



Emerging Evidence Alert

March 2022

This Emerging Evidence Alert 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. It provides a review of recent journal articles and relevant content related to Comcare’s five research themes: Fostering Work Participation; Building Employer Capability; Adapting to the Future of Work; Guiding and Supporting Mental Health and Wellbeing; and Enabling Healthy and Safe Workplaces. Collated articles were published in February 2022 only.

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Monthly research highlight

Women's health affected by employment changes during the pandemic

Women over 50 were more likely than men to report a negative change in their self-perceived health since the start of the COVID-19 pandemic, despite positive impacts from home-based work and working time reduction.

This negative change was independent of any COVID-19 symptoms and is in contrast to the situation before the pandemic, when women and men reported the same health levels.

A [recent study](#) conducted across 27 European countries found that workers who had access to home-based working, reduced hours or even periods of unemployment as a result of the pandemic reported positive effects on their health.

However, women often reported overall negative health impacts due to factors outside of their employment including:

- Social contacts and isolation
- Access to health care services
- Housing quality
- Social benefits and income, and others.

The study demonstrated that factors outside of the workplace need to be addressed in conjunction with those inside the workplace to improve women's self-perceived health. Comcare has guidance available on [looking after your mental health](#), along with support for both employees and employers on [working from home](#).



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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

Fostering Work Participation

Return to Work

The effectiveness of case-management rehabilitation intervention in facilitating return to work and maintenance of employment after myocardial infarction: Results of a randomized controlled trial

Background: To study the long-term effectiveness of case-management rehabilitation intervention on vocational reintegration of patients after myocardial infarction (MI). **Methods:** Blinded simple randomization was used to construct an intervention and control groups that were followed up for two years. Subjects and setting were 151 patients, aged 50.3 ± 5.9 years, who experienced uncomplicated MI and were enrolled in a cardiac rehabilitation program were recruited. Interventions included an early referral to an occupational physician, tailoring an occupational rehabilitation program, based on individual patient needs, coordination with relevant parties, psychosocial intervention, intensive follow-up sessions during a two-year follow-up. Main measures included return to work within six months of hospitalization and maintenance of employment at one and two years of follow-up. **Results:** Return-to-work (RTW) rate in the intervention group was 89% and nearly all maintained employment at one year of follow-up (92%) and two years of follow-up (87%). Moreover, almost all of them returned to and maintained their previous jobs. The corresponding figures were: 98%, 94% and 98%, respectively. The figures for the RTW and employment maintenance for the control group were: 74%, 75%, and 72%, respectively. Only about 75%, in this group kept their previous job. The case-management intervention was associated with increased odds of maintaining employment at follow-up of one year (OR = 5.89, 95% CI 1.42-24.30) and two years (OR = 3.12, 95% CI 1.01-10.03). **Conclusions:** The extended case-management rehabilitation intervention had a substantial positive impact on both the RTW of MI patients and their maintenance of employment at one and two years of follow-up.

Zack et al. 2022.

Clinical Rehabilitation, vol. 22.

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Keywords: Myocardial infarction; case-management; randomized controlled trial; rehabilitation; return to work.

Evidence Level: 2A

Link: <https://journals.sagepub.com/doi/full/10.1177/02692155221076826>

Evidence-informed decision about (de-)implementing return-to-work coordination to reduce sick leave: A case study

Background: Coordination of return to work (RtW) is implemented in many countries, but a Cochrane review found no considerable effect on workers' sick leave compared to usual care. The aim of the study is to analyse how the evidence from this review can be used for decisions about (de-)implementing RtW coordination in a country-specific setting, using Finland as an example. **Methods:** We conducted a systematic literature search and online survey with two groups of experts to compare interventions included in the Cochrane review to Finnish RtW practice using content analysis methods. We applied the evidence-to-decision (EtD) framework criteria to draw conclusions about (de-)implementing RtW coordination in Finland, including benefits, harms and costs of the intervention compared to usual care. **Results:** We included seven documents from the literature search and received data from 10 of 42 survey participants. RtW coordination included, both in Finland and in the review, at least one face-to-face meeting between the physician and the worker, a workers' needs assessment, and an individual RtW plan and its implementation. Usual care focuses on medical treatment and may include general RtW advice. RtW coordination would be cost-saving if it decreases sick leave with at least 2 days compared to usual care. The evidence in the Cochrane review was mainly of low certainty, and the effect sizes had relatively wide confidence intervals. Only a new, high-quality and large randomized controlled trial (RCT) can decrease the current uncertainty, but this is unlikely to happen. The EtD framework did not provide arguments for further implementation or for de-implementation of the intervention.

Conclusions: Interventions evaluated in the Cochrane review are similar to RtW coordination and usual care interventions in Finland. Considering all EtD framework criteria, including certainty of the evidence and costs, de-implementation of RtW coordination interventions in Finland seems unnecessary. Better evidence about the costs and stakeholders' values regarding RtW coordination is needed to improve decision-making.

Tikka et al. 2022.

Health Research Policy and Systems, vol. 20, no. 1.

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Keywords: Evidence-based; occupational health policy; occupational health services; return to work; sick leave; sickness absence; work ability.

Evidence Level: 5B

Link: <https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-022-00823-4>

Return to work after COVID-19 infection - A Danish nationwide registry study

Background: This study aimed to explore return to work after COVID-19 and how disease severity affects this. This is a Nationwide Danish registry-based cohort study using a retrospective follow-up design.

Methods: Patients with a first-time positive SARS-CoV-2 polymerase chain reaction test between 1 January 2020 and 30 May 2020, including 18-64 years old, 30-day survivors, and available to the workforce at the time of the first positive test were included. Admission types (i.e. no admission, admission to non-intensive care unit [ICU] department and admission to ICU) and return to work was investigated using Cox regression standardised to the age, sex, comorbidity and education-level distribution of all included subjects with estimates at 3 months from positive test displayed. **Results:** Among the 7466 patients included in the study, 81.9% (6119/7466) and 98.4% (7344/7466) returned to work within 4 weeks and 6 months, respectively, with 1.5% (109/7466) not returning. Of the patients admitted, 72.1% (627/870) and 92.6% (805/870) returned 1 month and 6 months after admission to the hospital, with 6.6% (58/870) not returning within 6 months. Of patients admitted to the ICU, 36% (9/25) did not return within 6 months. Patients with an admission had a lower chance of return to work 3 months from positive test (relative risk [RR] 0.95, 95% confidence interval [CI] 0.94-0.96), with the lowest chance in patients admitted to an ICU department (RR 0.54, 95% CI 0.35-0.72). Female sex, older age, and comorbidity were associated with a lower chance of returning to work. **Conclusion:** Hospitalised patients with COVID-19 infection have a lower chance of returning to work with potential implications for postinfection follow-up and rehabilitation.

Jacobsen et al. 2022.

Public Health, vol. 203.

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Keywords: COVID-19; long-term covid; return to work; severity; sick leave; workforce connection.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0033-3506\(21\)00473-X](https://linkinghub.elsevier.com/retrieve/pii/S0033-3506(21)00473-X)

Compliance with COVID-19-preventive behaviours among employees returning to work in the post-epidemic period

Background: The COVID-19 pandemic has underscored the importance of behaviours such as social distancing in controlling pandemics. Currently, the epidemic is under control in China and production has resumed in various industries. This study investigates the behavioural compliance and related factors for COVID-19 prevention among employees returning to the workplace and provides strategic recommendations for improving individual-level preventive behaviour to prevent a new outbreak.

Methods: A cross-sectional study design was used. Data were gathered from returning employees in China using an online questionnaire survey, from March to May, 2020. The questionnaire covered participants' COVID-19-related knowledge, compliance with recommended preventive behaviours, and levels of

depression and anxiety. Univariate and multi-factor methods were used to analyse the data and identify factors influencing behaviour compliance. **Results:** Of the 1300 participants completing the full survey, more than half were male (71.92%) and 61% were aged between 31 and 50 years. Six hundred and ninety-eight (53.7%) participants showed high compliance, while 602 (46.3%) showed low compliance. In models adjusted for demographic and socio-economic factors, high education level (odds ratio [OR] = 0.23, 95% confidence interval [CI]: 0.07-0.70), office staff (OR = 0.51, 95% CI: 0.33-0.78), higher knowledge of COVID-19 (OR = 0.74, 95% CI: 0.67-0.81), and quarantining (OR = 0.74, 95% CI: 0.57-0.96) predicted better compliance with preventive behaviours ($P < 0.05$), while high anxiety levels (OR = 1.55, 95% CI: 1.10-2.18) predicted lower compliance with preventive behaviours ($P < 0.05$). **Conclusion:** For employees returning to work during the post-COVID-19-epidemic period, compliance with recommended preventive behaviours requires improvement. Consequently, comprehensive intervention measures, including the provision of health education and psychological counselling, as well as the continuance of a strict isolation policy, could enhance such compliance.

Liu et al. 2022.

BMC Public Health, vol. 22, no. 1.

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Keywords: COVID-19; compliance with COVID-19-preventive behaviours; Coronavirus; post-epidemic period; preventive behaviours.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-12709-9>

Integrating vocational rehabilitation and mental healthcare to improve the return-to-work process for people on sick leave with depression or anxiety: results from a three-arm, parallel randomised trial

Background: The aim of this study was to investigate an integrated mental healthcare and vocational rehabilitation intervention to improve and hasten the process of return-to-work of people on sick leave with anxiety and depression. **Methods:** In this three-arm, randomised trial, participants were assigned to (1) integrated intervention (INT), (2) improved mental healthcare (MHC) or (3) service as usual (SAU). The primary outcome was time to return-to-work measured at 12-month follow-up. The secondary outcomes were time to return-to-work measured at 6-month follow-up; levels of anxiety, depression, stress symptoms, and social and occupational functioning at 6 months; and return-to-work measured as proportion in work at 12 months. **Results:** 631 individuals were randomised. INT yielded a higher proportion in work compared with both MHC (56.2% vs 43.7%, $p=0.012$) and SAU (56.2% vs 45%, $p=0.029$) at 12-month follow-up. We found no differences in return-to-work in terms of sick leave duration at either 6-month or 12-month follow-up, with the latter being the primary outcome. No differences in anxiety, depression or functioning between INT, MHC and SAU were identified, but INT and MHC showed lower scores on Cohen's Perceived Stress Scale compared with SAU at 12-month follow-up.

Conclusions: Although INT did not hasten the process of return-to-work, it yielded better outcome with regard to proportion in work compared with MHC and SAU. The findings suggest that INT compared with SAU is associated with a few, minor health benefits. Overall, INT yielded slightly better vocational and health outcomes, but the clinical significance of the health advantage is questionable.

Hoff et al. 2022.

Occupational and Environmental Medicine, vol. 79, no. 2.

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Keywords: Occupational health; psychiatry.

Evidence Level: 2A

Link: <https://oem.bmj.com/content/79/2/134.long>

Workers' compensation

Differences in clinically important physical function improvement in workers' compensation population

Background: Patients receiving workers' compensation demonstrate a propensity for poorer postoperative outcomes. This study aims to determine rates of minimum clinically important difference (MCID) achievement in patients receiving workers' compensation following transforaminal lumbar interbody fusion (TLIF). **Methods:** We retrospectively reviewed a prospective surgical database from 2015 to 2020 for primary, single-level TLIFs with posterior instrumentation for degenerative spinal pathologies. Visual analog scale (VAS) for back and leg, Oswestry Disability Index (ODI), 12-Item Short Form Physical Component Summary (SF-12 PCS), and Patient-Reported Outcome Measurement Information System physical function (PROMIS-PF) were collected pre- and postoperatively. Patients were separated by workers' compensation (WC) status. Propensity score matching was performed to account for differences in demographic characteristics. Postoperative improvements in patient-reported outcome measures (PROMs) were calculated using paired Student's *t* test, and intergroup differences were determined by Mann-Whitney *U* test. Achievement of MCID was determined using established values, and intergroup differences were assessed using χ^2 analysis. **Results:** A total of 121 patients were included in this study with 29 WC and 92 non-WC patients. The mean age was 53.5 years with the majority being men (63.6%) and nonobese (54.5%). WC patients demonstrated significantly poorer PROM values at all timepoints except for preoperative VAS back ($P = 0.297$) and leg ($P = 0.475$). Overall achievement of MCID was significantly lower for WC patients for VAS back ($P = 0.040$), ODI ($P = 0.001$), SF-12 PCS ($P = 0.010$), and PROMIS-PF ($P = 0.039$). **Conclusion:** WC patients demonstrated poorer postoperative outcomes at multiple timepoints. Additionally, a significantly lower rate of MCID achievement for back pain, disability, and physical function was observed for WC patients.

Cha et al. 2022.

International Journal of Spine Surgery, vol. 17.

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

Keywords: Lumbar fusion; patient-reported outcome measures (PROMs); propensity score match; workers' compensation.

Evidence Level: 5A

Link: <http://www.ijssurgery.com/content/early/2022/03/01/8186>

Characteristics of workers' compensation claim applications for COVID-19 infections in South Korea

Background: This study aimed to identify the major industries and jobs with the highest proportion of workers' compensation (WC) claims for COVID-19, characterize COVID-19 WC claims in terms of their demographic properties and disease severity, and identify factors influencing the approval of COVID-19 WC claims as occupational disease. **Methods:** A total of 488 workers who submitted COVID-19-related claims to the Korea Workers' Compensation and Welfare Service (KWCWS) from January 2020 to July 2021 were analyzed. A Fisher's exact test was employed to associate the severity of COVID-19 infection with demographic properties. **Results:** The highest proportion of all COVID-19 WC claims compensated as occupational disease (N=462) were submitted by healthcare workers (HCW=233, 50%), while only 9% (N=41) of the total originated from manufacturing industries. The 5% (N=26) of the COVID-19 WC claims accepted were evaluated as severe (N=15) and acute respiratory distress syndrome (N=9). A total of 71% (N=329) of the COVID-19 patients compensated (N=462) were from workplaces with infection clusters. A total of 26 WC cases were rejected for various reasons, including unclear infection routes, infection at private gatherings (including within families), no diagnosis, and more. **Conclusion:** Given our findings, we suggest an official system should be established to detect and compensate more job-associated infectious diseases like COVID-19.

Nam et al. 2022.

Industrial Health, vol. 15.

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Keywords: COVID-19; COVID-19 workers' compensation; healthcare workers; Industrial Accident Compensation Insurance Acts; infectious disease.

Evidence Level: 5B

Link: https://www.istage.jst.go.jp/article/indhealth/advpub/0/advpub_2021-0271/_article

Language accommodations in workers' compensation: Comparing Ontario and Quebec

Background: Workers who experience language barriers are more likely to get injured or sick because of their work and have poorer claim and return-to-work outcomes compared to other workers. **Methods:** To better understand the systemic factors that shape access to compensation in contexts of language barriers, we compared language accommodation policies and practices in the Quebec and Ontario workers' compensation systems. **Results:** We uncovered gaps limiting access to professional interpreters in both provinces, although gaps were more pronounced in Quebec where workers were responsible for the cost of interpreters. **Conclusion:** We argue that simply improving the linguistic competence of workers' compensation systems is not sufficient to tackle access barriers and must be accompanied by efforts to address the root causes of social and economic inequities for workers who experience language barriers.

Premji et al. 2022.

New Solutions, vol. 31, no. 4.

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Keywords: Accommodations; language; policies and practices; workers' compensation.

Evidence Level: 6B

Link: <https://journals.sagepub.com/doi/full/10.1177/10482911211053020>

Presenteeism and Absenteeism

Impact of the Norwegian agreement for a more inclusive working life on diagnosis-specific sickness absence in young adults: a difference-in-difference analysis

Background: The Norwegian Agreement for a More Inclusive Working Life (the IA Agreement) aims to reduce sickness absence (SA) and increase work participation. Potential impacts of the IA Agreement have not been thoroughly evaluated. The study aimed to estimate the impact of the IA Agreement on musculoskeletal and psychological SA prevalence and duration among young adult men and women, and to identify whether the impact was modified by economic activity or SA grade. **Methods:** Data from national registries were combined for 372,199 individuals born in Norway 1967-1976. ICPC-2 codes identified musculoskeletal (L) and psychological (P) diagnoses. A difference-in-difference method compared prevalence and mean duration of first SA > 16 days between 2000 and 2005 separately for men and women working in IA companies relative to non-IA companies. Analyses were adjusted for mean company size and stratified by economic activity and SA grade (full/graded). Average marginal change was calculated with 95% confidence intervals (CI). **Results:** The impacts of the IA Agreement on SA prevalence were mixed as the direction and size of marginal changes varied according to diagnosis, gender, and economic activity. However, there was a general tendency towards reduced mean SA duration for both diagnosis groups, and in particular men with musculoskeletal SA (- 16.6 days, 95% CI -25.3, - 7.9). Individuals with full SA in IA companies had greater reductions in mean SA duration. Only the wholesale and retail economic activity indicated a beneficial contribution of the IA Agreement for both SA prevalence and duration, in both diagnoses and genders. **Conclusions:** Potential impacts of the IA Agreement on SA in young men and women varied according to diagnosis and economic activity. However, results indicated that the IA

Agreement could reduce SA duration. Further research should identify reasons for gender and economic activity differences.

Hasting et al. 2022.

BMC Public Health, vol. 22, no. 1.

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Keywords: Cohort study; difference-in-difference; gender; mental health; musculoskeletal diagnosis; musculoskeletal disorder; policy interventions; psychological diagnosis; register-based study; sick leave.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-12636-9>

Building Employer Capability

Wellness Programs

Workplace health promotion among ethnically diverse women in midlife with a low socioeconomic position

Background: Workplace health promotion (WHP) may be an appropriate way to support women with a low socioeconomic position (SEP) during midlife. Little is known about reaching and engaging women in WHP, particularly not at the intersection of midlife, low SEP, and ethnicity. **Methods:** We initiated the ProudWoman project, in which we implemented a WHP intervention aimed at supporting midlife women as a pilot in an academic hospital. We qualitatively evaluated the implementation using the RE-AIM framework. The pilot comprised multiple steps: tailoring the intervention to the needs of ethnically diverse group of midlife women with a low SEP, developing an implementation protocol, implementing the tailored intervention, and evaluating the implementation process. **Results:** The main findings of our study are: (1) due to a wide range of recruitment activities that were actively deployed, we were able to *reach* an ethnically diverse group of midlife women with a low SEP; (2) regarding *adoption*, awareness of the relevance of this topic as an occupational health challenge was not self-evident at the organizational level; (3) according to our participants, various facilitators and barriers should be taken into account in the *implementation* of the work-life program; and (4) our focus group discussion revealed as *maintenance* is relevant to these levels in different ways, awareness of midlife and menopause as an occupational health challenge should be raised at four professional levels. **Conclusion:** We conclude that elements, such as an active and personal recruitment approach, are important in the implementation of WHP for ethnically diverse midlife women with an SEP.

Verburgh et al. 2022.

Health Education and Behavior, vol. 5.

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Keywords: RE-AIM; ethnicity; low SEP; menopause; midlife; workplace health promotion.

Evidence Level: 5A

Link: <https://journals.sagepub.com/doi/pdf/10.1177/10901981211071030>

Effects of a mindfulness app on employee stress in an Australian public sector workforce: Randomized controlled trial

Background: Workplace-based mindfulness programs have good evidence for improving employee stress and mental health outcomes, but less is known about their effects on productivity and citizenship behaviors. Most of the available evidence is derived from studies of mindfulness programs that use class-based approaches. Mindfulness apps can increase access to training, but whether self-directed app use is sufficient to realize benefits equivalent to class-based mindfulness programs is unknown. We assessed the effectiveness of a mindfulness app, both with and without supporting classes, for reducing employees' perceived stress. Changes in mindfulness, mental health, quality of life, perceptions of job demand, control

and support, productivity indicators, organizational citizenship, and mindful behaviors at work were also investigated. **Methods:** Tasmanian State Service employees were invited by the Tasmanian Training Consortium to a 3-arm randomized controlled trial investigating the effects of a mindfulness app on stress. The app used in the Smiling Mind Workplace Program formed the basis of the intervention. The app includes lessons, activities, and guided meditations, and is supported by 4 instructional emails delivered over 8 weeks. Engagement with the app for 10-20 minutes, 5 days a week, was recommended. Reported data were collected at baseline (time point 0), 3 months from baseline (time point 1 [T1]), and at 6-month follow-up (time point 2). At time point 0, participants could nominate a work-based observer to answer surveys about participants' behaviors. Eligible participants (n=211) were randomly assigned to self-guided app use plus four 1-hour classes (app+classes: 70/211, 33.2%), self-guided app use (app-only: 71/211, 33.6%), or waitlist control (WLC; 70/211, 33.2%). Linear mixed effects models were used to assess changes in the active groups compared with the WLC at T1 and for a head-to-head comparison of the app+classes and app-only groups at follow-up. **Results:** App use time was considerably lower than recommended (app+classes: 120/343 minutes; app-only: 45/343 minutes). Compared with the WLC at T1, no significant change in perceived stress was observed in either active group. However, the app+classes group reported lower psychological distress ($\beta=-1.77$, SE 0.75; $P=.02$; Cohen $d=-0.21$) and higher mindfulness ($\beta=.31$, SE 0.12; $P=.01$; Cohen $d=0.19$). These effects were retained in the app+classes group at 6 months. No significant changes were observed for the app-only group or for other outcomes. There were no significant changes in observer measures at T1, but by time point 2, the app+classes participants were more noticeably mindful and altruistic at work than app-only participants. **Conclusions:** Including classes in the training protocol appears to have motivated engagement and led to benefits, whereas self-guided app use did not realize any significant results. Effect sizes were smaller and less consistent than meta-estimates for class-based mindfulness training.

Bartlett et al. 2022.

JMIR Mhealth Uhealth, vol. 10, no. 2.

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Keywords: Apps; employee; mindfulness; mobile phone; performance; smartphone app; stress; workplace.

Evidence Level: 2A

Link: <https://mhealth.jmir.org/2022/2/e30272/>

Job Design

Salutogenesis at work as a facilitator for implementation? An explorative study on the relationship of job demands, job resources and the work-related sense of coherence within a complex healthcare programme

Background: The implementation of complex healthcare programmes can be challenging for respective service providers (SPs) in implementation settings. A strong work-related sense of coherence (Work-SoC) promotes creation of job resources and potentially facilitates coping with demands that may arise during implementation. In this study, we analyse how SPs' Work-SoC is influenced by job resources and demands during programme implementation and identify relevant implementation strategies to ensure a salutogenic implementation process. **Methods:** Qualitative data were collected during the implementation of a new complex psycho-oncological care programme called isPO. Four focus groups and four interviews were conducted with SPs. All were audiotaped, transcribed and content analysis was applied, whilst ensuring inter- and intra-rater reliability. **Results:** Each Work-SoC component was influenced by specific job resources and demands. In particular, comprehensibility and manageability interacted. Manageability affected assessment of the programme's feasibility. High meaningfulness positively affected the programme's acceptance and overall assessment among SPs. Furthermore, it buffered low manageability and was strongly associated with project identification. **Conclusion:** We found that Work-SoC could be used

to assess SPs' work environment, and therefore programme feasibility. It may be worthwhile to use Work-SoC as an implementation outcome or as an indicator for possible programmes.

Cecon et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Complex interventions; implementation research; job demands; job resources; qualitative data; salutogenesis; work-related sense of coherence.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/3/1842>

You stay home, but we can't: Invisible 'dirty' work as calling amid COVID-19 pandemic

Background: Research on calling has largely focused on its benefits for employees. This study contends that experiencing work as a moral duty based calling in invisible-dirty occupations can yield both favorable and unfavorable employee outcomes. Whether employees feel burdened or supported in their work and family roles depends on the demands and resources provided by the workplace. **Methods and Results:** In a sample of 175 janitors at a large government hospital designated for treating COVID-19 patients in the national capital region of India, hypothesis testing results support that work calling is positively associated with both positive (job performance, subjective career success), and negative (work-family and family-work conflicts, burnout) outcomes. **Conclusions:** Further, job demands strengthen the relationship of work calling with work-family and family-work conflicts, and burnout, whereas, job resources augment the relationship between work calling and job performance, and subjective career success.

Sharma et al. 2022.

Journal of Vocational Behavior, vol. 132.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19; health care; invisible-dirty work; job demands; job resources; work calling.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8641980/>

An international scoping review of rangers' precarious employment conditions

Background: Protecting wildlife and other natural resources requires engaging and empowering local communities, ensuring compliance with rules, and ongoing monitoring and research. At the frontline of these efforts are rangers. Despite their critical role in maintaining the integrity of parks and protected areas, rangers across the world are exposed to precarious employment conditions and hazardous work environments. **Methods:** We conducted an international scoping review to understand which employment and working conditions are examined in the context of the ranger occupation and to assess whether the concept of precarious employment is used in the conservation, criminological, and environmental sustainability literature on rangers. We reviewed publications from Web of Knowledge, Scopus, ProQuest, and Medline, and grey literature for relevant English language articles published between 2000 and 2021. Our findings are based on the analysis of 98 included studies. **Results:** We found that the most commonly discussed aspect of rangers' employment and working conditions was the hazardous social and physical work environment, although this was often accompanied by severe income inadequacy, employment insecurity, and a lack of social security, regulatory support, and workplace rights. Such employment and working conditions can cause adverse impacts on rangers' mental and physical health, well-being, and safety, and are also detrimental to their ability to adequately protect biodiversity. **Conclusions:** We conclude by outlining the need for sustainable solutions and additional research based on established conceptualizations of the precarious employment concept and other related concepts. Lastly, we suggest that governments should acknowledge the importance of rangers through their recognition as essential workers and provide greater support to improve their employment conditions.

Anagnostou et al. 2022.

Environmental Systems and Decisions, vol. 1, no. 1-25.

User License: *PMC Open Access Subset*

Keywords: Conservation officer; decent work; job quality; occupational health; protected areas; sustainable development.

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8805139/>

Shift Work

Do holidays change subjective sleep length or sleep debt in shift work disorder?

Background: In shift work disorder (SWD), disturbed sleep acutely impairs employees' recovery, but little attention has been paid to sleep during longer recovery periods. **Methods :** We examined how holidays affect self-estimated sleep length, sleep debt, and recovery in cases of SWD. Twenty-one shift workers with questionnaire-based SWD and nine reference cases without SWD symptoms completed a questionnaire on recovery and sleep need. They also reported sleep length on two separate occasions: during a work period and after ≥ 2 weeks of holidays. Sleep debt was calculated by subtracting sleep length from sleep need. We used parametric tests to compare the groups and the periods. **Results:** The groups reported shorter sleep on workdays than during holidays (median difference: SWD group 1.7 h, $p < 0.001$; reference group 1.5 h; $p < 0.05$). The SWD group's self-estimated sleep during holidays increased less above the sleep need (median 0.0 h) than the reference group's sleep (1.0 h, $p < 0.05$). In addition, the SWD group reported good recovery from irregular working hours less often (14%) than the reference group (100%, $p < 0.001$). **Conclusions:** Although holidays were generally associated with longer sleep estimates than workdays, employees with SWD experienced consistently less efficient recovery than those without SWD.

Vanttola et al. 2022.

Industrial Health, vol. 15.

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Keywords: Circadian rhythm sleep-wake disorder; day off; excessive sleepiness; free day; insomnia; non-workday; shift work sleep disorder; vacation.

Evidence Level: 5A

Link: https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2020-0215/_article

Autonomic nervous system activity under rotational shift programs: Effects of shift period and gender

Background: Rotational shifts perturb homeostatic mechanisms in a sexually dimorphic way and may compromise the activity of the autonomic nervous system during day- and night-shifts. Heart rate variability (HRV) is a non-invasive measure to assess autonomic control of the heart. **Methods:** Our aim in this study was to assess HRV by short-term continuous electrocardiogram in female ($n=40$, average age: 31, average working year: 7) and male ($n=40$, average age: 29, average working year: 6) nurses under rotational shift programs, HRV is derived from short-term electrocardiogram recordings, carried out both at day- and night -shifts, and included time-domain [e.g., standard deviation of NN intervals, SDNN (ms); percentage of successive RR intervals that differ by more than 50 ms, pNN50 (%); root mean square of successive RR interval differences, RMSSD (ms)] and frequency-domain [very low frequency, VLF; low frequency, LF; high frequency, HF; LF/HF] parameters. **Results:** Heart rates were similar across the groups but males had lower SDNN ($p=0.020$), RMSSD ($p=0.001$), pNN50 ($p=0.001$), VLF ($p=0.048$) and HF ($p=0.001$) but had higher LF/HF ratio ($p=0.000$) than females. In general, these parameters did not differ between day- and night-shifts ($p < 0.05$). **Conclusions:** Lower HRV parameters and higher LF/HF in males suggest that they may be under greater threat for disease progression.

Cakan et al. 2022.

Industrial Health, vol. 60, no. 1.

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Keywords: Autonomic nervous system activity; gender; heart rate variability; rotating-shift; stress.

Evidence Level: 5B

Link: https://www.jstage.jst.go.jp/article/indhealth/60/1/60_2021-0029/article

Night shift work characteristics are associated with several elevated metabolic risk factors and immune cell counts in a cross-sectional study

Background: Night shift work is associated with increased health risks. Here we examined the association of metabolic risk factors and immune cell counts, with both night shift work and particular characteristics thereof: frequency, duration and consecutive night shifts. **Methods:** We performed a cross-sectional study using data from 10,201 non-shift workers and 1062 night shift workers of the Lifelines Cohort study. Linear regression analyses, adjusted for demographic, lifestyle and occupational factors, were used to study associations of night shift work characteristics with metabolic risk factors and immune cell counts. **Results:** Night shift workers had an increased BMI, waist circumference and immune cell counts compared to non-shift workers. This was especially seen in night shift workers who had a higher frequency of night shifts per month (≥ 5 : BMI: $B = 0.81 \text{ kg/m}^2$ (95%-CI = 0.43-1.10); waist circumference: $B = 1.58 \text{ cm}$ (95%-CI = 0.34-1.71); leukocytes: $B = 0.19 \times 10^9 \text{ cells/L}$ (95%-CI = 0.04-0.34 $\times 10^9$)) and worked more consecutive night shifts (> 3 : BMI: $B = 0.92 \text{ kg/m}^2$ (95%-CI = 0.41-1.43); waist circumference: $B = 1.85 \text{ cm}$ (95%-CI = 0.45-3.24); leukocytes: $B = 0.32 \times 10^9 \text{ cells/L}$ (95%-CI = 0.09-0.55 $\times 10^9$)). This association was less pronounced in long-term night shift workers (≥ 20 years). **Conclusions:** Our findings provide evidence for the association between night shift work characteristics and BMI, waist circumference and leukocytes (including, monocytes, lymphocytes, and basophil granulocytes).

Streng et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Shift work; metabolic risk factors; immunity; immune cells.

Evidence Level: 4A

Link: <https://www.nature.com/articles/s41598-022-06122-w>

Multimodal investigation of the association between shift work and the brain in a population-based sample of older adults

Background: Neuropsychological studies reported that shift workers show reduced cognitive performance and circadian dysfunctions which may impact structural and functional brain networks. **Methods:** Here we tested the hypothesis whether night shift work is associated with resting-state functional connectivity (RSFC), cortical thickness and gray matter volume in participants of the 1000BRAINS study for whom information on night shift work and imaging data were available. 13 present and 89 former night shift workers as well as 430 control participants who had never worked in shift (NEVER) met these criteria and were included in our study. **Results:** No associations between night shift work, three graph-theoretical measures of RSFC of 7 functional brain networks and brain morphology were found after multiple comparison correction. Preceding multiple comparison correction, our results hinted at an association between more years of shift work and higher segregation of the visual network in PRESENT shift workers and between shift work experience and lower gray matter volume of the left thalamus. Extensive neuropsychological investigations supplementing objective imaging methodology did not reveal an association between night shift work and cognition after multiple comparison correction. **Conclusions:** Our pilot study suggests that night shift work does not elicit general alterations in brain networks and affects the brain only to a limited extent. These results now need to be corroborated in studies with larger numbers of participants.

Bittner et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Shift work; older adults; shift workers; brain

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-022-05418-1>

Disturbance of the circadian system in shift work and its health impact

The various non-standard schedules required of shift workers force abrupt changes in the timing of sleep and light-dark exposure. These changes result in disturbances of the endogenous circadian system and its misalignment with the environment. Simulated night-shift experiments and field-based studies with shift workers both indicate that the circadian system is resistant to adaptation from a day- to a night-oriented schedule, as determined by a lack of substantial phase shifts over multiple days in centrally controlled rhythms, such as those of melatonin and cortisol. There is evidence that disruption of the circadian system caused by night-shift work results not only in a misalignment between the circadian system and the external light-dark cycle, but also in a state of internal desynchronization between various levels of the circadian system. This is the case between rhythms controlled by the central circadian pacemaker and clock genes expression in tissues such as peripheral blood mononuclear cells, hair follicle cells, and oral mucosa cells. The disruptive effects of atypical work schedules extend beyond the expression profile of canonical circadian clock genes and affects other transcripts of the human genome. In general, after several days of living at night, most rhythmic transcripts in the human genome remain adjusted to a day-oriented schedule, with dampened group amplitudes. In contrast to circadian clock genes and rhythmic transcripts, metabolomics studies revealed that most metabolites shift by several hours when working nights, thus leading to their misalignment with the circadian system. Altogether, these circadian and sleep-wake disturbances emphasize the all-encompassing impact of night-shift work, and can contribute to the increased risk of various medical conditions. Here, we review the latest scientific evidence regarding the effects of atypical work schedules on the circadian system, sleep and alertness of shift-working populations, and discuss their potential clinical impacts.

Boivin et al. 2022.

Journal of Biological Rhythms, vol. 37, no. 1.

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

Keywords: Alertness; circadian rhythms; night shift; performance; physical and mental health; shift work; sleep; sleepiness.

Evidence Level: 6B

Link: <https://journals.sagepub.com/doi/full/10.1177/07487304211064218>

Impact of night and shift work on metabolic syndrome and its components: a cross-sectional study in an active middle-to-older-aged population-based sample

Background: To examine the effects of work schedules on metabolic syndrome and its components in active middle-to-older-aged workers. **Methods:** A cross-sectional analysis including middle-to-older-aged active workers from the population-based CoLaus|PsyCoLaus study (Lausanne, Switzerland) was performed. Work schedule was self-reported and defined as follows: permanent day, day shift, night shift and permanent night work. Associations between work schedule and the risk of metabolic syndrome and its components were analysed using multivariable-adjusted logistic regressions. **Results:** A total of 2301 active workers (median age (IQR): 55.4 (50.8 to 60.4), 50.1% women) were included. Of these, 1905 were permanent day workers, 220 were day-shift workers, 134 were night-shift workers and 42 were permanent night-shift workers. There were significant interactions between sex and work schedule for metabolic syndrome, high triglycerides and visceral obesity. Men but not women permanent night workers had a higher prevalence of metabolic syndrome than permanent day workers in multivariable-adjusted analyses

(OR 4.45 (95% CI 1.36 to 14.56)). Analysis of metabolic syndrome subcomponents showed that the association between work schedule and metabolic syndrome in men was mainly driven by visceral obesity (OR 3.35 (95% CI 1.04 to 10.76)). Conversely, women but not men working in night shift were at increased risk of having high triglycerides compared with permanent day workers (OR 2.92 (95% CI 1.03 to 8.27)).

Conclusions: The risk of metabolic syndrome is higher in men working in permanent night shift compared with permanent day work, and this association could be mediated by visceral obesity.

Bayon et al. 2022.

BMJ Open, vol. 12, no. 2.

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Keywords: Diabetes & endocrinology; epidemiology; general endocrinology.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/2/e053591.long>

Management and Leadership

The relationship between leader support, staff influence over decision making, work pressure and patient satisfaction: A cross-sectional analysis of NHS datasets in England

Background: To explore the relationships between leader support, staff influence over decisions, work pressure and patient satisfaction. **Methods:** A cross-sectional study of large National Health Service (NHS) datasets in England in 2010. Setting and participants: 158 NHS acute hospital trusts in England (n=63 156) from all staff groups. Primary and secondary outcome measures: Survey data measuring leader support, staff influence over decision making, staff work pressure and objective outcome data measuring patient satisfaction. **Results:** Multilevel serial mediation analysis showed a significantly positive association between leader support and staff influence over decisions (B=0.74, SE=0.07, p<0.01). Furthermore, staff influence over decisions showed a negative association with staff work pressure (B=-0.84, SE=0.41, p<0.05) which in turn was negatively linked to patient satisfaction (B=-17.50, SE=4.34, p<0.01). Serial mediation showed a positive indirect effect of leader support on patient satisfaction via staff influence over decisions and work pressure (B=10.96, SE=5.55, p<0.05). **Conclusions:** Our results provide evidence that leader support influences patient satisfaction through shaping staff experience, particularly staff influence over decisions and work pressure. Patients' care is dependent on the health, well-being, and effectiveness of the NHS workforce. That, in turn, is determined by the extent to which leaders are supportive in ensuring that work environments are managed in a way which protects the well-being of staff.

West et al. 2022.

BMJ Open, vol. 12, no. 2.

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Keywords: Health services administration & management; organisational development; quality in health care.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/2/e052778.long>

Work Ability

Promoting work ability with a wearable activity tracker in working age individuals with hip and/or knee osteoarthritis: A randomized controlled trial

Background: Physical activity (PA) may improve work ability and health in individuals with hip and/or knee osteoarthritis (OA). The use of wearable activity trackers (WATs) has been shown to increase PA and improve other health outcomes but little is known concerning their effect on work ability. The objectives of this study were to examine the effect of self-monitoring PA with a WAT on work ability, PA and work

productivity among individuals of working age with hip and/or knee OA. **Methods:** Individuals (n = 160) were included and cluster-randomized to a Supported Osteoarthritis Self-management Program (SOASP) with the addition of self-monitoring PA using a commercial WAT for 12 weeks (n = 86), or only the SOASP (n = 74). Primary outcome was self-reported work ability measured with the Work Ability Index (WAI) and secondary outcomes were self-reported PA measured with the International Physical Activity Questionnaire - Short Form (IPAQ-SF) and work productivity, measured with the Work Productivity and Activity Impairment scale: Osteoarthritis (WPAI:OA) at baseline and after 3, 6 and 12 months. Data was primarily analysed with linear mixed models. **Results:** Participants with data from baseline and at least one follow-up were included in the analyses (n = 124). Linear mixed models showed no statistically significant difference between groups regarding pattern of change in work ability or PA, from baseline to follow-ups. Also, neither group had a statistically significant difference in work ability between baseline and each follow-up. **Conclusion:** The SOASP together with self-monitoring PA with a WAT did not have any effect on the primary outcome variable work ability. Participants already at baseline had good work ability and were physically active, which could have reduced the possibility for improvements. Future interventions should target a population with lower work ability and PA-level.

Östlind et al. 2022.

BMC Musculoskeletal Disorders, vol. 23, no. 1.

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Keywords: Hip osteoarthritis; knee osteoarthritis; Mhealth; physical activity; wearable activity tracker; work ability.

Evidence Level: 2A

Link: <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-022-05041-1>

Adapting to the Future of Work

Aging Workforce

A shift in women's health? Older workers' self-reported health and employment settings during the COVID-19 pandemic

Background: The first wave of COVID-19 has had a massive impact on work arrangements settings in many European countries with potential effects on health that are likely to vary across gender.

Methods: Focusing on the workforce aged 50 and over in 27 European countries using data from SHARE wave 8 (N = 11,221), the study applies a generalized logit mixed-effects model to assess the relationship between negative and positive change in self-reported health since the start of the pandemic and change in employment settings using an interaction effect between gender and employment arrangements to distinguish their specific association by gender after controlling for socio-economic covariates and multicollinearity. **Results:** Female respondents have higher probabilities to declare a positive health when working fully or partially from home or when temporarily and permanently unemployed. However, introducing the main effect of gender exacerbates discrepancies and such benefits fade away. Differences across countries do not significantly change the estimates. **Conclusion:** The benefits of work arrangements to improve women's health during the first wave of COVID-19 have not compensated the negative effect of gender discrepancies exacerbated by the pandemic to the extent that employment arrangements have no role, or just a negative impact, in modulating them.

Wels et al. 2022.

European Journal of Public Health, vol. 32, no. 1.

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Keywords: COVID-19; women's health; health; employment.

Evidence Level: 4B

Link: <https://academic.oup.com/eurpub/article/32/1/80/6444990?login=false>

Medical rehabilitation of older employees with migrant background in Germany: Does the utilization meet the needs?

Background: Due to demographic change with an ageing workforce, the proportion of employees with poor health and a need for medical rehabilitation is increasing. The aim was to investigate if older employees with migrant background have a different need for and utilization of medical rehabilitation than employees without migrant background. **Methods:** To investigate this, self-reported data from older German employees born in 1959 or 1965 of the first and second study wave of the lidA cohort study were exploratory analyzed (n = 3897). Subgroups of employees with migrant background were separated as first-generation, which had either German or foreign nationality, and second-generation vs. the rest as non-migrants. All subgroups were examined for their need for and utilization of medical rehabilitation with descriptive and bivariate statistics (chi-square, F- and post-hoc tests). Furthermore, multiple logistic regressions and average marginal effects were calculated for each migrant group separately to assess the effect of need for utilization of rehabilitation. **Results:** According to our operationalizations, the foreign and German first-generation migrants had the highest need for medical rehabilitation while the German first- and second-generation migrants had the highest utilization in the bivariate analysis. However, the multiple logistic model showed significant positive associations between their needs and utilization of rehabilitation for all subgroups. Further in-depth analysis of the need showed that something like under- and oversupply co-exist in migrant groups, while the foreign first-generation migrants with lower need were the only ones without rehabilitation usage. However, undersupply exists in all groups independent of migrant status. **Conclusions:** Concluding, all subgroups showed suitable use of rehabilitation according to their needs at first sight. Nevertheless, the utilization does not appear to have met all needs, and therefore, the need-oriented utilization of rehabilitation should be increased among all employees, e.g. by providing more information, removing barriers or identifying official need with uniform standards.

Schröder et al. 2022.

PLoS One, vol. 17, no. 2.

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Keywords: Medical rehabilitation; immigrants; Germany.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0263643>

Social networks may shape visually impaired older adults' occupational engagement: A narrative inquiry

Background: Age-related vision loss (ARVL) has been shown to interfere with older adults' occupational engagement. The primary purpose was to examine the role social networks play in facilitating/constraining engagement in desired occupations for older adults with ARVL. **Methods:** This study adopted a constructivist narrative methodology. Five older adults, ≥ 60 years of age with ARVL, participated in three virtual interviews, which were coded using thematic analysis. **Results:** Three overarching themes were identified: (a) Diverse Social Networks Fulfill Different Occupational and Psychosocial Needs, (b) Retaining a Sense of Independence through Seeking Reciprocity in Social Relationships, and (c) Community Mobility and Technology Support as Essential for Preserving Social Relationships. **Conclusions:** Findings broaden understandings of how informal/formal social networks are involved in shaping visually-impaired older adults' adaptation to ARVL and related occupational changes. Findings may help improve the quality and delivery of low-vision rehabilitation services to optimize their contribution to occupational engagement.

Kang et al. 2022.

Occupation, Participation and Health, vol. 22.

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Keywords: Occupational science; older adults; rehabilitation; social participation; visual perception.

Evidence Level: 6B

Link: <https://journals.sagepub.com/doi/full/10.1177/15394492221078315>

Ageism in working life: A scoping review on discursive approaches

Background: This review investigates the contribution of discursive approaches to the study of ageism in working life. It looks back on the 50 years of research on ageism and the body of research produced by the discursive turn in social science and gerontology. **Methods:** This study followed the 5-step scoping review protocol to define gaps in the knowledge on ageism in working life from a discursive perspective. About 851 papers were extracted from electronic databases and, according to inclusion and exclusion criteria, 39 papers were included in the final review. **Results:** The selected articles were based on discursive approaches and included study participants along the full continuum of working life (workers, retirees, jobseekers, and students in training). Three main themes representing the focal point of research were identified, namely, experiences of ageism, social construction of age and ageism, and strategies to tackle (dilute) ageism. **Conclusions:** Discursive research provides undeniable insights into how participants experience ageism in working life, how ageism is constructed, and how workers create context-based strategies to counteract age stereotypes, prejudice, and discrimination. Discursive research on ageism in the working life needs further development about the variety of methods and data, the problematization of age-based labeling and grouping of workers, and a focus on the intersection between age and other social categories. Further research in these areas can deepen our understanding of how age and ageism are constructed and can inform policies about ways of disentangling them in working life.

Previtali et al. 2022.

Gerontologist, vol. 62, no. 2.

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Keywords: Aging policies; discourses; older–younger workers; workforce.

Evidence Level: 6A

Link: <https://academic.oup.com/gerontologist/article/62/2/e97/5899780?login=false>

Healthy working life expectancy at age 50 for people with and without osteoarthritis in local and national English populations

Background: Retirement ages are rising in many countries to offset the challenges of population ageing, but osteoarthritis is an age-associated disease that is becoming more prevalent and may limit capacity to work until older ages. We aimed to assess the impact of osteoarthritis on healthy working life expectancy (HWLE) by comparing HWLE for people with and without osteoarthritis from ages 50 and 65 nationally and in a local area in England. **Methods:** Mortality-linked data for adults aged ≥ 50 years were used from six waves (2002-13) of the English Longitudinal Study of Ageing and from three time points of the North Staffordshire Osteoarthritis Project. HWLE was defined as the average number of years expected to be spent healthy (no limiting long-standing illness) and in paid work (employment or self-employment), and was estimated for people with and without osteoarthritis and by sex and occupation type using interpolated Markov chain multi-state modelling. **Results:** HWLE from age 50 years was a third lower for people with osteoarthritis compared to people without osteoarthritis both nationally (5.68 [95% CI 5.29, 6.07] years compared to 10.00 [9.74, 10.26]) and in North Staffordshire (4.31 [3.68, 4.94] years compared to 6.90 [6.57, 7.24]). HWLE from age 65 years for self-employed people with osteoarthritis exceeded HWLE for people without osteoarthritis in manual or non-manual occupations. Osteoarthritis was associated with a significantly shorter HWLE. **Conclusions:** People with osteoarthritis are likely to have significantly impaired working ability and capacity to work until older ages, especially in regions with poorer health and work outcomes.

Lynch et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Life expectancy; Osteoarthritis; English

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-022-06490-3>

Technology

Employees' perceptions of relational communication in full-time remote work in the public sector

Background: The global COVID-19 pandemic has led to numerous changes in society. This paper aims to understand how the abrupt transfer to remote work is reflected in employees' perceptions of relational communication at their work. Our research question is as follows: What kinds of perceptions and profiles regarding relational communication can be found among full-time remote workers? **Methods:** A sample of 1,091 Finnish public sector employees with virtually no previous experience in remote work completed an open-ended survey during the first wave of the pandemic. **Results:** The findings present 17 aspects of relational communication that the respondents mentioned as having changed because of moving to remote work. These aspects divide the respondents into three groups: those who found remote work as a challenge for relational communication, those who found it as an opportunity for relational communication, and those whose perceptions were ambivalent. The respondents' individual characteristics are presented alongside their perceptions. The results reflect the diversity of relational communication in organizations, highlighting its importance to well-being and coping. **Conclusions:** The practical implications of the study reflect the typical time and place of relational communication in traditional organizing, offering insights into how to develop a culture that enables relational communication in remotely working organizations.

Jämsen et al. 2022.

Computers in Human Behavior, vol. 132.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19; communication technology; relational communication; remote work; technology-mediated communication; work relationships.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8847075/>

Value of normative belief in intention to use workplace health promotion apps

Background: Mobile applications (apps) have started to be used for workplace health promotion (WHP). However, the factors that lead to the usage of apps in the workplace from the end-user perspective remain unclear. **Methods:** To investigate the research gap, the study evaluates a model for the adoption of WHP apps by combining the theory of planned behavior, the health belief model, and the technology acceptance model. A self-administered questionnaire with validated scales among 354 participants was used to evaluate the proposed model for WHP. **Results:** Although the study indicated a limited overall model fit, interesting aspects were derived. In particular, the study demonstrated that normative belief (especially), perceived usefulness, and attitudinal belief play important roles in the intention to use WHP apps. **Conclusion:** The study is among the first to validate the theoretical models of mHealth adoption for WHP. Moreover, it shows that not only normative belief but also adjustment to several target groups is a necessary factor to be considered in the development and implementation of an app for WHP.

Junker et al. 2022.

BMC Medical Informatics and Decision Making, vol. 22, no. 1.

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Keywords: Acceptance; adoption; structural equation modeling; workplace health promotion; mhealth.

Evidence Level: 5A

Link: <https://bmcmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-022-01760-6>

Working towards inclusion: Creating technology for and with people living with mild cognitive impairment or dementia who are employed

Background: Earlier diagnosis and longer working careers is resulting in more individuals being identified as having Mild Cognitive Impairment or Early Onset Dementia (MCI/EOD) when they are still in the workforce. While there is growing interest in the dementia research community and beyond to develop technologies to support people with dementia, the use of technology for and by people with MCI/EOD in the workplace has had very little attention. **Methods:** This paper presents a two-part study involving interviews and participatory sessions to begin to understand the workplace experiences and the role of technology among people living with MCI/EOD. We present our findings from working with seven people with MCI/EOD and two care partners to explore technology design. **Results:** Our results indicate several similarities as well as a few differences between MCI/EOD and later-onset dementia with respect to challenges using technology and design considerations for supporting engagement and use of technology. **Conclusions:** Lessons learned through the process of working with people with MCI/EOD through participatory methods is presented along with recommendations to foster an inclusive, respectful, and empowering experience for participants with MCI/EOD.

Shastri et al. 2022.

Dementia, vol. 21, no. 2.

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Keywords: Early-onset dementia; mild cognitive impairment; technology; user-centred design; workplace.

Evidence Level: 5A

Link: <https://journals.sagepub.com/doi/full/10.1177/14713012211051885>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

The perception of stress, behavior in stressful situations and mental health of bank employees within a German-Ukrainian comparative study

Background: The banking sector is a branch of the global labor market that is increasingly facing stress. This can have some negative effects on mental and physical health. The aim of the study was to examine the management of stress and the assessment of mental health in 2 European countries. **Methods:** The sample comprised 90 (52%) German and 83 (48%) Ukrainian bank employees (BA) (N = 173). To achieve the aim of the study, the following questionnaires were used: the *Differential Stress Inventory* (DSI), the *Inventory for Personality Diagnosis in Situations* (IPS) and the 12-item *General Health Questionnaire* (GHQ-12). The participants were examined in regard to nationality. Age, gender, senior position and DSI types were considered as covariates. **Results:** There were some significant national differences. The senior position, gender and age alone had little or no influence on the results. In stress management, the German sample showed unfavorable values of DSI and IPS categories. Significantly more German bank employees (10%) were overstressed (DSI type II) compared to Ukrainian ones (3%). Significant differences in stress trigger, stress manifestation and stress stabilization of DSI, and in almost all IPS categories, were found between the bank employees of both countries. More specifically, 20% of the German sample and only 8.8% of the Ukrainian sample reported impaired mental health. **Conclusions:** Bank employees from Germany and Ukraine differed in their perception of stress and behavior in stressful situations, based on the DSI and IPS results; the Germans were shown to perform worse. This is reflected in the higher level of mental health impairment among the Germans, which is demonstrated by the GHQ-12 results. However, there is a need for workplace health promotion and preventive programs for both samples. *Int J Occup Med Environ Health.* 2022;35(1):81-94.

Thielmann et al. 2022.

International Journal of Occupational Medicine and Environmental Research, vol. 35, no. 1.

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Keywords: European; employees; personality; prevention; senior position; stress.

Evidence Level: 5B

Link: <http://ijomeh.eu/The-perception-of-stress-behavior-in-stressful-situations-and-mental-health-of-bank,138184,0,2.html>

Explaining the occupational structure of depressive symptoms: Precarious work and social marginality across European countries

Background: The idea that socioeconomic differences are a "fundamental cause" of health and well-being is the basis for large volumes of research. However, one of the challenges in this area is that of linking socioeconomic positions to etiological mechanisms in theoretically informative ways. The situation is doubly challenging because the expression and meaning of socioeconomic positions and the mechanisms they activate change over time. **Methods: and Results:** Focusing on depression and applying mediation analysis to data from a large multinational sample from European countries, we find strong support for a three-stage model where occupational differences are largely mediated by exposure to precarious work, which itself is mediated by social marginality. The model is largely robust across welfare state regimes.

Conclusions: Ultimately, the research extends fundamental cause perspectives by highlighting connections between "old" and "new" dimensions of socioeconomic status and the social and social psychological sequelae that connect them to psychological well-being.

Macmillian et al. 2022.

Journal of Health and Social Behavior, vol. 9.

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Keywords: Fundamental causes; mental health; precarious work; social marginality; welfare state regimes.

Evidence Level: 6B

Link: <https://journals.sagepub.com/doi/full/10.1177/00221465211072309>

Occupational stress and psychological wellbeing during COVID 19: Mediating role of positive psychological capital

Background: The COVID 19 pandemic has challenged the humankind's livelihood, physical health, mental health, employment, and economy. Lockdowns, quarantines, online teaching, and learning have become new normal. Negativities have been spread across the globe and society by the pandemic. The negative effects caused a confused mindset, fear, anxiety, stress, and other psychological complications amongst the people especially among the Health Care Workers (HCWs), children, elderly people, and Frontline Workers (FLWs). **Background:** This research work examines the levels of Occupational Stress (OS), and psychological well-being (PWB) of HCWs and police personnel during the pandemic and the relationship between OS and PWB. Further, the study analyzed the role of Positive Psychological Capital (PPC) as a mediator and Emotional Quotient (EQ) as a moderator in the relationship between OS and PWB. **Results and**

Conclusions: Positive Psychological Capital (PPC) characteristics of the respondents such as having faith in one's ability, and performance, willingness to succeed or attain the goals framed, ability to bounce back from the hard times, and their optimism about the future have helped them to tackle the stress caused by the pandemic and to maintain a better state of psychological wellbeing in the fight against the pandemic.

Ravikumar. 2022.

Current Psychology, vol. 5, no. 1-8.

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Keywords: COVID 19; emotional quotient; occupational stress; positive psychological capital; psychological wellbeing.

Evidence Level: 6B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8817772/>

Mental health of employed family caregivers in Canada: A gender-based analysis on the role of workplace support

Background: This study examines the effect of gender differences in mental health outcomes among employed family caregivers, focusing on the role of workplace support in balancing work and caregiving.

Methods: Guided by the social role theory, this study analyzes nationally representative data from the 2012 Canada General Social Survey, with a sample of 2,426 participants. **Results:** Women experience worse mental health outcomes than men when they require employment adjustment to fulfill their caregiving responsibilities. Workplace support could offset the negative effects of employment adjustment on mental health either directly or indirectly through family-work conflict, but gender difference is apparent in terms of the effect of workplace support. In general, women require more supportive workplace than men.

Conclusions: Further study of the effects of various types of workplace support on the mental health among women who are employed family caregivers, and on more tailored support, is recommended.

Li et al. 2022.

International Journal of Aging and Human Development, vol. 7.

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

Keywords: Family; caregiving; psychological wellbeing; work-life balance.

Evidence Level: 5B

Link: <https://journals.sagepub.com/doi/full/10.1177/00914150221077948>

Psychosocial Issues

Combining supervised and unsupervised named entity recognition to detect psychosocial risk factors in occupational health checks

Background: In occupational health checks the information about psychosocial risk factors, which influence work ability, is documented in free text. Early detection of psychosocial risk factors helps occupational health care to choose the right and targeted interventions to maintain work capacity. In this study the aim was to evaluate if we can automate the recognition of these psychosocial risk factors in occupational health check electronic records with natural language processing (NLP). **Methods:** We compared supervised and unsupervised named entity recognition (NER) to detect psychosocial risk factors from health checks' documentation. Occupational health nurses have done these records. **Results:** Both methods found over 60% of psychosocial risk factors from the records. However, the combination of BERT-NER (supervised NER) and QExp (query expansion/paraphrasing) seems to be more suitable. In both methods the most (correct) risk factors were found in the work environment and equipment category. **Conclusion:** This study showed that it was possible to detect risk factors automatically from free-text documentation of health checks. It is possible to develop a text mining tool to automate the detection of psychosocial risk factors at an early stage.

Uronen et al. 2022.

International Journal of Medical Informatics, vol. 160.

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Keywords: Health check; occupational health; psychosocial risk factors; text mining, named entity recognition.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S1386505622000090?via%3Dihub>

Is work-family conflict a pathway between job strain components and binge eating? A cross-sectional analysis from the ELSA-Brasil study

Background: Job strain has been reported as a trigger for binge eating, yet the underlying mechanisms have been unclear. The aim of this study was to evaluate whether work-family conflict is a pathway in the association between job strain and binge eating, considering the possible effect-modifying influence of body mass index (BMI). **Methods:** This cross-sectional analysis included 12,084 active civil servants from the multicenter Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). Job strain was assessed using the Demand-Control-Support Questionnaire. Work-family conflict was considered as a latent variable comprising three items. Binge eating was defined as eating a large amount of food in less than 2 h at least twice a week in the last six months with a sense of lack of control over what and how much was eaten. Structural equation modelling was used to test the role of work-family conflict in the association between job strain and binge eating, stratifying for BMI. **Results:** For individuals of normal weight, positive associations were found between skill discretion and binge eating (standardized coefficient [SC] = 0.209, 95%CI = 0.022-0.396), and between psychological job demands and work-family conflict (SC = 0.571, 95%CI = 0.520-0.622), but no statistically significant indirect effect was found. In overweight individuals, psychological job demands, skill discretion, and work-family conflict were positively associated with binge eating (SC = 0.099, 95%CI = 0.005-0.193; SC = 0.175, 95%CI = 0.062-0.288; and SC = 0.141, 95%CI = 0.077-0.206, respectively). Also, work-family conflict was observed to be a pathway on the associations of psychological job demands and decision authority with binge eating (SC = 0.084, 95%CI = 0.045-0.122; and SC = - 0.008, 95%CI = - 0.015- - 0.001, respectively). **Conclusions:** Work-family conflict partly explains effects of high levels of psychological job demands and low levels of decision authority on binge eating among overweight individuals. Moreover, skill discretion is positively associated with binge eating, regardless of BMI category.

Juvanhol et al. 2022.

Journal of Eating Disorders, vol. 10, no. 1.

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Keywords: Eating behavior; eating disorder; job stress; obesity; occupational stress; psychological stress.

Evidence Level: 4B

Link: <https://jeatdisord.biomedcentral.com/articles/10.1186/s40337-022-00540-x>

Work environment risk factors causing day-to-day stress in occupational settings: A systematic review

Background: While chronic workplace stress is known to be associated with health-related outcomes like mental and cardiovascular diseases, research about day-to-day occupational stress is limited. This systematic review includes studies assessing stress exposures as work environment risk factors and stress outcomes, measured via self-perceived questionnaires and physiological stress detection. These measures needed to be assessed repeatedly or continuously via Ecological Momentary Assessment (EMA) or similar methods carried out in real-world work environments, to be included in this review. The objective was to identify work environment risk factors causing day-to-day stress. **Methods:** The search strategies were applied in seven databases resulting in 11833 records after deduplication, of which 41 studies were included in a qualitative synthesis. Associations were evaluated by correlational analyses. **Results:** The most commonly measured work environment risk factor was work intensity, while stress was most often framed as an affective response. Measures from these two dimensions were also most frequently correlated with each other and most of their correlation coefficients were statistically significant, making work intensity a major risk factor for day-to-day workplace stress. **Conclusions:** This review reveals a diversity in methodological approaches in data collection and data analysis. More studies combining self-perceived stress exposures and outcomes with physiological measures are warranted.

Lukan et al. 2022.

BMC Public Health, vol. 22, no. 1.

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

Keywords: Day-to-day stress; Ecological Momentary Assessment (EMA); stress outcomes; systematic literature review; work environment risk factors.

Evidence Level: 1A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-12354-8>

Precarious employment and chronic stress: Do social support networks matter?

Background: Precarious employment has been identified as a potentially damaging stressor. Conversely, social support networks have a well-known protective effect on health and well-being. The ways in which precariousness and social support may interact have scarcely been studied with respect to either perceived stress or objective stress biomarkers. **Methods:** This research aims to fill this gap by means of a cross-sectional study based on a non-probability quota sample of 250 workers aged 25-60 in Barcelona, Spain. Fieldwork was carried out between May 2019 and January 2020. Employment precariousness, perceived social support and stress levels were measured by means of scales, while individual steroid profiles capturing the chronic stress suffered over a period of a month were obtained from hair samples using a liquid chromatography-tandem mass spectrometry methodology. **Results:** As for perceived stress, analysis indicates that a reverse buffering effect exists (interaction $B = 0.22$, $p = 0.014$). Steroid biomarkers are unrelated to social support, while association with precariousness is weak and only reaches significance at $p < 0.05$ in the case of women and 20β dihydrocortisone metabolites. **Conclusions:** These results suggest that social support can have negative effects on the relationship between perceived health and an emerging stressful condition like precariousness, while its association with physiological measures of stress remains uncertain.

Belvis et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

User License:

Keywords: Buffering hypothesis; chronic stress; cortisol; health inequalities; precarious employment; social determinants of health; social support networks; stress biomarkers.

Evidence Level: 4A

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Link: <https://www.mdpi.com/1660-4601/19/3/1909>

Burnout

Associations between burnout symptoms and sleep among workers during the COVID-19 pandemic

Background: The aim of this study was to investigate the relations between underlying dimensions of burnout (ie exhaustion, mental distance, cognitive impairment and emotional impairment) and sleep reactivity in occupations that maintain critical societal functions during the COVID-19 pandemic. Sleep reactivity refers to the vulnerability of experiencing sleep disturbances during stressful and challenging situations, and manifests as difficulties with falling and staying asleep. Previous research has highlighted the importance investigating psychological factors that may influence or trigger vulnerability to stress induced sleep problems, including factors at work. **Methods:** Longitudinal self-report data was collected using an online survey administered to Norwegian workers employed in health care, education, social services, emergency services and other sectors with critical tasks during the COVID-19 pandemic at two different time points three months apart. The sample in the present study ($N = 1331$) consisted of 76% females and 24% males with a mean age of 44 years. **Results:** The results showed that work-related exhaustion measured at baseline was the strongest symptom of burnout associated with higher sleep reactivity three months later, followed by emotional impairment. Mental distance and cognitive impairment at work were not associated with sleep reactivity, indicating that these burnout dimensions have less of an impact on sleep than exhaustion and emotional impairment. **Conclusion:** Work-related exhaustion and emotional impairment can lower the individual's tolerance to perceiving events as stressful

as well as reinforce the stress response, and contribute to difficulties with initiating and/or maintaining sleep. Workers employed in occupations with critical tasks during the pandemic may be more susceptible to exhaustion, emotional strain and poorer sleep due to increased and prolonged work pressure. Organizational and individual measures that can decrease stress and increase coping should be offered to employees working in high-stress conditions.

Sørengaard et al. 2022.

Sleep Medicine, vol. 199-203.

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Keywords: COVID-19; emotional impairment; exhaustion; insomnia; sleep reactivity.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S1389945722000326?via%3Dihub>

Are human resource managers with good listening competency more likely to avoid job burnout?

Background: Listening is an important responsibilities of human resource managers, whether it will bring role stress to human resource managers, or lead to the risk of job burnout. This study aims to analyze the impact of listening competency on job burnout among human resource managers, and examine the mediating effect of role stress. **Methods:** This study adopted a cross-sectional method to randomly select 500 human resource managers from China's top ten human resource management cities to conduct an online questionnaire survey, and 232 valid samples were obtained. Descriptive statistical and one-way ANOVA were used to explore the status of job burnout among human resource managers in China.

Correlation analysis, multiple linear regression and mediating effect analysis were employed to test the relationship between listening competency and job burnout, as well as the mediating effect of role stress.

Results: (1) 34.5% of the respondents reported mild burnout, while 3.0% respondents showed serious burnout. Emotional exhaustion was the most serious. (2) Those are good at listening could easily avoid job burnout. Among them, listening skills were conducive to reducing the degree of depersonalization of human resource managers, and empathy was more conducive to improving their personal sense of accomplishment. (3) The role stress had a significant mediating role in the relationship between listening competency and job burnout. Which means that listening competency can avoid job burnout by reducing role stress of human resource managers. **Conclusions:** This study revealed the current situation of job burnout among human resource managers in China, and explored the influence of listening competency on job burnout. This study enriched the research content of job burnout, and provided references for preventing and intervening job burnout of human resource managers.

Wang et al. 2022.

BMC Public Health, vol. 22, no. 1.

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Keywords: human resource manager; job burnout; listening competency; role stress.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-12618-x>

Enabling Healthy and Safe Workplaces

Health and Wellbeing

Being an accountant, cook, entertainer and teacher-all at the same time: Changes in employees' work and work-related well-being during the coronavirus (COVID-19) pandemic

Background:In March 2020, the world was hit by the coronavirus disease (COVID-19) pandemic which led to all-embracing measures to contain its spread. Most employees were forced to work from home and take care of their children because schools and daycares were closed. **Methods:** We present data from a research project in a large multinational organisation in the Netherlands with monthly quantitative

measurements from January to May 2020 (N = 253-516), enriched with qualitative data from participants' comments before and after telework had started. **Results:** Growth curve modelling showed major changes in employees' work-related well-being reflected in decreasing work engagement and increasing job satisfaction. For work-non-work balance, workload and autonomy, cubic trends over time were found, reflecting initial declines during crisis onset (March/April) and recovery in May. Participants' additional remarks exemplify that employees struggled with fulfilling different roles simultaneously, developing new routines and managing boundaries between life domains. Moderation analyses demonstrated that demographic variables shaped time trends. **Conclusions:** The diverging trends in well-being indicators raise intriguing questions and show that close monitoring and fine-grained analyses are needed to arrive at a better understanding of the impact of the crisis across time and among different groups of employees.

Syrek et al. 2022.

International Journal of Psychology, vol. 57, no. 1.

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

Keywords: Autonomy; COVID-19; job satisfaction; work-life balance; workload.

Evidence Level: 5B

Link: <https://onlinelibrary.wiley.com/doi/10.1002/ijop.12761>

Modelling the COVID-19 pandemic effects on employees' health and performance: A PLS-SEM mediation approach

Background: The COVID-19 pandemic has resulted in the imposition of certain changes in the management of organizations and in the behavior and actions of employees. The purpose of this paper is to investigate the impact of COVID-19 pandemic effects on employees' health and mental well-being, as well as on their working performance. Moreover, the paper aims to highlight whether health- and work-related stress factors mediate the above relations. **Methods:** For the purpose of data collection, a structured questionnaire was used. **Results:** The first results of the study showed that the pandemic effects felt by employees did not directly affect their mental and physical well-being. On the other hand, the COVID-19 pandemic effects felt by employees affected their general work performance. **Conclusions:** The findings of the study may provide a useful perspective for organizations and their employees in order to adopt the most effective measures to minimize the effects generated by the pandemic.

Popa et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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

Keywords: COVID-19; mental well-being; pandemic effects; physical well-being; stress factors; work performance.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/3/1865>

Occupational health and safety statistics as an indicator of worker physical health in South African industry

Background: Operations in general industry, including manufacturing, expose employees to a myriad of occupational health hazards. To prevent exposure, occupational health and safety regulations were enacted, with both employers and workers instituting various risk reduction measures. The analysis of available occupational disease and injury statistics (indicators of worker physical health) can be used to infer the effectiveness of risk reduction measures and regulations in preventing exposure. **Methods:** Thus, using the READ approach, analyses of occupational disease and injury statistics from South African industry, derived from annual reports of the Compensation Fund, were conducted. **Results:** The publicly available database of occupational disease and injury statistics from the South African general industry is unstructured, and the data are inconsistently reported. This data scarcity, symptomatic of an absence of a functional occupational disease surveillance system, complicates judgement making regarding the

effectiveness of implemented risk reduction measures, enacted occupational health and safety regulations and the status of worker physical health from exposure to workplace hazards. The statistics, where available, indicate that workers continue to be exposed to occupational health impacts within general industry, notwithstanding risk reduction measures and enacted regulations. In particular, worker physical health continues to be impacted by occupational injuries and noise-induced hearing loss. This is suggestive of shortcomings and inefficiencies in industry-implemented preventive measures and the regulatory state.

Conclusions: A robust national occupational disease surveillance system is a regulatory tool that should detect and direct policy responses to identified occupational health hazards.

Rokhotso et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Compensation; hazard and risk identification; health and safety legislation; health hazard; occupational disease; regulatory inspection; surveillance.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/3/1690>

Work and worker health in the post-pandemic world: A public health perspective

The COVID-19 pandemic has highlighted the importance of work in shaping population health and wellbeing. This viewpoint applies a multilevel systems framework to assist in understanding the diverse and complex interactions of forces affecting worker health and wellbeing, and how trending changes in employment and working conditions have been accelerated by the pandemic. Government agencies concerned with population health and wellbeing, and economic activity must expand their capacity to monitor, evaluate, and respond to these trends. In addition, integrated enterprise and workplace-based approaches that consider the interactions among these multidimensional drivers will build organisation and worker resilience to navigate the continual changes in work and worker safety, health, and wellbeing in a post-pandemic world.

Peters et al. 2022.

Lancet Public Health, vol. 7, no. 2.

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Keywords: Health; COVID-19; Worker.

Evidence Level: 6B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S2468-2667\(21\)00259-0](https://linkinghub.elsevier.com/retrieve/pii/S2468-2667(21)00259-0)

Increasing cocaine use amongst employed Australians: Who is most at-risk?

Background: Australian's cocaine use is at record levels. Large increases occurred between 2016-2019, with significant increases predominately found among employed Australians. **Methods:** Patterns, and prevalence of workers' cocaine use were examined using the 2016 and 2019 National Drug Strategy Household Survey data via frequency analyses. **Results:** Logistic regression modelling identified predictors of employed Australian's: cocaine use (2019); and increased use over time (2016-2019). Workers' cocaine use increased 63% between 2016-2019 (3.8%-6.2%). Predictors of use, and increased use, were age, marital status, state, remoteness, smoking status, alcohol use, and cocaine approval level. Income and psychological distress predicted cocaine use in 2019 only. Highest prevalence in 2019 occurred among workers who approved of regular cocaine use (47.9%), currently smoked (14.9%), were very highly distressed (14.0%), risky alcohol consumers (13.7%), and aged 18-24 years (13.9%). Numerous individual-level characteristics influence workers' cocaine use. Workplace cultural norms and substance use climates may facilitate increased cocaine use. **Conclusions:** The workplace is a powerful setting for cocaine prevention and intervention efforts. Potential strategies include targeting social norms, shifting positive

drug use workplace cultures, and providing health and safety training focussing on the risk of use to self and co-workers whilst also examining demographic subgroups' motivations for use.

McEntee et al. 2022.

Industrial Health, vol. 15.

User License: *Creative Commons Attribution -NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)* (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Keywords: Australia; cocaine; epidemiology; illicit drug use; workforce.

Evidence Level: 4A

Link: https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2021-0159/_article

Changes in cause-specific mortality trends across occupations in working-age Japanese women from 1980 to 2015: A cross-sectional analysis

Background: Reducing health inequalities is an important public health challenge. Many studies have examined the widening health gap by occupational class among men, but few among women. We therefore estimated variation in absolute and relative mortality by occupational category across four leading causes of mortality-cancer, ischaemic heart disease, cerebrovascular disease, and suicide-to explore how occupational class is associated with health among working women aged 25-64 in Japan. **Methods:** We conducted a repeated cross-sectional study using Poisson regression analysis on each five-yearly mortality data from 1980 to 2015, obtained from the National Vital Statistics and the Japanese Population Census.

Results: There was a decreasing trend in mortality from all cancers, ischaemic heart disease, cerebrovascular disease, and suicide among women in all occupational groups from 1980 to 2015.

Agriculture workers had higher risk of mortality than professional workers for all four causes of death. The absolute difference in mortality rates for all cancers and cerebrovascular disease was higher in 2000-2015 than 1980-1995. The mortality trend among clerks and sales workers decreased after 2000, except for suicide. **Conclusions:** Mortality rates from all four causes are higher among agriculture workers compared to professional workers, and attention is needed to reduce this mortality gap. Continuous monitoring of ongoing mortality trends is essential to ensure better health and wellbeing in Japan.

Dhungel et al. 2022.

BMC Womens Health, vol. 22, no. 1.

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Keywords: Cancer; cerebrovascular disease; inequality; ischaemic heart disease; Japan; mortality; occupation; suicide; women; working age.

Evidence Level: 4B

Link: <https://bmcwomenshealth.biomedcentral.com/articles/10.1186/s12905-022-01621-4>

Higher unemployment and higher work-related traumatic fatality: Trends and associations from the Canadian province of Saskatchewan, 2007-2018

Background: Although Saskatchewan appears to have the greatest burden of work-related fatality (WRF) in Canada, it is unclear how WRF rates have varied over time. We investigated the WRF rate in Saskatchewan over the past decade and modeled potential risk factors for WRF, including economic indicators.

Methods: In this cross-sectional, population-based study, Saskatchewan workplace traumatic fatalities grouped by year, season, and worker characteristics (eg, age, industry) were used in addition to Statistics Canada labor force survey total employment, total labor force, and the number of unemployed workers by year and season. WRF rates were calculated as fatalities per total number of employed workers. A Poisson generalized additive model was employed to examine the association between WRF rates and personal characteristics, and economic indicators. **Results:** The rate remained fairly stable between 2013-2014 and 2015-2017 but sharply increased from 2017 to 2018. On average, the highest rate was observed among workers aged ≥ 60 years (0.70 ± 0.21 per 100 000). Men had a more than 13-fold greater risk of WRF than women [relative risk (RR)13.7, 95% confidence interval (CI) 10.48-17.9], with the highest RR of WRF

observed in the construction industry (RR 9.2, 95% CI 6.1-13.8). The risk of mortality increased non-linearly with increasing unemployment rate, with instability as the unemployment rate reaches the highest modeled values. **Conclusion:** Workplace fatality in the province has fluctuated over the past decade, with differential impact observed among industry groups. Furthermore, an increase in the unemployment rate was followed by an increase in mortality risk. Prioritizing and encouraging prevention strategies during periods of economic recessions could help address the incidence of fatalities at work.

Essien et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 9.

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Keywords: Unemployment; traumatic fatality; Canada; burden.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4013>

Workplace interventions that aim to improve employee health and well-being in male-dominated industries: A systematic review

Background: The published evidence on whether workplace health and well-being interventions are as effective in male-dominated industries compared with mixed-gender environments has not been synthesised. **Methods:** We performed a systematic review of workplace interventions aimed at improving employee health and well-being in male-dominated industries. We searched Web of Knowledge, PubMed, Medline, Cochrane Database and Web of Science for articles describing workplace interventions in male-dominated industries that address employee health and well-being. The primary outcome was to determine the effectiveness of the intervention and the process evaluation (intervention delivery and adherence). To assess the quality of evidence, Cochrane Collaboration's Risk of Bias Tool was used. Due to the heterogeneity of reported outcomes, meta-analysis was performed for only some outcomes and a narrative synthesis with albatross plots was presented. After full-text screening, 35 studies met the eligibility criteria. **Results:** Thirty-two studies delivered the intervention face-to-face, while two were delivered via internet and one using postal mail. Intervention adherence ranged from 50% to 97%, dependent on mode of delivery and industry. 17 studies were considered low risk of bias. Albatross plots indicated some evidence of positive associations, particularly for interventions focusing on musculoskeletal disorders. There was little evidence of intervention effect on body mass index and systolic or diastolic blood pressure. Limited to moderate evidence of beneficial effects was found for workplace health and well-being interventions conducted within male-dominated industries. **Conclusions:** Such interventions in the workplace can be effective, despite a different culture in male-dominated compared with mixed industries, but are dependent on delivery, industry and outcome. CRD42019161283.

Hulls et al. 2022.

Occupational and Environmental Medicine, vol. 79, no. 2.

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

Keywords: Health personnel; mental health; occupational health; occupational stress.

Evidence Level: 1A

Link: <https://oem.bmj.com/content/79/2/77.long>

Validation of the double mediation model of workplace well-being on the subjective well-being of technological employees

Background: In recent years, workplace well-being has been a popular research topic, because it is helpful to promote employees' welfare, thereby bringing valuable personal and organizational outcomes. With the development of technology, the technology industry plays an important role in Taiwan. Although the salary and benefits provided by the technology industry are better than other industries, the work often requires a lot of time and effort. It is worth paying attention to whether a happy workplace will bring subjective

well-being for the technology industry in Taiwan. This study explored the influence of workplace well-being, job involvement, and flow on the subjective well-being. **Methods:** The research was conducted by a questionnaire survey. A total of 256 employees in the technology industry in the Nanzi Processing Zone in Kaohsiung City, Taiwan were surveyed. Collected data were analyzed by statistical methods, such as multivariate and structural equation models. **Results:** The study results indicated that workplace well-being, flow, and job involvement have a positive and significant impact on the subjective well-being. In addition to having a direct impact on subjective well-being, flow is also a significant variable to mediate the impact of workplace well-being to subjective well-being. In addition, job involvement also affects subjective well-being through flow, which means that the state of selflessness at work is the most important factor affecting subjective well-being. **Conclusions:** Finally, based on the research findings, the researcher provided practical suggestions to the government and the technology industry.

Chang et al. 2022.

Frontiers in Psychology, vol. 7.

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

Keywords: Flow; job involvement; subjective well-being; technological employee; workplace well-being.

Evidence Level: 5B

Link: <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.838723/full>

Seroprevalence of SARS-CoV-2 among workers in Northern Italy

Background: The spread of severe acute respiratory coronavirus 2 (SARS-CoV-2) among active workers is poorly known. The aim of our study was to evaluate the seroprevalence of immunoglobulin G (IgG) among a convenience sample of workers and to identify high-risk job sectors during the first pandemic wave.

Methods: We conducted a cross-sectional study among workers tested for SARS-CoV-2 between 28 March and 7 August 2020, recorded by a private healthcare center located in North-West Italy. Association among seroprevalence and demographic and occupational variables was evaluated using chi square test and the seroprevalence and 95% confidence intervals (CI) were calculated. **Results:** We collected the results for 23568 serological tests from a sample of 22708 workers from about 1000 companies. Median age was 45 years and about 60% of subjects were male. The overall seroprevalence was 4.97% [95%CI 4.69-5.25]. No statistical difference was found among gender while seroprevalence was associated with subjects' age, geographical location, and occupational sector. Significantly higher values of positivity were observed for the logistics sector (31.3%), weaving factory (12.6%), nursing homes (9.8%), and chemical industry (6.9%) workers. However, we observed some clusters of cases in single companies independently from the sector. Then, a detailed focus on 940 food workers shown a seroprevalence of 5.21% [95%CI 3.79-6.63] and subjects who self-reported COVID-19 symptoms and who worked during lockdown had a higher probability of being infected ($p < 0.001$). **Conclusions:** Data obtained might be useful for future public health decision; more than occupation sector, it seems that failure on prevention system in single companies increase the SARS-CoV-2 transmission.

Airoldi et al. 2022.

Annals of Work Exposures and Health, vol. 66, no. 2.

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Keywords: SARS-CoV-2; seroprevalence; workers.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8385866/>

Working from home during the corona-crisis is associated with higher subjective well-being for women with long (pre-corona) commutes

Background: Much research has been devoted to assessing the effect of commute duration on the subjective well-being of people, but as of yet, the respective body or research has been inconclusive as to whether there is indeed a (large) negative effect or not. To control the spread of COVID-19 governments around the world have taken unprecedented measures to control the outbreak of the Corona-virus. Forcing or strongly advising people to work from home (i.e. at least those who can) is often one of these. The ensuing situation can be considered a natural experiment; the government's intervention effectively cancels people's commuting trip and can be considered completely exogenous. Should commuting time indeed have an adverse effect on well-being, it may be expected that those workers with long (pre-corona) commutes who have transitioned to working from home will experience an increase in their well-being.

Methods: This idea is tested by combining several surveys -timed before and after the crisis- from the Longitudinal Internet Studies for the Social sciences (LISS) panel, a panel that is representative of the Dutch population. **Results:** In line with expectations, the results indicate that workers with a long commuting duration who transitioned to working from home indeed increased their subjective well-being. However, this effect was found to be significant only for women and not for men. **Conclusions:** A more general finding of interest is that subjective well-being did not change much between the measurements before and during the corona-crisis.

Kroesen. 2022.

Transportation Research: Part A Policy and Practice, vol. 156.

User License: Elsevier Connect COVID-19 resource centre

Keywords: Commuting duration; corona crisis; fixed-effect regression; natural experiment; panel data; subjective well-being; working from home.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8719338/>

Diet quality during the COVID-19 pandemic: Effects of workplace support for families and work-to-family enrichment in dual-earner parents with adolescent children

Background: Organizational support goes beyond the work domain, supporting workers' family role and thus generating resources that lead to work-to-family enrichment. Workers may invest these resources in improving their, and their family's, diet quality. However, data on the link between work resources, enrichment and diet quality during the COVID-19 pandemic is still emerging. The present study contributes to this literature by exploring the actor and partner effects between perceived workplace support for families, work-to-family enrichment, and diet quality in different-sex dual-earner parents with adolescent children; the potential mediating role of work-to-family enrichment between perceived workplace support for families and diet quality was also explored. **Methods:** A sample of 430 different-sex dual-earner parents and one of their adolescent children (mean age 13.0 years, 53.7% female) were recruited in Rancagua, Chile, during March and June 2020. Mothers and fathers responded to a measure of work-to-family enrichment, and a measure of Perceived Workplace Support for Families. The three family members answered the Adapted Healthy Eating Index. Analyses were conducted using the Actor-Partner Interdependence Model and structural equation modelling. **Results:** Results showed that fathers' perceived workplace support for families positively and directly affected their own diet quality (actor effect) as well as the mothers' diet quality (partner effect), while indirectly positively affected the adolescents' diet quality via work-to-family enrichment (partner effect). Mothers' perceived workplace support for families enhanced their own work-to-family enrichment, which in turn improved their diet quality (actor effects). These results suggest that resources that both parents acquire through family-friendly workplace policies have positive effects on the three family members' diet quality by different mechanisms. **Conclusions:** Policymakers and organizations must aim to promote family-friendly workplace policies, particularly during ongoing crisis such as a pandemic.

Schnettler et al. 2022.

Appetite, vol. 1, no. 169.

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Keywords: Actor-partner interdependence model; adolescents; diet quality; dual-earner couples; enrichment; work resources.

Evidence Level: 5A

Link: [https://linkinghub.elsevier.com/retrieve/pii/S0195-6663\(21\)00730-3](https://linkinghub.elsevier.com/retrieve/pii/S0195-6663(21)00730-3)

Work Health and Safety

Health and safety risks faced by delivery riders during the COVID-19 pandemic

Background: Delivery riders have been front-line workers throughout the pandemic but little is known about their own health and safety during this time. This study explores the health and safety issues facing delivery riders in Ho Chi Minh City, Vietnam, during the COVID-19 pandemic, in particular during the second lockdown (May-October 2021). **Method:** A web-based survey of more than 800 riders was conducted in August-September 2021. Following descriptive statistics, four logit models were fitted to examine the factors associated with (a) sanitizing one's hands, (b) using a face shield, (c) contracting a new health issue, and (d) engaging in riskier traffic behaviors during the lockdown. **Results:** The riders who were less consistent in adopting health and safety measures tended to be male, older, less-educated, and vaccinated. Also, they were under greater financial pressure and had suffered a larger loss of income during the pandemic. To recover the loss, they worked longer hours and felt under more intense pressure at work. The job pressure, long working hours, and financial burdens led many drivers to adopt risky traffic behaviors, such as speeding. Conversely, where the companies and co-workers were more supportive, riders tended to adopt health prevention measures more often. Fear of COVID-19 also acted as a facilitator. Job and financial pressure combined with the fear of contracting the virus contributed to the occurrence of new health issues during the pandemic. Again, support from the company and co-workers helped to reduce the risk of new health problems emerging. **Conclusion:** In Ho Chi Minh City and other Global South megacities that employ tens of thousands of riders, ensuring their health and safety is important to support both private businesses and public health. Overall, companies should assume a much larger responsibility here.

Thuy Tran et al. 2022.

Journal of Transport and Health, vol. 25.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: City logistics; COVID-19 pandemic; delivery riders; Ho Chi Minh city; last-mile delivery; working conditions.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8853807/>

Utilization of personal protective equipment and associated factors among large-scale factory workers in Debre-Berhan town, Amhara Region, Ethiopia, 2021

Background: Personal protective equipment was designed to protect workers from serious workplace injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Use of personal protective equipment has been identified as an important hazard control strategy in work environments where it may not be practical to adopt other strategies.

Objective: To determine *personal protective equipment* utilization and its associated factors based on health belief model among large scale factory workers in Debre-Birhan, Ethiopia. **Methods:** An institution-based cross-sectional study was employed in Debre-Birhan Town, North Shoa Ethiopia, from April 1 to May 1, 2021. The data were collected by using an interviewer-administered structured questionnaire. A total of 412 samples were selected by systematic random sampling method. The data were entered to EpiData version 3.1 and analyzed by SPSS. All independent variables were fitted into the binary logistic regression

model to evaluate the degree of association and variables with a p value of <0.2 that was fitted for multiple logistic regressions. Finally, variables with a p value of <0.05 was found to be statistically significant.

Result: A total of 412 workers were study participants with 100% response rate. The mean age was 29 (± 7.3) years. Most workers, 367 (89%) knew that PPE can prevent work-related injury and illness. Overall, 172 (41.7%) of the workers were considered to have good personal protective equipment utilization. Perceived susceptibility (AOR = 1.2, 95% CI (1.076-1.38)), perceived severity (AOR = 1.1, 95% CI (1.088-1.163)), perceived self-efficacy (AOR = 1.2, 95% CI (1.082-1.349)), and perceived barrier (AOR = 0.87, 95% CI (0.800-0.956)) were found to be significant predictors of good personal protective equipment utilization.

Conclusion: The study revealed that good personal protective equipment utilization in large-scale factory workers. Perceived susceptibility, perceived severity, perceived barrier, and perceived self-efficacy were found to be predictors of PPE utilization. It is recommended that, during delivery of health education special emphasis should be given to severity, susceptibility, barrier, and self-efficacy of occupational disease.

Tessema et al. 2022.

Journal of Environment and Public Health, vol. 8.

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Keywords: Personal Protective Equipment; factory; industry; Ethiopia

Evidence Level: 4B

Link: <https://www.hindawi.com/journals/jep/2022/8439076/>

Personal protective equipment training for non-healthcare workers in the Covid-19 pandemic: Effectiveness of an evidence-based skills training framework

Background: This study explored the effectiveness of a procedural skills training framework in ensuring personal protective equipment (PPE) compliance for non-healthcare workers (NHCW). **Methods:** The PPE procedural skills training framework for NHCWs used the Learn, See, Practice, Prove, Do, and Maintain (LSPDDM) framework. NHCWs were trained using this framework. Effectiveness was assessed using: 1) competency assessment scores for NHCWs, 2) PPE compliance rates from daily audit findings, and, 3) healthcare-associated COVID-19 infection rates of NHCWs. **Results:** 883 NHCWs completed the PPE training and demonstrated competency in PPE compliance. **Conclusion:** An evidence-based skills training framework is effective in PPE training of large numbers of NHCWs, resulting in high compliance of appropriate PPE use and prevention of healthcare-associated COVID-19 infection.

Liow et al. 2022.

Infection, Disease and Health, vol. 27, no. 1.

Keywords: Non-healthcare workers; pandemic; personal protective equipment compliance; skill based training framework; training.

Evidence Level: 5A

Link: [https://linkinghub.elsevier.com/retrieve/pii/S2468-0451\(21\)00083-3](https://linkinghub.elsevier.com/retrieve/pii/S2468-0451(21)00083-3)

Incidence of Severe Acute Respiratory Syndrome Coronavirus-2 infection among previously infected or vaccinated employees

Background: We aimed to determine the incidence of SARS-CoV-2 infection among individuals with previous infection versus vaccinated individuals. **Methods:** In March 2020, a SARS-CoV-2 testing company, began routinely screening its workforce for SARS-CoV-2 with a PCR test. On December 15, 2020, vaccination with either the BNT162b2 or mRNA-1273 vaccines became available. Routine screening has continued through July 2021. We compared incidence of SARS-CoV-2 infection between people who were SARS-CoV-2 naïve and unvaccinated group; people with prior COVID-19 without vaccination; and people vaccinated without prior COVID-19. Incidence in 100 person-years with 95% confidence intervals (95% CIs) was calculated with the Poisson Exact equation. The incidence rate ratio (IRR), the ratio of confirmed COVID-19 cases per 100 person-years of follow up with 95% CIs, was used as a measure of association

between groups. Analyses were performed on StataSE. **Results:** The median age of employees was 29.0 years (interquartile range: 23.6, 39.9). During the observation period, 258 SARS-CoV-2 incident infections were identified. The naïve, unvaccinated group had a SARS-CoV-2 incidence of 25.9 per 100 person-years (95% CI: 22.8-29.3). The previously infected, unvaccinated group had an incidence of 0 per 100 person-years (95% CI: 0-5.0). The vaccinated group had an incidence of 1.6 per 100 person-years (95% CI: 0.04-4.2). **Conclusion:** We found a strong association between prior SARS-CoV-2 infection and vaccination for SARS-CoV-2 with either BNT162b2 or mRNA-1273 and the reduced incidence of SARS-CoV-2 when compared to those naïve and unvaccinated to SARS-CoV-2.

Kojima et al. 2022.

International Journal of Infectious Diseases, vol. 10.

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

Keywords: COVID-19; incidence; prior infection; reinfection; Sars-cov-2; vaccination.

Evidence Level: 5A

Link: [https://www.ijidonline.com/article/S1201-9712\(22\)00091-1/fulltext](https://www.ijidonline.com/article/S1201-9712(22)00091-1/fulltext)

Skin-related problems associated with the use of personal protective equipment among health care workers during the COVID-19 pandemic: A online survey study

Background: This study explored the skin-related problems related to personal protective equipment (PPE) use in health care workers (HCWs). **Methods:** Cross-sectional online survey study of HCWs working in a university hospital in Turkey. **Results:** Among the HCWs, 95.6% reported skin-related problems including "dryness" (%74.0) and "itching" (%72.1) when wearing gloves, "perspiration and moisture" (73.6%), "formation of equipment traces" (53.9%), and "skin lesions" (52.8%) when wearing a surgical/N95 mask, "perspiration and moisture" (89.7%) when wearing protective overalls/gowns. **Conclusions:** Wearing PPE for more than 4h, taking additional precautions to increase the sense of protection ($p=0.026$), and not applying preventive measures while using PPE ($p=0.003$) significantly increase the risk of skin-related problems.

Gürlek Kısacık et al. 2022.

Journal of Tissue Viability, vol. 31, no. 1.

Keywords: COVID-19; health care workers; personal protective equipment; skin-related problems.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0965206X22000031?via%3Dihub>

Sufficient personal protective equipment training can reduce COVID-19 related symptoms in healthcare workers: A prospective cohort study

Background: The association between inadequate personal protective equipment during the COVID-19 pandemic and an increased risk of SARS-CoV-2 infection in frontline healthcare workers has been proven. However, frontline healthcare workers with an adequate supply of personal protective equipment still showed an increased risk of contracting COVID-19. Research on the use of personal protective equipment could provide insight into handling present and future pandemics. **Objectives:** This study aims to investigate the impact of the availability, training and correct selection of personal protective equipment on the incidence of SARS-CoV-2 infection or positive suspect cases in healthcare workers during the COVID-19 pandemic in Belgium. **Design:** This was a prospective cohort study involving Belgian healthcare workers: nurses, nursing aides, and midwives working in hospitals, home care services, and residential care services. **Methods:** Respondents were invited from May to July 2020 (period 1) followed by a second time in October 2020 (period 2) to complete a digital survey on personal protective equipment availability, training, personal protective equipment selection, screening ability, COVID-19 testing and status, and symptoms corresponding with the COVID-19 suspect case definition. The main outcome was a composite of COVID-19 status change (from negative to positive) during the study or a positive suspect case definition in period 2.

Results: Full data were available for 617 participants. The majority of respondents were nurses (93%) employed in a hospital (83%). In total, 379 respondents provided frontline care for COVID-19 patients (61%) and were questioned on personal protective equipment availability and personal protective equipment selection. Nurses were more likely to select the correct personal protective equipment compared with nursing aides and midwives. Respondents working in residential care settings were least likely to choose personal protective equipment correctly. Of all healthcare workers, 10% tested positive for COVID-19 during the course of the study and a composite outcome was reached in 54% of all respondents. Working experience and sufficient personal protective equipment training showed an inverse relation with the composite outcome. The relationship between personal protective equipment availability and the composite outcome was fully mediated by personal protective equipment training (-0.105 [95% confidence interval -0.211 - -0.020]). **Conclusions:** Proper training in personal protective equipment usage is critical to reduce the risk of COVID infection in healthcare workers. During a pandemic, rapid dissemination of video guidelines could improve personal protective equipment knowledge in practitioners. Tweetable abstract: Proper training in personal protective equipment usage is critical to reduce the risk of COVID infection in healthcare workers.

Haegdorens et al. 2022.

International Journal of Nursing Studies, vol. 126.

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Keywords: COVID-19; healthcare personnel; home care services; hospital; nursing; personal protective equipment; residential facilities.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0020748921002777?via%3Dihub>

The impact of changes in work arrangements during COVID-19 pandemic on the lifestyle of Qatar's working population

Background: To explore the impact of changing work arrangements during COVID-19 on diet, physical activity, body weight, and sleep of Qatar's working population. **Methods:** A web-based survey targeting working adults who were residing in Qatar during the period of home confinement was conducted.

Results: About 47% of 1061 participants reported weight gain. Higher proportions of participants reported consuming more fatty foods ($P = 0.007$), more sugary foods ($P = 0.001$), and greater increase in screen and sitting/reclining times ($P < 0.001$) among the work from home (WFH) group. Participants with higher adverse dietary changes score were more likely to report weight gain in both the WFH (adjusted OR 1.38, 95% CI 1.28 to 1.49), and working regularly groups (adjusted OR, 1.31, 95% CI 1.20 to 1.43) with $P < 0.001$.

Conclusion: Qatar's working population experienced adverse lifestyle changes which were more prominent among those who shifted to WFH.

Abed et al. 2022.

Journal of Occupational and Environmental Medicine, vol. 64, no. 2.

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Keywords: COVID-19; pandemic; changes in work; work arrangements; diet; physical activity; body weight; sleep.

Evidence Level: 5B

Link: https://journals.lww.com/joem/Fulltext/2022/02000/The_Impact_of_Changes_in_Work_Arrangements_During.15.aspx

Work-related and personal predictors of COVID-19 transmission: Evidence from the UK and USA

Background: To develop evidence of work-related and personal predictors of COVID-19 transmission.

Methods: Data are drawn from a population survey of individuals in the USA and UK conducted in June 2020. Regression models are estimated for 1467 individuals in which reported evidence of infection depends on work-related factors as well as a variety of personal controls. **Results:** The following themes emerge from the analysis. First, a range of work-related factors are significant sources of variation in COVID-19 infection as indicated by self-reports of medical diagnosis or symptoms. This includes evidence about workplace types, consultation about safety and union membership. The partial effect of transport-related employment in regression models makes the chance of infection over three times more likely while in univariate analyses, transport-related work increases the risk of infection by over 40 times in the USA. Second, there is evidence that some home-related factors are significant predictors of infection, most notably the sharing of accommodation or a kitchen. Third, there is some evidence that behavioural factors and personal traits (including risk preference, extraversion and height) are also important. **Conclusions:** The paper concludes that predictors of transmission relate to work, transport, home and personal factors. Transport-related work settings are by far the greatest source of risk and so should be a focus of prevention policies. In addition, surveys of the sort developed in this paper are an important source of information on transmission pathways within the community.

Anand et al. 2022.

Journal of Epidemiology and Community Health, vol. 76, no. 2.

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Keywords: Environmental epidemiology; health inequalities; multilevel modelling; policy; psychosocial factors.

Evidence Level: 5B

Link: <https://jech.bmj.com/content/76/2/152.long>

COVID-19 moral disengagement and prevention behaviors: The impact of perceived workplace COVID-19 safety climate and employee job insecurity

Background: In response to the COVID-19 pandemic, the U.S. Centers for Disease Control and Prevention developed recommendations for individual COVID-19 prevention behaviors, as well as guidance for the safe reopening of businesses. **Methods:** Drawing from previous research on occupational safety, business ethics, and economic stressors, we tested the hypothesis that more positive perceptions of the workplace COVID-19 safety climate would be associated with lower employee COVID-19 related moral disengagement. In turn, we predicted that higher COVID-19 moral disengagement would be associated with lower enactment of preventive behaviors both at work and in nonwork settings (i.e., a spillover effect). Further, we investigated whether employee job insecurity would impact organizational socialization processes, such that the relationship between the perceived COVID-19 safety climate and moral disengagement would be weaker at higher levels of job insecurity. **Results:** By analyzing a three-wave lagged dataset of U.S. employees working on-site during the pandemic using a Bayesian multilevel framework, we found empirical support for the hypothesized moderated mediation model. **Conclusions:** We discuss the relevance of these findings (i.e., the spillover effect and the role of job insecurity) in light of the extant safety climate literature and outline how our findings have several implications for the scope and conceptualization of safety climate in light of the surge of new working arrangements, infectious diseases, and continuing employment instability.

Bazzoli et al. 2022.

Safety Science, vol. 150.

User License: *Elsevier Connect COVID-19 resource centre*

Keywords: COVID-19 safety climate; job insecurity; moral disengagement; preventative behaviors; spillover effect.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8824170/>

Risk Assessment

Supporting occupational health and safety risk assessment skills: A case study of five companies

Background: Financial burden due to poor occupational safety practices remains high although occupational health and safety (OHS) have improved in recent years. Conducting risk assessment is one way to improve OHS. Workplaces may not have sufficient expertise in risk assessment. The aim of this study was to identify the needed OHS risk assessment skills, current support in the workplaces and the ways to improve risk assessment skills. **Methods:** This study was conducted with the Delphi survey for OHS experts (n = 13) and with interviews (n = 41) in the case companies. **Results:** OHS experts agreed that the most significant skills were for employees to identify hazards and minimize risks in one's work; for supervisors to influence others with a good example; and for OHS experts to understand and manage the wholeness of safety practices and understand and manage the meaning, concepts, and criteria of risk assessment. The current main support methods were learning at work, training and written instructions. However, many of the interviewees felt that they had not received risk assessment training and that the support depended on their activity. Finally, the OHS experts determined that the most feasible ways to improve risk assessment skills were training, coaching and giving clear instructions. Likewise, the interviewees suggested various training methods. **Conclusions:** Based on these results, concrete development plans to improve risk assessment skills can be made.

Rantala et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Development; expertise; occupational health and safety; risk assessment; skill; support; training.

Evidence Level: 5A

Link: <https://www.mdpi.com/1660-4601/19/3/1720>

Chronic Health Issues

Exploring treatment adherence in long-term sick-listed workers and the impact of coping strategies, illness perceptions and perceived health

Background: Treatment adherence is important to improve return to work in sick-listed workers. Especially in long-term sick-listed workers who apply for a disability benefit and therefore have not (fully) returned to work, it is of great value to gain insight in the adherence to advice of physicians. Non-adherence could be one of the main reasons why they have not returned to work and are sick-listed for a long-term. The aim of the study is to explore treatment adherence and possible associated factors to advice from medical and occupational health physicians in long-term sick-listed workers. **Methods:** The study is a cross-sectional survey study among 561 long-term (partly) sick-listed workers applying for a disability benefit. Associations of sociodemographic characteristics, disease related factors, coping strategies (Utrecht Coping List, UCL), illness perception (Illness Cognition Questionnaire, ICQ) and perceived health (Short-Form 12, SF12) with treatment adherence (measured with the Medical Outcomes Study Measures of Patient Adherence, MOS-MPA) were analysed separately for adherence to medical advice (n = 348, mean age 51.3 ± 9.1 years, 55.9% female) and adherence to occupational advice (n = 229, mean age 50.4 ± 9.5 years, 54.1% female).

Results: Among participants, 63.3% to 76.4% reported they were able to do what the physician told them to do. However, about half of the participants found it easy to follow-up and implement the suggestions of the physician (54.3% for medical advice and 50.2% for occupational advice). Having a mental health disorder was negatively associated with adherence to medical advice. An active coping strategy, acceptance of the disease, and perceiving positive long-term consequences of the disease were associated with a

higher adherence, whereas focusing on the negative consequences was associated with a lower adherence, both for medical and occupational advice. **Conclusions:** The tendency to adhere to medical and occupational advice in long-term sick-listed workers is relatively low. In order to increase return to work in this population, medical and occupational health physicians should especially be aware of the adherence of sick-listed workers with mental health disorders, but also on those who focus on the negative consequences of their (physical or mental health) disorder.

Hoekstra et al. 2022.

BMC Public Health, vol. 22, no. 1.

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Keywords: Chronic disease; disability benefit; occupational health; patient adherence; return-to-work; sick leave.

Evidence Level: 4A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-12676-1>

Depressive symptoms in workers with high autistic trait scores according to job stress type

Background: Individuals with high levels of autistic traits are at a high risk of experiencing depressive symptoms, and are also vulnerable to job stress. This study aimed to identify which combination of autistic traits and type of job stress are related to depressive symptoms. **Methods:** Participants comprised 992 workers from different regions of Japan. Autistic traits, depressive symptoms, and job stress were measured using the Autism-Spectrum Quotient, K6 scale, and Job Content Questionnaire, respectively. Logistic regression was performed to estimate the odds ratio and 95% confidence interval. **Results:** Workers with high autistic traits scores reported significantly more depressive symptoms for all job stress types, especially high job demand. Depressive symptoms differed according to autistic traits and job stress. In workers with high autistic trait subscale scores, those with active job stress reported more depressive symptoms than those with high strain job stress, except for the "poor imagination" trait. This is contrary to previous reports that the active stress type is generally less associated with depressive symptoms than the high-strain stress type. **Conclusions:** To prevent depressive symptoms in workers with high autistic trait scores, it is important to understand which combination of autistic traits and type of job stress contribute to depressive symptoms.

Suzuki et al. 2022.

Industrial Health, vol. 15.

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Keywords: Autism; Depression; symptoms; job stress.

Evidence Level: 4B

Link: https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2021-0253/_article

Perceived work situation and work ability among persons who are working one year after stroke

Background: To explore how persons who have returned to work perceive their work situation and work ability one year after stroke. **Methods:** Cross-sectional design. Subjects: A total of 88 persons of working age (mean age 52 (standard deviation; SD 8) years, 36% women), with mild to moderate disabilities following stroke, who had returned to work within one year after stroke participated in the study. A survey including a questionnaire regarding psychological and social factors at work (QPS Nordic) and 4 questions from the Work Ability Index (WAI) was posted to the participants. **Results:** According to the QPS Nordic survey, 69-94% of respondents perceived their work duties as well defined, and were content with their work performance. Most participants had good social support at work and at home. Between 51% and 64% of respondents reported that they seldom felt stressed at work, seldom had to work overtime, or that work demands seldom interfered with family life. According to the WAI $\geq 75\%$ of respondents perceived their work ability as sufficient, and they were rather sure that they would still be working 2 years ahead.

Conclusion: Persons who have returned to work within one year after stroke appear to be content with their work situation and work ability. Appreciation at work, well-defined and meaningful work duties and support seem to be important for a sustainable work situation.

Lindgren et al. 2022.

Journal of Rehabilitation Medicine, vol. 3.

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

Keywords: Work situation; Ability; Stroke

Evidence Level: 4A

Link: <https://medicaljournalssweden.se/jrm/article/view/918>

Occupation and prostate cancer risk: Results from the epidemiological study of prostate cancer (EPICAP)

Background: Although prostate cancer (PCa) is the most frequent male cancer in industrialized countries, little is known about its aetiology. The literature has suggested an influence of the environment, including occupational exposures, but results are inconsistent. In this context, we investigated PCa risk associated to employment among several occupations using data from EPICAP study. **Methods:** EPICAP is a French population-based case-control study including 819 PCa incident cases and 879 controls frequency-matched on age. In-person interviews gathered data on potential risk factors and lifetime occupational histories for each job held at least 6 months. Then, occupations were coded using ISCO 68. Unconditional logistic regressions were performed to assess the association between occupations (ever occupied and by duration) and PCa risk, whether all and aggressive, after adjusting for potential confounders. **Results:** For ≥ 10 years of employment, we found positive associations with PCa, whether overall and aggressive, among Medical, Dental and Veterinary workers (OR (odds ratios) = 5.01 [95% confidence interval] [1.27; 19.77]), Members of the armed forces (OR = 5.14 [0.99; 26.71]) and Fishermen, hunters and related workers (OR = 4.58 [1.33; 15.78]); whether overall and non-aggressive PCa, among Legislative officials and Government administrators (OR = 3.30 [1.10; 9.84]) or Managers (OR = 1.68 [1.18; 2.41]); however a negative association, whether overall and non-aggressive PCa, among Material-Handling and Related Equipment Operators, Dockers and Freight Handlers (OR = 0.40 [0.17; 0.97]). **Conclusion:** Excess PCa risks were observed in the EPICAP study mostly among white collar workers exposed to several factors in their work environment. These emerging associations can be used to lead future research investigating specific occupational exposures.

Bijoux et al. 2022.

Journal of Occupational Medicine and Toxicology, vol. 17, no. 1.

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Keywords: Aggressive prostate cancer; case-control study; occupation; prostate cancer.

Evidence Level: 5B

Link: <https://occup-med.biomedcentral.com/articles/10.1186/s12995-022-00346-2>

Occupational Exposure

Occupational and environmental exposures, the association with chronic sinusitis

Background: To find the association between environmental and occupational exposures and chronic rhinosinusitis (CRS) development. **Methods:** The Preferred Reporting Items Of Systematic Reviews Guidelines were used when a systematic literature review was conducted to find all published cases of CRS by searching PubMed database and Google Scholar. Published articles between 1989 and 2021 that reported chronic and occupational rhinosinusitis were included. However, articles that reported allergic rhinitis or upper airway diseases and non-English articles were excluded from this study. **Results:** A total of 97 articles were extracted initially, and 15 articles were reviewed after excluding 82 articles that did not match our inclusion criteria. Most studies linked CRS development to smoke exposure (n=9734), followed

by living in rural areas as farms (n=5504). Exposure to pesticides (n=4248) contributed to a higher prevalence of CRS. Blue-collar occupations, such as fire fighters, farmers, and fishermen were significantly related to CRS development in a total of 5260 patients. Chronic rhinosinusitis mainly affected more men (n=8912) than women (n=8076). **Conclusion:** We found that smoking was the most aggravating environmental factor. Chronic rhinosinusitis symptoms' severity increased with direct contact with allergens. Thus, the greatest proportion of patients with CRS was those with blue-collar occupations, such as firefighters, farmers, and fishermen.

Alkholaiwi et al. 2022.

Saudi Medical Journal, vol. 43, no. 2.

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Keywords: Environmental exposure; nasal polyps; occupational exposure; sinusitis.

Evidence Level: 1A

Link: <https://smj.org.sa/content/43/2/125>

Application of pattern mining methods to assess exposures to multiple airborne chemical agents in two large occupational exposure databases from France

Background: Surveys of the French working population estimate that approximately 15% of all workers may be exposed to at least three different chemical agents, but the most prevalent coexposure situations and their associated health risks remain relatively understudied. **Methods:** To characterize occupational coexposure situations in France, we extracted personal measurement data from COLCHIC and SCOLA, two large administrative occupation exposure databases. We selected 118 chemical agents that had ≥ 100 measurements with detected concentrations over the period 2010-2019, including 31 carcinogens (IARC groups 1, 2A, and 2B). We grouped measurements by work situations (WS, combination of sector, occupation, task, and year). We characterized the mixtures across WS using frequent itemset mining and association rules mining. The 275,213 measurements extracted came from 32,670 WS and encompassing 4692 unique mixtures. **Results:** Workers in 32% of all WS were exposed to ≥ 2 agents (median 3 agents/WS) and 13% of all WS contained ≥ 2 carcinogens (median 2 carcinogens/WS). The most frequent coexposures were ethylbenzene-xylene (1550 WS), quartz-cristobalite (1417 WS), and toluene-xylene (1305 WS). Prevalent combinations of carcinogens also included hexavalent chromium-lead (368 WS) and benzene-ethylbenzene (314 WS). Wood dust (6% of WS exposed to at least one other agent) and asbestos (8%) had the least amount of WS coexposed with other agents. Tasks with the highest proportions of coexposure to carcinogens include electric arc welding (37% of WS with coexposure), polymerization and distillation (34%), and construction drilling and excavating (34%). **Conclusions:** Overall, the coexposure to multiple chemical agents, including carcinogens, was highly prevalent in the databases, and should be taken into account when assessing exposure risks in the workplace.

Sauvé et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Chemical mixtures; exposure assessment; multiple exposure assessment; occupational exposure database.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/3/1746>

Bioassays in workers exposed to long time random intakes

Background: Workers who are occupationally exposed to radioactive aerosols are usually subjected to periodic controls of internal contamination by performing bioassays (whole body or partial body monitoring and measurement of excreta samples). The intakes are also estimated by using Static Air Samples (SAS). These measurements are used to estimate the radioactive intakes of the workers. A typical

assumption is the workers are chronically (constant) exposed for long periods of time. However, the intakes are random and there are also periods without any exposure (weekends, holidays, etc.). **Methods:** The method presented here considers both facts. Simulations help to choose the most appropriate method of evaluation to minimize the statistical uncertainties in the intake. It has been applied to evaluate workers exposed to UO₂ aerosols for a long time (30 years or more for most of them) in the same working area (sintering). **Results:** Results of measurements of uranium in urine and daily intakes (from SAS) of these workers have been used. For this evaluation, the new Occupational Intakes of Radionuclides (OIR) biokinetic models of the International Commission on Radiological Protection (ICRP) for uranium have been solved. **Conclusions:** For some workers the evaluation gives a significative deviation between the intake estimated from urine samples and the intake estimated using the SAS values, supporting the idea that the physiological standard parameters of the reference worker are not always applicable. The computations have been implemented in the BLOKMOD code.

Sánchez-León et al. 2022.

Applied Radiation and Isotopes, vol. 180.

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Keywords: Bioassay evaluation; biokinetic models; ICRP; internal dosimetry; simulation; uncertainties.

Evidence Level: 6B

Link: <https://www.sciencedirect.com/science/article/pii/S0969804321004486?via%3Dihub>

Exploring methods for surveillance of occupational exposure from additive manufacturing in four different industrial facilities

Background: 3D printing, a type of additive manufacturing (AM), is a rapidly expanding field. Some adverse health effects have been associated with exposure to printing emissions, which makes occupational exposure studies important. There is a lack of exposure studies, particularly from printing methods other than material extrusion (ME). The presented study aimed to evaluate measurement methods for exposure assessment in AM environments and to measure exposure and emissions from four different printing methods [powder bed fusion (PBF), material extrusion (ME), material jetting (MJ), and vat photopolymerization] in industry. **Methods:** Structured exposure diaries and volatile organic compound (VOC) sensors were used over a 5-day working week. Personal and stationary VOC samples and real-time particle measurements were taken for 1 day per facility. Personal inhalable and respirable dust samples were taken during PBF and MJ AM. **Results:** The use of structured exposure diaries in combination with measurement data revealed that comparatively little time is spent on actual printing and the main exposure comes from post-processing tasks. VOC and particle instruments that log for a longer period are a useful tool as they facilitate the identification of work tasks with high emissions, highlight the importance of ventilation and give a more gathered view of variations in exposure. No alarming levels of VOCs or dust were detected during print nor post-processing in these facilities as adequate preventive measures were installed. **Conclusions:** As there are a few studies reporting negative health effects, it is still important to keep the exposure as low as reasonable.

Runström Eden et al. 2022.

Annals of Work Exposures and Health, vol. 66, no. 2.

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Keywords: 3D printing; VOC; additive manufacturing; diary; exposure; industry; material extrusion; material jetting; occupational; particles; powder bed fusion; vat photopolymerization.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8855698/>

Sedentary Practices

Association of occupational sitting with cardiovascular outcomes and cardiometabolic risk factors: A systematic review with a sex-sensitive/gender-sensitive perspective

Background: Sedentary behaviour is a modifiable risk factor for cardiovascular health. Although long periods of sedentary behaviour take place at work, evidence of the relationship between such occupational sitting and cardiometabolic health risks remains limited. This systematic review aimed to update the evidence on the associations of occupational sitting with cardiovascular outcomes and cardiometabolic risk factors based on longitudinal studies. **Methods:** Systematic review. Setting: Workplace. Population: Employees aged 18-65 years. Primary and secondary outcomes: Primary outcomes were cardiovascular diseases and cardiometabolic risk markers. The secondary outcome was all-cause mortality. Data sources: Ten databases, including PubMed, Web of Science and CINAHL (search January 2018, updated February 2019). Data extraction and synthesis: Data were screened, extracted and appraised by three independent reviewers following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. **Results:** Studies were markedly heterogeneous in terms of measurement of occupational sitting, cardiometabolic risk factors and cardiovascular morbidity and mortality, so that standards were hardly identifiable and limiting the value of the evidence. The review included 27 high or acceptable quality publications. Of the eight high-quality publications from seven cohorts, three cohort studies found significant associations of occupational sitting with primary outcomes. Additionally, one study described an association with the secondary outcome. Another high-quality publication found an association between occupational sitting and ischaemic heart disease in a subgroup already at risk due to hypertension. For sex/gender analysis, 11 of the 27 high and acceptable quality publications reported sex-stratified results. Five of these found sex differences. **Conclusions:** Evidence regarding the association of occupational sitting with cardiometabolic health risks was limited because of the lack of standardised measurements for occupational sitting. Occupational sitting combined with an overall sedentary lifestyle was associated with an elevated relative risk for several cardiometabolic outcomes. There is an urgent need for standardised measurements of occupational sitting to facilitate meta-analysis. Sex/gender aspects of this relationship require further investigation.

Reichel et al. 2022.

BMJ Open, vol. 12, no. 2.

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Keywords: Cardiology; diabetes & endocrinology; epidemiology; occupational & industrial medicine; preventive medicine; public health.

Evidence Level: 1A

Link: <https://bmjopen.bmj.com/content/12/2/e048017.long>

Different sit:stand time ratios within a 30-minute cycle change perceptions related to musculoskeletal disorders

Background: Regular standing interruptions to sedentary work are recommended, but their dosage is understudied. **Methods:** To measure perception variations associated with different sit:stand ratios, 16 people used six ratios (30:0, 27:3, 24:6, 21:9, 18:12 and 15:15) within 30-min cycles in their normal office environment. At start and end of each workday, study participants recorded their perception of 11 factors on a 10-point scale. Musculoskeletal discomfort in 10 body regions was measured before and after exposure to sit-stand ratios. **Results:** Overall preferred ratios were recorded. Sit:stand ratio affected all perceived factors, with impact varying. Standing at least 6 min improved results most overall; however, individual perceived factors were least impacted by any of 30:0, 27:3, 24:6 or 21:9. Preferred sit:stand ratios were 15:15, 18:12 and 21:9. Typically, least liked ratios involved briefest standing (30:0, 27:3, 24:6) although two participants least liked 15:15. **Conclusions:** Understanding these variations contributes to appropriate standing dosage recommendations.

Black et al. 2022.

Applied Ergonomics, vol. 99.

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Keywords: Musculoskeletal disorders; office ergonomics; perception; sit-stand; workstation design.

Evidence Level: 5A

Link: <https://www.sciencedirect.com/science/article/pii/S0003687021002520?via%3Dihub>

Sedentary time and its association with risk of cardiovascular diseases in adults: An updated systematic review and meta-analysis of observational studies

Background: Epidemiological studies assessing the association between sedentary time and cardiovascular diseases (CVD) risks have been published at a rapid pace in recent years, which makes the periodic review of knowledge essential. Furthermore, much of the early and ongoing work used screen time as a marker of total sedentary time, which may weaken the association between sedentary time and CVD risks. To update evidence on CVD risks associated with different types of sedentary time, especially total sedentary time and screen time, and to explore as a marker of total sedentary time, whether screen time had similar CVD risks with total sedentary time. **Methods:** PRISMA guideline was followed for the performing and reporting of this systematic review and meta-analysis. Three independent researchers searched eight electronic databases and two clinical trial registries for all studies published between January 2015 and December 2021 that assessed the association between sedentary time and CVD risks in adults. A standardized form was used for data extraction and collection. Wilmot and colleagues' modified tool was used for quality assessment. The categorical association was assessed by comparing the pooled effect sizes for CVD risks associated with the highest and the lowest sedentary time categories across included studies. Stata 16.0 and Review Manager 5.3 were used for all statistical analyses, $P \leq 0.05$ was considered as statistically significant. **Results:** Seventeen prospective cohort studies and two cross-sectional studies with 145,1730 participants and over 48,668 CVD cases and deaths were included. Two included studies measured sedentary time with the accelerometer, 16 studies with self-reported questions, and one study with both the accelerometer and self-reported questions. CVD outcomes were self-reported in two included studies and objectively adjudicated through medical records or death certifications in 17 studies. Compared with the lowest total sedentary time category (median duration, 2.75 h/d), participants in the highest category (median duration, 10.5 h/d) had an increased risk of CVD morbidity (pooled RR, 1.24; 95% CI, 1.21-1.27). Compared with the lowest total sedentary time category (median duration, 2.98 h/d), participants in the highest category (median duration, 10.2 h/d) had an increased risk of CVD mortality (pooled HR, 1.29; 95% CI, 1.13-1.47). The association between screen time and CVD risks was similar to total sedentary time with the cut-off point of 5-6 h/d. The associations between occupational sitting time, leisure sedentary time, and CVD risks stayed inconclusive. **Conclusion:** Total sedentary time and screen time are both associated with cardiovascular health. As a marker of total sedentary time, screen time over 5-6 h/d had similar CVD risks with total sedentary time over 10-11 h/d.

Jingjie et al. 2022.

BMC Public Health, vol. 22, no. 1.

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Keywords: Cardiovascular diseases; meta-analysis; morbidity; mortality; screen time; sedentary time; systematic review.

Evidence Level: 1A

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-022-12728-6>

Physical Activity

Potential of micro-exercise to prevent long-term sickness absence in the general working population: Prospective cohort study with register follow-up

Background: This study assesses the potential of workplace-based micro-exercise (brief and simple exercise bouts) to prevent long-term sickness absence (LTSA) at the population level. **Methods:** In the Work Environment and Health in Denmark Study (2012-2018), we followed 70,130 workers from the general working population, without prior LTSA, for two years in the Danish Register for Evaluation of Marginalisation. We used Cox regression with model-assisted weights and controlled for various confounders. **Results:** From 2012 to 2018, the percentage of workers in Denmark using workplace-based micro-exercise during and outside of working hours increased from 7.1 to 10.9% and from 0.8 to 1.4%, respectively. The incidence of long-term sickness absence (at least 30 days) was 8.4% during follow-up. The fully adjusted model showed reduced risk of long-term sickness absence from using micro-exercise during working hours, (HR 0.86, 95% CI 0.77-0.96), but not when used outside of working hours. If used by all workers, micro-exercise during working hours could potentially prevent 12.8% of incident long-term sickness absence cases (population attributable fraction). **Conclusions:** In conclusion, micro-exercise performed during working hours holds certain potential to prevent incident long-term sickness absence in the general working population. Large-scale implementation of workplace-based micro-exercise may represent an unexploited opportunity for public health promotion.

Andersen et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Sickness absence; micro-exercise; workers.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8831624/>

Measuring productivity, perceived stress and work engagement of a nationally delivered workplace step count challenge

Background: Workplace step count challenges show promise with regard to increasing physical activity, with walking linked to many positive physical and mental health benefits. Few studies have investigated their effects on work-related outcomes. The aim of this study was to describe (1) the process of collecting work-related outcomes as part of a real-world workplace intervention, the Step Count Challenge, and (2) report step counts and work-related outcomes (productivity, perceived stress and work engagement) during the Step Count Challenge. **Methods:** This pre-post study was conducted as part of a four-week 2018 National Step Count Challenge (SCC) in Scotland, UK. A survey was administered to collect self-reported steps, productivity (HWQ), perceived stress (Cohen Perceived Stress Scale) and work engagement (UWES) on the week prior to the intervention starting (baseline), week 1 and week 4. Process data such as recruitment and response rates were monitored throughout. Of 2042 employees who signed up to the SCC, baseline data were reported for 246 (12% of total; mean age 42.5 years, 83% female). **Results:** Process data suggest low uptake to the study and poor compliance between surveys time points. Preliminary data suggest positive changes in step counts (3374 steps/day by week 4), stress and productivity. No changes in work engagement were found. The findings highlight the need to integrate research more effectively into real-world interventions, including a true baseline period. **Conclusions:** The Step Count Challenge may have positive change on some work-related outcomes warranting further investigation into how robust research designs can be delivered without negatively influencing real-world interventions.

Ryde et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Physical activity; productivity; steps; stress; walking; work engagement; workplace.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/3/1843>

Effectiveness of wearable devices as a support strategy for maintaining physical activity after a structured exercise intervention for employees with metabolic syndrome: A randomized controlled trial

Background: Metabolic syndrome (MetS) is associated with an increased risk for cardiovascular events and high socioeconomic costs. Despite lifestyle interventions focusing on exercise are effective strategies to improve parameters of the above aspects, many programs fail to show sustained effects in the long-term.

Methods: At visit 2 (V2) 129 company employees with diagnosed MetS, who previously participated in a 6-month telemonitoring-supported exercise intervention, were randomized into three subgroups for a 6-month maintenance treatment phase. A wearable activity device was provided to subgroup A and B to assess and to track physical activity. Further subgroup A attended personal consultations with individual instructions for exercise activities. Subgroup C received neither technical nor personal support. 6 months later at visit (V3), changes in exercise capacity, MetS severity, work ability, health-related quality of life and anxiety and depression were compared between the subgroups with an analysis of variance with repeated measurements. **Results:** The total physical activity (in MET*h/week) declined between visit 2 and visit 3 (subgroup A: V2: 48.0 ± 33.6, V3: 37.1 ± 23.0; subgroup B: V2: 52.6 ± 35.7, V3: 43.8 ± 40.7, subgroup C: V2: 51.5 ± 29.7, V3: 36.9 ± 22.8, for all $p = 0.00$) with no between-subgroup differences over time ($p = 0.68$). In all three subgroups the initial improvements in relative exercise capacity and MetS severity were maintained. Work ability declined significantly in subgroup C (V2: 40.3 ± 5.0, V3: 39.1 ± 5.7; $p < 0.05$), but remained stable in the other subgroups with no between-subgroup differences over time ($p = 0.38$). Health-related quality of life and anxiety and depression severity also showed no significant differences over time. **Conclusions:** Despite the maintenance of physical activity could not be achieved, most of the health related outcomes remained stable and above baseline value, with no difference regarding the support strategy during the maintenance treatment phase.

Bayerle et al. 2022.

BMC Sports Science, Medicine and Rehabilitation, vol. 14, no. 1.

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Keywords: Company employees; maintenance; metabolic syndrome; physical activity; sustainability; telemonitoring; wearable device; work ability.

Evidence Level: 2A

Link: <https://bmcsportsscimedrehabil.biomedcentral.com/articles/10.1186/s13102-022-00409-1>

Musculoskeletal Health

Prevalence and associated factors of lower extremity musculoskeletal disorders among manufacturing workers: A cross-sectional study in China

Background: To survey the prevalence of lower extremity musculoskeletal disorders (MSDs) among Chinese manufacturing workers, and to identify the associated factors. **Methods:** Observational study with cross-sectional design. Setting: A self-administered questionnaire survey was conducted in four manufacturing factories in China. Participants: 7908 manufacturing workers were included in this study after excluding non-conforming personnel. Outcome measures: Individual and work-related information, and MSDs in the whole leg and knee region were measured by the anonymous self-administered questionnaire. Individual and work-related factors associated with MSDs and their effects were identified through multivariate logistic regression. **Results:** Of all respondents, 3241 (41.0%) reported having had lower extremity MSDs in the recent 12 months, and for the knees, ankles/feet and hips/thighs were 29.5%, 23.9% and 16.7%, respectively. After confounder-adjusted single-factor analysis, 22 variables (of 24) were significantly related to the disorders. Factors like always kneeling/squatting for long periods, always

standing for long periods and often lifting in an uncomfortable position were shown to have higher risks, with ORs of 2.77 (95% CI: 2.33 to 3.30), 2.30 (1.96 to 2.69) and 2.25 (2.04 to 2.47). Comparable results were found on knee disorders. The final model included 15 variables of demography, biomechanics and work organisation. The following factors showed increased risks of lower extremity MSDs: being female, being older, longer working years, higher body mass index (BMI), keeping the same posture for a long time, awkward position, shift work and monotonous work. Whereas having enough breaks reduced the risk.

Conclusion: The prevalence of lower extremity MSDs among Chinese manufacturing workers is high. The most commonly affected body regions were the knees and ankles/feet. Multiple factors were found associated with lower extremity MSDs including age, BMI, work experience, work organisations, physical ergonomics exposures, etc.

Jin et al. 2022.

BMJ Open, vol. 12, no. 2.

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Keywords: Musculoskeletal disorders; occupational & industrial medicine; preventive medicine; risk management.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/2/e054969.long>

The effect of core stabilization exercise with the abdominal drawing-in maneuver technique on stature change during prolonged sitting in sedentary workers with chronic low back pain

Background: To enhance stature recovery, lumbar spine stabilization by stimulating the deep trunk muscle activation for compensation forces originating from the upper body was introduced. The abdominal drawing-in maneuver (ADIM) technique has been found mainly to activate deep trunk muscles. The purpose of the current study was to determine whether 5 weeks of training of deep trunk muscles using the ADIM technique could improve stature recovery, delay trunk muscle fatigue, and decrease pain intensity during prolonged sitting. **Methods:** Thirty participants with chronic low back pain (CLBP) conducted a core stabilization exercise (CSE) with the ADIM technique for 5 weeks. Participants were required to sit for 41 min before and after the exercise intervention. Stature change was measured using a seated stadiometer with a resolution of ± 0.006 mm. During sitting, the stature change, pain intensity, and trunk muscle fatigue were recorded. **Results:** A comparison between measurements at baseline and after 5 weeks of training demonstrated: (i) stature recovery and pain intensity significantly improved throughout the 41 min sitting condition; (ii) the bilaterally trunk muscle showed significantly decreased fatigue. The CSE with the ADIM technique was shown to provide a protective effect on detrimental reductions in stature change and trunk muscle fatigue during prolonged sitting in young participants under controlled conditions in a laboratory. This information may help to prevent the risk of LBP from prolonged sitting activities in real life situations.

Saiklang et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 3.

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Keywords: Core stability; ergonomics; spinal load.

Evidence Level: 3A

Link: <https://www.mdpi.com/1660-4601/19/3/1904>