



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 September 2023 only.

## Contents

Description of Evidence Levels Definitions Used in this Review .....	2
Enabling Healthy and Safe Workplaces .....	3
Health and Wellbeing .....	3
Work Health and Safety.....	8
Risk Assessment.....	13
Chronic Health Issues .....	15
Occupational Exposure.....	18
Physical Activity .....	26
Guiding and Supporting Mental Health and Wellbeing .....	27
Mental Health.....	27
Bullying, Harassment and Occupational Violence.....	29
Psychosocial Issues.....	30
Fostering Work Participation.....	32
Return to Work.....	32
Presenteeism and Absenteeism .....	35
Workers Compensation.....	37
Working hours .....	39
Wellness Programs .....	39
Organisational Issues.....	40
Shift Work.....	41
Work Ability .....	42
Adapting to the Future of Work .....	43
Aging Workforce.....	43
Technology .....	46
Work Environment .....	47

## 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 relationship between insomnia and lifestyle-related diseases, the role of lifestyle behaviors and stress as risk factors for obesity, the association of living environmental and occupational factors with semen quality, the effect of mental workload on wellbeing, association between serum albumin levels and height loss and factors associated with breastfeeding abandonment in the first month after the mother's return to work. In Covid-19 related research we explore the return of rush hour traffic post-Covid-19 lockdown, the effect of working from home on eating habits, the risk of household Covid-19 contacts and the relationship between long-term headache and cognitive complaints post-Covid-19.*

#### **Rush hour-and-a-half: Traffic is spreading out post-lockdown**

**Background:** Traffic congestion is ubiquitous in major cities around the world. Congestion is associated with a slew of negative effects, including delays and local air pollution. Because of the negative effects of congestion, governments invest billions of dollars into the highway system to try to reduce congestion and accommodate peak-hour automobile travel demand. The COVID-19 pandemic presented a significant disruption to transportation systems globally. One impact was a drastic reduction in travel, leading to free-flowing traffic conditions in many previously-congested cities. As lockdowns eased, traffic volumes returned to near-normal levels. However, the temporal pattern of demand may differ, due to increased remote work or other factors. **Methods:** In this article, we examine the temporal distribution of highway demand in California, using data from over 3,500 traffic sensors. **Results:** We find that peak-hour automobile travel is spreading in the post-lockdown period. In addition to decreased traffic congestion, this finding also has implications for infrastructure investment. Roadways are generally sized based on peak-hour demand. As the peaks spread, some highway construction project may prove unnecessary.

**Conclusions:** It may be possible to reallocate road space to other uses with fewer tradeoffs in terms of traffic congestion.

**Bhagat-Conway et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Traffic; post-lockdown; rush hour; congestion.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0290534>

#### **The relationship between insomnia and lifestyle-related diseases among Japanese male truck drivers**

**Background:** Previously, insomnia and adverse lifestyle were prevalent among truck drivers, but the association between the two remains unknown in this particular occupational cohort. **Methods:** This study aimed to examine the relationship between insomnia and lifestyle-related diseases among truck drivers. We investigated 875 male truck drivers of the Japan Truck Association, Akita branch, as of July 2020. The definition of insomnia was based on the International Classification of Sleep Disorders, Third Edition (ICSD-3). Data from a self-administered questionnaire were merged with health records and health insurance claims data of 2020. **Results:** In total, 40.1% had either one of the lifestyle-related diseases including hypertension (29.7%), diabetes mellitus (11.7%), and dyslipidemia (24.8%), whereas according to ICSD-3, 13.2% had insomnia. Multivariate logistic regression models demonstrated that individuals with insomnia had approximately 2-fold increased risk of having at least one lifestyle-related disease ( $p < 0.001$ ), hypertension ( $p = 0.0027$ ), diabetes mellitus ( $p = 0.0654$ ) and dyslipidemia ( $p < 0.001$ ). Occupational characteristics including daily driving hours, driving distance, and travel days were not associated with any lifestyle-related diseases except for an association between short-haul and at least one disease.

**Conclusions:** In conclusion, insomnia is significantly associated with increased risks of lifestyle-related diseases among male truck drivers in Japan.

**Ando et al. 2023.**

**The Tohoku Journal of Experimental Medicine, vol. 261, no. 1.**

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**Keywords:** Dyslipidemia; hypertension; insomnia; lifestyle-related diseases; truck drivers.

**Evidence Level:** 5B

**Link:** [https://www.jstage.jst.go.jp/article/tjem/261/1/261\\_2023.J052/article](https://www.jstage.jst.go.jp/article/tjem/261/1/261_2023.J052/article)

### **Lifestyle behaviors and stress are risk factors for overweight and obesity in healthcare workers: A cross-sectional survey**

**Background:** Overweight and obesity have become major public health concerns worldwide. Persistent stress can activate the human hypothalamic–pituitary–adrenal axis (HPA) and increase the intake of "self-rewarding food", thereby raising the incidence of obesity. Health care workers (HCWs) experience higher workloads and mental stress than workers in many other industries, which may put them at increased risk for overweight/obesity. However, few studies have been carried out on overweight and obesity among HCWs in China, and the overall scenario and behind-the-scenes factors of their overweight and obesity are unknown. The aim of this study is to understand the epidemic of overweight and obesity and risk factors among Chinese HCWs. **Methods:** Based on a cross-sectional web survey design, 23,234 HCWs from 100 health institutions in 5 provinces/autonomous regions/municipalities across China were sampled to answer a self-administered questionnaire that was purposely developed using a multi-staged clustered random-sampling method. Chi-square test and ANOVA were performed to compare variables between two or more groups. Univariate analyses were conducted to identify the influence of self-reported persistent stress and/or recurrent anxiety/depressed mood on lifestyle behaviors. A multivariate binary logistic regression model was used to analyse the risk factors of overweight/obesity. **Results:** Among the respondents, 34.26% were overweight, and 11.22% were obese. Most of the respondents had regular exercise habits (68.17%), had habitually stayed-up late (65.06%) and had been affected by persistent stress and/or recurrent anxiety/depressed mood (62.04%). A higher proportion of those with persistent stress and/or recurrent anxiety/depressed mood than those without habitually staying-up late (76.18%); consumed take-out food (54.92%), fried food (49.93%), snacks or desserts (50.51%); drank sugary drinks (46.57%); smoked (14.27%); and drank alcohol (23.34%). Gender (Female) (OR: 0.314, 95%CI: 0.292-0.336), age (OR: 1.742-2.334, 95%CI: 1.544-2.858), education (OR: 0.620-0.728, 95%CI: 0.445-0.973), living and working area (OR: 1.271, 95%CI: 1.192-1.355), breakfast (OR: 0.898, 95%CI: 0.839-0.960), fried food (OR: 1.133, 95%CI: 1.048-1.224), and alcohol consumption (OR: 1.111, 95%CI: 1.017-1.214) were factors for overweight/obesity. All of the aforementioned results were significant ( $P < 0.05$ ). **Conclusions:** The overweight/obesity rate of Chinese HCWs is rather high, which might be directly associated with lifestyle behaviors. However, these behaviors fundamentally originated from persistent stress and/or recurrent anxiety/depression, mediated by lifestyle behaviors. Substantial measures should be taken for stress reduction and mental health promotion for overweight/obesity prevention and control among HCWs.

**Guo et al. 2023.**

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

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**Keywords:** Healthcare workers; overweight/obesity; risk factors; stress.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16673-w>

### **Changes in office workers' lived experiences of their own eating habits since working from home due to the COVID-19 pandemic: An interpretative phenomenological analysis**

**Background:** In response to the unprecedented circumstances of the COVID-19 pandemic, there has been little insight into how office workers perceived their own eating behaviour in relation to their new home working environment. The sedentary nature of office-based jobs means that it is crucial that workers in these occupations engage in health behaviours that are beneficial to them. **Methods:** The present study aimed to explore how office workers perceive changes to their own eating behaviour since the transition to working from home (WFH) as a consequence of the pandemic. Semi-structured interviews were conducted with six volunteer office workers who previously worked in an office environment and who are now WFH. Data were analysed using interpretative phenomenological analysis, allowing the researcher to explore

each account and understand their lived experiences. **Results:** There were five superordinate themes: Healthy eating; time constraints; escaping the office; social cognitions; and food indulgence. Increased snacking behaviour since WFH was a major challenge, which was particularly potent during times of elevated stress. Furthermore, quality of nutrition since WFH appeared to coincide with the participants' wellbeing, such that this was reported as being worst at times of low wellbeing. Future studies must focus on developing strategies to improve the eating behaviours and the general wellbeing of office workers as they continue to WFH. **Conclusions:** These findings can then be utilised for the development of health promoting behaviours.

**Knightley et al. 2023.**

**Appetite, vol. 188.**

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**Keywords:** Eating behavior; interpretative phenomenological analysis; qualitative; work from home.

**Evidence Level:** 5A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0195666323017403?via%3Dihub>

### **SARS-CoV-2 risk in household contacts of healthcare workers: A prospective cohort study**

**Background:** Few studies have assessed whether the increased SARS-CoV-2 risk of healthcare workers (HCW) is carried on to their household contacts. Within a prospective HCW cohort, we assessed the SARS-CoV-2 risk of household contacts of HCW depending on the HCWs cumulative exposure to COVID-19 patients and identified factors influencing this association. **Methods:** HCW aged  $\geq 16$  years from nine Swiss healthcare networks participated. HCW without any household contacts were excluded. For HCW, cumulative patient exposure (number of COVID-19 patient contacts times average contact duration during a 12-month follow-up) was calculated. During follow-up, HCW reported SARS-CoV-2 nasopharyngeal swab results and positive swab results of their household contacts. We used multivariable logistic regression to identify variables associated with SARS-CoV-2 household positivity. **Results:** Of 2406 HCW, 466 (19%) reported  $\geq 1$  SARS-CoV-2 positive household. In multivariable analysis, patient exposure of HCW (adjusted OR [aOR] 1.08 per category, 95% CI 1.04-1.12), household size (aOR 1.53 per household member, 95% CI 1.35-1.73) and having children (aOR 0.70, 95% CI 0.53-0.94) remained associated with household positivity. Vaccinated HCW had a lower risk (aOR 0.54, 95% CI 0.38-0.77) of reporting a positive contact, as were those using respirator masks in contact with COVID-19 patients (aOR 0.65, 95% CI 0.49-0.86). Among vaccinated HCW, delayed first vaccination was associated with increased household SARS-CoV-2 positivity (aOR 1.14 per month, 95% CI 1.08-1.21). **Conclusions:** SARS-CoV-2 positivity in household contacts of HCW increases with higher cumulative COVID-19 patient exposure of HCWs. Measures reducing the SARS-CoV-2 risk in HCW might indirectly reduce the infection risk of their households.

**Kohler et al. 2023.**

**Antimicrobial Resistance & Infection Control, vol. 12, no. 1.**

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**Keywords:** COVID-19; healthcare workers; household contacts; SARS-CoV-2; spillover.

**Evidence Level:** 4B

**Link:** <https://aricjournal.biomedcentral.com/articles/10.1186/s13756-023-01300-5>

### **Mental workload task modeled on office work: Focusing on the flow state for well-being**

**Background:** This research aimed to objectively evaluate the optimal state of desk work (flow state) through physiological measurements and use the data to support workers' mental health and well-being. We suppose that the flow state evaluation in real-time can contribute to a concentrated work environment, improved work efficiency, and stabilize worker's minds. **Methods:** This study reports on the development of the mental task modeled on daily work for the physiological measurement experiment. In the first phase of the research, a field survey was conducted with 55 desk workers to understand the details of their jobs and develop suitable mental tasks. Further, the relationship between daily work content and subjective stress was clarified. In the second phase, based on the results of the field survey, a task inducing the flow state was developed for practical use. Through empirical experiments with 35 participants (22 adults and 13 students), the developed task was evaluated for its usefulness and possible issues by examining the relationships among subjective assessment, task performance, degree of flow



state, and individual characteristics. **Results:** The study results showed that the proposed mental task developed in this study constitutes practical work that can be used for concentrated and goal-directed efforts. The task also demonstrated the property of inducing a flow state. **Conclusions:** Further, the results suggest that it is necessary to adjust the task difficulty level and implement effective feedback methods to induce the flow state more effectively.

**Kurosaka et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Mental workload; tasks; flow state; office work; well-being.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0290100>

### **Association between serum albumin levels and height loss in Japanese workers: A retrospective study**

**Background:** Height loss starting in middle age was previously shown to be associated with high cardiovascular mortality in later life. However, the factors associated with height loss remain unknown. Since low serum albumin levels are reported to be associated with high mortality caused by cardiovascular disease, they may also contribute to height loss. **Methods:** To clarify the association between serum albumin and height loss, we conducted a retrospective study of 7637 Japanese workers who participated in general health check-ups from 2008 to 2019. Height loss was defined as the highest quartile of height loss per year. **Results:** Individual with high serum concentration of albumin possess beneficial influence on preventing incidence of height loss. In both men and women, serum albumin level was significantly inversely associated with height loss. After adjustment for known cardiovascular risk factors, the adjusted odd ratio (OR) and 95% confidence interval (CI) for height loss per 1 standard deviation of albumin (0.2 g/dL for both men and women) were 0.92 (0.86, 0.98) in men and 0.86 (0.79, 0.95) in women. Even when the analysis was limited to participants without hypoalbuminemia, essentially same association was observed, with fully adjusted corresponding ORs (95%CI) of 0.92 (0.86, 0.98) in men and 0.86 (0.78, 0.94) in women. **Conclusion:** Independent of known cardiovascular risk factors, higher serum albumin levels may prevent height loss among Japanese workers. While several different diseases cause hypoalbuminemia, they may not be the main reasons for the association between serum albumin and height loss. Though further research is necessary, this finding may help clarify the mechanisms underlying the association between height loss and higher mortality in later life.

**Shimizu et al. 2023.**

**Journal of Physiological Anthropology, vol. 42, no. 1.**

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**Keywords:** Albumin; height loss; retrospective; workers.

**Evidence Level:** 4B

**Link:** <https://jphysiolanthropol.biomedcentral.com/articles/10.1186/s40101-023-00338-z>

### **Factors associated with breastfeeding abandonment in the first month after the mother's return to work**

**Background:** The return to work of lactating mothers has been identified as an important risk factor for breastfeeding interruption. We proposed to identify factors associated with breastfeeding abandonment in the first month after return. **Methods:** 252 women working at a hospital who had children aged 12 to 36 months and who were still breastfeeding when returned to work answered a questionnaire containing questions on sociodemographic characteristics, pregnancy, childbirth, breastfeeding and work-related factors. The associations were estimated using adjusted prevalence ratio (aPR), calculated with the hierarchical Poisson multivariable regression model. **Results:** The following factors showed a significant association with breastfeeding abandonment: using a pacifier (aPR 4.58), cohabiting with someone other than partner (aPR 3.77), having no intention or having doubts about maintaining breastfeeding after returning (aPR 3.39), having a college degree (aPR 2.66), having no support from the infant's caregiver (aPR 2.26), and infant being older when the woman returned to work (PR 1.16 for each additional month of infant age). Longer duration of exclusive breastfeeding was a protective factor (aPR 0.990).

**Conclusions:** Most of the factors associated with discontinuation of breastfeeding in the first month after the mother's return to work are not directly related to the woman's work.

Schorn et al. 2023.

*Ciência & Saúde Coletiva*, vol. 28, no. 9.

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Keywords: Breastfeeding; return to work; lactating mothers.

Evidence Level: 5B

Link: <https://www.scielo.br/j/csc/a/Xy5prtjYGBN5k47nSxfmK6x/?lang=en>

### **Impact of menopausal symptoms on work and careers: A cross-sectional study**

**Background:** Women over 50 years are one of the fastest-growing employment groups. Menopausal symptoms can adversely impact quality of life, work performance and attendance; however, few studies look at the impact of individual menopausal symptoms on work and career development. **Aims:** To measure the prevalence of menopausal symptoms in employees in a healthcare setting, to assess the impact of individual symptoms on work, attendance and career development and to explore perceptions about workplace supports. **Methods:** In this cross-sectional study of Irish hospital workers, menopausal employees were asked about the frequency of 10 menopausal symptoms and the extent to which each symptom impacted them at work. Impacts on performance, attendance and career development were assessed, along with the benefits of workplace support. **Results:** Responses from 407 women showed that the most common menopausal symptoms affecting employees greater than 50% of the time while at work were fatigue (54%), difficulty sleeping (47%), poor concentration (44%) and poor memory (40%). Work performance was impacted for 65% of respondents and 18% had taken sick leave. There was a significant association between symptom severity at work and reduced work performance, career development decisions and attendance. Manager awareness about menopause (29%) and flexible working times (29%) were selected as the most important workplace supports. **Conclusions:** Female employees are negatively impacted by menopausal symptoms while at work, particularly by psychological and neurocognitive symptoms which were associated with reduced work performance, attendance and career decisions. Manager awareness and flexible schedules were considered the most beneficial workplace supports.

O'Neill et al. 2023.

*Occupational Medicine*, vol. 73, no. 6.

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Keywords: Menopausal symptoms; work; careers.

Evidence Level: 4A

Link: <https://academic.oup.com/occmed/article/73/6/332/7237845>

### **Long-term headache and cognitive complaints among health care workers who acquired SARS-CoV-2**

**Background:** Neurological manifestations are frequent after acquiring COVID-19 and may persist long-term as part of post-COVID-19 syndrome. Cognitive impairment, chronic fatigue, sleep disturbances, and headache complaints are the most reported neurological features. During the COVID-19 pandemic, health care workers were particularly vulnerable due to the high workload and levels of stress associated with this period, but acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) may also contribute. The authors aimed to evaluate the neurological involvement of acquiring SARS-CoV-2 in a population of hospital health care workers and its impact on their personal and professional lives. **Methods:** A sample of health care workers who did and did not acquire SARS-CoV-2 matched by age and sociodemographic variables was studied. Through an online questionnaire, data were collected regarding the symptoms in the acute phase of the disease (for those who acquired it) and for all in the last 6 months of the study period. Proportion of neurological complaints were compared between groups, adjusting for age, sex, and professional class (using a rate ratio (RR)). **Results:** This study included 326 participants (174 cases and 152 controls). The mean age (standard deviation) was 39.7 (10.2) years, and the female:male ratio was 3:1. Headache and cognitive complaints were the most prevalent neurological complaints in the last 6 months of the study period. The health care workers who acquired SARS-CoV-2 were more likely to report headache and cognitive complaints than the control group (RR = 1.51, 95% confidence interval = 1.17-1.9 and RR = 2.02, 95% confidence interval = 1.53-2.65, respectively). **Conclusion:** In a population of health care workers, those who acquired SARS-CoV-2 were more likely to have long-term cognitive complaints and persistent headaches.

**Marques et al. 2023.**

**The Permanente Journal, vol. 27, no. 3.**

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**Keywords:** Headache; cognitive complaints; health care workers; SARS-CoV-2

**Evidence Level:** 4B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10502378/>

### **Association of living environmental and occupational factors with semen quality in Chinese men: A cross-sectional study**

**Background:** Sperm quality can be easily influenced by living environmental and occupational factors. This study aimed to discover potential semen quality related living environmental and occupational factors, expand knowledge of risk factors for semen quality, strengthen men's awareness of protecting their own fertility and assist the clinicians to judge the patient's fertility. **Methods:** 465 men without obese or underweight ( $18.5 < \text{BMI} < 28.5 \text{ kg/m}^2$ ), long-term medical history and history of drug use, were recruited between June 2020 to July 2021, they are in reproductive age ( $25 < \text{age} < 45$  years). We have collected their semen analysis results and clinical information. Logistic regression was applied to evaluate the association of semen quality with different factors. **Results:** We found that living environment close to high voltage line ( $283.4 \times 10^6/\text{ml}$  vs  $219.8 \times 10^6/\text{ml}$ , Cohen  $d = 0.116$ ,  $P = 0.030$ ) and substation ( $309.1 \times 10^6/\text{ml}$  vs  $222.4 \times 10^6/\text{ml}$ , Cohen  $d = 0.085$ ,  $P = 0.015$ ) will influence sperm count. Experienced decoration in the past 6 months was a significant factor to sperm count ( $194.2 \times 10^6/\text{ml}$  vs  $261.0 \times 10^6/\text{ml}$ , Cohen  $d = 0.120$ ,  $P = 0.025$ ). Living close to chemical plant will affect semen PH (7.5 vs 7.2, Cohen  $d = 0.181$ ,  $P = 0.001$ ). Domicile close to a power distribution room will affect progressive sperm motility (37.0% vs 34.0%,  $F = 4.773$ , Cohen  $d = 0.033$ ,  $P = 0.030$ ). Using computers will affect both progressive motility sperm (36.0% vs 28.1%,  $t = 2.762$ , Cohen  $d = 0.033$ ,  $P = 0.006$ ) and sperm total motility (57.0% vs 41.0%, Cohen  $d = 0.178$ ,  $P = 0.009$ ). After adjust for potential confounding factors (age and BMI), our regression model reveals that living close to high voltage line is a risk factor for sperm concentration (Adjusted OR 4.03, 95% CI 1.15-14.18,  $R^2 = 0.048$ ,  $P = 0.030$ ), living close to Chemical plants is a protective factor for sperm concentration (Adjusted OR 0.15, 95% CI 0.05-0.46,  $R^2 = 0.048$ ,  $P = 0.001$ ) and total sperm count (Adjusted OR 0.36, 95% CI 0.13-0.99,  $R^2 = 0.026$ ,  $P = 0.049$ ). Time spends on computer will affect sperm total motility (Adjusted OR 2.29, 95% CI 1.11-4.73,  $R^2 = 0.041$ ,  $P = 0.025$ ). **Conclusions:** Sum up, our results suggested that computer using, living and working surroundings (voltage line, substation and chemical plants, transformer room), and housing decoration may association with low semen quality. Suggesting that some easily ignored factors may affect male reproductive ability. Couples trying to become pregnant should try to avoid exposure to associated risk factors. The specific mechanism of risk factors affecting male reproductive ability remains to be elucidated.

**Mai et al. 2023.**

**Scientific Reports, vol. 13, no. 1.**

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**Keywords:** Semen quality; sperm; environmental; occupational; Chinese.

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-023-42927-z>

### **Work Health and Safety**

This month we explore the severity of occupational accidents in the mining sector, the computer vision syndrome-related symptoms in presbyopic computer workers, cancer risk in information technology workers, the adverse effects of a shoulder- and back-support exoskeleton and the implications for workplace health and safety of medicinal cannabis. In firefighter specific research we explore training injuries and their psychological effects, and the perceptions of lung function surveillance in firefighters. In Covid-19 related research we explore the perceived health of remote workers' during the pandemic, and the relationship between patient-facing job role and Covid-19 infection.



### **Statistical analysis of the severity of occupational accidents in the mining sector**

**Background:** The aim of this paper is to understand the causes of occupational accidents in Spain's mining sector in order to propose action plans and improve future accident rates. **Method:** This research analyzed a pool of data on 15,032 accidents occurring in the mining sector and reported to authorities between 2013 and 2018. Accidents are divided into three levels of severity: light, serious, and fatal. We study the influence of 12 variables on the accident severity rate in our sample. **Results:** The results show that accident severity is related to age, gender, nationality, length of service, economic activity, company size, accident location, days of injury leave, day of the week, deviation, injury, and specific Spanish region. This sector produces a high rate of serious accidents compared to all other sectors; has a male-dominated, older and experienced workforce; and employs mainly Spanish workers. Its activity is concentrated in larger companies and the work involves the use of heavy machinery and dangerous materials **Conclusion:** We offer conclusions and future lines of research to help regulators, companies and workers to improve worker safety.

**Baraza et al. 2023.**

**Journal of Safety Research, vol. 86.**

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**Keywords:** Accident rate; health and safety; mining; occupational accidents; occupational safety.

**Evidence Level:** 4A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0022437523001007?via%3Dihub>

### **Computer vision syndrome-related symptoms in presbyopic computer workers**

**Background:** To evaluate the prevalence of computer vision syndrome (CVS)-related symptoms in a presbyopic population using the computer as the main work tool, as well as the relationship of CVS with the electronic device use habits and the ergonomic factors. **Methods:** A sample of 198 presbyopic participants (aged 45-65 years) who regularly work with a computer completed a customised questionnaire divided into: general demographics, optical correction commonly used and for work, habits of electronic devices use, ergonomic conditions during the working hours and CVS-related symptoms during work performance. A total of 10 CVS-related symptoms were questioned indicating the severity with which they occurred (0-4) and the median total symptom score (MTSS) was calculated as the sum of the symptoms. **Results:** The MTSS in this presbyopic population is  $7 \pm 5$  symptoms. The most common symptoms reported by participants are dry eyes, tired eyes and difficulties in refocusing. MTSS is higher in women ( $p < 0.05$ ), in laptop computer users ( $p < 0.05$ ) and in teleworkers compared to office workers ( $p < 0.05$ ). Regarding ergonomic conditions, MTSS is higher in participants who do not take breaks while working ( $p < 0.05$ ), who have an inadequately lighting in the workspace ( $p < 0.05$ ) and in the participants reporting neck ( $p < 0.01$ ) or back pain ( $p < 0.001$ ). **Conclusion:** There is a relationship between CVS-related symptoms, the use of electronic devices and the ergonomic factors, which indicates the importance of adapting workplaces, especially for home-based teleworkers, and following basic visual ergonomics rules.

**Galindo-Romero et al. 2023.**

**International Ophthalmology, vol. 43, no. 9.**

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**Keywords:** Computer vision syndrome; electronic devices; ergonomic factors; presbyopia.

**Evidence Level:** 5A

**Link:** <https://link.springer.com/article/10.1007/s10792-023-02724-z>

### **Remote workers' perceived health during the COVID-19 pandemic: An exploratory study of influencing factors in the IT and communications sector in Malta**

**Background:** The COVID-19 pandemic resulted in a sudden switch to remote working that many organisations and workers were unprepared for. **Methods:** The study investigates the perceived impact of remote working on workers' health and influencing factors. The topic has received limited attention within published studies. A cross-sectional online survey was distributed to IT and communication remote workers in Malta (N=459). Closed-ended questions were analysed quantitatively in order to identify perceived changes in health. Open-ended questions were analysed qualitatively to determine the perceived reasons

for such changes. **Results:** More workers reported that their health had deteriorated than improved during the first 12 months of the pandemic. Greater proportions of remote work were associated with improved levels of health. Several factors were perceived to have influenced levels of health, including: health behaviours, such as physical activity, nutrition, and sleep; the development of disease, particularly mental health issues; work related factors, such as social support, work demands, and the blurring of work-life boundaries; and personal factors, including family life and leisure. **Conclusions:** The study concludes that remote working can be beneficial for health when workers engage in the correct health-promoting behaviours and are provided with the necessary support, both during their working and private life.

**Fiorini 2023.**

**Industrial Health, vol. 61, no. 5.**

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**Keywords:** COVID-19; mental health; occupational health; remote work; telework; work from home.

**Evidence Level:** 4B

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/61/5/61\\_2022-0018/article](https://www.jstage.jst.go.jp/article/indhealth/61/5/61_2022-0018/article)

### **Patient-facing job role is associated with SARS-CoV-2 positivity among healthcare workers in long term care facilities in Minnesota, August-December, 2020**

**Background:** Healthcare workers (HCWs) in long-term care facilities (LTCFs) are disproportionately affected by severe acute respiratory coronavirus virus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (COVID-19). To characterize factors associated with SARS-CoV-2 positivity among LTCF HCWs, we performed a retrospective cohort study among HCWs in 32 LTCFs in the Minneapolis-St Paul region.

**Methods:** We analyzed the outcome of SARS-CoV-2 polymerase chain reaction (PCR) positivity among LTCF HCWs during weeks 34-52 of 2020. LTCF and HCW-level characteristics, including facility size, facility risk score for resident-HCW contact, and resident-facing job role, were modeled in univariable and multivariable generalized linear regressions to determine their association with SARS-CoV-2 positivity.

**Results:** Between weeks 34 and 52, 440 (20.7%) of 2,130 unique HCWs tested positive for SARS-CoV-2 at least once. In the univariable model, non-resident-facing HCWs had lower odds of infection (odds ratio [OR], 0.50; 95% confidence interval [CI], 0.36-0.70). In the multivariable model, the odds remained lower for non-resident-facing HCW (OR, 0.50; 95% CI, 0.36-0.71), and those in medium- versus low-risk facilities experienced higher odds of testing positive for SARS-CoV-2 (OR, 1.47; 95% CI, 1.08-2.02). **Conclusions:** Our findings suggest that COVID-19 cases are related to contact between HCW and residents in LTCFs. This association should be considered when formulating infection prevention and control policies to mitigate the spread of SARS-CoV-2 in LTCFs.

**Bakare et al. 2023.**

**Infection Control and Hospital Epidemiology, vol. 44, no. 9.**

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**Keywords:** SARS-CoV-2; COVID-19; healthcare workers; long term care facilities.

**Evidence Level:** 4B

**Link:** <https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/patientfacing-job-role-is-associated-with-sarscov2-positivity-among-healthcare-workers-in-long-term-care-facilities-in-minnesota-augustdecember-2020/C49F553FF71A8942F44758ECD09DC080>

### **Side-effects and adverse events of a shoulder- and back-support exoskeleton in workers: A systematic review**

**Background:** While the biomechanical effects of exoskeletons are well studied, research about potential side-effects and adverse events are limited. The aim of this systematic review was to provide an overview of the side-effects and adverse events on shoulder- and back-support exoskeletons during work tasks.

**Methods:** Four in-field studies and 32 laboratory studies were included in this review, reporting on n = 18 shoulder exoskeletons, n = 9 back exoskeletons, n = 1 full body with a supernumerary arm, and n = 1 combination of shoulder and back exoskeleton. **Results:** The most frequent side-effect reported is discomfort (n = 30), followed by a limited usability of the exoskeleton (n = 16). Other identified side-effects

and adverse events were changes in muscle activity, mobility, task performance, balance and posture, neurovascular supply, gait parameters and precision. An incorrect fit of the exoskeleton and the decreased degrees of freedom are most often reported as causes of these side-effects. Two studies did not find any side-effects. This review also showed that there are differences in the occurrence of side-effects in gender, age, and physical fitness. Most studies (89%) were conducted in a laboratory setting. Most studies (97%) measured short-term effects only. Psychological and social side-effects or adverse events were not reported. Side-effects and adverse events for active exoskeletons were understudied (n = 4). **Conclusion:** It was concluded that the evidence for side-effects and adverse events is limited. If available, it mainly consists of reports of mild discomfort and limited usability. Generalisation is limited because studies were conducted in lab settings and measured short term only, and most participants were young male workers.

**Kranenborg et al. 2023.**

**Applied Ergonomics, vol. 111.**

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**Keywords:** Human-machine interaction; musculoskeletal disorders; prevention.

**Evidence Level:** 1A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0003687023000807?via%3Dihub>

### **Investigation and analysis of training injury and its psychological effects on firefighters in Beijing: A cross-sectional study**

**Background:** Firefighters' high-intensity training often leads to injuries in the musculoskeletal system. Studies have found that these injuries in the musculoskeletal system may contribute to poor psychological issues. At the same time, low psychological well-being increases the risk of injuries, illness, and mortality. According to research reports, firefighters generally have a good psychological state. **Methods:** So this study aims to survey and analyze the training-related injuries and psychological states of firefighting and rescue personnel in Beijing. This cross-sectional study employed a questionnaire survey to gather data from a total of 214 firefighters in a certain city. The participants were required to complete a questionnaire about musculoskeletal injuries and psychological status, and then these data were statistically analyzed. **Results:** The incidence of training-related injuries is relatively high among firefighting and rescue teams, with the highest proportions observed in the lower back, knees, and ankles. Overweight and obese firefighters are more prone to ankle injuries. In the group with injuries, the subjective well-being index is lower compared to the group without injuries. Firefighters experiencing moderate to severe pain due to injuries exhibit lower subjective well-being indices compared to those with mild pain. Psychological resilience and the impact of pain on training and sleep can predict the subjective well-being index of firefighters. **Conclusions:** It is recommended that firefighting and rescue teams enhance preventive measures for musculoskeletal injuries during training to elevate the subjective well-being of firefighters.

**Gong et al. 2023.**

**Medicine, vol. 102, no. 38.**

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**Keywords:** Training injury; psychological; firefighters.

**Evidence Level:** 4B

**Link:** [https://journals.lww.com/md-journal/fulltext/2023/09220/investigation\\_and\\_analysis\\_of\\_training\\_injury\\_and.74.aspx](https://journals.lww.com/md-journal/fulltext/2023/09220/investigation_and_analysis_of_training_injury_and.74.aspx)

### **Cancer risk in information technology workers: A UK Biobank study**

**Background:** The information technology (IT) workforce has been growing more rapidly than others, with occupational health (OH) risks of sedentary behaviour, physical inactivity and poor diet, yet studies of their non-communicable disease risk, notably cancer, are lacking. **Aims:** To investigate cancer risk in IT workers compared to others in employment and the nine major Standard Occupational Classification (SOC) groups. **Methods:** We evaluated incident diagnosed cancers in the UK Biobank cohort through national cancer registry linkage. Cox proportional hazard regression models, with 15-year follow-up, were used to compare incident cancer risk among IT workers with all other employed participants and with the nine major SOC

groups. **Results:** Overall, 10 517 (4%) employed participants were IT workers. Adjusting for confounders, IT workers had a slightly lower cancer incidence compared to all other employed participants (Model 2: hazard ratio = 0.91, 95% confidence interval [CI] 0.83-1.01). Compared to the nine major SOC groups, they had a similar (Major Groups 2, 5 and 8) or lower (Major Groups 1, 3, 4, 6, 7 and 9) cancer incidence.

**Conclusions:** Despite their occupational risks of sedentary behaviour, poor diet and physical inactivity, IT workers do not have an increased cancer incidence compared to all other employed participants and the nine major SOC groups. This study paves the way for large, longitudinal health outcome studies of this under-researched and rapidly growing occupational group.

**Laloo et al. 2023.**

**Occupational Medicine, vol. 73, no. 6.**

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**Keywords:** Cancer risk; IT; information technology workers.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/occmed/article/73/6/304/7227604?login=true>

### **Perceptions of lung function surveillance in urban firefighters**

**Background:** Workplace health and safety (WHS) is an important responsibility falling on both employers and employees and is most effective when the perspectives of all stakeholders are considered. This study aimed to explore the facilitators and barriers to a voluntary workplace lung function surveillance program from the perspective of urban firefighters and describe their perceptions of its value.

**Methods:** Using a qualitative, descriptive methodology, firefighters who had participated in a longitudinal lung function surveillance study were invited to participate in semi-structured interviews. Purposeful, maximum variation sampling was used to achieve diversity in those firefighters invited to participate. We used inductive content analysis to identify themes. **Results:** Interviews with 15 firefighters identified 3 main themes: (i) practical experience of surveillance (administration, communication, workplace culture change, convenience, acceptability, and appeal); (ii) value of surveillance (lung health efficacy and control, social support, workplace management support/motivations, contribution to global firefighter health); and (iii) contribution of surveillance to health (occupational risk, relevance in the context of total health, workability, and fitness and future value). **Conclusion:** Practical and psychosocial facilitators and barriers to providing lung function surveillance in the fire service were identified. In addition to the personal benefits of detecting adverse lung health and allowing for medical intervention, factors known to positively influence firefighter workplace wellbeing, such as providing peace of mind, feedback on good work practices, motivation to utilize control measures, management commitment to health, and providing data to assist with global knowledge were valued aspects of longitudinal lung function surveillance.

**Pendergrast et al. 2023.**

**Annals of Work Exposures and Health, vol. 67, no. 8.**

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**Keywords:** Firefighter; lung function surveillance; qualitative; wellbeing; workplace health and safety.

**Evidence Level:** 5B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10516620/>

### **Medicinal cannabis and implications for workplace health and safety: Scoping review of systematic reviews**

**Background:** Although medicinal cannabis is prescribed for conditions such as pain, epilepsy, nausea and vomiting during cancer treatment, evidence about associated adverse side effects is still evolving. Because adverse events (AEs) might impact the performance of workers, it is important to consider their implications on workplace health and safety (WHS). This study aimed to map the types and prevalence of the AEs associated with medical cannabis and articulate how those events could impact WHS. **Methods:** A scoping review of systematic reviews and/or meta-analyses published between 2015 and March 2021 was performed to identify the AEs of medicinal cannabis in adults. Publications in English and full text available online were collected from Embase, MEDLINE, PsychINFO, PubMed, Scopus, and Web of Science.

**Results:** Of 1,326 papers identified from the initial search, 31 met the inclusion criteria and were analyzed.

The studies reported various AEs with the most predominant being sedation, nausea/vomiting, dizziness, and euphoria. Acute and chronic pain was the most prevalent disorder under review. **Conclusions:** Adverse events associated with the use of medicinal cannabis could increase workplace risks, including decreased alertness and reaction times, increased absenteeism, reduced ability to safely drive or operate machinery and an increased probability of falling. Focused research into the risk to workers and workplaces from the use of medical cannabis and related human performance impairment is urgently warranted.

**O'Neill et al. 2023.**

**Workplace Health and Safety, vol. 71, no. 9.**

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**Keywords:** Adverse events; medical cannabis; occupational health and safety; safety management.

**Evidence Level:** 5A

**Link:** <https://journals.sagepub.com/doi/10.1177/21650799231157086>

## Risk Assessment

*This month we explore the use of motion capture systems for risk classification for upper limb work-related activities, risk factors for hand eczema among hospital cleaners and the relationship between exposure to heavy physical workload and low job control and the risk of disability pension. In Covid-19 related research we explore the occupational risks associated with Covid-19 disease infection.*

### **Utilizing motion capture systems for instrumenting the OCRA Index: A study on risk classification for upper limb work-related activities**

**Background:** In the search to enhance ergonomic risk assessments for upper limb work-related activities, this study introduced and validated the efficiency of an inertial motion capture system, paired with a specialized platform that digitalized the OCRA index. **Methods:** Conducted in a semi-controlled environment, the proposed methodology was compared to traditional risk classification techniques using both inertial and optical motion capture systems. The inertial method encompassed 18 units in a Bluetooth Low Energy tree topology network for activity recording, subsequently analyzed for risk using the platform. **Results:** Principal outcomes emphasized the optical system's pre-eminence, aligning closely with the conventional technique. The optical system's superiority was further evident in its alignment with the traditional method. Meanwhile, the inertial system followed closely, with an error margin of just  $\pm 0.098$  compared to the optical system. Risk classification was consistent across all systems. The inertial system demonstrated strong performance metrics, achieving F1-scores of 0.97 and 1 for "risk" and "no risk" classifications, respectively. Its distinct advantage of portability was reinforced by participants' feedback on its user-friendliness. **Conclusions:** The results highlight the inertial system's potential, mirroring the precision of both traditional and optical methods and achieving a 65% reduction in risk assessment time. This advancement mitigates the need for intricate video setups, emphasizing its potential in ergonomic assessments.

**Aqueveque et al. 2023.**

**Sensors, vol. 23, no. 17.**

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**Keywords:** Ergonomics; instrumented OCRA index; musculoskeletal disorders; repetitive tasks.

**Evidence Level:** 3B

**Link:** <https://www.mdpi.com/1424-8220/23/17/7623>

### **Combined exposure to heavy physical workload and low job control and the risk of disability pension: A cohort study of employed men and women in Sweden**

**Background:** To investigate the separate and combined effects of overall heavy physical workload (PWL) and low decision authority on all-cause disability pension (DP) or musculoskeletal DP. **Methods:** This study uses a sample of 1,804,242 Swedish workers aged 44-63 at the 2009 baseline. Job Exposure Matrices (JEMs) estimated exposure to PWL and decision authority. Mean JEM values were linked to occupational



codes, then split into tertiles and combined. DP cases were taken from register data from 2010 to 2019. Cox regression models estimated sex-specific Hazard Ratios (HR) with 95% confidence intervals (95% CI). The Synergy Index (SI) estimated interaction effects. **Results:** Heavy physical workload and low decision authority were associated with an increased risk of DP. Workers with combined exposure to heavy PWL and low decision authority often had greater risks of all-cause DP or musculoskeletal DP than when adding the effects of the single exposures. The results for the SI were above 1 for all-cause DP (men: SI 1.35 95%CI 1.18-1.55, women: SI 1.19 95%CI 1.05-1.35) and musculoskeletal disorder DP (men: SI 1.35 95%CI 1.08-1.69, women: 1.13 95%CI 0.85-1.49). After adjustment, the estimates for SI remained above 1 but were not statistically significant. **Conclusion:** Heavy physical workload and low decision authority were separately associated with DP. The combination of heavy PWL and low decision authority was often associated with higher risks of DP than would be expected from adding the effects of the single exposures. Increasing decision authority among workers with heavy PWL could help reduce the risk of DP.

**Badarin et al. 2023.**

**International Archives of Occupational and Environmental Health, vol. 96, no. 7.**

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**Keywords:** Ageing employee; decision authority; disability benefit; early exit; heavy manual job; heavy work; musculoskeletal; physical health; work ability; work conditions.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s00420-023-01983-8>

### **Occupational risks associated with severe COVID-19 disease and SARS-CoV-2 infection - A Swedish national case-control study conducted from October 2020 to December 2021**

**Background:** This study aimed to investigate whether workplace factors and occupations are associated with SARS-CoV-2 infection or severe COVID-19 in the later waves of the pandemic. **Methods:** We studied 552 562 cases with a positive test for SARS-CoV-2 in the Swedish registry of communicable diseases, and 5985 cases with severe COVID-19 based on hospital admissions from October 2020 to December 2021. Four population controls were assigned the index dates of their corresponding cases. We linked job histories to job-exposure matrices to assess the odds for different transmission dimensions and different occupations. We used adjusted conditional logistic analyses to estimate odds ratios (OR) for severe COVID-19 and SARS-CoV-2 with 95% confidence intervals (CI). **Results:** The highest OR for severe COVID-19 were for: regular contact with infected patients, (OR 1.37, 95% CI 1.23-1.54), close physical proximity (OR 1.47, 95% CI 1.34-1.61), and high exposure to diseases or infections (OR 1.72, 95% CI 1.52-1.96). Mostly working outside had lower OR (OR 0.77, 95% CI 0.57-1.06). The odds for SARS-CoV-2 when mostly working outside were similar (OR 0.83, 95% CI 0.80-0.86). The occupation with the highest OR for severe COVID-19 (compared with low-exposure occupations) was certified specialist physician (OR 2.05, 95% CI 1.31-3.21) among women and bus and tram drivers (OR 2.04, 95% CI 1.49-2.79) among men. **Conclusions:** Contact with infected patients, close proximity and crowded workplaces increase the risks for severe COVID-19 and SARS-CoV-2 infection. Outdoor work is associated with decreased odds for SARS-CoV-2 infection and severe COVID-19.

**Torén et al. 2023.**

**Scandinavian Journal of Work, Environment and Health, vol. 49, no. 6.**

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**Keywords:** COVID-19; occupational risk; SARS-CoV-2

**Evidence Level:** 5B

**Link:** <https://www.sjweh.fi/article/4103>

### **Prevalence and risk factors for hand eczema among professional hospital cleaners in Denmark: A cross-sectional questionnaire-based study**

**Background:** Professional cleaners are commonly affected by hand eczema (HE) due to wet work and exposure to cleaning products in the work environment. **Objective:** To investigate (1) the prevalence of HE in a group of professional hospital cleaners, (2) the association of HE with various comorbidities and self-reported signs/symptoms of skin lesions and (3) the association of HE with various occupational and personal risk factors in the same population. **Methods:** A cross-sectional questionnaire-based study including all cleaners working in three hospitals in Denmark. The questionnaire was composed of 35

questions. Prevalence is reported using proportions with 95% confidence intervals and compared using difference of proportions and Fisher's exact test. **Results:** A total of 122 out of 180 cleaners (response rate = 68%) participated in this study. The self-reported lifetime prevalence of HE among the cleaners was 30.3%, while the 1-year prevalence was 18.9%. HE was significantly associated with a history of atopic diseases. There was a significant correlation between having HE, and self-reported redness and itch of the hands in the last 12 months, as well as the use of hydrochloric acid  $\geq 4$  days/week during the last 12 months. Logistic regression analysis found HE significantly associated with washing hands  $\geq 20$  times during a working day and a history of atopic dermatitis. **Conclusion:** Cleaners are at an elevated risk of developing HE. More focus on education/information regarding the prevention and treatment of HE is necessary for the cleaning profession. Self-reported redness and itching of the hands may be a useful prediction of HE in cleaners.

**Sedeh et al. 2023.**

**Contact Dermatitis, vol. 89, no. 4.**

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**Keywords:** Cleaning; contact allergy; dermatitis; sensitisation.

**Evidence Level:** 4B

**Link:** <https://onlinelibrary.wiley.com/doi/10.1111/cod.14379>

## Chronic Health Issues

*This month we explore the workplace issues associated with Type 2 diabetes mellitus prevention programs, autistic, non-autistic neurodivergent and neurotypical adults, workers with a cancer diagnosis and cardiovascular disease.*

### **Workplace interventions for Type 2 diabetes mellitus prevention: An umbrella review**

**Background:** Type 2 diabetes mellitus (T2DM) is a chronic disease that may lead to severe complications. The main methods of preventing or delaying the onset of T2DM include lifestyle changes. The purpose of this study is to identify and evaluate the effectiveness of workplace interventions aimed at preventing type 2 diabetes. **Methods:** An umbrella review was conducted in accordance with the Cochrane Collaboration guidelines. Searches were performed in Medline (via PubMed), Embase (via OVID), and Cochrane Library databases. The quality assessment of the included studies was performed using the AMSTAR2 tool.

**Results:** The final analysis included 7 studies. The majority (4 of 7) of the studies included in the review focused on workplace interventions based on the guidelines of the US Diabetes Prevention Program (DPP) or other similar programs. The method of decreasing the risk of type 2 diabetes among employees are programs consisting of multiple approaches aimed at improving parameters associated with diabetes, i.e., body weight, and therefore BMI, reduction, and reducing blood glucose levels, as well as HbA1c levels through educational approach and lifestyle changes. The results of those studies point to multicomponent interventions as more effective than single-component interventions. **Conclusion:** An effective workplace intervention aimed to reduce the risk of type 2 diabetes among employees is a multicomponent program consisting of elements such as educational activities, interventions targeting dietary changes and increased physical activity.

**Wnuk et al. 2023.**

**Current Diabetes Reports, vol. 23, no. 10.**

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**Keywords:** Diabetes mellitus; health promotion; T2DM; workplace.

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007/s11892-023-01521-3>

### **The workplace masking experiences of autistic, non-autistic neurodivergent and neurotypical adults in the UK**

**Background:** Masking entails hiding or concealing one's traits during social interactions. Research suggests that masking is particularly common for autistic people, though many non-autistic people also conceal

aspects of their identity. Existing research has identified the key motivations and consequences of masking. No research to date, however, has considered how this might be affected by the social context in which masking is employed. **Methods:** This study compared the masking experiences of 285 autistic, 88 non-autistic neurodivergent and 99 neurotypical adults within a context in which masking is expected to be highly prevalent, namely the workplace. We used reflexive thematic analysis to explore the motivations, consequences, and contextual differences of workplace masking compared to other social contexts.

**Results:** Workplace masking was considered by participants in all three groups to be an adaptive response to a range of socially grounded workplace challenges and was usually employed as a strategy to safeguard against the threat of negative social and employment outcomes. Our non-autistic neurodivergent and autistic participants, however, reported experiencing unique pressures to mask, given the limited understanding of neurodiversity in workplaces and society more broadly. **Conclusions:** These findings have important implications for the wider masking literature and for workplace practice.

**Pryke-Hobbes et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Autistic; masking; non-autistic; neurodivergent; neurotypical.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0290001>

### **Association of employment disruptions and financial hardship among individuals diagnosed with cancer in the United States: Findings from a nationally representative study**

**Background:** Financial hardship (FH), defined as adverse patient effects due to cancer costs, is experienced by approximately half of individuals diagnosed with cancer. Many individuals diagnosed with cancer also experience disruptions with their employment. **Methods:** This study examines associations of employment disruptions and FH among a nationally representative sample of individuals diagnosed with cancer in the United States. We utilized 2016/2017 Medical Expenditure Panel Survey Experiences with Cancer data from individuals who worked for pay following cancer diagnosis. Employment disruption included taking extended paid time off work; switching to part-time/less demanding jobs; and/or retiring early due to cancer diagnosis/treatment. FH domains included: material (e.g., borrowing money/financial sacrifices); psychologic (e.g., worrying about medical bills/income); and behavioral (delaying/forgoing healthcare services because of cost). **Results:** Multivariable logistic regression analyses determined associations of employment disruption and FH. Among 732 individuals with a cancer history, 47.4% experienced employment disruptions; 55.9% experienced any FH. Any FH was significantly more common among individuals with versus without employment disruptions across multiple measures and domains (68.7% vs. 44.5%;  $P$  value of difference  $<0.0001$ ). Individuals with employment disruptions were more likely to have any FH [OR, 2.38; 95% confidence interval (CI), 1.62-3.52] and more FHs (OR, 2.76; 95% CI, 1.96-3.89). This study highlights that employment disruptions are common and significantly associated with multiple domains of FH among individuals with a cancer history. **Conclusions:** Employer workplace accommodation, physician discussions regarding potential impacts of cancer care on employment, and other policies to minimize employment disruptions among individuals diagnosed with cancer may reduce FH in this vulnerable population.

**Halpern et al. 2023.**

**Cancer Research Communications, vol. 3, no. 9.**

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**Keywords:** Employment; disruptions; financial hardship; cancer.

**Evidence Level:** 4B

**Link:** <https://aacrjournals.org/cancerrescommun/article/3/9/1830/728999/Association-of-Employment-Disruptions-and>

### **Work-focused healthcare from the perspective of employees living with cardiovascular disease: A patient experience journey mapping study**

**Background:** People living with cardiovascular diseases (CVD) often experience work participation problems. Good work-focused healthcare, defined as the received advice, treatment, and guidance

focusing on work participation, can support the patient and work place. However, experiences with work-focused healthcare are generally not always positive which is a barrier for work participation. Therefore, the objective of this study is to gain insight into the work-focused healthcare journey from the perspective of patients with work participation problems due to CVD, to understand their experiences and needs, and to derive opportunities for improving work-focused healthcare service at a system level. **Methods:** Semi-structured interviews, preceded by preparatory assignments, were conducted with 17 patients who experience(d) work participation problems due to CVD. The patient experience journey map (PEJM) approach was used to visualize the patients' work-focused healthcare journey, including experiences and needs over time and place, from which opportunities to improve work-focused healthcare from the patient's perspective were derived. **Results:** An aggregated PEJM consisting of six phases was composed and graphically mapped. The first phase, working, represents a period in which CVD health problems and subsequent functional limitations occur. The next two phases, short- and long-term sick leave, represent a period of full sick leave. The last three phases, start-, partial-, and full vocational reintegration, focus on the process of return to work that takes place ranging from a few months up to several years after sick-listing. For each phase the touchpoints, timespan, stakeholders, activities, experiences and needs from the perspective of the patients were identified. Finally, for better work-focused healthcare nine opportunities for improvement were derived from the PEJM, e.g. emphasize the need for work adjustment prior to the medical intervention, provide more personalized advice on handling work limitations, and putting more compelling pressure on the employer to create suitable work positions for their employees. **Conclusion:** This paper contributes insights to provide a more patient-centered work-focused healthcare trajectory for patients employed in paid jobs when living with CVD. The PEJM provides an understanding of the patients' perspectives throughout their work-focused healthcare journey and highlights opportunities for improvement towards a better suited and seamless patient journey. Although this research was conducted within the Dutch healthcare system, it can be assumed that the findings on integrated work-focused healthcare are largely transferable to other healthcare systems.

**Hagendijk et al. 2023.**

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

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**Keywords:** Cardiology; occupational health; occupational health services; qualitative research; sick leave.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16486-x>

### **Work-related experiences of prostate cancer survivors in Australia: A qualitative study**

**Background:** Prostate cancer (PCa) is the most diagnosed cancer in Australian men, and the number of survivors is growing with advances in diagnosis and treatment. Work participation following PCa diagnosis and treatment becomes a significant aspect of quality of life and survivorship. Using a qualitative phenomenological approach, we explored the work-related experiences of PCa survivors in Australia.

**Methods:** Semi-structured telephone interviews were conducted with 16 men (6 salaried employees, 10 self-employed; 8 diagnosed  $\geq$  5 years) purposively sampled from a community setting. Interviews were inductively analysed. **Results:** Five main themes emerged: motivations to work; treatment decisions and work; the effects of PCa and its treatment on ability to participate in work; being an employee versus being self-employed; and personal agency. PCa and its treatment side-effects were detrimental to men's work capacity and ability, and could persist over an extended period. Most men expressed a strong desire to retain work or return to work. Discussions with healthcare professionals about work-related consequences were largely missing when treatment decisions were made. Self-employed men faced greater challenges than their salaried counterparts due to high financial burden and limited social and business support. Family, workplace and wider community support, and self-care, enhanced men's work participation experiences. **Conclusions:** PCa and its treatment substantially and persistently impacted men's working lives, and their experiences were diverse and multifaceted. Self-employed and long-term PCa survivors face greater challenges and are at high risk of poor work outcomes. A systematic approach and involvement of stakeholders at all levels is required to support ongoing work participation.

**Liu et al. 2023.**

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

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**Keywords:** Cancer (Neoplasms); employment; prostate; qualitative; self-employed; survivorship; work.

**Evidence Level:** 5A

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16706-4>

## Occupational Exposure

*This month we explore the workplace issues associated with occupational exposure to silica, bioaerosols, bisphenols, solvents, nanomaterials, diesel exhaust, external airborne agents, PFAS foam, benzene and other hydrocarbons, respirable dust and fine particulate matter, noise, and hot/cold work environments.*

### **Silica exposure and cardiovascular, cerebrovascular, and respiratory morbidity in a cohort of male Swedish iron foundry workers**

**Background:** We present quantitative exposure-response data on silica exposure in male Swedish iron foundry workers for cardiovascular, cerebrovascular, and respiratory morbidity. **Methods:** This research is a cohort study of 2063 male Swedish iron foundry workers. From the Swedish National Patient Registers, data on morbidity incidence were retrieved. A historical measurement database of 1667 respirable silica exposure measurements from 10 Swedish iron foundries was used to calculate the cumulative exposure dose for each worker. **Results:** Increased morbidity risk for the whole group of foundry workers was determined for ischemic heart disease, cerebrovascular disease, chronic obstructive pulmonary disease (COPD), bronchitis, and pneumonia. In addition, an increased risk for COPD at cumulative silica exposures ranging from 0.11 to 0.84 mg/m<sup>3</sup> 3 year is presented. **Conclusions:** The study presents a significantly increased COPD risk at cumulative silica exposures below the Swedish occupational exposure limit.

**Andersson et al. 2023.**

**Journal of Occupational and Environmental Medicine, vol. 65, no. 9.**

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**Keywords:** Silica exposure; cardiovascular; cerebrovascular; respiratory morbidity; iron foundry workers.

**Evidence Level:** 4B

**Link:** [https://journals.lww.com/joem/fulltext/2023/09000/silica\\_exposure\\_and\\_cardiovascular.4.aspx](https://journals.lww.com/joem/fulltext/2023/09000/silica_exposure_and_cardiovascular.4.aspx)

### **Bioaerosol-induced in vitro activation of toll-like receptors and inflammatory biomarker expression in waste workers**

**Background:** Occupational exposure to bioaerosols during waste handling remains a health concern for exposed workers. However, exposure-related health effects and underlying immunological mechanisms are still poorly described. **Methods:** The present study assessed the inflammatory potential of work-air samples (n = 56) in vitro and investigated biomarker expression in exposed workers (n = 69) compared to unexposed controls (n = 25). These quantitative results were compared to self-reported health conditions.

**Results:** Personal air samples provoked an activation of TLR2 and TLR4 HEK reporter cells in one-third of all samples, indicating that the work environment contained ligands capable of inducing an immune response in vitro. Monocyte levels, as well as plasma biomarker levels, such as IL-1Ra, IL-18 and TNF $\alpha$  were significantly higher in exposed workers, compared to the control group when confounding factors such as BMI, sex, age and smoking habits were accounted for. Furthermore, a significant exposure-related increase in midweek IL-8 levels was measured among exposed workers. Tendencies of increased prevalence of health effects of the respiratory tract were identified in exposed workers. **Conclusion:** Inhalable dust provoked TLR activation in vitro, indicating that an exposure-related immune response may be expected in susceptible workers. However, despite significant differences in inflammatory plasma biomarker levels between exposed and unexposed workers, prevalence of self-reported health effects did not differ between the groups. This may be due to the healthy worker effect, or other factors such as adequate use of personal protective respiratory devices or adaptation to the work environment with reduced activation of the immune system.

**Eriksen et al. 2023.**



**International Archives of Occupational and Environmental Health, vol. 96, no. 7.**

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**Keywords:** Bioaerosols; biomarkers; health effects; occupational exposure; symptoms; TLR2; TLR4; waste sorting.

**Evidence Level:** 3A

**Link:** <https://link.springer.com/article/10.1007/s00420-023-01984-7>

### **Parental occupational exposure to solvents and risk of developing testicular germ cell tumors among sons: A French nationwide case-control study (TESTIS study)**

**Background:** The etiology of testicular germ cell tumors (TGCT) is suspected to be related to prenatal environmental risk factors. Some solvents have potential endocrine disrupting or carcinogenic properties and may disrupt male genital development in utero. The aim of this study was to examine the association between parental occupational exposure to solvents and TGCT risk among their offspring. **Methods:** A French nationwide case-control study, TESTIS included 454 TGCT cases and 670 controls frequency-matched on region and 5-year age strata. Participants were interviewed via telephone and provided information on parental occupations at birth. Job-exposure matrices (JEM) developed in the French Matgéné program were used to assign exposure to five petroleum-based solvents, five solvents or groups of oxygenated solvents, and five chlorinated solvents. Odds ratios (OR) for TGCT and 95% confidence intervals (CI) were estimated using conditional logistic regression, adjusting for TGCT risk factors.

**Results:** Occupational exposure to at least one solvent during the year of their son's birth was 41% among fathers and 21% among mothers. Paternal exposure to at least one solvent showed OR 0.89 (95% CI 0.68-1.15). Exposure to perchloroethylene (OR 1.41, 95% CI 0.55-3.61), methylene chloride (OR 1.13, 95% CI 0.54-2.34) and diesel/kerosene/fuel oil (OR 1.17, 95% CI 0.80-1.73) disclosed OR >1 but with low precision. Our results suggest a possible modest increase in non-seminoma risk for sons whose fathers were highly exposed to trichloroethylene (OR 1.44, 95% CI 0.79-2.63). Maternal exposure to at least one solvent showed OR 0.90 (95% CI 0.65-1.24). When stratifying by birth year, men born in the 1970s experienced an increased TGCT risk following maternal exposure to fuels and petroleum-based solvents (OR 2.74, 95% CI 1.11-6.76). **Conclusion:** Overall, no solid association was found between parental occupational exposure to solvents and TGCT risk. The association found with maternal occupational exposure to fuels and petroleum solvents among older men needs further investigation.

**Guth et al. 2023.**

**Scandinavian Journal of Work, Environment and Health, vol. 49, no. 6.**

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**Keywords:** Testicular germ cell tumors (TGCT); prenatal environmental risk factors; male genital development.

**Evidence Level:** 5B

**Link:** <https://www.sjweh.fi/article/4102>

### **Heat and worker health**

**Background:** Extreme heat negatively impacts cognition, learning, and task performance. With increasing global temperatures, workers may therefore be at increased risk of work-related injuries and illness.

**Methods:** This study estimates the effects of temperature on worker health using records spanning 1985-2020 from an Australian mandatory insurance scheme. High temperatures are found to cause significantly more claims, particularly among manual workers in outdoor-based industries. **Results:** These adverse effects have not diminished across time, with the largest effect observed for the 2015-2020 period, indicating increasing vulnerability to heat. **Conclusions:** Within occupations, the workers most adversely affected by heat are female, older-aged and higher-earning. Finally, results from firm-level panel analyses show that the percentage increase in claims on hot days is largest at "safer" firms.

**Ireland et al. 2023.**

**Journal of Health Economics, vol. 91.**

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**Keywords:** Adaptation; climate change; labor; occupational health & safety; temperature.

**Evidence Level:** 5A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0167629623000772?via%3Dihub>

### **Occupational exposure to nanomaterials and biomarkers in exhaled air and urine: Insights from the NanoExplore international cohort**

**Background:** The current evidence on nanomaterial toxicity is mostly derived from experimental studies making it challenging to translate it into human health risks. **Methods:** We established an international cohort (N = 141 workers) within the EU-LIFE project "NanoExplore" to address possible health effects from occupational exposures to nanomaterials. We used a handheld direct-reading optical particle counter to measure airborne nanoparticle number concentrations (PNC) and lung-deposited surface areas (LDSAs). Airborne particles were characterized by TEM and SEM-EDAX. We assessed oxidative/nitrosative stress with a panel of biomarkers in exhaled breath condensate (EBC) (8-isoprostane, malondialdehyde, nitrotyrosine), inflammation (high-sensitivity C reactive protein (hs-CRP), IL-1 $\beta$ , TNF- $\alpha$ , IL-10) and KL-6 (considered as biomarker of interstitial lung fibrosis) and urine (total antioxidant power (TAP), 8-isoprostane, and malondialdehyde). Exhaled breath sampled in gas-sampling bags were assessed for oxidative potential. These biomarkers were quantified pre-shift at the beginning of the workweek and post-shift the 4th day. Relationships between airborne nanoparticle concentration and biomarkers were assessed by multiple linear regression with log-transformed exposure and biomarker concentrations adjusted for potential confounders. **Results:** We found a positive dose-response relationship for three inflammation biomarkers (IL-10, IL-1 $\beta$  and TNF- $\alpha$ ) in EBC with both PNC and LDSA. A negative dose-response relationship was observed between PNC and TAP. This study suggests that occupational exposures to nanoparticles can affect the oxidative balance and the innate immunity in occupationally exposed workers. **Conclusions:** However, owing to the intrinsic variability of biomarkers, the observed changes along with their health significance should be assessed in a long-term perspective study.

**Hemmendinger et al. 2023.**

**Environmental International, vol. 179.**

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**Keywords:** Epidemiological study; exhaled breath condensate; nanoparticles; occupational exposure; urine.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0160412023004300?via%3Dihub>

### **Diesel exhaust exposure and cause-specific mortality in the diesel exhaust in miners study II (DEMS II) cohort**

**Background:** With the exception of lung cancer, the health effects associated with diesel exhaust for other cancers and non-malignant health outcomes are not well understood. **Objectives:** We extended the mortality follow-up of the Diesel Exhaust in Miners Study, a cohort study of 12,315 workers, by 18 y (ending 31 December 2015), more than doubling the number of observed deaths to n=4,887, to evaluate associations between mortality and diesel exhaust exposure. **Methods:** Quantitative estimates of historical exposure to respirable elemental carbon (REC), a surrogate for diesel exhaust, were created for all jobs, by year and facility, using measurements collected from each mine, as well as historical measurements. Standardized mortality ratios (SMRs) and hazard ratios (HRs) were estimated for the entire cohort and by worker location (surface, underground). **Results:** We observed an excess of death for cancers of the lung, trachea, and bronchus (n=409; SMR=1.24; 95% CI: 1.13, 1.37). Among workers who ever worked underground, where the majority of diesel exposure occurred, excess deaths were evident for lung, trachea, and bronchus cancers (n=266; SMR=1.26; 95% CI: 1.11, 1.42). Several non-malignant diseases were associated with excess mortality among workers ever-employed underground, including ischemic heart disease (SMR=1.08; 95% CI: 1.00, 1.16), cerebrovascular disease (SMR=1.22; 95% CI: 1.04, 1.43), and non-malignant diseases of the respiratory system (SMR=1.13; 95% CI: 1.01, 1.26). Continuous 15-y lagged cumulative REC exposure <1,280 $\mu\text{g}/\text{m}^3$ -y was associated with increased lung cancer risk (HR=1.93; 95% CI: 1.24, 3.03), but the risk declined at the highest exposures (HR=1.29; 95% CI: 0.74, 2.26). We also observed a significant trend in non-Hodgkin lymphoma (NHL) risk with increasing 20-y lagged cumulative REC (HRTertile3vs. Tertile1=3.12; 95% CI: 1.00, 9.79; p-trend=0.031). **Conclusion:** Increased risks of

lung cancer mortality observed in the original study were sustained. Observed associations between diesel exposure and risk of death from NHL and the excesses in deaths for diseases of the respiratory and cardiovascular system, including ischemic heart disease and cerebrovascular disease, warrant further study and provide evidence of the potential widespread public health impact of diesel exposure.

**Koutros et al. 2023.**

**Environmental Health Perspectives, vol. 131, no. 8.**

**Keywords:** Diesel exhaust; exposure; mortality; miners; nonmalignant health outcomes.

**Evidence Level:** 4A

**Link:** <https://ehp.niehs.nih.gov/doi/full/10.1289/EHP12840>

### **Association between exposure to external airborne agents and autoimmune disease**

**Background:** The etiology of autoimmune disease pathogenesis remains obscure, and the impact of general environmental or occupational exposure to external airborne agents (EAA) on autoimmune diseases remains understudied. This study was conducted to elucidate the association between exposure to EAA and the risk of autoimmune diseases according to exposure type. **Methods:** From the NHIS-NSC (2002-2019), 17,984,963 person-years were included in the data analysis. Autoimmune diseases were categorized based on the InterLymph classification. We estimated the incidence and rate ratio of autoimmune diseases according to the EAA exposure. Association between exposure and autoimmune diseases was investigated using logistic regression analysis, adjusted for potential confounders. **Results:** Of the 1,082,879 participants, 86,376 (8.0%) were diagnosed with autoimmune diseases. Among these, 208 (14.1%) experienced severe exposure to EAA. Total EAA exposure was significantly associated with any autoimmune disease (OR: 1.29, 95% CI: 1.11-1.49) and organ-specific diseases (OR: 1.28, 95% CI: 1.08-1.53). Inorganic dust exposure was associated with organ-specific diseases (OR, 1.38; 95% CI: 1.01-1.81). Exposure to other dust was significantly associated with any autoimmune disease (OR: 1.35, 95% CI: 1.10-1.66), connective tissue diseases (OR: 1.43, 95% CI: 1.03-1.99), and organ-specific diseases (OR: 1.28, 95% CI: 1.00-1.65). Exposure to EAA was predominantly related to psoriasis, rheumatoid arthritis (RA), and type 1 diabetes (T1DM). We found that exposure to EAA is a potential risk factor for autoimmune diseases, especially psoriasis, RA, and T1DM. **Conclusions:** Our findings provide insight into the role of exposure to severe airborne agents in the pathogenesis of autoimmune diseases.

**Lee et al. 2023.**

**Ecotoxicology and Environmental Safety, vol. 263.**

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**Keywords:** Autoimmune diseases; external airborne agents; National Health Insurance Service in Korea.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0147651323008382?via%3Dihub>

### **First evidence of occupational and residential exposure to bisphenols associated with an e-waste dismantling site: A case study in China**

**Background:** Bisphenol A and its structural analogues (BPs) are widely used chemicals in electronics devices. **Methods:** To get insight into the occupational exposure to the full-time employees compared with the residents, urinary BPs in workers dismantling e-waste and in nearby residents were compared. **Results:** Only 4 BPs among the tested 8 congeners, bisphenol AF (BPAF), bisphenol A, bisphenol S (BPS), and bisphenol F (BPF), were extensively detected with the detection frequencies of 100%, 99%, 98.7%, 51.3%. The median concentration of bisphenol A was 8.48 ng/mL, followed by BPAF (1.05 ng/mL), BPS (0.115 ng/mL), and BPF (0.110 ng/mL). The 4 detected BPs had a median concentration ( $\Sigma_4$ BPs) ranging from 0.950 to 64.5 ng/mL in all volunteers, with a median value of 10.2 ng/mL. Result indicated the median concentration of  $\Sigma_4$ BPs in worker's urine was significantly higher (14.2 ng/mL) than those in residents in nearby towns (4.52 ng/mL and 5.37 ng/mL) ( $p < 0.05$ ), suggesting a BPs' occupational exposure risk related to e-waste dismantling. Besides, urinary  $\Sigma_4$ BPs' median concentrations for the employees in family workshops (14.5 ng/mL) were significantly higher than those in plants with centralized management (9.36 ng/mL). Among volunteers, higher  $\Sigma_4$ BPs were observed in groups of aged above 50 years, males, or body weight under average with no significant correlations. The estimated daily intake of bisphenol A did not

exceed the reference dose (50 µg/kg bw/day) recommended by the U.S. Food and Drug Administration.

**Conclusions:** In this research, excess levels of BPs were recorded for the full-time employees in e-waste dismantling sites. Strengthened standards could support public health initiatives for full-time worker protection and reduce take-home BPs to family members.

**Li et al. 2023.**

**Ecotoxicology and Environmental Safety, vol. 263.**

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**Keywords:** Bisphenol A and its structural analogues; dismantling modes; E-waste dismantling site; occupational exposure.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0147651323007108?via%3Dihub>

### **Temporal decline in serum PFAS concentrations among metropolitan firefighters: Longitudinal study on post-exposure changes following PFAS foam cessation**

**Background:** Firefighters are at a high risk of exposure to per- and polyfluoroalkyl substances (PFAS) due to their frequent use of PFAS-containing foams in training and emergency situations. **Methods:** This longitudinal study aimed to investigate the changes in serum PFAS levels among firefighters following cessation of their exposure to PFAS-containing foams. The study involved 130 firefighters from the South Australian Metropolitan Fire Services (SAMFS), and serum samples were collected at two time points: baseline in 2018-19 and follow-up in 2021-22. Along with the collection of samples, a survey questionnaire was administered to gather information on firefighters' employment and demographic characteristics. Regression models were employed to assess the association between these factors and the outcome variable (annual percentage change in serum PFAS concentration). **Results:** The results indicated a decline in serum PFAS concentrations over time, with the main contaminants being perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonate (PFHxS), and perfluorooctanoic acid (PFOA). The median and Interquartile Range (IQR) of total PFAS ( $\Sigma$ PFAS) concentration reduced from 21.5 ng/ml (IQR: 11 to 53 ng/ml) at baseline to 15 ng/ml (IQR: 8 to 33 ng/ml) at follow-up. On average, there was an annual reduction of 13%, 7%, and 4.4% in serum concentrations of PFOS, PFHxS, and PFOA, respectively. Firefighters under the age of 55, those who used PFAS in the past ten years, or those who had little to no frequency of PFAS exposure in their previous employment, encountered a significantly higher annual percentage reduction ( $P < 0.05$ ) in both  $\Sigma$ PFAS and PFOS concentrations. None of the independent variables analysed could significantly predict the annual percentage change in PFOA and PFHxS. **Conclusions:** This study provides evidence for a declining temporal trend in serum PFAS concentrations among metropolitan firefighters following workplace interventions that involved the removal of PFAS-containing foams

**Mesfin Tefera et al. 2023.**

**Environment International, vol. 179,.**

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**Keywords:** AFFF replacement; metropolitan firefighters; PFAS decline; PFHxS; PFOA; PFOS.

**Evidence Level:** 3A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0160412023004403?via%3Dihub>

### **Parental occupational exposure to metals and risk of cancer in the offspring: A register-based case-control study from Sweden**

**Background:** Cancer risks in the offspring of mothers and fathers exposed to metals are unknown. We estimated the relative risks of childhood cancer, overall and by type, associated with parental occupational exposure to arsenic, cadmium, chromium, nickel, and lead. **Methods:** We conducted a nested case-control study (1960-2015) of children born in Sweden aged 0-19 years diagnosed with cancer (National Cancer Register) matched 25:1 to controls on birth year and sex. We obtained parental occupational data around their birth from censuses and a nationwide register and identified exposure to each metal (yes/no, or higher/lower/no exposure) using the Swedish job-exposure matrix (SWEJEM). Adjusted odds ratios (OR) and 95% confidence intervals (CIs) were estimated separately for maternal and paternal exposures using conditional logistic regression. **Results:** We compared 9653 cases to 1,72,194 controls in maternal and



12,521 cases to 2,74,434 controls in paternal analyses, respectively. We found a 38% increased risk of cancer associated with maternal occupational exposure to arsenic (OR 1.38 [95% CI 1.06, 1.82]), likely driven by higher risks for lymphoma (OR 1.52 [0.73, 3.15]), central nervous system (CNS) (OR 1.49 [0.88, 2.54]) and other solid malignancies (OR 1.74 [1.14, 2.65]). There were also indications of higher risks of lymphoma in children of mothers exposed to nickel and iron, and of CNS tumours due to chromium exposure. No associations were observed from paternal occupational exposure to any of the metals.

**Conclusions:** We found evidence of increased risks of cancer in children of mothers but not fathers occupationally exposed to arsenic and potentially other metals.

**Rossides et al. 2023.**

**European Journal of Cancer, vol. 191.**

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**Keywords:** Arsenic; case-control studies; child; metals; neoplasms; parental occupational exposure.

**Evidence Level:** 5B

**Link:** [https://www.ejancer.com/article/S0959-8049\(23\)00345-3/fulltext](https://www.ejancer.com/article/S0959-8049(23)00345-3/fulltext)

### **Exposure to benzene and other hydrocarbons and risk of bladder cancer among male offshore petroleum workers**

**Background:** Occupational exposures constitute the second leading cause of urinary bladder cancer after tobacco smoking. Increased risks have been found in the petroleum industry, but high-quality exposure data are needed to explain these observations. **Methods:** Using a prospective case-cohort design, we analysed 189 bladder cancer cases (1999-2017) and 2065 randomly drawn non-cases from the Norwegian Offshore Petroleum Workers cohort. Cases were identified in the Cancer Registry of Norway, while work histories (1965-1998) and lifestyle factors were recorded by questionnaire at baseline (1998). Occupational petroleum-related hydrocarbon exposures were assessed by expert-developed job-exposure matrices. Hazard ratios were estimated by weighted Cox-regressions, adjusted for age, tobacco smoking, education, and year of first employment, and with lagged exposures. **Results:** Increased risks were found in benzene-exposed workers, either long-term exposure ( $\geq 18.8$  years, HR = 1.89, 95% CI: 1.14-3.13; p-trend = 0.044) or high-level cumulative benzene exposure (HR = 1.60, 95% CI: 0.97-2.63; p-trend = 0.065), compared with the unexposed. Associations persisted with 20-year exposure lag. No associations were found with skin or inhalation exposure to crude oil, mineral oil (lubrication, hydraulics, turbines, drilling), or diesel exhaust. **Conclusions:** The results suggest that exposures in the benzene fraction of the petroleum stream may be associated with increased bladder cancer risk.

**Shala et al. 2023.**

**British Journal of Cancer, vol. 129, no. 5.**

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**Keywords:** Benzene; hydrocarbons; bladder cancer; petroleum workers.

**Evidence Level:** 5B

**Link:** <https://www.nature.com/articles/s41416-023-02357-0>

### **Knowledge, attitude, behavior practices and compliance of workers exposed to respirable dust in a Zambian copper mine**

**Background:** Work in the copper mining industry is often associated with exposure to respirable dust and respirable crystalline silica. This exposure has the potential to cause silicosis, an incurable occupational respiratory lung disease. This study aimed at establishing the relationship between knowledge, attitudes, work behavioral practices and compliance with safety standards and workers' exposure to respirable dust. **Methods:** A cross-sectional descriptive survey was conducted on 528 mine workers. The Statistical Package for Social Sciences (SPSS) was used for the descriptives. Structural equation modeling (SEM) with latent variables and partial least squares (LVPLS) analysis were employed to determine the relationship among these variables. **Results:** The results indicated that of the four hypotheses, two were supported, and two were rejected, showing that there is a significant relationship between exposure to respirable dust and work behavioral practices, as well as compliance with safety standards. Knowledge and attitudes toward respirable dust exposure did not significantly influence exposure. According to the results from the survey, positive work behavioral practices as well as compliance with safety standards were significantly associated



with exposure to respirable dust. **Conclusions:** It is recommended that mines should focus on the miners' work behavioral practices and compliance with safety standards.

**Sifanu et al. 2023.**

**International Journal of Environmental Research and Public Health, vol. 20, no. 18.**

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**Keywords:** Attitudes; compliance and safety standards; copper mine; knowledge; respirable dust; work behavioral practices.

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1660-4601/20/18/6785>

### **Occupational exposure to noise and dust in Swedish soft paper mills and mortality from ischemic heart disease and ischemic stroke: A cohort study**

**Background:** To elucidate whether occupational noise exposure increases the mortality from ischemic heart disease (IHD) and stroke, and if exposure to paper dust modified the risks. **Methods:** We studied 6686 workers from soft paper mills, with occupational noise exposure, < 85 dBA, 85-90 dBA and > 90 dBA, and high (> 5 mg/m<sup>3</sup>) exposure to paper dust. Person-years 1960-2019 were stratified according to gender, age, and calendar-year. Expected numbers of deaths were calculated using the Swedish population as the reference and standardized mortality ratios (SMR) with 95% confidence intervals (95% CI) were assessed. **Results:** SMR for IHD was 1.12 (95% CI 0.88-1.41) for noise < 85 dBA, 1.18 (95% CI 0.90-1.55) for 85-90 dBA, and 1.27 (95% CI 1.10-1.47) among workers exposed > 90 dBA. Joint exposure to high noise exposure and high exposure to paper dust resulted in slightly higher IHD mortality (SMR 1.39, 95% CI 1.15-1.67). SMR for ischemic stroke was 0.90 (95% CI 0.37-2.15) for noise < 85 dBA, 1.08 (95% CI 0.45-2.59) for 85-90 dBA, and 1.48 (95% CI 0.99-2.00) among workers exposed > 90 dBA. High noise exposure and high exposure to paper dust resulted in higher ischemic stroke mortality (SMR 1.83, 95% CI 1.12-2.98). **Conclusion:** Noise levels > 90 dBA was associated with increased IHD mortality. Combined exposures of noise and paper dust may further increase the risks. Our results do not provide support for a causal relationship for ischemic stroke. Residual confounding from smoking has to be considered. Workers need to be protected from occupational noise levels exceeding 90 dBA.

**Torén et al. 2023.**

**International Archives of Occupational and Environmental Health, vol. 96, no. 7.**

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**Keywords:** Cardiovascular diseases; cerebrovascular diseases; job-exposure matrix; occupational health; physical factors.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s00420-023-01980-x>

### **Occupational exposure to fine particulate matter in the reinforced concrete production and its association with respiratory symptoms and lung function**

**Background:** Reinforced concrete production is widespread, but little is known about the occupational exposure to fine particulate matter (PM) in such workplaces, including from metalworking and concrete processing. Therefore, the aim was to characterize exposure to fine PM in the typical workplaces of the whole production cycle and to quantify the risk of respiratory symptoms and lung function in a cohort of reinforced concrete parts production industry. **Methods:** At a reinforced concrete parts producing facility in Almaty, we collected 50 personal PM<sub>2.5</sub> samples from the main exposure sites and the measured mass concentrations using gravimetric method. Workers also completed questionnaires on a detailed working history, respiratory symptoms (chronic obstructive pulmonary disease (COPD) Assessment Tool (CAT)), followed by spirometry. The association of cumulative dose with CAT score and forced expiratory volume in one second (FEV<sub>1</sub>)/forced vital capacity (FVC) was tested with multiple regression. **Results:** The highest PM<sub>2.5</sub> concentrations were found in the concrete-mixing unit (median 1180 µg/m<sup>3</sup>), followed by metalworking (510 µg/m<sup>3</sup>), armature workshop (375 µg/m<sup>3</sup>) and molding site (245 µg/m<sup>3</sup>), different from the concentrations in the office (29.5 µg/m<sup>3</sup>), Kruskal-Wallis p < 0.001. Cumulative PM<sub>2.5</sub> dose, mg/m<sup>3</sup>-year (beta 0.10 (95% confidence interval (CI) 0.05; 0.15)) was strongly associated with CAT score, whereas production with FEV<sub>1</sub>/FVC (beta -4.96 (-8.31; -1.61)), independent of smoking and chronic bronchitis and

sex. **Conclusions:** Mixing concrete and metalworks pose the greatest risk for worker's health in the reinforced concrete production from the inhalational exposure to aerosol, adversely affecting respiratory health.

**Vinnikov et al. 2023.**

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

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**Keywords:** Occupational; particulate matter; regression; reinforced concrete; respirable; spirometry.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16753-x>

### **Occupational and environmental noise exposure during pregnancy and rare health outcomes of offspring: A scoping review focusing on congenital anomalies and perinatal mortality**

**Background:** As environmental and occupational noise can be health hazards, recent studies have investigated the effects of noise exposure during pregnancy. Despite biological plausibility and animal studies supporting an association, studies focusing on congenital anomalies and perinatal mortality as outcomes of noise exposure are still scarce. **Methods:** We performed a scoping review to collect, summarise, and discuss the existing scientific research about the relationships between noise exposure during pregnancy and congenital anomalies and/or perinatal mortality. We searched electronic databases for papers published between 1970 and March 2021. We included 16 studies (seven on congenital anomalies, three on perinatal mortality, and two on both congenital anomalies and perinatal mortality). We assessed four studies on congenital hearing dysfunction as the definition of congenital anomalies includes functional anomalies. We found few studies on this topic and no studies on the combined effects of occupational and environmental noise exposures. **Results:** Evidence suggests a small increase in the risk of congenital anomalies in relation to occupational and to a lesser extent environmental noise exposure. In addition, few studies investigated perinatal mortality and the ones that did, used different outcome definitions, so no conclusions could be made. However, a recent big cross-sectional study demonstrated an association between road traffic noise and stillbirth. A few studies suggest a possible association between congenital hearing dysfunction and occupational noise exposure during pregnancy. **Conclusions:** Future studies with larger samples, better exposure assessments, and better statistical modelling strategies are needed to investigate these relationships further.

**Vincens et al. 2023.**

**Reviews on Environmental Health, vol. 38, no. 3.**

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**Keywords:** Birth defects; causal pathways; neonatal hearing dysfunction; prenatal exposures; stillbirth.

**Evidence Level:** 6A

**Link:** <https://www.degruyter.com/document/doi/10.1515/reveh-2021-0166/html>

### **Does working in an extremely cold environment affects lung function?: 10 years follow-up**

**Background:** The aim of this study is to investigate whether there is an association between brief but repeated exposures to extremely cold temperatures over many years and pulmonary function.

**Methods:** We performed a retrospective analysis of the data collected over 10 years in the context of the extended medical examinations of storeworkers exposed to extremely cold temperatures. We considered forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), Tiffeneau-Pinelli index (FEV<sub>1</sub>/FVC), CO diffusion capacity (D<sub>L,CO</sub>) and Krogh-factor (CO diffusion capacity relative to recorded alveolar volume, D<sub>L,CO</sub>/VA) reported as %-predicted. We analysed trends in outcome parameters with linear mixed models. **Results:** 46 male workers participated in at least two extended medical examinations between 2007 and 2017. Overall 398 measure points were available. All lung function parameters had values above the lower limit of normality at the first examination. In the multivariate model including smoking status and monthly intensity of cold exposure ( $\leq 16$  h/month vs.  $> 16$  h/month) FEV<sub>1</sub> %-predicted and FVC %-predicted had a statistically significant positive slope (FEV<sub>1</sub>, 0.32% 95% CI 0.16% to 0.49%  $p < 0.001$ ; FVC 0.43% 95% CI 0.28% to 0.57%  $p < 0.001$ ). The other lung function parameters (FEV<sub>1</sub>/FVC %-predicted, DL,CO %-predicted, DL,CO/VA %-predicted) showed no statistically significant change over time.

**Conclusions:** Long term intermittent occupational exposure to extreme cold temperatures (-55 °C) does not

appear to cause irreversible deleterious changes in lung function in healthy workers, thus the development of obstructive or restrictive lung diseases is not expected.

**Velasco Garrido et al. 2023.**

**International Archives of Occupational and Environmental Health, vol. 96, no. 7.**

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**Keywords:** Cold exposure; long-term; lung function; occupational exposure; pulmonary disease.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s00420-023-01988-3>

## Physical Activity

*This month we explore the effect of workplace physical activity coaching and the sociodemographic and work-related factors related to workers' daily physical activity.*

### A systematic review of workplace physical activity coaching

**Background:** Studies show that about 60 min of moderate physical activity (PA) per day compensate for sitting all day at work. However, the workplace offers an ideal setting for health-promoting interventions such as PA coaching as a person-centered intervention aimed at achieving lasting health behavior changes. Given a good evidence base of health coaching studies in general, this systematic review aims to provide an overview of workplace PA coaching interventions. **Methods:** This review was conducted according to PRISMA guidelines. Studies published up to July 2021 were considered based on the following inclusion criteria: (1) longitudinal intervention studies, (2) analysis of PA at work, (3) sedentary employees, (4) PA coaching in the workplace as intervention, (5) increasing workplace PA. **Results:** Of 4323 studies found, 14 studies with 17 interventions met inclusion criteria. All 17 interventions indicated an increase in at least one PA outcome. Twelve interventions indicated significant improvements in at least one workplace or total PA outcome. There is a high variation within the different coaching parameters, such as behavior change techniques and communication channels. The study quality showed a moderate to high risk of bias. **Conclusions:** The majority of interventions provided evidence for the effectiveness of workplace PA coaching. Nevertheless, the results are inconclusive with regard to the variety of coaching parameters and thus no general statement can be made about the effectiveness of individual parameters. However, this variety of parameters also leads to a high degree of individualization of workplace PA coaching interventions to increase PA for different groups of employees and different types of workplaces.

**Gawlik et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 3.**

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**Keywords:** Coaching; health intervention; physical activity; sedentary behavior; workplace.

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10093-8>

### Identifying the sociodemographic and work-related factors related to workers' daily physical activity using a decision tree approach

**Background:** The social and behavioural factors related to physical activity among adults are well known. Despite the overlapping nature of these factors, few studies have examined how multiple predictors of physical activity interact. This study aimed to identify the relative importance of multiple interacting sociodemographic and work-related factors associated with the daily physical activity patterns of a population-based sample of workers. **Methods:** Sociodemographic, work, screen time, and health variables were obtained from five, repeated cross-sectional cohorts of workers from the Canadian Health Measures Survey (2007 to 2017). Classification and Regression Tree (CART) modelling was used to identify the discriminators associated with six daily physical activity patterns. The performance of the CART approach was compared to a stepwise multinomial logistic regression model. **Results:** Among the 8,909 workers analysed, the most important CART discriminators of daily physical activity patterns were age, job skill, and physical strength requirements of the job. Other important factors included participants' sex, educational attainment, fruit/vegetable intake, industry, work hours, marital status, having a child living at home,

computer time, and household income. The CART tree had moderate classification accuracy and performed marginally better than the stepwise multinomial logistic regression model. **Conclusion:** Age and work-related factors-particularly job skill, and physical strength requirements at work-appeared as the most important factors related to physical activity attainment, and differed based on sex, work hours, and industry. Delineating the hierarchy of factors associated with daily physical activity may assist in targeting preventive strategies aimed at promoting physical activity in workers.

**Biswas et al. 2023.**

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

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**Keywords:** Decision trees; epidemiology; exercise; machine learning; physical activity; workplace.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16747-9>

## Guiding and Supporting Mental Health and Wellbeing

### Mental Health

*This month we explore the links between burnout and suicidal ideation, the association between living alone and depressive symptoms and the role of pet ownership, the effect of multi-level interventions for workers' movement behaviour and mental health, perceived causes of sick leave due to common mental disorders and the measurement of work-related psychological injury with depressive symptoms.*

#### **"It depends on the boss" - A qualitative study of multi-level interventions aiming at office workers' movement behaviour and mental health**

**Background:** This embedded qualitative study explored the acceptability, feasibility, and fidelity of two multi-level RCT interventions among office workers, aiming at improving movement behaviour to enhance mental health and cognition. The interventions addressed the organizational, environmental, and individual level. **Methods:** Semi-structured interviews and focus group discussions were conducted with 38 stakeholders after completion of the interventions. Data were analysed using reflexive thematic analysis.

**Results:** The interventions were well appreciated, and office workers attributed improvements in movement behaviour and wellbeing to the interventions. Especially the cognitive behavioural therapy (CBT) based counselling and free gym access were appreciated, feasible and delivered as planned. Participants described existing workplace norms as barriers to more activity, particularly for reducing sitting. Support from managers and team support were considered crucial components. However, delivering these components was difficult. **Conclusions:** The findings support the design of the multi-level interventions for changing movement behaviour. Results highlight the potential of CBT for this target group and the importance of manager and team support. Desired effects of similar multi-level interventions, including CBT, might be achieved in future studies that carefully address the issues with feasibility and acceptability and the resulting low fidelity of some intervention components that were identified in this study.

**Larisch et al. 2023.**

**International Journal of Qualitative Studies on Health and Well-being, vol. 18, no. 1.**

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**Keywords:** Physical activity; acceptability; behaviour change; cognitive behavioural therapy; ecological model; feasibility; fidelity; mental health; sedentary behaviour; workplace health promotion.

**Evidence Level:** 5B

**Link:** <https://www.tandfonline.com/doi/full/10.1080/17482631.2023.2258564>

#### **Examining the links between burnout and suicidal ideation in diverse occupations**

**Background:** It is uncertain whether burnout is associated with suicidal ideation among workers not in health care services. The aim of this study was to identify how burnout and suicidal ideation are linked among employees in various occupations and whether depression affects this link. **Methods:** This cross-sectional study collected data from 12,083 participants aged 19-65 years from 25 companies and public

institutions who underwent workplace mental health screening. Burnout and depression were assessed using both the Oldenburg Burnout Inventory and the Center for Epidemiologic Studies Depression Scale. Suicidal ideation was assessed by a self-rated questionnaire from the Korea National Health and Nutrition Examination Survey. **Results:** Exhaustion but not the cynicism dimension of burnout was associated with increased odds of suicidal ideation after adjustment for depression and other covariates (odds ratio [OR] = 1.47, 95% CI = 1.26-1.72). The association of exhaustion with suicidal ideation was significant in both depressed (OR = 1.36, 95% CI = 1.14-1.61) and not depressed (OR = 1.77, 95% CI = 1.13-2.76) participants. In exhausted participants, insufficient job control, an unfavorable occupational climate, low educational level, and depression were associated with increased odds of suicidal ideation. **Conclusion:** Exhaustion is linked with risk of suicidal ideation in employees not in health care service, regardless of depression status. Exhausted employees, particularly those having poor job resources, should be recognized as an at-risk group.

**Oh et al. 2023.**

**Frontiers in Public Health, vol. 7.**

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**Keywords:** Burnout; depression; exhaustion; occupational health; suicidal ideation; suicide.

**Evidence Level:** 4B

**Link:** <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1243920/full>

### **The association between living alone and depressive symptoms and the role of pet ownership among Japanese workers**

**Background:** Living alone has been positively associated with the prevalence of depressive symptoms. We examined how a combination of living alone and pet ownership relates to depressive symptoms.

**Methods:** As part of the Japan Epidemiology Collaboration on Occupational Health Study, we conducted a survey on health-related lifestyles, including living arrangements and pet ownership, among 12,763 employees of five companies in 2018-2021. Depressive symptoms were assessed using the 11-item Center for Epidemiological Studies-Depression Scale (cutoff score  $\geq 9$ ). A Poisson regression model with a robust variance estimator was used to calculate prevalence ratio and 95% confidence interval (CI) while adjusting for covariates. **Results:** Among the participants, 30.9% were depressed, 17.7% had pets, and 29.1% lived alone. Compared to individuals living with others but not with a pet, those living alone and not with a pet had a 1.17 times higher prevalence ratio of depressive symptoms (95% CI: 1.08-1.26). The corresponding figures were 1.03 (95% CI: 0.95-1.11) for those living with others and pet(s) and 1.42 (95% CI: 1.18-1.69) for those living alone but with pet(s). **Conclusion:** Living alone was significantly associated with a higher prevalence of depressive symptoms. The association was rather stronger among individuals with vs. without pets. Pet ownership may not be associated with decreased depressive symptoms.

**Miyake et al. 2023.**

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

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**Keywords:** CES-D; depression; depressive symptoms; Japan; living alone; pet ownership.

**Evidence Level:** 4B

**Link:** <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-023-16619-2>

### **A gender perspective on perceived causes of sick leave due to common mental disorders among young Swedish employees: A qualitative interview study**

**Background:** Common mental disorder (CMD) is the most common reason for sick leave among young employees in Sweden, with young women having a higher prevalence. There is a lack of studies focusing on young employees' own perceptions of sick leave. The aim was twofold: to investigate 1) perceived causes of sick leave due to CMD among young employees, and 2) differences and similarities among women and men. **Methods:** Using a qualitative design with an applied gender perspective enabled us to capture young employees' gendered experiences and consider cultural and social aspects of their situations. We interviewed 13 women and 12 men (aged 20-29) with experience of being on sick leave and applied a conventional inductive content analysis. **Results:** Six categories were identified: a) Being new to the labour market and the workplace; b) Want to prove themselves; c) To be exposed to poor working conditions; d)



Relations at work; e) Being vulnerable; and f) Additional private life burdens. **Conclusion:** This study adds to the understanding of young employees' perceived causes of sick leave due to CMD, by letting them share their experiences of events prior to sick leave connected to work and private life. Similarities and differences in women's and men's experiences were revealed. Overall, both young men and women describe a more pressured work situation for young women compared to their male counterparts, that young women take more social responsibility in private life and at work whereas men on the other hand find it harder to disclose mental health problems.

**Olsson et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Gender; sick leave; mental disorders.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291551>

### **Measurement of work-related psychological injury with depressive symptoms**

**Background:** This study aimed to measure the level of psychological injury caused by work-related stress as well as the severity of depression among workers. **Method:** First, we conducted an online survey and recruited 500 workers diagnosed with depression or adjustment disorder to investigate what type of stress they experienced within six months before onset. Second, we conducted another online survey and recruited 767 participants who experienced some form of work-related stress. All the participants were classified into four groups by whether or not they were diagnosed with depression and whether or not they quit their jobs due to work-related stress. We used the Impact of Event Scale-Revised (IES-R) to measure psychological injury caused by work-related stressful events and the Patient Health Questionnaire (PHQ)-9 to assess the severity of depression. **Results:** In study 1, 62.4% of workers diagnosed with depression or adjustment disorder experienced work-related stress within six months before onset. In study 2, the IES-R mean scores were 40.7 (SD = 23.1) for Group A (workers with depression and quit their jobs) and 36.67 (SD = 23.4) for Group B (workers with depression but stayed at their jobs), with both exceeding the cut-off point (24/25) of PTSD (Post-Traumatic Stress Disorder), while the mean score of Group C (workers who did not have depression but quit their jobs because of work-related stress) was 20.74 (SD = 21.2), and it was 13.89 (SD = 17.4) for Group D (workers who had work-related stress but stayed at their jobs), with both of them below the cut-off point of PTSD. The total scores of IES-R of Group A and Group B were significantly higher than those of Group C and Group D ( $p < 0.001$ ). There was a significant positive correlation between the scores of IES-R and PHQ-9 for all four groups ( $r = 0.708$ ). **Conclusions:** This study suggests that it is necessary to measure not only depressive symptoms but also the level of psychological injury resulting from stressful events in the workplace to assess workers with depression.

**Tanaka et al. 2023.**

**BMC Psychiatry, vol. 23, no. 1.**

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**Keywords:** Adjustment disorder; depression; psychological injury; work-related stress.

**Evidence Level:** 5B

**Link:** <https://bmcp psychiatry.biomedcentral.com/articles/10.1186/s12888-023-05178-w>

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

*This month we explore the relationship between gender-based harassment and alcohol-related morbidity and mortality, and workplace bullying and violence in the health sector.*

#### **Gender-based harassment in Swedish workplaces and alcohol-related morbidity and mortality: A prospective cohort study**

**Background:** The study investigated experiences of different types of work-related gender-based harassment (GBH), specifically sexual and gender harassment, as risk factors for alcohol-related morbidity and mortality (ARMM). **Methods:** Information about experiences of (i) sexual harassment (SH-I) and (ii) gender harassment (GH-I) from inside the organization and (iii) sexual harassment from a person external

to the organization (SH-E) were obtained from the Swedish Work Environment Survey 1995-2013, a biannual cross-sectional survey, administered to a representative sample of the Swedish working population. The survey responses from 86 033 individuals were connected to multiple registers containing information about alcohol-related diagnoses, treatment, or cause of death. Cox proportional hazard models were fitted to assess hazard ratios (HR) of incident ARMM during a mean follow-up of eight (SH-I and GH-I) and ten (SH-E) years. **Results:** A higher prospective risk estimate of ARMM was found among participants who reported experiences of SH-E [HR 2.01, 95% confidence interval (CI) 1.61-2.52], GH-I (HR 1.33, CI 1.03-1.70), or SH-I (HR 2.37, CI 1.42-3.00). Additional analyses, distinguishing one-time from reoccurring harassment experiences, indicated a dose-response relationship for all three harassment types. Gender did not modify the associations. Under the assumption of causality, 9.3% (95% CI 5.4-13.1) of the risk of ARMM among Swedish women and 2.1% (95% CI 0.6-3.6) among Swedish men would be attributable to any of the three types of GBH included in this study. **Conclusions:** Experiences of GBH in the work context may be a highly relevant factor in the etiology of ARMM.

**Blindow et al. 2023.**

**Scandinavian Journal of Work, Environment and Health, vol. 49, no. 6.**

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**Keywords:** Harassment; gender; alcohol-related morbidity; mortality.

**Evidence Level:** 4B

**Link:** <https://www.sjweh.fi/article/4101>

### **Workplace bullying and violence in health sector in Saudi Arabia**

**Background:** Workplace bullying violence (BV), with psychological and physical impacts, is increasing globally. However, studies from Saudi Arabia investigating which specialties are most exposed, and linking them with other factors, such as sociodemographic conditions, are scarce. **Methods:** This study aimed to estimate the prevalence of workplace BV over a 12-month period and determine the circumstances related to the event, consequences for the attacker, and targeted personnel among all healthcare providers in the Kingdom of Saudi Arabia (KSA). This analytical cross-sectional study included all health providers registered with the Saudi Commission for Health Specialties who worked for more than 1 year in the healthcare sector (governmental or private) in the KSA until May 2019. **Results:** In total, 7398 healthcare workers were electively enrolled in the study; 51.3% were men, and 48.7% were women, with a mean age of  $40 \pm 8.62$  years. They were mostly (60%) non-Saudi. Overall, 26.6% encountered BV. Those who worked in the private sector, in shifts, especially evening shifts, were significantly more exposed. Furthermore, pharmacists had the highest prevalence of workplace violence. The prevalence of BV is moderately high; however, it is a serious issue faced by healthcare workers, especially those working night shifts. Pharmacists were more likely to experience bullying. This demonstrates that more support, specific strategies, and policies are required to reduce the occurrence of workplace BV, protect healthcare providers, and prevent attacks. **Conclusions:** Underreporting these situations may give an incorrect indication of the magnitude of the problem; thus, more education and further studies in the KSA are needed.

**Alhassan et al. 2023.**

**Medicine, vol. 102, no. 35.**

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**Keywords:** Workplace bullying; violence; health sector; Saudi Arabia; psychological.

**Evidence Level:** 4B

**Link:** [https://journals.lww.com/md-journal/fulltext/2023/09010/workplace\\_bullying\\_and\\_violence\\_in\\_health\\_sector.21.aspx](https://journals.lww.com/md-journal/fulltext/2023/09010/workplace_bullying_and_violence_in_health_sector.21.aspx)

### **Psychosocial Issues**

*This month we explore the acute stress in health workers and mental stress objective screening for workers using urinary neurotransmitters.*

### **Acute stress in health workers in Colombia 2017-2021: A cross-sectional study**

**Background:** Analyze the presence of acute stress response after adverse events in human talent in Colombian health institutions from 2017 to 2021. **Methods:** Cross-sectional study of prevalence, carried out on 838 members of the human talent in health (professionals, technicians, technologists, and auxiliaries) of Colombian health institutions in the study period with the application of the EASE instrument. Univariate analysis using descriptive statistical techniques, chi-square and Student's t-test, and bivariate analysis with a Poisson regression model using the institutional SPSS v. 26. **Results:** The prevalence of adverse events in the last 5 years was 33.8%, presenting levels of acute stress qualifying as Medium-high emotional overload at 21.91%, while extreme acute stress was at 3.53%. The prevalence of risk for presenting acute stress after being involved in an adverse event was PR: 1.30 (CI: 1.24-1.36). **Conclusion:** Acute stress in human talent after adverse events is limiting health and care capacity and must be efficiently addressed by health institutions. Psychosocial risk is linked within the framework of the patient safety program and the institutional occupational health and safety management systems.

**Gonzalez Delgado et al. 2023.**

**International Journal of Public Health, vol. 68.**

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**Keywords:** Acute; health personnel; psychosocial risk; stress disorders; traumatic.

**Evidence Level:** 4B

**Link:** <https://www.ssph-journal.org/articles/10.3389/ijph.2023.1606274/full>

### **Mental stress objective screening for workers using urinary neurotransmitters**

**Background:** Almost 10% of the population develop depression or anxiety disorder during their lifetime. Considering that people who are exposed to high stress are more likely to develop mental disorders, it is important to detect and remove mental stress before depression or anxiety disorder develops. We aimed to develop an objective screening test that quantifies mental stress in workers so that they can recognize and remove it before the disorder develops. **Methods:** We obtained urine specimens from 100 healthy volunteers (49 men and 51 women; age =  $48.2 \pm 10.8$  years) after they received medical checks and answered the Brief Job Stress Questionnaire (BJSQ). Participants were divided into high- and low- stress groups according to their total BJSQ scores. We further analyzed six urinary neurotransmitters (dopamine, serotonin, 5-hydroxyindoleacetic acid, gamma-aminobutyric acid, homovanillic acid, and vanillylmandelic acid) using liquid chromatography-mass spectrometry to compare their levels between the two groups. **Results:** We obtained the concentrations of the six analytes from 100 examinees and revealed that the levels of urinary dopamine ( $p = 0.0042$ ) and homovanillic acid ( $p = 0.020$ ) were significantly lower in the high-stress group than those in the low-stress group. No biases were observed between the two groups in 36 laboratory items. The stress index generated from the six neurotransmitter concentrations recognized high-stress group significantly. Moreover, we discovered that the level of each urinary neurotransmitter changed depending on various stress factors, such as dissatisfaction, physical fatigue, stomach and intestine problems, poor appetite, poor working environments, sleep disturbance, isolation, worry, or insecurity. **Conclusion:** We revealed that urinary neurotransmitters could be a promising indicator to determine underlying mental stress. This study provides clues for scientists to develop a screening test not only for workers but also for patients with depression.

**Tanabe et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Mental stress; urinary neurotransmitters.

**Evidence Level:** 3A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287613>

## Fostering Work Participation

### Return to Work

*This month we explore the return to work issues following surgery in cancer survivors, stress-related mental disorders including anxiety, depression or burnout, musculoskeletal disorder or injury, stroke and the racial and ethnic inequities in the return-to-work of workers experiencing injury or illness.*

#### **Psychosocial factors associated with workability after surgery in cancer survivors: An explorative study**

##### **Background:**

This study aimed to evaluate the work ability and its associated factors in patients with glioma (II, III) and breast cancer after 6 (T0) and 12 (T1) months from surgery. **Methods:** A total of 99 patients were evaluated with self-reported questionnaires at T0 and T1. Correlation and Mann-Whitney tests were used to investigate the association between work ability and sociodemographic, clinical, and psychosocial factors. The Wilcoxon test was used to investigate the longitudinal change in work ability. **Results:** Our sample showed a decrease in work ability level between T0 and T1. Work ability was associated with emotional distress, disability, resilience, and social support in glioma III patients at T0, and with fatigue, disability, and clinical treatments in patients with breast cancer at T0 and T1. Work ability levels decreased in patients with glioma and breast cancer and were associated with different psychosocial factors after surgery.

**Conclusions:** Their investigation is suggested to facilitate the return to work.

**Silvaggi et al. 2023.**

**Journal of Health Psychology, vol. 28, no. 11.**

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**Keywords:** Breast cancer; employment; glioma; return to work; work ability.

**Evidence Level:** 5A

**Link:** <https://pubmed.ncbi.nlm.nih.gov/36800903/>

#### **Does employer involvement in primary health care enhance return to work for patients with stress-related mental disorders? A cluster randomized controlled trial**

**Background:** Stress-related disorders have become a major challenge for society and are associated with rising levels of sick leave. The provision of support to facilitate the return to work (RTW) for this patient group is of great importance. The aim of the present study was to evaluate whether a new systematic procedure with collaboration between general practitioners (GPs), rehabilitation coordinators (RCs) and employers could reduce sick leave days for this patient group. **Method:** Employed patients with stress-related diagnoses seeking care at primary health care centres (PHCCs) were included in either the intervention group (n = 54), following the systematic intervention procedure, or the control group (n = 58), receiving treatment as usual (TAU). The intervention included a) a training day for participant GPs and RCs, b) a standardised procedure for GPs and RCs to follow after training, c) the opportunity to receive clinical advice from specialist physicians in the research group. Outcome measures for RTW were sick leave days.

**Results:** The median number of registered gross sick leave days was lower for the control group at six, 12 and 24 months after inclusion, but the difference was not statistically significant. The control group had significantly fewer net sick leave days at three months (p = 0.03) at six months (p = 0.00) and at 12-months follow-up (p = 0.01). At 24 months, this difference was no longer significant. **Conclusions:** The PRIMA intervention, which applied a standardized procedure for employer involvement in the rehabilitation process for patients with stress-related disorders, actually increased time to RTW compared to TAU. However, at 24 months, the benefit of TAU could no longer be confirmed. The study was registered on 16/01/2017 (ClinicalTrials.gov, [NCT03022760](https://clinicaltrials.gov/ct2/show/study/NCT03022760)).

**Beno et al. 2023.**

**BMC Primary Care, vol. 24, no. 1.**

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**Keywords:** Employer; return to work; sick leave; stress-related disorders.

**Evidence Level:** 2A

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10512560/>

### **Racial and ethnic inequities in the return-to-work of workers experiencing injury or illness: A systematic review**

**Background:** Non-White workers face more frequent, severe, and disabling occupational and non-occupational injuries and illnesses when compared to White workers. It is unclear whether the return-to-work (RTW) process following injury or illness differs according to race or ethnicity. **Objective:** To determine racial and ethnic differences in the RTW process of workers with an occupational or non-occupational injury or illness.

**Methods:** A systematic review was conducted. Eight academic databases - Medline, Embase, PsycINFO, CINAHL, Sociological Abstracts, ASSIA, ABI Inform, and Econ lit - were searched. Titles/abstracts and full texts of articles were reviewed for eligibility; relevant articles were appraised for methodological quality. A best evidence synthesis was applied to determine key findings and generate recommendations based on an assessment of the quality, quantity, and consistency of evidence. **Results:** 15,289 articles were identified from which 19 studies met eligibility criteria and were appraised as medium-to-high methodological quality. Fifteen studies focused on workers with a non-occupational injury or illness and only four focused on workers with an occupational injury or illness. There was strong evidence indicating that non-White and racial/ethnic minority workers were less likely to RTW following a non-occupational injury or illness when compared to White or racial/ethnic majority workers. **Conclusions:** Policy and programmatic attention should be directed towards addressing racism and discrimination faced by non-White and racial/ethnic minority workers in the RTW process. Our research also underscores the importance of enhancing the measurement and examination of race and ethnicity in the field of work disability management.

**Jetha et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 3.**

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**Keywords:** Back to work; ethnic and racial minorities; racial factors; racism; return to work.

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10119-1>

### **Integrated mental healthcare and vocational rehabilitation for people on sick leave with anxiety or depression: 24-month follow-up of the randomized IBBIS trial**

**Background:** Integration of vocational rehabilitation and mental healthcare has shown some effect on work participation at 1-year follow-up after sick leave with depression and anxiety. **Methods:** We aimed to study the effect on work and health outcomes at 2-year follow-up, why we performed a randomized trial was conducted to study the effectiveness of integrated intervention (INT) compared to service as usual (SAU) and best practice mental healthcare (MHC). **Results:** We included 631 participants, and at 24-month follow-up, we detected no differences in effect between INT and SAU. Compared to MHC, INT showed faster return-to-work (RTW) rates ( $p = 0.044$ ) and a higher number of weeks in work ( $p = 0.024$ ). No symptom differences were observed between the groups at 24 months. In conclusion, compared to SAU, INT was associated with a slightly higher work rate reaching borderline statistical significance at 12-month follow-up and lower stress levels at 6-month follow-up. The disappearance of relative effect between 12 and 24 months may be explained by the fact that the intervention lasted less than 12 months or by delayed spontaneous remission in the SAU group after 12 months. Despite the lack of effect at long-term follow-up, INT still performed slightly better than SAU overall. Moderate implementation difficulties, may partly explain the absence of the hypothesized effect. **Conclusions:** Integrated intervention, as implemented in this trial, showed some positive effects on mid-term vocational status and short-term stress symptom levels. However, these effects were not sustained beyond the duration of the intervention.

**Hoff et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 3.**

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**Keywords:** Anxiety; cognitive behavioural therapy; common mental disorders; depression; integrated services; mental healthcare; RCT; return to work; vocational rehabilitation

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10094-7>



### **Return-to-work interventions for sick-listed employees with burnout: A systematic review**

**Background:** Burnout is a work-related mental health problem that often causes long-term sickness absence. Return-to-work (RTW) interventions for burned-out sick-listed employees aim to prevent long-term work disability. **Methods:** This systematic review addresses two questions: (1) Which interventions for burned-out sick-listed employees have been studied?; (2) What is the effect of these interventions on RTW? We performed a systematic literature review and searched PubMed, Cochrane Central Register of Controlled Trials, Embase, CINAHL and Web of Science from 1 January 2000 to 31 December 2022. We searched for articles of interventions for burned-out sick-listed employees. We conducted the review in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines. Outcome was RTW. We identified 2160 articles after removal of all duplicates. **Results:** Eight studies met inclusion criteria. RTW outcomes were number of sick-leave days, sick-leave rates, median period of RTW and worked hours per week. Five studies described person-directed interventions, one described a workplace-directed intervention, one described a combination of both intervention types and one study described all three types of intervention. Only the workplace-directed intervention showed a significant improvement in RTW compared with the comparator group: at 18-month follow-up, 89% of the intervention group had returned to work compared with 73% of the comparator group. Only a limited number of studies have explored interventions specifically focused on burned-out sick-listed employees and the effect on RTW. **Conclusions:** Due to heterogeneity and moderate to high risk of bias of these studies, no firm conclusions can be drawn on the described interventions and their effect on RTW. The study was registered with the International prospective register of systematic reviews (PROSPERO, registration number: CRD42018089155).

**Lambreghts et al. 2023.**

**Occupational and Environmental Medicine, vol. 80, no. 9.**

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**Keywords:** Burnout, psychological; rehabilitation; sick leave.

**Evidence Level:** 1A

**Link:** <https://oem.bmj.com/content/80/9/538.long>

### **Return to work after sick leave due to musculoskeletal disorder or injury: A longitudinal study conducted in Brazil**

**Background:** Musculoskeletal disorders and injuries (MSDI) are conditions that affect the locomotor system characterized by pain and impairment of functionality. They are the leading cause of years lived with disability. The aim of this study was to analyze the factors that influence the return to work (RTW) among workers on sick leave due to MSDI. **Methods:** A longitudinal study was conducted in the city of São Paulo, Brazil, between 2020-2022. The participants were 216 workers who required social security compensation due to MSDI. They filled out online questionnaires about their sociodemographic characteristics, health risk behaviors, work characteristics and health conditions. They were followed for 365 days after their first day of sick leave. A Cox regression was performed to identify the factors that influenced their first RTW.

**Results:** Most participants were male (53.0%), mean age was 39.5 years (SD 10.6), 70.4% returned to work within the one-year follow-up period. The mean duration of sick leave was 192.6 days. Factors associated with a lower RTW were age 40 years and older (HR 0.54; 95%CI 0.39-0.76) and the interaction between perceptions of the need for improvement in the physical and psychological domains of quality of life (HR 0.67; 95%CI 0.48-0.94). **Conclusions:** Occupational healthcare professionals should pay greater attention to patients who are aging and those with perceived worse physical and psychological conditions, in order to facilitate the reintegration process and promote sustained RTW after sick leave due to musculoskeletal disorder or injury.

**Silva-Junior et al. 2023.**

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

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**Keywords:** Longitudinal study; musculoskeletal system; occupational health; return to work.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16789-z>

### **Rate of return to work in patients with stroke under the health and employment support program of Rosai hospitals in Japan**

**Background:** To facilitate return to work (RTW) in patients with stroke, a health and employment support (HES) program was started at Rosai hospitals in Japan. This study aimed to determine the rate of RTW in patients with stroke under this support program. **Methods:** We collected demographic and clinical data of patients with stroke from the implementation reports of the HES program. The program provided coordinated dual support, such as acute medical treatments, and stroke and vocational rehabilitation on the medical side, and management and support on the workplace side. The primary endpoint was RTW. Successful and unsuccessful RTW were examined using the  $\chi^2$  test. The RTW rate curves were analyzed using the Kaplan-Meier method. **Results:** We enrolled 483 patients; 355 (73%) and 128 (27%) patients had successful and unsuccessful RTW, respectively. Stroke types, neurological findings, and activities of daily living were significant factors for RTW. **Conclusions:** The Kaplan-Meier method revealed that left hemiplegia, right hemiplegia, and neuropsychological deficits, except for combined disability (hemiplegia with neuropsychological deficits), had similar RTW curves with an RTW rate of > 70%.

**Umemura et al. 2023.**

**Scientific Reports, vol. 13, no. 1.**

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**Keywords:** Return to work; health and employment support program; stroke.

**Evidence Level:** 5B

**Link:** <https://www.nature.com/articles/s41598-023-43162-2>

### **Presenteeism and Absenteeism**

*This month we explore the determinants of the duration of sick leave due to occupational injuries, the production losses due to absenteeism and presenteeism, concurrent trajectories of part-time work and sickness absence, and managers' experience of causes and prevention of sick leave among young employees with Common Mental Disorders (CMDs).*

### **Determinants of the duration of sick leave due to occupational injuries: Evidence from Spanish manufacturing**

**Background:** Despite the significant economic impact of occupational injuries on companies and society, studies focused on analyzing the determinants of workdays lost due to sick leave remain scarce and incomplete. This paper contributes to this issue by (a) analyzing the drivers of sick leave duration, distinguishing factors that explain the health recovery time from those that could lead workers to a voluntary extension of the absence period, and (b) formulating and empirically testing the effect of gender, citizenship, temporary work, job tenure, amount of disability benefit, and size of the injured worker's firm on the number of days the employee is off work after the injury. **Method:** Hypotheses are tested on a comprehensive dataset that includes all nonfatal occupational injuries causing sick leave that occurred in the manufacturing sector in Spain during 2015-2019, with more than 400,000 injuries. We conduct ordinary least squares and count data regression models in which the number of days off work is regressed on employees and work characteristics while accounting for a set of variables to control the injury's nature and severity. **Results:** The results show that after considering the intrinsic characteristics of the injury and the severity of the worker's injuries, women, native workers, workers with more seniority, workers with higher salaries, and those working in larger companies have longer periods of sick leave. The results suggest that moral hazard considerations significantly impact the time to return to work after an occupational injury. **Conclusion:** Based on the findings, several insights for company managers and public decision-makers are discussed. Specifically, interventions aimed at improving the organization of work and the working conditions of workers in manufacturing industries are highlighted, as well as the need to improve control and supervision mechanisms during the recovery process of injured workers.

**Arocena et al. 2023.**

**Journal of Safety Research, vol. 86.**

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**Keywords:** Absenteeism; moral hazard; recovery time; work-related injuries; working days lost.

**Evidence Level:** 4B

**Link:** [https://linkinghub.elsevier.com/retrieve/pii/S0022-4375\(23\)00094-4](https://linkinghub.elsevier.com/retrieve/pii/S0022-4375(23)00094-4)

### **Production losses due to absenteeism and presenteeism: The influence of compensation mechanisms and multiplier effects**

**Background:** Productivity costs can form a large and influential component of total costs in an economic evaluation taking a societal perspective. In calculating productivity costs, estimating productivity losses is a central element. Compensation mechanisms and multiplier effects may influence these losses but remain understudied. Compensation mechanisms could reduce productivity losses while multiplier effects may increase them. **Methods:** Data on productivity losses were collected in 2015 using an online survey among a sample of persons aged 15–65 years in The Netherlands who worked at least 12 h per week and reported to have experienced absenteeism and/or presenteeism during the past 4 weeks. A total of 877 respondents completed the survey that contained questions on productivity losses, compensation mechanisms, and multiplier effects. **Results:** We found that 45.5% of the respondents reported absenteeism (average 6.5 days) during the past 4 weeks, losing on average 48.7 working hours, while presenteeism was experienced by 75.9% of respondents, with an average loss of 10.7 working hours. Compensation mechanisms were reported by 76.9% of respondents, compensating almost 80% of their lost production, while multiplier effects were reported by 23.6% of respondents, reducing the productivity of 4.2 colleagues by 27.8% on average, implying a multiplier of 2.1 in that subgroup. **Conclusions:** This study highlights that compensation mechanisms and multiplier effects are common and may substantially affect production losses. Investigating these mechanisms and effects further, as well as their interactions, remains important. Translating these findings into productivity cost calculations in economic evaluations is not straightforward and requires attention, especially since compensation mechanisms may not be costless and, for multiplier effects, the value of hours of colleagues may not be similar to that of the person experiencing health problems.

**Brouwer et al. 2023.**

**Pharmacoeconomics, vol. 41, no. 9.**

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**Keywords:** Absenteeism; presenteeism; production losses; compensation.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s40273-023-01253-y>

### **Concurrent trajectories of part-time work and sickness absence: A longitudinal cohort study over 11 years among shift working hospital employees**

**Background:** To investigate the concurrent changes in part-time work and sickness absence (SA) in healthcare. Another aim was to investigate the role of age and sex on different concurrent trajectory groups. **Methods:** *Design:* Prospective cohort study. *Setting:* Public hospital districts (n=10) and cities (n=11) in Finland. *Participants:* Payroll-based objective working hour data of the healthcare sector in Finland for 28 969 employees in 2008–2019 were used. The final sample included those working shifts with 3 consecutive years of data and without baseline ( $\geq 14$  days) SA. *Primary outcomes:* Part-time work (yes or no) and months of SA. *Measures:* Group-based trajectory modelling to identify concurrent changes in part-time work, and months of SA while controlling the time-variant amount of night work and multinomial regression models for relative risk (RR) with 95% CIs were used. **Results:** Four-group trajectory model was the best solution: group 1 (61.2%) with full-time work and no SA, group 2 (16.9%) with slowly increasing probability of part-time work and low but mildly increasing SA, group 3 (17.6%) with increasing part-time work and no SA, and group 4 (4.3%) with fluctuating, increasing part-time work and highest and increasing levels of SA. Men had a lower (RR 0.49–0.75) and older age groups had a higher likelihood (RRs 1.32–3.79) of belonging to trajectory groups 2–4. **Conclusions:** Most of the sample were in the trajectory group with full-time work and no SA. The probability of part-time work increased over time, linked with concurrent low increase or no SA. A minor group of employees had both an increased probability of part-time work and SA.

Part-time work and other solutions might merit attention to promote sustainable working life among healthcare employees.

**Ropponen et al. 2023.**

**BMJ Open, vol. 13, no. 9.**

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**Keywords:** Epidemiology; human resource management; occupational & industrial medicine.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/13/9/e072987.long>

### **Managers' experience of causes and prevention of sick leave among young employees with Common Mental Disorders (CMDs): A qualitative interview study with a gender perspective**

**Background:** Young adults entering the workforce have an almost 40% greater risk of work-related mental health problems than other working age groups. Common mental disorders (CMDs) constitute the majority of such mental health problems. Managers are crucial in promoting a good psychosocial work environment and preventing sick leave. The study aims to explore managers' experience of 1) causes of sick leave in the personal and work-life of young employees with CMDs, and 2) prevention of such sick leave. A gender perspective is applied to examine managers' experience of causes and prevention of sick leave in relation to male and female employees and male and female-dominated occupations. **Methods:** A qualitative design was applied and 23 semi-structured interviews were conducted with Swedish managers experienced in supervising young employees with CMDs. The interviews were analysed with conventional content analysis and the managers' experience of similarities and differences between young female and male employees and occupations were explored through reflective notes. **Results:** Four main categories and eight subcategories describe the managers' experience of the causes of sick leave due to CMD among young employees. The main categories are: 1) entering work life when already worn-out, 2) struggling with too high expectations at work, 3) having a challenging personal life, and 4) being unable to manage specific occupational challenges and demands. Gender differences were found in six subcategories regarding, e.g., work demands and problems in personal relationships. One main category and three subcategories describe how this type of sick leave might be prevented, with managers emphasizing the need to ease the transition into work life. Gender differences in the prevention of sick leave were found in one subcategory regarding communication about workers' health and problems at work. **Conclusion:** Our findings show that gender norms and the expectations of young men and women are factors of importance in managers' experience of the development and prevention of CMDs. These results can inform their preventive work and their supervision and introduction of newly-employed young adults.

**Tinnerholm Ljungberg et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Sick leave; managers; employee; gender; mental disorders.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0292109>

## **Workers Compensation**

*This month we explore the self-esteem trajectories after occupational injuries and diseases and their relation to changes in subjective health, and the prevalence of mental health service use in Australian workers with accepted Workers' Compensation claims for low back pain.*

### **Self-esteem trajectories after occupational injuries and diseases and their relation to changes in subjective health: Result from the Panel Study Of Workers' Compensation Insurance (PSWCI)**

**Background:** Occupational injuries and diseases are life events that significantly impact an individual's identity. In this study, we examined the trajectories of self-esteem among victims of occupational injury and disease and their relation to health. **Methods:** The Panel Study of Workers' Compensation Insurance conducted annual follow-ups on workers who had experienced occupational injury or disease. A total of 2,000 participants, who had completed medical care, were followed from 2013 to 2017. Growth mixture

modeling was utilized to identify latent classes in the self-esteem trajectory. Additionally, logistic regressions were conducted to explore the association between trajectory membership, baseline predictors, and outcomes. **Results:** Three distinct trajectory classes were identified. Total 65.8% of the samples (n = 1,316) followed an increasing self-esteem trajectory, while 31.1% (n = 623) exhibited a constant trajectory, and 3.1% (n = 61) showed a decreasing trajectory. Individuals with an increasing trajectory were more likely to have a higher educational attainment (odds ratio [OR], 1.86; 95% confidence interval [CI], 1.20-2.88), an absence of a moderate-to-severe disability rating (OR, 0.49; 95% CI, 0.25-0.96), no difficulty in daily living activities (OR, 0.81; 95% CI, 0.75-0.88), and were economically active (re-employed: OR, 2.46; 95% CI, 1.52-3.98; returned to original work: OR, 4.46; 9% CI, 2.65-7.50). Those with a decreasing self-esteem trajectory exhibited an increased risk of poor subjective health (OR, 1.89; 95% CI, 0.85-4.85 in 2013 to OR, 3.17; 95% CI, 1.04-13.81 in 2017), whereas individuals with an increasing trajectory showed a decreased risk (OR, 0.54; 95% CI, 0.43-0.68 in 2013 to OR, 0.44; 95% CI, 0.33-0.57 in 2017). **Conclusion:** Our findings emphasize the diversity of psychological responses to occupational injury or disease. Policymakers should implement interventions to enhance the self-esteem of victims.

**Baek et al. 2023.**

**Journal of Korean Medical Science, vol. 38, no. 37.**

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**Keywords:** Psychological Health; return-to-work; self-rated health; work-related disease; work-related injury.

**Evidence Level:** 4A

**Link:** <https://jkms.org/DOIx.php?id=10.3346/jkms.2023.38.e284>

### **The prevalence of mental health service use in Australian workers with accepted Workers' Compensation claims for low back pain: A retrospective cohort study**

**Background:** Low back pain (LBP) is a leading cause of disability globally and interferes with work performance and quality of life. For work-related LBP, Australian workers can receive workers' compensation and access funded healthcare to promote recovery, including mental health services, as there are strong links between chronic LBP and mental health. The objective of this study was to determine the prevalence of funded mental health services for workers with compensated LBP. **Methods:** Claims and services data from four Australian workers' compensation jurisdictions were analysed. Prevalence of accessing at least one mental health service was reported as a percentage of all claims overall and by duration of time loss, age group, sex, financial year of claim lodgement, jurisdiction, socioeconomic status and remoteness. Odds of accessing at least one service was determined using logistic regression.

**Results:** Almost 10% of LBP claims accessed at least one mental health service (9.7%) with prevalence increasing with time loss. Prevalence was highest in Victoria however a higher percentage of workers with LBP accessed mental health services earlier in Queensland. Odds of accessing services was highest with longest time loss duration, among females and in Queensland. Lower odds were observed in regional areas and among those aged over 56 years. **Conclusion:** Findings suggest opportunities for workers' compensation regulators and insurers to provide greater access to appropriate mental health services alongside physical treatment as standard practice, such as those in more remote locations or earlier in a claim, to improve recovery outcomes for workers with LBP.

**Gray et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 3.**

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**Keywords:** Injury; low back pain; mental health; Workers' Compensation.

**Evidence Level:** 4A

**Link:** <https://link.springer.com/article/10.1007/s10926-023-10098-3>



## Working hours

### Long working hours and risk of hypertensive intracerebral haemorrhage among Japanese workers claiming compensation for overwork-related intracerebral haemorrhage: An unmatched case-control study

**Background:** Overwork-related cerebrovascular and cardiovascular diseases (CCVDs) constitute a major occupational and public health issue worldwide. However, to our knowledge, few studies have reported the underlying pathophysiological mechanisms. We aimed to determine whether patients with extreme workload have a greater risk of developing hypertensive intracerebral haemorrhage (ICH) located in the deep brain areas than patients without extreme workload. We also determined the association between the number of hours of overtime work and the risk of developing hypertensive ICH. **Methods:**

*Design:* Unmatched case-control study. *Setting:* Database of patients claiming compensation for overwork-related CCVDs in Japan. *Participants:* A total of 1215 patients who claimed overwork-related ICH in Japan, of whom 621 had their compensation claim approved (patients with extreme workload) and 622 did not.

*Primary and secondary outcome measures:* Logistic regression analysis was performed to calculate the risk of developing hypertensive ICH in patients with extreme workload compared with those without extreme workload, adjusted for confounders such as age, occupation, smoking status, alcohol consumption and medical history. We also calculated the risk of developing hypertensive ICH in compensated patients by average monthly overtime working hours. **Results:** Patients with extreme workloads had a significantly higher odds ratio (OR) for developing hypertensive ICH (1.44, 95% CI: 1.10 to 1.88) than those without extreme workloads. ORs for developing hypertensive ICH according to overtime working hours showed a dose-response relationship; an overtime of 100 hours/month was associated with a significantly higher OR (1.31, 95% CI: 0.89 to 1.91; 1.41, 95% CI: 0.95 to 2.11; and 1.50, 95% CI: 1.01 to 2.22 for 60-79.9, 80-99.9 and  $\geq 100$  hours/month, respectively) than that for workloads of less than 60 hours/month.

**Conclusions:** Regarding Japanese workers, overtime work could be associated with the risk of developing hypertensive ICH, and hypertension may play an important role in overwork-related ICH.

**Morita et al. 2023.**

**BMJ Open, vol. 13, no. 9.**

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**Keywords:** Case-control studies; hypertension; neurosurgery; occupational & industrial medicine; stroke.

**Evidence Level:** 5B

**Link:** <https://bmjopen.bmj.com/content/13/9/e074465.long>

## Wellness Programs

*This month we explore the effect of an online workplace vocal health and low stress levels promotion program and the impact of work incentives benefits counselling on employment outcomes.*

### Effect of an online workplace vocal health and low stress levels promotion program implemented in a Colombian University during COVID-19 pandemic

**Background:** To determine the effect of an online Workplace Vocal Health and Low Stress Levels (WVHLS) Promotion Program implemented in a Colombian university during COVID-19 pandemic. **Methods:** This research was a quasi-experimental study. Twenty-nine professors participated in this study within two groups: (1) intervention group (n=17) or (2) non-intervention group (n=12). Participants in the intervention group took part in four virtual sessions about how to improve vocal health and strategies to reduce stress levels during their homeworking and online classes. Teachers filled in a questionnaire including questions about working conditions, work-related stress, and the voice functioning (including the Vocal Fatigue Index-VFI). They also recorded a voice sample of a sustained vowel on two separate occasions (before and after the follow-up). **Results:** At the end of the follow-up, there was a tendency to reduce Factor 1 of VFI in the intervention group. Although, all participants had a longer MPT at the end of the study compared with the baseline measures, males in the intervention group had longer MPT compared with other participants.

**Conclusion:** Our results suggest a positive effect of a WVHLS promotion program on reducing vocal fatigue perception measured by means of the Vocal Fatigue Index and improving coordination and control of breathing speech measured MPT. These changes at the end of the follow-up may indicate that holistic

programs that include voice care recommendations, breathing exercises, vocal warm-up, cold-down and laryngeal relaxation vocal exercises, and stress management may be beneficial for reducing work-related stress and voice symptoms among professors.

**Atará-Piraquive et al. 2023.**

**CoDAS, vol. 35, no. 6.**

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**Keywords:** Workplace Vocal Health And Low Stress; COVID-19 pandemic.

**Evidence Level:** 3B

**Link:** <https://www.scielo.br/j/codas/a/Cb7R3KxMxBtJF9DzxScpfCj/?lang=en>

### **The impact of work incentives benefits counselling on employment outcomes: A national vocational rehabilitation Study**

**Background:** Millions of Americans receiving Social Security Administration (SSA) disability benefits aspire to work and reduce reliance on disability benefits, but find the rules about entering or rejoining the workforce too complex or confusing and fear that working will cause loss of important benefits. A case control study was conducted to investigate the impact of receiving work incentives benefits counselling (WIBC) on employment outcomes, and its relationship with demographic covariates for U.S. vocational rehabilitation (VR) clients who are SSA disability benefit recipients. **Method:** Data for this study were extracted from the Rehabilitation Service Administration (RSA-911) database. Mahalanobis distance matching procedures were used to match clients who received WIBC with those who did not receive it. Chi-square independence tests and independent samples t tests were used to compare receipt of WIBC and employment outcomes based on the demographic variables. Additionally, chi squared automatic interaction detection (CHAID) analysis was used to divide VR clients into homogeneous groups based on the covariates. **Results:** Clients who received WIBC were more likely to obtain competitive integrated employment (CIE). Impairment type, referral source, long-term employment and education level were significantly associated with CIE for clients who received WIBC. Additionally, VR clients with sensory/communicative impairments and low-income status were less likely to receive WIBC.

**Conclusion:** Modifying VR structure to be more inclusive; understanding of stigma; and increasing the functioning, psychological well-being and self-efficacy of VR clients might improve employment outcomes.

**Kaya et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 3.**

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**Keywords:** Benefits counseling; impairment; mahalanobis distance matching; rehabilitation service administration; vocational rehabilitation.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s10926-022-10092-1>

### **Organisational Issues**

#### **Modelling the significance of organizational conditions on quiet quitting intention among Gen Z workforce in an emerging economy**

**Background:** The phenomenon of "quiet quitting" has gained significant attention globally through various platforms, raising concerns about the impact of workplace stress on individuals' personal lives and sparking social movements and investigations. As the number of Generation Z individuals is projected to surpass millennials by 2050, understanding and addressing the quiet quitting behaviour of this generation becomes crucial, considering their negative experiences during the COVID-19 pandemic and their preference for a work-life balance, which has led to a rejection of intense competition and a desire for a more relaxed lifestyle. **Methods:** Thus, this study investigated the factors (work conditions, job security, perceived career development opportunities, affective organizational commitment, and perceived organizational support on job burnout and employee well-being) determining the quiet quitting intention among Chinese Gen Z employees. It used an online survey to obtain cross-sectional data from 683 respondents, which were then tested using partial least squares structural equation modelling. **Results:** The results showed that work conditions, job security, perceived career progression opportunities, affective organizational commitment,

and perceived organizational support had a significant positive effect on employee well-being and that job burnout had a major negative effect. Furthermore, employee well-being had a significant negative impact on China's Gen Z employees' quit quitting decision and job burnout had a significant positive influence on China's Gen Z employees' quit quitting decision. The findings provide valuable insights for organizations and practitioners, enabling them to address these factors and effectively reduce quiet quitting intentions. Moreover, this study aligns with the Social Exchange Theory (SET), which explains how the interactions between employees and their organizations influence expectations and outcomes. **Conclusions:** By considering the SET framework, organizations can understand the motivations behind employees' behaviours and make informed decisions to foster a positive work environment and enhance employee well-being.

**Xueyun et al. 2023.**

**Scientific Reports, vol. 13, no. 1.**

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**Keywords:** Quiet quitting; work; Gen Z.

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-023-42591-3>

## Shift Work

*This month we explore the experiences of shift workers using a low-calorie meal replacement dietary intervention and the treatment seeking profile of male shift workers with hypertension and diabetes.*

### **A qualitative exploration of the experiences of shift workers participated in a low-calorie meal replacement dietary intervention**

**Background:** Shift work is associated with various health challenges, including obesity and metabolic disturbances. To address these concerns, a randomised controlled clinical trial was conducted to evaluate the efficacy of a low-calorie meal replacement (MR) dietary intervention for dinner among shift workers with obesity. This study focuses on the qualitative aspects of this intervention, aiming to explore the experiences and perceptions of shift workers who participated in the trial. **Method:** *Design:* Following the completion of the intervention, semi-structured face-to-face or telephone interviews were conducted with a purposive sample of trial participants. Data analysis was inductive, thematic using NVivo V.10 software. *Setting:* The intervention was conducted among shift workers with obesity in a private hospital in Sri Lanka and resulted in a modest decrease in weight. *Participants:* Using purposeful maximum variation sampling, we recruited eight healthcare shift workers who took part in a weight loss intervention. **Results:** All participants expressed satisfaction with the MR meal for dinner, highlighting its positive impact on their well-being. Despite initial difficulties, strong determination and motivation by results supported adherence. Some participants suggested that the MR could be improved with sweeter taste and more flavour options. Few reported mild bloating at the beginning, but no serious side effects were noted. Participants felt lighter in their bodies due to weight loss. The method's simplicity was the most frequently reported benefit, making it feasible even during busy night shifts. Overall, participants highly recommended the intervention to others in need. **Conclusion:** Participants experienced weight loss by replacing their dinner with the MR. This study offers valuable insights for tailoring future workplace-based dietary interventions for this vulnerable population.

**Sooriyaarachchi et al. 2023.**

**BMJ Open, vol. 13, no. 9.**

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**Keywords:** Experience; meal replacement; qualitative; shift work; weight loss.

**Evidence Level:** 5B

**Link:** <https://bmjopen.bmj.com/content/13/9/e072012.long>

### **Seeking treatment profile of male shift workers with hypertension and diabetes**

**Background:** This study was identified seeking treatment for hypertension and diabetes among male shift workers. **Method:** This retrospective cohort study included nine large companies in Japan. Data were

collected from health checkup, health insurance records, and self-administered questionnaires in 2017 and 2020. Data were analyzed using Kaplan-Meier curves and Cox regression. **Result:** Person-days shift workers and day workers seeking treatment for hypertension were 41,604 and 327,301, respectively and, for diabetes, were 7326 and 60,735, respectively. The log ranks were statistically significant. Shift workers were 46% and 56% less likely to seek treatment for hypertension and diabetes, respectively, than day workers were after adjustment for age, marital status, education level, and intention to modify lifestyle (model 2) ( $P < 0.01$ ). **Conclusions:** Male shift workers are less likely to seek treatment for hypertension and diabetes compared with day workers.

**Adi et al. 2023.**

**Journal of Occupational and Environmental Medicine, vol. 65, no. 9.**

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**Keywords:** Shift workers; hypertension; diabetes; treatment; male.

**Evidence Level:** 4B

**Link:**

[https://journals.lww.com/joem/fulltext/2023/09000/seeking\\_treatment\\_profile\\_of\\_male\\_shift\\_workers.11.aspx](https://journals.lww.com/joem/fulltext/2023/09000/seeking_treatment_profile_of_male_shift_workers.11.aspx)

## Work Ability

*This month we explore the tools to assess employment readiness for colorectal cancer survivors, factors associated with job interruption during pregnancy and regional differences in annual prevalence of sustainable working life.*

### **Tools to assess employment readiness for colorectal cancer survivors: A scoping review**

**Background:** The ability to return to work and remain at work is an important recovery milestone after a cancer diagnosis. With the projected number of colorectal cancer patients of working age likely to increase, it is important to identify when a person is ready to resume work. There are many employment-related tools available to help people return to work after injury or illness; however, it is unknown which may be suitable for a person with colorectal cancer. To identify tools related to employment readiness in colorectal cancer survivors and to chart the relevant factors of employment assessed by these tools.

**Method:** Literature searches were performed in PubMed, CINAHL, Embase and Medline, the Cochrane library and PsycINFO using search terms around cancer, survivorship and employment to identify all peer-reviewed articles published in English up to June 2022. **Results:** Thirty-five studies used a total of 77 tools focused on assessing employment issues experienced by people with cancer in general. Four tools were used with colorectal cancer survivors. None considered all relevant employment-related factors for colorectal cancer survivors. **Conclusion:** Tools used to identify return-to-work and remain-at-work were not specific to colorectal cancer. There are a range of existing tools that collate some, but not all, of the domains and outcome criteria required to meet the employment needs of colorectal cancer survivors. To optimize work outcomes for the working colorectal cancer population, a specified tool is warranted.

**Ding et al. 2023.**

**Cancer Medicine, vol. 12, no. 17.**

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**Keywords:** Cancer; colorectal; employment; measurement; readiness; survivor.

**Evidence Level:** 6A

**Link:** <https://onlinelibrary.wiley.com/doi/10.1002/cam4.6432>

### **A narrative review on factors associated with job interruption during pregnancy**

**Background:** Most women continue to work during pregnancy. However, some of them have to stop working before giving birth. Absence from work poses several challenges for employers and employees, as well as for society. The literature on absence from work during pregnancy and its determinants remains inconsistent and rather scarce. **Methods:** To conduct a narrative literature review on the factors associated with work interruption and on existing interventions aimed at reducing the absence prevalence during

pregnancy. The review refers to published peer-reviewed articles dealing with all types of work interruption among pregnant women. Keyword searches were performed in the electronic databases PubMed, EMBASE, and Google Scholar, covering the period 2000-2022. **Results:** The review, which includes 42 papers, presents a broad and comprehensive picture of factors and interventions associated with absence from work among pregnant workers. The factors appear at different levels and include factors related to the pregnant women, such as individual health and socio-demographic factors; employer and workplace-related factors, such as risk exposures and working conditions; factors related to the role of the healthcare provider; and factors related to the national context (social benefits/insurance). The determinants of absence from work during pregnancy are complex and multifactorial and involve multiple stakeholders. **Conclusions:** The discussion addresses gaps and needs in the literature on pregnancy at work and in the field of occupational health. *Int J Occup Med Environ Health*. 2023;36(3):303-23.

**Brunner et al. 2023.**

**International Journal of Occupational Medicine and Environmental Health, vol. 36, no. 3.**

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**Keywords:** Absences from work; narrative literature review; occupational health; pregnancy; workplace accommodation; workplace intervention.

**Evidence Level:** 6A

**Link:** <http://ijomeh.eu/A-narrative-review-on-factors-associated-with-job-interruption-during-pregnancy,166115,0,2.html>

### **Regional differences in annual prevalence of sustainable working life in Swedish twin cohort**

**Background:** The global rise in life expectancy transforms age structure consequently having impact to the sustainability of social protection systems and working life. This descriptive study aimed to illustrate the annual prevalence of sustainable working life across Swedish residential regions, and investigate differences between age groups, sex, or being identical or fraternal twin. **Methods:** The study sample included 81,231 twins with linkage to national register data on sickness absence, disability pension, unemployment, and residential regions. Regions were classified by Swedish municipalities into nine groups. Sustainable working life were then followed in 1998, 2003, 2008, and 2013. Annual prevalence and Generalized Estimating Equation (GEE) with log linear models for interaction test were used.

**Results:** Medium to large size municipalities (15-24%) had higher annual prevalence of sustainable working life than smaller municipalities (1-7%). Young adults in medium to large size municipalities had high annual prevalence of sustainable working life. We found no differences for sexes or being identical or fraternal twin. To conclude, annual prevalence of sustainable working life in 1998, 2003, 2008 and 2013 differed by region being highest in medium to large size municipalities which may have importance for targeting policies, regulations, and practices in a region-specific way. **Conclusions:** Further studies on residential regions and sustainable working life would be merited to confirm associations and other influential factors.

**Raza et al. 2023.**

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

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**Keywords:** Annual prevalence; regional differences; sustainable working life; twins.

**Evidence Level:** 4B

**Link:** <https://bmcresearchnotes.biomedcentral.com/articles/10.1186/s13104-023-06503-y>

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

### **Aging Workforce**

*This month we explore the physical activity and self-rated health during retirement transition, trajectories of CVD medication after statutory retirement, successful ageing at work, the association between psychosocial work-related factors at midlife and arterial stiffness at older age, the association of age-related hearing loss, tinnitus, and chronic low back pain in middle-aged and older*



adults and the relationships between loneliness and occupational dysfunction in community-dwelling older adults.

### **Physical activity and self-rated health during retirement transition: A multitrajectory analysis of concurrent changes among public sector employees**

**Background:** The aim of the study was to evaluate concurrent changes in physical activity and self-rated health during retirement transition over 4 years by multivariate trajectory analysis and to examine whether sociodemographic and lifestyle factors predict the probability of being classified to a certain subgroup of observed changes. **Method:** *Design:* Prospective cohort study. *Setting:* Public sector employees. *Participants:* 3550 participants of the Finnish Retirement and Aging study. *Primary and secondary outcome measures:* Participants estimated on a yearly questionnaire their weekly hours of different types of activities converted to metabolic equivalent of task-hour/week. Self-rated health was assessed on a 5-point Likert-like scale from poor to excellent and dichotomised as suboptimal and optimal. Multivariate trajectory analysis was used to distinguish different subgroups of trajectories. Multinomial regression analysis was used to describe the associations between covariates and the probability of being classified to a certain trajectory group. **Results:** Three trajectory groups were identified, all displaying increasing activity during retirement with a simultaneous decrease in perceived suboptimal health. Physical activity peaked at 18 months after retirement and then slightly decreased, except for initially highly physically active participants (9%) with good self-rated health, who demonstrated a constant high level of physical activity. Male gender, professional occupation, being married or cohabiting, body mass index <30 kg/m<sup>2</sup>, not smoking and using alcohol below risk levels were associated with higher physical activity and better self-rated health. **Conclusion:** Changes in physical activity and perceived health during retirement transition were interconnected. Both were improved during retirement transition, but the change was temporary. Longer follow-up studies are required to assess the changes over a longer period after retirement.

**Lintuaho et al. 2023.**

**BMJ Open, vol. 13, no. 9.**

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**Keywords:** Aging; life change events; public health.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/13/9/e073876.long>

### **Trajectories of CVD medication after statutory retirement: contributions of pre-retirement sociodemographic, work and health-related factors: A register study in Finland**

**Background:** Cardiovascular diseases (CVDs) are prevalent in older people, but few studies focus on developmental patterns in CVD medication directly after transition to statutory retirement. We thus aimed to identify trajectories of CVD medication after retirement, and their sociodemographic, work and health-related determinants. **Methods:** We used complete register data of former employees of the City of Helsinki, Finland. All who reached their statutory retirement in 2000-2013, with five-year follow-up data (n = 6,505, 73% women), were included. Trajectories of CVD medication were identified with group-based trajectory modelling using data from Finnish Social Insurance Institution's reimbursement register. Sociodemographic, work and health-related determinants of trajectory group membership were analysed using multinomial logistic regression. **Results:** Six trajectories of CVD medication were distinguished: "constant low" (35%), "late increase" (6%), "early increase" (5%), "constant high" (39%), "high and decreasing" (8%), and "low and decreasing" (7%). The majority (74%) of the retirees fell into the "constant low" and "constant high" categories. Lower occupational class and increased pre-retirement sickness absence were associated with the "constant high" trajectory. Further, those with lower educational attainment were more prone to be in the "early increase" trajectory. **Conclusions:** Individuals in lower socioeconomic positions or with a higher number of pre-retirement sickness absence may be considered at higher risk and might benefit from early interventions, e.g. lifestyle interventions and interventions targeting working conditions, or more frequent monitoring.

**Harkko et al. 2023.**

**BMC Geriatrics, vol. 23, no. 1.**

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**Keywords:** Ageing; pharmaceuticals; registers; retirement; social determinants of health.

**Evidence Level:** 4B

**Link:** <https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-023-04272-8>

### **Successful ageing at work: The role of job characteristics in growth trajectories of work ability and motivation to work amongst older workers**

**Background:** In order to age successfully at work, people need to maintain or improve their work ability and motivation to work. This implies a process that develops over time and can differ substantially between individuals. This study investigated whether different trajectories of perceived work ability and motivation to work can be distinguished between older employees over time and to what extent job demands and job resources are predictive of these different trajectories. **Methods:** We applied growth mixture modelling amongst 5799 employees of 45 years and older at four time points. **Results:** We found five distinct groups of older workers that differed in their trajectories of perceived work ability and four types of groups of older workers that differed in their trajectories of their motivation to work. Higher levels of physical demands, mental demands, autonomy, supervisor support, and colleague support were less common in unfavourable trajectories. **Conclusions:** This study gives Human Resource Management practitioners insight into how jobs should be designed to stimulate successful ageing at work.

**Pak et al. 2023.**

**Acta Psychologica, vol. 239.**

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**Keywords:** Job design; motivation; perceived work ability; successful ageing at work.

**Evidence Level:** 5B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0001691823001889?via%3Dihub>

### **Association between psychosocial work-related factors at midlife and arterial stiffness at older age in a prospective cohort of 1736 white-collar workers**

**Background:** Arterial stiffness and exposure to psychosocial work-related factors increase the risk of developing cardiovascular disease. However, little is known about the relationship between psychosocial work-related factors and arterial stiffness. We aimed to examine this relationship. **Method:** *Design:* Prospective cohort study. *Setting:* Public organisations in Quebec City, Canada. *Participants:* The study included 1736 white-collar workers (women 52%) from 19 public organisations. *Primary and secondary outcome measures:* Association between psychosocial work-related factors from the job strain and effort-reward imbalance (ERI) models assessed at study baseline (1999-2001) with validated instruments and arterial stiffness assessed using carotid-femoral pulse wave velocity at follow-up, on average 16 years later (2015-2018). Generalised estimating equations were used to estimate differences in arterial stiffness between exposed and unexposed participants. Subgroup analyses according to sex, age, blood pressure (BP), cardiovascular risk score and employment status were conducted. **Results:** Among participants with high diastolic BP ( $\geq 90$  mm Hg) at baseline, aged 47 on average, those exposed to high job strain had higher arterial stiffness (1.38 m/s (95% CI: 0.57 to 2.19)) at follow-up, 16 years later, following adjustment for a large set of potential confounders. The trend was similar in participants with high systolic BP ( $\geq 140$  mm Hg) exposed to high job strain (0.84 m/s (95% CI: -0.35 to 2.03)). No association was observed for ERI in the total sample and counterintuitive associations were observed in subgroup analyses. **Conclusions:** Job strain may have a long-term deleterious effect on arterial stiffness in people with high BP. Interventions at midlife to reduce job strain may mitigate arterial stiffness progression.

**Massamba et al. 2023.**

**BMJ Open, vol. 13, no. 9.**

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**Keywords:** Epidemiology; occupational & industrial medicine; occupational stress; risk factors.

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/13/9/e073649.long>

### **Association of age-related hearing loss, tinnitus, and chronic low back pain in middle-aged and older Korean adults**

**Background:** This was a cross-sectional study conducted to evaluate the association between hearing impairment and low back pain (LBP) using data from the Korean National Health and Nutrition Examination Survey. **Methods:** A total of 5,504 middle-aged and older Korean adults (aged  $\geq 50$  years old) who underwent plain radiography of the lumbar spine and pure tone audiometry were included. The presence of LBP was evaluated using a questionnaire, which included a question on whether the patient had experienced LBP that lasted for more than 30 days during the past three months. Patients with age-related hearing loss (ARHL) were defined as those with bilateral hearing impairment who met the following criteria: 1) normal otologic examination results, 2) average pure-tone hearing thresholds of  $\leq 15$  dB in both ears, and 3) no occupational noise exposure. **Results:** Multivariable logistic regression analysis showed that ARHL was not associated with LBP (odds ratio, 1.33; 95% CI, 0.94-1.89) after adjusting for potential confounders in the final model. However, when participants without both ARHL and tinnitus were defined as the reference group, the results showed that the participants with both ARHL and tinnitus were more likely to have LBP (OR, 1.86; 95% CI, 1.11-3.11). These results indicate that ARHL with tinnitus is significantly associated with LBP. **Conclusions:** We recommend that elderly patients with ARHL and tinnitus increase their daily physical activities and engage in more muscle-strengthening exercises to prevent LBP.

**Noh et al. 2023.**

**PLoS One, vol. 18, no. 9.**

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**Keywords:** Hearing loss; tinnitus; chronic low back pain; middle-aged and older Korean adults.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291396>

### **Relationships between loneliness and occupational dysfunction in community-dwelling older adults: A cross-sectional study**

**Background:** The study explored cross-sectional associations between loneliness and occupational dysfunction in community-dwelling older adults. **Method:** Seventy-four older adults (12 men and 62 women; mean age  $73.9 \pm 8.3$  years) completed a questionnaire survey that included the Japanese version of the UCLA Loneliness Scale Version 3 and the Classification and Assessment of Occupational Dysfunction (CAOD). Bayesian statistical modeling was used for a more stable estimation given the small sample. For model selection, we assumed a univariate analysis model of the CAOD (Model 1); a multivariate analysis model, including confounding factors in Model 1 (Model 2); and a multivariate analysis model, including random effects in Model 2 (Model 3). The best model was selected by comparing the widely applicable information criterion (WAIC) and the widely applicable Bayesian information criterion (WBIC) for each model. **Results:** Bayesian statistics with the dependent variable as "loneliness" showed that the best model used "occupational dysfunction" as the independent variable and included confounding factors and random effects (WAIC = 474.5 and WBIC = 213.1). The best model identified an association between occupational dysfunction and loneliness (odds ratio [OR] = 2.363; 95% Bayesian confidence interval [CI] = 1.105-5.259). This study highlights the role of occupational dysfunction in addition to the risks and related factors reported to date when dealing with loneliness. **Conclusions:** Therapists could help older adults cope with loneliness by supporting their social participation and improving their occupational dysfunction.

**Nakashima et al. 2023.**

**Occupational Therapy International, vol. 7.**

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**Keywords:** Loneliness; occupational dysfunction; relationships; community-dwelling; older adults.

**Evidence Level:** 4B

**Link:** <https://www.hindawi.com/journals/oti/2023/9505865/>

## **Technology**

**Acceptability of the ehealth intervention sustainable worker digital support for persons with chronic pain and their employers (SWEPE): Questionnaire and interview study**

**Background:** Sick leave and decreased ability to work are the consequences of chronic pain. Interdisciplinary pain rehabilitation programs (IPRPs) aim to improve health-related quality of life and participation in work activities, although implementing rehabilitation strategies at work after IPRPs can be difficult. Employers' knowledge about pain and the role of rehabilitation needs to be strengthened. The self-management of chronic pain can be improved through eHealth interventions. However, these interventions do not involve communicating with employers to improve work participation. To address this deficiency, a new eHealth intervention, Sustainable Worker Digital Support for Persons with Chronic Pain and Their Employers (SWEPE), was developed. This study aimed to describe the acceptability of SWEPE after IPRPs from the perspective of patients with chronic pain and their employers. **Methods:** This study included 11 patients and 4 employers who were recruited to test SWEPE in daily life for 3 months after IPRPs. Data were collected using individual interviews at the end of the 3-month test period and questionnaires, which were completed when SWEPE was introduced (questionnaire 1) and at a 3-month follow-up (questionnaire 2). Data were also collected on how often SWEPE was used. Qualitative data were analyzed through a qualitative content analysis using an abductive approach. The framework used for the deductive approach was the theoretical framework of acceptability. Quantitative data were analyzed through descriptive statistics and the differences between the responses to questionnaires 1 and questionnaire 2 using the Wilcoxon signed rank test. **Results:** Both patients and employers reported that SWEPE increased their knowledge and understanding of how to improve work participation and helped them identify goals, barriers, and strategies for return to work. In addition, participants noted that SWEPE improved employer-employee communication and collaboration. However, experiences and ratings varied among participants and the different SWEPE modules. The acceptability of SWEPE was lower in patients who experienced significant pain and fatigue. A high degree of flexibility and choice of ratings in SWEPE were generally described as helpful. **Conclusions:** This study shows promising results on the user acceptability of SWEPE from both patient and employer perspectives. However, the variations among patients and modules indicate a need for further testing and research to refine the content and identify the group of patients who will best benefit from SWEPE.

**Svanholm et al. 2023.**

**JMIR Human Factors, vol. 28.**

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**Keywords:** Acceptability; barrier; chronic pain; digital support; eHealth; implementation; interview; mobile phone; qualitative; quality of life; questionnaire; rehabilitation; return to work; support; users.

**Evidence Level:** 5B

**Link:** <https://humanfactors.jmir.org/2023/1/e46878>

## Work Environment

*This month we explore the attitudes towards rest breaks, productivity and wellbeing while working from home, the role of psychosocial safety climate on flexible work from home and a causal model for the link between home environment, work productivity, and well-being.*

### "Make it the done thing": an exploration of attitudes towards rest breaks, productivity and wellbeing while working from home

**Background:** Taking regular rest breaks while working positively impacts productivity and wellbeing. While home and hybrid working styles have become a popular choice for employees, the impact of, and perceptions towards, taking breaks while working at home is poorly understood. The current research aimed to explore attitudes towards taking rest breaks while working from home and capture levels of breaks taken, wellbeing and productivity in a sample of UK white-collar workers. **Methods:** A mixed method approach was applied where self-report data from an online survey were gathered from individuals (N = 140) from one organisation. Open-ended questions regarding attitudes and perceptions towards rest break behaviours were obtained. Further quantitative measures included the number of breaks taken while working from home, levels of productivity (measured by the Health and performance Presenteeism subscale) and mental wellbeing (measured by the Short Warwick-Edinburgh Mental wellbeing scale). Both

quantitative and qualitative analysis approaches were applied. **Results:** Qualitative responses indicated two overarching themes (1) Personal and (2) Organisational sat above four further themes including Movement outside, Structure of home working, Home environment and Digital presence. Additionally, quantitative findings indicated that the number of breaks taken outside was associated with positive changes in wellbeing. **Conclusion:** Employers could aim to support employees working from home in taking outside breaks through flexible working patterns, authentic leadership, and a change in company social norms around break behaviours. Such organisational changes could help to improve workforce productivity and wellbeing.

**Walker et al. 2023.**

**International Archives of Occupational and Environmental Health, vol. 96, no. 7.**

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**Keywords:** Productivity; rest breaks; wellbeing.

**Evidence Level:** 5B

**Link:** <https://link.springer.com/article/10.1007/s00420-023-01985-6>

### **The role of psychosocial safety climate on flexible work from home digital job demands and work-life conflict**

**Background:** Due to the COVID-19 pandemic, the number of employees in flexible work from home has increased markedly along with a reliance on information communication technologies. **Methods:** This study investigated the role of an organisational factor, psychosocial safety climate (PSC; the climate for worker psychological health and safety), as an antecedent of these new kinds of demands (specifically work from home digital job demands) and their effect on work-life conflict. Data were gathered via an online survey of 2,177 employees from 37 Australian universities. **Results:** Multilevel modelling showed that university level PSC to demands,  $\gamma=-0.09$ ,  $SE=0.03$ ,  $p<0.01$ , and demands to work-life conflict,  $\gamma=0.51$ ,  $SE=0.19$ ,  $p<0.05$ , relationships were significant. Supporting the antecedent theory, university level PSC was significantly indirectly related to work-life conflict via demands (LL -0.10 UL -0.01). Against expectations PSC did not moderate the demand to work-life conflict relationship. The results imply that targeting PSC could help prevent work from home digital job demands, and therefore, work-life conflict. **Conclusions:** Further research is needed on the role of digital job resources as flexible and hybrid work takes hold post COVID.

**Parkin et al. 2023.**

**Industrial Health, vol. 61, no. 5.**

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**Keywords:** Digital job demands; flexible work; hybrid work; information communication technologies; psychosocial safety climate; work-life conflict.

**Evidence Level:** 4A

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/61/5/61\\_2022-0078/\\_article](https://www.jstage.jst.go.jp/article/indhealth/61/5/61_2022-0078/_article)

### **Home as a new physical workplace: A causal model for understanding the inextricable link between home environment, work productivity, and well-being**

**Background:** The home has become a new physical workplace, and can therefore influence the work, health, and life of workers. **Methods:** This cross-sectional study aimed to evaluate the chronology of the effects of work hazards at home on factors such as workers' health, productivity, and well-being (WB). Information on novice working-from-home (WFH) workers was derived from the "Occupational health of WFH" project. The selected variables in the hypothesis model comprised problems such as perceived indoor environmental quality (IEQ), working conditions (WC), sick house syndrome (SHS), occupational stress (OS), work productivity (WP), and WB. The relationship between these variables was analyzed using a structural equation model. **Results:** The group analysis results showed the following significant indirect path effects from work environment through WP: IEQ->SHS->OS->WP. A non-significant direct effect was observed between IEQ and WP. While WC problems could also have a significant direct effect on WP, or be mediated by OS, WP is a significant consequence and a direct effect of WB. In conclusion, the WFH model's causal impact between home environment, WP, and WB is a physio-psychological pathway.



**Conclusions:** Therefore, creating a healthy home environment and WC, along with OS management, comprise important issues for improving productivity and WB for this new work style.

**Ekpanyaskul et al. 2023.**

**Industrial Health, vol. 61, no. 5.**

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**Keywords:** Occupational stress; productivity; sick house syndrome; well-being; work environment; work style; working-from-home.

**Evidence Level:** 4B

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/61/5/61\\_2022-0083/\\_article](https://www.jstage.jst.go.jp/article/indhealth/61/5/61_2022-0083/_article)