



Emerging Evidence Alert

June 2022

This Emerging Evidence Alert includes the latest peer-reviewed articles, reports and evidence published in May 2022 only.

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Description of Evidence Levels Definitions Used in this Review

- 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).

- 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

This month we explore issues associated with return to work following pelvic gynecologic cancer radiotherapy, degenerative cervical spondylotic myelopathy surgery, spinal cord injury, total hip or total knee arthroplasty, discectomy and cardiovascular disease. We also explore a hospital-based return-to-work programme, the effect of compensation scheme policies on return to work and the utility of a nucleic acid amplification test-based approach to shorten isolation of workers with COVID-19

A hospital-based return-to-work programme in Singapore

Background: Return to Work (RTW) programmes have become imperative in manpower scarce countries. This paper describes a RTW programme in a Singapore tertiary hospital, reports patient outcomes and discusses the practicality and effectiveness of the programme. **Methods:** Seventy-three workers participated in the programme over a two-year period. **Results:** A statistically significant increase in work ability and self-perceived overall health status from first contact with worker (baseline) to discharge was observed. Continued programme participation till first RTW was associated with higher work ability and self-perceived overall health status at baseline. The RTW Coordinator-anchored multidisciplinary model which provided holistic support to the worker and addressed stakeholder interests were central to the programme's success. Greater awareness of RTW programme benefits will improve sustained participation. **Conclusions:** Our RTW programme features, implementation experiences and participant reported effectiveness may inform the development of improved return to work models.

Tan et al. 2022.

Industrial Health, vol, 19.

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Keywords: Coordination; health performance indicators; injury; occupational fitness; occupational health; occupational rehabilitation; performance.

Evidence Level: 5B

Link: https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2022-0072/article

Development of a computational policy model for comparing the effect of compensation scheme policies on recovery after workplace injury

Background: The direct comparison of real-world workers' compensation scheme management policies and their impact on aspects of scheme performance such as health and return to work outcomes, financial sustainability, and client experience metrics is made difficult through existing differences in scheme design that go beyond the factors of interest to the researcher or policymaker. Disentangling effects that are due purely to the result of policy and structural differences between schemes or jurisdictions to determine 'what works' can be difficult. **Method:** We present a prototype policy exploration tool, 'WorkSim', built using an agent-based model and designed to enable workers' compensation system managers to directly compare the effect of simulated policies on the performance of workers compensation systems constructed using agreed and transparent principles. **Results:** The utility of the model is demonstrated through and case-study comparison of overall scheme performance metrics across 6 simple policy scenarios. **Conclusion:** Policy simulation models of the nature described can be useful tools for managers of workplace compensation and rehabilitation schemes for trialing policy and management options ahead of their real-world implementation.

Thompson et al. 2022.

Journal of Occupational Rehabilitation, vol.10 , no. 1-11.

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Keywords: Agent based model; injury; policy; rehabilitation.

Evidence Level: 6B

Link: <https://link.springer.com/article/10.1007/s10926-022-10035-w>

Return to work, fatigue and cancer rehabilitation after curative radiotherapy and radiochemotherapy for pelvic gynecologic cancer

Background: Pain, fatigue, and depression are a common cluster of symptoms among cancer patients that impair quality of life and daily activities. We aimed to evaluate the burden of cancer rehabilitation and return-to-work (RTW) rates. **Method:** Tumor characteristics, lifestyle and household details, treatment data, the use of in-house social services and post-treatment inpatient rehabilitation, and RTW were assessed for 424 women, diagnosed with cervical, uterine, or vaginal/vulvar cancer, receiving curative radio(chemo)therapy. **Results:** Progression-free RTW rate at 3 months was 32.3%, and increased to 58.1% and 63.2% at 12 and 18 months, respectively. Patients with advanced FIGO stages and intensified treatments significantly suffered more from acute pain and fatigue. A higher Charlson-Comorbidity-Index reliably predicted patients associated with a higher risk of acute fatigue during RT. Aside from the presence of children, no other household or lifestyle factor was correlated with increased fatigue rates. Women aged ≤ 45 years had a significantly higher risk of developing depression requiring treatment during follow-up. Post-treatment inpatient cancer rehabilitation, including exercise and nutrition counseling, significantly relieved fatigue symptoms. **Conclusion:** The burdens for recovery from cancer therapy remain multi-factorial. Special focus needs to be placed on identifying high-risk groups experiencing fatigue or pain. Specialized post-treatment inpatient cancer rehabilitation can improve RTW rates.

Meixner et al. 2022.

Cancers (Basel), vol. 14, no. 9.

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Keywords: Adjuvant chemoradiation; definitive radiotherapy; endometrial cancer; toxicity.

Evidence Level: 5B

Link: <https://www.mdpi.com/2072-6694/14/9/2330>

Factors associated with return to work after surgery for degenerative cervical spondylotic myelopathy: Cohort analysis from the Canadian spine outcomes and research network

Background: Retrospective analysis of prospectively collected data from the multicentre Canadian Surgical Spine Registry (CSORN). Degenerative cervical myelopathy (DCM) is the most common cause of spinal cord dysfunction in North America. Few studies have evaluated return to work (RTW) rates after DCM surgery. Our goals were to determine rates and factors associated with postoperative RTW in surgically managed patients with DCM. **Methods:** Data was derived from the prospective, multicenter Canadian Spine Outcomes and Research Network (CSORN). From this cohort, we included all nonretired patients with at least 1-year follow-up. The RTW rate was defined as the proportion of patients with active employment at 1 year from the time of surgery. Unadjusted and adjusted analyses were used to identify patient characteristics, disease, and treatment variables associated with RTW. **Results:** Of 213 surgically treated DCM patients, 126 met eligibility, with 49% working and 51% not working in the immediate period before surgery; 102 had 12-month follow-up data. In both the unadjusted and the adjusted analyses working preoperatively and an anterior approach were associated with a higher postoperative RTW ($P < .05$), there were no significant differences between the postoperative employment groups with respect to age, gender, preoperative mJOA (modified Japanese Orthopaedic Association) score, and duration of symptoms ($P > .05$). Active preoperative employment (odds ratio = 15.4, 95% confidence interval = 4.5, 52.4) and anterior surgical procedures (odds ratio = 4.7, 95% confidence interval = 1.2, 19.6) were associated with greater odds of RTW at 1 year. **Conclusions:** The majority of nonretired patients undergoing surgery for DCM had returned to work 12 months after surgery; active preoperative employment and anterior surgical approach were associated with RTW in this analysis.

Romagna et al. 2022.

Global Spine Journal, vol. 12, no. 4.

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Keywords: Cervical; degenerative; myelopathy; return to work; surgery.

Evidence Level: 4B

Link: <https://journals.sagepub.com/doi/10.1177/2192568220958669>

Stakeholders' expectations of return-to-work after spinal cord injury: A 1-year follow-up

Background: Understanding the process of return-to-work is key to supporting people's social participation and health after a disability. **Methods:** This phenomenographic study aimed to explore the expectations and ways of understanding return-to-work from the perspectives of three stakeholder types: three workers with spinal cord injuries, their employers, and an occupational therapist coordinator. Participants were interviewed twice, at 6 and 12 months, after having participated in a research-based return-to-work intervention in Sweden. A phenomenographic approach was used to analyze the data. **Results:** The findings highlight how stakeholders' different expectations prevented them from openly discussing more flexible arrangements to make return-to-work viable and sustainable. **Conclusion:** The study contributes to occupational therapy practice by raising awareness of the challenges of work reintegration. It also adds to the body of knowledge in occupational science by illuminating how normative social expectations and policy concerning work/productivity influence the return-to-work process.

Farias et al. 2022.

OTJR – Occupation, Participation and Health, vol. 14.

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Keywords: Occupational science; return to work; spinal cord injury.

Evidence Level: 4B

Link: <https://journals.sagepub.com/doi/full/10.1177/15394492221097355>

Influence of social support on return to work after total hip or total knee arthroplasty: A prospective multicentre cohort study

Background: There is strong evidence that social support is an important determinant of return to work (RTW). Little is known about the role of social support in RTW after total hip or knee arthroplasty (THA/TKA). Objective was to examine the influence of preoperative and postoperative perceived social support on RTW status 6 months postoperatively. **Method:** A prospective multicentre cohort study was conducted. Setting: Orthopaedic departments of four Dutch medical centres; a tertiary university hospital, two large teaching hospitals and a general hospital. Participants: Patients planned to undergo THA/TKA, aged 18-63 and employed preoperatively were included. Main outcome measures: Questionnaires were filled out preoperatively and 3 and 6 months postoperatively and included questions to assess patients' perceived social support targeting three sources of social support: from home (friends, family), from work (coworkers, supervisors) and from healthcare (occupational physician, general practitioner, other caregivers). Control variables included age, gender, education, type of arthroplasty and comorbidities. RTW was defined as having fully returned to work 6 months postoperatively. Univariate and multivariate logistic regression analyses were conducted. **Results:** Enrolled were 190 patients (n=77 THA, n=113 TKA, median age was 56 years, 56% women). The majority returned to work (64%). Preoperatively, social support from the occupational physician was associated with RTW (OR 2.53, 95% CI 1.15 to 5.54). Postoperatively, social support from the occupational physician (OR 3.04, 95% CI 1.43 to 6.47) and the supervisor (OR 2.56, 95% CI 1.08 to 6.06) was associated with RTW. **Conclusions:** This study underscores the importance of work-related social support originating from the occupational physician and supervisor in facilitating RTW after primary THA/TKA, both preoperatively and postoperatively. Further research is needed to confirm our results and to understand the facilitating role of social support in RTW, as arthroplasty is being performed on a younger population for whom work participation is critical.

Kamp et al. 2022.

BMJ Open, vol. 12, no. 5.

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Keywords: Adult orthopaedics; hip; knee; musculoskeletal disorders; occupational & industrial medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/5/e059225.long>

A nucleic acid amplification test-based strategy does not help inform return to work for healthcare workers with COVID-19

Background: The objective of this study is to assess the utility of a nucleic acid amplification test-based approach to shorten isolation of healthcare workers (HCWs) with COVID-19 in the setting of the highly

transmissible omicron variant. **Methods:** Between December 24, 2021, and January 5, 2022, HCWs who tested positive for SARS-CoV-2 were retested with PCR at least 5 days since onset of symptoms.

Results: Forty-six sequential fully COVID-19 vaccinated HCWs who had tested positive for SARS-CoV-2 underwent follow-up testing. All the samples were confirmed as omicron variants and only four (8.7%) were negative in the follow-up test performed at a median of 6 (range 5-12) since onset of symptoms.

Conclusions: Implementation of a test-based strategy is logistically challenging, increases costs, and did not lead to shorter isolation in our institution.

Hijano et al. 2022.

Influenza and Other Respiratory Viruses, vol. 26.

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Keywords: COVID-19; NAAT; SARS-CoV-2; antigen test; healthcare workers; isolation.

Evidence Level: 4B

Link: <https://onlinelibrary.wiley.com/doi/10.1111/irv.13000>

Return to work factors and vocational rehabilitation interventions for long-term, partially disabled workers: A modified Delphi study among vocational rehabilitation professionals

Background: Long-term disability has a great impact on both society and workers with disabilities. Little is known about the barriers which prohibit workers with long-term disabilities from returning to work and which interventions are best suited to counteract these barriers. The main purpose of this study was to obtain consensus among professionals on important return to work (RTW) factors and effective vocational rehabilitation (VR) interventions for long-term (> 2 years), partially disabled workers. Our three research questions were: (1) which factors are associated with RTW for long-term disabled workers?; (2) which factors associated with RTW can be targeted by VR interventions?; and (3) which VR interventions are the most effective to target these factors? **Methods:** A modified Delphi Study was conducted using a panel of 22 labour experts, caseworkers, and insurance physicians. The study consisted of several rounds of questionnaires and one online meeting. **Results:** The multidisciplinary panel reached consensus that 58 out of 67 factors were important for RTW and that 35 of these factors could be targeted using VR interventions. In five rounds, the expert panel reached consensus that 11 out of 22 VR interventions were effective for at least one of the eight most important RTW factors. **Conclusions:** Consensus was reached among the expert panel that many factors that are important for the RTW of short-term disabled workers are also important for the RTW of long-term partially disabled workers and that a substantial number of these factors could effectively be targeted using VR interventions. The results of this study will be used to develop a decision aid that supports vocational rehabilitation professionals in profiling clients and in choosing suitable VR interventions.

de Geus et al. 2022.

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

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Keywords: Decision aid; disability pension; insurance physicians; labour experts; long-term sick leave; return to work.

Evidence Level: 6A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13295-6>

Predictive factors of successful return to work following discectomy

Background: Retrospective analysis of prospectively collected data. **Objective:** To identify modifiable factors associated with successful return to work 12 weeks following discectomy. Lumbar disc herniation is a common cause of sciatica and sick leave. This presents an economic burden to the individual and the society. **Methods:** Data from DaneSpine on a consecutive cohort of patients operated due to lumbar disc herniation during a 3-year period was identified and merged with data from the Ministry of Employment's register on public welfare payments. Data on welfare payments 2 years prior to the date of operation and 1 year postoperative was included. Patients were considered to be on sick leave if they received welfare payments for the week. Patients are considered to have returned to work if they did not receive public welfare payments for a 4-week period. **Results:** Of 1134 patients meeting inclusion criteria, 98.5% had complete preoperative surgical data available. Postoperatively, 79.1% of the patients returned to the work

within 12 weeks. Physically demanding jobs, low preoperative EQ5D score, and long duration of sick leave prior to surgery were associated negatively with return to work at 12 weeks. **Conclusion:** The results of this study indicate that patients who have a longer duration of sick leave have a physically demanding job and are in a poor health are more likely not to return to work by 12 weeks after surgery for lumbar disc herniation. Future studies are needed to determine if earlier referral to a surgeon leads to an earlier return to work.

Andersen et al. 2022.

Global Spine Journal, vol. 12, no. 4.

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Keywords: Disc herniation; discectomy; lumbar.

Evidence Level: 4A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9109552/>

Perceived return-to-work pressure following cardiovascular disease is associated with age, sex, and diagnosis: A nationwide combined survey- and register-based cohort study

Background: Return to work is a key rehabilitation goal for people with cardiovascular disease (CVD) because employment matters to individuals and societies. However, people recovering from CVD often struggle with returning to work and maintaining employment. To identify people in need of vocational counselling, we examined the probability of feeling under pressure to return to work following CVD.

Methods: We conducted a combined survey- and register-based study in a randomly selected, population-based cohort of 10,000 people diagnosed with atrial fibrillation, heart failure, heart valve disease, or ischaemic heart disease in 2018. The questionnaire covered return-to-work items, and we reported the probabilities of feeling under pressure to return to work with 95% confidence intervals (CIs) in categories defined by sex, age, and CVD diagnosis. **Results:** The survey response rate was 51.1%. In this study, we included 842 respondents (79.7% men) aged 32-85 years, who had returned to work following a sick leave. Overall, 249 (29.7%) had felt pressure to return to work. The probability of feeling under pressure to return to work ranged from 18.3% (95% CI: 13.1-24.6) among men aged > 55 years with atrial fibrillation to 51.7% (95% CI: 32.5-70.6) among women aged ≤ 55 years with atrial fibrillation. In addition, 66.0% of all respondents had not been offered vocational rehabilitation, and 48.6% of those who reported a need for vocational counselling had unmet needs. Survey responses also indicated that many respondents had returned to work before feeling mentally and physically ready. **Conclusion:** A substantial proportion of people with cardiovascular disease feel under pressure to return to work, and this pressure is associated with age, sex, and diagnosis. The results show that vocational rehabilitation must be improved and emphasize the importance of ensuring that cardiac rehabilitation programmes include all core rehabilitation components.

Bernt Jørgensen et al. 2022.

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

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Keywords: Cardiac rehabilitation; cardiovascular disease; employment; return to work; vocational counselling; vocational rehabilitation.

Evidence Level: 4A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13494-1>

Presenteeism and Absenteeism

This month sees an exploration on the effects on absenteeism from a wide range of factors including the effect of follow up regimes and dialogue meetings with sick employees, the effect of by providing financial aid for acupuncture therapy, and covid-19 vaccine side effects. The effect of physical work environment and workplace support on presenteeism is also explored.

Follow-up regimes for sick-listed employees: A comparison of nine north-western European countries

Background: The Covid-19 pandemic has revealed the importance of social protection systems, including income security, when health problems arise. **Methods:** The aims of this study are to compare the follow-up regimes for sick-listed employees across nine European countries, and to conduct a qualitative assessment of the differences with respect to burden and responsibility sharing between the social protection system, employers and employees. **Results:** The tendency highlighted is that countries with shorter employer periods of sick-pay typically have stricter follow-up responsibility for employers because, in practice, they become gatekeepers of the public sickness benefit scheme. In Germany and the UK, employers have few requirements for follow-up compared with the Nordic countries because they bear most of the costs of sickness absence themselves. The same applies in Iceland, where employers carry most of the costs and have no obligation to follow up sick-listed employees. The situation in the Netherlands is paradoxical: employers have strict obligations in the follow-up regime even though they cover all the costs of the sick-leave themselves. **Conclusion:** During the pandemic, the majority of countries have adjusted their sick-pay system and increased coverage to reduce the risk of spreading Covid-19 because employees are going to work sick or when they should self-quarantine, except for the Netherlands and Belgium, which considered that the current schemes were already sufficient to reduce that risk.

Ose et al. 2022.

Health Policy, vol. 10.

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Keywords: European countries; comparative study; sick-pay; sickness absenteeism; sickness benefit.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S016885102200104X?via%3Dihub>

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

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

Minakawa et al. 2022.

Industrial Health, vol. 13.

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

Evidence Level: 2B

Link: https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2021-0186/article

Effects of dialogue meetings on sickness absence—evidence from a large field experiment

Background: Sickness absence entails large individual and societal costs. Dialogue Meetings (DMs) where the absentee, the employer, and the physician discuss arrangements for full or partial work resumption have been in place in Norway since 2007. **Methods:** In collaboration with the Labour and Welfare Administration, we conducted a large-scale, pre-registered, randomized field experiment to evaluate

aspects of the Norwegian DMs policy. **Results:** We do not find statistically significant effects of summoning to a meeting and we can reject even small threat (notification) effects of sending out letters. We also conduct an extensive search for heterogeneous treatment effects but find no evidence of these.

Alpino et al. 2022.

Journal of Health Economics, vol. 83.

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Keywords: Employment; field experiment; rct; sickness absence.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0167629622000352?via%3Dihub>

Impact of COVID-19 vaccine-associated side effects on health care worker absenteeism and future booster vaccination

Background: Short-term side effects related to mRNA vaccines against SARS-CoV-2 are frequent and bothersome, with the potential to disrupt work duties and impact future vaccine decision-making.

Objective: To identify factors more likely to lead to vaccine-associated work disruption, employee absenteeism, and future vaccine reluctance among healthcare workers (HCWs). Hypothesis: Side effects related to COVID vaccination: 1- frequently disrupt HCW duties, 2- result in a significant proportion of HCW absenteeism, 3- contribute to uncertainty about future booster vaccination, 4- vary based on certain demographic, socioeconomic, occupational, and vaccine-related factors. **Methods:** Using an anonymous, voluntary electronic survey, we obtained responses from a large, heterogeneous sample of COVID-19-vaccinated HCWs in two healthcare systems in Southern California. Descriptive statistics and regression models were utilized to evaluate the research questions. **Results:** Among 2,103 vaccinated HCWs, 579 (27.5%) reported that vaccine-related symptoms disrupted their professional responsibilities, and 380 (18.1%) missed work as a result. Independent predictors for absenteeism included experiencing generalized and work-disruptive symptoms, and receiving the Moderna vaccine [OR = 1.77 (95% CI = 1.33 - 2.36), $p < 0.001$]. Physicians were less likely to miss work due to side effects (6.7% vs 21.2% for all other HCWs, $p < 0.001$). Independent predictors of reluctance toward future booster vaccination included lower education level, younger age, having received the Moderna vaccine, and missing work due to vaccine-related symptoms. **Conclusion:** Symptoms related to mRNA vaccinations against SARS-CoV-2 may frequently disrupt work duties, lead to absenteeism, and impact future vaccine decision-making. This may be more common in Moderna recipients and less likely among physicians. Accordingly, health employers should schedule future booster vaccination cycles to minimize loss of work productivity.

Chrissian et al. 2022.

Vaccine, vol. 40, no. 23.

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Keywords: absenteeism; booster; COVID-19; healthcare worker; hesitancy; side-effects; vaccine.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9013647/>

Associations between physical work environment, workplace support for health, and presenteeism: a COVID-19 context

Background: Presenteeism has, in a larger sense, been viewed as a negative behaviour, although a limited body of studies suggests and reports its positive implications in an organizational context. This study assessed the association between the physical work environment (PWE) and presenteeism as well as the moderating influence of workplace support for health (WSH) on this relationship. **Methods:** This study adopted the cross-sectional design alongside a sensitivity analysis and techniques against common methods bias. The study population was employees of private and public organizations in Accra, Ghana. A total of 590 employees participated in the study and hierarchical linear regression was used to present the results. **Results:** PWE had a positive relationship with presenteeism ($\beta = 0.15$; $t = 3.04$; $p < 0.05$), which means that higher presenteeism was associated with larger PWE scores. WSH positively moderated the relationship between PWE and presenteeism ($\beta = 0.23$; $t = 4.84$; $p < 0.001$). **Conclusions:** Organizations with more satisfactory work environments may serve as preferred protective places for employees during a pandemic, more so within organizations with higher WSH. Interventions rolled out to improve PWE and to

provide WSH can attenuate the potential negative influences of presenteeism on individual health and organizational productivity.

Danquah et al. 2022.

International Archives of Occupational and Environmental Health, vol. 16, no. 1-10.

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Keywords: COVID-19; Ghana; physical work environment; presenteeism; workplace support for health.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-022-01877-1>

Working hours

This month explores the relationship between working hours on health eating, burnout and perceived health amongst workers.

Influence of work hours and commute time on food practices: A longitudinal analysis of the Household, Income and Labour Dynamics in Australia Survey

Background: Work hours and commute time are key contributors to time scarcity, with potential detrimental implications for healthy eating. This study examined (1) associations between work and commute hours with food practices and (2) within-individual associations between changes in work and commute hours with changes in food practices. **Method:** Longitudinal study SETTING: Australia PARTICIPANTS: Data were from 14 807 respondents in waves 7 (2007), 9 (2009), 13 (2013) and 17 (2017) of the Household, Income and Labour Dynamics in Australia Survey. The sample for this analysis included individuals who were in paid employment in at least one of the four waves. Primary and secondary outcome measures: Outcomes included frequency of out-of-home food purchasing for breakfast, lunch, dinner and all three summed eating occasions, and fruit and vegetables consumption. **Results:** Results indicated the longer individuals spent working and commuting, the more likely they were to purchase out-of-home foods (frequency of total out-of-home food purchasing: incidence rate ratio (IRR)=1.007 (95% CI 1.007 to 1.008)), and the less they consumed fruit and vegetables, although reductions in fruit and vegetables servings were minimal (fruit: $\beta=-0.002$ (95% CI -0.003 to -0.001), vegetables: $\beta=-0.002$ (95% CI -0.003 to -0.001)). Similar results regarding associations with out-of-home food purchasing were observed when examining within-individual changes (IRR=1.006 (95% CI 1.005 to 1.007)). **Conclusions:** Results suggest employment-related time demands push towards more frequent out-of-home food purchasing. In the long term, this may have negative health consequences as out-of-home foods tend to be less healthy than home-prepared foods.

Oostenbach et al. 2022.

BMJ Open, vol. 12, no. 5.

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Keywords: Epidemiology; nutrition & dietetics; public health.

Evidence Level: 4A

Link: <https://bmjopen.bmj.com/content/12/5/e056212.long>

Burnout and poor perceived health in flexible working time in Japanese employees: The role of self-endangering behavior in relation to workaholism, work engagement, and job stressors

Background: The study aim was to examine whether flexible working time was associated with burnout and poor perceived health in relation to the work-related psychological/behavioral factors of self-endangering work behavior (SEWB), workaholism, work engagement, and job stressors. **Methods:** We analyzed data obtained from an Internet survey of 600 full-time Japanese employees. We also proposed a causal model using path analysis to investigate the overall relationships of burnout and perceived health to psychological/behavioral factors. **Results:** The results indicated that flexible working time was associated with adverse work-related consequences and factors such as increased burnout, working hours, SEWB, workaholism, and job demands, and with positive factors such as improvement of work engagement. The path analysis suggested that burnout was caused by workaholism both directly and via SEWB, and by low job decision latitude, and was reduced by work engagement. Similarly, it was observed that poor health

was caused by workaholism via SEWB, and reduced by work engagement. **Conclusion:** Thus, SEWB is driven by workaholism and plays a key role in the adverse health consequences of flexible working time. For workers to benefit from flexible working time, it is important to improve workaholism, SEWB, and low job decision latitude, and to develop work engagement in the workplace.

Yokoyama et al. 2022.

Industrial Health, vol. 25.

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: Burnout; flexible working time; job stress; perceived health; self-endangering behavior; work engagement; workaholism.

Evidence Level: 5B

Link: https://www.istage.jst.go.jp/article/indhealth/advpub/0/advpub_2022-0063/_article

Building Employer Capability

Wellness Programs

This month sees the exploration of workplace interventions for mindfulness, worksite tobacco control and general workplace health promotion.

Changes in salivary immunoglobulin a, stress, and burnout in a workplace mindfulness intervention: A pilot study

Background: The purpose of this pilot study was to examine the effectiveness of a 6-week workplace mindfulness- and self-compassion-based intervention (MSCBI) on perceived stress, burnout, immune functioning (assessed with the biomarker Immunoglobulin A), self-compassion, and experiential avoidance compared to a Workplace Stress Management Intervention. Both interventions were contextual, i.e., they were carried out in the workplace setting and during working hours. **Methods:** We followed a randomised controlled trial study design. The total sample was composed of 24 employees of an automotive company. **Results:** One-way analyses of covariance between groups revealed significant differences in post-intervention levels of perceived stress, salivary Immunoglobulin A (sIgA), emotional exhaustion, self-compassion, and experiential avoidance, after adjusting for pre-test scores. **Conclusion:** The results of this study have several implications. Firstly, it confirms that MSCBIs might be more effective than regular psychoeducational interventions for work-related stress and burnout treatment. Secondly, sIgA can be used to assess immune function state changes when MSCBIs are carried out. Furthermore, these results indicate that it is feasible to carry out MSCBIs within companies and during working hours, and that these interventions can help effectively manage stress and burnout associated with the work environment.

Martínez-Borrás et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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

Keywords: Burnout; mindfulness-based intervention; salivary Immunoglobulin A; work-related stress; workplace intervention.

Evidence Level: 2B

Link: <https://www.mdpi.com/1660-4601/19/10/6226>

Rural-urban differences in workplace health promotion among employees of small and medium-sized enterprises in Germany

Background: Rural and urban areas hold different health challenges and resources for resident small and medium-sized enterprises (SMEs) and their employees. Additionally, residents of urban and rural areas differ in individual characteristics. This study aims at investigating potential rural-urban differences (1) in the participation rate in workplace health promotion (WHP) and (2) in the relationship of WHP and health relevant outcomes in residents living in rural or urban German areas and working in SMEs. **Methods:** Data of a large German Employee Survey in 2018 were used and analyzed by chi-square and t-tests and

regression analyses regarding job satisfaction, sick days, and psychosomatic complaints. A total of 10,763 SME employees was included in analyses (23.9% living in rural, 76.1% living in urban areas).

Results: Analyses revealed higher participation rates for SME employees living in rural areas. SME employees living in urban areas reported more often the existence of WHP. Results showed (a) significance of existence of WHP for psychosomatic complaints and (b) significance of participation in WHP for job satisfaction in SME employees living in urban but not for those living in rural areas. **Conclusion:** The revealed disparities of (1) higher participation rates in SME employees living in rural areas and in (2) the relationship of WHP aspects with health relevant outcomes are of special interest for practitioners (, e.g. human resource managers), politicians, and researchers by providing new indications for planning and evaluating WHP measures.

Lindert et al. 2022.

BMC Health Services Research, vol. 22, no. 1.

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

Keywords: Employee health; job satisfaction; occupational health; psychosomatic complaints; sick leave days.

Evidence Level: 4B

Link: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-022-08052-9>

Worksite tobacco control - A qualitative study on perspectives from employers and employees at small worksites

Background: Evidence-based interventions (EBIs) for tobacco control can be implemented in worksite settings to reduce tobacco use. Small worksites are less likely to adopt tobacco control EBIs than large worksites. The purpose of this qualitative study was to 1) explore factors that impact small employers' decisions to offer tobacco control EBIs, and 2) understand employees' perceptions of tobacco control at small worksites. **Methods:** Working with staff from small worksites (20-250 employees), we analyzed data from 12 semi-structured interviews with employers (via key informants) and four focus groups with employees. We recruited employers and employees through a purchased business list and market research company, respectively. Interview and focus group topics included perceptions of worksite tobacco control; internal and external forces shaping worksite tobacco control implementation; and perceived worksite support for cessation. We conducted thematic data analysis. **Results:** Key themes from the employer interviews included: the local environment played an important role in implementation of tobacco control EBIs; tobacco control was perceived as important but not a priority; and tobacco control decisions were driven by worksite culture. Key themes from the employee focus groups included: perceived employer support for tobacco cessation was limited although there was interest from employees; employees who currently used tobacco were stigmatized for their behavior; and incentives and coaching were considered ideal tobacco control EBIs. **Conclusions:** Tobacco control has not been prioritized at small worksites, despite employees welcoming additional cessation support. This study contributes important information on contextual factors and employee preferences that could be targeted to improve tobacco control EBI implementation. Worksites should implement comprehensive tobacco-free policies, minimize stigma when promoting cessation, establish equitable break policies, and involve employees in decision-making related to tobacco control.

Kava 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: Employees; employers; evidence-based intervention; implementation; small workplaces; tobacco; tobacco control.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13346-y>

Job Design

This month we explore job design issues such as work schedule and seasonal influences and , managing work from home from an employee perspective

Work schedule and seasonal influences on sleep and fatigue in helicopter and fixed-wing aircraft operations in extreme environments

Background: Sleep and fatigue were investigated in aviation search and rescue, firefighting, emergency medical services and offshore transfer operations in 210 participants, for 21 days each, across 17 datasets in seven countries. **Methods:** Sleep data were collected using wrist-worn actigraphs and sleep diaries. Sustained attention was assessed using a 5-min Psychomotor Vigilance Task (PVT). Duty information was provided from corporate IT systems. **Results:** Despite the number of 24 h operations, most work occurred during daytime hours, and most sleep occurred at night. There were seasonal changes in work and sleep patterns, with naps used to augment total sleep time. The proportion of sleep occurring during duty varied from zero to 30%. Differences in PVT response times were trivial to small. Legislation that defines flight, duty time and minimum rest limits assume that sleep is not obtained during duty periods, apart from some napping under Fatigue Risk Management Systems (FRMS). However, especially in cases where the aviation service requires waiting for tasks (e.g. search and rescue, emergency medical response), this assumption may not always hold. **Conclusion:** FRMS should accommodate different modes of working that safely facilitate sleep during duty time where appropriate.

Fletcher et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Sleep; fatigue; season; work schedule; aircraft.

Evidence Level: 5B

Link: <https://www.nature.com/articles/s41598-022-08996-2>

Strategies to manage working from home during the pandemic: The employee experience

Background: Many Australian workers were mandated to work from home during the COVID-19 pandemic. Using a qualitative approach, this study aimed to identify optimal work from home management strategies, by analysing the experience of Australian employees working from home (WFH) during this time. **Methods:** A purposive sample, drawn from the Australian Employees Working from Home Study, of managers and non-managers from a range of sectors, was invited to participate in focus groups. Data were analysed using thematic analysis and mapped to the work-systems framework approach to determine strategies implemented to support WFH. **Results:** Most participants' experiences were more negative than positive, in part due to extreme lockdowns including curfews, with childcare and school closures compounding their WFH experiences. **Conclusion:** Effective workplace-initiated strategies to optimise WFH included: management support of flexible work hours; provision of necessary equipment with ICT support; regular online communication; performance management adjustments; and manager training.

Oakman et al. 2022.

Industrial Health, vol. 11.

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: Australian workforce; COVID-19; health and safety; management; wellbeing; work; working from home.

Evidence Level: 5A

Link: https://www.istage.jst.go.jp/article/indhealth/advpub/0/advpub_2022-0042/_article

Shift Work

This month we explore the effect of shift work on mortality rates and substance use and self-medication

Shift and night work and all-cause and cause-specific mortality: Prospective results from the stressjem study

Background: The literature remains sparse and inconclusive about the impact of shift and night work on mortality, and still more on specific causes of death. The objectives were to explore the prospective associations between exposure to shift and night work and all-cause and cause-specific mortality.

Methods: The study was based on a large national representative French prospective cohort of 1,511,456 employees followed up from 1976 to 2002. Exposure to shift and night work relied on a job-exposure matrix, and 3 time-varying measures (current, cumulative, and recency-weighted cumulative exposure) were constructed. Mortality and causes of death were provided by the national registry, and all-cause, cardiovascular, cancer and preventable mortality, and suicide were studied. Cox proportional hazards models were performed to study the associations between shift and night work and mortality. **Results:** During follow-up, 22,105 deaths occurred for all-cause mortality. In the study of mortality until the end of last job during follow-up, shift and/or night work were associated with all-cause, cardiovascular, cancer and preventable mortality, and suicide (except night without shift work with cancer mortality and suicide) among men. Shift work (especially shift without night work) was associated with all-cause, cancer and preventable mortality among women. The results were similar for current, cumulative, and recency-weighted cumulative exposure. Associations were found for more detailed causes of death: cerebrovascular diseases for both genders, ischemic heart diseases, respiratory cancers, smoking-related mortality, and external causes of death among men, and breast cancer among women. In the study of mortality until the end of follow-up, some additional associations were found among women between night work and all-cause and preventable mortality, and suicide, suggesting long-term or delayed exposure effects. The study may, however, be underpowered to detect all the exposure-outcome associations, especially among women. **Conclusion:** More research and prevention are needed to reduce mortality among shift and night workers.

Niedhammer et al. 2022.

Journal of Biological Rhythms, vol. 37, no. 3.

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Keywords: Cancer mortality; cardiovascular mortality; mortality; night work; preventable mortality; shift work; suicide; time schedules.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9149517/>

Perceived stigma, substance use and self-medication in night-shift healthcare workers: A qualitative study

Background: Many risk factors related to altered circadian rhythms impact the health of night-shift hospital workers (NSHW), resulting in mental and somatic disorders. Easy access to psychoactive substances (PS) may facilitate addictive behaviors in NSHW. They are also exposed to a stressful work environment, which may further affect sleep quality. This study aimed to explore the link between sleep deprivation, work-related psychosocial stress and psychoactive substance use as a self-medication response in NSHW.

Methods: Qualitative study to verify the plausibility of the self-medication theory applied to addictive behaviors. Semi-structured interviews (N = 18 NSHW) and thematic analysis, following consolidated criteria for reporting qualitative research recommendations. **Results:** Stigma against NSHW was a primary element of a stressful work environment. The stressful and stigmatizing environment, together with night-shift work, further affected NSHW sleep and their mental and physical health. The use of PS appeared to be for self-medication, encouraged by social and professional environments, source(s) of stress, discrimination, and isolation. The work environment, through aggravated sleep disorders, led NSHW to use non-prescribed sleeping pills. Alcohol after work and smoking were used as a social break but also as a means to reduce

stress. **Conclusion:** Anti-stigma interventions in the healthcare setting and screening of mental/somatic disorders in NSW can help reduce harmful self-medication behaviors and improve hospital care in the COVID-19 era.

Cousin et al. 2022.

BMC Health Services Research, vol. 22, no. 1.

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

Keywords: Addiction; health workers; occupational health; qualitative study; shiftwork.

Evidence Level: 5A

Link: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-022-08018-x>

Management and Leadership

This month we explore the effect of safety management leadership on employees and organizational safety performance, indicators for safety management practices among utility industries and job satisfaction amongst safety managers in the construction industry.

How does leadership in safety management affect employees' safety performance? A case study from mining enterprises in China

Background: Leadership is a necessary element for ensuring workplace safety. Rather little is known about the role of leadership safety behaviours (LSBs) in the mining industry. Using regression analysis and structural equation modelling analysis, this study examined the cause-and-effect relationships between leadership safety behaviours and safety performance. **Methods:** Data were collected by questionnaires from 305 miners in China. **Results:** Data were analysed using exploratory factor analysis and confirmatory factor analysis, which identified five main dimensions of LSBs: safety management commitment, safety communication with feedback, safety policy, safety incentives, and safety training; the analysis also identified three main dimensions of safety performance: employee's safety compliance, safety participation, and safety accidents. The results showed the overall effects of each LSB variable on safety compliance in descending order as: safety training (0.504), safety incentives (0.480), safety communication with feedback (0.377), safety management commitment (0.281), and safety policy (0.110). The overall effects of each LSB variable on safety participation in descending order were: safety training (0.706), safety incentives (0.496), safety management commitment (0.365), and safety policy (0.247). Furthermore, we found that safety management commitment and safety incentives increased employees' safety behaviours, but this influence was mediated by safety training, safety policy, and safety communication with feedback.

Zhang et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Safety compliance; safety leadership; safety participation; safety performance.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/6187>

Small + Safe + Well: lessons learned from a Total Worker Health® randomized intervention to promote organizational change in small business

Background: Leadership commitment to worker safety and health is one of the most important factors when organizations develop and implement a Total Worker Health® approach. We aimed to assess the effectiveness of a Total Worker Health ("TWH") leadership development program that targeted owners and other senior-level leadership positions on changing organizational and worker outcomes from baseline to one-year later. **Methods:** The Small + Safe + Well study included small businesses from a variety of industries in the state of Colorado, USA that were participating in Health Links™. We designed a randomized waitlisted control comparison design (RCT) to evaluate the added benefit of a TWH leadership development program. An employer assessment tool was used to assess TWH policies and programs, and an employee health and safety survey was used to assess safety leadership and health leadership practices, safety climate and health climate, safety behaviors and health behaviors, and well-being. We used a linear

mixed model framework with random effects for business and employee to assess the impact of intervention on the outcomes of interest. **Results:** Thirty-six businesses (37% retention) and 250 employees (9% retention) met the RCT study inclusion criteria and were included in the analysis. Businesses improved their TWH policies and programs score from baseline to one-year later, regardless of leadership intervention group assignment. Neither intervention group demonstrated improvements in employee-reported outcomes. **Conclusions:** This study sought to address a gap in the literature regarding small business senior leadership development for TWH. Our study demonstrates many of the challenges of conducting studies focused on organizational change in workplaces, specifically in small businesses. When designing TWH intervention studies, researchers should consider how to best engage small business leaders in interventions and implementations early on, as well as methods that are well matched to measuring primary and secondary outcomes longitudinally. Future research is needed to test the feasibility and sustainability of TWH interventions in small business.

Schwatka et al. 2022.

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

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

Keywords: Employer health promotion; implementation science; occupational health and safety; organizational behavior; organizational leadership; total worker health; training; workplace health.

Evidence Level: 2B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13435-y>

Systematic literature review on indicators use in safety management practices among utility industries

Background: Workers in utility industries are exposed to occupational accidents due to inadequate safety management systems. Accordingly, it is necessary to characterize and compare the available literature on indicators used in safety management practices in the utility industries. **Methods:** The systematic literature review was based on the Preferred Reporting Items for Systematic Reviews and Meta-analysis statement. This study considered 25 related studies from Web of Science and Scopus databases. **Results:** Further review of these articles resulted in three main performance indicators; namely, driven leading indicators, observant leading indicators, and lagging indicators consisting of 15 sub-indicators. **Conclusions:** Future studies should consider researching a more comprehensive range of utility industries, measuring subjective and objective indicators, integrating risk management into safety management practices, and validating the influence of leading indicators on safety outcomes. Further, researchers recommend including accidents, fatalities, lost time injuries, and near misses in safety outcomes.

Ali et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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

Keywords: Lagging indicators; leading indicators; occupational safety and health; safety management practices; safety performance.

Evidence Level: 1A

Link: <https://www.mdpi.com/1660-4601/19/10/6198>

Job satisfaction level of safety and health manager in construction industry: Pandemic period

Background: In a widespread social turmoil such as the Pandemic, job groups with high turnover rates and high job stress, such as the construction industry, will have a greater adverse impact than the general job group. This is to be used as basic data in preparing management plans by identifying the factors that hinder job stress and job satisfaction of construction workers. **Methods:** In this study, during the Pandemic period (1 September 2021 to 31 December 2021), a survey was conducted on job stress and job satisfaction among safety and health managers working at construction sites. **Results:** The overall job satisfaction of workers in the construction industry was grasped by analyzing the level of correlation and the mutual influence on job stress, job satisfaction, general characteristics, and work-related characteristics. As a result, in terms of work characteristics, it was found that the smaller the working period in the current position, the more positive the job satisfaction was ($p < 0.01$). In addition, it was found that job satisfaction increased significantly when there was a promotion opportunity ($p < 0.001$). **Conclusion:** The

construction industry is a job group with high basic job stress and low job satisfaction. In addition, it was evaluated that job stress increased during the pandemic.

Choi et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: COVID-19; health manager; job satisfaction; job stress; safety manager.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/5858>

Work Ability

This month we explore the perception of work ability amongst workers and factors that may affect work ability.

Perceived work ability: A constant comparative analysis of workers' perspectives

Background: Perceived work ability, or one's perceived ability to continue working in their current job, is important to understand in order to inform efforts to retain talent and promote worker well-being. The current study offers a unique contribution by taking an inductive approach, giving participants voice to describe their own work ability experiences. **Methods:** Participants (N = 301) who were working at least 30 h a week in the U.S. and reported one or more hindrances to work ability responded to four open-ended questions about hindrances to work ability, individual strategies for maintaining work ability, and employer supports for maintaining work ability. **Results:** Using constant comparative analysis, we corroborated existing work ability research and theory, along with unique contributions that enhance our understanding of perceived work ability. Notably, non-work demands, such as family obligations and lack of financial resources are under-examined, yet emerged as important work ability hindrances in this study. We also uncovered several personal strategies to help maintain WA (e.g., maintaining health and using work strategies to optimize functionality) that are dependent upon available job resources (e.g., support, autonomy, and flexibility). **Conclusion:** Ultimately, job resources of support, job control, and flexibility emerged as the most powerful leverage points for organizations to help workers maintain WA. Findings suggest that future efforts to support workers' work ability should include these resources.

McGonagle et al. 2022.

Occupational Health Sciences, vol. 10, no. 1-40.

User License: *PMC Open Access Subset*

Keywords: Inductive research; job resources; perceived work ability; personal resources; qualitative study.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9086129/>

Factors influencing work ability among the working-age population in Singburi province, Thailand

Background: The ability to work is an essential factor in the quality of work life. This study aimed to determine factors related to work ability among the working population in Sing Buri Province. **Methods:** A total of 360 workers completed a cross-sectional survey using a questionnaire. The questionnaire included demographic data and work conditions, psychosocial factors, and measures of the seven components of the work-ability index (WAI). Mean, percentage, standard deviation, and stepwise multiple regression analyses were conducted to determine the rates and predictors of the WAI of the participants. **Results:** Of the 360 participants, 61.40% were women with an average age of 43.00 ± 11.30 years; 36.70% had completed high school education. Their average work experience was 11.30 ± 8.50 years. The results revealed that the average WAI was 31.40 ± 4.15 . 76.10% of the participants qualified for the moderate work ability index. The number of current diseases, age, and monthly income were found to significantly contribute to the prediction of the WAI ($p < 0.05$). **Conclusion:** This finding suggests that the relevant agencies should support a policy, project or program related to health promotion among the working population with physical health conditions. Promoting occupations should be considered to raise income policy. In doing so, work ability among the working population may be improved.

Kaewdok et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Health status; occupational health; safety; work ability; working population.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/5935>

Adapting to the Future of Work

Technology

In this month's Technology section we explore cyber ostracism in a virtual work environment and the ethics of AI in the workplace

Shadow of cyber ostracism over remote environment: Implication on remote work challenges, virtual work environment and employee mental well-being during a Covid-19 pandemic

Background: This study aimed to identify the influence of workplace cyber ostracism on employee online work engagement and employee mental well-being with the mediating roles of remote work challenges such as loneliness, procrastination, work-home interference, and ineffective communication. **Methods:** As amidst lockdown due to COVID-19, the data was collected from 303 respondents through an online questionnaire that was distributed in virtual groups among friends, relatives, and other fellows who were working in the private sector organizations of Pakistan. The hypotheses were tested using the partial least square structural equation modeling PLS-SEM technique. **Results:** The findings of this study showed that workplace cyber ostracism has a positive and significant impact on employee online work engagement and employee mental well-being. Moreover, results also demonstrated that loneliness, ineffective communication, procrastination, and work-home interference positively and significantly mediate the relationship between workplace cyber ostracism, employee online work engagement, and employee mental well-being. **Conclusion:** Furthermore, discussion, implications, and limitations were also discussed in this research article.

Yang et al. 2022.

Acta Psychologica, vol. 225.

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Keywords: Covid-19 pandemic; Employee mental well-being; Employee online work engagement; Ineffective communication; Loneliness; Procrastination; Work-home interference; Workplace cyber ostracism.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0001691822000671?via%3Dihub>

Applying ethics to AI in the workplace: The design of a scorecard for Australian workplace health and safety

Background: Artificial Intelligence (AI) is taking centre stage in economic growth and business operations alike. Public discourse about the practical and ethical implications of AI has mainly focussed on the societal level. There is an emerging knowledge base on AI risks to human rights around data security and privacy concerns. A separate strand of work has highlighted the stresses of working in the gig economy. This prevailing focus on human rights and gig impacts has been at the expense of a closer look at how AI may be reshaping traditional workplace relations and, more specifically, workplace health and safety. **Methods:** To address this gap, we outline a conceptual model for developing an AI Work Health and Safety (WHS) Scorecard as a tool to assess and manage the potential risks and hazards to workers resulting from AI use in a workplace. A qualitative, practice-led research study of AI adopters was used to generate and test a novel list of potential AI risks to worker health and safety. **Results:** Risks were identified after cross-referencing Australian AI Ethics Principles and Principles of Good Work Design with AI ideation, design and implementation stages captured by the AI Canvas, a framework otherwise used for assessing the

commercial potential of AI to a business. **Conclusion:** The unique contribution of this research is the development of a novel matrix itemising currently known or anticipated risks to the WHS and ethical aspects at each AI adoption stage.

Cebulla et al. 2022.

AI & Society, vol. 13, no. 1-17.

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Keywords: AI Canvas; Australia; Ethics principles; risk assessment; WHS/OHS; workers.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9098376/>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

This month we explore the effects of covid related remote working, occupational stress in companies affected by covid-19, and the effects of covid-19 related measures in the workplace on employees mental health. In the area of occupational stress studies have explored the cost of stress related sick leave, use of a decision-making framework to manage occupational stress, and the effect of mindfulness interventions. The effects on employee mental health of employee-oriented flexible work, the emotional demands at work, promoting staying at work, web-based mental health interventions and a mental health screening tool are also explored. Finally, suicide amongst hospitality workers in Australia from 2006-2017 and the effect of occupational class and employment sector on sickness absence due to common mental disorders are explored.

Association between workplace and mental health and its mechanisms during COVID-19 pandemic: A cross-sectional, population-based, multi-country study

Background: The COVID-19 pandemic worsens populations' mental health. However, little is known about the COVID-19-related mental health among remote workers. **Methods:** We retrieved data from survey of Health, Ageing and Retirement in Europe, covering 27 countries. Eligible people were those employed. The main outcome is the mental disorder, covering four aspects: depression, anxiety, sleep disorder, and loneliness. Country-specific weighted mixed models were fitted to estimate the association of workplaces with mental health, controlled for age, gender, education level, living alone, making ends meets, working hours, closing to suspected or confirmed COVID-19 cases, received anti-virus protection, social contact, disability, and chronic disease. Moderate analyses were conducted to explore possible mechanisms.

Results: 11,197 participants were included, among them 29.3% suffered at least one worse mental disorder. After controlling for covariates, compared with those who worked at the usual workplace, those who worked at home only or part of the time did not associate with worse mental disorders (p -value ≥ 0.1395), and those who worked at neither the usual workplace nor home had a 55% higher likelihood of suffering from worse mental disorders (OR = 1.55, 95%CI 1.03-2.36). The mediation analyses identified three indirect pathways by which workplaces influence mental health, including making ends meets, social contact, and receiving anti-virus protection. Detailed results on subtypes of mental disorders were also provided. Limitations: All assessments were self-reported, resulting in a risk of method bias.

Conclusions: During the COVID-19 pandemic, working at other places, neither at the usual workplace nor home, worsened mental health. Evidence provided in this study will contribute to more nuanced and practical public health policy strategy making.

Zhang et al. 2022.

Journal of Affective Disorders, vol. 310.

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: COVID-19; mechanism; mental health; remote-worker; workplace.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S0165032722005407?via%3Dihub>

Sick leave due to stress, what are the costs for Dutch employers?

Background: Stress-related illnesses are prevalent in Western society, causing sick leave and putting a heavy economic burden on employers and society. For Dutch employers it is particularly relevant to have insight into the costs of absenteeism due to stress-related illness, as they are legally obligated to continue payment of wages. Therefore, this study assessed the duration and costs of an episode of sick leave due to stress-related illness for Dutch employers. **Methods** Data on sick leave due to various stress-related illnesses were obtained from a nationwide occupational health service database. Stress-related illnesses included tension complaints, burn-out, overexertion, and other reactions to stress. The duration per sick leave episode was estimated in working days, after which the average cost per sick leave period was estimated using age- and gender-specific price weights. **Results** During the study period, 16,676 employees took 17,338 episodes of sick leave due to stress-related illness. On average, one episode of sick leave lasted 101 working days, for which the costs for the employer were on average €19,151 per worker. Women were responsible for most episodes of sick leave and were on average 37 days more absent per episode compared to men. Moreover, of all kinds of stress-related illnesses, burn-out had the longest duration of sick leave with 313 calendar days and 163 working days, resulting in an average cost of €30,770. **Conclusions** Sick leave due to stress-related illness places a heavy burden on employers and thus society. Further research should be conducted on how to reduce this burden.

Wolvetang et al. 2022.

Journal of Occupational Rehabilitation, vol.16, no. 1-9.

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Keywords: Burn-out; cost of illness; employer health costs; sick days; sick leave.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s10926-022-10042-x>

Association between home working and mental health by key worker status during the Covid-19 pandemic. Evidence from four British longitudinal studies

Background: Little is known about the relationship between homeworking and mental health during the Covid-19 pandemic and how it might differ by keyworker status. **Methods:** To understand this relationship, we use longitudinal data collected over three time points during the pandemic from three British cohort studies born in 1958 (National Child Development Study), 1970 (British Cohort Study) and 1989-90 (Next Step) as well as from a population-based study stratified by four age groups (Understanding Society). We estimate the association between life satisfaction, anxiety, depression, and psychological distress and homeworking by key worker status using mixed effects models with maximum likelihood estimation to account for repeated measurements across the pandemic, allowing intercepts to vary across individuals after controlling for a set of covariates including pre-pandemic home working propensities and loneliness. **Results:** Results show that key workers working from home showed the greatest decline in mental health outcomes relative to other groups. Pre-pandemic homeworking did not significantly change the nature of such a relationship and loneliness slightly attenuated some of the effects. Finally, mental health outcomes varied across age-groups and time points. **Conclusion:** The discussion emphasises the need to pay attention to key workers when assessing the relationship between mental health and homeworking.

Wielgoszewska et al. 2022.

Industrial Health, vol. 19.

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: Employment; essential worker; home working; key worker; mental health; wellbeing.

Evidence Level: 4B

Link: https://www.jstage.jst.go.jp/article/jndhealth/advpub/0/advpub_2022-0081/article

Promoting factors to stay at work among employees with common mental health problems: A multiple-stakeholder concept mapping study

Background: Most individuals affected by common mental health problems are employed and actually working. To promote stay at work by workplace interventions, it is crucial to understand the factors perceived by various workplace stakeholders, and its relative importance. **Methods:** This concept mapping

study therefore explores perspectives of employees with common mental health problems (n = 18), supervisors (n = 17), and occupational health professionals (n = 14). Per stakeholder group, participants were interviewed to generate statements. Next, each participant sorted these statements on relatedness and importance. For each group, a concept map was created, using cluster analysis. Finally, focus group discussions were held to refine the maps. **Results:** The three concept maps resulted in several clustered ideas that stakeholders had in common, grouped by thematic analysis into the following meta-clusters: (A) Employee's experience of autonomy in work (employee's responsibility, freedom to exert control, meaningful work), (B) Supervisor support (being proactive, connected, and involved), (C) Ways to match employee's capacities to work (job accommodations), (D) Safe social climate in workplace (transparent organizational culture, collective responsibility in teams, collegial support), and (E) professional and organizational support, including collaboration with occupational health professionals. **Conclusion:** Promoting stay at work is a dynamic process that requires joined efforts by workplace stakeholders, in which more attention is needed to the interpersonal dynamics between employer and employee. Above all, a safe and trustful work environment, in which employee's autonomy, capacities, and needs are addressed by the supervisor, forms a fundamental base to stay at work.

van Hees et al. 2022.

Frontiers in Psychology, vol. 10.

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Keywords: Concept mapping; leadership; mental health; occupational health services; stakeholder participation; stay at work; workplace interventions.

Evidence Level: 5B

Link: <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.815604/full>

The effect of employee-oriented flexible work on mental health: A systematic review

Background: The effect of flexible work on mental health is not well known. The aim of this systematic review was to assess the effects of employee-oriented flexible work on mental health problems and associated disability. **Methods:** Literature searches were conducted in the PubMed, Scopus, Web of Sciences, Cochrane Library, PsycINFO, ProQuest and EconPapers databases from their inception through October-November 2020. Sixteen studies on the associations of worktime control, working from home, or flexible working arrangements with mental health related outcomes were included in the review: one cluster randomized controlled trial, two non-randomized controlled trials, two cross-over studies, and 11 prospective cohort studies. Three reviewers independently assessed the methodological quality of the included studies and extracted the data. The included studies differed in design, intervention/exposure, and outcome, so meta-analysis was not carried out and qualitative results were reported. **Results:** A few prospective cohort studies found that low employees' control over worktime increases the risk of depressive symptoms, psychological distress, burnout, and accumulated fatigue. One cross-over and a few cohort studies found small beneficial effects of working partly from home on depressive symptoms, stress, and emotional exhaustion. A small number of controlled trials, cross-over or cohort studies found that flexible working arrangements increase employees' control over working hours, but have only modest beneficial effects on psychological distress, burnout, and emotional exhaustion. **Conclusion:** This systematic review suggests that employee-oriented flexible work may have small beneficial effects on mental health. However, randomized controlled trials and quasi-experimental studies are needed to identify the health effects of flexible work.

Shiri et al. 2022.

Healthcare (Basel), vol. 10, no. 5.

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Keywords: Anxiety; depression; mental disorders; schedule control; telecommuting; work schedule; worktime control.

Evidence Level: 1A

Link: <https://www.mdpi.com/2227-9032/10/5/883>

A hybrid decision-making framework to manage occupational stress in project-based organizations

Background: According to recent studies in the field of human resource management (HRM), especially in project-based organizations (PBOs), stress is recognized as a factor that has a paramount significance on the performance of staff. Previous studies in organizational stress management have mainly focused on identifying job stressors and their effects on organizations. Contrary to the previous studies, this paper aims to propose a comprehensive decision-support system that includes identifying stressors, assessing organizational stress levels, and providing solutions to improve the performance of the organization.

Methods: A questionnaire is designed and distributed among 170 senior managers of a major project-based organization in the field of the energy industry in Iran to determine organizational stressors. **Results:** Based on the questionnaire results and considering the best worst method (BWM) as an approach to determine the weighting vector, the importance degree of each stressor is calculated. In the next stage, a decision-support model is developed to assess the stress level of a PBO through fuzzy inference systems (FIS). Some main advantages of the proposed hybrid decision-support model include (i) achieving high-reliable results by not-so-time-consuming computational volume and (ii) maintaining flexibility in adding new criteria to assess the occupational stress levels in PBOs. Based on the obtained results, six organizational stressors, including job incongruity, poor organizational structure, poor project environment, work overload, poor job promotion, and type A behavior, are identified. It is also found that the level of organizational stress is not ideal. **Conclusion:** Finally, some main recommendations are proposed to manage occupational stresses at the optimum level in the considered sector.

Sazvar et al. 2022.

Soft Computing, vol. 17, no. 1-16.

User License: PMC Open Access Subset

Keywords: Best worst method; fuzzy inference system; occupational stress; project-based organization.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9110217/>

A comparison between healthcare workers and non-healthcare workers' anxiety, depression and PTSD during the initial COVID -19 lockdown

Background: Several studies have found that Healthcare workers are vulnerable to mental health problems during the COVID-19 pandemic. However, few studies have made comparisons of healthcare workers (HCWs) and non-HCWs. The current study aimed to compare mental health problems among HCWs with non-HCWs during the initial lockdown of COVID 19. Study design: A population-based cross-sectional survey. **Methods:** The survey was conducted by means of an open web link between April and May 2020. Data were collected by self-report. The PTSD Checklist for DSM-5 (PCL-5) was used to assess posttraumatic stress. **Results:** A total of 4527 citizens answered the questionnaire and 32.1% were HCWs. The majority were female, under 60 years of age, and lived in urban areas. Among the HCWs, the majority were registered nurses working in hospitals. The prevalence were 12.8% vs 19.1% for anxiety, 8.5% vs 14.5% for depression and 13.6% vs 20.9% for PTSD among HCWs and non-HCWs respectively. The highest prevalence's for anxiety and PTSD among HCWs were found for those under 40 years of age and having low education level (<12 years). **Conclusion:** Mental health problems was significantly lower among HCWs compared to non-HCWs. However, the COVID-19 poses a challenge for HCWs, especially young HCWs and those with low level of education. Providing support, appropriate education, training, and authoritative information to the different members of the HCWs could be effective ways to minimize the psychological effect.

Schou-Bredal et al. 2022.

Public Health Practices, vol. 3.

User License: Elsevier Connect COVID-19 resource centre

Keywords: Anxiety; CORONAPOP; COVID-19; DSM-5; Depression; healthcare workers; mental health; PTSD; PTSS; pandemic; survey.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9068258/>

Acceptability of web-based mental health interventions in the workplace: Systematic review

Background: Web-based interventions have proven to be effective not only in clinical populations but also in the occupational setting. Recent studies conducted in the work environment have focused on the effectiveness of these interventions. However, the role of employees' acceptability of web-based interventions and programs has not yet enjoyed a similar level of attention. **Objective:** The objective of this systematic review was to conduct the first comprehensive study on employees' level of acceptability of web-based mental health interventions based on direct and indirect measures, outline the utility of different types of web-based interventions for work-related mental health issues, and build a research base in the field. **Methods:** The search was conducted between October 2018 and July 2019 and allowed for any study design. The studies used either qualitative or quantitative data sources. The web-based interventions were generally aimed at supporting employees with their mental health issues. The study characteristics were outlined in a table as well as graded based on their quality using a traffic light schema. The level of acceptability was individually rated using commonly applied methods, including percentile quartiles ranging from low to very high. **Results:** A total of 1303 studies were identified through multiple database searches and additional resources, from which 28 (2%) were rated as eligible for the synthesis. The results of employees' acceptability levels were mixed, and the studies were very heterogeneous in design, intervention characteristics, and population. Approximately 79% (22/28) of the studies outlined acceptability measures from high to very high, and 54% (15/28) of the studies reported acceptability levels from low to moderate (overlap when studies reported both quantitative and qualitative results). Qualitative studies also provided insights into barriers and preferences, including simple and tailored application tools as well as the preference for nonstigmatized language. However, there were multiple flaws in the methodology of the studies, such as the blinding of participants and personnel.

Conclusions: The results outline the need for further research with more homogeneous acceptability studies to draw a final conclusion. However, the underlying results show that there is a tendency toward general acceptability of web-based interventions in the workplace, with findings of general applicability to the use of web-based mental health interventions.

Scheutzwow et al. 2022.

JMIR Mental Health, vol. 9, no. 5.

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Keywords: Acceptability; e-mental health; employees; mobile phone; occupational online interventions; online mental health interventions.

Evidence Level: 1A

Link: <https://mental.jmir.org/2022/5/e34655/>

Occupational stress: Evidence from industries affected by COVID-19 in Japan

Background: This study provides objective evidence on the impact of COVID-19 based on employee occupational stress reported from 13 different industries, and examines the determinants of employee psychological well-being. As the economic and social impacts of the COVID-19 pandemic continue, governments should consider industry-level differences when making support decisions concerning public resource allocation to corporations. However, little evidence exists regarding the differences in occupational stress across industries. **Methods:** Employee occupational stress data (N = 673,071) was derived from workers in Japan from 2018 to 2020. The sample comprises workers from 13 industries, including civil services, service industry (other), real estate, medical/welfare, wholesale/retail, academic research, and accommodation/restaurant business. A logit model is employed to investigate the differences in employees' psychological well-being before and during the pandemic. **Results:** In 2020, 11 out of 12 industries had significantly worse occupational stress compared to employees engaged in civil services. Over 23% of employees from the wholesale/retail and accommodation/restaurant industries were observed as high-stress employees. Improved compensation policies supporting these industries are suggested. In contrast, reduced occupational stress was found among employees in the transportation/postal and information/communication industries. Among the 13 industries, aside from high job demands, tough inter-person relationships in the workplace became the most significant stressors during the pandemic. **Conclusions:** The results confirm that the pandemic has had a heterogeneous effect

on employee occupational stress across industries, thus suggesting that the level of compensation given to different industries during the COVID-19 pandemic should be discussed and approved by the Japanese government. Additionally, support for the wholesale/retail and accommodation/restaurant industries during the pandemic should be improved.

Piao et al. 2022.

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

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Keywords: COVID-19; industry; Japan; occupational stress.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13257-y>

Nature and mindfulness to cope with work-related stress: A narrative review

Background: In recent years, work-related stress has grown exponentially and the negative impact that this condition has on people's health is considerable. The effects of work-related stress can be distinguished in those that affect workers (e.g., depression and anxiety) and those that affect the company (e.g., absenteeism and productivity). It is possible to distinguish two types of prevention interventions. **Results:** Individual interventions aim at promoting coping and individual resilience strategies with the aim of modifying cognitive assessments of the potential stressor, thus reducing its negative impact on health. Mindfulness techniques have been found to be effective stress management tools that are also useful in dealing with stressful events in the workplace. Organizational interventions modify the risk factors connected to the context and content of the work. It was found that a restorative workplace (i.e., with natural elements) reduces stress and fatigue, improving work performance. Furthermore, practicing mindfulness in nature helps to improve the feeling of wellbeing and to relieve stress. **Conclusion:** In this paper, we review the role of mindfulness-based practices and of contact with nature in coping with stressful situations at work, and we propose a model of coping with work-related stress by using mindfulness in nature-based practices.

Menardo et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Mindfulness; nature; review; work-related stress.

Evidence Level: 6A

Link: <https://www.mdpi.com/1660-4601/19/10/5948>

Emotional demands at work and risk of hospital-treated depressive disorder in up to 1.6 million Danish employees: A prospective nationwide register-based cohort study

Background: Previous studies on effects of emotional demands on depression have relied on self-reported exposure data and lacked control for potential confounding by pre-employment risk factors for depression. This study used a register-based design to examine the risk of hospital-treated depressive disorder in relation to occupational levels of emotional demands at work, furthermore addressing the role of risk factors for depression before workforce entry. **Methods:** We analyzed data from two Danish register-based cohorts - Job Exposure Matrix Analyses of Psychosocial Factors and Healthy Ageing in Denmark (JEMPAD, N= 1 665 798) (17) and Danish Work Life Course Cohort (DaWCo, N=939 411), which link assessments of emotional demands by job exposure matrices to records of hospital-treated depressive disorder among employees aged 15-59 years at baseline (average follow up: 9.7 years in JEMPAD, 7.3 years in DaWCo). **Results:** Potential confounders comprised sociodemographics, job control, work-related violence and physical demands at work. In DaWCo, we followed individuals from their entry into the workforce, and also included data on risk factors for depression before workforce entry (eg, parental income, education, and psychiatric diagnoses). Employees in occupations with high emotional demands had an increased risk of hospital-treated depressive disorder with confounder-adjusted hazard ratios of 1.32 [95% confidence interval (CI) 1.24–1.41] and 1.19 (95% CI 1.09–1.30) in JEMPAD and DaWCo, respectively. This association remained after controlling for risk factors before workforce entry. **Conclusions:** This study suggests that employees in occupations with high emotional demands are at increased risk of hospital-treated depressive

disorder. This increased risk was neither attributable to reporting bias nor explained by the included risk factors for depression recorded before workforce entry.

Madsen et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 48, no. 4.

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Keywords: Emotional demands; depression; Danish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4020>

Suicide among hospitality workers in Australia, 2006-2017

Background: Suicide among hospitality workers has recently attracted attention in the media. To date, little is known about suicide among hospitality workers in Australia. **Methods:** Suicide data were obtained from the National Coronial Information System (NCIS). Occupational suicide rates were calculated using the Australian Bureau of Statistics population-level data from the 2011 census. Negative binomial regression, univariate logistic regression, and multivariate logistic regression were used to estimate the association between suicide and employment as a hospitality worker over the period 2006-2017, compared to all other occupations. **Results:** Suicide rates for chefs was significantly higher than for persons in non-hospitality occupations [incidence rate ratio (IRR), 3.93; 95% CI 2.53-5.79; $P < 0.001$]. The interaction between occupation and sex was examined with follow-up testing. Suicide rates for female chefs were significantly higher than for females in non-hospitality occupations (IRR, 3.93; 95% CI 2.60-5.94). Suicide rates for male chefs were also significantly higher than males in non-hospitality occupations (IRR, 1.38; 95% CI 1.14-1.67). Compared with non-hospitality occupations, hospitality workers who died by suicide had significantly greater odds of being female (OR 0.63, 95% CI 0.50-0.79), residing in residential Socio-Economic Indexes for Areas (SEIFA) classified as most disadvantaged (OR 1.62, 95% CI 1.19-2.20), and being born outside of Australia (OR 1.74, 95% CI 1.34-2.25). **Conclusion:** Results indicate the need for targeted prevention of suicide by Australian hospitality workers. Overall, results suggest that specific hospitality occupations present a higher risk of suicidal behaviour than other non-hospitality occupations.

Burnett et al. 2022.

Social Psychiatry and Psychiatric Epidemiology, vol. 57, no. 5.

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Keywords: Epidemiology; occupations; public health; suicide prevention.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007/s00127-022-02229-7>

Sickness absence due to common mental disorders in young employees in Sweden: Are there differences in occupational class and employment sector?

Background: A large proportion of sickness absence (SA) in young adults is due to common mental disorders (CMDs). Still studies on CMD-related SA in young workers are lacking, especially studies for those employed in the private sector. The current study investigated the associations between sector of employment, occupational class and SA due to CMDs. In addition, associations between type of employment branch and SA due to CMDs within each sector were examined. **Methods:** This population-based longitudinal cohort study included 663,583 employees, 19-29 years, residing in Sweden in 2009. Employment sector (i.e., private/public) and occupational class (non-manual/manual workers) were measured in 2009. Risk estimates of SA due to CMDs, between 2010 and 2016, were calculated as Hazard Ratios (HR) with 95% confidence intervals (CI), using Cox regression analysis. **Results:** Sector of employment was associated with SA due to CMDs, such that public sector workers had an elevated risk when compared with private sector employees (adjusted HR: 1.31 (95% CI 1.29-1.33)). Moreover, manual workers had a slightly elevated risk for SA due to CMDs compared to non-manual workers. Within the private sector, in both manual and non-manual workers, those employed in education and health and social services evidenced the highest rates and risks of SA due to CMDs. **Conclusion:** Sector of employment and occupational class play a role in SA due to CMDs in young employees. These findings should be considered when identifying high-risk groups for SA in the young working population.

Björkenstam et al. 2022.

Social Psychiatry and Psychiatric Epidemiology, vol. 57, no. 5.

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Keywords: Cohort; common mental disorder; employment; epidemiology; occupation; occupational class; sickness absence; sweden; young adults.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00127-021-02152-3>

Effects of workplace measures against COVID-19 on psychological distress of full-time employees: A 12-month prospective study in the COVID-19 pandemic

Background: This study aimed to investigate the prospective effects of corporate and organizational workplace measures against COVID-19 on reducing employees' psychological distress during a 12-month follow-up in the COVID-19 pandemic. **Methods:** Data were retrieved from an online longitudinal panel survey of full-time employees in Japan, with the 1st survey in March 2020, and the 2nd to 6th surveys in May, August, November 2020, February and March 2021, respectively. Seven area-specific workplace measures were assessed using a self-report 23-item scale at the 2nd follow-up. Psychological distress was measured using an 18-item scale of the Brief Job Stress Questionnaire at each survey. Linear regressions and mixed model analysis were conducted of psychological distress at follow-ups on scores of the area-specific workplace measures, adjusting for psychological distress and other covariates at the 1st survey. **Results:** A total of 941 employees responded at baseline; most of them (86.9-90.9%) participated in the follow-up surveys. Linear regression analysis indicated that workplace measures of facilitating employees' preventive measures (ie, hygiene behaviors) statistically significantly and negatively correlated with psychological distress at the 5th survey [$b=-0.518$, standard error (SE) 0.259, $P=0.046$]. A statistically significant and negative interaction between the scores and time of follow-up was observed in the mixed model analysis ($b=-0.096$, SE 0.047, $P=0.041$). No such correlation or interaction was found for any of other subcategorical workplace measures. **Conclusions:** The study provides prospective evidence for a protective effect of workplace measures to facilitate employee's hygiene behaviors on reducing psychological distress of full-time employees in the COVID-19 pandemic. The association seems stronger at a later follow-up.

Asaoka et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 16.

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Keywords: COVID-19; psychological distress; pandemic; employees; workplace measures.

Evidence Level: 4A

Link: <https://www.sjweh.fi/article/4030>

Evaluation of a mental health screening tool using cross-sectional surveys in a workplace setting

Background: The Brief Health Check (BHC) is a health screener used by the Get Healthy at Work programme, which identifies workers with chronic disease risk and provides them with advice and referrals to support services. The BHC was revised to include mental health to provide a holistic approach to workplace health. This study aimed to evaluate the acceptability and appropriateness of the revised BHC by comparing the results around psychological distress and future risk with previous research, and a participant feedback survey. **Method:** Data collection took place between October 2018 and May 2019. The study used data that were collected as part of programme delivery, as well as a participant feedback survey that was administered after the health check was completed. **Results:** BHCs were completed by $n=912$ workers, out of which, $n=238$ completed the feedback survey. The mean Distress Questionnaire 5 score was 10.5, and 10% of participants met the threshold for 'high' future risk. The feedback survey revealed that the majority of participants found the mental health advice to be useful (76%), agreed with their mental health distress and risk ratings (92%-94%) and most intended on using the referred services (62%-68%).

Conclusion: The findings around mental health risk were comparable to previous findings in employed samples. The inclusion of mental health assessments, advice and referral pathways into the BHC was found to be acceptable and the subsequent referrals were appropriate, indicating that this approach could be scaled up and implemented to help address worker's mental ill health.

Xu et al. 2022.

BMJ Open, vol. 12, no. 5.

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Keywords: Mental health; psychiatry; public health.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/5/e052155.long>

Bullying and Harassment

This month we explore the relationship between workplace bullying and high performance work systems, and later benefit recipiency and physician-certified sick leave

High performance work systems, justice, and engagement: Does bullying throw a spanner in the works?

Background: High performance work systems (HPWS) have typically been shown to positively influence employee attitudes and well-being. Research in the realm of HPWS has, in this respect, established a clear connection between these systems and employee engagement through organizational justice. **Methods:** In this study, we analyzed if being bullied affects this relationship. Using reasoning from Affective Events Theory (AET), we expected that the positive association between HPWS and engagement through perceptions of organizational justice is impaired by experiences of workplace bullying. Moreover, we expected a remaining direct effect between HPWS and engagement, also attenuated by bullying. **Results:** Our results in a sample of service workers in Finland (n = 434) could not support the moderating role of bullying in the indirect effect. Workplace bullying did, however, impair the remaining direct relationship indicating it disrupts the positive effect of HPWS on engagement. In all, whereas HPWS were found to be beneficial for not bullied respondents, it was associated with decreased engagement for the bullied.

Conclusion: Our findings further underscore the importance of preventing bullying in our workplaces, as it may significantly alter the outcomes of positively intended HR practices into an undesired result.

Baillien et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 9.

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Keywords: Affective events; high performance work practices; mobbing; moderated mediation; workplace bullying.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/9/5583>

Associations between workplace bullying and later benefit recipiency among workers with common mental disorders

Background: In this study, we examined exposure to workplace bullying as a predictor of registry-based benefit recipiency among workers struggling with work participation due to common mental disorders. Further, we examined if the experience of receiving social support moderated the association between workplace bullying and benefit recipiency. **Method:** Secondary analyses of a randomized controlled trial. **Patients:** People struggling with work participation due to common mental disorders (CMD). **Study participants** (n = 1193) were from a randomized controlled trial (The At Work and Coping trial (AWaC). **Clinical trials:** gov [NCT01146730](https://clinicaltrials.gov/ct2/show/study/NCT01146730)), and self-reported CMD as a main obstacle for work participation. **Participants** were at risk of sickness absence, currently on sickness absence or on long-term benefits. **Benefit recipiency** indicated sickness absence and/or long-term benefits (i.e., disability pension) at 6-month follow-up. **Results:** Of the 1193 participants, 36% reported exposure to workplace bullying. Workplace bullying was significantly associated with benefit recipiency at 6-month follow-up (OR 1.41, CI 1.11-1.79). Social support did not moderate the association between bullying and benefit recipiency. **Conclusions:** The finding that workplace bullying increases the risk of later benefit recipiency suggest that bullying is a significant obstacle for work participation.

Løvvik et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 4.

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Keywords: Common mental disorders; disability; sickness absence; social support; work participation; workplace bullying.

Evidence Level: 2A

Link: <https://link.springer.com/article/10.1007/s00420-021-01764-1>

The relationship between workplace conflicts and subsequent physician-certified sick leave: A prospective population study

Background: The impact of workplace conflicts on sick leave is largely unknown. We studied the associations between conflicts and physician-certified sick leave in a randomly drawn general working population sample. **Methods:** Eligible respondents were interviewed in 2009, 2013, and 2016 and were registered with an employee relationship ≥ 50 working days in the national sick-leave register the year following the survey interviews ($n = 22,088$ observations/13,731 respondents). We used mixed-effects logistic regression models (adjusted for sex, age, education level, occupation and sick leave days) to assess the associations of self-reported conflicts with superiors or colleagues and subsequent physician-certified sick leave of 1-16 days (i.e., low-level sick leave (LLSL)) and more than 16 days (i.e., high-level sick leave (HLSL)). **Results:** Conflicts with superiors were associated with LLSL (OR = 1.73 95% CI 1.15-2.62) and HLSL (OR = 1.84 95% CI 1.15-2.94). The corresponding ORs for conflicts involving colleagues were weaker and largely non-significant. The population risks of LLSL and HLSL attributable to conflicts with superiors were 1.95% (95% CI 0.55-3.41) and 3.98% (95% CI 2.08-5.91), respectively. **Conclusion:** Conflicts with superiors appear to be an important risk factor for sick leave among employees. Organizations are well-advised to develop policies and competencies to prevent and manage conflicts at work.

Sterud et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Occupational health; psychosocial working conditions; sickness absence; workplace conflicts.

Evidence Level: 4A

Link: <https://www.mdpi.com/1660-4601/19/10/6047>

Psychosocial Issues

This month explores psychosocial issues related to turnover intention, working through the covid-19 pandemic including working from home, precarious work, balancing work and family and self reported hardiness.

Signifying the relationship between psychological factors and turnover intention: The mediating role of work-related stress and moderating role of job satisfaction

Background: Human capital plays a significant role in an organization's advancement. In recent years, emerging work-related psychological issues have become a critical factor, demanding considerable attention from management. As such, this study measures the role of job satisfaction in work-related stress and employees' turnover intentions. There is a mediating relationship between work-related stress-such as emotional exhaustion, work engagement, role conflict, and psychosocial risks-and turnover intentions.

Methods: The study used primary data collection techniques to gather data and purposive sampling to analyze the data. **Results:** The study's sample size consisted of 270 employees working in Chinese organizations. SmartPLS software was used to test the research hypothesis. The study results show the mediating role of work-related stress and moderating role of employees' job satisfaction. **Conclusion:** Accordingly, the study provides implications for managers, encouraging them to take the necessary steps in controlling the turnover rate by enhancing employees' morale (i.e., job satisfaction) and work engagement.

Xue et al. 2022.

Frontiers in Psychology, vol.3.

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Keywords: Emotional exhaustion; job satisfaction; psychosocial risks; role conflict; turnover intentions; work engagement.

Evidence Level: 5B

Link: <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.847948/full>

Effect of working from home on the association between job demands and psychological distress

Background: Limited information is available regarding the association between workplace psychosocial factors and general mental health status among workers during the coronavirus disease 2019 pandemic. This study examined how working from home affected the association between job demands and psychological distress (PD). **Methods:** A cross-sectional online survey was conducted in December 2020 (N = 27,036). The dependent variable (PD) was assessed using the Kessler Psychological Distress Scale. Job demands were assessed using the Job Content Questionnaire. **Results:** Working from home was determined by participants' responses to the question, "Do you currently work from home?" We used a two-level regression analysis adjusted for prefecture. Each individual-level variable at Level 1 was nested into each prefecture at Level 2, stratified by working from home or not. Overall, 21.3% of participants worked from home. The interaction between working from home and job demands was significant. Job demands were positively associated with PD. The stratified analysis indicated that the associations were weaker among employees who worked from home compared with those among employees who did not. **Conclusion:** The association between job demands and PD may be weakened by working from home.

Eguchi et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: COVID-19 pandemic; job demand–resource model; psychological distress; psychosocial factors; work from home.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/10/6287>

Study on the effect of employees' perceived organizational support, psychological ownership, and turnover intention: A case of China's employee

Background: In the context of severe turnover, taking measures to enhance core employee management, prevent the turnover of talents, and improve employees' sense of belonging and responsibility to the firm can become a non-negligible problem in human resource management. **Methods:** Considering Chinese enterprises as the research background, this study starts with the related theories of organizational support, psychological ownership, and turnover intention to explore the impact of organizational support on psychological ownership and its dimensions (self-efficacy, taking responsibility, a sense of belonging, and self-identification), the effect of each dimension of psychological ownership on turnover intention, and the relationship between organizational support and turnover intention, as well as verifies the mediating role of psychological ownership. **Results:** The main findings show that (1) perceived organizational support positively affects psychological ownership; (2) psychological ownership negatively affects turnover intention; (3) perceived organizational support negatively influences turnover intention; and (4) psychological ownership mediates the relationship between perceived organizational support and turnover intention. **Conclusion:** The study results contribute to the relevant literature and guide human resource practice.

Jing et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Chinese enterprises; perceived organizational support; turnover intention.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/6016>

Hardiness and Burnout in Adult U.S. Workers

Objective: Burnout is a costly problem, and it appears to be getting worse due to COVID-related stressors. It is thus important for organizations to find better tools to prevent and mitigate worker burnout.

Methods: Conditional PROCESS path analysis was used to assess the relation of hardiness to burnout in a representative sample of U.S. workers, with sex and age as potential moderators. **Results:** Hardiness is associated with reduced burnout symptoms. Sex did not moderate this relation. A moderating effect for age was observed, with more burnout appearing in younger, less hardy workers. **Conclusions:** Findings suggest hardiness operates similarly for men and women as a buffer against burnout, and that older workers are less vulnerable to burnout. Training programs to increase stress appraisals and coping skills used by more experienced, hardy workers may be beneficial in reducing burnout. Results have clinical significance regarding reduction and mitigation of worker burnout across multiple occupations. New workers could benefit from special training aimed at enhancing hardiness attitudes and coping skills. In addition, supervisors and leaders should promote hardiness in the workforce through their personal example in coping with stressful conditions, and by the workplace policies they establish and enforce.

Bartone et al 2022

Journal of Occupational and Environmental Medicine: vol. 64, no.5

doi: 10.1097/JOM.0000000000002448

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Keywords: age, burnout, hardiness, moderation, sex

Evidence level: 4B

Link: <https://pubmed.ncbi.nlm.nih.gov/34817457/>

Precarious work and workplace dignity during COVID-19: A longitudinal study

Background: Building upon the psychology of working theory (PWT), the goal of the present study was to examine longitudinal relations among precarious work, workplace dignity, and basic need fulfillment (survival, social contribution, and self-determination needs). **Methods:** To examine our hypotheses, we surveyed a group of working adults in the United States three times over three months. However, the study began in March 2020 - before widespread lockdowns, layoffs, and furloughs - and some participants lost their jobs on subsequent waves during April and May 2020. Therefore, a secondary aim of the study was to explore predictors of job loss in the first few months of the COVID-19 pandemic. **Results:** We found that having precarious work in early March 2020 significantly predicted job loss due to COVID-19 in May 2020. For workers who remained employed during this time, greater precarious work predicting lower fulfillment of survival needs over time. In addition, workplace dignity and fulfillment of relatedness needs operated reciprocally, predicting greater levels of each other over time, and greater workplace dignity predicted greater fulfillment of social contribution, autonomy, and competence needs across time. **Conclusion:** These results expand PWT by suggesting that precarious work and workplace dignity are both important work conditions that predict fulfillment of different basic needs over time.

Allan et al. 2022.

Journal of Vocational Behavior, vol. 136.

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

Keywords: Decent work; need satisfaction; psychology of working; underemployment.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9122777/>

Work-related stress among a cohort of Italian long-term care workers during the COVID-19 pandemic: An observational study

Background: Despite long-term care (LTC) workers having been identified as particularly subject to chronic stress, only a few studies evaluated the impact of the COVID-19 pandemic on stress in this population. As far as the authors know, no studies have investigated the relationship between work-related stress and chronic stress in the LTC setting. **Methods:** This retrospective observational study aimed to assess the level of chronic stress in LTC workers, to identify some possible predictors and vulnerability factors, and to measure the impact of the COVID-19 pandemic on work-related stress. **Results:** The study was based on

the information gathered from two different questionnaires administered before and one year after the beginning of the pandemic, to a cohort of Italian LTC workers. We found that chronic stress was associated with lower resilience to stress scores (57.42 vs. 60.66) and with higher work-related stress scores (30.48 vs. 20.83). Interestingly, the overall level of work-related stress did not differ between the two questionnaires (27.84 vs. 29.08). However, the main components of the questionnaires changed; fatigue and burnout symptoms became more relevant after the pandemic. **Conclusion:** Results of this study suggests deepening knowledge of the components of stress to develop and implement effective stress mitigation interventions. **Conti et al. 2022.**

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: COVID-19; healthcare workers mental health; long-term care; mental health; work-related stress.

Evidence Level: 4B

Link: <https://www.mdpi.com/1660-4601/19/10/5874>

Stress in balancing work and family among working parents in Hong Kong

Background: Work-life imbalance might lead to detrimental outcomes, including family dissatisfaction, poor performance in the workplace, and poor mental and physical health. **Methods:** This population-based study aims to explore the situation and trends in regard to work-life balance among working men and women in 2017, with a special focus on the stress experienced in work and personal lives. Descriptive analysis and multiphase regression are used to explore the associations of work-life imbalance with individual and family factors. **Results:** Males' satisfaction with the amount of time spent at work was most significantly related to the level of work-life stress. Both males' and females' satisfaction with work life, family life, and the amount of time spent at work and with family were all negatively related to the level of work-life stress. Participants who were not in marital or cohabiting status reported significantly higher levels of work-life stress. Participants who had childcare support reported higher levels of work-life stress than those who looked after their children by themselves or their partners. A similar pattern was found among participants involved in elderly care. **Conclusion:** This study provides insight into family policy that could promote balance in professional and personal life and relationships.

Chen et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 9.

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Keywords: Childcare; elderly care; satisfaction; stress; work and family balance.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/9/5589>

Enabling Healthy and Safe Workplaces

Health and Wellbeing

This month explores the relationship between health and wellbeing and measures to suppress covid-19 including working from home and telework, and the effect of vaccinations and previous infections. Other topics include strategies to reduce the energy content of foods pre-ordered for lunch in the workplace and the effect of biochemical clusters of endocrine and immune parameters on work ability over a 10 year period

Lessons from past pandemics: A systematic review of evidence-based, cost-effective interventions to suppress COVID-19

Background: In an unparalleled global response, during the COVID-19 pandemic, 90 countries asked 3.9 billion people to stay home. Yet other countries avoided lockdowns and focused on other strategies, like contact tracing. How effective and cost-effective are these strategies? We aimed to provide a comprehensive summary of the evidence on past pandemic controls, with a focus on cost-effectiveness.

Methods: Following PRISMA guidelines, MEDLINE (1946 to April week 2, 2020) and EMBASE (1974 to April

17, 2020) were searched using a range of terms related to pandemic control. Articles reporting on the effectiveness or cost-effectiveness of at least one intervention were included. **Results:** We found 1653 papers; 62 were included. The effectiveness of hand-washing and face masks was supported by randomized trials. These measures were highly cost-effective. For other interventions, only observational and modelling studies were found. They suggested that (1) the most cost-effective interventions are swift contact tracing and case isolation, surveillance networks, protective equipment for healthcare workers, and early vaccination (when available); (2) home quarantines and stockpiling antivirals are less cost-effective; (3) social distancing measures like workplace and school closures are effective but costly, making them the least cost-effective options; (4) combinations are more cost-effective than single interventions; and (5) interventions are more cost-effective when adopted early. For 2009 H1N1 influenza, contact tracing was estimated to be 4363 times more cost-effective than school closure (\$2260 vs. \$9,860,000 per death prevented). **Conclusions:** For COVID-19, a cautious interpretation suggests that (1) workplace and school closures are effective but costly, especially when adopted late, and (2) scaling up as early as possible a combination of interventions that includes hand-washing, face masks, ample protective equipment for healthcare workers, and swift contact tracing and case isolation is likely to be the most cost-effective strategy.

Juneau et al. 2022.

Systematic Reviews, vol. 11, no. 1.

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Keywords: COVID-19; cost-effectiveness; epidemic interventions; non-pharmaceutical interventions; outbreak control; pandemic control.

Evidence Level: 1A

Link: <https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-022-01958-9>

Service workers' well-being during COVID-19: A strengths-based inclusive theory of work perspective

Background: This study tested the Strengths-Based Inclusive Theory of Work (S-BIT of Work), a vocational theory that emphasizes positive psychological and cultural factors, among a sample of service industry workers during COVID-19. **Methods:** Service industry workers (N = 320) were recruited via social media sources across the United States, and structural equation modeling was used to examine the model.

Results: This model included privilege and COVID-19 impact as contextual variables; organizational support and workplace dignity as promotive workplace variables; hope, strengths use, adaptability, empowerment, and perceived COVID-19 threat as individual variables; and fulfilling work and psychological distress as outcome variables. Privilege and workplace dignity were identified as particularly important variables; results suggested privilege was positively associated with a promotive work context and negatively related to psychological distress. Additionally, the greater the amount of privilege and dignity the service industry workers experienced, the greater their positive individual characteristics were able to flourish.

Owens et al. 2022.

Journal of Career Assessment, vol. 30, no. 2.

User License: *PMC Open Access Subset*

Keywords: Fulfilling work; positive psychology; strengths; vocational psychology; well-being.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8977758/>

Work-from-home during covid-19 lockdown: When employees' well-being and creativity depend on their psychological profiles

Background: With the COVID-19 pandemic, governments implemented successive lockdowns that forced employees to work from home (WFH) to contain the spread of the coronavirus. This crisis raises the question of the effects of mandatory work from home on employees' well-being and performance, and whether these effects are the same for all employees. **Methods:** In the present study, we examined whether working at home may be related to intensity, familiarity with WFH, employees' well-being (loneliness at work, stress, job satisfaction, and work engagement) and creativity ('subjective' and 'objective'). We also examined whether the psychological profile of employees, combining preference for solitude and associated personality variables from the Big Five, may influence the effects of WFH. The data

were collected via an online survey from November 13th to December 15th 2020 among 946 employees from various organizations during the second lockdown in France. **Results:** In addition to identifying two distinctive psychological profiles for employees having to WFH, results revealed that those with a "Solitary" profile reported higher loneliness at work, higher levels of stress, and lower levels of job satisfaction and work engagement than those with an "Affiliative" profile. It was also found that employees with a "Solitary" profile perceived themselves as less creative and produced objectively fewer ideas than individuals with an "Affiliative" profile. **Conclusion:** The present study suggests the necessity to distinguish the profiles of teleworkers and to offer a stronger support for the less affiliative employees when working from home.

Michinov et al. 2022.

Frontiers in Psychology, vol. 9.

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Keywords: COVID-19; big-five dimensions; creativity; preference for solitude; well-being; work-from-home.

Evidence Level: 5B

Link: <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.862987/full>

Health status, health-related factors and work environment in Korean semiconductor workers between 1984-2012: A qualitative study and a cross-sectional study

Background: The environment of semiconductor facilities and exposure status has undergone changes. To identify changes in the work environment, health status, and risk factors, a qualitative and cross-sectional study was conducted. **Methods:** For the qualitative study, 38 current and retired workers who worked for at least 10-years were studied; for the cross-sectional study, 306 current workers who worked for at least 5-years based on JEM strata from Samsung Electronics were selected. Participants were asked about occupational history, cancer-relating risk factors during the working period, medical history, dietary habits for the past year, and hematological cancer-relating infection. **Results:** In the qualitative study, fabrication workers reported bladder cystitis, dermatitis in hands, gastritis/ulcer, and dry eye as frequent symptoms during work environment changes (manual to automatic process). In the cross-sectional study, there were no abnormal findings for infection biomarkers related to hematological cancer and spontaneous abortion, and their general health status was no different from the general population. Also, questionnaire feasibility was evaluated for the applicability in the prospective cohort. **Conclusion:** Current semiconductor workers' health status was good compared to other populations. For lifelong health assessment, a cohort study is needed which considers health worker effects and current environments.

Kim et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Cross-sectional study; health-related factors; job-exposure matrix; qualitative study; semiconductor workers; work environment.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/6286>

Changes in occupational well-being during COVID-19: The impact of age, gender, education, living alone, and telework in a Finnish four-wave population sample

Background: This study investigated how occupational well-being evolved across different phases, before and during the COVID-19 outbreak in the Finnish population. Whereas studies have suggested that certain demographic groups (eg, young, female) are more at risk during COVID-19, less is known whether the effects of such demographic factors may vary (i) across different phases of the unfolding viral outbreak and (ii) on different dimensions of occupational well-being. As they are predictors of changes in burnout, job boredom, and work engagement, we examined age, gender, education, living alone, and teleworking. This is the first study to provide such detailed knowledge regarding the changes in various occupational well-being dimensions before and during the COVID-19 outbreak. **Methods:** We collected randomized population panel data at the end of 2019 and conducted three follow-up surveys with 6-month intervals (N=532). The data were analyzed with latent change score models. **Results:** Whereas during spring 2020, occupational well-being slightly improved, in autumn 2020 well-being decreased back to pre-COVID-19 levels. There was an indication of slight increases in job boredom between before COVID-19 and summer

2021. Well-being deteriorated more for the young and those who lived alone. There was also some indication of females, those with lower education, and non-teleworkers experiencing less favorable changes in occupational well-being. Teleworking appeared to have more beneficial effects on well-being for those with lower education. **Conclusions:** The study suggests that only relatively minor changes in well-being took place among the employed population. A particular focus in workplaces should be targeted at younger employees.

Kaltainen et al. 2022.

Scandinavian Journal of Work, Environment and Health, vol. 12.

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Keywords: Occupational wellbeing; COVID-19; age; gender; education; telework; Finnish.

Evidence Level: 4B

Link: <https://www.sjweh.fi/article/4033>

Incidence of SARS-CoV-2 infection among previously infected or vaccinated employees

Background: We aimed to determine the incidence of SARS-CoV-2 infection among individuals with a previous SARS-CoV-2 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 the incidence of SARS-CoV-2 infection between people who were SARS-CoV-2 naïve and unvaccinated, 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/or vaccination for SARS-CoV-2 with either the BNT162b2 or mRNA-1273 vaccines and the reduced incidence of SARS-CoV-2 infection when compared with those naïve and/or unvaccinated to SARS-CoV-2.

Kojima et al. 2022.

International Journal of Infectious Diseases, vol. 18.

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Keywords: COVID-19; incidence; prior infection; reinfection; SARS-CoV-2; vaccination.

Evidence Level: 5B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S1201-9712\(22\)00091-1](https://linkinghub.elsevier.com/retrieve/pii/S1201-9712(22)00091-1)

Strategies to reduce the energy content of foods pre-ordered for lunch in the workplace: A randomised controlled trial in an experimental online canteen

Background: Prompting employees to swap their usual lunches for lower-energy alternatives may help align energy intake with public health recommendations. We tested the effect of offering lower-energy swaps with and without physical activity calorie equivalent (PACE) information on the energy of lunches pre-ordered in an online hypothetical workplace canteen. **Methods:** UK employed adults (n = 2,150) were invited to hypothetically pre-order their lunch from the canteen through a custom-made online platform. They were randomised 1:1:1 to: (i) control: no swaps offered; (ii) lower-energy swaps offered; or (iii) lower-energy swaps offered with PACE information. The primary outcome was the total energy ordered using analysis of covariance and controlling for the energy content of the initial items ordered. Secondary outcomes were swap acceptance rate and intervention acceptability. **Results:** Participants were 54% female, had a mean age of 36.8 (SD = 11.6) and a BMI of 26.3 (SD = 5.6). Compared with an average 819 kcal energy ordered in the control, both the swaps and swaps + PACE interventions significantly reduced average energy ordered by 47 kcal (95% CI: -82 to -13, p = 0.003) and 66 kcal (95% CI: -100 to -31, p <

0.001), respectively. Compared with offering swaps only, the swaps + PACE intervention led to significantly higher swap acceptance (OR: 1.63, 95% CI: 1.27 to 2.09, $p < 0.001$) but did not significantly reduce energy ordered (-19 kcal, 95% CI: -53 to 16, $p = 0.591$). About 65% and 16% of intervention participants found the swap interventions acceptable and unacceptable, respectively, with the swaps + PACE intervention being considered more acceptable than swaps only (OR: 1.32, 95%CI: 1.09 to 1.60, $p < 0.004$).

Conclusion: Offering lower-energy swaps with or without PACE information reduced the energy of pre-ordered lunches experimentally. Both interventions hold promise for reducing the energy of purchased foods and drinks. Trial Registration As Predicted reference number: 56358, 22/01/21, <https://aspredicted.org/pw2qr.pdf>.

Breathnach et al. 2022.

The International Journal of Behavioral Nutrition and Physical Activity, vol. 19, no. 1.

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Keywords: Canteen; lower-energy; lunch; pace; pre-ordering; randomised controlled trial; swaps; workplace.

Evidence Level: 2B

Link: <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-022-01257-5>

Biochemical clusters predict mortality and reported inability to work 10 years later

Background: Chronic systemic inflammation has been linked to premature mortality and limited somatic as well as mental health with consequences for capability to work and everyday functioning. We recently identified three biochemical clusters of endocrine and immune parameters (C-reactive protein (CRP), interleukin-6 (IL-6), fibrinogen, cortisol and creatinine) in participants, age 35-81 years, of the open access Midlife in the United States Study (MIDUS) dataset. These clusters have been validated in an independent cohort of Japanese mid-life adults. Among these clusters, the one characterized by high inflammation coupled with low cortisol and creatinine concentrations was associated with the highest disease burden, referred to as high-risk cluster in the following. The current study aims to further examine the nature of this cluster and specifically whether it predicts mortality and the reported inability to work the last 30 days 10 years after the biomarker assessment. **Methods:** Longitudinally assessed health data from $N = 1234$ individuals were analyzed in the current study. Logistic regression analyses were performed to predict mortality within one decade after first assessment (T_0 = first assessment; T_1 = second assessment). General linear models were used to predict the number of days study participants were unable to work due to health issues in the last 30 days (assessed at T_1 , analyses restricted to individuals < 70 years of age). Biological sex, disease burden, and age at T_0 were used as covariates in all analyses. **Results:** Individuals in the previously identified high-risk cluster had a higher risk for mortality (22% of individuals deceased between T_0 and T_1 versus 10% respectively 9% in the two other clusters). Logistic regression models predicting mortality resulted in a significant difference between individuals from the high-risk cluster compared to those from an identified reference cluster (indicator method, $p = .012$), independently of age and disease burden. Furthermore, individuals in the high-risk cluster reported a higher number of disability days during the past 30 days (3.4 days in the high-risk cluster versus 1.5 respectively 1.0 days in the reference clusters) assessed at T_1 . All pairwise comparisons involving the high-risk cluster were significant (all $ps < .001$). **Conclusions:** Immune-endocrine profiles are predictive of mortality within the following decade over and above age and disease burden. The findings thus highlight the importance of biomarker-based risk profiling that may provide new targets for interventions in the context of preventive medicine in the transition from health to disease and disease-related mortality.

Bertele et al. 2022.

Brain, Behavior and Immunity - Health, vol. 21.

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Keywords: Biomarkers; high-risk cluster; mortality; patient stratification; risk assessment; systemic inflammation.

Evidence Level: 4B

Link: [https://linkinghub.elsevier.com/retrieve/pii/S2666-3546\(22\)00022-9](https://linkinghub.elsevier.com/retrieve/pii/S2666-3546(22)00022-9)

Work Health and Safety

This month we explore health and safety related to female firefighters, safety perception of managers and workers in the construction industry, and resilience and sickness absence, lockdowns and personal protective wear during the covid pandemic. Other topics include the role of ergonomists to reduce ergonomic injuries and the relationship between overtime working patterns and adverse events in work-related suicide cases

Female firefighter work-related injuries in the united states and Canada: An overview of survey responses

Background: This study explored how demographic characteristics, life experiences, and firefighting experiences have an impact on work-related injuries among female firefighters, and described events surrounding such work-related injuries. **Methods:** This online survey was available from June 2019 to July 2020. Questions related to demographic characteristics, life experiences, firefighting experiences, and work-related injuries. Descriptive analyses characterized variables by the presence or absence of work-related injury, injury severity, job assignment, and country of residence. **Results:** There were 1,160 active female firefighter survey respondents from the US and Canada, 64% of whom reported having at least one work-related injury. US respondents made up 67% of the total but 75% of the injured sample. Injured respondents were older, had been in the fire service longer, and had a greater number of fires and toxic exposures than non-injured respondents. Heavier weight, tobacco use, and alcohol consumption were more common among injured respondents. The two most common contributing factors to work-related injuries were human error and firefighter fatigue. Among respondents who reported an injury-related time loss claim, 69% were wearing protective equipment when injured, and 9% of the injuries directly resulted in new policy implementation. **Conclusions:** These findings can help inform resource allocation, and development of new policies and safety protocols, to reduce the number of work-related injuries among female firefighters.

Pawer et al. 2022.

Frontiers in Public Health, vol. 9.

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Keywords: Firefighters; occupational injuries; risk factors for injury; survey; women's health.

Evidence Level: 5B

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2022.861762/full>

Are construction managers from Mars and workers from Venus? Exploring differences in construction safety perception of two key field stakeholders

Background: Persisting high rates of worksite accidents and injuries in construction projects indicate the urge to investigate the root causes and revisit safety practices in this industry. Consonance in perceptions and safety approaches has been identified as a fundamental factor in boosting projects' safety. Discrepancies between how different elements of construction safety are perceived and handled by the key stakeholders, namely managers and workers, could be detrimental to worksite safety. **Methods:** This research studied how, if at all, the perception of four key construction safety components, including 33 sets of pairwise questions, is different in the lens of managers from workers. To explore safety perceptions, 133 construction professionals in the United States participated in the study and expressed their perceptions toward their own and counterparts' (1) safety knowledge, (2) safety culture and commitment, (3) safety performance, and (4) safety support and communication. **Results:** The results indicated that massive gaps in safety perceptions do exist between the construction managers and workers (26 out of 33 areas), and the magnitude varies for different safety elements. In all four categories, both managers and workers perceived a superior safety position for themselves and inferior for their counterparts. Further investigations revealed that the common ground between managers and workers is their consensus on proper communication and safety training as the key solutions to address such discrepancies. **Conclusion:** Construction safety professionals and practitioners can benefit from the results of this study to establish

and implement strategies to foster communication and provide more effective safety training to bridge the existing gaps in the perception of safety by managers and workers.

Namian et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Construction field; construction managers; construction workers; safety culture and commitment; safety knowledge; safety perception; safety performance; safety support and communication; safety training.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/6172>

A machine learning approach to predict resilience and sickness absence in the healthcare workforce during the COVID-19 pandemic

Background: During the COVID-19 pandemic, healthcare workers (HCWs) have faced unprecedented workloads and personal health risks leading to mental disorders and surges in sickness absence. Previous work has shown that interindividual differences in psychological resilience might explain why only some individuals are vulnerable to these consequences. However, no prognostic tools to predict individual HCW resilience during the pandemic have been developed. **Methods:** We deployed machine learning (ML) to predict psychological resilience during the pandemic. The models were trained in HCWs of the largest Finnish hospital, Helsinki University Hospital (HUS, N = 487), with a six-month follow-up, and prognostic generalizability was evaluated in two independent HCW validation samples (Social and Health Services in Kymenlaakso: Kymsote, N = 77 and the City of Helsinki, N = 322) with similar follow-ups never used for training the models. **Results:** Using the most predictive items to predict future psychological resilience resulted in a balanced accuracy (BAC) of 72.7-74.3% in the HUS sample. Similar performances (BAC = 67-77%) were observed in the two independent validation samples. The models' predictions translated to a high probability of sickness absence during the pandemic. **Conclusion:** Our results provide the first evidence that ML techniques could be harnessed for the early detection of COVID-19-related distress among HCWs, thereby providing an avenue for potential targeted interventions.

Lieslehto et al. 2022.

Scientific Reports, vol. 12, no. 1.

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Keywords: Sickness; absence; COVID-19; healthcare workers.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-022-12107-6>

The problem with "ergonomics injuries": What can ergonomists do?

Background: Effects of psychosocial hazards on risk of musculoskeletal disorders (MSDs) are often very substantial, but workplace risk management practices focus largely on biomechanical hazards, as do the risk assessment methods used by ergonomists. Translation of research evidence into more effective workplace practices demands a more holistic risk management framework that encompasses both types of hazard. **Methods:** In this context, we evaluate the validity of different MSD risk assessment methods for different purposes, focusing particularly on requirements for routine workplace risk management. **Results:** These include choice of fit-for-purpose assessment methods, prioritisation of hazards that are most affecting risk, and control actions as high as possible in the risk control hierarchy. **Conclusion:** Ergonomists could facilitate more effective workplace risk management by promoting: awareness of the need for change; improvements to guidance from OHS regulators; research on MSD-related workplace management issues; and professional development programs on this topic for ergonomists and other OHS practitioners.

Macdonald et al. 2022.

Applied Ergonomics, vol. 103.

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Keywords: Musculoskeletal disorders; valid risk assessment; workplace risk management.

Evidence Level: 6A

Link: <https://www.sciencedirect.com/science/article/pii/S0003687022000977?via%3Dihub>

The impact of lockdowns during the COVID-19 pandemic on work-related accidents in Austria in 2020

Background: This study aims to investigate the impact of the lockdowns during the COVID-19 (Corona-Virus-Disease 19) pandemic in Austria on work-related accidents in the year 2020. Apart from the lockdowns, multiple work-related measures were introduced in 2020, such as the new law on short-term work and regulation on accidents during home-office. Their combined effects on work-related accidents are unknown and a secondary parameter of this study. **Methods:** Daily data on the number of accepted and rejected cases of work-related accidents from the Allgemeine Unfallversicherungsanstalt were obtained for the years 2019 and 2020. Based on data provided by the World Health Organization and government publications, the beginning and end dates of national hard and soft lockdown periods were derived. From this database, a difference-in-differences regression analysis on the absolute number of daily work-related accidents was conducted. **Results:** On average 272.3 work-related accidents per day were registered in 2019 and 199.4 in 2020, a statistically significant reduction of 72.9 accidents per day and total decrease of 26,164 less accidents compared to 2019. Both lockdowns had a statistically highly significant effect on work-related accidents: The hard lockdown reduced the average number of daily registered work-related accidents by 40%. The light lockdown phases reduced this number by an average of 51%. Weekends and holidays had the greatest impact on work-related accidents with a reduction of 69% and 73%, respectively. **Conclusion:** Both lockdown qualities during the COVID-19 pandemic in Austria led to a significant reduction in work-related accidents for their duration. These findings merit further investigation with more detailed data on sectors and injury-quality.

Huber et al. 2022.

Wiener klinische Wochenschrift, vol. 134, no. 9-10.

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Keywords: Accidents; occupational injuries; sarscov2; social control; stay at home orders; teleworking.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s00508-022-02013-2>

Overtime working patterns and adverse events in work-related suicide cases: Hierarchical cluster analysis of national compensation data in Japan (fiscal year 2015-2016)

Background: Although various work-related adverse events affect workers' mental health, the association between long working hours and mental disorders remains unclear. We investigated the characteristics of overtime work and work-related adverse events among all cases of compensated work-related suicide in Japan to empirically reveal the context of the serious consequences. **Methods:** We analysed all 167 cases of mental disorders resulting in suicide that were compensated in fiscal year 2015-2016. Hierarchical clustering was applied to the overtime working history. Work-related adverse events were also evaluated as the qualitative aspects of their jobs. **Results:** More than half of the cases committed suicide within a month of developing a mental disorder. The Administrative and professional or engineering workers had a higher suicide rate. The clustering analysis revealed chronic long working hours (19%), gradual increase (27%), or rapid increase (25%) in working hours before the onset of a mental disorder. A group of cases with less overwork experienced more interpersonal conflicts. **Conclusion:** This is the first study to employ a clustering technique to objectively reveal the actual working patterns behind suicide. The patterns of working overtime before the onset of mental disorders varied considerably among the cases. Taking the transition of working overtime into account may provide clearer insight into the relationship between long working hours and workers' mental health. These results highlight the need for countermeasures especially for causes of chronic overworking, drastic increases in working hours, and interpersonal conflicts to prevent work-related suicide.

Nishimura et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 4.

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Keywords: Cluster analysis; Japan; karojisatsu; karoshi; mental health; suicide; working overtime.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007/s00420-021-01760-5>

A retrospective observational insight into COVID-19 exposures resulting from personal protective equipment (PPE) breaches

Background: Healthcare workers (HCWs) stand the risk of acquiring infection directly, while attending to patients or indirectly while handling and testing patient specimens. Considering this, the present study was planned to assess Personal Protective Equipment (PPE) breaches and exposures among HCWs working in COVID-19 wards/ screening areas and to evaluate their COVID-19 positivity rates post-exposure concerning the level of exposure, type of PPE breach, and the cadre of HCWs exposed in COVID-19 wards. **Methods:** This retrospective cross-sectional study involved the analysis of all instances of PPE breaches which occurred during a period of nine months from June 2020 to February 2021 at a tertiary care level hospital in Central India. The analysis included all exposures involving any cadre of HCWs that occurred while handling the patients or while doffing the contaminated PPE in COVID -19 wards. **Results:** A total of 347 PPE breaches were analyzed from the available records of the Hospital Infection Control team repository. Amongst the 347 breaches, 268 (77.2%) were classified as low-risk exposures and 79 (22.8%) as high-risk exposures. Cadre wise distribution of high and low-risk exposures revealed that, PPE breaches occurred most commonly in the category of nursing officers (n = 174, 50.1%). Among all of the breaches, 15.2% of high-risk exposures and 2.6% of low-risk exposures resulted in COVID-19 positivity with a cumulative positivity of 5.4%. Collectively, non-mask related breaches accounted for the majority (63.2%) of the positive COVID-19 cases. **Conclusion:** Appropriate use of PPE by HCWs is vital for their protection. However, breaches in the use of PPE may occur while managing COVID-19 patients due to physical and mental exhaustion among HCWs resulting from work overload. Early identification and appropriate management of HCWs with high-risk exposures can help prevent transmission to other hospital staff and patients, thus preserving resources and workforce.

Gaikwad et al. 2022.

PLoS One, vol. 17, no. 5.

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Keywords: COVID-19; personal protective equipment; breaches; COVID wards.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0268582>

Personal protection equipment and infection control procedures among health workers during the COVID-19 pandemic

Background: Health workers have been particularly affected by the COVID-19 pandemic, but it is unclear which healthcare professions are more exposed. We search for information that can help identify health workers who are employed in exposure-prone professions and who, therefore, routinely wear and adopt strict infection control equipment and measures from other colleagues. **Methods:** Our purpose is to test the hypothesis that health professionals historically considered less exposure-prone are affected more severely by COVID-19. **Results:** Taking dentists as an example of exposure-prone healthcare professionals, this study aims to analyze data on COVID-19-related deaths reported by the Italian board of doctors and dentists' database to evaluate the number of COVID-19-related deaths of doctors and dentists in Italy from the beginning of the pandemic to 31 December 2022. As of 31 December 2021, out of 364 deaths, 38 were dentists, and of the remaining 326 doctors, 140 were general practitioners (GPs). The percentage of deaths among dentists, total doctors and GPs results in 0.06%, 0.09% and 0.33%, respectively, for the whole sample. Excluding subjects over 70 years of age, the corresponding values are 0.05%, 0.06% and 0.25%. Most of the deaths occurred in Lombardia, and the geographical distribution overlaps the trend of the corresponding general Italian population. **Conclusion:** Considering the outcome of "death", dentists, despite being at high risk, are not particularly affected by COVID-19.

Carmagnola et al. 2022.

Healthcare (Basel), vol. 10, no. 5.

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Keywords: COVID-19; PPE; dental care professionals; exposure-prone; general practitioners.

Evidence Level: 5A

Link: <https://www.mdpi.com/2227-9032/10/5/944>

Non-standard employment and unemployment during the COVID-19 crisis: Economic and health findings from a six-country survey study

Background: The COVID-19 crisis is a global event that has created and amplified social inequalities, including an already existing and steadily increasing problem of employment and income insecurity and erosion of workplace rights, affecting workers globally. **Methods:** The aim of this exploratory study was to review employment-related determinants of health and health protection during the pandemic, or more specifically, to examine several links between non-standard employment, unemployment, economic, health, and safety outcomes during the COVID-19 pandemic in Sweden, Belgium, Spain, Canada, the United States, and Chile, based on an online survey conducted from November 2020 to June 2021. The study focused on both non-standard workers and unemployed workers and examined worker outcomes in the context of current type and duration of employment arrangements, as well as employment transitions triggered by the COVID-19 crisis. **Results:** The results suggest that COVID-19-related changes in non-standard worker employment arrangements, or unemployment, are related to changes in work hours, income, and benefits, as well as the self-reported prevalence of suffering from severe to extreme anxiety or depression. The results also suggest a link between worker type, duration of employment arrangements, or unemployment, and the ability to cover regular expenses during the pandemic. Additionally, the findings indicate that the type and duration of employment arrangements are related to the provision of personal protective equipment or other COVID-19 protection measures. **Conclusion:** This study provides additional evidence that workers in non-standard employment and the unemployed have experienced numerous and complex adverse effects of the pandemic and require additional protection through tailored pandemic responses and recovery strategies.

Gunn et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: Atypical employment; health equity; income and employment insecurities; lack of workplace rights; mental health; occupational health and safety; worker health and well-being.

Evidence Level: 4b

Link: <https://www.mdpi.com/1660-4601/19/10/5865>

Industrial construction safety policies and practices with cost impacts in a COVID-19 pandemic environment: A Louisiana DOW case study

Background: There are always significant challenges in improving the safety culture by changing and adding additional safety protocols. The unknown impacts of COVID-19 and how it quickly spreads led the industry to institute essential safety protocols. **Methods:** This paper addresses two problem statements. The first problem statement is: what are the additional safety protocols for process safety, construction & maintenance, and personal protective equipment requirements? The second problem statement is: what are the cost and schedule impacts of industrial construction projects resulting from implementing safety protocols and process safety during construction with the added PPE? While complying with added safety protocols, the industrial construction industry cannot forget that it has a distinct reputation for high incident rates and less than desirable safety performance. **Results:** In 2017, the construction industry suffered 971 fatalities. This alarming number is compared to 1123 total fatalities in 2017 for the Gulf Coast States. The objective is to share the rationale and practices of social distancing, required additional PPE, and personal hygiene practices to reduce spreading and outbreaks during a pandemic within an industrial construction environment. Before any construction work, the process safety teams must clear, isolate, and tag out process lines, equipment, and instruments to be repaired or replaced. **Conclusion:** The information presented demonstrates the significant cost and schedule impacts that industrial construction companies will encounter during a pandemic like COVID-19. This paper aims to improve safety processes, cost & schedule impacts, and prescribe additional personal protective equipment in industrial construction during a pandemic such as COVID-19. The COVID-19 pandemic spread globally in a very short period. The reactions in mitigating the spread were suggestive, with little to no data on safety protective equipment and practices. The contribution this paper addresses are how to employ efficient safety practices and policies during a pandemic in an industrial construction environment.

Briggs et al. 2022.

Journal of Loss Prevention in the Process Industries, vol. 76.

User License: Elsevier Connect COVID-19 resource centre

Keywords: COVID-19 costs; construction safety; louisiana; ppe; sanitizing; social distancing.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8719009/>

Risk Assessment

Chronic Health Issues

This month we explore the chronic health issues associated with early axial spondyloarthritis, and celiac disease

How do clinical and socioeconomic factors impact on work disability in early axial spondyloarthritis? Five-year data from the DESIR cohort

Background: To investigate the impact of clinical and socioeconomic factors on work disability (WD) in early axial spondyloarthritis (axSpA). **Methods:** Patients from the DESIR cohort with a clinical diagnosis of axSpA were studied over 5 years. Time to WD and potential baseline and time-varying predictors were explored, with a focus on socioeconomic (including ethnicity, education, job-type, marital/parental status) and clinical (including disease activity, function, mobility) factors. Univariable analyses, collinearity and interaction tests guided subsequent multivariable time-varying Cox survival analyses. **Results:** From 704 patients eligible for this study, the estimated incidence of WD among those identified as at risk ($n = 663$, 94%), and across the five years of DESIR, was 0.05 (95% CI 0.03, 0.06) per 1000 person-days. Significant differences in baseline socioeconomic factors, including lower educational status and clinical measures, including worse disease activity, were seen in patients developing WD over follow-up, compared with those who never did. In the main multivariable model, educational status was no longer predictive of WD, whereas the AS disease activity score (ASDAS) and the BASFI were significantly and independently associated with a higher hazard of WD [HR (95%CI) 1.79 (1.27, 2.54) and 1.42 (1.22, 1.65), respectively]. **Conclusion:** WD was an infrequent event in this early axSpA cohort. Nevertheless, clinical factors were among the strongest predictors of WD, over socioeconomic factors, with worse disease activity and function independently associated with a higher hazard of WD. Disease severity remains a strong predictor of adverse work outcome even in early disease, despite substantial advances in therapeutic strategies in axSpA.

Nikiphorou et al. 2022.

Rheumatology, vol. 61, no. 5.

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Keywords: Adverse work outcomes; axSpA; disease activity; socioeconomic factors; work disability.

Evidence Level: 4B

Link: <https://academic.oup.com/rheumatology/article/61/5/2034/6329842?login=true>

Work loss in patients with celiac disease: A population-based longitudinal study

Background & aims: Celiac disease (CD) affects around 1% of the population worldwide. Data on work disability in patients with CD remain scarce. We estimated work loss in patients with CD, including its temporal relationship to diagnosis. **Methods:** Through biopsy reports from Sweden's 28 pathology departments, we identified 16,005 working-aged patients with prevalent CD (villus atrophy) as of January 1, 2015, and 4936 incident patients diagnosed with CD in 2008 to 2015. Each patient was matched to up to 5 general-population comparators. Using nationwide social insurance registers, we retrieved prospectively recorded data on compensation for sick leave and disability leave to assess work loss in patients and comparators. **Results:** In 2015, patients with prevalent CD had a mean of 42.5 lost work days as compared with 28.6 in comparators (mean difference, 14.7; 95% confidence interval [CI], 13.2-16.2), corresponding to a relative increase of 49%. More than one-half of the work loss (60.1%) in patients with CD was derived from a small subgroup (7%), whereas 75.4% had no work loss. Among incident patients, the annual mean difference between patients and comparators was 8.0 days (range, 5.4-10.6 days) of lost work 5 years

before CD diagnosis, which grew to 13.7 days (range, 9.1-18.3 days) 5 years after diagnosis. No difference in work loss was observed between patients with or without mucosal healing at follow-up.

Conclusions: Patients with CD lost more work days than comparators before their diagnosis, and this loss increased after diagnosis. Identifying patients with an increased risk of work loss may serve as a target to mitigate work disability, and thereby reduce work loss, in patients with CD.

Bozorg et al. 2022.

Clinical Gastroenterology and Hepatology, vol. 20, no. 5.

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Keywords: Absenteeism; cost; economic burden; health economics.

Evidence Level: 4B

Link: [https://www.cghjournal.org/article/S1542-3565\(21\)00966-6/fulltext](https://www.cghjournal.org/article/S1542-3565(21)00966-6/fulltext)

Occupational Exposure

This month we explore occupational exposures related to noise during pregnancy, covid-19, nitrous oxide, cutaneous larva migrans, fresh air system on the indoor environment, nanoparticles, plasma proteins, silica, soil ingestion, extreme heat, cleaning products and pesticides

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

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

Vincens et al. 2022.

Reviews on Environmental Health, vol. 3.

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

Evidence Level: 6A

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

Validation of a covid-19 job exposure matrix (covid-19-jem) for occupational risk of a sars-cov-2 infection at work: Using data of dutch workers

Background: A COVID-19 Job Exposure Matrix (COVID-19-JEM) has been developed, consisting of four dimensions on transmission, two on mitigation measures, and two on precarious work. This study aims to validate the COVID-19-JEM by (i) comparing risk scores assigned by the COVID-19-JEM with self-reported data, and (ii) estimating the associations between the COVID-19-JEM risk scores and self-reported COVID-19. **Methods:** Data from measurements 2 (July 2020, n = 7690) and 4 (March 2021, n = 6794) of the

Netherlands Working Conditions Survey-COVID-19 (NWCS-COVID-19) cohort study were used. Responses to questions related to the transmission risks and mitigation measures of Measurement 2 were used to calculate self-reported risk scores. These scores were compared with the COVID-19-JEM attributed risk scores, by assessing the percentage agreement and weighted kappa (κ). Based on Measurement 4, logistic regression analyses were conducted to estimate the associations between all COVID-19-JEM risk scores and self-reported COVID-19 (infection in general and infected at work). **Results:** The agreement between the COVID-19-JEM and questionnaire-based risk scores was good ($\kappa \geq 0.70$) for most dimensions, except work location ($\kappa = 0.56$), and face covering ($\kappa = 0.41$). Apart from the precarious work dimensions, higher COVID-19-JEM assigned risk scores had higher odds ratios (ORs; ranging between 1.28 and 1.80) on having had COVID-19. Associations were stronger when the infection were thought to have happened at work (ORs between 2.33 and 11.62). **Conclusions:** Generally, the COVID-19-JEM showed a good agreement with self-reported infection risks and infection rates at work. The next step is to validate the COVID-19-JEM with objective data in the Netherlands and beyond.

van der Feltz et al. 2022.

Annals of Work, Exposure and Health, vol. 18.

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

Keywords: COVID-19; Job Exposure Matrix; SARS-CoV-2 infection; mitigation measures; precarious work; transmission risk.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9129190/>

Nitrous oxide-induced reproductive risks: Should recreational nitrous oxide users worry?

Background: Nitrous oxide (N₂O) is a frequently used anaesthetic. Since the year 2000, recreational use of N₂O, also known as 'laughing gas', became popular as a recreational drug due to its mild *psychedelic* effect. In the 1980s, several reports warned against N₂O-induced reproductive risks among healthcare personnel, questioning the occupational safety of N₂O in health care. **Methods:** Data about the reproductive risks of N₂O were collected from literature. **Results:** Particularly in the past, professionals working in dental and midwifery practices, operating theatres and ambulance transport were exposed to high levels of N₂O. Adverse reproduction effects included congenital anomalies, spontaneous abortion and reduced fertility rates in females. Following occupational measures, like maximal exposure limits for ambient N₂O, this occupational risk was considerably reduced. Recreational users of N₂O, however, voluntarily and repeatedly expose themselves to (very) high doses of N₂O. As such, they exceed the health exposure limits some hundred times, but they are fully unaware of the related reproductive risks. **Conclusion:** We advocate to increase the awareness in recreational N₂O-users about its potential reproductive risks, especially in heavy users, pregnant users or those who intend to become pregnant.

van Amsterdam et al. 2022.

Journal of Psychopharmacology, vol. 5.

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Keywords: Nitrous oxide; abortion; congenital anomalies; laughing gas; recreative drugs; reproduction.

Evidence Level: 6A

Link: <https://journals.sagepub.com/doi/full/10.1177/02698811221077194>

Occupational risk of cutaneous larva migrans: A case report and a systematic literature review

Background: Cutaneous larva migrans (CLM) is a parasitic zoonosis of warm tropical and subtropical areas, although autochthonous cases have been increasingly reported in Western European countries.

Methods: Data on the prevalence of CLM as an occupational disease in workers exposed to potentially contaminated soil or in close contact with dogs and cats are scant. **Results:** Herein, we report an autochthonous case of CLM in a dog breeder from southern Italy (Apulia region), along with a systematic literature review describing the risk of CLM infection, mainly according to job categories. The patient was referred to the dermatology unit presenting a serpiginous lesion on his hand, raising the suspected CLM diagnosis. In non-endemic areas, CLM might represent a challenge for physicians in terms of diagnosis, treatment, and prevention, particularly in workplaces. **Conclusion:** The multidisciplinary approach in the

diagnosis of CLM with the involvement of different scientific competences (i.e., dermatologists, veterinarians, and occupational physicians) may contribute to further assess the distribution of human CLM and associated risk factors, toward reducing the risk for the infection.

Stufano et al. 2022.

PLoS Neglected Tropical Diseases, vol. 16, no. 5.

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Keywords: Parasite; tropical; cutaneous larva migrans.

Evidence Level: 5B

Link: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0010330>

Analysis of the impact of a fresh air system on the indoor environment in office buildings

Background: This study conducted objective physical tests and subjective questionnaire surveys related to the operation of a fresh air system in an office building in Beijing before the outbreak of the coronavirus disease 2019 (COVID-19). **Methods:** The long-term tests on indoor environmental parameters included air temperature, relative air humidity, air velocity, CO₂ concentration, PM_{2.5} concentration, and fresh air volume, and the questionnaire surveyed the satisfaction of office workers in the indoor environment.

Results: The results showed that the indoor environmental parameters conformed to the values specified in relevant design standards; however, the satisfaction with the indoor environmental parameters was generally low. The probability of infection of indoor personnel with the virus causing COVID-19 under two existing fresh air system operation modes was calculated and compared, and it was less than 5%. A gray correlation analysis of the measured data with the questionnaire results identified indoor air temperature and quality as the main factors affecting the subjective satisfaction, which was consistent with the results of the questionnaire analysis. **Conclusion:** A new operation and maintenance method for fresh air systems was proposed for regular epidemic prevention and control to ensure the normal operation of the office building and the health of indoor personnel.

Niu et al. 2022.

Sustainable Cities and Society, vol. 83.

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

Keywords: Air quality; COVID-19; fresh air system; gray correlation method; indoor environment.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9093101/>

Exposures, symptoms and risk perception among office workers in relation to nanoparticles in the work environment

Background: Submicroscopic nanoparticles (NPs) in air have received much attention due to their possible effects on health and wellbeing. Adverse health impacts of air pollution may not only be associated with level of exposure, but also mediated by the perception of the pollution and by beliefs of the exposure being hazardous. **Methods:** The aim of this study was to test a model that describes interrelations between NP pollution, perceived air quality, health risk perception, stress, and sick building syndrome. In the NanoOffice study, the level of NPs was measured and a survey on health risk perception was conducted among 260 employees in twelve office buildings in northern Sweden. Path analyses were performed to test the validity of the model. **Results:** The data refute the model proposing that the NP exposure level significantly influences stress, chronic diseases, or SBS symptoms. Instead, the perceived exposure influences the perceived risk of NP, and the effect of perceived exposure on SBS and chronic disease is mediated by stress. There was little concern about nanoparticles, despite relatively high levels in some facilities. Perceived pollution and health risk perception may explain a large part of the environmentally induced symptoms and diseases, particularly in relatively low levels of pollution. The research results raise important questions on the physiologically or psychologically mediated health effects of air pollution.

Orru et al. 2022.

International Journal of Environmental Research and Public Health, vol. 19, no. 10.

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Keywords: SBS; exposure; nanoparticles; path analysis; risk perception; work environment.

Evidence Level: 5B

Link: <https://www.mdpi.com/1660-4601/19/10/5789>

Key considerations for assessing soil ingestion exposures among agricultural workers

Background: Soil ingestion is a critical, yet poorly characterized route of exposure to contaminants, particularly for agricultural workers who have frequent, direct contact with soil. **Objective:** This qualitative investigation aims to identify and characterize key considerations for translating agricultural workers' soil ingestion experiences into recommendations to improve traditional exposure science tools for estimating soil ingestion. **Methods:** We conducted qualitative in-depth interviews with 16 fruit and vegetable growers in Maryland to characterize their behaviors and concerns regarding soil contact in order to characterize the nature of soil ingestion in the agricultural context. **Results:** We identified and discussed four emergent themes: (1) variability in growers' descriptions of soil and dust, (2) variability in growers' soil contact, (3) growers' concerns regarding soil contact, (4) growers' practices to modify soil contact. We also identified environmental and behavioral factors and six specific agricultural tasks that may impact soil ingestion rates. **Significance:** Our investigation fills an important gap in occupational exposure science methodology by providing four key considerations that should be integrated into indirect measurement tools for estimating soil ingestion rates in the agricultural context. Specifically, a task-based framework may provide a structure for future investigations of soil contact that may be useful in other populations.

Lupolt et al. 2022.

Journal of Exposure Science and Environmental Epidemiology, vol. 32, no. 3.

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Keywords: Agriculture; exposure factor; farmers; soil ingestion.

Evidence Level: 5B

Link: <https://www.nature.com/articles/s41370-021-00339-z>

Extreme heat and COVID-19: A dual burden for farmworkers

Background: Currently, there is an extensive literature examining heat impacts on labor productivity and health, as well as a recent surge in research around COVID-19. However, to our knowledge, no research to date examines the dual burden of COVID-19 and extreme heat on labor productivity and laborers' health and livelihoods. **Methods:** To close this research gap and shed light on a critical health and livelihood issue affecting a vulnerable population, we urge researchers to study the two topics in tandem. Because farmworkers have a high incidence of COVID-19 infections and a low rate of inoculation, they will be among those who suffer most from this dual burden. In this article, we discuss impacts from extreme heat and COVID-19 on farm laborers. **Results:** We provide examples from the literature and a conceptual framework showing the bi-directional nature of heat impacts on COVID-19 and vice versa. **Conclusion:** We conclude with questions for further research and with specific policy recommendations to alleviate this dual burden. If implemented, these policies would enhance the wellbeing of farmworkers through improved unemployment benefits, updated regulations, and consistent implementation of outdoor labor regulations. Additionally, policies for farmworker-related health needs and cultural aspects of policy implementation and farmworker outreach are needed. These and related policies could potentially reduce the dual burden of COVID-19 and extreme heat impacts while future research explores their relative cost-effectiveness.

López-Carr et al. 2022.

Frontiers in Public Health

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Keywords: COVID-19; EPI-epidemiology; dual burden of disease; extreme heat; farm labor; farm work; public health.

Evidence Level: 6A

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2022.884152/full>

Plasma proteins as occupational hazard risk monitors for populations working in harsh environments: A mendelian randomization study

Background: Harsh work environments can include very cold, hot, dusty, and noisy workplaces, as well as exposure in the workplace with chemicals and other fumes, cigarette smoke, and diesel exhaust. Although working in these harsh environments can have a negative effect on health, there are no effective

biomarkers for monitoring health conditions until workers develop disease symptoms. Plasma protein concentrations, which reflect metabolism and immune status, have great potential as biomarkers for various health conditions. **Methods:** Using a Mendelian-randomization (MR) design, this study analyzed the effects of these harsh environments on plasma proteins to identify proteins that can be used as biomarkers of health status. **Results:** Preliminary analysis using inverse variance weighted (IVW) method with a p-value cutoff of 0.05 showed that workplace environments could affect the concentrations of hundreds of plasma proteins. After filtering for sensitivity via MR-Egger, and Weighted Median MR approaches, 28 plasma proteins altered by workplace environments were identified. Further MR analysis showed that 20 of these plasma proteins, including UNC5D, IGFBP1, SCG3, ST3GAL6, and ST3GAL2 are affected by noisy workplace environments; TFF1, RBM39, ACYP2, STAT3, GRB2, CXCL1, EIF1AD, CSNK1G2, and CRKL that are affected by chemical fumes; ADCYAP1, NRSN1, TMEM132A, and CA10 that are affected by passive smoking; LILRB2, and TENM4 that are affected by diesel exhaust, are associated with the risk of at least one disease. **Conclusion:** These proteins have the potential to serve as biomarkers to monitor the occupational hazards risk of workers working in corresponding environments. These findings also provide clues to study the biological mechanisms of occupational hazards.

Li et al. 2022.

Frontiers in Public Health,

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Keywords: Mendelian randomization; biomarker; occupational hazards; plasma protein; workplace environment.

Evidence Level: 5A

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2022.852572/full>

Demographic, exposure and clinical characteristics in a multinational registry of engineered stone workers with silicosis

Background: To investigate differences in workplace exposure, demographic and clinical findings in engineered stone (ES) workers from a multinational consortium using the Engineered Stone Silicosis Investigators (ESSI) Global Silicosis Registry. **Methods:** With ethics board approval in Israel, Spain, Australia and the USA, ES workers ages 18+ with a physician diagnosis of work-related silicosis were enrolled. Demographic, occupational, radiologic, pulmonary function and silica-related comorbidity data were compared cross-sectionally among countries using analysis of variance, Fisher's exact tests and logistic regression. **Results:** Among 169 ES workers with silicosis, most were men, with mean age 51.7 (± 11.4) years. Mean work tenure in stone fabrication or masonry was 19.9 (± 9.8) years. Different methods of case ascertainment explained some inter-country differences, for example, workers in Queensland, Australia with a state-based surveillance program were likely to be identified earlier and with shorter work tenure. Overall, 32.5% of workers had progressive massive fibrosis, the most severe form of dust-related pneumoconiosis, of whom 18.5% reported ≤ 10 years of work tenure. Lung function impairment including restriction, reduced diffusion capacity and hypoxaemia was common, as was autoimmunity. **Conclusions:** Findings from a multinational registry represent a unique effort to compare demographic, exposure and clinical information from ES workers with silicosis, and suggest a substantial emerging population of workers worldwide with severe and irreversible silica-associated diseases. This younger worker population is at high risk for disease progression, multiple comorbidities and severe disability. The ESSI registry provides an ongoing framework for investigating epidemiological trends and developing prospective studies for prevention and treatment of these workers.

Hua et al. 2022.

Occupational and Environmental Medicine, vol. 3.

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Keywords: Cross-sectional studies; dust; occupational health; respiratory function tests; silicosis.

Evidence Level: 4B

Link: <https://oem.bmj.com/content/early/2022/05/02/oemed-2021-108190.long>

The relationship between cleaning product exposure and respiratory and skin symptoms among healthcare workers in a hospital setting: A systematic review and meta-analysis

Background and aims: Several studies from multiple work settings have reported an increase in asthma and asthma-like respiratory symptoms in workers exposed to cleaning or disinfecting agents. Hospital workers perform many cleaning and disinfecting activities and may be vulnerable to respiratory and skin symptoms caused by these agents. This systematic review and meta-analysis aim to quantify the risk of asthma and asthma-like symptoms in hospital workers exposed to cleaning/disinfecting agents. A secondary aim is to assess associated risks of skin symptoms in those studies. **Methods:** MEDLINE, EMBASE, CDSR, CENTRAL, CINAHL databases, and references of relevant review articles were searched. NHLBI quality assessment tools were used to assess the quality of the included studies. A total of 2550 articles were retrieved and 34 studies met criteria to be included. The software R version 4.0.5 was used to perform the meta-analysis. The random-effects model was used to pool the results due to within-studies heterogeneity. **Results:** Meta-analysis of 10 studies evaluating the association between occupational cleaning exposures and asthma demonstrated a 35% increased risk in exposed hospital workers (meta-RR = 1.35, 95% CI: 1.09-1.68). The risk of asthma increased when workers were exposed to bleach compared with nonexposed workers (meta-RR = 1.51, 95% CI: 0.54-4.18), but was not statistically significant. Two studies investigated the relationship between respiratory and skin symptoms and produced mixed results. **Conclusions:** The results suggest a need for preventive practices to reduce the risk of asthma and asthma-like symptoms in hospital workers exposed to occupational cleaning/disinfecting agents. Trial registration number: CRD42020137804.

Dang et al. 2022.

Health Science Reports, vol. 5, no. 3.

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Keywords: Asthma; cleaning; disinfecting agents; hospital workers; respiratory symptoms.

Evidence Level: 1A

Link: <https://onlinelibrary.wiley.com/doi/10.1002/hsr2.623>

Pesticide exposure of workers in apple growing in France

Background: Although apple trees are heavily sprayed, few studies have assessed the pesticide exposure of operators and workers in apple orchards. However, these data are crucial for assessing the health impact of such exposures. The aim of this study was to measure pesticide exposure in apple growing according to tasks and body parts. **Methods:** A non-controlled field study was conducted in apple orchards in 4 regions of France during the 2016 and 2017 treatment seasons. Workers' external contamination and their determinants were assessed over 156 working days corresponding to 30 treatment days, 68 re-entry days and 58 harvesting days. We measured pesticide dermal contamination during each task and made detailed observations of work characteristics throughout the day. Captan and dithianon were used as markers of exposure. **Results:** The median dermal contamination per day was 5.50 mg of captan and 3.33 mg of dithianon for operators, 24.39 mg of captan and 1.84 mg of dithianon for re-entry workers, and 5.82 mg of captan and 0.74 mg of dithianon for harvesters. Thus, workers performing re-entry tasks, especially thinning and anti-hail net opening, presented higher contamination, either equal to or higher than in operators. For these last ones, mixing/loading and equipment cleaning were the most contaminating tasks. Most of the contamination was observed on workers' hands in all tasks, except for net-opening in which their heads accounted for the most daily contamination. **Conclusions:** This study highlights the importance of taking indirect exposures into account during re-entry work in apple growing.

Bureau et al. 2022.

International Archives of Occupational and Environmental Health, vol. 95, no. 4.

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Keywords: Apple growing; captan; dermal contamination; dithianon; occupational exposure; pesticides.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007/s00420-021-01810-y>

Sedentary Practices

Barriers and facilitators influencing the implementation of the occupational health intervention 'Dynamic Work': A qualitative study

Background: Sedentary behavior is associated with an increased risk of morbidity and mortality. To reduce occupational sitting time of office workers, the multi-component intervention 'Dynamic Work' was implemented in a Dutch insurance company. Although the results showed no significant reductions in sitting time, associations were found between higher levels of implementation and reductions in sitting time. Building upon these findings, this qualitative study aimed to identify barriers and facilitators from an organizational perspective for the implementation of Dynamic Work. In addition, we explored differences in barriers and facilitators between departments with a low, middle and high level of implementation.

Methods: In total, eighteen semi-structured interviews were conducted with two Dynamic Work coordinators, three occupational physiotherapists who delivered the intervention, and thirteen department managers. All participants were purposively sampled. The data was coded in Atlas.ti and a thematic analysis was performed guided by The Integrated Checklist of Determinants (TICD). **Results:** Implementation factors were related to the organization; working culture and financial support facilitated implementation. Factors related to the implementing department mainly hindered implementation, i.e. lack of information at start of the project, late delivery of Dynamic Work equipment, large group sizes, employee's workload and work tasks, and an ongoing reorganization. The facilitating role of managers was experienced as both enabling and hindering. The pre-existing familiarity of the occupational physiotherapists with the departments and alignment amongst the three implementers facilitated implementation. Yet, the non-obligatory nature of the intervention as well as limited availability and technical problems of equipment did not support implementation. **Conclusions:** Various barriers and facilitators influenced the implementation of the Dynamic Work intervention, where the key role of the department manager, late delivery of dynamic work equipment and groups sizes varied between low and high implementing departments. These results can contribute to developing and improving implementation strategies in order to increase the effectiveness of future occupational health interventions.

Mastenbroek et al. 2022.

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

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Keywords: Barriers; facilitators; implementation; intervention; occupational health; office workers; qualitative study; sedentary behavior; sitting time.

Evidence Level: 5B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-13230-9>

Musculoskeletal Health

This month explores the relationship between musculoskeletal health and long working hours and ergonomic risk factors, and patient education and strengthening exercise therapy

Influence of coexposure to long working hours and ergonomic risk factors on musculoskeletal symptoms: An interaction analysis

Background: This study explores the interaction between ergonomic risk factors and long working hours on musculoskeletal symptoms by additive and multiplicative scales. **Method:** We used the data of the fifth Korean Working Condition Survey (KWCS). The KWCS is a cross-sectional study. Setting: To represent the entire Korean working population, the probability proportion stratified cluster sampling method was used. The face-to-face interview was carried out with a structured questionnaire. Main outcomes and measures: To assess the combined effect of ergonomic risk factors and long working hours on musculoskeletal symptoms, the relative excess risk due to interaction (RERI) and the ratio of ORs were calculated using multiple survey-weighted logistic analysis and postestimation commands.

Results: The OR for musculoskeletal symptoms was 1.75 (95% CI 1.28 to 1.39) for exposure to long working hours, 3.49 (95% CI 3.06 to 3.99) for exposure to ergonomic risk factors and 5.07 (95% CI 4.33 to 5.93) for coexposure to long working hours and ergonomic risk factors. The RERI was 0.82 (95% CI 0.11 to 1.53) and the ratio of ORs was 0.83 (95% CI 0.50 to 1.14) **Conclusion:** Our findings suggest that coexposure to both

ergonomic risk factors and long working hours has a supra-additive interaction effect on musculoskeletal symptoms. Regulations on working hours and workplace interventions might reduce the musculoskeletal diseases of workers.

Park et al. 2022.

BMJ Open, vol. 12, no. 5.

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Keywords: Epidemiology; musculoskeletal disorders; occupational & industrial medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/12/5/e055186.long>

Evaluation of the effect of patient education and strengthening exercise therapy using a mobile messaging app on work productivity in Japanese patients with chronic low back pain: Open-label, randomized, parallel-group trial

Background: Artificial intelligence-assisted interactive health promotion systems are useful tools for the management of musculoskeletal conditions. Objective: This study aimed to explore the effects of web-based video patient education and strengthening exercise therapy, using a mobile messaging app, on work productivity and pain in patients with chronic low back pain (CLBP) receiving pharmacological treatment.

Methods: Patients with CLBP were randomly allocated to either the exercise group, who received education and exercise therapy using a mobile messaging app, or the conventional group. For patient education, a web-based video program was used to provide evidence-based thinking regarding the importance of a cognitive behavioral approach for CLBP. The exercise therapy was developed in accordance with the recommendations for alignment, core muscles, and endogenous activation, including improvement of posture and mobility for proper alignment, stimulation and/or strengthening of deep muscles for spinal stability, and operation of intrinsic pain for the activation of endogenous substances by aerobic exercise. Both groups continued to receive the usual medical care with pharmacological treatment. The end points were changes in work productivity, pain intensity, quality of life, fear of movement, and depression. The observation period for this study was 12 weeks. An analysis adjusted for baseline values, age at the time of consent acquisition, sex, and willingness to strengthen the exercise therapy was performed. **Results:** The exercise and conventional groups included 48 and 51 patients, with a mean age of 47.9 years (SD 10.2 years; n=27, 56.3% male patients) and 46.9 years (SD 12.3 years; n=28, 54.9% male patients) in the full analysis set, respectively. No significant impact of these interventions on work productivity was observed in the exercise group compared with the conventional group (primary end point: Quantity and Quality method; 0.062 vs 0.114; difference between groups -0.053, 95% CI -0.184 to 0.079; P=.43). However, the exercise group showed consistently better trends for the other end points than did the conventional group. Compared with the conventional group, the exercise group showed a significant improvement in the symptoms of low back pain (3.2 vs 3.8; difference between groups -0.5, 95% CI -1.1 to 0.0; P=.04), quality of life (EuroQoL 5 Dimensions 5 Level: 0.068 vs 0.006; difference between groups 0.061, 95% CI 0.008 to 0.114; P=.03), and fear of movement at week 12 (-2.3 vs 0.5; difference between groups -2.8, 95% CI -5.5 to -0.1; P=.04). **Conclusions:** This study suggests that patient education and strengthening exercise therapy using a mobile messaging app may be useful for treating CLBP. This study does not reveal the effect of therapeutic interventions on CLBP on work productivity. Thus, further research is required to assess work productivity with therapeutic interventions.

Itoh et al. 2022.

JMIR, vol. 10, no. 5.

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Keywords: Chronic low back pain; exercise regimen; mobile app; mobile phone; patient education.

Evidence Level: 2A

Link: <https://mhealth.jmir.org/2022/5/e35867/>

Characteristics of office workers who benefit most from interventions for preventing neck and low back pain: A moderation analysis

Background: Neck and low back pain are significant health problem in sedentary office workers. Active break and postural shift interventions has been proved to reduce the incidence of new onset of both neck

and low back pain. Objectives: To identify variables that moderate the effects of active breaks and postural shift interventions on the development of neck and low back pain in office workers. **Methods:** Using data from a 3-arm (active break, postural shift, and control group) cluster randomized controlled trial (N = 193), we evaluated the moderating effects of age, job position, education level, sex, perceived psychological work demands, number of working hours, and using a chair with lumbar support on the benefits of 2 interventions designed to prevent the development of neck and low back pain in office workers. Moderation analyses were conducted using the Hayes PROCESS macro, with post hoc Johnson-Neyman techniques and logistic regressions. **Results:** Significant interactions between intervention groups and 3 moderators assessed at baseline emerged. For the prevention of neck pain, the effect of the active break intervention was moderated by the number of working hours and the effect of the postural shift intervention was moderated by the level of perceived psychological work demands and the number of working hours. For the prevention of low back pain, the effect of postural shift intervention was moderated by having or not having a chair with lumbar support. **Conclusions:** The study findings can be used to help determine who might benefit the most from 2 treatments that can reduce the risk of developing neck and low back pain in sedentary workers and may also help us to understand the mechanisms underlying the benefits of these interventions.

Akkarakittichoke et al. 2022.

Pain Reports, vol. 7, no. 3.

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Keywords: Active break; low back pain; moderator; neck pain; postural shift; sedentary worker.

Evidence Level: 2A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9128793/>