-age AMI patients enrolled in the Swiss AMIS Plus registry between 01/2006 and 09/2021 with 1-year follow-up and self-reported work status were analyzed. Patient characteristics were compared between those who did not reduce their work hours, those who reduced, and those who were no longer working 1 year after AMI. Multinomial logistic regression was used to analyze independent predictors of working ability.

**Results:** Of the patients, 3204 (74.3%) did not reduce their work hours, 592 (13.7%) reduced and 519 (12.0%) were no longer working 1 year after AMI. Women were more likely to reduce or stop working. Patients who did not reduce were more frequently young and male. Multinomial logistic regression showed that work reduction was associated with female sex and a Killip class > 2 at admission whereas stopping work was associated with female sex and comorbidities. A high rate of AMI patients in Switzerland (88%) return to work 1 year after AMI. Approximately 1 in 8 did not return to work and approximately 1 in 7 reduced their work hours. **Conclusion:** Important factors associated with reducing or no longer working after AMI were female sex, older age and a higher proportion of comorbidities.

**Barresi et al. 2024.**

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

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**Keywords:** Acute myocardial infarction; return to work; work inability.

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-024-63988-8>

### **Disclosing non-visible disabilities in educational workplaces: A scoping review**

**Background:** a sizable proportion of the working population has a disability that is not visible. Many choose not to disclose this at work, particularly in educational workplaces where disability is underrepresented. A better understanding of the barriers and facilitators to disclosure is needed. **Method:** this scoping review is based on studies published in scientific journals. **Results:** the reasons underpinning disclosure are complex and emotive-in-nature. Both individual and socio-environmental factors influence this decision and process.

Stigma and perceived discrimination are key barriers to disclosure and, conversely, personal agency a key enabler. Areas of controversy: there is a growing trend of non-visible disabilities within the workplace, largely because of the increasing prevalence of mental ill health. Understanding the barriers and facilitators to disability disclosure is key to the provision of appropriate workplace support. Growing points: our review shows that both individual and socio-environmental factors influence choice and experience of disclosure of non-visible disabilities in educational workplaces. Ongoing stigma and ableism in the workplace, in particular, strongly influence disabled employees' decision to disclose (or not), to whom, how and when. Areas timely for developing research: developing workplace interventions that can support employees with non-visible disabilities and key stakeholders during and beyond reasonable adjustments is imperative.

**Hassard et al. 2024.**

**British Medical Bulletin**, vol. 150, no. 1.

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**Keywords:** Disability disclosure; education; workplaces.

**Evidence Level:** 6A

**Link:** <https://academic.oup.com/bmb/article/150/1/23/7618085?login=false>

### **An ecological systems model of employee experience in industry-led autism employment programmes**

**Background and Method:** We asked 33 autistic adults from two industry-led employment programmes about their experiences in the programmes. These are programmes started by companies to recruit and support autistic people in work. We also asked about their workplace supports, relationships and how they thought the programme had impacted their life. Understanding the experiences of people in these industry-led employment programmes is important as the information can help to improve the programmes and participants' experiences. **Results:** After reviewing the interviews, we found five themes that best described the employee's experience: (1) working involves multiple job tasks that evolve as the employment context changes; (2) relationships in the workplace are diverse and are influenced by the type of work participants do and the work environment; (3) workplace needs change as the autistic employees learn to navigate their work environment; (4) autistic employees develop a professional identity in the workplace as they master work and feel more integrated in the workplace; and (5) recommendations for the development of supportive workplace environments for autistic people. **Conclusion:** We explored the way that aspects of the two employment programmes (e.g. training) and factors outside the programme changed with time and contributed to the participant's experience. We developed a new model to capture individual and workplace factors that contribute to the experience of autistic people who participate in industry employment programmes.

**Bury et al. 2024.**

**Autism**, vol. 28, no. 6.

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**Keywords:** Autism employment; autistic adults; ecological systems; supported employment.

**Evidence Level:** 5B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11134994/>

## **Adapting to the Future of Work**

### **Aging Workforce**

#### **Work and retirement among women: The health and employment after fifty study**

**Background:** Women increasingly work beyond age 50+ but their occupational health is under-researched.

**Objectives:** To investigate what jobs older contemporary women do, when they exit their jobs and what factors predict job exit. **Methods:** Data came from the Health and Employment After Fifty cohort, which recruited women aged 50-64 at baseline in 2013-14 and has followed them up annually collecting: demographic, lifestyle and work information. Exits from employment were mapped longitudinally over five follow-ups. Time-to-first event Cox regression analyses were used to identify risk factors for job exit.

**Results:** At baseline, 4436 women participated, 64% of whom were working. The proportions of women working at 50-54, 55-60 and over 60 years were 86%, 79% and 38%, respectively. Amongst all women, after

adjustment for age, managing comfortably financially and not coping with the mental demands of the job were associated with exit. Risk factors for job exit differed in the age bands: 50-54; 55-59 and >60 years, reflecting socio-economic status, markers of health (musculoskeletal pain and poor self-rated health) and work factors (under-appreciation, job dissatisfaction, temporary/permanent contracts, coping with work's physical demands). **Conclusions:** Factors contributing to exit from work among older women differ by age group, after controlling for perceived financial position, age and mental demands of the job. A number of work characteristics predict job exit and suggest that employers can play an important role in supporting women to continue working until older ages. Identification and treatment of musculoskeletal pain could also enable work amongst older women.

**Palermo et al. 2024.**

**Occupational Medicine, vol. 74, no. 4.**

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**Keywords:** Work; retirement; women; health; employment.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/occmed/article/74/4/313/7680562?login=false>

## Technology

### **A critical review of the feasibility of emerging technologies for improving safety behaviour on construction sites**

**Background:** Advancements in the modern construction industry have contributed to the development of a range of technology-based interventions to improve the safety behaviour of front-line construction workers. Notwithstanding the extensive research on safety behaviour, there is still a paucity of research on assessing technology interventions of safety behaviour to provide an overview of their strengths and limitations. The present study aims to bridge this gap in the literature and identify the main trends of research. **Method:** A systematic review and critical content analysis are adopted to capture an overview of the state of knowledge on safety behaviour technologies. As a result of searching Scopus, Web of Science, and Google Scholar databases in the period from Jan 2010 to Feb 2023, a total of 359 potential studies went through the systematic screening process and finally, 48 representative studies were selected followed by an assessment of the feasibility and applicability of the safety behaviour technologies.

**Results:** It was found that safety behaviour technology is characterized by seven technologies including virtual-reality simulation (T1), eye-tracking technology (T2), prediction modelling of safety behaviour (T3), computer-based training (T4), drone/sensor-based hazard monitoring (T5), vision-based behaviour monitoring (T6), and real-time positioning (T7). **Conclusions:** This research improves understanding of the status of safety behaviour technologies and provides a critical review of their feasibility from the perspective of four assessment criteria including application, limitation, benefit, and feasibility. Practical applications: The categorizations of technologies add value to the body of knowledge in terms of generic requirements for their implementation and adaptation on construction sites.

**Newaz et al. 2024.**

**Journal of Safety Research, vol. 89.**

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**Keywords:** Construction industry; construction workers; safety behavior; safety technology.

**Evidence Level:** 1A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0022437524000495?via%3Dihub>