



Australian Government

Comcare

Emerging Evidence Alert July 2021

This Emerging Evidence Alert includes the latest peer-reviewed articles, reports and evidence on a range of workplace health and safety, prevention, recovery at work and return to work topics. It provides a review of recent journal articles and relevant content related to Comcare’s five research themes: Fostering Work Participation; Building Employer Capability; Adapting to the Future of Work; Guiding and Supporting Mental Health and Wellbeing; and Enabling Healthy and Safe Workplaces. Collated articles were published in June 2021 only.

Contents

Description of Evidence Levels Definitions Used in this Review	3
Fostering Work Participation.....	4
Return to Work.....	4
Presenteeism and Absenteeism	7
Working Hours.....	9
Building Employer Capability.....	11
Wellness Programs	11
Organisational Issues.....	13
Shift Work.....	13
Work Ability	15
Adapting to the Future of Work	18
Aging Workforce.....	18
Guiding and Supporting Mental Health and Wellbeing	19
Mental Health.....	19
Bullying and Harassment.....	22
Psychosocial Issues.....	23
Enabling Healthy and Safe Workplaces	24
Health and Wellbeing	24
Work Health and Safety.....	25
Risk Assessment.....	26
Chronic Health Issues	27
Occupational Exposure.....	29
Sedentary Practices	32
Physical Activity	33
Musculoskeletal Health	34
COVID 19.....	37
Guiding and Supporting Mental Health and Wellbeing	37

Monthly research highlight

Strengthening manager capability in return to work

Managers have an important role in facilitating and supporting return to work however, the process can be more complex when managing employees experiencing ill-health due to work-related stress.

The [latest return to work research](#) explores strategies for strengthening manager capability using insights from targeted interviews and guided workplace interventions with a rehabilitation coordinator. The interventions focused on improving employee-manager dialogue to find practical solutions that would enable return to work.

The research found guided workplace interventions helped to strengthen manager capability in the return to work process across three categories, including:

1. Building competence — recognising and dealing with the signs of stress, learning about the rehabilitation process, and adapting the communication approach.
2. Making adjustments — taking a tailored approach to create clarity and balance workload based on an individual employee’s needs.
3. Sharing responsibility with the employee — enabling mutual responsibility and promoting trust and honest communication.

The research also found additional benefits for managers such as building confidence to take preventative measures with other employees in the workplace, recognising the signs of stress and identifying unhealthy workloads.

For more information about the role of managers and supervisors in the return to work process, including participating in rehabilitation case conferences, visit the [Comcare website](#).

Description of Evidence Levels Definitions Used in this Review

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

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

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

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

Fostering Work Participation

Return to Work

A return-to-work intervention for prematurely retired depression or anxiety disorder patients

Background: Depression and anxiety disorders are the most common cause for premature retirement of people of middle age. These people are expelled from the workforce. The following social disintegration can have an additional detrimental effect on subjects' psychological well-being which further reduces the chance to re-enter the workforce. Depression and anxiety in general need not be regarded as irreversible causes of disability. Therefore, long-term disability should be avoidable in many cases. This two-arm prospective controlled study tests a novel approach for those who have become economically inactive due to their illness with the goal to improve psychological well-being and return to work. Forty-one subjects were followed-up on over a period of 12 months and compared to 41 control cases. ANOVA for repeated measures showed that experimental subjects' psychological well-being and work ability was much better after the intervention than in the control group. These findings show that an individually tailored return-to-work intervention can be a useful therapeutic tool even after retirement.

Wittenberg et al. 2021.

Frontiers of Psychology, vol. 2, no. 12.

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

Keywords: Absenteeism; anxiety; depression; disability; mental health; occupational disability; return to work; work ability.

Evidence Level: 3A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8206491/>

Occupational reintegration after severe burn injury: a questionnaire study

Background: As a consequence of improved survival rates after burn injury occupational reintegration of burn survivors has gained increasing significance. We aimed to develop a precise patient questionnaire as a tool to evaluate factors contributing to occupational reintegration. **Material and methods:** A questionnaire comprising 20 questions specifically evaluating occupational reintegration was developed under psychological supervision. The single-center questionnaire study was implemented in patients with burn injuries who were admitted to the 6-bed burn intensive care unit (BICU) of the General Hospital of Vienna, Austria (2004-2013). The questionnaire was sent to burn survivors of working age (18-60 years) with an abbreviated burn severity index (ABSI) of 6 or greater, a total burn surface area (TBSA) of 15% or greater, and a BICU stay of at least 24 h. **Results:** A total of 112 burn survivors met the inclusion criteria and were contacted by mail. Of the 112 patients 11 (10%) decided to participate in the study and 218/220 questions (99%) in 11 patients were answered. Out of 11 patients 7 (64%) reported successful return to work and 4 of 11 (36%) did not resume their occupation. Advanced age, longer BICU and hospital stays, higher TBSA, burn at work, lower education, and problems with esthetic appearance seemed to impair patients' return to their occupation. **Conclusion:** When implementing the questionnaire, severely burned patients with higher age, lower education, and longer hospital and BICU stay seemed at high risk for failed reintegration in their profession after burn injury.

Vorstandlechner et al. 2021.

Wiener klinische Wochenschrift, vol. 133, no. 11-12.

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

Keywords: Burns; occupations; surveys and questionnaires; work after burn injury; wounds and injuries.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007%2Fs00508-021-01871-6>

Subgroups of long-term sick-listed based on prognostic return to work factors across diagnoses: A cross-sectional latent class analysis

Comorbidity is common among long-term sick-listed and many prognostic factors for return to work (RTW) are shared across diagnoses. RTW interventions have small effects, possibly due to being averaged across heterogeneous samples. Identifying subgroups based on prognostic RTW factors independent of diagnoses

might help stratify interventions. The aim of this study was to identify and describe subgroups of long-term sick-listed workers, independent of diagnoses, based on prognostic factors for RTW. Latent class analysis of 532 workers sick-listed for eight weeks was used to identify subgroups based on seven prognostic RTW factors (self-reported health, anxiety and depressive symptoms, pain, self-efficacy, work ability, RTW expectations) and four covariates (age, gender, education, physical work). Four classes were identified: Class 1 (45% of participants) was characterized by favorable scores on the prognostic factors; Class 2 (22%) by high anxiety and depressive symptoms, younger age and higher education; Class 3 (16%) by overall poor scores including high pain levels; Class 4 (17%) by physical work and lack of workplace adjustments. Class 2 included more individuals with a psychological diagnosis, while diagnoses were distributed more proportionate to the sample in the other classes. The identified classes illustrate common subgroups of RTW prognosis among long-term sick-listed individuals largely independent of diagnosis. These classes could in the future assist RTW services to provide appropriate type and extent of follow-up, however more research is needed to validate the class structure and examine how these classes predict outcomes and respond to interventions.

Standal et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Common mental disorder; pain; return to work; sick leave; vocational rehabilitation.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09928-5>

Developing a multilevel scale to assess retention of workers with disabilities

Purpose Persons with disabilities (PwD) face difficulties in employment. Despite extensive research on PwD in the workplace, there is lack of research on the factors behind retaining or terminating the job of a PwD. This study aims to address this gap by developing the Retaining Workers with Disability (RWD) model.

Method Predicated on 1032 respondents with employment decision authority, we performed exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) for convergent and discriminant validity of the RWD model. Next, we developed the two-rank model RWD-II and employed CFA for validation.

Results We presented a dual-facet measurement tool for assessing employer attitudes towards retaining PwD in the workplace. Two dominant factors were measured, direct and indirect work-related items. Indices for both models (one and two-rank) showed a good fit. **Conclusion** Our study highlighted two major factors influencing managers in the decision-making process of retaining workers with disabilities as follows: direct and indirect work-related concerns. The measure was validated using the RWD scale. By providing the tool to identify attitudes towards PwD work retention, we offer the first step in identifying and changing a negative approach toward this population in the workplace. Practical contributions are discussed.

Krisi et al. 2021.

Journal of Occupational Rehabilitation.

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

Keywords: Covid-19; disability; employment; rehabilitation; weights and measures.

Evidence Level: 5A

Link: <https://link.springer.com/article/10.1007/s10926-021-09984-5>

Enhanced capacity to act: Managers' perspectives when participating in a dialogue-based workplace intervention for employee return to work

Purpose To explore if and how a dialogue-based workplace intervention with a convergence dialogue meeting can support a return to work process from the managers' perspective. **Methods** Individual interviews were conducted with 16 managers (10 women and 6 men) who had an employee on sick leave because of stress-induced exhaustion disorder. The manager and employee participated in a dialogue-based workplace intervention with a convergence dialogue meeting that was guided by a healthcare rehabilitation coordinator. The intervention aimed to facilitate dialogue and find concrete solutions to enable return to work. The interviews were analyzed by the Grounded Theory method. **Results** A theoretical model was developed with the core category enhancing managerial capacity to act in a complex

return to work process, where the managers strengthened their agential capacity in three levels (categories). These levels were building competence, making adjustments, and sharing responsibility with the employee. The managers also learned to navigate in multiple systems and by balancing demands, control and support for the employee and themselves. An added value was that the managers began to take preventive measures with other employees. When sick leave was caused only by personal or social issues (not work), workplace actions or interventions were difficult to find. **Conclusions** From the managers' perspective, dialogue-based workplace interventions with a convergence dialogue meeting and support from a rehabilitation coordinator can strengthen managerial competence and capacity to act in a complex return to work process.

Eskilsson et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Burnout; exhaustion; qualitative research; return to work; workplace intervention.

Evidence Level: 5A

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09914-x>

Barriers that obstruct return to work after coronary bypass surgery: A qualitative study

Purpose Coronary artery bypass grafting is the most frequently performed cardiac surgical procedure. Despite its benefits on survival and quality of life, it is associated with a considerable financial burden on society including sick leave. Our study aimed to explore the barriers that obstruct return to work after coronary artery bypass grafting. **Methods** We performed a qualitative study with in-depth interviewing of patients 6 months after their surgery. We included ten working patients and interviewed them and their spouses at home. The interviews were transcribed and two investigators independently searched the transcriptions for barriers that had obstructed return to work. **Results** Based on the interviews we were able to distinguish four main groups of barriers: 'personal', 'healthcare', 'work' and 'law & regulation.' The personal barriers were subgrouped in affective, physical, cognitive, social and individually determined factors. **Conclusion** In a qualitative study we showed that personal barriers as well as barriers regarding healthcare, work and law & regulation, were perceived by patients as important factors obstructing return to work after coronary artery bypass grafting. To overcome the identified barriers, the process of return to work could preferably be initiated during the hospital phase, started during cardiac rehabilitation, and coordinated by a case-managing professional.

Blokzijl et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Absenteeism; cardiac rehabilitation; coronary artery bypass; return to work.

Evidence Level: 5A

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09919-6>

Life expectancy estimations and determinants of return to work among cancer survivors over a 7-year period

Due to advances in medical science and technology, the number of cancer survivors continues to increase. The workplace needs and employment difficulties cancer survivors face after treatment need to be addressed to protect these individuals' right to work and to maintain the overall labor force of the country. We conducted a retrospective cohort study with a follow-up period from 2004 to 2010. All data analyzed in the study were obtained from the Labor Insurance Database, the Taiwan Cancer Registry of the Ministry of Health and Welfare, and the National Health Insurance Research Database. The relationships between risk factors and the presence of returning to work were analyzed by a Cox proportional hazard model. The survival rates of patients with different cancer stages were evaluated using Kaplan-Meier survival analysis. Among the employees with an initial diagnosis of cancer, 70.4% remained employed through 1 year after the diagnosis, accounting for 83.4% of all cancer survivors; only 51.1% remained employed through 5 years after the diagnosis, accounting for 78.7% of all cancer survivors, a notable decrease. Age, gender, salary, treatment method, company size, and cancer stage were the factors that affected whether employees could return to work or not. The long-term survival of people diagnosed with cancer depends on their

chances of returning to work. Strengthening existing return-to-work policies and assisting cancer survivors with returning to work after the treatment should be priorities for protecting these individuals' right to work and for maintaining the overall labor force.

Chen et al. 2021.

Science Reports, vol. 11, no. 1.

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

Keywords: Life expectancy; estimation; return to work; cancer survivors.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-021-92306-9>

Presenteeism and Absenteeism

Guideline adherence and lost workdays for acute low back pain in the California workers' compensation system

Context: The use of clinical-practice guidelines is a suggested method for improving health outcomes by the earlier provision of necessary and effective medical interventions. **Objective:** To quantify the influence of adherence to guideline-recommended interventions in the first week of treatment for an initial low back pain (LBP) injury on lost workdays. **Methods:** In a retrospective cohort of California's workers' compensation claims data from May 2009 to May 2018, 41 diagnostic and treatment interventions were abstracted from the medical claims for workers with acute LBP injuries and compared with guideline recommendations. Lost workdays within 1-year post-injury were compared by guideline adherence using quantile regressions. **Results:** Of the 59,656 workers who met the study inclusion criteria, 66.1% were male and the average (SD) age was 41 (12) years. The median number (IQR) of lost workdays was 27 (6-146) days. In the first week of treatment, 14.2% of workers received only recommended interventions, 14.6% received only non-recommended interventions, and 51.1% received both recommended and non-recommended interventions. Opioid prescriptions fell 86% from 2009 to 2018. Workers who received only guideline-recommended interventions experienced significantly fewer lost workdays (11.5 days; 95% CI: -13.9, -9.1), a 29.3% reduction, than workers who received only non-recommended interventions. The percentage of workers receiving only recommended interventions increased from 10.3% to 18.2% over the 9 years. **Conclusion and relevance:** When workers received guideline-recommended interventions, they typically returned to work in fewer days. The majority of workers received at least one non-recommended intervention, demonstrating the need for adherence to guideline recommendations. Fewer lost workdays and improved quality care are outcomes that strongly benefit injured workers.

Gaspar et al. 2021.

PLoS One, vol. 16, no. 6.

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

Keywords: Low back pain; guidance; lost work days; workers compensation.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0253268>

Occupational prestige and sickness absence inequality in employed women and men in Sweden: a registry-based study

Objectives: Socioeconomic position has been linked to sickness absence (SA). However, less is known about the role of occupational prestige, a measure of social status afforded by one's occupation, in SA. We investigated the association between occupational prestige and SA and the distribution of the association in women and men. We also examined the effect of intersections of gender and occupational prestige on SA. **Design:** Longitudinal. **Setting:** A nationwide representative sample of Swedish working population. **Participants:** 97 397 employed individuals aged 25-59 years selected from the 2004, 2007 and 2010 waves of the Swedish Labour Force Survey and prospectively linked to the Swedish Longitudinal Integration Database for Health Insurance and Labour Market Studies. **Outcome measures:** The number of SA days in any particular year during a 3-year follow-up and long-term (>120 days) SA based on those with at least one sick leave spell during the follow-up. **Results:** Occupational prestige was weakly associated with SA in the

total sample after adjusting for potential confounders. In the gender-stratified analysis, women in lower prestige occupations had higher absenteeism rates than women in high prestige occupations; men in lower prestige occupations had higher odds for long-term SA than men in high prestige occupations. In the intersectional analysis, women regardless of prestige level and men in lower prestige occupations had higher probability of SA compared with men in high prestige occupations. Women in high prestige occupations had the highest absenteeism rates (incidence rate ratio (IRR), 2.25, 95% CI, 2.20 to 2.31), while men in medium prestige occupations had the lowest rates (IRR, 1.17, 95% CI, 1.13 to 1.20). Compared with the rest of the groups, men in low and medium prestige occupations had higher odds for long-term absence. **Conclusion:** There is need to pay close attention to occupational prestige as a factor that may influence health and labour market participation.

Nwaru et al. 2021.

BMJ Open, vol. 11, no. 6.

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

Keywords: Epidemiology; occupational & industrial medicine; social medicine.

Evidence Level: 4B

Link: <https://bmjopen.bmj.com/content/11/6/e050191.long>

The relationship between insomnia symptoms and work productivity among blue-collar and white-collar Japanese workers engaged in construction/civil engineering work: a cross-sectional study

Background: The situation of work productivity loss due to sleep disorders/problems among workers in industrialized societies remains unclear. The purpose of this study was to clarify the prevalence of insomnia symptoms and actual situation of work productivity by job type (white-collars/blue-collars) among construction/civil engineering workers in Japan and evaluate the association between insomnia symptoms and work productivity adjusting for sleep duration and sociodemographic, work-related, and health-related variables. **Methods:** This cross-sectional study included 17,828 construction/civil engineering workers (15,837 males and 1991 females) aged 40 to 74 years in Japan. The questionnaire consisted of socio-demographic characteristics, information on work productivity (work performance and absence), respective insomnia symptoms (difficulty initiating sleep; DIS, difficulty maintaining sleep; DMS, and early morning awakening; EMA), bedtime schedule, work-related factors (job type, working hours), and perceived health condition. To identify the associated factors of work productivity, the logistic regression analyses were conducted. **Results:** The percentages of workers who reported to be experiencing DIS, DMS, and EMA were 7.9, 16.3, and 13.1%, respectively. Poor work performance was associated with every insomnia symptom in both the blue-collar and white-collar workers. Meanwhile, absence was associated with DIS in blue-collar workers and both DIS and DMS in white-collar workers; however, not with EMA in both the groups. In blue-collar workers, engagement in shift work was associated with poor work performance. **Conclusions:** The present study revealed the association between insomnia symptoms and work productivity, suggesting the necessity of early prevention of insomnia among both blue-collar and white-collar workers.

Kayaba et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: Absenteeism; blue-collar worker; insomnia; shift work; work performance; work productivity.

Evidence Level: 4B

Link: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-021-11273-y>

Alternative duty work as workplace-initiated procedure to reduce sickness absence

Purpose: Alternative duty work is a procedure that enables an employee with a short-term disability to perform modified duties as an alternative to sickness absence. We examined whether the implementation of an alternative duty policy was associated with reduced sickness absence in the Finnish public sector.

Methods: Two city administrations (A and D) that implemented an alternative duty work policy to their employees (n = 5341 and n = 7538) served as our intervention cities, and two city administrations (B and C) that did not implement the policy represented the reference cities (n = 6976 and n = 6720). The outcomes were the number of annual days, all episodes, and short-term (< 10 days) episodes during the 2 years

before versus the 2 years after the intervention year. We applied repeated measures negative binomial regression analyses, using the generalized estimating equations method and the difference-in-difference analysis to compare the intervention and control cities (adjusted for sex, age, type of job contract, occupational class). **Results:** During the five-year study period, the number of sickness absence days and episodes increased in both the intervention and control cities. Covariate-adjusted analysis of relative risk showed that the overall increase in post- versus pre-intervention sickness absence days was smaller in intervention City A, RR = 1.14 (95% CI = 1.09-1.21) than in control cities B and C, RR = 1.19 (95% CI = 1.14-1.24), group × time interaction $p < 0.02$. In intervention City D, we found a corresponding result regarding all sickness absence episodes and short-term sickness absence episodes but not days. **Conclusions:** This follow-up suggests that implementing an alternative duty work policy may marginally decrease employees' sickness absences.

Mattila-Holappa et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: Alternative duty work; sickness absence; work disability; work modification.

Evidence Level: 4A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-11181-1>

Working Hours

Switching gears: A self-regulatory approach and measure of nonwork role re-engagement following after-hours work intrusions

As employees' personal lives are increasingly splintered by work demands, the boundary between work and nonwork domains is becoming ever more blurred. Grounded within a self-regulatory approach and the executive control function of inhibitory control, we operationalize and examine nonwork role re-engagement (NWRR)-the extent to which individuals can redirect attentional resources back to nonwork tasks following work-related intrusions. In phases 1 and 2, we develop and refine a psychometrically sound unidimensional measure for NWRR aligned with the self-regulatory processes of self-control and interference control underlying inhibitory control. In phase 3, we confirm the factor structure with a new sample. In phase 4 we validate the measure using the samples from phases 2 and 3 to provide evidence of criterion-related, convergent, and discriminant validity. NWRR was related to important well-being and work-related outcomes above and beyond existing self-regulatory and boundary management constructs. We offer theoretical and practical implications and an agenda to guide future research, as attentional agility becomes increasingly relevant in a home life replete with interruptions from work.

Grotto et al. 2021.

Journal of Business Psychology.

User License: *PMC Open Access Subset*

Keywords: Attention; boundary management; executive control; inhibitory control; interruption; intrusion; scale development; self-regulation; work-family conflict.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8188740/>

The effect of exposure to long working hours on depression: A systematic review and meta-analysis from the WHO/ILO joint estimates of the work-related burden of disease and injury

Background: The World Health Organization (WHO) and the International Labour Organization (ILO) are developing the WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury (WHO/ILO Joint Estimates), supported by a large number of individual experts. Evidence from previous reviews suggests that exposure to long working hours may cause depression. In this article, we present a systematic review and meta-analysis of parameters for estimating (if feasible) the number of deaths and disability-adjusted life years from depression that are attributable to exposure to long working hours, for the development of the WHO/ILO Joint Estimates. **Objectives:** We aimed to systematically review and meta-analyse estimates of the effect of exposure to long working hours (three categories: 41-48, 49-54 and ≥ 55 h/week), compared

with exposure to standard working hours (35-40 h/week), on depression (three outcomes: prevalence, incidence and mortality). **Data sources:** We developed and published a protocol, applying the Navigation Guide as an organizing systematic review framework where feasible. We searched electronic academic databases for potentially relevant records from published and unpublished studies, including the WHO International Clinical Trial Registers Platform, Medline, PubMed, EMBASE, Web of Science, CISDOC and PsycInfo. We also searched grey literature databases, Internet search engines and organizational websites; hand-searched reference lists of previous systematic reviews; and consulted additional experts. **Study eligibility and criteria:** We included working-age (≥ 15 years) workers in the formal and informal economy in any WHO and/or ILO Member State but excluded children (aged < 15 years) and unpaid domestic workers. We included randomized controlled trials, cohort studies, case-control studies and other non-randomized intervention studies with an estimate of the effect of exposure to long working hours (41-48, 49-54 and ≥ 55 h/week), compared with exposure to standard working hours (35-40 h/week), on depression (prevalence, incidence and/or mortality). **Study appraisal and synthesis methods:** At least two review authors independently screened titles and abstracts against the eligibility criteria at a first stage and full texts of potentially eligible records at a second stage, followed by extraction of data from qualifying studies. Missing data were requested from principal study authors. We combined odds ratios using random-effects meta-analysis. Two or more review authors assessed the risk of bias, quality of evidence and strength of evidence, using Navigation Guide and GRADE tools and approaches adapted to this project. **Results:** Twenty-two studies (all cohort studies) met the inclusion criteria, comprising a total of 109,906 participants (51,324 females) in 32 countries (as one study included multiple countries) in three WHO regions (Americas, Europe and Western Pacific). The exposure was measured using self-reports in all studies, and the outcome was assessed with a clinical diagnostic interview (four studies), interview questions about diagnosis and treatment of depression (three studies) or a validated self-administered rating scale (15 studies). The outcome was defined as incident depression in all 22 studies, with first time incident depression in 21 studies and recurrence of depression in one study. We did not identify any study on prevalence of depression or on mortality from depression. For the body of evidence for the outcome incident depression, we had serious concerns for risk of bias due to selection because of incomplete outcome data (most studies assessed depression only twice, at baseline and at a later follow-up measurement, and likely have missed cases of depression that occurred after baseline but were in remission at the time of the follow-up measurement) and due to missing information on life-time prevalence of depression before baseline measurement. Compared with working 35-40 h/week, we are uncertain about the effect on acquiring (or incidence of) depression of working 41-48 h/week (pooled odds ratio (OR) 1.05, 95% confidence interval (CI) 0.86 to 1.29, 8 studies, 49,392 participants, I^2 46%, low quality of evidence); 49-54 h/week (OR 1.06, 95% CI 0.93 to 1.21, 8 studies, 49,392 participants, I^2 40%, low quality of evidence); and ≥ 55 h/week (OR 1.08, 95% CI 0.94 to 1.24, 17 studies, 91,142 participants, I^2 46%, low quality of evidence). Subgroup analyses found no evidence for statistically significant ($P < 0.05$) differences by WHO region, sex, age group and socioeconomic status. Sensitivity analyses found no statistically significant differences by outcome measurement (clinical diagnostic interview [gold standard] versus other measures) and risk of bias ("high"/"probably high" ratings in any domain versus "low"/"probably low" in all domains). **Conclusions:** We judged the existing bodies of evidence from human data as "inadequate evidence for harmfulness" for all three exposure categories, 41-48, 48-54 and ≥ 55 h/week, for depression prevalence, incidence and mortality; the available evidence is insufficient to assess effects of the exposure. Producing estimates of the burden of depression attributable to exposure to long working hours appears not evidence-based at this point. Instead, studies examining the association between long working hours and risk of depression are needed that address the limitations of the current evidence.

Rugulies et al. 2021.

Environment International, vol. 15, no. 155.

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

Keywords: Depression; global burden of disease; long working hours; meta-analysis; occupational health; systematic review.

Evidence Level: 1A

Link: <https://www.sciencedirect.com/science/article/pii/S0160412021002543?via%3Dihub>

Building Employer Capability

Wellness Programs

Workplace cafeteria and other multicomponent interventions to promote healthy eating among adults: A systematic review

The objective of this review is to evaluate evidence for the effectiveness of workplace cafeteria and other supporting multicomponent interventions to promote healthy eating and reductions in health risks among adults. We conducted an electronic search in EMBASE, CINAHL, EconLit, Ovid, Cochrane, Web of Science and PubMed for English-language articles published from 1985 to July 2019. Studies were original articles reporting the results of workplace cafeteria interventions to promote healthy eating and reduction in health risks. Outcomes were classified as changes in fruit and vegetable intake, health risk indicators, dietary intake, and food sales. Interventions were categorized as interventions targeting food quality or quantity, targeting price, targeting food choice at point of purchase, targeting improved supply, targeting client's information, education or motivation and targeting organization policies. Behavioral change conditions used in interventions were identified using the COM-B system of behavioral change. Results were presented in a narrative summary. A total of 55 studies out of 6285 articles were identified for this review. Several studies used multicomponent interventions and the most featured interventions included interventions targeting food quality or quantity, targeting client's information, education or motivation and targeting food choice at point of purchase. There is evidence that workplace cafeteria and other supporting multicomponent interventions resulted in higher intake of fruit and vegetables, improved dietary intake, improved health outcomes and healthy food sales. The findings of this review have the potential to inform future cafeteria-based and other supporting multicomponent workplace health interventions. The review protocol was not registered in a repository.

Naicker et al. 2021.

Preventive Medicine Reports, vol. 22, no. 101333.

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: Cafeteria; Environmental intervention; Workplace.

Evidence Level: 1A

Link: <https://www.sciencedirect.com/science/article/pii/S2211335521000243?via%3Dihub>

Effectiveness of workplace active rest programme on low back pain in office workers: a stepped-wedge cluster randomised controlled trial

Objective: This study aimed to investigate the effectiveness of workplace active rest programme (WARP) on chronic low back pain (LBP) among office workers. **Design:** A closed cohort, stepped-wedge cluster randomised trial was conducted. The total duration of the study was 16 weeks (4 weeks for each step). Sequence allocation was randomised, but no one was blinded. **Setting:** This study was conducted in three offices in a Japanese electronics company. One office was for the administrative department, the others are for the engineering department. **Participants:** We recruited 29 office workers with LBP greater than 3 months. LBP due to specific injury or disease was excluded. The median age was 38 years, and 26 (90%) were male. All participants completed the study. **Interventions:** In the intervention phase, participants performed WARP comprising frequent stand-up and individualised brief exercise/physical activity during work. Physical therapists held an LBP workshop and developed tailor-made programmes before introducing WARP. We instructed participants to perform WARP at five timings during work. Control phase was set before the intervention and participants stayed as usual. **Primary and secondary outcome measures:** The primary outcome was pain intensity of LBP assessed using the Brief Pain Inventory. The secondary outcomes were work productivity loss measured using the Work Limitations Questionnaire, LBP disability assessed using the Roland-Morris Disability Questionnaire, psychosocial subscale assessed using the STarT Back Screening Tool and physical activity measured using triaxial accelerometers. These outcomes were collected at baseline and at 4-month follow-up evaluation. **Results:** In the intention-to-treat analysis, WARP did not show any significant effects on pain intensity (β , 0.01; 95% CI -0.50 to 0.52) and on the secondary outcomes. The median adherence to WARP was 28.6% (IQR, 16.8-41.1), which was equal to 1.43 times per

day. No adverse effect was observed. **Conclusions:** The present study was unable to confirm the effectiveness of active rest in improving LBP. Hence, further study needs to investigate its effectiveness.

Tsuboi et al. 2021.

BMJ Open, vol. 11, no. 6.

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

Keywords: Back pain; occupational & industrial medicine; pain management.

Evidence Level: 2A

Link: <https://bmjopen.bmj.com/content/11/6/e040101.long>

The role of occupational health services in cancer prevention - which factors determine the implementation of preventive measures?

Objectives: Epidemiological data on cancer diseases are alarming. The workplace has become an increasingly important site for disseminating health information and implementing health promotion activities. Occupational medicine physicians (OMPs) have the opportunity to carry out primary and secondary preventive activities focused on civilization diseases, especially cancer. The aim of this study was to evaluate the potential of OMPs in cancer prevention, including the analysis of factors determining the implementation of preventive measures, as part of standard healthcare for employees. **Material and methods:** The study was conducted among 362 OMPs. The interviews were carried out by the computer assisted telephone interview (CATI) method. **Results:** Over 60% of the surveyed OMPs are ready to implement cancer preventive activities among employees. The doctors with the longest seniority in occupational health services are more likely to declare unwillingness to implement cancer preventive activities. Patient's consent, informing women about the program and adjusting the time of the medical visit are the most important conditions for introducing cancer prevention programs by OMPs. Neither seniority nor the number of examinations performed by a physician influenced the currently implemented cancer preventive activities as part of occupational health services (including the evaluation of cancer risk factors occurrence among employees). **Conclusions:** In Poland, OMPs are willing to implement cancer preventive activities among employees, but their current activity in this area is limited and needs development. The most specific actions should be addressed to doctors with the longest seniority in occupational health services, who are frequently unwilling to implement cancer preventive activities. Strengthening the preventive potential of Polish occupational health services requires a systemic approach to the scope and way of action of healthcare professionals.

Wizniewska et al. 2021.

International Journal of Occupational Medicine and Environmental Health, vol. 1.

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

Keywords: Cancer prevention; cytology; mammography; occupational health services; screening program; surveillance.

Evidence Level: 5A

Link: <http://ijomeh.eu/The-role-of-occupational-health-services-in-cancer-prevention-which-factors-determine,133439,0,2.html>

Evaluation of selected risk factors for cardiovascular diseases and diabetes as a background for the prevention program in occupational healthcare

Objectives: Cardiovascular and metabolic disorders constitute major health problems in the working populations in Europe. The aim of this project was to evaluate the health condition of workers employed in a Polish research and medical institution, and then to establish the necessary preventive actions by creating a modern model of occupational healthcare integrated with civilization disease (CivD) prevention. **Material and methods:** Overall, 100 workers voluntarily participated in a health program for CivD prevention during mandatory prophylactic examinations. Data from these examinations was collected in a system of electronic documentation to enable the analysis of the workers' health condition and risk factors of CivDs. **Results:** Women accounted for 72% of the employees who voluntarily participated in the prevention program, and 80% of the subjects had university education. As regards the health condition, 27% of the patients had elevated systolic, and 23% diastolic, blood pressure, and 21% had an abnormal fasting glucose level. Stressful job was an important factor correlated with an excessive body mass index, diastolic blood

pressure, as well as total and low-density lipoprotein cholesterol levels. Smoking, sedentary work and a lack of physical activity were significant factors for abdominal obesity. Generally, 94% of the program participants required some further interventions in lifestyle, diagnostics or treatment.

Conclusions: Civilization disease prevention should focus on increasing physical activity both in leisure time and at the workplace as far as practicable. There is a need for implementing projects leading to occupational stress reduction and smoking cessation. Men as well as workers with vocational and elementary education need to be recruited for prevention programs dedicated to employees.

Lam et al. 2021.

Scientific Reports, vol. 11, no. 1.

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

Keywords: Systemic coronary risk evaluation; health of the working-age population; health promotion at the workplace; occupational health system; occupational medicine; risk factors of civilization diseases.

Evidence Level: 5B

Link: <http://ijomeh.eu/Evaluation-of-selected-risk-factors-for-cardiovascular-diseases-and-diabetes-as-a,128973,0,2.html>

Organisational Issues

Safety culture: A retrospective analysis of occupational health and safety mining reports

Background: In the mining industry, various methods of accident analysis have utilized official accident investigations to try and establish broader causation mechanisms. An emerging area of interest is identifying the extent to which cultural influences, such as safety culture, are acting as drivers in the reoccurrence of accidents. Thus, the overall objective of this study was to analyze occupational health and safety (OHS) reports in mining to investigate if/how safety culture has historically been framed in the mining industry, as it relates to accident causation. **Methods:** Using a computer-assisted qualitative data analysis software, 34 definitions of safety culture were analyzed to highlight key terms. Based on word count and contextual relevance, 26 key terms were captured. Ten OHS reports were then analyzed via an inductive thematic analysis, using the key terms. This analysis provided a concept map representing the 50-year data set and facilitated the use of text framing to highlight safety culture in the selected OHS mining reports. **Results:** Overall, 954 references and six themes, safety culture, attitude, competence, belief, patterns, and norms, were identified in the data set. Of the 26 key terms originally identified, 24 of them were captured within the text. The results made evident two distinct frames in which to interpret the data: the role of the individual and the role of the organization, in safety culture. **Conclusion:** Unless efforts are made to understand and alter cultural drivers and share these findings within and across industries, the same accidents are likely to continue to occur.

Tetzlaff et al. 2021.

Safety and Health at Work, vol. 12, no. 2.

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

Keywords: Accidents; mining; occupational health and safety (OHS); post-investigation reports; safety culture.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S2093791120303620?via%3Dihub>

Shift Work

Dose-response effects of light therapy on sleepiness and circadian phase shift in shift workers: a meta-analysis and moderator analysis

Light therapy has been considered to be effective in mitigating sleepiness and regulating circadian phase shift in shift workers. However, the effective treatment dose of light therapy remains undetermined. We performed a meta-analysis of randomized experimental studies to determine the effect of light therapy doses on sleepiness and circadian phase shift in shift workers. An article search was performed in 10 electronic databases from inception to June 2020. Two raters independently screened and extracted data

and reached consensus. Twenty-one eligible studies were included. Analyses were performed using random-effects models. Light therapy exerted significantly small to medium effects on sleepiness and large treatment effects on circadian phase shift. Moderator analyses performed with subgroup and metaregression analyses revealed that medium-intensity light therapy for a shorter duration more effectively reduced sleepiness at night, whereas higher-intensity light therapy more effectively induced phase shifting, but the required treatment duration remained inconclusive. This study provides evidence regarding the effect of light therapy in reducing sleepiness and shifting circadian phase in shift workers. Exposure to medium-intensity light for a short duration at night reduced sleepiness, whereas exposure to high-intensity light improved sleep by shifting their circadian phase.

Lam et al. 2021.

Scientific Reports, vol. 11, no. 1.

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

Keywords: Light therapy; sleepiness; circadian phase; shift work.

Evidence Level: 1A

Link: <https://www.nature.com/articles/s41598-021-89321-1>

An association between cumulative exposure to light at night and the prevalence of hyperuricemia in steel workers

Objectives: Exposure to light at night (LAN) can disturb circadian endocrine and metabolic rhythms.

Hyperuricemia (HUA) is an early-onset metabolic disorder. However, it is still not clear whether LAN

exposure increases the prevalence of HUA. **Material and methods:** The authors used cross-sectional data on the Beijing-Tianjin-Hebei occupational populations cohort from March-July 2017. A total of 7664 steel workers were finally selected to investigate the relationship between LAN exposure and the prevalence of HUA among steel workers. The authors collected demographic and socio-economic data, as well as information on lifestyle factors, anthropometric measures, and laboratory tests. The restricted cubic spline method was used to analyze the dose-response relationship between cumulative LAN exposure and the prevalence of HUA. Logistic regression analyses were used to fit the relationship between them.

Results: The average age of the participants was 43.5±8.6 years; 7051 (91.7%) of them were males, 2749 (35.9%) reported to suffer from HUA, and 1241 (16.2%) were not exposed to LAN. There was a significant non-linear dose-response relationship between them. After adjustment for the confounding factors, including demographic data, lifestyle factors, etc., the lower LAN exposure was significantly associated with HUA (0-1931.7 days, OR = 1.180, and the 95% CI: 1.000-1.394; 1931.7-4343 days, OR = 1.215, 95% CI: 1.035-1.426). **Conclusions:** This study revealed that a certain amount of exposure to LAN is independently related to the prevalence of HUA in steel workers in China. *Int J Occup Med Environ Health.* 2021;34(3):385-401.

Li et al. 2021.

International Journal of Occupational Medicine and Environmental Health, vol. 34, no. 3.

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

Keywords: Circadian rhythms; hyperuricemia; light at night; restricted cubic spline; steel workers; uric acid.

Evidence Level: 4B

Link: <http://ijomeh.eu/An-association-between-cumulative-exposure-to-light-at-night-and-the-prevalence-of,128747,0,2.html>

The effects of dynamic daylight-like light on the rhythm, cognition, and mood of irregular shift workers in closed environment

Shift workers are mostly suffered from the disruption of circadian rhythm and health problems. In this study, we designed proper light environment to maintain stable circadian rhythm, cognitive performance, and mood status of shift workers. We used five-channel light-emitting diodes to build up the dynamic daylight-like light environment. The illuminance, correlated color temperature, and circadian action factor of light were tunable in the ranges of 226 to 678 lx, 2680 to 7314 K, and 0.32 to 0.96 throughout the day (5:30 to 19:40). During the nighttime, these parameters maintained about 200 lx, 2700 K, and 0.32, respectively. In this light environment, three subjects had engaged in shift work for 38 consecutive days. We measured plasma melatonin, activity counts, continuous performance tests, and visual analogue scale on mood to assess the rhythm, cognitive performance, and mood of subjects. After 38-day shift work, the

subjects' peak melatonin concentration increased significantly. Their physiological and behavioral rhythms maintained stable. Their cognitive performance improved significantly after night work, compared with that before night work. Their mood status had no significant change during the 38-day shift work. These results indicated that the light environment was beneficial to maintain circadian rhythm, cognitive performance and mood status during long-term shift work in closed environment.

Nie et al. 2021.

Scientific Reports, vol. 11, no. 1.

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

Keywords: Shift workers; closed environment; dynamic daylight-like light; rhythm; cognition; mood.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-021-92438-y>

Work Ability

A descriptive study of the implementation of remote occupational rehabilitation services due to the COVID-19 pandemic within a workers' compensation context

Purpose The Coronavirus Disease (COVID-19) pandemic resulted in dramatic changes to avoid virus spread. In Canada, following provincial legislation the Workers' Compensation Board of Alberta (WCB-Alberta) stopped in-person rehabilitation services on March 23, 2020. On April 1, training began on remote service delivery using videoconferencing or telerehabilitation, which started April 3. We studied WCB-Alberta's transition to remote rehabilitation service delivery. **Methods** A population-based descriptive study was conducted, with data extracted from the WCB-Alberta database. This included clinical data from rehabilitation providers. We included workers completing services between January 1 and May 31, 2020. We statistically examined differences before and after the transition to remote services. **Results** The dataset included 4,516 individuals with work-related injuries. The mean number of work assessments per week pre-COVID was 244.6 (SD 83.5), which reduced to 135.9 (SD 74.5). Workers undergoing remote assessments were significantly more likely to work in health care or trades, did not require an interpreter, and were less likely to be working or judged as ready to return to work. Number of completed rehabilitation programs also reduced from 125.6 to 40.8 per week, with most (67.1%) remote programs being functional restoration. Few adverse effects were observed. **Conclusions** We describe the transition to completely remote delivery of occupational rehabilitation due to COVID-19 physical distancing restrictions in one Canadian compensation jurisdiction. It appears the use of remote services was successful but proceeded cautiously, with fewer complex cases being referred for assessment or rehabilitation. Further research examining longer-term work outcomes and stakeholder perceptions is needed.

Gross et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: COVID-19; compensation and redress; musculoskeletal diseases; rehabilitation; telehealth.

Evidence Level: 4B

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09934-7>

Work-life balance predicted work ability two years later: a cohort study of employees in the Swedish energy and water sector

Background: Work-life balance (WLB) is the extent to which individual's multiple life roles and demands carry over between each role. WLB can be divided into work interference with personal life (WIPL) and personal life interference with work (PLIW). This study aimed to investigate longitudinal associations between WIPL, PLIW and work ability outcomes. **Methods:** In this cohort study, 224 employees in the energy and water sector in Sweden were followed-up over 2 years. Three questions derived from the Work Ability Index were used for measuring work ability outcome: current work ability compared with lifetime best; work ability regarding physical; and mental demands. Logistic regression models were used to analyse longitudinal associations between work ability and WIPL and PLIW respectively, controlling for workplace (company), position at work, experience of leadership quality, demographics, and work ability.

Results: Work ability compared to lifetime best were associated with WIPL in the adjusted logistic regression models (odds ratio (OR) 1.77, 95% confidence interval (CI) 1.15-2.73), and PLIW (OR 3.34, 95% CI 1.66-6.74). Work ability regarding physical demands was associated with WIPL (OR 1.60, 95% CI 1.07-2.40). Work ability regarding mental demands was associated with WIPL (OR 1.59, 95% CI 1.03-2.44) and PLIW (OR 2.88, 95% CI 1.31-6.32). **Conclusion:** In this two-year longitudinal study, lower WIPL predicted good/excellent overall work ability compared with lifetime best, higher work ability regarding physical and mental demands, and lower PLIW predicted good/excellent overall work ability compared with lifetime best and higher work ability regarding and mental demands.

Berglund et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: Mental demands; physical demands; work ability; work-life balance.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-11235-4>

Predicting and assessing work performance of people with limited work capacity (LWC): A multi-wave, multi-source study

Purpose: Occupational integration is vital for the health of all people, also for people with Limited Work Capacity (LWC). Therefore, participation in regular work is a legal right for people that are restricted in their work capacity due to a disability and/or lack sufficient education. Full and effective integration is dependent on the person-job fit, and adequate vocational support should focus on meeting performance standards, as is common practice in traditional personnel selection and development programmes. Despite the huge amount of valid instruments for personnel selection and development, these tests are not suitable people with LWC. Recently, an instrument was developed for assessment and development purposes specifically for this target group. That study provided evidence for reliability and dimensionality this instrument. In our study, we add criterion-related measures to this instrument to demonstrate that assessment at T1 predict performance at T2, thus validating the instrument. **Method** We conducted a four-source data study, two sources for independent and two for outcome variables, to test the predictive validity of this instrument in a multi-wave setup. **Results:** This study largely supports the validity of the instrument in predicting work behaviour and task performance of people with LWC. More specific, when measures are tailored to this target group, this group is able to predict their work behaviour and task performance accurately just like the general population. **Conclusion:** We conclude that this instrument contributes to science, vocational support practices, and the personal and professional development of people with LWC, which is required for sustainable work.

van Ruitenbeek et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Multi-source feedback; people with disabilities and limitations; personal and professional development; task performance; work behaviour.

Evidence Level: 5B

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09925-8>

Work ability of Thai older workers in Southern Thailand: a comparison of formal and informal sectors

Background: Thai society is becoming an ageing society. Independent older persons need to be able to continue to work after retirement. The Work Ability Index (WAI) is an assessment tool for improving the health and work environment of the older workers. The objective of this study is to explore work ability and its related factors among older workers in formal and informal sectors in southern Thailand. **Methods:** This cross-sectional study with multistage sampling focused on 324 Thai older workers, aged between 45 and 70 years, working in Nakhon Si Thammarat province. Data on sociodemographic status, health history, and work-related factor questionnaires were collected, including anthropometric measures and the WAI instrument between March and September 2019. Descriptive and logistic regression analyses were used to examine associations. **Results:** The participants were predominantly general labourers (23.8%) and female (70.7%). Nearly half of them had noncommunicable chronic diseases (NCDs) (48.2%) and were obese (more

than 60%). Approximately 60% (59.9%) engaged in safe working practices. The participants sometimes received occupational health services (51.9%) and frequently accessed health promotion services (78.1%). There was a significant difference in the total average WAI score of the formal and informal workers: 40.6 (S.D. = 4.6) and 37.5 (S.D. = 5.0), respectively. The multivariate analysis showed that workers aged 55 years and older (adj. OR = 1.45; 95% CI [1.21, 1.74]), those with NCDs (adj. OR = 2.85; 95% CI [1.69, 4.80]), and those who were exposed to unsafe working practices (adj. OR = 2.11; 95% CI [1.26, 3.55]) had a higher risk of a poor to moderate WAI. **Conclusions:** Most of the older workers had good to excellent work ability. Older age and the presence of NCDs were negatively associated with good to excellent work ability. Safe working practices improved older workers' work ability. Integrated occupational health protections and health promotion programmes for older informal workers should be provided by community health services to improve work ability.

Thanapop et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: Formal and informal sectors; older workers; work ability.

Evidence Level: 4B

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10974-8>

Using administrative data to assess the risk of permanent work disability: A cohort study

Purpose Unmet rehabilitation needs are common. We therefore developed a risk score using administrative data to assess the risk of permanent work disability. Such a score may support the identification of individuals with a high likelihood of receiving a disability pension. **Methods** Our sample was a random and stratified 1% sample of individuals aged 18-65 years paying pension contributions. From administrative records, we extracted sociodemographic data and data about employment and welfare benefits covering 2010-2012. Our outcome was a pension due to work disability that was requested between January 2013 and December 2017. We developed a comprehensive logistic regression model and used the model estimates to determine the risk score. **Results** We included 352,140 individuals and counted 6,360 (1.8%) disability pensions during the 5-year follow-up. The area under the receiver operating curve was 0.839 (95% CI 0.834 to 0.844) for the continuous risk score. Using a threshold of ≥ 50 points (20.2% of all individuals), we correctly classified 80.6% of all individuals (sensitivity: 71.5%; specificity: 80.8%). Using ≥ 60 points (9.9% of all individuals), we correctly classified 90.3% (sensitivity: 54.9%; specificity: 91.0%). Individuals with 50 to < 60 points had a five times higher risk of a disability pension compared to individuals with low scores, individuals with ≥ 60 points a 17 times higher risk. **Conclusions** The risk score offers an opportunity to screen for people with a high risk of permanent work disability.

Bethge et al. 2021.

Journal of Occupational Rehabilitation, vol. 31.

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

Keywords: Employment; longitudinal studies; needs assessment; pensions; rehabilitation; social welfare.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007/s10926-020-09926-7>

Barriers to employment of Australian cancer survivors living with geographic or socio-economic disadvantage: A qualitative study

Background: Opportunities for cancer survivors' employment can both reflect and perpetuate health inequities, as employment is an important social determinant of health. Socio-economic and geographic disadvantage is associated with greater difficulty finding work, but little is known about work needs of Australian cancer survivors living with disadvantage. **Objective:** This study examined survivor and health-care professional (HCP) perspectives on barriers experienced by Australian cancer survivors experiencing disadvantage when attempting to remain at or return to work. **Method:** Focus groups and individual interviews were held with cancer survivors (N = 15) and oncology and primary HCPs (N = 41), focusing on communities at risk of disadvantage. Participants were asked about employment barriers and facilitators in general and in the context of disadvantage. Themes were identified using framework analysis.

Results: Geographic and socio-economic disadvantage resulted in specific individual- and system-level

barriers. These related to distance from treatment and support services and limited availability and suitability of work for survivors living with geographic disadvantage, and limited availability, security, and flexibility of work and previous unemployment for survivors living with socio-economic disadvantage. Identified needs included system-level changes such as public and workplace-level education, legislative and policy changes, and better access to resources. **Conclusions:** Cancer survivors living with disadvantage experience limited access to flexible employment opportunities and resources, further perpetuating their disadvantage. Promotion of health equity for cancer survivors living with disadvantage requires systemic changes to support attempts to remain at/return to work. **Patient or public contribution:** This study included cancer survivors and HCPs as investigators, authors and participants.

Kemp et al. 2021.

Health Expectations, vol. 24, no. 3.

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

Keywords: Cancer survivors; employment; return to work; social determinants of health; vulnerable populations.

Evidence Level: 5A

Link: <https://onlinelibrary.wiley.com/doi/10.1111/hex.13238>

Adapting to the Future of Work

Aging Workforce

The impact of age stereotypes and age norms on employees' retirement choices: a neglected aspect of research on extended working lives

This article examines how older workers employ internalized age norms and perceptions when thinking about extending their working lives or retirement timing. It draws on semi-structured interviews with employees ($n = 104$) and line managers, human resource managers and occupational health specialists ($n = 52$) from four organisations in the United Kingdom. Previous research has demonstrated discrimination against older workers but this is a limiting view of the impact that ageism may have in the work setting. Individuals are likely to internalize age norms as older people have lived in social contexts in which negative images of what it means to be "old" are prevalent. These age perceptions are frequently normalized (taken for granted) in organisations and condition how people are managed and crucially *how they manage themselves*. How older workers and managers think and talk about age is another dynamic feature of decision making about retirement with implications for extending working lives. Amongst our respondents it was widely assumed that older age would come with worse health-what is more generally called the decline narrative - which served both as a motivation for individuals to leave employment to maximize enjoyment of their remaining years in good health as well as a motivation for some other individuals to stay employed in order to prevent health problems that might occur from an inactive retirement. Age norms also told some employees they were now "too old" for their job, to change job, for training and/or promotion and that they should leave that "to the younger ones"-what we call a sense of intergenerational disempowerment. The implications of these processes for the extending working lives agenda are discussed.

Vickerstaff et al. 2021.

Frontiers in Sociology, vol. 1, no. 6.

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

Keywords: Age norms; age stereotypes; ageism; extending working lives; older workers; qualitative interviews.

Evidence Level: 5A

Link: <https://www.frontiersin.org/articles/10.3389/fsoc.2021.686645/full>

Guiding and Supporting Mental Health and Wellbeing

Mental Health

Predicting new major depression symptoms from long working hours, psychosocial safety climate and work engagement: a population-based cohort study

Objectives: This study sought to assess the association between long working hours, psychosocial safety climate (PSC), work engagement (WE) and new major depression symptoms emerging over the next 12 months. PSC is the work climate supporting workplace psychological health. **Setting:** Australian prospective cohort population data from the states of New South Wales, Western Australia and South Australia.

Participants: At Time 1, there were 3921 respondents in the sample. Self-employed, casual temporary, unclassified, those with working hours <35 (37% of 2850) and participants with major depression symptoms at Time 1 (6.7% of 1782) were removed. The final sample was a population-based cohort of 1084 full-time Australian employees. **Primary and secondary outcome measures:** The planned and measured outcomes were new cases of major depression symptoms. **Results:** Long working hours were not significantly related to new cases of major depression symptoms; however, when mild cases were removed, the 41-48 and ≥55 long working hour categories were positively related to major depression symptoms. Low PSC was associated with a threefold increase in risk for new major depression symptoms. PSC was not related to long working hours, and long working hours did not mediate the relationship between PSC and new cases of major depression symptoms. The inverse relationship between PSC and major depression symptoms was stronger for males than females. Additional analyses identified that WE was positively related to long working hours. Long working hours (41-48 and ≥55 hours) mediated a positive relationship between WE and major depression symptoms when mild cases of major depression were removed. **Conclusion:** The results suggest that low workplace PSC and potentially long working hours (41-48; ≥55 hours/week) increase the risk of new major depression symptoms. Furthermore, high WE may increase long working hours and subsequent major depression symptoms.

Zadow et al. 2021.

BMJ Open, vol. 11, no. 6.

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

Keywords: Depression & mood disorders; mental health; occupational & industrial medicine.

Evidence Level: 4A

Link: <https://bmjopen.bmj.com/content/11/6/e044133.long>

Factors related to psychological well-being in unskilled manual workers

Objectives: The authors characterized the demographic, socioeconomic, and psychosocial work factors associated with performance of unskilled manual work, and then identified the modifiable psychosocial work factors that affected the psychological well-being of these workers. **Material and methods:** This study analyzed data from the fifth Korean Working Condition Survey conducted in 2017. The study subjects were 37 081 Korean employees. The occupational classes investigated were: managers, professionals, and clerks; service and sales workers; and skilled or unskilled manual workers. **Results:** Unskilled manual workers were more likely to be elderly and less educated, to have low income, to work fewer hours weekly, to have a shorter work duration, to perform temporary or daily jobs, and to report poor subjective health and well-being. Unskilled manual workers were also more likely to experience psychosocial hazards, such as adverse social behaviors, a lack of job satisfaction, a lack of support from managers, and a poor social climate. However, with statistical adjustment for demographic, socioeconomic, and psychosocial work factors, unskilled manual work was no longer associated with poor psychological well-being, but psychosocial work factors were associated with poor psychological well-being. **Conclusions:** The poor psychological well-being of unskilled manual workers cannot be explained by the intrinsic nature of this type of work. Instead, the poor psychological well-being of these workers is associated with unfavorable psychosocial work factors, such as a poor employment status, a lack of job satisfaction, a lack of support from managers, and a bad social climate. These results thus suggest that the modification of psychosocial work factors may improve the psychological well-being of unskilled manual workers.

Park et al. 2021.

International Journal of Occupational Medicine and Environmental Health.

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

Keywords: Job; job satisfaction; manual workers; occupational groups; psychological well-being; unskilled workers.

Evidence Level: 5B

Link: <http://ijomeh.eu/Factors-related-to-psychological-well-being-in-unskilled-manual-workers,135147,0,2.html>

Towards a biochemical approach to occupational stress management

Given the immense and growing cost of occupational stress to society through lost productivity and the burden to healthcare systems, current best practices for detecting, managing and reducing stress in the workplace are clearly sub-optimal and substantially better methods are required. Subjective, self-reported psychology and psychiatry-based instruments are prone to biases whereas current objective, biology-based measures produce conflicting results and are far from reliable. A multivariate approach to occupational stress research is required that reflects the broad, coordinated, physiological response to demands placed on the body by exposure to diverse occupational stressors. A literature review was conducted to determine the extent of application of the emerging multivariate technology of metabolomics to occupational stress research. Of 170 articles meeting the search criteria, three were identified that specifically studied occupational stressors using metabolomics. A further ten studies were not specifically occupational or were of indirect or peripheral relevance. The occupational studies, although limited in number highlight the technological challenges associated with the application of metabolomics to investigate occupational stress. They also demonstrate the utility to evaluate stress more comprehensively than univariate biomarker studies. The potential of this multivariate approach to enhance our understanding of occupational stress has yet to be established. This will require more studies with broader analytical coverage of the metabolome, longitudinal sampling, combination with experience sampling methods and comparison with psychometric models of occupational stress. Progress will likely involve combining multi-omic data into a holistic, systems biology approach to detecting, managing and reducing occupational stress and optimizing workplace performance.

Shackleton. 2021.

Heliyon, vol. 7, no. 6.

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: Metabolomics; occupational stress; systems biology.

Evidence Level: 6A

Link: <https://www.sciencedirect.com/science/article/pii/S2405844021012780>

Work-related violence and depressive disorder among 955,573 employees followed for 6.99 million person-years. The Danish Work Life Course Cohort study: Work-related violence and depression

Background: We examined the association between probability of work-related violence and first diagnosis of depressive disorder whilst accounting for the potential selection of individuals vulnerable to depression into occupations with high probability of work-related violence. **Methods:** Based on a pre-published study protocol, we analysed nationwide register data from the Danish Work Life Course Cohort study, encompassing 955,573 individuals followed from their entry into the workforce, and free from depressive disorder before work-force entry. Depressive disorder was measured from psychiatric in- and outpatient admissions. We measured work-related violence throughout the worklife by the annual average occupational risk of violence exposure. Using Cox proportional hazards regression, we examined the longitudinal association between work-related violence (both past year and cumulative life-long exposure) and first depressive disorder diagnosis, whilst adjusting for numerous confounders including parental psychiatric and somatic diagnoses, childhood socioeconomic position, and health services use before workforce entry. **Results:** The risk of depressive disorder was higher in individuals with high probability of past year work-related violence (hazard ratio: 1.11, 95% CI: 1.06-1.16) compared to employees with low probability of exposure, after adjustment for confounders. Among women, associations were robust across industries, whereas among men, associations were limited to certain industries. **Limitations:** Violence was

measured on the job group and not the individual level, likely resulting in some misclassification of the exposure. **Conclusions:** Work-related violence may increase the risk of depressive disorder, independent of pre-existing risk factors for depressive disorder. These findings underline the importance of preventing work-related violence.

Madsen et al. 2021.

Journal of Affective Disorders.

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: Depressive disorder; occupational exposure; occupational stress; offending behaviors; workplace violence.

Evidence Level: 4B

Link: <https://www.sciencedirect.com/science/article/pii/S0165032721002913?via%3Dihub>

Work-family conflict, depression, and burnout among jail correctional officers: A 1-Year prospective study

Background: Correctional officers (COs) experience elevated rates of mental and physical ill-health as compared with other general industry and public safety occupations. The purpose of this study was to investigate demographic, mental health, job tenure, and work-family characteristics and their prospective association to burnout within and between jail officers during one year of new employment. **Methods:** In 2016, newly hired jail officers (N = 144) completed self-reported surveys across four time points in a one-year prospective study at a Midwestern United States urban jail. Linear mixed-effects and growth modeling examined how work-family conflict (W-FC) and depressive symptoms relate to perceptions of burnout over time. **Results:** Jail officer burnout increased and was related to rises in W-FC and depression symptoms. Within-person variance for W-FC ($B_{pooled} = .52, p < .001$) and depression symptoms ($B_{pooled} = .06, p < .01$) were significant predictors of burnout. Less time on the job remained a significant predictor of burnout across all analyses ($B_{pooled} = .03, p < .001$). **Conclusions:** Results from this study indicate that burnout increased during the first year of new employment; and increased W-FC, higher depression, and brief tenure were associated with burnout among jail COs. Future study of correctional workplace health is needed to identify tailored, multilevel interventions that address burnout and W-FC prevention and early intervention among COs.

Jaegers et al. 2021.

Safety and Health at Work, vol. 12, no. 2.

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; correctional officer; health promotion; mental health; public safety.

Evidence Level: 4A

Link: <https://www.sciencedirect.com/science/article/pii/S2093791120303504?via%3Dihub>

Benevolence - Associations with stress, mental health, and self-compassion at the workplace

Objective: Benevolence is an emerging concept in motivation theory and research as well as in on pro-social behavior, which has stimulated increasing interest in studying factors that impair or facilitate benevolence and effects thereof. This exploratory study examines the associations between benevolence, stress, mental health, self-compassion, and satisfaction with life in two workplace samples. **Methods:** In the first study $n = 522$ (38% = female, median age = 42) participants answered questionnaires regarding self-reported stress symptoms (i.e., emotional exhaustion), depressive symptoms and benevolence. In the second study $n = 49$ (female = 96%) participants answered questionnaires regarding perceived stress, self-compassion, anxiety, depression symptoms, and benevolence. **Results:** In study 1, measures of emotional exhaustion ($r = -0.295$) and depression ($r = -0.190$) were significantly negatively correlated with benevolence. In study 2, benevolence was significantly negatively correlated with stress ($r = -0.392$) and depression ($r = -0.310$), whereas self-compassion (0.401) was significantly positively correlated with benevolence. While correlations were in expected directions, benevolence was not significantly associated with Satisfaction with Life ($r = 0.148$) or anxiety ($r = -0.199$) in study 2. **Conclusion:** Self-assessed benevolence is associated with levels of perceived stress, exhaustion, depression, and self-compassion.

Future studies are warranted on how benevolence is related to stress and mental ill health such as depression and anxiety, and if benevolence can be trained in order to decrease stress and mental ill health such as depression and anxiety in workplace settings.

Andersson et al. 2021.

Frontiers of Psychology, vol. 12.

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

Keywords: Benevolence; mental health; self-compassion; stress; well-being; workplace.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8204106/>

The effect of psychological contract combined with stress and health on employees' management behavior

In order to effectively manage employees and improve their work enthusiasm, based on the theoretical basis of project team members' psychological contract, the *status quo* of employees' psychological contract, stress and health status are investigated and analyzed. The differences of employees' psychological contract are analyzed through the questionnaire. A total of 400 questionnaires are distributed and 365 are returned. The method of one-way ANOVA is used to study the psychological contract status of project members from four aspects: gender, education background, position level, and working years, and obtain the results of difference analysis in four aspects. Functional magnetic resonance imaging (fMRI) is used to evaluate the work stress of employees. The results show that gender, education background, position level and working years have different effects on employees' psychological contract. Moreover, if employees continue to bear high-intensity work stress, a series of psychological and physical health problems will appear, such as difficulty in concentration. For enterprises, the poor psychological and physical conditions of employees will make the overall work inefficient and the working atmosphere dull. Therefore, enterprises should control employees' work stress within a reasonable range, and should not blindly impose high-intensity work stress on employees. This exploration demonstrates the way to realize the psychological contract construction of project team members, and targeted employee management countermeasures are put forward.

Cheng et al. 2021.

Frontiers of Psychology, vol. 10, no. 12.

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

Keywords: fMRI; employee management; management behavior; psychological contract; stress and health.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8222592/>

Bullying and Harassment

Factors that affect depression and anxiety in service and sales workers who interact with angry clients

Introduction: We evaluated depression and anxiety in service and sales workers from Korea who interacted with angry clients to identify factors that mediated and moderated depression and anxiety in these workers. **Methods:** This was a secondary analysis of data from the fifth Korean Working Conditions Survey conducted in 2017. A structural equation model was used for mediation and moderation analysis.

Results: Service and sales workers who had more interactions with angry clients had increased risk for depression and anxiety. Experiencing clients' adverse behaviors (acute episodes) mediated the relationship between interacting with angry clients (a chronic situation) on depression and anxiety. Job satisfaction and managers' support moderated the relationship between interacting with angry clients and mental health problems. **Conclusion:** We suggest that employers of service and sales workers should recruit staff based on their aptitude for such work, thus ensuring job satisfaction, and train them to deal with angry clients in such a way that they experience less emotional burden. Employers should also make bylaws requiring managers to directly take care of adverse social behavior by clients. Furthermore, a sociocultural campaign to prevent adverse social behavior by clients is also needed.

Park et al. 2021.

Safety and Health at Work, vol. 12, no. 2.

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: Anxiety; client; depression; emotional labor.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S2093791120303516?via%3Dihub>

Psychosocial Issues

Emotional intelligence: predictor of employees' wellbeing, quality of patient care, and psychological empowerment

Background: The study explored the role of emotional intelligence (EI) on employees' perceived wellbeing and empowerment, as well as their performance, by measuring their quality of care. **Methods:** The baseline data for the present project was collected from 78 staff of a Victorian aged care organization in Australia. Self-administered surveys were used to assess participants' emotional intelligence, general wellbeing, psychological empowerment, quality of care, and demographic characteristics. The model fit was assessed using structural equation modelling by AMOS (v 24) software. **Results:** The evaluated model confirmed that emotional intelligence predicts the employees' psychological empowerment, wellbeing, and quality of care in a statistically significant way. **Conclusions:** The current research indicates that employees with higher EI will more likely deliver a better quality of patient care. Present research extends the current knowledge of the psychological empowerment and wellbeing of employees with a particular focus on emotional intelligence as an antecedent in an under-investigated setting like aged care setting in Australia.

Karimi et al. 2021.

BMC Psychology, vol. 9, no. 1.

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

Keywords: Emotional intelligence; psychological empowerment; quality of patient care; wellbeing.

Evidence Level: 5A

Link: <https://bmcpyschology.biomedcentral.com/articles/10.1186/s40359-021-00593-8>

Does cultural distance energize employees? The moderating role of psychological safety

The increasingly globalized workforce and the growing need for boosting employee energy have engendered both practical and research interest in stimulating employee energy in intercultural interactions. Yet neither the culture research nor the energy literature has explored the link between cultural distance and employee relational energy—the heightened level of psychological resources in social relations. This paper presents empirical evidence of cultural distance stimulating relational energy. Further, building upon the threat-rigidity theory, I propose that cultural distance stimulates relational energy more when employees perceive high levels of psychological safety. Two studies were conducted to test these two hypotheses. One laboratory experiment on 202 international students at a Dutch university provided causal evidence of the positive relationship between cultural distance and relational energy. Next, a two-wave field study on 373 international employees was conducted to replicate this main effect of cultural distance and further investigate the moderating role of psychological safety. Results supported that employees with higher levels of psychological safety are more prone to experience enhanced relational energy as a result of cultural distance. These findings contribute to the scarce research on possible positive influence of cross-cultural communication at work, and also advance the growing research on the antecedents of employee relational energy. The implications for practitioners to energize employees are also discussed.

Yuan. 2021.

PLoS One, vol. 16, no. 6.

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

Keywords: Employees; cultural distance; psychological safety.

Evidence Level: 6B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0252406>

Distress, work satisfaction, and work ability are mediators of the relation between psychosocial working conditions and mental health-related long-term sickness absence

Purpose: This study investigated the effects of psychosocial working conditions on mental health-related long-term sickness absence and whether distress, work satisfaction, burnout, engagement, and work ability mediated the associations between psychosocial working conditions and mental health-related long-term sickness absence. **Methods:** This cohort study included 53,833 non-sick listed workers who participated in occupational health surveys between 2010 and 2013. The effects of the individual psychosocial working conditions on mental long-term sickness absence were analyzed using univariable and multivariable logistic regression analyses. Mediation analyses were performed to examine the mediating role of distress, burnout, work satisfaction, engagement, and work ability between psychosocial working conditions and mental long-term sickness absence. The mediation analyses were performed using structural equation modeling. **Results:** Role clarity, cognitive demands, emotional demands, work variety, learning opportunities, and co-worker support were related to mental health-related long-term sickness absence after adjustment for other working conditions. The relationship between emotional demands and mental health-related long-term sickness absence was the strongest, OR 1.304 ($p < 0.001$, 95% CI 1.135 to 1.498). The relation between psychosocial working conditions and mental health-related long-term sickness absence was mediated by distress, burnout, work satisfaction, engagement, and work ability. Distress was the most important mediator between psychosocial working conditions and mental health-related long-term sickness absence. **Conclusions:** Psychosocial working conditions are related to mental health-related long-term sickness absence. After correction for other working conditions, the association between emotional demands and mental health-related long-term sickness absence was the strongest. Psychosocial working conditions are indirectly related to mental health-related long-term sickness absence through mediation by distress, work satisfaction, and work ability.

vanHoffen et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Conditions; health surveys; mediation analysis; mental health; psychosocial working; sick leave.

Evidence Level: 4A

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09931-w>

Enabling Healthy and Safe Workplaces

Health and Wellbeing

Health and wellness in the Australian coal mining industry: A cross sectional analysis of baseline findings from the RESHAPE workplace wellness program

Overweight and obesity has reach pandemic levels, with two-thirds (67%) of adult Australians classified as overweight or obese. As two of the most significant behavioral risk factors for obesity are modifiable (diet and exercise), there exists an opportunity for treatment through workplace health promotion initiatives. As one of Australia's largest industries with its own unique workplace factors, the mining industry has previously reported higher than population levels of overweight and obesity. This represented an opportune setting to test the RESHAPE workplace wellness program. RESHAPE is an eight-step framework (based on the WHO 'Health Workplace Framework and Model') which aims to provide a sustained approach to wellness in the workplace. This paper presents baseline findings from a pilot study that aimed to implement RESHAPE at three mine sites in NSW, Australia, and investigates the issue of overweight and obesity in the coal mining industry. Across three mine sites, 949 coal miners were examined cross-sectionally on a range of workplace, wellness, health, diet, and exercise factors using a paper-based survey. This was a predominantly male sample (90.4%) with the majority (59.2%) of participants aged 25-44 years. Self-reported height and weight measures indicated that less than 20 percent (18.9%) of participants were in a healthy BMI range, while there were effectively equal numbers of overweight (40.9%) and obese

(39.1%) participants. Only 3.5% of participants met the daily recommendation for vegetables (5 serves) and shift-workers had greater association with elevated BMI compared to non-shift workers ($B = 1.21$, 95% CI: 0.23, 2.20, $p = 0.016$). Poor nutrition is likely to be a key component in elevated levels of overweight and obesity within this industry, with workplace factors compounding challenges workers face in implementing health behavior change. Future studies would benefit from assessing diet and physical activity knowledge in relation to recommendations and serving sizes.

Bezzina et al. 2021.

PLoS One, vol. 16, no. 6.

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

Keywords: Health; wellness; coal mining; industry; RESHAPE; workplace.

Evidence Level: 4A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0252802>

Analysis of factors contributing to occupational health inequality in Korea: a cross-sectional study using nationally representative survey data

Background: Despite the consensus that higher occupational classes tend to have better health and lower mortality rates, one study has reported reversed occupational gradients in mortality rates among Korean men after the economic crisis in the late 2000s. To examine these patterns of health inequality in more detail, we investigated the tendency of occupational gradients in socioeconomic position and multiple pathway indicators known to affect mortality in Korea. **Methods:** We used data from 4176 men aged 35-64 in Korea derived from the 2007-2009 and 2013-2015 Korean National Health and Nutrition Examination Surveys. We compared the age-standardized prevalence and age-adjusted mean values of each contributing factor to health inequality among occupational groups, which are divided into upper non-manual workers, lower non-manual workers, manual workers, and others. Contributing factors included childhood and adulthood socioeconomic position indicators, biological risk factors, health behaviors, psychosocial factors, and work environment. **Results:** Upper non-manual workers had prominently higher levels of education, income, parental education, and economic activity than lower non-manual and manual workers. The rates of smoking and high-risk alcohol consumption were lower, and the rate of weight control activities was higher, in the non-manual classes. Further, the rates of depression and suicidal ideation were lower, and perceptions of the work environment were more favorable, among non-manual workers than among their manual counterparts. **Conclusions:** We detected occupational inequality in a wide range of socioeconomic positions and pathway indicators in Korea with consistently favorable patterns for upper non-manual workers. These occupational gradients do not support the previously reported reversed pattern of higher mortality rates in non-manual groups versus in the manual job class in Korea.

Noh et al. 2021.

Archives of Public Health, vol. 79, no. 1.

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

Keywords: Health inequalities; mortality; occupations; psychology; Republic of Korea; risk factors; socioeconomic factors.

Evidence Level: 4B

Link: <https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-021-00638-9>

Work Health and Safety

Health service use and health outcomes among international migrant workers compared with non-migrant workers: A systematic review and meta-analysis

Objectives: The review aimed to synthesise recent evidence on health service use and health outcomes among international migrant workers, compared with non-migrant workers. **Methods:** A search was carried out in MEDLINE, PubMed, Embase, and CINAHL for studies published between Jan 1, 2010, and Feb 29, 2020. Included outcomes were: occupational health service use, fatal occupational injury, HIV, and depression. Two authors independently screened records, extracted data, assessed risk of bias and judged

quality of evidence. We meta-analysed estimates and conducted subgroup analyses by sex, geographical origin, geographical destination, and regularity of migration. **Results:** Twenty-one studies were included comprising >17 million participants in 16 countries. Most studies investigated regular migrant workers in high-income destination countries. Compared with non-migrant workers, migrant workers were less likely to use health services (relative risk 0.55, 95% confidence interval 0.41 to 0.73, 4 studies, 3,804,131 participants, I² 100%, low quality of evidence). They more commonly had occupational injuries (1.27, 95% confidence interval 1.11 to 1.45, 7 studies, 17,100,626 participants, I² 96%, low quality of evidence). Relative risks differed by geographical origin and/or destination. There is uncertainty (very low quality of evidence) about occupational health service use (0 studies), fatal occupational injuries (5 studies, N = 14,210,820), HIV (3 studies, N = 13,775), and depression (2 studies, N = 7,512). **Conclusions:** Migrant workers may be less likely than non-migrant workers to use health services and more likely to have occupational injuries. More research is required on migrant workers from and in low- and middle-income countries, across migration stages, migrating irregularly, and in the informal economy.

Pega et al. 2021.

PLoS One, vol. 9, no. 16.

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

Keywords: Health service; migrant workers; health outcomes; non-migrant workers

Evidence Level: 1A

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0252651>

Risk Assessment

Assessing disabling and non-disabling injuries and illnesses using accepted workers compensation claims data to prioritize industries of high risk for Oregon young workers

Introduction: Young workers are especially vulnerable to occupational injuries and illnesses. There is a continued need to investigate injury burden among young workers across demographics and industry to inform targeted interventions. Workers compensation (WC) claims are important for quantifying work-related injuries and illnesses, however published studies have focused on disabling claims. This study extended previous research on Oregon young workers by including the most recent WC claims data to identify patterns of injury and high risk industries. **Methods:** We obtained all accepted disabling claims (N = 13,360) and a significant portion of non-disabling claims (N = 24,660) on workers aged 24 years and under from 2013 to 2018. Claim count, rate and cost were calculated by year, age, gender, industry, and injury type. A prevention index (PI) method was used to rank industries in order to inform prevention efforts.

Results: Average annual disabling and non-disabling claim rates were 111.6 and 401.3 per 10,000 young workers. Workers aged 19-21 (disabling: 119.0 per 10,000 and non-disabling: 429.3) and 22-24 years (115.7 and 396.4) and male workers (145.3 and 509.0) had higher claim rates than workers aged 14-18 (80.6 and 297.0) and female workers (79.8 and 282.9). The most frequent injury types were "struck by/against" (35.6%) and "work-related musculoskeletal disorders (WMSDs)" (19.5%). High risk industries included agriculture, construction, and manufacturing for both genders combined. For female young workers, the highest risk industry was healthcare. **Conclusions:** This study demonstrated the added value of non-disabling WC claims data. Using both disabling and non-disabling data and PI method, agriculture, construction, manufacturing and healthcare industries were identified as priority workplaces to prevent common and costly injuries among Oregon young workers. Practical Applications: While the industries identified are considered hazardous for all workers, findings in this study can guide targeted research and prevention efforts specific to young workers.

Yang et al. 2021.

Journal of Safety Research, vol. 77, no. 241-254.

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

Keywords: Disabling claims; non-disabling claims; work-related injury and illness; workers' compensation; young workers.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0022437521000402?via%3Dihub>

Development of a digital video-based occupational risk assessment method

The development and implementation of an observational video-based risk assessment is described. Occupational risk assessment is one of the most important yet also challenging tasks for employers. Most assessment tools to date use questionnaires, expert interviews, and similar tools. Video analysis is a promising tool for risk assessment, but it needs an objective basis. A video of a plastering worker was recorded using a 360° camera. The recording was then analyzed using the developed observational matrix concerning *Work Characteristics*, *Work Activities* as well as potential risks. Risk factors present during the video of the work included lifting, fall from ladder, hazardous substances as well as occasionally bad posture. The worker had no or just one risk factor present during most of the time of the video recording, while only 16 s with more than one risk factor present according to the observational matrix. The paper presents a promising practical method to assess occupational risks on a case-by-case basis. It can help with the risk assessment process in companies which is required by law in some industrialized countries. The matrix in combination with video analysis is a first step toward digital observational risk assessment. It can also be the basis of an automated risk assessment process.

Beese et al. 2021.

Frontiers of Public Health, vol. 10, no. 9.

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

Keywords: Construction work; occupational health; occupational safety; risk assessment; video analysis.

Evidence Level: 6A

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2021.683850/full>

Chronic Health Issues

A 2019 update on Occupational Lung Diseases: A narrative review

Occupational lung diseases (OLDs) are caused, aggravated or exacerbated by exposures at the workplace. OLDs encompass a wide range of respiratory diseases similar to that found outside the work environment. Occupational asthma is the most commonly diagnosed OLD. Other OLDs may include acute and chronic conditions, ranging from hypersensitivity pneumonitis to chronic obstructive pulmonary disease (COPD) to pulmonary fibrosis. Historically, research into OLDs has centered on diseases resulting from exposures relevant to high-income countries and more obvious hazardous occupations, such as silicosis in coal miners. Peer-reviewed publications in 2019 have broadened the focus to include low- and middle-income countries and once-overlooked occupations such as dry cleaning and animal husbandry. Technological advances and greater understanding of disease etiology have allowed researchers and clinicians to implement improved risk analysis, screening and mitigation strategies to not only treat disease once it occurs, but to identify at-risk populations and institute protections to prevent or limit the negative impacts of workplace hazards. As recognition of OLDs as a worldwide threat in a variety of occupations increases, research is allowing for the development of better treatments and preventive measures that advance workers' rights and ensure their continued good health.

Vlahovich et al. 2021.

Pulmonary Therapy, vol. 7, no. 1.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

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

Keywords: Asthma; COPD; occupational lung disease; pneumoconiosis; pulmonary fibrosis; small airways disease.

Evidence Level: 6A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8137769/>

Occupational performance of hearing-impaired and normal-hearing workers in Korea

Background and objectives: This study aimed to investigate the occupational performance of Korean workers with and without hearing loss and analyze the hearing-related difficulties in the working environment. **Subjects and methods:** The Amsterdam checklist for hearing and work was used for the analyses and the occupational environments of the Korean workers were investigated. Out of 129 total

participants, 86 workers experienced severe to profound hearing loss and 43 had the normal hearing ability. The hearing-impaired workers were recruited from two leading vocational centers and normal-hearing workers were their colleagues. **Results:** The hearing-impaired workers were found to take fewer sick leaves and exhibited higher rates of permanent job statuses compared to the normal-hearing workers. Workers with hearing loss rarely detected background sound; however, they could perceive reverberation more frequently. They felt more satisfied with their careers than the normal hearing workers as they received social support and needed to put their effort into hearing for most hearing activities. Furthermore, the effort in hearing increased with the increase in job demand, job control, social support, and career satisfaction. The working hours per week increased with the increase in age, education level, job demand, job control, and social support. Different trends were observed in 9 out of 12 variables while comparing the data from the present study with that obtained from the hearing-impaired workers of the Netherlands, indicating a large difference between countries. **Conclusions:** Although the hearing-impaired Korean workers operate diligently with good job positions, it is necessary to enhance their acoustic environment and provide them social support. Considering the cultural background of the hearing-impaired workers, the development of suitable vocational rehabilitation programs and specific questionnaires is strongly recommended worldwide.

Kim et al. 2021.

Journal of Audiology and Otology.

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

Keywords: Acoustic environment; Amsterdam checklist for hearing and work; Korean hearing-impaired workers; occupational performance; vocational rehabilitation.

Evidence Level: 5B

Link: <https://www.ejao.org/journal/view.php?doi=10.7874/jao.2021.00185>

Leisure-time, occupational, and commuting physical activity and the risk of chronic kidney disease in a working population

Physical activity has been linked to a lower risk of chronic kidney disease (CKD); however, evidence on the relationship between domain-specific physical activity and CKD is scarce. This study aimed to examine the risk of CKD in relation to leisure-time, occupational, and commuting physical activities in a large occupational cohort in Japan. Participants were 17,331 workers (20-65 years old) without CKD and were followed-up for a maximum period of 13 years. Incident CKD was defined as an estimated glomerular filtration rate of < 60 mL/min/1.73 m² and/or proteinuria determined using the dipstick test. The Cox proportional hazards models were used to examine the associations. During 147,752 person-years of follow-up, 4013 participants developed CKD. Workers who were standing or walking at work and those who were fairly active at work had adjusted hazard ratios of 0.88 (95% confidence interval 0.86-0.96) and 0.89 (95% confidence interval 0.78-1.02), respectively, for developing CKD than sedentary workers. Leisure-time physical activity and walking for commute were not associated with CKD risk. Our findings suggest that occupational, but not leisure-time and commuting physical activities, is associated with a lower CKD risk.

Yamamoto et al. 2021.

Scientific Reports, vol. 11, no. 1.

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

Keywords: Leisure-time; occupational; physical activity; health risk; chronic kidney disease.

Evidence Level: 4B

Link: <https://www.nature.com/articles/s41598-021-91525-4>

Factors associated with low back pain among construction workers in Nepal: A cross-sectional study

Background: Low back pain (LBP) is the commonest cause of disability throughout the world. This study aimed to determine the prevalence and factors associated with LBP among the construction workers in Nepal. **Methods:** A community-based cross-sectional study was conducted among the construction workers working in Banepa and Panauti municipalities of Kavre district, from September 2019 to February 2020. Data was collected purposively by face-to-face interview from 402 eligible participants from the both municipalities using semi-structured questionnaire. Mobile-based data collection was done using

KoboCollect. Data were exported to and analysed using R-programming software (R-3.6.2). Univariate and multivariate logistic regressions were performed. All tests were two tailed and performed at 95% confidence interval (CI). **Result:** One-year prevalence of LBP among construction workers were 52.0% (95%CI: 47.0-57.0). The higher odds of LBP was reported among females [adjusted odds ratio (aOR) = 2.42; 95%CI: 1.12-5.23], those living below poverty-line (aOR = 2.35; 95%CI: 1.32-4.19), participants with more than five years of work experience (aOR = 1.66; 95%CI: 1.01-2.73) and those with intermediate sleep quality (aOR = 2.06; CI: 1.03-4.11). About 80.0% of construction workers with LBP never seek healthcare services due to: a) time constraints (90.9%), b) financial constraints (18.1%) and c) fear of losing wages on seeking healthcare services (40.9%). The majority of the participants (94.8% among those without LBP and 72.3% among those with LBP) did nothing to prevent or manage LBP. **Conclusion:** The prevalence of LBP in the past one year was high among construction workers where majority of workers never did anything to prevent or manage LBP. Therefore, the public health professionals should set up the health promotion, education, and interventions aimed at increasing awareness on preventive techniques and predisposing factors of LBP.

Adjikari et al. 2021.

PLoS One, vol. 16, no. 6.

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

Keywords: Low back pain; construction; construction workers; Nepal.

Evidence Level: 4B

Link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0252564>

Occupational Exposure

In-house contractors' exposure to risks and determinants of industrial accidents; with focus on companies handling hazardous chemicals

Background: The series of serious industrial accidents in recent years at contractors to large companies has highlighted risk outsourcing as a real and urgent problem. This study aims to review the difference in the degree of risk exposure and the occurrence of industrial accidents depending on the type of company relations. Among in-house contractors, the focus will be on those handling hazardous chemicals that include companies for which outsourcing requires approval. **Methods:** This study uses the 9th wave of the Industrial Safety and Health Survey (2018). For determining the degree of risk exposure, the occurrence of industrial accidents, and industrial accident rate, multivariate, logistic, and fractional logit, regression analyses were used, respectively. **Results:** First, In-house contractors' degree of risk exposure is higher than that of the client companies. In particular, this gap is even greater for companies dealing with chemicals. Second, among only those that handle hazardous chemicals, in-house contractors do show a significantly higher rate of industrial accident occurrence. Third, In-house contractors have a significantly higher rate of industrial accidents from diseases than client companies. **Conclusion:** The analysis supports the intent of the legal amendment that strengthens the protection of in-house contracted workers who handle hazardous chemicals. Second, the results of this study suggest that safety and health management must go beyond legal compliance and ensure that it has substance and effectiveness. Last, there should be policy consideration is necessary to reduce attempts to hide industrial accidents.

Shin. 2021.

Safety and Health at Work, vol. 12, no. 2.

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: In-house contract; industrial accident; risk transfer.

Evidence Level: 5A

Link: <https://www.sciencedirect.com/science/article/pii/S209379112030367X?via%3Dihub>

Characterizing exposures to flame retardants, dioxins, and furans among firefighters responding to controlled residential fires

Firefighters may encounter items containing flame retardants (FRs), including organophosphate flame retardants (OPFRs) and polybrominated diphenyl ethers (PBDEs), during structure fires. This study utilized biological monitoring to characterize FR exposures in 36 firefighters assigned to interior, exterior, and overhaul job assignments, before and after responding to controlled residential fire scenarios. Firefighters provided four urine samples (pre-fire and 3-h, 6-h, and 12-h post-fire) and two serum samples (pre-fire and approximately 23-h post-fire). Urine samples were analyzed for OPFR metabolites, while serum samples were analyzed for PBDEs, brominated and chlorinated furans, and chlorinated dioxins. Urinary concentrations of diphenyl phosphate (DPhP), a metabolite of triphenyl phosphate (TPhP), bis(1,3-dichloro-2-propyl) phosphate (BDCPP), a metabolite of tris(1,3-dichloro-2-propyl) phosphate (TDCPP), and bis(2-chloroethyl) phosphate (BCEtP), a metabolite of tris(2-chloroethyl) phosphate (TCEP), increased from pre-fire to 3-hr and 6-hr post-fire collection, but only the DPhP increase was statistically significant at a 0.05 level. The 3-hr and 6-hr post-fire concentrations of DPhP and BDCPP, as well as the pre-fire concentration of BDCPP, were statistically significantly higher than general population levels. BDCPP pre-fire concentrations were statistically significantly higher in firefighters who previously participated in a scenario (within the past 12 days) than those who were responding to their first scenario as part of the study. Similarly, firefighters previously assigned to interior job assignments had higher pre-fire concentrations of BDCPP than those previously assigned to exterior job assignments. Pre-fire serum concentrations of 2,3,4,7,8-pentachlorodibenzofuran (23478-PeCDF), a known human carcinogen, were also statistically significantly above the general population levels. Of the PBDEs quantified, only decabromodiphenyl ether (BDE-209) pre- and post-fire serum concentrations were statistically significantly higher than the general population. These results suggest firefighters absorbed certain FRs while responding to fire scenarios.

Mayer et al. 2021.

International Journal of Hygiene and Environmental Health, vol. 236.

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: Biomonitoring; firefighters; furans; occupational exposure; Organophosphate flame retardants (OPFRs); Polybrominated diphenyl ethers (PBDEs).

Evidence Level: 5A

Link: <https://www.sciencedirect.com/science/article/pii/S1438463921000973?via%3Dihub>

Early occupational exposure to lead on neutrophil-to-lymphocyte ratio and genotoxicity

Background: Lead (Pb) is known to induce detrimental health effects in exposed populations, including hematotoxicity and genotoxicity. Complete blood count (CBC) is a cost-effective and easy way to determine toxicity, and variations in proportion of different types of leukocytes: neutrophil-to-lymphocyte ratio (NLR) and lymphocyte-to-monocyte ratio (LMR) are further evidence of hematotoxicity. However, few studies have been conducted to systematically evaluate effects of occupational Pb exposure on NLR and LMR, and their associations with genotoxicity. **Objectives:** Our study was aimed to systematically assess the effects of current occupational Pb exposure on NLR and LMR, and their associations with genotoxicity. **Methods:** Our investigation was performed on 1176 workers from a newly built battery factory in North China. The workers had just entered their current job position in recent years and most of them had no previous history of occupational exposure to Pb. Blood lead levels (BLLs) and leukocytes indices were detected for all participants. Cytokinesis-blocked micronucleus assay (MN; n = 675) and alkaline comet assay (% tail DNA; n = 869) were used to assess genotoxicity. Multivariate linear and Poisson regression analyses were conducted to examine associations between leukocytes indices, genotoxic biomarkers and BLLs with adjustment for covariates. Spearman correlation and mediation analyses were used to investigate relationships between NLR and genotoxicity. **Results:** Among all the exposed workers, NLR increased with increasing BLLs. However, WBC and LMR did not change significantly. Significant and dose-dependent increases in both MN frequencies and % tail DNA were observed among groups with different exposure doses. Compared with the normal NLR group ($1.48 \leq \text{NLR} < 4.58$), the high NLR group ($\text{NLR} \geq 4.58$) had higher % tail DNA. In addition, there was a significant and positive association between NLR and % tail DNA among all the workers, and % tail DNA mediated 15% of the effect of Pb on increasing NLR. **Conclusion:** Our

large-scale population study shows that Pb exposure increased NLR and induced genotoxicity. There was an association between elevated NLR and DNA damage. In addition, the mediation effect of % tail DNA on the relationship between BLLs and NLR provided mechanistic evidence that certain mechanisms, e.g. inflammation, may be involved in elevation of NLR from Pb exposure. Therefore, NLR may be a convenient and sensitive biomarker for indication of Pb toxicity. Further studies are needed to validate the proposed mechanism and NLR as a biomarker.

Meng et al. 2021.

Environment International, vol. 151.

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

Keywords: Comet; genotoxicity; inflammation; lead exposure; micronuclei; neutrophil-to-lymphocyte ratio (NLR).

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S0160412021000738?via%3Dihub>

Occupational exposure to respirable crystalline silica in municipal household waste collection and road cleaning workers

Despite the increase in the number of cases among South Korean sanitation workers, lung cancer as a result of exposure to occupational carcinogen has not been sufficiently investigated. This study aimed to identify exposure levels of sanitation workers to respirable crystalline silica (RCS) for various tasks and factors that affect individual RCS exposure. Exposure to RCS was assessed for 90 sanitation workers from seven companies. The obtained geometric mean value of the RCS was 2.6 $\mu\text{g m}^{-3}$, which is a similar level to recommendations set by California's Office of Environmental Health Hazard Assessment's Recommended Exposure Limit. Meanwhile, coal briquette ash (CBA) collectors exhibited the highest RCS concentration (24 $\mu\text{g m}^{-3}$), followed by road cleaning workers who used a blower, municipal household waste collectors, sweepers, and drivers ($p < 0.05$). Additionally, when the ANOVA was conducted, statistically significant differences were observed in RCS concentrations among various factors such as job task, season, employment type and city scale. Our study confirmed that sanitation workers who work outdoors could be exposed to RCS. Due to the possibility of exposure to high RCS concentrations, special attention should be paid to the collection of used CBA and road cleaning involving the use of a blower.

Kim et al. 2021.

Scientific Reports, vol. 11, no. 1.

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

Keywords: Occupational exposure; respirable crystalline silica; municipal household; waste collection; road cleaning; workers.

Evidence Level: 5A

Link: <https://www.nature.com/articles/s41598-021-92809-5>

Occupational exposure to polycyclic aromatic hydrocarbons and risk of prostate cancer

Background: Several industries entailing exposure to polycyclic aromatic hydrocarbons (PAHs) are known or suspected carcinogens. A handful of studies have assessed the role of PAHs exposure in prostate cancer risk, but none has examined tumor aggressiveness or the influence of screening practices and detection issues. We aimed to examine the association between lifetime occupational exposure to PAHs and prostate cancer risk. **Methods:** Detailed work histories were collected from 1,929 prostate cancer cases (436 aggressive) and 1,994 controls from Montreal, Canada (2005-2012). Industrial hygienists applied the hybrid expert approach to assign intensity, frequency and certainty of exposure to benzo[a]pyrene, PAHs from wood, coal, petroleum, other sources, and any source, in each job held. Odds ratios (ORs) for prostate cancer risk associated with lifetime PAHs exposure, adjusted for age, ancestry, education, lifestyle and occupational factors, and 95% confidence intervals (CI), were estimated using unconditional logistic regression. **Results:** After restriction to probable and definite exposures, and application of a 5-year lag, no clear association emerged for any of the PAHs, although small excesses in risk were apparent with 5-year increments in exposure to PAHs from wood (OR = 1.06, 95%CI 0.95 to 1.18). While analyses by cancer aggressiveness suggested no major differences, some elevated risk of high-grade cancer was observed for exposure to PAHs from wood (OR = 1.37, 95%CI 0.65 to 2.89), frequently occurring among firefighters.

Conclusion: Findings provide weak support for an association between occupational exposure to PAHs from wood and prostate cancer risk.

Barul et al. 2021.

Environmental Health, vol. 20, no. 1.

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

Keywords: Case-control study; occupational health; polycyclic aromatic hydrocarbons; prostate; tumor.

Evidence Level: 4A

Link: <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-021-00751-w>

Associations between multiple occupational exposures and sleep problems: Results from the national French working conditions survey

This study explored the associations between a range of occupational exposures and sleep problems using data from the French 2016 Working Conditions survey conducted on a nationally representative sample of workers, including 20,430 employees aged 15-65 yr (8,579 men, 11,851 women). The authors reported that almost all psychosocial work exposures were associated with sleep problems, whereas the only significant working time/hours factor associated with sleep problems was night work among women. They recommended that workplace preventive strategies targeting the work environment may help improve sleep among working populations.

Bertrais et al. 2021.

Journal of Sleep Research, vol. 30, no. 3.

Keywords: Insomnia symptoms; job stress; multiple exposures; occupational factors; working conditions.

Evidence Level: 4B

Link: <https://onlinelibrary.wiley.com/doi/10.1111/jsr.13101>

Sedentary Practices

The effects on self-efficacy, motivation and perceived barriers of an intervention targeting physical activity and sedentary behaviours in office workers: a cluster randomized control trial

Background: The importance of physical activity on health is clear, but changing behaviour is difficult. Successful interventions aiming to improve physical activity and reduce sedentary behaviour is therefore of importance. The aim of this study was to evaluate effects on motivation, self-efficacy and barriers to change behaviour from two different behavioural intervention focusing either on reducing sedentary behaviour or on increasing physical activity as compared to a waiting list control group. **Methods:** The study was designed as a cluster randomized control trial (RCT) within two private companies. Self-efficacy, motivation and perceived barriers were together with demographic variables assessed before and after a 6-month intervention. Participant cluster teams were randomly allocated to either the physical activity intervention (iPA), the sedentary behaviour intervention (iSED), or control group. The intervention was multi componential and included motivational counselling based on Cognitive behaviour therapy and Motivational interviewing, group activities and management involvement. Group differences were determined using Bayesian multilevel modelling (parameter estimate; credible interval (CI)), analysing complete cases and those who adhered to the protocol by adhering to at least 3 out of 5 intervention sessions. **Results:** After the intervention, the complete cases analysis showed that the iPA group had significantly higher autonomous motivation (0.33, CI: 0.05-0.61) and controlled motivation (0.27, CI: 0.04-0.51) for physical activity compared with the control group. The iSED group scored less autonomous and controlled motivation compared to the iPA group (0.38, CI: - 0.69- -0.087 respectively - 0.32, CI: - 0.57-0.07) but no significant differences compared with the control group. Among individuals that adhered to the protocol, the results showed higher scores on Exercise (3.03, CI: 0.28-6.02) and Sedentary self-efficacy (3.59, CI: 0.35-7.15) for individuals in the iPA group and on Sedentary self-efficacy (4.77, CI: 0.59-9.44) for the iSED group compared to the control group. **Conclusion:** These findings indicate that the interventions were successful in increasing self-efficacy in each intervention group and autonomous motivation for exercise in the iPA group, in particular when actively participating in the motivational counselling sessions.

Blom et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: Motivation; office-workers; physical activity; randomized intervention; sedentary behaviour; self-efficacy.

Evidence Level: 2A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-11083-2>

Physical Activity

Occupational physical activity and longevity in working men and women in Norway: a prospective cohort study

Background: Studies suggest that high occupational physical activity increases mortality risk. However, it is unclear whether this association is causal or can be explained by a complex network of socioeconomic and behavioural factors. We aimed to examine the association between occupational physical activity and longevity, taking a complex network of confounding variables into account. **Methods:** In this prospective cohort study, we linked data from Norwegian population-based health examination surveys, covering all parts of Norway with data from the National Population and Housing Censuses and the Norwegian Cause of Death Registry. 437 378 participants (aged 18–65 years; 48·7% men) self-reported occupational physical activity (mutually exclusive groups: sedentary, walking, walking and lifting, and heavy labour) and were followed up from study entry (between February, 1974, and November, 2002) to death or end of follow-up on Dec 31, 2018, whichever came first. We estimated differences in survival time (death from all causes, cardiovascular disease, and cancer) between occupational physical activity categories using flexible parametric survival models adjusted for confounding factors. **Findings:** During a median of 28 years (IQR 25–31) from study entry to the end of follow-up, 74 203 (17·0%) of the participants died (all-cause mortality), of which 20 111 (27·1%) of the deaths were due to cardiovascular disease and 29 886 (40·3%) were due to cancer. Crude modelling indicated shorter mean survival times among men in physically active occupations than in those with sedentary occupations. However, this finding was reversed following adjustment for confounding factors (birth cohort, education, income, ethnicity, prevalent cardiovascular disease, smoking, leisure-time physical activity, body-mass index), with estimates suggesting that men in occupations characterised by walking, walking and lifting, and heavy labour had life expectancies equivalent to 0·4 (95% CI –0·1 to 1·0), 0·8 (0·3 to 1·3), and 1·7 (1·2 to 2·3) years longer, respectively, than men in the sedentary referent category. Results for mortality from cardiovascular disease and cancer showed a similar pattern. No clear differences in survival times were observed between occupational physical activity groups in women. **Interpretation:** Our results suggest that moderate to high occupational physical activity contributes to longevity in men. However, occupational physical activity does not seem to affect longevity in women. These results might inform future physical activity guidelines for public health.

Dalene et al. 2021.

Lancet Public Health, vol. 6, no. 6.

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: Occupation; physical activity; longevity; work.

Evidence Level: 4B

Link: [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(21\)00032-3/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00032-3/fulltext)

Accelerometer measured sedentary and physical activity behaviors of working patients after total knee arthroplasty, and their compensation between occupational and leisure time

Purpose Objective measurements of sedentary and physical activity (PA) behavior are scarce among working-age patients who undergo total knee arthroplasty (TKA). Aim was to assess sedentary and PA behaviors using accelerometers and to identify compensation effects between occupational and leisure time of sedentary and PA behavior. **Methods** One year post-TKA, 51 patients wore an ActiGraph(GT3x) accelerometer for 7 days. Sedentary time, prolonged sedentary bouts (≥ 30 min) and PA (light-intensity and moderate-to-vigorous PA) were examined. Compliance with the guideline of > 150 min moderate-to-

vigorous PA per week was calculated. Compensation effects were analyzed using multilevel models, splitting effects into routine and within-day compensation, stratifying by physical and non-physical jobs. The routine compensation effects are the ones of interest, representing habitual compensation during a week. **Results** Participants spent 60% of time in sedentary bouts and 17% in prolonged sedentary bouts, with 37% of PA spent in light-intensity and 3% in moderate-to-vigorous activity. About 70% of patients met the PA guideline. Routine compensation effects were found for workers in physical jobs, who compensated for their occupational light-intensity PA with less light-intensity PA during leisure time. Workers in non-physical jobs did not compensate for their occupational prolonged sedentary bouts, as these continued during leisure time. **Conclusion** This study showed that working TKA patients are highly sedentary 1 year after surgery, but most met the PA guideline. Especially those with non-physical jobs do not compensate for their occupational prolonged sedentary bouts. This stresses the need to stimulate PA among TKA patients not complying with the guidelines and those with non-physical jobs.

Hylkema et al. 2021.

Journal of Occupational Rehabilitation, vol. 31, no. 2.

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

Keywords: Knee replacement; accelerometry; physical activity; sedentary behavior.

Evidence Level: 5A

Link: <https://link.springer.com/article/10.1007%2Fs10926-020-09924-9>

Musculoskeletal Health

Musculoskeletal disorders associated with quality of life and body composition in urban and rural public school teachers

Introduction: Teachers have been reported to be a labor group with high rates of musculoskeletal disorders (MSDs), stress, and strong deterioration of quality of life (QoL). However, little information exists about the association between MSD, QoL, and body composition in rural and urban teachers. **Objective:** The aim was to study the association of MSD with QoL perception and body composition of urban and rural teachers. **Participants and Methods:** Participants are comprised a representative sample of urban and rural public schoolteachers from the Valparaiso Region, Chile. MSDs were evaluated with the Standardized Nordic Questionnaire for Musculoskeletal Symptoms validated for the Chilean population. QoL perception was evaluated with the 36-Item Short-Form Survey (SF-36). Body composition was measured via bioimpedance. A logistic regression model was used to evaluate the association between MSD, QoL, and body composition, adjusted for age and gender. **Results:** A total of 88.9% (urban 90%; rural 87%) of teachers felt pain in some body area, 71.2% of them with limitations; 39% of teachers presented body fat obesity, with the highest rate in rural women. The body area with the greatest MSD prevalence was the neck and shoulders (68.6%). Significant differences were observed between teachers with >p75 of MSD (over six pain regions) and those with ≤p75 (six or fewer painful regions; $p < 0.05$) on six QoL scales and on physical health components (PCSs) and mental health (MCS) in urban teachers. However, rural teachers presented no differences. The association between teachers with >p75 MSD and low QoL perception was significant ($p < 0.05$) in PCS and MCS. Furthermore, the regression model presents a significant association between rural areas and low PCS perception. **Conclusions:** Urban and rural teachers present high rates of MSD and obesity. Teachers with higher rates of MSD have their mental and physical QoL affected, making workplace intervention in MSD necessary to prevent teacher health deterioration.

Vega-Fernández et al. 2021.

Frontiers in Public Health, vol. 1, no. 9.

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

Keywords: Mental health; musculoskeletal disorders; obesity; physical health; quality of life; school teachers.

Evidence Level: 4B

Link: <https://www.frontiersin.org/articles/10.3389/fpubh.2021.607318/full>

Factors associated with headache and neck pain among telecommuters - a five days follow-up

Background: The current sanitary crisis brought on by the COVID-19 recently forced a large proportion of workers to adopt telecommuting with limited time to plan transition. Given that several work-related risk factors are associated with headache and neck pain, it seems important to determine those associated with headache and neck pain in telecommuters. The main objective of this study was to identify which telecommuting and individual associated factors are related with headache and neck pain occurrence in telecommuters over a five days follow-up. The second objective was to evaluate the impact of wearing a headset on headache and neck pain intensity in telecommuters. **Methods:** One hundred and sixty-two participants in telecommuting situation were recruited. Baseline assessment included sociodemographic data, headache and neck pain-related disability (6-item Headache Impact Test (HIT-6) and Neck Bournemouth Questionnaire (NBQ)), headache and neck pain frequency and intensity as well as questions about the wearing of a headset (headset wearing, headset type and headset wearing hours). A prospective data collection of headache, neck pain and headset wearing was conducted using daily e-mail over a 5-day follow-up. A stepwise multivariate regression model was performed to determine associated factors of headache or neck pain occurrence during the follow-up. A t-test was conducted to assess the impact of headset wearing on headache and neck pain intensity during the follow-up. **Results:** Regarding headache, the stepwise multivariate regression model showed that the HIT-6 score was associated with future headache occurrence in telecommuters (OR (95% CI) = 1.094 (1.042-1.148); $R^2 = 0.094$; $p < 0.001$). For neck pain, the stepwise multivariate regression showed that the NBQ score was related to future neck pain occurrence in telecommuters (OR (95% CI) = 1.182 (1.102-1.269); $R^2 = 0.182$; $p < 0.001$). T-test showed no difference between participants that wore a headset and participant that did not wore a headset on mean headache ($p = 0.94$) and neck pain ($p = 0.56$) intensity during the five days follow-up. **Conclusion:** Although several work-related risk factors are associated with headache and neck pain in workers, telecommuting did not present the same risks. Working set-up did not have a significant impact on headache and neck pain as headache-related disability was the only associated factor of future headache episodes and neck-pain related disability was the only associated factor of future neck pain episodes. Also, wearing a headset had no impact on headache and neck pain in telecommuters.

Houle et al. 2021.

BMC Public Health, vol. 21, no. 1.

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

Keywords: COVID-19; disability; headache; headset; neck pain; physical health; telecommuting.

Evidence Level: 5A

Link: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-11144-6>

Negative impacts of prolonged standing at work on musculoskeletal symptoms and physical fatigue: The fifth Korean working conditions survey

Purpose: We aimed to investigate variations in the risk of low back pain (LBP), lower extremity muscle pain, and whole body fatigue according to differences in prolonged standing work hours in relation to risk factor exposure and rest frequency. **Materials and methods:** From the fifth Korean Working Conditions Survey data collected in 2017, data for 32970 full-time workers who worked for more than 1 year at their present job were analyzed. We classified the workers according to exposure to fatigue or painful postures, carrying heavy objects, performance of repetitive movements that burden the musculoskeletal system, and how often they took a break. Relationships between time spent in a standing posture at work and risks of LBP, lower extremity muscle pain, and whole body fatigue were analyzed by multivariate logistic regression. **Results:** Of the full-time workers in the survey, 48.7% worked in a standing position for more than half of their total working hours. A higher odds ratio (OR) value for lower extremity muscle pain was observed in female not exposed to carrying heavy objects [OR: 3.551, 95% confidence interval (CI): 3.038-4.150] and not exposed to performing repetitive movements (OR: 3.555, 95% CI: 2.761-4.557). **Conclusion:** Changes in work methodologies are needed to lower the number of hours spent in a prolonged standing posture at work, including being able to rest when workers want to do so, to reduce pain and fatigue.

Jo et al. 2021.

Yonsei Medical Journal, vol. 62, no. 6.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

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

Keywords: Fatigue; low back pain; lower extremity; standing position; workers.

Evidence Level: 5B

Link: <https://www.eymj.org/DOIx.php?id=10.3349/ymj.2021.62.6.510>

Effects of load mass and position on the dynamic loading of the knees, shoulders and lumbar spine during lifting: a musculoskeletal modelling approach

Musculoskeletal models may enhance our understanding of the dynamic loading of the joints during manual material handling. This study used state-of-the-art musculoskeletal models to determine the effects of load mass, asymmetry angle, horizontal location and deposit height on the dynamic loading of the knees, shoulders and lumbar spine during lifting. Recommended weight limits and lifting indices were also calculated using the NIOSH lifting equation. Based on 1832 lifts from 22 subjects, we found that load mass had the most substantial effect on L5-S1 compression. Increments in asymmetry led to large increases in mediolateral shear, while load mass and asymmetry had significant effects on anteroposterior shear. Increased deposit height led to higher shoulder forces, while the horizontal location mostly affected the forces in the knees and shoulders. These results generally support the findings of previous research, but notable differences in the trends and magnitudes of the estimated forces were observed.

Skals et al. 2021.

Applied Ergonomics, vol. 96.

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: Computer simulation; musculoskeletal system; occupational injuries.

Evidence Level: 5A

Link: <https://www.sciencedirect.com/science/article/pii/S0003687021001381?via%3Dihub>

Causal relationship between the risk factors and work-related musculoskeletal disorders among professional drivers: A systematic review

Objective: This review evaluates the evidence on the strength of causal relationship between categories of risk factors (RFs) and work-related musculoskeletal disorders (WRMSDs) among professional drivers.

Background: A compilation of evidence on the causal relationship between RFs and WRMSDs among professional drivers is lacking. **Methods:** A systematic search of the literature was conducted in major electronic data bases that include Medline (1946 + via OvidSP), Embase (1974 + OvidSP), CINAHL (1982+), AMED, and Web of Science. The methodological quality of the studies was assessed and scored. A descriptive analysis on the categories of RFs associated with WRMSDs was conducted. The Bradford-Hill causation criteria and evidence interpretation tool were used to evaluate the causal relationship between RFs and WRMSDs in professional drivers. **Results:** Among the 54 studies reviewed, a strong evidence suggests a causal relationship between RFs such as whole-body vibration, awkward postures, lifting tasks, manual material handling, job stress, job demand, and previous pain episodes with WRMSDs. Moderate evidence was observed on RFs such as uncomfortable seat and low job satisfaction. The evidence on causal relationship between RFs such as years of professional driving, driving duration, and individual characteristics such as age and body mass index was inconclusive. **Conclusion:** There is strong to moderate evidence on the causal relationship between the physical and psychosocial RFs and WRMSDs among professional drivers. **Application:** Potential application of this review highlights evidence to occupational health practitioners, policy makers, and stakeholders on the strength of causal relationship between RFs and WRMSDs among professional drivers.

Joseph et al. 2021.

Human Factors.

User License: *Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)*

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

Keywords: Ergonomics; musculoskeletal disorders; professional drivers; risk assessment; risk factors.

Evidence Level: 1A

Link: <https://journals.sagepub.com/doi/full/10.1177/00187208211006500>

COVID 19

Guiding and Supporting Mental Health and Wellbeing

Workers' stress during the first lockdown: Consequences on job performance analyzed with a mediation model

Objective: This study sheds light on the pathways leading to an increase in workers stress levels and the resulting effects on job performance during a pandemic. **Methods:** Path analyses were conducted on a sample of 459 Canadian workers using MPlus software. These analyses allowed us to determine whether the association between potential stressors during lockdown and job performance was mediated by workers' stress. **Results:** The results revealed four significant indirect associations. Work-life balance dissatisfaction, gender (women), and marital tensions were indirectly associated with lower job performance because of their positive associations with stress. Teleworking was associated with higher job performance because of its negative association with stress. **Conclusions:** The results suggest that specific stressors are worth targeting with interventions to ensure job performance.

Lamarche et al. 2021.

Journal of Occupational and Environmental Medicine, vol. 63, no. 5.

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: Work; stress; lockdown; job performance.

Evidence Level: 5B

Link:

https://journals.lww.com/joem/Fulltext/2021/06000/Workers_Stress_During_the_First_Lockdown_4.asp
[X](#)

Intolerance of uncertainty and fear of COVID-19 moderating role in relationship between job insecurity and work-related distress in the Republic of Serbia

The COVID-19 outbreak in Serbia was followed by strict restrictions that negatively affected the economy, particularly small size companies. The complete lockdown and the prohibition of certain services have led to an unstable employment situation. Only several studies investigated the job insecurity and its consequences during COVID-19 pandemic, and some of them highlight the fear of COVID-19 as a significant moderator of mental health. Other studies emphasize the huge effect that intolerance of uncertainty could have in explaining distress, especially during pandemic. In addition, intolerance of uncertainty was considered as a possible moderator of the relationship between the objective and subjective job threat, as well their consequences for mental health. This study aimed to examine the presence of job insecurity and work related distress in Serbia during the first wave of COVID-19. We wanted to measure the effect of the job insecurity on experienced work distress, as well the moderation potential of the intolerance of uncertainty as an individual-level and the fear of coronavirus as a situation-dependent variable. Five hundred and twenty five employed participants took part in an online study during the first wave of coronavirus infection in Serbia. To measure job insecurity, we used Perception of job insecurity scale (PJIS), while distress was assessed with Distress scale from 4DSQ. Fear of COVID-19 was measured on three items. The intolerance of uncertainty was measured by the IUS-11 scale. The results showed that 30.4% of the participants consider their employment as moderately or highly insecure, and 15.1% thought they can lose their jobs. 63.4% of participants expressed increased levels of distress. The moderation analysis revealed that the effect of job insecurity on distress can be moderated by interaction of intolerance of uncertainty and COVID-related fear. In general, distress scores were increasing with increasing job insecurity, intolerance of uncertainty and fear of COVID-19. This pattern is not observed only when fear and intolerance of uncertainty were both low, when job instability could not influence distress. This study also showed that emotional appraisal of the job threat had higher impact on distress than the perceived threat, that shed the light on the importance of considering general resilience capabilities as a protective factor in the work environment in the time of crisis.

Blanusa et al. 2021.

Frontiers of Psychology, vol. 11, no. 12.

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

Keywords: Job threats; distress; fear of COVID-19; intolerance of uncertainty; job insecurity.

Evidence Level: 5B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8226083/>

Employee well-being profiles during COVID-19 lockdown: A latent profile analysis of French and UK employees

The coronavirus pandemic, social distancing, and lockdown measures have had an impact on employee well-being. This study uses Latent Profile Analysis to examine subjective well-being among employees during the first lockdown based on a cross-national survey in UK and France ($n = 652$). We identify five distinct well-being profiles, namely Moderately positive (67%), Languishing (18%), Flourishing (8%), Mixed feelings (4%), and Apathetic (3%). The results showed that while some employees were suffering, others managed to thrive and cope with the stresses of the lockdown. We also found that the profiles could be distinguished by perceived changes in financial situation and physical health as well as experienced boredom. Our study complements prior studies that examine the relations between individual characteristics and well-being during the pandemic on a general level by showing that employee well-being under lockdown is not the same across the board.

Harju et al. 2021.

Frontiers of Psychology, vol. 12.

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

Keywords: COVID-19; employee well-being; latent profile analysis; lockdown; multigroup CFA.

Evidence Level: 4B

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8219910/>

Identity leadership, social identity continuity, and well-being at work during COVID-19

The COVID-19 pandemic has led to widespread remote working that has posed significant challenges for people's sense of connection to their workplace and their mental health and well-being. In the present work, we examined how leaders' identity leadership is associated with the well-being of employees in the context of the COVID-19 pandemic. Specifically, we examined how both leaders' and team members' identity leadership is associated with employees' social identity continuity, and through this with their job satisfaction, burnout and loneliness at work. Employees ($N = 363$) participated in a field study during the COVID-19 pandemic, completing measures of their leader's and team members' identity leadership (i.e., entrepreneurship and impresarioship), social identity continuity, job satisfaction, burnout, loneliness at work. Results revealed that to the extent that employees perceived greater social identity continuity, they were more satisfied with their work and felt less lonely. Furthermore, mediation analyses revealed indirect effects of team members' identity entrepreneurship on job satisfaction and loneliness via an increase in social identity continuity. Results suggest that to foster employees' health and well-being in times of disruption, organizations might put in place practices that allow employees to maintain a sense of 'we-ness' at work by involving not only formal leaders but also other members of the organization.

Krug et al. 2021.

Frontiers of Psychology, vol. 12, no. 684475.

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

Keywords: COVID-19; health; identity continuity; identity leadership; social identity; well-being.

Evidence Level: 5A

Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8225939/>

Enabling Healthy and Safe Workplaces

COVID-19 patient returned to work after long hospitalization and follow-up: a case report

Background: Coronavirus disease 2019 (COVID-19) causes severe respiratory dysfunction and post-intensive care syndrome (PICS), which can significantly affect the return to work after discharge from the hospital. This report describes the first case of a patient with severe COVID-19 at our institution during the

first wave of the COVID-19 pandemic (February to June 2020) who returned to work following rehabilitation management. **Case:** A 48-year-old female nurse was admitted with COVID-19 and underwent mechanical ventilation (MV). Respiratory and anti-gravity training was conducted as physical therapy; however, the patient developed PICS, muscle weakness, delirium, and psychological problems. After the withdrawal of MV, muscle strengthening activities, activities of daily living (ADL) training, family visits, and occupational and speech therapy were started. On day 60 post-admission, the patient was able to perform ADL independently and was discharged; however, she continued to experience shortness of breath during exertion. Post-discharge, follow-up assessments for symptoms, respiratory function, and exercise capacity were continued. On day 130, she returned to work as a nurse. **Discussion:** The PICS noted during hospitalization in this patient improved, but at discharge, the patient had difficulty completing the practical tasks involved in a nurse's workload. Follow-up assessments of symptoms, respiratory function, and exercise capacity after discharge helped to determine whether the patient could return to work.

Uchiyama et al. 2021.

Progress in Rehabilitation Medicine, vol. 8, no. 6.

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; ICU-AW; post-intensive care syndrome (PICS); rehabilitation; return to work.

Evidence Level: 5A

Link: https://www.istage.jst.go.jp/article/prm/6/0/6_20210025/_article

COVID-19 and return-to-work for the construction sector: Lessons from Singapore

Singapore's construction sector employs more than 450,000 workers. During the height of the COVID-19 pandemic in Singapore from April to June 2020, migrant workers were disproportionately affected, including many working in the construction sector. Shared accommodation and construction worksites emerged as nexuses for COVID-19 transmission. Official government resources, including COVID-19 epidemiological data, 43 advisories and 19 circulars by Singapore's Ministries of Health and Manpower, were reviewed over 8 month period from March to October 2020. From a peak COVID-19 incidence of 1,424.6/100,000 workers in May 2020, the incidence declined to 3.7/100,000 workers by October 2020. Multilevel safe management measures were implemented to enable the phased reopening of construction worksites from July 2020. Using the Swiss cheese risk management model, the authors described the various governmental, industry, supervisory and worker-specific interventions to prevent, detect and contain COVID-19 for safe resumption of work for the construction sector.

Gan et al. 2021.

Safety and Health at Work, vol. 12, no. 2.

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; construction; migrant workers.

Evidence Level: 5B

Link: <https://www.sciencedirect.com/science/article/pii/S2093791121000329?via%3Dihub>

Attendance at London workplaces after symptom onset: a retrospective cohort study of staff members with confirmed COVID-19

COVID secure workplace guidance is important for disease control in workplaces. This study explored the proportion of symptomatic staff members attending workplaces after symptom onset or testing, and associated factors using London Coronavirus Response Centre (LCRC) records from routine telephone calls. A minority of symptomatic cases attended the workplace after the onset of COVID-19 symptoms, with a smaller proportion attending after testing. Males were less likely to attend the workplace after the onset of COVID-19 symptoms.

Jain et al. 2021.

Journal of Public Health, vol. 43, no. 2.

Keywords: Communicable diseases; health protection; public health.

Evidence Level: 4B

Link: <https://academic.oup.com/jpubhealth/article/43/2/236/6082829>

The Smart Safeguard System for COVID-19 to prevent cluster-infection in workplaces

The ongoing Coronavirus Disease 2019 (COVID-19) broke out in China since December 2019, and rapidly spread worldwide. To contain the disease, unessential businesses had been shut down in several countries to a varying extent. Nowadays, the enterprises are resuming productions and businesses. While the resumption of production is crucial to social development, it elevates the risk of cluster-infections at the workplaces. Guangdong Second Provincial General Hospital therefore set up the Smart Safeguard System for COVID-19, aiming to provide rapid screening and consistent protection to assist the local enterprises with resumption. The system has received positive feedback as being helpful and practical. It has the potential to be widely used to prevent the cluster-infection of COVID-19 at workplaces during the pandemic.

Li et al. 2021.

Journal of Infection and Public Health, vol. 14, no. 8.

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: Health and safety; occupational health practice; occupational hygiene; preventive medicine; viruses.

Evidence Level: 6A

Link: <https://www.sciencedirect.com/science/article/pii/S1876034121001647?via%3Dihub>

Shift work is associated with positive COVID-19 status in hospitalised patients

Introduction: Shift work is associated with lung disease and infections. We therefore investigated the impact of shift work on significant COVID-19 illness. **Methods:** 501 000 UK Biobank participants were linked to secondary care SARS-CoV-2 PCR results from Public Health England. Healthcare worker occupational testing and those without an occupational history were excluded from analysis. **Results:** Multivariate logistic regression (age, sex, ethnicity and deprivation index) revealed that irregular shift work (OR 2.42, 95% CI 1.92 to 3.05), permanent shift work (OR 2.5, 95% CI 1.95 to 3.19), day shift work (OR 2.01, 95% CI 1.55 to 2.6), irregular night shift work (OR 3.04, 95% CI 2.37 to 3.9) and permanent night shift work (OR 2.49, 95% CI 1.67 to 3.7) were all associated with positive COVID-19 tests compared with participants that did not perform shift work. This relationship persisted after adding sleep duration, chronotype, premorbid disease, body mass index, alcohol and smoking to the model. The effects of workplace were controlled for in three ways: (1) by adding in work factors (proximity to a colleague combined with estimated disease exposure) to the multivariate model or (2) comparing participants within each job sector (non-essential, essential and healthcare) and (3) comparing shift work and non-shift working colleagues. In all cases, shift work was significantly associated with COVID-19. In 2017, 120 307 UK Biobank participants had their occupational history reprofiled. Using this updated occupational data shift work remained associated with COVID-19 (OR 4.48 (95% CI 1.8 to 11.18)). **Conclusions:** Shift work is associated with a higher likelihood of in-hospital COVID-19 positivity. This risk could potentially be mitigated via additional workplace precautions or vaccination.

Maidstone et al. 2021.

Thorax, vol. 76, no. 6.

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

Keywords: COVID-19; infection control; occupational lung disease; respiratory infection; viral infection.

Evidence Level: 4A

Link: <https://thorax.bmj.com/content/76/6/601.long>