



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 July 2023 only.

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## Description of Evidence Levels Definitions Used in this Review

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

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

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

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

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## Enabling Healthy and Safe Workplaces

### Health and Wellbeing

*This month we explore a new global indicator for workers health based on mortality rate from diseases attributable to selected occupational risk factors, the effect on preterm birth of working conditions in women with multiple pregnancies and the relationship between stressful life events, unhealthy eating behaviours and obesity in workers.*

#### **New global indicator for workers' health: Mortality rate from diseases attributable to selected occupational risk factors**

**Background:** Through sustainable development goals 3 and 8 and other policies, countries have committed to protect and promote workers' health by reducing the work-related burden of disease. To monitor progress on these commitments, indicators that capture the work-related burden of disease should be available for monitoring workers' health and sustainable development. The World Health Organization and the International Labour Organization estimate that only 363 283 (19%) of 1 879 890 work-related deaths globally in 2016 were due to injuries, whereas 1 516 607 (81%) deaths were due to diseases. Most monitoring systems focusing on workers' health or sustainable development, such as the global indicator framework for the sustainable development goals, include an indicator on the burden of occupational injuries. Few such systems, however, have an indicator on the burden of work-related diseases. To address this gap, we present a new global indicator: mortality rate from diseases attributable to selected occupational risk factors, by disease, risk factor, sex and age group. **Methods:** We outline the policy rationale of the indicator, describe its data sources and methods of calculation, and report and analyse the official indicator for 183 countries. We also provide examples of the use of the indicator in national workers' health monitoring systems and highlight the indicator's strengths and limitations. **Results:** We conclude that integrating the new indicator into monitoring systems will provide more comprehensive and accurate surveillance of workers' health, and allow harmonization across global, regional and national monitoring systems. **Conclusion:** Inequalities in workers' health can be analysed and the evidence base can be improved towards more effective policy and systems on workers' health.

**Pega et al. 2023.**

**Bulletin of the World Health Organization, vol. 101, no. 6.**

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**Keywords:** Workers' health; mortality rate; disease; occupational risk.

**Evidence Level:** 4B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10225940/>

#### **Working conditions in women with multiple pregnancy-the impact on preterm birth and adherence to guidelines: A prospective cohort study**

**Background:** Women with multiple pregnancies are at risk for maternal complications such as preterm birth. Hazardous working conditions, such as physically demanding work and long and irregular working hours, might increase the risk of preterm birth. **Objective:** This study primarily aimed to determine whether certain working conditions up to 20 weeks of pregnancy increase the risk of preterm birth in multiple pregnancies. The secondary objective was to evaluate whether the working conditions of Dutch women with multiple pregnancy have been adjusted to the guidelines of the Netherlands Society of Occupational Medicine. **Study design:** We performed a prospective cohort study alongside the ProTWIN trial, a multicenter randomized controlled trial that assessed whether cervical pessaries could effectively prevent preterm birth. Women with paid work of >8 hours per week completed questionnaires concerning general health and working conditions between 16 and 20 weeks of pregnancy. Univariable and multivariable logistic regression analyses were performed to identify work-related factors associated with preterm birth (32-36 weeks' gestation) and very preterm birth (<32 weeks' gestation). We analysed a subgroup of participants who worked for more than half of the week (>28 hours). We calculated the proportion of women who reported work-related factors not in accordance with guidelines. **Results:** We studied 383 women, of whom 168 (44%) had been randomized to pessary, 142 (37%) to care as usual, and 73 (19%) did

not participate in the randomized part of the study. After adjusting for confounding variables, working >28 hours was associated with very preterm birth (n=33; 78%) (adjusted odds ratio, 3.0; 95% confidence interval, 1.1-8.1), and irregular working times were associated with preterm birth (n=26, 17%) (adjusted odds ratio, 2.0; 95% confidence interval, 1.0-4.1) and very preterm birth (n=10; 24%) (adjusted odds ratio, 2.7; 95% confidence interval, 1.0-7.3). Within a subgroup of 213 participants working >28 hours per week, multivariable analysis showed that irregular working times (n=16; 20%) (adjusted odds ratio, 3.5; 95% confidence interval, 1.2-10.1) and no/little freedom in performance of tasks (n=23; 28%) (adjusted odds ratio, 3.0; 95% confidence interval, 1.3-7.3) were associated with preterm birth. Irregular working times (n=9; 27%) (adjusted odds ratio, 3.4; 95% confidence interval, 1.0-11.1), requiring physical strength (n=9; 27%) (adjusted odds ratio, 5.3; 95% confidence interval, 1.6-17.8), high physical workload (n=7; 21%) (adjusted odds ratio, 3.9; 95% confidence interval, 1.1-13.9), and no/little freedom in performing tasks (n=10; 30%) (adjusted odds ratio, 3.2; 95% confidence interval, 1.1-9.6) were associated with very preterm birth. Before 20 weeks of pregnancy, 224 (58.5%) women with multiple pregnancy continued to work under circumstances that were not in accordance with the guidelines. **Conclusion:** In our cohort study, nearly 60% of women with multiple pregnancy continued to work under circumstances not in accordance with the guidelines to avoid physical and job strain and long and irregular working hours. Irregular hours were associated with preterm and very preterm birth, and long hours were associated with preterm birth. **van beukering et al. 2023.**

**American Journal of Obstetrics and Gynecology, vol. 228, no. 6.**

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**Keywords:** Job strain; maternity protection legislation; occupational exposure; physical workload; shift work; working hours.

**Evidence Level:** 4B

**Link:** [https://www.ajog.org/article/S0002-9378\(22\)02169-X/fulltext](https://www.ajog.org/article/S0002-9378(22)02169-X/fulltext)

### **Stressful life events, unhealthy eating behaviors and obesity among Chinese government employees: A follow-up study**

**Background:** The underlying mechanisms of the relationship between stressful life events and obesity among Chinese workers are unclear. **Objective:** This study aimed to understand the processes and mechanisms involved in stressful life events, unhealthy eating behavior, and obesity among Chinese workers. **Methods:** From January 2018 to December 2019, a total of 15,921 government employees were included at baseline and they were followed-up until May 2021. Stressful life events were assessed using the Life Events Scale, and unhealthy eating behavior was assessed using four items. BMI was calculated as weight (kg) divided by height (m<sup>2</sup>) using physically measured data. **Results:** Overeating at each mealtime (OR = 2.21, 95%CI: 1.78-2.71) at baseline led to reports of higher risk of obesity at follow up. Eating before going to bed at night sometimes (OR = 1.51, 95%CI: 1.31-1.73) or often (OR = 3.04, 95%CI: 2.28-4.05) at baseline led to reports of higher risk of obesity at follow-up. Eating out sometimes (OR = 1.74, 95%CI: 1.47-2.07) or often (OR = 1.59, 95%CI: 1.07-2.36) at baseline led to reports of higher risk of obesity at follow-up. Stressful life events were not directly associated with obesity, but unhealthy eating behaviors, including overeating at each mealtime ( $\beta = 0.010$ , 95%CI: 0.007-0.014;  $\beta = 0.002$ , 95%CI: 0.001-0.004, respectively) and irregular meal timing ( $\beta = -0.011$ , 95%CI: -0.015--0.008;  $\beta = -0.004$ , 95%CI: -0.006--0.001, respectively), significantly mediated the associations between stressful life events at baseline and obesity at both baseline and follow-up. **Conclusion:** Unhealthy eating behaviors mediated the relationship between stressful life events and obesity. Interventions should be provided to workers who have experienced stressful life events and unhealthy eating behaviors.

**Qiu et al. 2023.**

**Nutrients, vol. 15, no. 11.**

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**Keywords:** Bootstrap analysis; obesity; path analysis; stress; unhealthy eating behavior.

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/2072-6643/15/11/2637>

## Work Health and Safety

*This month we explore pulmonary oxygen toxicity in occupational divers, mesothelioma risk among construction workers, sharps penetrating injuries in health workers, hearing loss and respiratory symptoms in sawmill workers, blood pressure surges in firefighters, Cryptosporidium parvum exposure amongst livestock workers and promotion of safety and health among correctional workers. In Covid-19 related research we explore the effect of wearing Personal Protective Equipment on blood culture contamination and the safety and efficacy of hydroxychloroquine as prophylactic against Covid-19.*

### **Pulmonary oxygen toxicity in occupational diving**

**Background:** One of the hazards of occupational diving is pulmonary oxygen toxicity, which can lead to reduced lung diffusion capacity and fibrosis. The current gold standard to determine the 'safe limits' for oxygen was developed more than 50 years ago and lacks the accuracy required for occupational specialists.

**Conclusion:** These restrictions may be overcome by new diagnostic methods like exhaled breath analysis, which would allow occupational specialists to accurately monitor pulmonary health in the individual diver, and thus reduce long-term health effects of professional diving.

**de Jong et al. 2023.**

**Occupational Medicine, vol. 73, no. 5.**

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**Keywords:** Pulmonary oxygen toxicity; occupational diving; lung capacity; fibrosis.

**Evidence Level:** 6B

**Link:** <https://academic.oup.com/occmed/article/73/5/231/7207818?login=true>

### **Mesothelioma risk among construction workers according to job title: Data from the Italian Mesothelioma Register**

**Background:** An increased risk of mesothelioma has been reported in various countries for construction workers. The Italian National Mesothelioma Registry, from 1993 to 2018, reported exposure exclusively in the construction sector in 2310 cases. We describe the characteristics of these cases according to job title.

**Methods:** We converted into 18 groups the original jobs (N=338) as reported by ISTAT codes ('ATECO 91'). The exposure level was attributed at certain, probable and possible in accordance with the qualitative classification of exposure as reported in the Registry guidelines. Descriptive analysis by jobs highlights the total number of subjects for each single job and certain exposure, in descending order, insulator, plumber, carpenter, mechanic, bricklayer, electrician, machine operator, plasterer, building contractor, painter and labourer. **Results:** The cases grow for plumbing in the incidence periods 1993-2018, while, as expected, it decreases for insulator. Within each period considered the most numerous cases are always among bricklayers and labourers, these data confirm the prevalence of non-specialised "interchangeable" jobs in Italian construction sector in the past. **Conclusion:** Despite the 1992 ban, the construction sector still presents an occupational health prevention challenge, circumstances of exposure to asbestos may still occur due to incomplete compliance with prevention and protection measures.

**Vimercati et al. 2023.**

**La Medicina de Lavoro, vol. 114, no. 3.**

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**Keywords:** Mesothelioma; mesothelioma risk; construction.

**Evidence Level:** 4B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/14538>

### **Assessment of sharps penetrating injury, mucosal exposure and compliance with standard precautions of health workers at a University Hospital in Turkey**

**Background:** To evaluate the compliance with standard precautions in healthcare workers who experienced a sharps penetrating injury or mucosal exposure using the compliance with Standard Precautions Scale, Turkish version. **Methods:** This descriptive cross-sectional study was conducted in a



tertiary hospital. The occupational health and safety unit records of healthcare workers who were injured by a sharps penetrating injury or experienced mucosal exposure between January 2018 and July 2020 were examined. Compliance with the Standard Precautions Scale was assessed by having participants answer a questionnaire. **Results:** Of the 100 participants, 59% were men. Of all healthcare workers in the university hospital, 4.5% (n=100) were injured by sharps penetrating injuries or mucosal exposure. Of the participants, 95% were wounded by a sharps penetrating injury and 5% had mucosal exposure. The mean Compliance with Standard Precautions Scale score of participants with a sharps penetrating injury was  $16.36 \pm 2.39$  and with mucosal exposure was  $16.80 \pm 3.03$ . There was no significant difference between the mean Compliance with Standard Precautions Scale scores of the sharps penetrating injury and mucosal exposure groups regardless of training on occupational health and safety ( $p=0.794$ ). **Conclusion:** In conclusion, the frequency of a sharps penetrating injury and mucosal exposure in healthcare workers was similar to the literature. The compliance level of the healthcare workers measured with the Compliance with Standard Precautions Scale was high.

**Sari et al. 2023.**

**Saudi Medical Journal, vol. 44, no. 6.**

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**Keywords:** Health care worker; sharps penetrating injury; standard precautions.

**Evidence Level:** 4B

**Link:** <https://smj.org.sa/content/44/6/588>

### **Cryptosporidium parvum: An emerging occupational zoonosis in Finland**

**Background:** Cryptosporidiosis has increased in recent years in Finland. We aimed to identify risk factors for human cryptosporidiosis and to determine the significance of *Cryptosporidium parvum* as a causative agent. Based on notifications to the Finnish Infectious Disease Register (FIDR), we conducted a case-control study and genotyped *Cryptosporidium* species from patient samples from July to December 2019. We also retrieved the occupational cryptosporidiosis cases from 2011 to 2019 from the Finnish Register of Occupational Diseases (FROD). **Results:** Of 272 patient samples analysed, 76% were *C. parvum* and 3% *C. hominis*. In the multivariable logistic regression analysis of 82 *C. parvum* cases and 218 controls, cryptosporidiosis was associated with cattle contact (OR 81, 95% confidence interval (CI) 26-251), having a family member with gastroenteritis (OR 34, 95% CI 6.2-186), and spending time at one's own vacation home (OR 15, 95% CI 4.2-54). Of the cases, 65% had regular cattle contact. The most common gp60 subtypes identified were IIaA15G2R1 and IIaA13G2R1. In FROD, 68 recognized occupational cryptosporidiosis cases were registered in 2011-2019. **Conclusion:** *C. parvum* is the most common *Cryptosporidium* species found in humans in Finland and poses a moderate to high risk of occupational infection for people working with cattle. The number of occupational notifications of cryptosporidiosis increased between 2011 and 2019. Cryptosporidiosis should be recognized as an important occupational disease among persons working with livestock in Finland, criteria to identify occupational cryptosporidiosis need to be created, and occupational safety in cattle-related work should be improved.

**Enbom et al. 2023.**

**Acta Veterinaria Scandinavica, vol. 65, no. 1.**

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**Keywords:** Biological Agents; cryptosporidiosis; Gp60 subtypes; occupational health; risk factors; zoonoses.

**Evidence Level:** 4B

**Link:** <https://actavetscand.biomedcentral.com/articles/10.1186/s13028-023-00684-z>

### **Hearing loss and respiratory health symptoms among large-scale sawmill workers of the timber processing factories within the Gert Sibande District Municipality: A comparative cross-sectional study**

**Background:** Occupational exposure to wood dust may cause respiratory illnesses, while prolonged exposure to loud noise may cause noise-induced hearing loss. **Objective:** The objective of the study was to assess the prevalence of hearing loss and respiratory symptoms among large-scale sawmill workers within the Gert Sibande Municipality in Mpumalanga Province, South Africa. **Methods:** A comparative cross-sectional study consisting of 137 exposed and 20 unexposed randomly selected workers was undertaken

from January to March 2021. The respondents completed a semi-structured questionnaire on hearing loss and respiratory health symptoms. **Data analysis:** The data was analysed using Statistical Package for Social Sciences (SPSS) version 21 (Chicago II, USA). The statistical analysis of the difference between the two proportions was done using an independent student t-test. The level of significance was set at  $p < 0.05$ .

**Results:** There was a statistically significant difference between the exposed and unexposed workers on the prevalence of respiratory symptoms like phlegm (51.8 vs. 0.0%) and shortness of breath (chest pain) (48.2 vs. 50%). There was also a statistically significant difference between the exposed and unexposed workers on the signs and symptoms of hearing loss like tinnitus (ringing in the ears) (50 vs. 33.3%), ear infections (21.4 vs. 66.7%), ruptured ear drums (16.7 vs. 0.0%), and ear injuries (11.9 vs. 0.0%). The exposed workers reported always wearing personal protective equipment (PPE) (86.9%) compared to the unexposed workers (75%). The reason for not wearing PPE consistently by the exposed workers was due to not being available (48.5%), compared to the unexposed workers who reported other reasons (100%).

**Conclusion:** The prevalence of respiratory symptoms among the exposed workers was higher than that of the unexposed workers, except for chest pains (shortness of breath). The prevalence of symptoms of hearing loss among the exposed workers was higher than the unexposed workers, except for ear infections. The results suggest that measures should be implemented at the sawmill to help protect workers' health.

**Rathipe et al. 2023.**

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

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**Keywords:** Hearing loss; noise; respiratory symptoms; sawmill workers; wood dust.

**Evidence Level:** 4B <https://journals.sagepub.com/doi/full/10.1177/14034948211033692>

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16086-9>

### **Blood pressure surge with alarm is reduced after exercise and diet intervention in firefighters**

**Background:** Cardiac-related incidents are a public health concern for tactical occupations, and cardiovascular disease rates are higher in these populations compared with civilians. Research is needed to examine blood pressure (BP) responses in firefighters. The pager alert is one occupational hazard, and it is unknown if lifestyle change can reduce the systolic surge response. **Purpose:** To measure BP surge with alarm in firefighters to determine whether the magnitude is lower after a 6-week tactical exercise and Mediterranean-diet intervention. **Methods:** SBP and DBP and BP surge levels, circulating markers, vascular health, and fitness were analysed. BP surge with alarm was captured during a 12-hour workshift. Exercise and diet were self-reported. Diet was tracked with diet scores based on number of servings.

**Results:** Twenty five firefighters ( $43.4 \pm 13.9$  years) participated. We found changes in the magnitude of BP surge with alarm (SBP surge from  $16.7 \pm 12.9$  to  $10.5 \pm 11.7$  mmHg,  $P < 0.05$ ; DBP surge from  $8.2 \pm 10.8$  to  $4.9 \pm 5.6$  mmHg,  $P > 0.05$ ) after intervention. We confirm that clinical ( $127.6 \pm 9.1$  to  $120 \pm 8.2$  mmHg) and central ( $122.7 \pm 11.3$  to  $118.2 \pm 10.7$  mmHg) SBP levels improve with exercise and diet. We report for the first time in firefighters that oxidative stress markers superoxide dismutase ( $9.1 \pm 1.5$  to  $11.2 \pm 2.2$  U/ml) and nitric oxide ( $40.4 \pm 7$  to  $48.9 \pm 16.9$   $\mu\text{mol/l}$ ) levels improve with an exercise and diet intervention.

**Conclusion:** These findings have implications toward the benefit that short-term lifestyle changes make toward reducing the alarm stress response in first responders.

**Feairheller et al. 2023.**

**Blood Pressure Monitoring, vol. 28, no. 3.**

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**Keywords:** Blood pressure; exercise; diet intervention; firefighters.

**Evidence Level:** 3A

**Link:**

[https://journals.lww.com/bpmonitoring/Fulltext/2023/06000/Blood\\_pressure\\_surge\\_with\\_alarm\\_is\\_reduced\\_after.3.aspx](https://journals.lww.com/bpmonitoring/Fulltext/2023/06000/Blood_pressure_surge_with_alarm_is_reduced_after.3.aspx)

### **Safety and efficacy of hydroxychloroquine as prophylactic against COVID-19 in healthcare workers: A meta-analysis of randomised clinical trials**

**Background:** We studied the safety and efficacy of hydroxychloroquine (HCQ) as pre-exposure prophylaxis for COVID-19 in healthcare workers (HCWs), using a meta-analysis of randomised controlled trials (RCTs).

**Data sources:** PubMed and EMBASE databases were searched to identify randomised trials studying HCQ.

**Study selection:** Ten RCTs were identified (n=5079 participants). **Data extraction and synthesis:** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were used in this systematic review and meta-analysis between HCQ and placebo using a Bayesian random-effects model. A pre-hoc statistical analysis plan was written.

**Main outcomes:** The primary efficacy outcome was PCR-confirmed SARS-CoV-2 infection and the primary safety outcome was incidence of adverse events. The secondary outcome included clinically suspected SARS-CoV-2 infection. **Results:** Compared with placebo, HCWs randomised to HCQ had no significant difference in PCR-confirmed SARS-CoV-2 infection (OR 0.92, 95% credible interval (CI): 0.58, 1.37) or clinically suspected SARS-CoV-2 infection (OR 0.78, 95% CI: 0.57, 1.10), but significant difference in adverse events (OR 1.35, 95% CI: 1.03, 1.73). **Conclusion and**

**relevance:** Our meta-analysis of 10 RCTs investigating the safety and efficacy of HCQ as pre-exposure prophylaxis in HCWs found that compared with placebo, HCQ does not significantly reduce the risk of confirmed or clinically suspected SARS-CoV-2 infection, while HCQ significantly increases adverse events.

**Prospero registration number:** CRD42021285093.

**Hong et al. 2023.**

**BMJ Open, vol. 13, no. 6.**

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**Keywords:** COVID-19; epidemiology; statistics & research methods.

**Evidence Level:** 1A

**Link:** <https://bmjopen.bmj.com/content/13/6/e065305.long>

### **Integrated safety and health promotion among correctional workers and people incarcerated: A scoping review.**

**Background:** Improving safety and health for correctional workers and people who are incarcerated are widespread yet separate initiatives. Correctional workers and people who are incarcerated experience similar challenges involved with poor workplaces and living conditions, including mental health crises, violence, stress, and chronic health issues, and the available resources lack integration with respect to safety and health promotion. **Methods:** This scoping review sought to contribute to an integrated approach for correctional system safety and health resources and identify studies of correctional resources that address health promotion among correctional workers and people who are incarcerated. Guided by PRISMA, a search of gray literature, also termed peer-reviewed literature, published between 2013-2023 ( $n = 2545$ ) was completed, and 16 articles were identified. **Results:** Resources primarily targeted individual and interpersonal levels. At every level of intervention, resources improved the environment for both workers and those incarcerated, with trends of less conflict, more positive behaviours, and improved relations, access to care, and feelings of safety. The corrections environment is impacted by changes from both workers and people who are incarcerated and should be examined using a holistic approach.

**Conclusion:** Future health and safety resources should target the larger correctional environment by utilizing practices, policies, and procedures to improve safety and health for incarcerated people and workers.

**Hull et al. 2023.**

**International Journal of Environmental Research and Public Health, vol. 20, no. 12.**

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**Keywords:** Antisocial behavior; corrections; incarceration; prosocial behavior; recidivism; total worker health; work environment.

**Evidence Level:** 6A

**Link:** <https://www.mdpi.com/1660-4601/20/12/6104>



### **Effect of wearing Personal Protective Equipment (PPE) for COVID-19 treatment on blood culture contamination: Implication for optimal PPE strategies**

**Background:** The personal protective equipment (PPE) used to minimize exposure to hazards can hinder healthcare workers from performing sophisticated procedures. **Methods:** We retrospectively reviewed 77,535 blood cultures (202,012 pairs) performed in 28,502 patients from January 2020 to April 2022.

**Results:** The contamination rate of all blood cultures was significantly elevated in the coronavirus disease 2019 ward at 4.68%, compared to intensive care units at 2.56%, emergency rooms at 1.13%, hematology wards at 1.08%, and general wards at 1.07% (All of  $P < 0.001$ ). This finding implies that wearing PPE might interfere with adherence to the aseptic technique. **Conclusion:** Therefore, a new PPE policy is needed that considers the balance between protecting healthcare workers and medical practices.

**Park et al. 2023.**

**Journal of Korean Medical Science, vol. 38, no. 23.**

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

**Keywords:** Blood culture; Coronavirus Disease 2019; Personal Protective Equipment.

**Evidence Level:** 4B

**Link:** <https://jkms.org/DOIx.php?id=10.3346/jkms.2023.38.e180>

### **Risk Assessment**

#### **A relative importance index approach to on-site building construction workers' perception of occupational hazards assessment**

**Background:** The construction industry has a percentage of work-related injuries and fatalities. Workers' perception of occupational hazards exposure can be a proactive management tool in knowing the state of construction site safety performance. This study aimed to assess the hazard perception of on-site construction workers in Ghana. **Methods:** Using a structured questionnaire, data was collected from 197 construction workers at live building sites in the Ho Municipality. The data were analysed using the Relative Importance Index (RII) approach. **Results:** The study revealed that on-site construction workers perceived ergonomic hazards as the most frequent, followed by physical, psychological, biological, and chemical hazards. The importance level of RII revealed that long working hours and bending or twisting back during task performance were perceived as the most severe hazards. Long working hours had the highest overall RII ranking, followed by bending or twisting back during task performance, manual lifting of objects or loads, scorching temperatures, and lengthy standing for prolonged periods. **Conclusion:** Given the adverse health effects of working for long hours, the management of Ghanaian construction industries needs to reinforce the legislation on working hours to safeguard workers' occupational health. Safety professionals can use the study's findings to improve safety performance in the Ghanaian construction industry.

**Boakye et al. 2023.**

**La Medicina del Lavoro, vol. 114, no. 3.**

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**Keywords:** Hazards; work-related injuries; fatalities; occupational hazards; exposure; construction.

**Evidence Level:** 5B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/14240>

### **Chronic Health Issues**

*This month we explore workplace issues associated with people with multiple sclerosis, work-related respiratory health conditions in construction workers, work participation in people with osteoarthritis, and fitness for work through a personalized work plan for workers with disabilities and chronic diseases. In other studies, we explore occupational asthma among food industry workers and the relationship between metabolic syndrome and long-term sickness absence and severe cancer.*

### **Employment status, productivity loss, and associated factors among people with multiple sclerosis**

**Background:** Multiple Sclerosis (MS) affects people in their most productive years of life. Consequently, MS can substantially affect employment and work-related outcomes. **Objectives:** This study characterizes productivity loss and employment status of people with multiple sclerosis (pwMS) and investigates associated factors. **Methods:** We used baseline data collected as part of the Canadian Prospective Cohort Study to Understand Progression in Multiple Sclerosis (CanProCo). Using the Valuation of Lost Productivity questionnaire, we measured MS-related paid work productivity loss for those employed, productivity losses incurred by those unemployed (i.e. lost employment time), and unpaid work productivity losses for all. A set of sociodemographic, disease, and performance-related factors were investigated using a two-part regression model for productivity loss and a multinomial logistic model for employment status.

**Results:** From the cohort of 888 pwMS enrolled at baseline (mostly showing mild to moderate disability), 75% were employed, and of those unemployed, 69% attributed their unemployment to health-related issues. Total productivity loss over a 3-month period averaged 64 and 395 hours for those employed and unemployed, respectively. Some factors that affected productivity loss and employment status included use of disease-modifying therapies, fatigue, and performance indicators such as cognitive processing speed. **Conclusion:** Productivity loss experienced by employed and unemployed pwMS is substantial. Targeting the identified modifiable factors is likely to improve work productivity and permanence of MS patients in the workforce.

**Rodriguez Llorian et al. 2023.**

**Multiple Sclerosis Journal, vol. 29, no. 7.**

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**Keywords:** Employment status; multiple sclerosis; productivity loss.

**Evidence Level:** 4B

**Link:** <https://journals.sagepub.com/doi/10.1177/13524585231164295>

### **Work-related respiratory health conditions among construction workers: A systematic narrative review**

**Background:** Emerging evidence in both developed and developing countries indicate that occupational health hazards and diseases among construction workers constitute a significant public health challenge. While occupational health hazards and conditions in the construction sector are diverse, a burgeoning body of knowledge is emerging about respiratory health hazards and diseases. Yet, there is a notable gap in the existing literature in terms of comprehensive syntheses of the available evidence on this topic. In light of this research gap, this study systematically reviewed the global evidence on occupational health hazards and related respiratory health conditions among construction workers. **Methods:** Using meta-aggregation, guided by the Condition (respiratory health conditions), Context (construction industry) and Population (construction workers) (CoCoPop) framework and Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, literature searches were conducted on Scopus, PubMed, Web of Science and Google Scholar for relevant studies on respiratory health conditions affecting construction workers. Four eligibility criteria were used in scrutinising studies for inclusion. The quality of the included studies was assessed based on Joanna Briggs Institute's Critical Appraisal tool, while the reporting of the results was guided by the Synthesis Without Meta-analysis guidelines. **Results:** From an initial pool of 256 studies from the various databases, 25 studies published between 2012 and October 2022 were identified as meeting the inclusion criteria. In all, 16 respiratory health conditions were identified, with cough (ie, dry and with phlegm), dyspnoea/shortness of breath and asthma emerging as the top three respiratory conditions among construction workers. The study identified six overarching themes of hazards that are associated with respiratory health conditions among construction workers. These hazards include exposure to dust, respirable crystalline silica, fumes, vapours, asbestos fibres and gases. Smoking and extended period of exposure to the respiratory hazard were found to increase the risk of contracting respiratory diseases.

**Conclusion:** Our systematic review indicates that construction workers are exposed to hazards and conditions that have adverse effects on their health and well-being. Given the considerable impact that work-related health hazards can have on the health and socioeconomic well-being of construction workers, we suggest that the implementation of a comprehensive occupational health programme is essential. Such a programme would extend beyond the mere provision of personal protective equipment and would

incorporate a range of proactive measures aimed at controlling the hazards and mitigating the risk of exposure to the occupational health hazards.

**Boadu et al. 2023.**

**BMJ Open Respiratory Research, vol. 10, no. 1.**

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**Keywords:** ARDS; asbestos induced lung disease; lung cancer; occupational lung disease; respiratory infection.

**Evidence Level:** 1A

**Link:** <https://bmjopenrespres.bmj.com/content/10/1/e001736.long>

### **Biopsychosocial, work-related, and environmental factors affecting work participation in people with Osteoarthritis: A systematic review**

**Background:** Osteoarthritis (OA) causes pain and disability, with onset often during working age. Joint pain is associated with functional difficulties and may lead to work instability. The aims of this systematic review are to identify: the impact of OA on work participation; and biopsychosocial and work-related factors associated with absenteeism, presenteeism, work transitions, work impairment, work accommodations, and premature work loss. **Methods:** Four databases were searched, including Medline. The Joanna Briggs Institute Critical Appraisal tools were used for quality assessment, with narrative synthesis to pool findings due to heterogeneity of study designs and work outcomes. **Results:** Nineteen studies met quality criteria (eight cohort; 11 cross-sectional): nine included OA of any joint(s), five knee-only, four knee and/or hip, and one knee, hip, and hand OA. All were conducted in high income countries. Absenteeism due to OA was low. Presenteeism rates were four times greater than absenteeism. Performing physically intensive work was associated with absenteeism, presenteeism, and premature work loss due to OA. Moderate-to-severe joint pain and pain interference were associated with presenteeism, work transition, and premature work loss. A smaller number of studies found that comorbidities were associated with absenteeism and work transitions. Two studies reported low co-worker support was associated with work transitions and premature work loss. **Conclusion:** Physically intensive work, moderate-to-severe joint pain, co-morbidities, and low co-worker support potentially affects work participation in OA. Further research, using longitudinal study designs and examining the links between OA and biopsychosocial factors e.g., workplace accommodations, is needed to identify targets for interventions.

**Ching et al. 2023.**

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

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**Keywords:** Absenteeism; employment; osteoarthritis; presenteeism; work loss.

**Evidence Level:** 1A

**Link:** <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-023-06612-6>

### **Diversity & inclusion: Fitness for work through a personalized work plan for workers with disabilities and chronic diseases according to the iso 30415/2021**

**Background:** The recent standard ISO 30415-2021 - Human resources management - Diversity and inclusion - was developed internationally within the technical committee ISO/TC 260 "Human resources management" (Working group WG 8 "Diversity and inclusion") and underlines the need for actions to create a work environment that is inclusive of diversity (e.g. in terms of health, gender, age, ethnicity, culture). Developing an inclusive work environment requires ongoing commitment and input from the entire organization regarding policies, processes, organizational practices, and individual behavior. As far as the role of occupational medicine is concerned, this direction can be supported by the correct management of disabled workers and workers with chronic pathologies that affect their fitness for duty. The "reasonable accommodation" is the way by which the European Union first, and the United Nations then intended to support the inclusion of disabled people in the world of work. The Personalized Work Plan includes different approaches (organizational, technical, procedural) meant for modifying the work activity envisaged for the disabled worker or for any worker suffering from chronic diseases or dysfunctions.

**Conclusion:** The adoption of the Personalized Work Plan implies the effort of redesigning the workstation, the work procedures, or even the planning of different micro and macro tasks etc., in order to prioritise the

adaptation of the working environment to the worker, safeguarding the value of the worker's productivity according to the principle of reasonable accommodation.

**Cristaudo et al. 2023.**

**La Medicina del Lavoro, vol. 114, no.3 .**

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**Keywords:** Diversity; fitness; inclusion; disabilities; chronic disease; work plan.

**Evidence Level:** 6B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/14339>

### **Metabolic syndrome and the increased risk of medically certified long-term sickness absence: A prospective analysis among Japanese workers**

**Background:** Metabolic syndrome (MetS) has been associated with various chronic diseases that may lead to long-term sickness absence (LTSA), but there is lacking information on the direct association between MetS and LTSA. The present study aimed to investigate the all-cause and cause-specific associations between MetS and the risk of medically certified LTSA among Japanese workers. **Methods:** We recruited 67,403 workers (57,276 men and 10,127 women), aged 20-59 years from 13 companies in Japan during their health check-ups in 2011 (11 companies) and 2014 (2 companies), and we followed them for LTSA events ( $\geq 30$  consecutive days) until March 31, 2020. MetS was defined according to the Joint Interim Statement. A Cox proportional hazards regression model was used to estimate hazard ratios (HRs) and its 95% confidence intervals (CIs) for LTSA associated with MetS and its components. **Results:** During 408,324 person-years of follow-up, 2,915 workers experienced LTSA. The adjusted HR for all-cause LTSA was 1.54 (95% CI, 1.41-1.68) among those with MetS compared to those without MetS. In cause-specific analysis, HRs associated with MetS significantly increased for LTSA due to overall physical disorders (1.76); cardiovascular diseases (3.16); diseases of the musculoskeletal system and connective tissue (2.01); cancers (1.24); obesity-related cancers (1.35); mental, behavioral, and neurodevelopmental disorders (1.28); reaction to severe stress and adjustment disorders (1.46); and external causes (1.46). The number of MetS components were also significantly associated with increased LTSA risk. **Conclusion:** MetS was associated with an increase in the risk of LTSA due to various diseases among Japanese workers.

**Hoang et al. 2023.**

**Journal of Epidemiology, vol. 33, no. 6.**

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**Keywords:** Japan; longitudinal study; metabolic syndrome; sickness absence.

**Evidence Level:** 4B

**Link:** [https://www.jstage.jst.go.jp/article/jea/33/6/33\\_JE20210185/article](https://www.jstage.jst.go.jp/article/jea/33/6/33_JE20210185/article)

### **Metabolic syndrome and the risk of severe cancer events: A longitudinal study in Japanese workers**

**Background:** Metabolic syndrome (MetS) is associated with cancer risk; however, little is known regarding its relationship with the risk of cancer-related premature death and long-term sick leave (LTSL), which can lead to a substantial loss in working years. The present study aimed to quantify the all-site and site-specific associations between MetS and the risk of severe cancer events (a composite outcome of LTSL and mortality due to cancer) in a large working population in Japan. **Methods:** We recruited 70,875 workers (59,950 men and 10,925 women), aged 20-59 years, who attended health check-ups in 2011 (10 companies) and 2014 (2 companies). All workers underwent follow up for severe cancer events until March 31, 2020. MetS was defined in accordance with the Joint Interim Statement. Cox regression models were used to quantify the association between baseline MetS and severe cancer events. **Results:** During 427,379 person-years of follow-up, 523 participants experienced the outcome consisting of 493 LTSLs of which 124 eventually resulted in death, and 30 deaths without taking LTSL. The adjusted hazard ratios (HR) (95% confidence intervals [CI]) for composite severe events due to all-site, obesity-related, and non-obesity-related cancer among those with vs. without MetS were 1.26 (1.03, 1.55), 1.37 (1.04, 1.82), and 1.15 (0.84, 1.56), respectively. In cancer site-specific analyses, MetS was associated with an increased risk of severe events due to pancreatic cancer (HR, 2.06; 95% CI, 0.99-4.26). When mortality was treated solely as the endpoint, the association was significant for all-site (HR, 1.58; 95% CI, 1.10-2.26), and obesity-related (HR, 1.59; 95% CI, 1.00-2.54) cancer. Additionally, a greater number of MetS components was associated with a

greater risk of both severe cancer events and cancer-related mortality (P trend < 0.05). **Conclusion:** Among Japanese workers, MetS was associated with an increased risk of severe cancer events, especially those due to obesity-linked cancer.

**Van Hoang et al. 2023.**

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

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**Keywords:** Japan; long-term sick leave; metabolic syndrome; mortality; severe cancer events.

**Evidence Level:** 4B

**Link:** <https://bmccancer.biomedcentral.com/articles/10.1186/s12885-023-11026-7>

### **Factors associated with occupational asthma among food industry workers: A systematic review**

**Background:** Occupational asthma (OA) is a type of Work-Related Asthma characterised by variable airflow limitation and/or inflammation due to causes and conditions attributable to a particular occupational environment, and not to stimuli encountered outside the workplace. There is an increasing need to extend the depth of knowledge of OA to better manage this condition, especially among food industry workers who are affected by it. **Objective:** This systematic review aimed to determine the factors associated with occupational asthma among food industry workers by electronically collecting articles from two databases (Medline and Scopus). **Methods:** This systematic review was prepared in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) updated guideline. Two independent reviewers screened the titles and abstracts of the collected data, which were then stored in Endnote20 based on the inclusion and exclusion criteria. The included articles have been critically appraised to assess the quality of the studies using the Mixed Methods Appraisal Tool (MMAT). **Result:** The search yielded 82 articles from Medline and 85 from SCOPUS, resulting in 167 unique hits. Only 22 articles have been included in the full-text assessment following a rigorous selection screening. Of the 22 articles identified, five were included in the final review. Several factors were found to have contributed to occupational asthma among food industry workers. They were classified into two categories: (1) work environment-related factors; and (2) individual factors. **Conclusion:** Several work environment and individual-related factors were found to be associated with OA among food industry workers. A better understanding of the development of the disease and its potential risk factors is needed because it can affect worker's quality of life. Pre-employment and periodic medical surveillance should be conducted to assess and detect any possible risk of developing occupational asthma among workers.

**Md Zamri et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Occupational asthma, food industry; asthma.

**Evidence Level:** 1A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287040>

## **Occupational Exposure**

*This month we explore occupational exposure issues associated with sun exposure in farmers, thermal exposure in train drivers, hepatitis viral exposure among sanitary workers, and exposure limits for toluene. In other research we explore occupational exposure in electronic waste recycling facilities and industrial 3D printing, and methods for assessing lung health in welders.*

### **Sun safety: Knowledge and behavior among Egyptian farmers - A multicomponent intervention study**

**Background:** The purpose of study was to screen for health hazards related to sun exposure and to examine the effectiveness of a sun safety multicomponent intervention designed specifically for the Egyptian farmers. **Methods:** A multicomponent interventional study was conducted among 128 farmers from three villages in Zagazig district, Sharkia Governorate, Egypt, from January to July 2022. It passed through three phases: phase 1: assessment of participants' risk of skin cancer and vision screening; phase 2: filling a semi-structured questionnaire assessing sun exposure hazards and sun safety knowledge, behavior,



and barriers; and phase 3: conducting multicomponent intervention composed of education session, providing sun safety supplies and reminders then evaluate the effect of this intervention after one month. **Results:** Most of participants had moderate risk for skin cancer (69.0%), history of photokeratitis (77.3%), cataract (15.6%), and bad/very bad self-reported overall eyesight (43.0%). After intervention, there was a statistically significant improvement in the participants' awareness regarding sun exposure-related hazards, all knowledge items about sun safety measures ( $p < 0.01$ ) and some sun safety behaviors ( $p < 0.05$ ) including wearing protective clothing, minimization of direct sunlight exposure, taking breaks, plentiful water intake, regular self-checking of skin, wearing wide brimmed hats, and job rotation. Furthermore, there was a statistically significant improvement in all sun protection barriers ( $p < 0.01$ ) except sunscreen and sunglasses related barriers ( $p > 0.05$ ). **Conclusion:** The multicomponent intervention composed of education session, providing sun safety supplies and reminders was effective in increasing awareness of farmers with sun exposure hazards and improving their knowledge and behavior towards sun safety measures.

**El-Shafei et al. 2023.**

**Journal of Cancer Education, vol. 38, no. 3.**

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**Keywords:** Barriers; behavior; brief skin cancer risk assessment tool; farmer; knowledge; skin cancer screening; sun safety; vision screening.

**Evidence Level:** 3B

**Link:** <https://link.springer.com/article/10.1007/s13187-022-02230-3>

### **The analysis and optimization of thermal sensation of train drivers under occupational thermal exposure**

**Background:** Prolonged exposure of train drivers to thermal discomfort can lead to occupational safety and health (OSH) risks, causing physical and mental injuries. Traditional method of treating human skin as a wall surface fail to observe accurate skin temperature changes or obtain human thermal comfort that adapts to the thermal environment. **Methods:** This study employs the Stolwijk human thermal regulation model to investigate and optimize the thermal comfort of train drivers. To minimize the time-consuming design optimization, a pointer optimization algorithm based on radial basis function (RBF) approximation was utilized to optimize the train cab ventilation system design and enhance drivers' thermal comfort. The train driver thermal comfort model was developed using Star-CCM+ and 60 operating conditions were sampled using an Optimal Latin Hypercube Design (Opt LHD). **Results and discussion:** We analysed the effects of air supply temperature, air supply volume, air supply angle, solar radiation intensity and solar altitude angle on the local thermal sensation vote (LTSV) and overall thermal sensation vote (OTSV) of the train driver. Finally, the study obtained the optimal air supply parameters for the Heating Ventilation and Air Conditioning (HVAC) in the train cabin under extreme summer conditions, effectively improving the thermal comfort of the driver.

**Yang et al. 2023.**

**Frontiers in Public Health, vol. 9.**

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**Keywords:** CFD; air supply parameters; design and optimization; human thermal regulation model; occupational thermal exposure; thermal sensation; train driver.

**Evidence Level:** 5B

**Link:** <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1164817/full>

### **Sero-prevalence of hepatitis viral infections among sanitary workers across worldwide: A systematic review and meta-analysis**

**Background:** Sanitation or sanitary workers are exposed to hepatitis virus infections because of filthy and dangerous working conditions. The current global systematic review and meta-analysis aimed to estimate the pooled sero-prevalence of occupationally associated hepatitis virus infection among them.

**Methods:** Preferred Reporting Items for Systematic Reviews (PRISMA), and Population, Intervention, Comparison, Outcome and study design (PICOS) were used for flow diagram, and review questions, respectively. Four databases other methods were used published articles from 2000 to 2022. Boolean logic (AND, OR), MeSH, and keywords were used: (Occupation \*OR Job \*OR Work) AND (Hepatitis A \*OR

Hepatitis B virus \*OR Hepatitis C virus \*OR Hepatitis E virus) AND (Solid waste collectors [SWCs] \*OR Street sweepers [SS] \*OR Sewage workers [STWs] \*OR health care facilities cleaners [HCFCs]) AND (Countries). Stata MP/17 software was used for pooled prevalence analysis, meta-regression analysis (Hedges) at a 95% confidence interval (CI:95%). **Results:** A total of 182 studies were identified studies, a total of 28 studies were included from twelve countries. Of these, from developed (n = 7) and developing countries (n = 5). From total a of 9049 sanitary workers, 5951(66%), 2280 (25%) and 818 (9%) were STWs, SWCs and SS, respectively. Globally, the pooled sero-prevalence of occupational-related hepatitis viral infections among sanitary workers was 38.06% (95% CI: 30-0.46.12). Of this, it was 42.96% (95% CI: 32.63-53.29) and 29.81% (95% CI: 17.59-42.02) for high-income and low-income countries, respectively. Meanwhile, by sub-analysis, the highest pooled sero-prevalence of hepatitis viral infections by categories, type and year were 47.66% (95%CI: 37.42-57.90), 48.45% (95% CI: 37.95-58.96), and 48.30% (95% CI: 36.13-60.47) for SWTs, HAV, and 2000 to 2010 year, respectively. **Conclusion:** The consistency of the evidence suggests that sanitation workers, particularly sewage workers, are susceptible to occupationally acquired hepatitis regardless of their working conditions, necessitating significant changes to occupational health and safety regulations from governmental policies and other initiatives to reduce risks among sanitary workers.

**Tolera et al. 2023.**

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

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**Keywords:** Hepatitis virus; infections; occupation; sanitary workers; worldwide.

**Evidence Level:** 1A

**Link:** <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-023-08354-1>

### **Occupational health and safety, metal exposures and multi-exposures health risk in Canadian electronic waste recycling facilities**

**Background:** Electronic waste recycling (e-recycling) involves manual operations that expose workers to toxic metals. We aim to describe occupational health and safety practices and workers' exposures to metals in the Canadian formal e-recycling industry, and to estimate the health risk associated with multiple exposures. **Methods:** This cross-sectional study documented practices through observations and questionnaires, and assessed metal exposures using personal air samples and biomarkers. Health risks were estimated relative to recognised occupational exposure guidelines, and using an additive approach for consideration of multiple exposures. Six e-recycling and one commercial recycling facilities were investigated, and the metal exposures of 99 workers (23 women) were measured. **Results:** In most facilities, dust control was inadequate and personal protective equipment was improperly worn. In e-recycling, lead was detected in all air samples and in most blood samples, up to 48 µg/m<sup>3</sup> and 136 µg/l, respectively. Other quantified metals included beryllium, mercury, arsenic, barium, cadmium, chrome, cobalt, copper, indium, manganese, nickel and yttrium. When handling cathode ray tube screens, workers were 4.9 times and 8.5 times more likely to be exposed to lead and yttrium, respectively, than workers who were not assigned to a specific type of electronics. Overall, exposures were largely associated with facility size and airborne dust concentration. The additive hazard indices for airborne exposures raised concerns for kidney disorders, for peripheral and central nervous systems, and for the male reproductive system. **Conclusion:** Minimizing airborne dust through collective control methods and adequately using personal protection should reduce metal exposures and associated health risks in this growing industry.

**Gravel et al. 2023.**

**Waste Management, vol. 165.**

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**Keywords:** Biological exposure indices; e-waste; exposure assessment; metals; occupational exposure; threshold limit values.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S0956053X23003094?via%3Dihub>

### **Recommendation for an occupational exposure limit for toluene**

**Background:** The Lower Olefins and Aromatics (LOA) REACH Consortium, which includes toluene registrants in the EU, established a Working Group (WG) to conduct a review of the occupational exposure limit (OEL) for toluene. **Methods:** The review focussed on CNS and neuro-behavioural toxicity, ototoxicity, effects on colour vision, reproductive and developmental effects, as safety signals for these effects were identified. The WG also examined the need for a skin notation and/or a short-term exposure limit (STEL). The WG critically reviewed and discussed the strengths and weaknesses of the available published information describing the effects of toluene in animals and humans, to assess its adequacy as a potential point of departure for the establishment of an OEL for toluene and to derive an OEL. **Results and Conclusion:** As a result, the WG recommendation for a toluene OEL is 20 ppm 8-h TWA, with a 15-min STEL of 100 ppm and a skin notation.

**Rooseboom et al. 2023.**

**Regulatory Toxicology and Pharmacology, vol. 141.**

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**Keywords:** Occupational exposure; toluene.

**Evidence Level:** 6B

**Link:** [https://linkinghub.elsevier.com/retrieve/pii/S0273-2300\(23\)00055-7](https://linkinghub.elsevier.com/retrieve/pii/S0273-2300(23)00055-7)

### **Workplace exposure measurements of emission from industrial 3D printing**

**Background and Methods:** Particle and gaseous contaminants from industrial scale additive manufacturing (AM) machines were studied in three different work environments. Workplaces utilized powder bed fusion, material extrusion, and binder jetting techniques with metal and polymer powders, polymer filaments, and gypsum powder, respectively. The AM processes were studied from operator's point of view to identify exposure events and possible safety risks. Total number of particle concentrations were measured in the range of 10 nm to 300 nm from operator's breathing zone using portable devices and in the range of 2.5 nm to 10 µm from close vicinity of the AM machines using stationary measurement devices. Gas-phase compounds were measured with photoionization, electrochemical sensors, and an active air sampling method which were eventually followed by laboratory analyses. **Results:** The duration of the measurements varied from 3 to 5 days during which the manufacturing processes were practically continuous. We identified several work phases in which an operator can potentially be exposed by inhalation (pulmonary exposure) to airborne emissions. A skin exposure was also identified as a potential risk factor based on the observations made on work tasks related to the AM process. The results confirmed that nanosized particles were present in the breathing air of the workspace when the ventilation of the AM machine was inadequate. Metal powders were not measured from the workstation air thanks to the closed system and suitable risk control procedures. Still, handling of metal powders and AM materials that can act as skin irritants such as epoxy resins were found to pose a potential risk for workers. **Conclusion:** This emphasizes the importance of appropriate control measures for ventilation and material handling that should be addressed in AM operations and environment.

**Kangas et al. 2023.**

**Annals of Work Exposures and Health, vol. 67, no. 5.**

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**Keywords:** Additive manufacturing; gas-phase compounds; industrial printers; nanoparticles; occupational health.

**Evidence Level:** 5B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10243937/>

### **Sensitive methods for assessment of lung health in welders and controls**

**Background:** Welders are exposed to gas and particle emissions that can cause severe lung disease, such as chronic obstructive pulmonary disease (COPD), a leading cause of mortality and morbidity worldwide. It is difficult to detect COPD early and therefore mitigating measures may be delayed. The aim of this study was to investigate lung health in welders and evaluate new sensitive methods with potential to assess early

onset pulmonary changes in occupational settings. **Methods:** This study assessed the lung health and symptoms in active welders (n = 28) and controls (n = 17). Lung measurements were performed with standard spirometry and new methods: airspace dimension assessment (AiDA), oscillometry, blood serum biomarkers (club cell secretory protein 16, surfactant protein D, matrix metalloproteinases, fibroblast, hepatocyte growth factor, interleukins), and one urine biomarker (desmosine). **Results:** According to spirometry measurements, all participants had normal lung function. However, prevalence of cough was significantly higher among welders compared with controls and lung changes were found in welders with the novel methods. Welders had significantly higher respiratory system resistance assessed with oscillometry, serum levels of metalloproteinases 9 and hepatocyte growth factor, compared with controls. Airspace dimensions were on average higher among welders compared with controls, but the difference was not significant. The number of welding years correlated with decreased respiratory system reactance and increased serum levels of matrix metalloproteinases 9, interleukin 6, and hepatocyte growth factor. Airspace dimension assessment indices were correlated with increasing levels of inflammatory markers and matrix metalloproteinases. **Conclusion:** This study indicated the potential to use new and more sensitive methods for identification of changes in lungs when standard spirometry failed to do so.

**Petersson et al. 2023.**

**Respiratory Medicine, vol. 212.**

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**Keywords:** Airspace dimension assessment with nanoparticles AiDA; Chronic obstructive pulmonary disease; occupational exposure; oscillometry; respiratory diagnostics; respiratory disease biomarkers; welders.

**Evidence Level:** 5A

**Link:** [https://www.resmedjournal.com/article/S0954-6111\(23\)00132-4/fulltext](https://www.resmedjournal.com/article/S0954-6111(23)00132-4/fulltext)

## Physical Activity

*This month we explore the effect of occupational lifting on levels of physical activity and relationship between physical activity at work or leisure and long-term sickness absence.*

### How does occupational lifting affect ambulatory blood pressure, relative aerobic workload and level of physical activity?

**Background:** Occupational physical activity (OPA), including occupational lifting (OL), seems to increase the risk of cardiovascular disease (CVD). Knowledge about the association between OL and risk of CVD is sparse, but repeated OL is assumed to result in prolonged raised blood pressure and heart rate (HR) eventually augmenting the risk of CVD. To disentangle parts of the mechanisms behind the raised 24-hour ambulatory blood pressure measurement (24h-ABPM), by exposure to OL, this study aimed to explore the acute differences in 24h-ABPM, relative aerobic workload (RAW) and OPA across workdays with and without OL, and secondary to assess the feasibility and rater agreement of direct field observations of the frequency and load of occupational lifting. **Methods:** This controlled cross-over study investigates associations between moderate to high OL and 24h-ABPM, RAW in per cent of heart rate reserve (%HRR) and level of OPA. This included 2x24h monitoring of 24h-ABPM (Spacelabs 90217), PA (Axivity) and HR (Actiheart), comprising a workday containing OL and a workday without. The frequency and burden of OL were directly observed in field. The data were time synchronized and processed in the Acti4 software. Differences across workdays with and without OL in 24h-ABPM, RAW and OPA were evaluated using repeated 2 × 2 mixed-models among 60 blue-collar workers in Denmark. Exposure to OL was estimated by direct manual field observation, registering burden and frequency of OL. Interrater reliability tests were performed across 15 participants representing 7 occupational groups. Interclass correlation coefficient (ICC) estimates of total burden lifted and frequency of lifts were calculated, based on a mean-rating (k = 2), absolute-agreement, 2 way mixed-effects model, indicating the raters as fixed effects. **Results:** OL led to non-significant increases in ABPM during work-time (systolic  $\Delta 1.79$  mmHg, 95%CI -4.49-8.08, diastolic  $\Delta 0.43$  mmHg, 95%CI -0.80-1.65), and on 24-hours basis (systolic  $\Delta 1.96$  mmHg, 95%CI -3.80-7.72, diastolic  $\Delta 0.53$  mmHg, 95%CI -3.12-4.18), significant increases in RAW during work ( $\Delta 7.74$  %HRR, 95%CI 3.57-11.91)

as well as a raised level of OPA ( $\Delta$ 4156.88 steps, 95%CI 1898.83-6414.93,  $\Delta$ -0.67 hours of sitting time, 95%CI -1.25-0.10,  $\Delta$ -0.52 hours of standing time, 95%CI -1.03-0.01,  $\Delta$ 0.48 hours of walking time, 95%CI 0.18-0.78). ICC estimates were 0.998 (95% CI 0.995-0.999) for total burden lifted and 0.992 (95% CI 0.975-0.997) for frequency of lift. **Discussion:** OL increased both intensity and volume of OPA among blue-collar workers, which supposedly to contributes to an augmented risk of CVD. Although this study finds hazardous acute effects, further investigations are needed to evaluate the long-term effects of OL on ABPM, HR and volume of OPA, also effects of cumulative exposure to OL would be relevant to investigate. **Conclusion:** OL significantly raised the intensity and volume of OPA. Direct field observation of occupational lifting showed an excellent interrater reliability.

**Baumann et al. 2023.**

**Annals of Work Exposures and Health, vol. 67, no. 5.**

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**Keywords:** Hypertension; work environment; manual work; physical activity paradox; technical measurements.

**Evidence Level:** 4B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10243935/>

### **Does it matter for health if steps are taken during work or leisure? A prospective accelerometer study using register-based long-term sickness absence.**

**Background:** Walking is known to be good for health. However, it is unknown whether it matters if steps are taken during work or leisure. Therefore, we aimed to examine the prospective association between accelerometer-measured steps taken during work or leisure and register-based long-term sickness absence (LTSA). **Methods:** We included 937 blue- and white-collar workers from the PODESA cohort who wore a thigh-based accelerometer over four days to measure number of steps during work and leisure. Steps were divided into domain based on diary data. First event of LTSA was retrieved from a national register with four years' follow-up. We used Cox proportional hazard models to analyse the association between domain-specific and total daily steps and LTSA, adjusted for age, sex, job type, smoking, and steps in the other domain (e.g., work/leisure). **Results:** We found more steps at work to be associated with a higher LTSA risk [Hazard Ratio (HR):1.04; 95% CI: 1.00-1.08 per 1000 steps]. No significant association was found between steps during leisure and LTSA (HR: 0.97; 95% CI: 0.91-1.02), nor between total daily steps and LTSA (HR: 1.01; CI 95% 0.99-1.04). **Conclusion:** More steps at work were associated with higher risk of LTSA, while steps during leisure was not clearly associated with LTSA risk. These findings partly support 'the physical activity paradox' stating that the association between physical activity and health depends on the domain.

**Christensen et al. 2023.**

**International Journal of Behavioral Nutrition and Physical Activity, vol. 20, no. 1.**

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**Keywords:** Absenteeism; occupational health; physical activity paradox; sick leave; walking; work demands.

**Evidence Level:** 4A

**Link:** <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-023-01468-4>

## **Musculoskeletal Health**

*This month we explore the prevalence of low back pain among bus drivers, musculoskeletal pain in health professionals, persistent musculoskeletal pain in factory employees, and musculoskeletal disorders among street cleaners and solid waste workers. In other studies, we explore the efficacy of sling exercise combined with extracorporeal shock wave and a multi-component intervention (Nexpro) on office workers with neck pain.*



### **Low back pain among professional bus drivers: A cross-sectional study from Bangladesh**

**Background:** Low back pain (LBP) is a common condition contributing to impaired quality of life among professional vehicle drivers. Our study aimed to assess LBP prevalence and associated factors among professional bus drivers in Bangladesh. **Methods:** A cross-sectional study was conducted among 368 professional bus drivers using a semi-structured questionnaire. A Nordic Musculoskeletal Questionnaire (NMQ) subscale was used to measure LBP. Multivariable logistic regression analysis was used to identify the factors associated with LBP. **Results:** In the last month, 127 (34.51%) participants reported experiencing pain or discomfort in the lower backside. Multivariable logistic regression analysis showed that age of more than 40 years (adjusted odds ratio (aOR): 2.07, 95% confidence interval (CI): 1.14 to 3.75), the income of more than 15,000 BDT per month (aOR: 1.91, 95% CI: 1.11 to 3.26), work duration more than ten years (aOR: 2.53, 95% CI: 1.12 to 5.70), working more than 15 days per month (aOR: 1.93, 95% CI: 1.02 to 3.65), working more than 10 h per day (aOR: 2.46, 95% CI: 1.05 to 5.75), poor condition of the driving seat (aOR: 1.80, 95% CI: 1.08 to 3.02), current smoking habit (aOR: 9.71, 95% CI: 1.25 to 75.15), illicit substances use (aOR: 1.97, 95% CI: 1.11 to 3.48), and four hours or less sleeping time per day (aOR: 1.83, 95% CI: 1.09 to 3.06) were positively associated with LBP. **Conclusion:** The high burden of LBP among the participants calls for a focus on this vulnerable group's occupational health and safety, with particular emphasis on implementing standard measures.

**Nabi et al. 2023.**

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

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**Keywords:** Bangladesh; bus drivers; low back pain; occupational health; quality of life.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16018-7>

### **Musculoskeletal pain in health professionals at the end of their studies and 1 year after entry into the profession: A multi-center longitudinal questionnaire study from Switzerland**

**Background:** Musculoskeletal pain, especially back pain, is common among health care professionals (HP). For prevention purposes, it is important to know whether HP develop their symptoms before or after entering the health care workforce. Cross-sectional studies among HP cannot answer this question. This follow-up study measures the prevalence and individual course of musculoskeletal pain among full-time HP students at the end of their studies and one year after entering the health care workforce. **Method:** Self-reported one-year prevalence for low back pain, neck/shoulder pain, pain in arms/hands, and pain in legs/feet was collected at two timepoints from 1046 participating HP using an online questionnaire. Participants were asked whether their musculoskeletal pain was related to study or work conditions. Generalized estimating equation (GEE) models of the binomial family with log link were used to estimate adjusted prevalence and corresponding normal based 95% confidence intervals were derived using the bootstrap method with 1000 replications. **Results:** The prevalence of low back pain as well as neck and shoulder pain was very high at baseline and follow-up in all full-time students and later HP. Prevalence for pain in arms/hands, legs/feet was low and there were significant differences between the professions. HP clearly associated their low back pain and neck/shoulder pain with study and work conditions; HP strongly associated pain in arms/hands, legs/feet only with work conditions. **Conclusion:** Many HP suffer from back/neck/shoulder pain already as students before starting their professional career. The prevention of back/neck/shoulder pain must be part of the education of all health professions at universities. As an example of best practice, universities should incorporate ergonomic measures and exercises into the daily routine of training health professionals. The effects of physically demanding professional tasks on the upper and lower extremities need to be investigated in further studies to take preventive measures.

**Bucher et al. 2023.**

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

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**Keywords:** Back; foot; hand; health professionals; longitudinal; musculoskeletal pain; neck.

**Evidence Level:** 4B

**Link:** <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-023-06635-z>

### **The Örebro Musculoskeletal Pain Screening Questionnaire-Short Form and 2-year follow-up of registered work disability**

**Background:** The Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ) was developed to identify psychological and functioning-related risk factors among individuals with musculoskeletal pain at risk of work disability. This study aimed to examine whether the short version of the ÖMPSQ (ÖMPSQ-SF) can be used for this purpose, using registry-based outcomes. **Methods:** The ÖMPSQ-SF was completed by the members of the Northern Finland Birth Cohort 1966 at the age of 46 years (baseline). These data were enriched with national registers, including information on sick leaves and disability pensions (indicators of work disability). The associations between the ÖMPSQ-SF categories (low-, medium- and high risk) and work disability over a 2-year follow-up were analysed using negative binomial regression and binary logistic regression models. We made adjustments for sex, baseline education level, weight status and smoking. **Results:** Overall, 4063 participants provided full data. Of these, 90% belonged to the low-risk, 7% to the medium-risk and 3% to the high-risk group. Compared to the low-risk group, the high-risk group had a 7.5 [Wald 95% confidence interval (CI) 6.2-9.0] times higher number of sick leave days and 16.1 (95% CI 7.1-36.8) times higher odds of disability pension after adjustments in the 2-year follow-up. **Conclusion:** : Our study suggests that the ÖMPSQ-SF could be used for predicting registry-based work disability at midlife. Those allocated to the high-risk group seemed to have a particularly great need of early interventions to support their work ability.

**Heikkala et al. 2023.**

**European Journal of Public Health, vol. 33, no. 3.**

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**Keywords:** Musculoskeletal pain; pain screening; disability.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/eurpub/article/33/3/442/7165278?login=true>

### **The efficacy of sling exercise combined with extracorporeal shock wave on office workers with chronic neck pain**

**Background:** This study aimed to investigate the effect of extracorporeal shockwave therapy on the anterior surface line of the fascia meridian, including the oblique muscle, combined with sling exercise, on the stability of the spine in the neck disability index (NDI), neck joint range of motion (ROM), craniovertebral angle, neck alignment, and posture control. **Methods:** A total of 20 office workers with chronic neck pain were randomly assigned to an experimental group that combined extracorporeal shock wave therapy and sling exercise (n = 10) and a control group (CG) consisting of sling exercise (n = 10) performed twice weekly for 4 weeks. All subjects were evaluated using the NDI, ROM, neck alignment, and spine stability tests. Following the intervention, there were significant differences in the For example, NDI, craniovertebral angle, Cobb's angle, Centaur data, and ROM. Except for Cobb's angle and Centaur data (-90 degrees), all variables showed significant differences in the CG. Comparing changes before and after the intervention, **Results:** The For example, showed significantly more significant changes in all variables than the CG. **Conclusion:** The combination of extracorporeal shockwave therapy and sling exercises improved NDI, ROM, and neck and spine alignment in office workers with chronic neck pain more effectively than the sling exercise alone. This study could be recommended as a new approach to enable individuals with chronic neck pain to perform better.

**Lee et al. 2023.**

**Medicine, vol. 102, no. 23.**

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**Keywords:** Chronic neck pain; extracorporeal shockwave therapy; sling exercise.

**Evidence Level:** 3A

**Link:** [https://journals.lww.com/md-journal/Fulltext/2023/06090/The\\_efficacy\\_of\\_sling\\_exercise\\_combined\\_with.42.aspx](https://journals.lww.com/md-journal/Fulltext/2023/06090/The_efficacy_of_sling_exercise_combined_with.42.aspx)

### **Quantifying the burden of persistent musculoskeletal pain in employees at Rolls-Royce in the United Kingdom: A real-world cross-sectional survey**

**Background:** We aimed to investigate the burden of persistent musculoskeletal (MSK) pain in Rolls-Royce UK employees. **Methods:** Employees with (n = 298) and without (n = 329) persistent MSK pain completed a cross-sectional survey. Weighted regression analyses were conducted to compare sickness absence, work ability, workplace accommodations/adaptations, and emotional well-being between these cohorts, controlling for confounders. **Results:** Persistent MSK pain (particularly back pain) had a significant impact on physical work ability and was associated with increased sickness absence due to pain. Many employees (56%) had not disclosed their condition to their managers. Of these, 30% felt uncomfortable doing so, and 19% of employees reported insufficient support at work for their pain. **Conclusion:** These findings highlight the importance of creating a workplace culture that encourages the disclosure of work-relevant pain, enabling organizations to consider improved, tailored support for employees.

**Abraham et al. 2023.**

**Journal of Occupational and Environmental Medicine, vol. 65, no. 6.**

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**Keywords:** Burden; musculoskeletal pain; Rolls-Royce; employees.

**Evidence Level:** 4B

**Link:** [https://journals.lww.com/joem/Fulltext/2023/06000/Quantifying\\_The\\_Burden\\_of\\_Persistent.21.aspx](https://journals.lww.com/joem/Fulltext/2023/06000/Quantifying_The_Burden_of_Persistent.21.aspx)

### **A multi-component intervention (Nexpro) reduces neck pain-related work productivity loss: A randomized controlled trial among Swiss office workers**

**Background:** Neck pain is common among office workers and leads to work productivity loss. This study aimed to investigate the effect of a multi-component intervention on neck pain-related work productivity loss among Swiss office workers. **Methods:** Office workers, aged 18-65 years, and without serious neck-related health problems were recruited from two organisations for our stepped-wedge cluster randomized controlled trial. The 12-week multi-component intervention included neck exercises, health-promotion information, and workplace ergonomics. The primary outcome of neck pain-related work productivity loss was measured using the Work Productivity and Activity Impairment Questionnaire and expressed as percentages of working time. In addition, we reported the weekly monetary value of neck pain-related work productivity loss. Data was analysed on an intention-to-treat basis using a generalized linear mixed-effects model. **Results:** Data from 120 participants were analysed with 517 observations. At baseline, the mean age was 43.7 years (SD 9.8 years), 71.7% of participants were female (N = 86), about 80% (N = 95) reported mild to moderate neck pain, and neck pain-related work productivity loss was 12% of working time (absenteeism: 1.2%, presenteeism: 10.8%). We found an effect of our multi-component intervention on neck pain-related work productivity loss, with a marginal predicted mean reduction of 2.8 percentage points (b = -0.27; 95% CI: -0.54 to -0.001, p = 0.049). Weekly saved costs were Swiss Francs 27.40 per participant. **Conclusion:** Our study provides evidence for the effectiveness of a multi-component intervention to reduce neck pain-related work productivity loss with implications for employers, employees, and policy makers. Trial Registration ClinicalTrials.gov, [NCT04169646](https://clinicaltrials.gov/ct2/show/NCT04169646). Registered 15 November 2019-Retrospectively registered, <https://clinicaltrials.gov/ct2/show/NCT04169646>.

**Aegerter et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 2.**

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**Keywords:** Absenteeism; ergonomics; exercise; health promotion; presenteeism.

**Evidence Level:** 2B

**Link:** <https://link.springer.com/article/10.1007/s10926-022-10069-0>

### **Magnitude and possible risk factors of musculoskeletal disorders among street cleaners and solid waste workers: A cross-sectional study**

**Background:** In the absence of a standardized work environment, insurance system, occupational safety measures and expanding workload an uptrend of musculoskeletal disorders secondary to occupational hazards is observed among a wide range of occupations in developing countries including street

sweepers/cleaners. The aim of this study is to determine the burden and potential factors associated with musculoskeletal disorders among street cleaners/solid waste collectors in Gondar town, Ethiopia.

**Methods:** A cross-sectional study design was used to determine the burden and identify potential risk factors of musculoskeletal disorders among street cleaners. Street cleaners (n = 422) working experience of at least one year were randomly selected from the community at their respective work sites (street). A face-to-face interview recorded the participant's response addressing socio-demographic, occupational, job satisfaction, disability related to basic ADL, physical measurements, and self-reported pain using the Nordic-Musculoskeletal questionnaire. The logistic regression model was created to identify potential factors associated with self-reported MSDs. **Results:** The sample consists of women street sweepers/cleaners (100%, n = 422, response rate 100%) with at least one-year of work experience with a mean age of  $37.03 \pm 8.26$ . About 40% of women sweepers were illiterate and 95% reported no job satisfaction. The overall prevalence of MSDs was 73% (n = 308, 95% CI; 68.5, 77.2), among them nearly 65% reported having experienced disability in performing basic ADL in the past 12 months. Low back pain was the most prevalent region (n = 216, 70.1% case versus MSDs n = 308). In univariate and multivariate logistics analysis, being overweight/obese (AOR of 4.91 (95%, 2.22, 10.87)), age group 35 and above (AOR 2.534 (1.51, 4.26)), not-satisfied with job (AOR 2.66 (1.05, 6.75)), and street cleaning distance of longer than 2 km (AOR 2.82 (1.64, 4.83)) were significantly associated with self-reported musculoskeletal disorder. **Conclusion:** This study demonstrated higher self-reported MSDs among street sweepers/cleaners. Modifiable predictors like overweight, lack of job satisfaction, and cleaning longer distance were identified to be associated. Hence, there is a need for ergonomic measures and policy to curb these factors to reduce the burden of MSD among women street sweepers.

**Alie et al. 2023.**

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

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**Keywords:** Musculoskeletal disorders; risk factors; solid-waste; street sweepers.

**Evidence Level:** 4B

**Link:** <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-023-06619-z>

## Guiding and Supporting Mental Health and Wellbeing

### Mental Health

*This month we explore tools to screen occupational mental health and workplace factors influencing it, the relationship between adverse mental health and job strain in police officers and the effect of work and coping factors on mental health in truckdrivers. In other studies, we explore workplace mental health disclosure, sustainable employability and well-being at work, the relationship between work-family conflicts and long-term medically certified sickness absence due to mental disorders and the effect of a blended intervention to improve suicide prevention literacy and help-seeking intentions among construction workers. In Covid-19 related research we explore the suicidal thoughts and behaviour among healthcare workers during the pandemic.*

### **Development and validation of tools to screen occupational mental health and workplace factors influencing it: For the Indian workforce.**

**Background:** An imbalance in the key organizational psychology constructs viz. "Workload", "Reward", "Community", "Control", "Values" and "Fairness" are potential factors leading to negative occupational mental health, i.e. burnout. Burnout, a psychological syndrome is the combination of emotional exhaustion, sense of reduced compassion and accomplishment. To note, the concept of occupational mental health in a nation with second largest workforce is nascent. Further, the utility of existing western tools in Indian subcontinent is limited by culturally inappropriateness, patented, less comprehensible and other factors. **Methods:** Present study attempted to develop tools to screen occupational mental health and workplace areas. Conventional steps involved in psychological tool development, viz. construct identification, drafting of pertinent questions, content validation, field testing of questions and others were

adopted. **Results:** After series of steps, tools for screening occupational mental health and key constructs influencing mental health at workplace (workplace assessment) were developed. The screening tools exhibited adequate test-retest reliability, internal consistency/reliability (cronbach's  $\alpha > 0.73$ ) and correlation (correlation coefficient  $> 0.6$ ) with the general mental health in larger evaluation of 153 consenting workers. **Discussion:** The proposed simple and easy to administer tool requires development of normative scores thereby aiding early diagnosis and management of those requiring intervention.

**Balachandar et al. 2023.**

**Industrial Health, vol. 61, no. 3.**

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**Keywords:** Burnout; occupational mental health; screening tools; tool development; workplace key areas.

**Evidence Level:** 6B

**Link:** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10277194/>

### **Primary care consultations among UK police officers and staff: Links with adverse mental health and job strain**

**Background:** The current study examined links between adverse mental health, job strain, and likelihood and frequency of primary care consultations among police employees. **Methods:** We conducted secondary data analysis on the Airwave Health Monitoring Study data (  $n = 33,730$ ). Measures included self-report data on mental health, job strain, job support, and primary care consultations in the past 12 months. Data were analyzed using a zero-inflated Poisson regression framework. **Results:** Findings showed that overall, help seeking was low based on mental health status and job strain. Adverse mental health was associated with more primary care consultations. Police employees with high, active, or passive job strain reported more primary care consultation compared with police employees with low strain. **Conclusion:** Findings suggest that more work to reduce stigma of taking the initial step of help seeking would be beneficial.

**Trompeter et al. 2023.**

**Journal of Occupational and Environmental Medicine, vol. 65, no. 6.**

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**Keywords:** Mental health; job strain; police.

**Evidence Level:** 4B

**Link:**

[https://journals.lww.com/joem/Fulltext/2023/06000/Primary\\_Care\\_Consultations\\_Among\\_UK\\_Police.9.aspx](https://journals.lww.com/joem/Fulltext/2023/06000/Primary_Care_Consultations_Among_UK_Police.9.aspx)

### **Impact of work and coping factors on mental health: Australian truck drivers' perspective**

**Background:** Truck driving is one of the most common male occupations worldwide. Drivers endure long working hours, isolation, separation from family, compromised sleep, and face rigid regulatory requirements. Studies have documented the work factors contributing to poor health outcomes, however these have not been explored in the Australian context. The aim of this grounded theory study was to explore the impact of work and coping factors on mental health of Australian truck drivers from their perspective. **Methods:** Recruitment used a purposive snowball sampling, through social media campaigns and direct email invites. Interview data were collected via phone/teleconference, audio recorded and typed verbatim. Inductive coding and thematic analysis were completed with triangulation of themes.

**Results:** Seventeen interviews were completed (94% male). Six themes arose, two supporting (Connections; Coping methods), and four disrupting mental health (Compromised supports; Unrealistic demands; Financial pressures; Lack of respect). Drivers had concerns regarding the many things beyond their control and the interactions of themes impacting their health even further. **Conclusion:** This study explored the impact of work and coping factors affecting truck driver mental health in Australia. Themes described the importance of connections and coping methods drivers had to support their health. Many factors that compromised their health were often outside their control. These results highlight the need for a multi-faceted collaboration between stakeholders; the driver, employing companies, policy makers/regulators and the public to address the negative impact of truck driving on mental health.



**Pritchard et al. 2023.**

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

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**Keywords:** Australia; mental health; qualitative research; risk and supportive factors; truck drivers.

**Evidence Level:** 5A

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15877-4>

### **Workplace mental health disclosure, sustainable employability and well-being at work: A cross-sectional study among military personnel with mental illness**

**Background:** Disclosure of mental illness to a supervisor can have positive (e.g. supervisor support) and negative consequences (e.g. stigma). However, research on the association between disclosure and sustainable employability and well-being at work is scarce. The aim of this study was to investigate the association between the disclosure decision (yes/no), experiences with the decision (positive/negative) and sustainable employment and well-being at work among military personnel with mental illness (N = 323).

**Methods:** A cross-sectional questionnaire study was conducted. Descriptive and regression (linear and ordinal) analyses were performed. Comparisons were made between those with positive and negative disclosure experiences. **Results:** Disclosure decision (yes/no) was not significantly associated with any of the measures of sustainable employability and well-being at work. However, positive disclosure experiences were significantly associated with higher scores on almost all measures of sustainable employability and well-being at work. Those with negative disclosure experiences reported significantly more shame ( $M_{pos} = 2.42$ ,  $M_{neg} = 2.78$ ,  $p < .05$ ) and discrimination ( $M_{pos} = 1.70$ ,  $M_{neg} = 2.84$ ,  $p < .001$ ). Those with a positive disclosure experience, reported significantly more supervisor support ( $M_{pos} = 3.20$ ,  $M_{neg} = 1.94$ ,  $p < .001$ ). **Conclusion:** We did not find evidence that the disclosure decision itself is related to measures of sustainable employment and well-being at work. In contrast, how participants had experienced their (non-)disclosure decision was significantly related to almost all measures. This emphasizes the importance of the work environments reactions to disclosure and mental illness in the workplace. Future research and interventions should focus on increasing the likelihood of positive disclosure experiences through creating a more inclusive work environment, with more supervisor support and less stigma.

**Bogaers et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 2.**

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**Keywords:** Disclosure; mental health; military; stigma; sustainable employability; well-being.

**Evidence Level:** 4B

**Link:** <https://link.springer.com/article/10.1007/s10926-022-10083-2>

### **Work-family conflicts and long-term medically certified sickness absence due to mental disorders: A follow-up study of female municipal employees**

**Background:** Decreased work ability due to mental disorders is a growing concern in Europe. We studied the role of work-family conflicts in association with long-term sickness absence due to mental disorders (LTSA-MD). **Methods:** Baseline data were extracted from the Helsinki Health Study for women aged 40 to 55 in full-time work in 2001 - 2002 (N = 2386). Questionnaire responses were linked with register data from the Social Insurance Institution of Finland on SA spells due to mental disorders during 2004-2010. We studied an overall question on satisfaction with combining work and family (WFS) and composite scores of work-to-family conflicts (WTFC) and family-to-work-conflicts (FTWC), and their components in association with the first certified SA spell ( $\geq 12$  calendar days) due to a mental disorder during the follow-up. We performed Cox regression analyses with hazard ratios (HR) and their 95% confidence intervals (CI) adjusted for sociodemographic factors, work schedule, perceived mental and physical strenuousness at work, and self-rated health. First, we examined all participants, and second, only those who reported no prior mental disorder. **Results:** Poor work-family satisfaction (WFS) was associated with subsequent LTSA-MD, adjusting for all covariates (HR 1.60; 95% CI 1.10-2.16). Both high WTFC (1.64; 1.15-2.23), and high FTWC (1.43; 1.02-2.00) increased the probability of LTSA-MD in the full model. When participants with prior mental disorder were excluded, the association between poor WFS and WTFC with LTSA-MD retained while that between

FTWC and LTSA-MD attenuated; however, two items of the FTWC were still associated with LTSA-MD: 'Family worries and problems distract you from your work' and 'Family matters prevent you from sleeping enough to do your job well'. Of the WTFC items, the following remained associated with LTSA-MD: 'Problems at work make you irritable at home' and 'Your job takes so much energy you do not feel up to doing things that need attention at home'. The experience of decreased time for work or family did not associate with LTSA-MD. **Conclusion:** Among female municipal employees, dissatisfaction with combining work and family and both work-to-family and family-to-work conflicts were associated with subsequent long-term sickness absence due to mental disorders.

**Kaila-Kangas et al. 2023.**

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

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**Keywords:** Family; mental health; role conflict; sick leave; wellbeing; work.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16075-y>

### **A blended face-to-face and smartphone intervention to improve suicide prevention literacy and help-seeking intentions among construction workers: A randomised controlled trial**

**Background:** In Australia and elsewhere, suicide rates among construction workers remain high. Construction workplaces are thus an important setting for targeted suicide prevention programs. This study aimed to compare suicide prevention literacy and help-seeking intentions among participants receiving face-to-face suicide prevention training, with those receiving face-to-face training augmented by a smartphone application. **Methods:** A two-arm randomised controlled trial of a smartphone suicide prevention intervention was conducted among construction workers in four Australian states (trial registration number: ACTRN12619000625178). All participants received face-to-face training and were randomised to the control condition (face-to-face only, n = 575), or MATESmobile condition (face-to-face + smartphone application, n = 509). Surveys administered at baseline and 3-month follow-up measured suicide prevention literacy and help-seeking intentions for personal/emotional problems and suicidal thoughts. A mixed-model repeated measures (MMRM) analysis included all 1084 randomised participants. **Results:** Outcomes did not differ significantly for suicide prevention literacy, nor help-seeking intentions from formal sources, informal sources outside the workplace, or no one (did not intend to seek help from anyone). However, relative to those in the control condition, those in the MATESmobile group showed greater increase in help-seeking intentions for emotional problems from a MATES worker/Connector (mean difference 0.54, 95% CI 0.22-0.87) and help-seeking intentions for suicidal thoughts from a workmate (mean difference 0.47, 95% CI 0.10-0.83) or MATES worker/Connector (mean difference 0.47, 95% CI 0.09-0.85). **Conclusion:** Results indicate that the MATESmobile application, together with face-to-face training, is beneficial in enhancing help-seeking intentions from MATES workers/Connectors and workmates to a greater extent than face-to-face training only. While this research provides some evidence that smartphone applications may support suicide prevention training, further research is needed.

**King et al. 2023.**

**Social Psychiatry and Psychiatric Epidemiology, vol. 58, no. 6.**

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**Keywords:** Intervention; randomised controlled trial; suicide prevention; workplace.

**Evidence Level:** 2A

**Link:** <https://link.springer.com/article/10.1007/s00127-023-02429-9>

### **Suicidal thoughts and behaviour among healthcare workers in England during the COVID-19 pandemic: A longitudinal study**

**Background:** During the COVID-19 pandemic, concern has been raised about suicide risk among healthcare workers (HCWs). We investigated the incidence risk and prevalence of suicidal thoughts and behaviour (STB), and their relationship with occupational risk factors, among National Health Service HCWs in England between April 2020 and August 2021. **Methods:** In this longitudinal study, we analysed online survey data completed by 22,501 HCWs from 17 NHS Trusts at baseline (Time 1) and six months (Time 2). The primary outcome measures were suicidal ideation, suicide attempts, and non-suicidal self-injury. We used logistic

regression to investigate the relationship between these outcomes and demographic characteristics and occupational factors. Results were stratified by occupational role (clinical/non-clinical). **Results:** Time 1 and Time 2 surveys were completed by 12,514 and 7,160 HCWs, respectively. At baseline, 10.8% (95% CI = 10.1%, 11.6%) of participants reported having experienced suicidal thoughts in the previous two months, whilst 2.1% (95% CI = 1.8%, 2.5%) of participants reported having attempted suicide over the same period. Among HCWs who had not experienced suicidal thoughts at baseline (and who completed the Time 2 survey), 11.3% (95%CI = 10.4%, 12.3%) reported such thoughts six months later. Six months after baseline, 3.9% (95% CI = 3.4%, 4.4%) of HCWs reported attempting suicide for the first time. Exposure to potentially morally injurious events, lack of confidence about raising safety concerns and these concerns being addressed, feeling unsupported by managers, and providing a reduced standard of care were all associated with increased suicidal ideation among HCWs during the COVID-19 pandemic. At six months, among clinicians, a lack of confidence about safety concerns being addressed, independently predicted suicidal ideation. **Conclusion:** Suicidal thoughts and behaviour among healthcare workers could be reduced by improving managerial support and enhancing the ability of staff to raise safety concerns.

**Panmanathan et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Suicidal thoughts; COVID-19; suicide risk, behaviour; healthcare workers.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286207>

## Psychosocial Issues

*This month we explore the relationship between job satisfaction and turnover intention among the young workforce, sleep quality and work stress among office workers, and child welfare factors and protection workers' intention to quit. In other studies, we explore the optimal telework frequency in terms of sleep and labour productivity and coping strategies for work-family conflict and burnout in construction workers.*

### **Envisaging the job satisfaction and turnover intention among the young workforce: Evidence from an emerging economy**

**Background:** As the economy evolves and markets change after Covid-19, demand and competition in the labor market increase in China, and employees become increasingly concerned about their career opportunities, pay, and organizational commitment. This category of factors is often considered a key predictor of turnover intentions and job satisfaction, and it is important that companies and management have a good understanding of the factors that contribute to job satisfaction and turnover intentions. The purpose of this study was to investigate the factors that influence employees' job satisfaction and turnover intention and to examine the moderating role of employees' job autonomy. **Methods:** This cross-sectional study aimed to quantitatively assess the influence of perceived career development opportunity, perceived pay for performance, and affective organisational commitment on job satisfaction and turnover intention, as well as the moderating effect of job autonomy. An online survey, which involved 532 young workforce in China, was conducted. All data were subjected to partial least squares-structural equation modelling (PLS-SEM). **Results:** The obtained results demonstrated the direct influence of perceived career development, perceived pay for performance, and affective organisational commitment on turnover intention. These three constructs were also found to have indirect influence on turnover intention through job satisfaction. Meanwhile, the moderating effect of job autonomy on the hypothesised relationships was not statistically significant. **Conclusion:** This study presented significant theoretical contributions on turnover intention in relation to the unique attributes of young workforce. The obtained findings may also benefit managers in their efforts of understanding the turnover intention of the workforce and promoting empowerment practices.

**Chen et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Job satisfaction; turnover; young workforce; economy; COVID-19.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287284>

### **Evaluation of sleep quality, work stress and related factors in hospital office workers**

**Background:** Occupational factors, working conditions, age, gender, exercise, acquired habits, and stress affect a person's sleep quality. The aim of this study was to investigate sleep quality, work stress, and related factors among office workers in a hospital. **Methods:** This cross-sectional study was conducted with office workers actively working in a hospital. A questionnaire consisting of a sociodemographic data form, the Pittsburgh Sleep Quality Index (PSQI), and Swedish Workload-Control-Support Scale were used to assess the participants. **Results:** The mean of PSQI score was  $4.32 \pm 2.40$  and 27.2% of the participants had poor sleep quality. In the multivariate backward stepwise logistic regression analysis, it was found that shift workers were 1.73 times (95% CI: 1.02-2.91) more likely to have poor sleep quality, and a one-unit increase in work stress score increased the risk of having poor sleep quality by 2.59 times (95% CI: 1.37-4.87). An increase in age was found to decrease the risk of poor sleep quality in workers (OR =0.95; 95% CI: 0.93-0.98). **Conclusion:** This study suggests that reducing workload and increasing work control as well as enhancing social support will be effective in preventing sleep disturbances. It is important, however, in terms of providing guidance for hospital employees in planning future measures to improve working conditions.

**Güngördü et al. 2023.**

**La Medicina del Lavoro, vol. 114, no. 3.**

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**Keywords:** Sleep quality; work stress; hospital; sleep.

**Evidence Level:** 4B

**Link:** <https://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/14033>

### **Optimal telework frequency in terms of sleep and labor productivity depends on the workers' psychological distress: A cross-sectional study in Tokyo, Japan**

**Background:** This study aimed to determine that workers' sleep and labour productivity differ with the telework frequency and that the optimal telework frequency depends on workers' psychological distress. **Methods:** A cross-sectional study using an online-based questionnaire was conducted with 2,971 workers employed by Japanese companies from October to December 2021. We used the 6-item Kessler Scale, K6, as a nonspecific psychological distress scale to screen mental health conditions. A score of  $\leq 4$  was defined as low psychological distress (LPD), and a score of  $\geq 5$  was defined as high psychological distress (HPD). We used the Athens Insomnia Scale (AIS) as a measure of sleep quality. The Utrecht Work Engagement (UWES) and Work Functioning Impairment (WFun) scales were used as measures of labour productivity. Series of analysis of covariance (ANCOVA) was used for the data analysis. **Results:** The analysis included 2,013 participants (1,390 men and 623 women; mean age 43.2 years, standard deviation 11.3). Multiple comparison tests showed that among the participants categorized HPD (HPD type), the AIS estimates were lowest in the 1-2 d/wk group, with significant differences between the 0-3 d/m and  $\geq 5$  d/wk groups. UWES estimates were lowest in the 3-4 d/wk group with significant differences between the participants categorized LPD (LPD type) and HPD type, while no significant differences were observed among the LPD type. The WFun estimates among the LPD type decreased significantly with increasing telework frequency, while no significant differences were observed among the HPD type. **Conclusion:** The optimal telework frequency for sleep and labour productivity may depend on the workers' psychological distress. The finding of this study could make a great contribution to occupational health activities and health promotion for teleworkers, which is necessary to make teleworking a sustainable work style.

**Matsumoto et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Sleep; labor productivity; psychological distress; telework.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286699>

### **Factors affecting child welfare and protection workers' intention to quit: A cross-sectional study from Norway**

**Background:** High turnover rates have been a problem for Norwegian child welfare and protection services for years. The main aim of this study was to identify which factors affect Norwegian child welfare and protection (CWP) workers intention to quit their job and whether there is a difference between experienced (< 3 years) and less experienced workers. **Methods:** A cross-sectional survey was performed among 225 Norwegian child welfare and protection workers. Data were collected using a self-report questionnaire. Turnover intention was examined using a variety of job demands and resources as possible predictors. T tests were used to study mean differences in variable scores between experienced and less experienced workers and linear regression analysis was employed determining predictors of intention to quit. **Results:** For the total sample (N = 225) the most important predictors for intention to quit were workload, burnout, engagement, and views on leadership. Higher emotional exhaustion and cynicism, and low professional efficacy predicted a higher score on the intention to quit scale. High engagement and leadership satisfaction predicted lower scores. The effect of workload was moderated, such that intention to quit among less experienced workers increased more with high workload than it did among more experienced child welfare workers. **Conclusion:** The conclusions are that job demands affect experienced and less experienced CWP workers differently and that when designing preventive efforts to reduce turnover this must be considered.

**Nilsen et al. 2023.**

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

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**Keywords:** Burnout; child advocacy; child welfare; intention; personnel turnover.

**Evidence Level:** 4B

**Link:** <https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-023-00829-1>

### **Coping strategy for work-family conflict and burnout in construction industrial adult workers: A philosophical highlight**

**Background:** The work environment in Nigeria is demanding and could lead to psychological disturbances. Evidentially, construction workers have confirmed the horrible job stress and work-family conflict they experience in the workplace. This has led to work-related burnout. As a matter of importance, this study was conducted. **Methods:** A pure experimental design was used, which helped to randomly assigned recruited 98 construction industry adult workers to 2 arms (treatment and waitlisted control groups). Two dependent measures were distributed before, immediately after, and 4 weeks after completion of intervention with 12 sessions that were given to the treatment group. **Results:** This study found that cognitive behavior therapy is beneficial in the management of work-family conflict and work burnout among construction industry workers. Therefore, there is a need for advancement and adequate implementation of cognitive behavior therapy in industries for psychological functioning of workers.

**Okereke et al. 2023.**

**Medicine, vol. 102, no. 23.**

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**Keywords:** Burnout; work-family conflict; coping strategy; construction.

**Evidence Level:** 3B

**Link:** [https://journals.lww.com/md-journal/Fulltext/2023/06090/Coping\\_strategy\\_for\\_work\\_family\\_conflict\\_and.53.aspx](https://journals.lww.com/md-journal/Fulltext/2023/06090/Coping_strategy_for_work_family_conflict_and.53.aspx)



## Fostering Work Participation

### Return to Work

*This month we explore return to work issues associated with young employees with common mental disorder and working-age patients after a total hip arthroplasty.*

#### **Hindering and enabling factors for young employees with common mental disorder to remain at or return to work affected by the COVID-19 pandemic: A qualitative interview study with young employees and managers**

**Background:** During the COVID-19 pandemic, changes in working life occurred, even in Sweden, where there was no general lockdown. The aim of this study was to examine how the COVID-19 pandemic was perceived as affecting the hindering and enabling factors among young employees with CMD to remain at or return to work, here as investigated from the perspective of young employees and managers. **Material and methods:** A qualitative design was applied with semi-structured interviews with 23 managers and 25 young employees (20-29 years old). The interviews were recorded and transcribed verbatim, and the parts of the interviews related to the aim of this article were analysed using conventional content analysis.

**Results:** The hindering factors were changed working conditions, decreased well-being when spending more time at home, and uncertainty. The enabling factors were decreased demands, increased balance, and well-functioning work processes. For managers it is important to be aware of warning signals indicating blurred boundaries between work and private life, to create and maintain well-functioning communication, and leave room for recovery. **Conclusion:** The hindering and enabling factors can be described as two sides of the same coin. Changes in the working conditions during the pandemic led to difficulties for both young employees and managers when the margins of manoeuvre were insufficient.

**Wallberg et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Young employees; mental disorder; return to work; COVID-19.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286819>

#### **Effectiveness of rehabilitation for working-age patients after a total hip arthroplasty: A comparison of usual care between the Netherlands and Germany**

**Background:** Postoperative rehabilitation after primary total hip arthroplasty (p-THA) differs between the Netherlands and Germany. Aim is to compare clinical effectiveness and to get a first impression of cost effectiveness of Dutch versus German usual care after p-THA. **Methods:** A transnational prospective controlled observational trial. Clinical effectiveness was assessed with self-reported questionnaires and functional tests. Measurements were taken preoperatively and 4 weeks, 12 weeks, and 6 months postoperatively. For cost effectiveness, long-term economic aspects were assessed from a societal perspective. **Results:** 124 working-age patients finished the measurements. German usual care leads to a significantly larger proportion (65.6% versus 47.5%) of satisfied patients 12 weeks postoperatively and significantly better self-reported function and Five Times Sit-to-Stand Test (FTSST) results. German usual care is generally 45% more expensive than Dutch usual care, and 20% more expensive for working-age patients. A scenario analysis assumed that German patients work the same number of hours as the Dutch, and that productivity costs are the same. This analysis revealed German care is still more expensive but the difference decreased to 8%. **Conclusion:** German rehabilitation is clinically advantageous yet more expensive, although comparisons are less straightforward as the socioeconomic context differs between the two countries.

**Wijnen et al. 2023.**

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

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**Keywords:** Cost comparison; economic evaluation; orthopedics; osteoarthritis; patient satisfaction; physiotherapy; rehabilitation; total hip replacement.

**Evidence Level:** 4B

**Link:** <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-023-06654-w>

## Presenteeism and Absenteeism

*This month we explore the relationship between sickness absences and labour market pathways, early retirement intentions amongst police, workplace emotional demands and open plan offices. In other studies, we explore the effect of providing financial aid for acupuncture therapy on office worker presenteeism.*

### **Managing office worker presenteeism by providing financial aid for acupuncture therapy: A pragmatic multicenter randomized comparative study**

**Background and Methods:** To evaluate whether financial aid for acupuncture therapy is beneficial for non-manufacturing job workers (office workers) who are aware of reduced job performance due to health issues (presenteeism), a four-wk pragmatic multicenter randomized controlled trial was conducted with office workers who were aware of their presenteeism. The control group only implemented the workplace-recommended presenteeism measures, whereas the intervention group received financial aid for acupuncture therapy of up to 8,000 JPY (Japanese yen) in addition to implementing the presenteeism measures recommended by each workplace. The major outcome measure was the World Health Organization Health and Work Performance Questionnaire relative presenteeism score. **Results:** A total of 203 patients were assigned to the intervention (n=103) and control (n=108) groups. The intervention group underwent a median of 1.0 (interquartile range [IQR], 1.0 to 2.0) sessions of acupuncture for neck disorders (64%), back disorders (16%), and depressed mood/anxiety/irritation (5%), among others. Results showed that the intervention group had slightly better job performance than the control group (effect size [r]=0.15, p=0.03). **Conclusion:** Financial aid for acupuncture therapy may help compensate for losses incurred by enterprises in the form of 14,117 JPY per worker a month.

**Minakawa et al. 2023.**

**Industrial Health, vol. 61, no. 3.**

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**Keywords:** Acupuncture therapy; costs and cost analysis; financial aid; health services accessibility; occupational health; presenteeism.

**Evidence Level:** 2B

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/61/3/61\\_2021-0186/article](https://www.jstage.jst.go.jp/article/indhealth/61/3/61_2021-0186/article)

### **Identifying labour market pathways after a 30-day-long sickness absence: A three-year sequence analysis study in Finland**

**Background:** Return-to-work (RTW) process often includes many phases. Still, multi-state analyses that follow relevant labour market states after a long-term sickness absence (LTSA), and include a comprehensive set of covariates, are scarce. The goal of this study was to follow employment, unemployment, sickness absence, rehabilitation, and disability pension spells using sequence analysis among all-cause LTSA absentees. **Methods:** Register data covered full-time and partial sickness allowance, rehabilitation, employment, unemployment benefits, and permanent and temporary disability pension (DP), retrieved for a 30% representative random sample of Finnish 18-59 years old persons with a LTSA in 2016 (N = 25,194). LTSA was defined as a ≥ 30-day-long full-time sickness absence spell. Eight mutually exclusive states were constructed for each person and for 36 months after the LTSA. Sequence analysis and clustering were used to identify groups with different labour market pathways. In addition, demographic, socioeconomic, and disability-related covariates of these clusters were examined using multinomial regressions. **Results:** We identified five clusters with emphases on the different states: (1) rapid RTW cluster (62% of the sample); (2) rapid unemployment cluster (9%); (3) DP after a prolonged sickness absence cluster (11%); (4) immediate or late rehabilitation cluster (6%); (5) other states cluster (6%). Persons with a rapid RTW (cluster 1) had a more advantaged background than other clusters, such as a

higher frequency of employment and less chronic diseases before LTSA. Cluster 2 associated especially with pre-LTSA unemployment and lower pre-LTSA earnings. Cluster 3 was associated especially with having a chronic illness before LTSA. Those in cluster 4 were on average younger and had a higher educational level than others. Especially clusters 3 and 4 were associated with a LTSA based on mental disorders.

**Conclusion:** Among long-term sickness absentees, clear groups can be identified with both differing labour market pathways after LTSA and differing backgrounds. Lower socioeconomic background, pre-LTSA chronic diseases and LTSA caused by mental disorders increase the likelihood for pathways dominated by long-term unemployment, disability pensioning and rehabilitation rather than rapid RTW. LTSA based on a mental disorder can especially increase the likelihood for entering rehabilitation or disability pension.

**Perhoniemi et al. 2023.**

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

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**Keywords:** Clustering; disability pension; labour market state; long-term sickness absence; longitudinal study; register study; rehabilitation; sequence analysis; work disability.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15895-2>

### **Early retirement intentions among Abu Dhabi Police: Investigating the role of psychosocial work factors and sickness absenteeism**

**Background:** Police departments are encouraged to integrate their health and safety management systems with the operational arrangements to demonstrate commitment to the improvement of working environment in the police is by the collection and analysis of occupational health data such as sickness absence and early retirement intention. **Methods:** About 760 responses to the Occupational Health and Safety Survey by the Abu Dhabi Police employees was used to analyse the early retirement intentions considering the work-related factors and sickness absence data. **Results:** Logistic regression results of the unadjusted model reported higher odds that lower levels of co-worker support, supervisor support, workplace support related to intentions of early retirement. Also, unfavourable perception of health management increases the odds to early retirement among the employees. **Conclusion:** The outcome of this study provides insights into the determinants of early retirement intentions in the less explored region of middle-east, specifically in Abu Dhabi. Thorough analysis of such data will help police organisations to prioritise plans and improve the health and wellbeing of officers, in turn contributing to strengthening the fight against crime and minimizing the number of occupational injuries and premature exit from paid work.

**Alkaabi et al. 2023.**

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

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**Keywords:** Abu Dhabi; early retirement; police; sickness absence; United Arab Emirates.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16129-1>

### **Emotional demands and all-cause and diagnosis-specific long-term sickness absence: A prospective cohort study in Sweden**

**Background:** High emotional demands at work require sustained emotional effort and are associated with adverse health outcomes. We tested whether individuals in occupations with high emotional demands, compared with low demands, had a higher future risk of all-cause long-term sickness absence (LTSA). We further explored whether the risk of LTSA associated with high emotional demands differed by LTSA diagnoses. **Methods:** We conducted a prospective, nationwide cohort study on the association between emotional demands and LTSA (>30 days) in the workforce in Sweden (n = 3 905 685) during a 7-year follow-up. Using Cox regression, we analyzed sex-stratified risks of all-cause and diagnosis-specific LTSA due to common mental disorders (CMD), musculoskeletal disorders (MSD) and all other diagnoses. Multivariable adjusted models included age, birth country, education, living area, family situation and physical work demands. **Results:** Working in emotionally demanding occupations was associated with a higher risk of all-cause LTSA in women [hazard ratio (HR) = 1.92, 95% confidence interval (CI): 1.88-1.96] and men (HR = 1.23, 95% CI: 1.21-1.25). In women, the higher risk was similar for LTSA due to CMD, MSD and all other

diagnoses (HR of 1.82, 1.92 and 1.93, respectively). In men, risk of LTSA due to CMD was pronounced (HR = 2.01, 95% CI: 1.92-2.11), whereas risk of LTSA due to MSD and all other diagnoses was only slightly elevated (HR of 1.13, both outcomes). **Conclusion:** Workers in occupations with high emotional demands had a higher risk of all-cause LTSA. In women, risk of all-cause and diagnosis-specific LTSA were similar. In men, the risk was more pronounced for LTSA due to CMD.

**Framke et al. 2023.**

**European Journal of Public Health, vol. 33, no. 3.**

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**Keywords:** Emotional demands; sickness absence.

**Evidence Level:** 4B

**Link:** <https://academic.oup.com/eurpub/article/33/3/435/7152427?login=true>

### **Association of open-plan offices and sick leave: A systematic review and meta-analysis**

**Background:** We aimed to systematically review and meta-analyze the association of employees working in various kinds of open-plan offices with sick leave data, compared to those working in traditional cell offices.

**Methods:** Databases of PubMed, PubPsych, and PsynDEX were systematically searched following the PRISMA statement. Pooled summary estimates of odds ratio (OR) were calculated comparing sick leave of employees in cell offices with those working in small open-plan offices (4-9 people), and those in various open-plan office solutions ( $\geq 4$  people). We used Forest plots visualizing study-specific estimates and the pooled fixed and random effects estimators. **Results:** Five studies were identified (2008-2020) with a total of 13,277 (range 469-6,328) participants. Compared with employees working in cell offices, those working in small open-plan offices were associated with higher odds of sick leave days (OR=1.27; 95% CI 0.99-1.54;  $p=0.046$ ) as well as those working in various kinds of open-plan offices with  $\geq 4$  colleagues (OR=1.24; 95% CI 0.96-1.51;  $p=0.004$ ). Our results are consistent with those of earlier reviews focusing on other effects of open-plan office solutions such as health and well-being. **Conclusion:** Different solutions for office design and architectural lay-out should be the focus of future studies to balance pros and cons of open-plan offices.

**Mauss et al. 2023.**

**Industrial Health, vol. 61, no. 3.**

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**Keywords:** Absenteeism; activity-based working; employees; office type; open office; sick leave; sickness; workspace.

**Evidence Level:** 1A

**Link:** [https://www.istage.jst.go.jp/article/indhealth/61/3/61\\_2022-0053/\\_article](https://www.istage.jst.go.jp/article/indhealth/61/3/61_2022-0053/_article)

## **Workers Compensation**

*This month we explore workers compensation issues associated with workers with moderate to severe work-related traumatic brain injury and the effect of cooperation between medical specialists and occupational health physicians*

### **Association between initiation of rehabilitation and length of hospital stay for workers with moderate to severe work-related traumatic brain injury.**

**Background:** In workers with moderate to severe work-related traumatic brain injury (wrTBI), this study aimed to investigate the effect of the timing of rehabilitation therapy initiation on the length of hospital stay and the factors that can influence this timing. **Methods:** We used data obtained from the Republic of Korea's nationwide Workers' Compensation Insurance. In the Republic of Korea, between the years 2010 and 2019, a total of 26,324 workers filed a claim for compensation for moderate to severe wrTBI. Multiple regression modelling was performed to compare the length of hospital stay according to the timing of rehabilitation therapy initiation following wrTBI. According to the timing of the initiation of rehabilitation

therapy following TBI, the proportions of healthcare institutions that provided medical care during each admission step were compared. **Results:** The length of hospital stay for workers who started rehabilitation therapy within 90 days was significantly shorter than that for workers who started rehabilitation were first admitted to tertiary hospitals. Approximately 39% of patients who received delayed rehabilitation treatment were first admitted to general hospitals, and 28.5% were first admitted to primary hospitals.

**Conclusion:** Our findings demonstrate the importance of early rehabilitation initiation and that the type of healthcare institution that the patient is first admitted to after wrTBI may influence the timing of rehabilitation initiation. The results of this study also emphasize the need to establish a Worker's Compensation Insurance-specialized rehabilitation healthcare delivery system.

**Bae et al. 2023.**

**Safety and Health at Work, vol. 14, no. 2.**

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**Keywords:** Length of stay; Occupational injuries; Rehabilitation; Traumatic brain injury; Worker's compensation.

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/pii/S2093791123000240?via%3Dihub>

### **Patients' experiences, needs, and expectations of cooperation between medical specialists and occupational health physicians: A qualitative study**

**Objective:** Cooperation between clinical and occupational health care practitioners is a key aspect of clinical work-integrating care. This study aimed to gain insight into patients' experiences, needs, and expectations regarding cooperation between medical specialists and occupational health physicians.

**Methods:** A thematic qualitative study was conducted involving a total of 33 participants in eight online focus groups. **Results:** Participants indicated practitioners are currently working in an isolated manner.

However, participants desired for partnership between specialists and occupational health physicians to address work-related concerns and showed a need for explanation of the consequences of their diagnosis, so this can be translated into their ability to work. **Conclusion:** Currently, cooperation between clinical and occupational health care is lacking. Yet, some participants experienced that these disciplines could complement each other by working together to support patients in work participation.

**Oosting et al. 2023.**

**Journal of Occupational and Environmental Medicine, vol. 65, no. 6.**

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**Keywords:** Occupational health; experience; patient; needs; expectations.

**Evidence Level:** 5B

**Link:**

[https://journals.lww.com/joem/Fulltext/2023/06000/Patients\\_Experiences,\\_Needs,\\_and\\_Expectations\\_of\\_.17.aspx](https://journals.lww.com/joem/Fulltext/2023/06000/Patients_Experiences,_Needs,_and_Expectations_of_.17.aspx)

### **Working hours**

*This month we explore the effect of long working hours on young adults' health, the psychological and physical responses, and trends in weekly working hours according to employment status and industrial sector.*

### **Hard work, long hours, and Singaporean young adults' health: A qualitative study**

**Background:** As young adults in their 20s to 30s transitioning toward new careers and independence, their dietary and physical activity practices often change, increasing their risk of weight gain. This study explored the ways that Singaporean young adults perceived and experienced the interaction between their working hours, work, and health practices. **Methods:** This research used semi-structured interviews to explore the perspectives and experiences of participants. Purposive and snowball sampling was used to recruit 15 men



and 18 women, aged 23 to 36, who had worked full-time at their respective jobs in Singapore for at least 1 year. An inductive and deductive thematic analysis approach was employed. **Results:** Young working adults' commitment to work was driven by a hard-working culture, a desire to attain better jobs and remuneration, and to fulfill cultural expectations to support their multi-generation families. Their non-work time was largely spent recuperating from work by socializing over food and in sedentary activities.

**Conclusion:** For young working adults, long work hours are normalized, even though they are a barrier to healthy diets and physical activity. Existing social and institutional norms support a culture that values commitment to work and encourages young adults to devote long hours to building a sound financial future and achieving personal and cultural aspirations. These findings have implications for long-term population health and should be considered in health promotion activities targeting young adults and barriers.

**Leu et al. 2023.**

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

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**Keywords:** Burden of disease; diet; health practices; health promotion; obesity; physical activity; preventing non-communicable diseases; work time.

**Evidence Level:** 4B

**Link:** <https://pubmed.ncbi.nlm.nih.gov/37377556/>

### **Characteristics of long working hours and subsequent psychological and physical responses: JNIOSH cohort study**

**Background:** This study aimed to examine the prospective association among objectively measured average working hours (AWHs), frequency of long working hours (FLWHs; defined as  $\geq 205$  working hours/month ( $\geq 45$  hours/week)) for 6 months, and workers' self-reported psychological and physical health.

**Methods:** The study included 15 143 workers from 5 Japanese companies. We collected monthly attendance records over 6 months before distributing a questionnaire survey on psychological/physical stress responses and work-related demographics. We then evaluated the associations of those attendance records with psychological/physical measures using analysis of covariance adjusted for sex, age, employment, job type, working conditions, work site and experience of emergency state due to COVID-19.

**Results:** Irritability, anxiety and depression were significantly greater at  $\geq 180$  hours ( $\geq 45$  hours/week), and fatigue and lack of vigour were greater at  $\geq 205$  hours than those of the normal working-hour group (140-180 hours/month [35-45 hours/week]). Psychological indices increased significantly with FLWH, with  $\geq 3$  times for irritability, depression and fatigue;  $\geq 2$  times for lack of vigour; and  $\geq 1$  time for anxiety when compared with no long working hours. No significant associations were observed between AWH or FLWH and physical stress responses. **Conclusion:** Longer AWH was associated with higher levels of psychological stress responses. The effects of FLWH in the past 6 months varied among the psychological stress responses and did not occur for physical complaints. Under circumstances requiring long hours, workers' mental health should be protected through minimising the frequency of long work hours.

**Ochiai et al. 2023.**

**Occupational and Environmental Medicine, vol. 80, no. 6.**

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**Keywords:** Mental Health; occupational health; public health.

**Evidence Level:** 4B

**Link:** <https://oem.bmj.com/content/80/6/304.long>

### **Decrease in weekly working hours of Korean workers from 2010 to 2020 according to employment status and industrial sector**

**Background:** The present study examined changes in the working hours of Korean workers from 2010 to 2020 according to employment status and industrial sector. **Methods:** This was a secondary analysis of data from the third (2010), fourth (2014), fifth (2017) and sixth (2020) Korean Working Conditions Surveys, which were conducted by the Korea Occupational Safety and Health Agency. **Results:** During the past 10 years, workers classified as employees, self-employed, or employers experienced clear declines in average

weekly working hours and in the percentages of individuals who worked more than 48 hours per week. During 2020, the largest proportion of employees (52.8%) had 40-hour work weeks, whereas the largest proportions of self-employed individuals (26.8%) and employers (25.1%) had very long work weeks ( $\geq 60$  h/week). Also during 2020, individuals who were self-employed or employers in the sectors of 'Accommodation and food service' had the longest weekly work hours, whereas employees in the sector of 'Transportation' had the longest weekly work hours. All three groups (employees, self-employed, and employers) in all 21 industrial sectors experienced declines in average weekly working hours from 2017 to 2020. **Conclusion:** From 2010 to 2020, employees, self-employed individuals, and employers experienced clear declines in average weekly working hours, and in the percentages of individuals with long weekly working hours. However, there were also differences in the weekly working hours of those who had different employment status and who worked in different industrial sectors. The implementation of the 40-hour work-week and the 52-hour maximum work-week in Korea reduced excessive work hours by individuals who had different employment status and who worked in different industrial sectors, and probably improved worker quality-of-life. We recommend extension of these regulations to workplaces with fewer than 5 employees.

**Park et al. 2023.**

**Journal of Korean Medical Science, vol. 38, no. 22.**

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**Keywords:** Employment status; long; work week; working hour.

**Evidence Level:** 4B

**Link:** <https://jkms.org/DOIx.php?id=10.3346/jkms.2023.38.e171>

## Wellness Programs

*This month we explore the relationship between wellbeing programs and blue-collar workers' participation, promotion of wellbeing among menopausal women, incidence of hypertension and prevention of pain and stress-related ill-health in employees.*

### **Factors associated with blue-collar workers' participation in Worksite Health Promotion Programs: A scoping literature review**

**Background:** A growing number of employers implement worksite health promotion programs (WHPPs). In particular, blue-collar workers may benefit from these WHPPs. However, they are less likely than other workers to participate and little is known about which factors affect their participation. **Methods:** The aim of this scoping literature review is to produce an overview of studies on factors associated with blue-collar workers' participation in WHPPs. Five databases were searched: BSU, PsycINFO, Medline, Web of Science and CINAHL. The review included peer-reviewed empirical studies on determinants associated with blue-collar workers' participation in WHPPs. Factors were extracted and categorized. Similar determinants were clustered and the direction of the associations was further examined. **Results:** Nineteen papers describing 11 qualitative and 4 quantitative studies met the eligibility criteria. Seventy-seven determinants were analyzed (in quantitative studies) or reported (in qualitative studies). In most studies, only participant characteristics were investigated. Participation may be enhanced by addressing needs, tailoring from a broad range of activities, offering group activities, requiring little effort and commitment at the start, using incentives, leading by example and combining WHPPs with occupational safety interventions.

**Conclusion:** WHPPs seem to be able to reach blue-collar workers, but it remains particularly challenging to reach shift workers and those who do not yet experience health complaints.

**Damen et al. 2023.**

**Health Promotion International, vol. 38, no. 3.**

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**Keywords:** Implementation; participation; prevention; program evaluation; worksite.

**Evidence Level:** 6A

Link: <https://academic.oup.com/heapro/article/38/3/daad052/7209682?login=true>

### **Effectiveness of workplace-based interventions to promote wellbeing among menopausal women: A systematic review**

**Background:** Menopausal symptoms are known to affect quality of life and work productivity.

**Methods:** This systematic review aimed to describe the range and effectiveness of workplace-based interventions for menopause. MEDLINE, PubMed, Embase, CINAHL, Cochrane Library, Web of Science, PsycINFO, EconLit, and SCOPUS were searched from the inception until April 2022. Quantitative interventional studies evaluating physical/virtual workplace-based interventions aiming to improve well-being, work, and other outcomes, that involved women in menopausal transition, or their line managers/supervisors were eligible for inclusion. Two randomized controlled trials and three uncontrolled trials, comprising 293 women aged 40-60 years and 61, line managers/supervisors, were included in the review. **Results:** Results were narratively synthesized due to the heterogeneity of interventions and outcomes and we found that only a limited range of interventions have been evaluated for their ability to support women going through menopausal transition in the workplace. Self-help cognitive behavioural therapy (CBT); Raja yoga; and health promotion (involving menopause consultations, work-life coaching and physical training) improved menopausal symptoms significantly. Self-help CBT was associated with a significant improvement in mental resources for work, presenteeism, and work and social adjustment. Awareness programs significantly improved knowledge and attitudes of both employees and line managers/supervisors about menopause. The interventions have mostly been evaluated in small studies with selected populations but have improved menopausal symptoms and work outcomes. **Conclusion:** A customizable menopause wellbeing intervention package incorporating these evidence-supported interventions should be developed and implemented on a wider scale within organizations alongside robust evaluation of its effectiveness.

**Rodrigo et al. 2023.**

**Post Reproductive Health, vol. 29, no. 2.**

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**Keywords:** Climacteric; employee health and wellbeing; midlife; occupational health.

**Evidence Level:** 1A

Link: <https://abdn.pure.elsevier.com/en/publications/effectiveness-of-workplace-based-interventions-to-promote-wellbei>

### **Workplace-based primary prevention intervention reduces incidence of hypertension: A post hoc analysis of cluster randomized controlled study**

**Background:** A workplace-based primary prevention intervention be an effective approach to reducing the incidence of hypertension (HTN). However, few studies to date have addressed the effect among the Chinese working population. We assessed the effect of a workplace-based multicomponent prevention interventions program for cardiovascular disease on reducing the occurrence of HTN through encouraging employees to adopt a healthy lifestyle. **Methods:** In this post hoc analysis of cluster randomized controlled study, 60 workplaces across 20 urban regions in China were randomized to either the intervention group (n = 40) or control group (n = 20). All employees in each workplace were asked to complete a baseline survey after randomization for obtaining sociodemographic information, health status, lifestyle, etc. Employees in the intervention group were given a 2-year workplace-based primary prevention intervention program for improving their cardiovascular health, including (1) cardiovascular health education, (2) a reasonable diet, (3) tobacco cessation, (4) physical environment promotion, (5) physical activity, (6) stress management, and (7) health screening. The primary outcome was the incidence of HTN, and the secondary outcomes were improvements of blood pressure (BP) levels and lifestyle factors from baseline to 24 months. A mix effect model was used to assess the intervention effect at the end of the intervention in the two groups.

**Results:** Overall, 24,396 participants (18,170 in the intervention group and 6,226 in the control group) were included (mean [standard deviation] age, 39.3 [9.1] years; 14,727 men [60.4%]). After 24 months of the intervention, the incidence of HTN was 8.0% in the intervention groups and 9.6% in the control groups [relative risk (RR) = 0.66, 95% CI, 0.58 ~ 0.76, P < 0.001]. The intervention effect was significant on systolic

BP (SBP) level ( $\beta = -0.7$  mm Hg, 95% CI,  $-1.06 \sim -0.35$ ;  $P < 0.001$ ) and on diastolic BP (DBP) level ( $\beta = -1.0$  mm Hg, 95% CI,  $-1.31 \sim -0.76$ ;  $P < 0.001$ ). Moreover, greater improvements were reported in the rates of regular exercise [odds ratio (OR) = 1.39, 95% CI,  $1.28 \sim 1.50$ ;  $P < 0.001$ ], excessive intake of fatty food (OR = 0.54, 95% CI,  $0.50 \sim 0.59$ ;  $P < 0.001$ ), and restrictive use of salt (OR = 1.22, 95% CI,  $1.09 \sim 1.36$ ;  $P = 0.001$ ) in intervention groups. People with a deteriorating lifestyle had higher rates of developing HTN than those with the same or improved lifestyle. Subgroup analysis showed that the intervention effect of BP on employees with educational attainment of high school above (SBP:  $\beta = -1.38$  /  $-0.76$  mm Hg,  $P < 0.05$ ; DBP:  $\beta = -2.26$  /  $-0.75$  mm Hg,  $P < 0.001$ ), manual labour workers and administrative worker (SBP:  $\beta = -1.04$  /  $-1.66$  mm Hg,  $P < 0.05$ ; DBP:  $\beta = -1.85$  /  $-0.40$  mm Hg,  $P < 0.05$ ), and employees from a workplace with an affiliated hospital (SBP:  $\beta = -2.63$  mm Hg,  $P < 0.001$ ; DBP:  $\beta = -1.93$  mm Hg,  $P < 0.001$ ) were significantly in the intervention group. **Conclusion:** This post hoc analysis found that workplace-based primary prevention interventions program for cardiovascular disease were effective in promoting healthy lifestyle and reducing the incidence of HTN among employees.

**Hu et al. 2023.**

**BMC Medicine, vol. 21, no. 1.**

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**Keywords:** Incidence of hypertension; multicomponent; post hoc analysis; prevention interventions; randomized controlled; workplace-based.

**Evidence Level:** 2B

**Link:** <https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-023-02915-6>

### **Preventing pain and stress-related ill-health in employees: A 6-months follow-up of a psychosocial program in a cluster randomized controlled trial**

**Background:** Pain and stress-related ill-health are major causes of long-term disability and sick leave. This study evaluated the effects of a brief psychosocial program, which previously has been tested for an at-risk population of employees. **Methods:** The Effective Communication within the Organization (ECO) program, where supervisors and employees were trained in communication and problem solving, was compared to an active control consisting of psychoeducative lectures (PE) about pain and stress in a cluster randomized controlled trial. First-line supervisors were randomized to ECO or PE, and a total of 191 mainly female employees with self-reported pain and/or stress-related ill-health were included. The hybrid format programs consisted of 2-3 group sessions. Sick leave data was collected from social insurance registers, before and 6-months after the program. Secondary outcomes (work ability, work limitations, pain-disability risk, exhaustion symptoms, perceived stress, perceived health, quality of life, perceived communication and support from supervisors) were assessed at baseline, post intervention, and at 6-months follow-up.

**Results:** No effects were observed on primary or secondary outcome variables. Pain symptoms were common (89%), however a lower proportion (30%) were identified as at risk for long-term pain disability, which might explain the lack of evident effects. The Covid-19 pandemic affected participation rates and delivery of intervention. **Conclusion:** In this study, preventive effects of the ECO program were not supported. Altogether, the findings point at the importance of selecting participants for prevention based on screening of psychosocial risk. Further research on workplace communication and support, and impact on employee health is warranted.

**Zetterberg et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 2.**

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**Keywords:** Chronic pain; communication; prevention; problem solving; randomized controlled trial; stress symptoms.

**Evidence Level:** 2A

**Link:** <https://link.springer.com/article/10.1007/s10926-022-10074-3>

## Organisational Issues

*This month we explore the shift from an individual to an organizational perspective in work environment management and the organisational policies and practices for the inclusion of vulnerable workers.*

### **Shifting from an individual to an organizational perspective in work environment management – A process evaluation of a six-year intervention program within the Swedish public sector**

**Background:** Working systematically with the work environment, particularly the organizational and psychosocial work environment entails several challenges for employers. There is a lack of knowledge on how to best undertake this work. Thus, the aim of this study is to evaluate the process of a six-year organizational-level intervention program where workplaces could apply for additional funds to implement preventive intervention measures, with the intention of improving working conditions and reducing sickness absence within the Swedish public sector. **Methods:** The program management process was studied using a mixed-method approach combining qualitative document and content analyses based on process documentation produced between 2017 and 2022 (n = 135), interviews with internal occupational health services professionals in 2021 (n = 9) and quantitative descriptive analyses of submitted applications with decisions from 2017 to 2022 (n = 621). **Results:** Qualitative analyses of the process documentation revealed concerns from the project group regarding access to sufficient competence and resources among stakeholders and participating workplaces, and role conflicts and ambiguities between the program and everyday operations. To address these challenges, the application process was developed over time using the knowledge gained from previous years. A change in the mental models in work environment management, from an individual to an organizational perspective, was seen among the project group and the internal occupational health services responsible for implementing most of the granted intervention measures. In addition, the proportion of granted intervention measures on an organizational level increased throughout the years from 39% in 2017 to 89% in 2022. The changes in the application process were believed to be the main contributor to the change among the applying workplaces.

**Conclusion:** Results indicate that a long-term organizational-level workplace intervention program may be used, by the employer, as a tool for shifting from an individual- to an organizational perspective in the work environment management. However, additional measures on multiple levels need to be implemented to secure a sustainable shift in perspective within the organization.

**Dahlqvist et al. 2023.**

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

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**Keywords:** Organization; organizational-level intervention; process evaluation; public sector; work environment; workplace interventions.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16059-y>

### **Organisational policies and practices for the inclusion of vulnerable workers: A scoping review of the employer's perspective**

**Background:** Current models of inclusive workplaces are primarily based on the perceptions of vulnerable workers, whereas attention for employer's perceptions is lacking. This scoping review addresses this issue by mapping the literature that covers employer's perceptions on the application and importance of organisational policies and practices aimed at the inclusion of vulnerable workers. **Methods:** A literature search for qualitative and quantitative research articles was conducted in MEDLINE, Scopus, ProQuest, PsychInfo, Google Scholar and Web of Science. Studies were included when (a) they reported on practices aimed at the inclusion, participation, or rehabilitation of (b) workers with disabilities, a low education or migration background, or who were long-term unemployed, and (c) were based on samples of employers or their representatives. **Results:** The search resulted in 3,134 articles. In total, 38 articles met the inclusion criteria of this study. We identified seven types of inclusive practices to stimulate the inclusion of vulnerable workers that employers applied and/or perceived as valuable: senior management commitment, recruitment and selection, performance management and development practices, job



accommodations and redesign of work, supportive culture, external collaborations with other employers, and monitoring. **Conclusion:** Our review identified seven categories of inclusive practices that pertain to all stages of the employee journey of vulnerable workers. These categories move beyond those reported in studies based on employee samples, for instance by highlighting the importance of monitoring and collaborations with other employers. Hence, our findings stress that insight into employers' perceptions about effective measures is crucial to increase labour market participation of vulnerable groups.

**Kersten et al. 2023.**

**Journal of Occupational Rehabilitation, vol. 33, no. 2.**

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**Keywords:** Disability; employer engagement; inclusion; long-term unemployed; low-educated worker; migrant worker; scoping review; vulnerable workers.

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007/s10926-022-10067-2>

## Job Design

*This month we explore the employment determinants of job insecurity, the risk of depression associated with marginal part-time work and the relationship between indoor noise perception and remote work.*

### Exploring the employment determinants of job insecurity in the French working population: Evidence from national survey data

**Background:** Studies are lacking on the employment determinants of job insecurity, that may be helpful to determine highly exposed groups and to assess the feasibility of constructing job-exposure matrices (JEMs) for this occupational exposure. The objectives were to explore the employment determinants of job insecurity in a nationally representative sample of the French working population. **Methods:** The study was based on the cross-sectional data of the 2013 national French working conditions survey including a sample of 28,293 employees, 12,283 men and 16,010 women. Job insecurity was assessed using one single item related to the fear of job loss in the next 12 months. Gender, age, and educational level were studied as well as the following employment variables: temporary/permanent work contract, full/part time work, job seniority, occupation, economic activity of the company, public/private sector, and company size. The associations with job insecurity were studied using bivariate and multivariate analyses. **Results:** One quarter of the study sample was exposed to job insecurity, without any difference between genders. Lower age and lower educational levels were associated with job insecurity. Employees who had a temporary work contract, lower job seniority, who were working in low-skilled occupational groups, in manufacturing (for both genders) and construction (among men), and in the private sector had a higher prevalence of exposure to job insecurity. The two major employment variables associated with job insecurity were temporary work contract (prevalence ratios > 2) and private sector (prevalence ratios > 1.4) for the whole sample and for both men and women. Our findings suggested that intervention/prevention measures could be oriented towards specific highly exposed groups of the working population, especially those exposed to temporary work contract and/or working in the private sector. **Conclusion:** Our study also underlined that constructing JEMs for job insecurity may be possible and could be a useful tool for large-scale occupational health studies.

**Neidhammer et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Job insecurity; working population; job exposure.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287229>

### **Trajectories of marginal part-time work and risk of depression. Does job or income insecurity mediate the relation?**

**Background:** Working few hours a week, known as marginal part-time work, may increase both job and income insecurity, which have been linked to the risk of depression. This study examines the association between marginal part-time work and depression and the mediating role of job and income insecurity.

**Methods:** We included 30 523 respondents of the Danish Labor Force Survey (DLFS) between 2010 and 2017 and linked them to register-based information on weekly working hours, which was used to identify full-time workers and model group-based trajectories of marginal part-time. These data were linked with survey information on job and income insecurity, and register-based information on hospital-diagnosed depression or redeemed anti-depressant drugs in the following two years. We estimated hazard ratios (HR) by Cox proportional hazards models and conducted mediation analyses to estimate the natural direct and indirect effects using job and income insecurity as mediators. **Results:** We identified three distinct trajectories of marginal part-time work: constant marginal part-time work, mobile towards marginal part-time work, and fluctuating in and out of marginal part-time work. Compared with full-time workers, the constant [HR 2.42, 95% confidence interval (CI) 1.83-3.20], mobile (HR 2.84, 95% CI 2.16-3.75), and fluctuating (HR 3.51, 95% CI 2.07-5.97) trajectories all had higher risks of depression. There was no evidence of mediation by either job (HR 1.02, 95% CI 0.92-1.12) or income (HR 0.98, 95% CI 0.89-1.08) insecurity. **Conclusion:** We found a higher risk of depression following marginal part-time work. The higher risk was not mediated by job or income insecurity.

**Nielsen et al. 2023.**

**Scandinavian Journal of Work, Environment and Health, vol. 49, no. 4.**

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**Keywords:** Part-time work; depression; job insecurity; income insecurity.

**Evidence Level:** 4B

**Link:** <https://www.sjweh.fi/article/4091>

### **Relationship between indoor noise perception and remote work during the COVID-19 pandemic**

**Background:** The coronavirus disease 2019 (COVID-19) pandemic has had a major influence on working patterns worldwide, given the various lockdown periods and the shift to remote working. As people's noise perception is known to be closely linked with their work performance and job satisfaction, investigating the noise perception in indoor spaces, especially in situations where people work from home, is crucial; however, studies on this aspect are limited. Thus, here, this study aimed to investigate the relationship between indoor noise perception and remote work during the pandemic. The study assessed how people who worked from home perceived indoor noise, and how it related with their work performance and job satisfaction. **Methods:** A social survey was conducted with respondents who worked from home during the pandemic in South Korea. A total of 1,093 valid responses were used for data analysis. Structural equation modeling was used as a multivariate data analysis method to simultaneously estimate multiple and interrelated relationships. **Results:** The results showed that indoor noise disturbance significantly affected annoyance and work performance. Annoyance with indoor noise affected job satisfaction. Job satisfaction was found to have a significant impact on work performance, particularly on two dimensions of the work performance that are crucial for achieving organizations' goals. Moreover, one dimension of the work performance had a significant impact on annoyance. **Conclusion:** The study proposed that reducing negative perception of indoor noise and improvement of job satisfaction can lead to the maximization of one's work performance when working from home.

**Park et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Noise perception; remote work; COVID-19; pandemic.

**Evidence Level:** 4B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286481>

## Shift Work

*This month we explore association of shift work and dietary inflammatory potential and risk of type 2 diabetes.*

### **Association of shift work and dietary inflammatory potential with all-cause death among us hypertensive population: National health and nutrition examination study, 2005-2010**

**Background:** The individual effect of working schedule on survival in the hypertensive population has not been adequately studied. Shiftworkers are also prone to unhealthy lifestyles like pro-inflammatory diet. Therefore, we assessed the effect of shift work and its joint association with dietary inflammatory potential on mortality risk among the large US nationally representative sample of adult hypertensive population.

**Methods:** Data were from a nationally representative prospective cohort among US hypertensive population (n = 3680; weighted population, 54,192,988). The participants were linked to the 2019 public-access linked mortality archives. The working schedule were self-reported using the Occupation Questionnaire Section. Dietary inflammatory index (DII) scores were equally calculated using the 24-hour dietary recall (24 h) interviews. Multivariable Cox proportional hazards regression models were used to estimate hazard ratio and 95% confidence intervals (95%CI) for survival of hypertension individuals by work schedule and dietary inflammatory potential. The joint effect of work schedule and dietary inflammatory potential was then examined. **Results:** Among the 3680 hypertension individuals (39.89% female [n = 1479] and 71.42% white [n = 1707]; weighted mean [SE] age, 47.35 [0.32] years), 592 individuals reported shift work status. 474 (10.76%) reported shift work status with pro-inflammatory dietary pattern (DII scores > 0). 118 (3.06%) reported shift work status with anti-inflammatory dietary pattern (DII scores < 0). 646 (19.64%) reported a non-shift working schedule with anti-inflammatory dietary pattern, while 2442 (66.54%) reported non-shift working schedule with pro-inflammatory dietary pattern. After a median follow-up of 11.67 years (140 months), 317 deaths (cardiovascular diseases (CVD), 65; cancer, 104) were registered. Cox regression analysis showed that shift work was associated with higher risk of all-cause mortality (hazard ratio [HR], 1.48; 95% CI, 1.07-2.06) compared with non-shift workers. In the joint analysis, shift work status combined with pro-inflammatory dietary pattern was associated with the highest all-cause mortality risk. Moreover, adopting the anti-inflammatory diet significantly attenuates the deleterious effect of shift work on mortality risk. **Conclusion:** In this large representative sample of adults with hypertension in the U.S., the combination of shift work status with pro-inflammatory dietary pattern was highly prevalent and was associated with the highest risks of death from all causes.

**Li et al. 2023.**

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

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**Keywords:** Dietary inflammatory potential; hypertensive population; mortality risk; occupational health.; public health; shift work.

**Evidence Level:** 4B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15740-6>

### **Shift work is associated with an increased risk of type 2 diabetes and elevated RBP4 level: Cross sectional analysis from the OHSPIW cohort study**

**Background:** Shift work, with its growing prevalence globally, disrupts the body's inherent circadian rhythm. This disruption may escalate the risk of chronic disease exacerbate chronic disease risk by dysregulating physiological, behavioral, and psychosocial pathways. This study aimed to evaluate the effect of shift work on type 2 diabetes (T2DM) and Retinol binding protein 4 (RBP4) level. **Methods:** The current study employed a multi-stage stratified cluster sampling technique, examining 1499 oilfield workers from the OHSPIW cohort who participated in occupational health assessments between March 2017 and June 2018. The evaluation involved shift work, sleep quality, T2DM status with questionnaires and plasma RBP4 levels in blood samples. Statistical analysis includes, Chi-square tests, t-tests, multivariate logistic regression analyses, and multivariate linear mixed models. **Results:** The prevalence rate of T2DM in shift workers (6.56%) was significantly higher than in day workers (4.21%) (OR = 1.60, 95% CI: 1.01-2.53), with no significant difference found in the family history of diabetes, hypertension, or other chronic heart diseases

( $P = 0.378$ ). The shift worker ( $6.89 \pm 3.35$ ) also exhibited distinctly higher PSQI scores than day workers ( $5.99 \pm 2.87$ ) ( $P < 0.001$ ). Adjusting the age, gender, BMI, family income, tobacco smoking, alcohol drinking and PSQI, hailed shift work as a risk factor for T2DM (OR = 1.91, 95% CI: 1.17-3.14). The pairwise comparison revealed significant differences in RBP4 levels across different groups: shift and non-shift workers both with and without T2DM ( $P < 0.001$ ). The RBP4 level of the shift group without T2DM was higher than the non-shift group without T2DM ( $P < 0.05$ ). The levels of RBP4 level in shift and non-shift groups with T2DM was higher than those without T2DM ( $P < 0.05$ ). The multivariate linear mixed model showed that when age, gender, BMI, diabetes, PSQI, family income, smoking and drinking remained unchanged, the RBP4 level of the shift workers increased by an average of  $9.51 \mu\text{g/mL}$  compared with the day workers. **Conclusion:** Shift work is associated with an increased risk of T2DM and high levels of RBP4. Follow-up of RBP4 could facilitate early detection of T2DM among shift workers.

**Wang et al. 2023.**

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

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**Keywords:** Oil workers; retinol binding protein 4; shift work; sleep quality; type 2 diabetes.

**Evidence Level:** 5B

**Link:** <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16091-y>

## Management and Leadership

### **The influence mechanisms of inclusive leadership on job satisfaction: Evidence from young university employees in China**

**Background:** Leadership style and job satisfaction are currently hot issues in the field of management psychology research, especially with regard to young employees. **Objective:** This study attempted to explain the mechanism of improving employees' job satisfaction by combining the key factors of work-family balance and psychological capital. **Methods:** We adopted the literature method, questionnaire survey method, and statistics method to conduct the research. And we conducted structural equation modelling (SEM) analysis of 540 young university employees in China using the random sampling method for sampling. **Results:** Based on the structural equation modelling (SEM) analysis of 540 young university employees in China, the results show that inclusive leadership has a positive impact on improving employees' job satisfaction and that work-family balance is beneficial to serving leaders in improving employees' job satisfaction. Simultaneously, psychological capital positively moderates the indirect effect of inclusive leadership on improving job satisfaction. **Conclusion:** The final model revealed an important path from inclusive leadership to job satisfaction through work-family balance. These findings not only extend and enrich the relevant research on the relationship between inclusive leadership and job satisfaction but also shed some light on university management practice.

**Li et al. 2023.**

**PLoS One, vol. 18, no. 6.**

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**Keywords:** Leadership; job satisfaction; management; university employees.

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287678>

## Work Ability

*This month we explore employment outcomes among stable psychiatric patients, and the relationship between work ability and psychological distress in a working population.*

### **Enhancing employment outcome among stable psychiatric patients: Lesson learnt on innovative model of work inclusion**

**Background:** Poor employment rate among psychiatric patients is poorly discussed. **Purpose:** To share our strategies in boosting employment rate among stable psychiatric patients and discuss the lessons learnt.

**Particular focus:** Multifaceted strategies were remodelled to ensure a three-dimensional optimisation: (1) strengthening clinical service to ensure stable disease and appropriate patient selection through battery of assessments, (2) provision of psychosocial support to boost self-esteem and foster discipline among patients through encouragement, guidance and regular monitoring by the multidisciplinary community mental health team and (3) encourage willingness and confidence among stakeholders and local market to host job opportunities to stable mental health patients. **Overview:** The yearly employment rate among our stable psychiatric patients under supported employment programme from 2020 to 2021 was 28.6% (2/7) and 30.0% (3/10), respectively. A qualitative survey found the main hindrance to recruitment were employers' scepticism on work performance, while poor work retention was due to patients' lack of specific skill set and discipline to adhere to routine. We restructured our supported employment programme by adding the role of community mental health facility to foster discipline and routine for 6 months prior to referral to a job coach. Until June 2022, two out of five patients managed to secure job positions (40.0%). Despite our efforts to improve employment with the instituted remedial strategy, we still fail to reach the minimum standard set by ministry. Future plan will focus on tailoring individual interests to a specific set of skills that match industrial expectation prior to seeking employment. Additionally, enhancing public education using social media may foster better inclusion of psychiatric patients and social acceptance.

**Khalid et al. 2023.**

**BMJ Open Quality, vol. 12, no. 2.**

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**Keywords:** Activities of daily living; community mental health services; community-based participatory research; quality improvement; social sciences.

**Evidence Level:** 5B

**Link:** <https://bmjopenquality.bmj.com/content/12/2/e002139.long>

### **Work ability and psychological distress in a working population: Results from the Stockholm Public Health Cohort**

**Background:** Psychological distress is a global public health concern with individual and societal implications causing work-related disability and loss of productivity. It is less known how much work ability contributes to the development of psychological distress. This study aimed to assess the association between self-perceived physical and mental work ability in relation to job demands, and the incidence of psychological distress in a Swedish working population. **Methods:** Data were obtained from three subsamples of the Stockholm Public Health Cohort with baseline in 2010 and follow-up in 2014, based on a working population in Stockholm County aged 18-60 years, with no or mild psychological distress at baseline ( $n=29,882$ ). Self-perceived physical and mental work ability in relation to job demands were assessed at baseline with a subscale from the Work Ability Index. Study participants scoring 4 or more on the General Health Questionnaire 12 at follow-up were classified as having developed psychological distress during the study period. Poisson log linear regression was used to calculate crude and adjusted rate ratios with 95% confidence intervals. **Results:** At follow-up, 2543 participants (12%) had developed psychological distress. Reporting poor physical and/or poor mental work ability in relation to job demands at baseline was associated with an almost doubled rate ratio of psychological distress at follow-up, compared to reporting good work ability (rate ratio 1.8; 95% confidence interval 1.6-2.0). **Conclusion:** Poor work ability is associated with a higher incidence of future psychological distress compared to good work ability.

**Onell et al. 2023.**

**Scandinavian Journal of Work, Environment and Health, vol. 51, no. 4.**

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**Keywords:** Epidemiology; occupational health; psychological distress; work ability.

**Evidence Level:** 4B

**Link:** <https://journals.sagepub.com/doi/full/10.1177/14034948211033692>



## Adapting to the Future of Work

### Technology

#### **Impact assessment of e-trainings in occupational safety and health: A literature review**

**Background:** Implementing workplace preventive interventions reduces occupational accidents and injuries, as well as the negative consequences of those accidents and injuries. Online occupational safety and health training is one of the most effective preventive interventions. This study aims to present current knowledge on e-training interventions, make recommendations on the flexibility, accessibility, and cost-effectiveness of online training, and identify research gaps and obstacles. **Method:** All studies that addressed occupational safety and health e-training interventions designed to address worker injuries, accidents, and diseases were chosen from PubMed and Scopus until 2021. Two independent reviewers conducted the screening process for titles, abstracts, and full texts, and disagreements on the inclusion or exclusion of an article were resolved by consensus and, if necessary, by a third reviewer. The included articles were analysed and synthesized using the constant comparative analysis method. **Result:** The search identified 7,497 articles and 7,325 unique records. Following the title, abstract, and full-text screening, 25 studies met the review criteria. Of the 25 studies, 23 were conducted in developed and two in developing countries. The interventions were carried out on either the mobile platform, the website platform, or both. The study designs and the number of outcomes of the interventions varied significantly (multi-outcomes vs. single-outcome). Obesity, hypertension, neck/shoulder pain, office ergonomics issues, sedentary behaviours, heart disease, physical inactivity, dairy farm injuries, nutrition, respiratory problems, and diabetes were all addressed in the articles. **Conclusion:** According to the findings of this literature study, e-trainings can significantly improve occupational safety and health. E-training is adaptable, affordable, and can increase workers' knowledge and abilities, resulting in fewer workplace injuries and accidents. Furthermore, e-training platforms can assist businesses in tracking employee development and ensuring that training needs are completed. Overall, this analysis reveals that e-training has enormous promise in the field of occupational safety and health for both businesses and employees.

**Barati Jozan et al. 2023.**

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

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**Keywords:** Occupational injuries and accidents; online occupational safety and health training; preventive occupational health interventions.

**Evidence Level:** 6A

**Link:** <https://bmcpublikealth.biomedcentral.com/articles/10.1186/s12889-023-16114-8>