



# Emerging Evidence Alert June 2019

This Emerging Evidence Alert supports Comcare’s strategic focus of working with employees and employers to minimise the impact of harm in the workplace, improve recovery at and return to work, and promote the health benefits of work through good work design. It also provides the latest research evidence to support Comcare’s Strategic Partnerships and Engagement’s five areas of importance to Comcare’s strategic direction: Fostering work participation; Enhancing employer capability; Guiding and supporting mental health; Enabling health and safe workplaces; and Adapting to the future of work.

The 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. Articles are collated for May and June 2019 only.

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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 generalizability

## Fostering work participation for people with health conditions or disability

Workforce participation for working age Australians with a temporary or permanent physical or mental health condition has remained the same since 2003. Australia’s disability employment rates have also remained low. Understanding employers’ attitudes and experiences can help improve participation.

In December 2018, Comcare shared new research on employers’ behaviours and attitudes towards hiring and retaining Australians whose work opportunities are limited by injury, illness or disability. This research is part of the Employer Mobilisation Project, one of the key programs of work under the [Collaborative Partnership to improve work participation](#) established by Comcare. The [Employer Mobilisation Report](#) provided insights from almost 2,500 employers who were surveyed on their behaviours, attitudes and intentions towards hiring and retaining people with health conditions or disability that impact their ability to work. A [Report Snapshot](#) highlights the key findings including: 50% of those surveyed were not confident in their businesses ability to support people with a physical or psychological health condition or disability; while only 27% of employers agreed that leadership in their organisation has a strong voice about inclusion of people with different abilities. There was also a strong fear of the unknown. Although there are significant barriers for employers, a key observation from the research is that past experience in hiring people with serious health conditions or disability drives a greater openness to recruiting people experiencing similar conditions in the future.

## Fostering Work Participation

### *Presenteeism*

#### **The effectiveness of vocational rehabilitation on work participation: a propensity score matched analysis using nationwide register data**

This review of nationwide Finnish data on vocational rehabilitees and matched controls, long-term changes in work participation before and after were examined to assess effectiveness of vocational rehabilitation (VR). VR resulted in gains in work participation, with larger differences observed over the long term for those whose rehabilitation lasted >10 months. VR after musculoskeletal- or mental-related work disability showed modest effectiveness on work participation. The authors recommended that for sustained work participation after shorter rehabilitation (usually focused on workplace interventions) and faster work resumption after longer rehabilitation (focused on training), enhanced and complementary interventions should be used.

**Leinonen et al. 2019.**

**Scandinavian Journal of Work, Environment and Health**

**Keywords:** Vocational rehabilitation, Work participation, effectiveness, Musculoskeletal, Mental-related, Work disability

**Evidence Level:** 4B

**Link:** [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=3823](http://www.sjweh.fi/show_abstract.php?abstract_id=3823)

### *Absenteeism*

#### **Risk factors of hospitalization for carpal tunnel syndrome among the general working population.**

Causes of carpal tunnel syndrome (CTS) are multifactorial, involving both personal and occupational risk factors. This study involved participants from the 1966 Northern Finland Birth Cohort who were working  $\geq 3$  days a week in a paid job (N=6326) Between 1997 and 2016, 3.4% of the participants had been hospitalized for CTS. Women [hazard ratio (HR) 3.77, 95% confidence interval (CI) 2.70-5.25], overweight/obese participants (HR 1.69, 95% CI 1.29-2.22), smokers (HR 1.48, 95% CI 1.12-1.96), farmers and manual workers (HR 3.02, 95% CI 1.85-4.92 compared with upper clerical workers), lower clerical workers (HR 1.74, 95% CI=1.08-2.80), workers exposed to hand vibration (HR 2.29, 95% CI 1.48-3.54) and participants with physically demanding jobs (HR 1.71, CI 1.06-2.76) were at increased risk of hospitalization for CTS.

**Hulkkonen et al. 2019.**

**Scandinavian Journal of Work, Environment & Health**

**Keywords:** Carpal tunnel syndrome, Occupational risk, Sick leave, Healthcare costs, Hospitalization

**Evidence Level:** 4A

**Link:** [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=3835](http://www.sjweh.fi/show_abstract.php?abstract_id=3835)

### *Early Intervention*

#### **Visual performance and occupational safety among aging workers**

Age-related conditions may affect overall workplace safety and health among these workers and their employers. This review outlines details about visual acuity, glare sensitivity, and contrast sensitivity, which are common age-related vision changes that can potentially affect their occupational safety.

**Hammond et al. 2019.**

**Workplace Health & Safety.**

**Keywords:** Aging, Workforce, Vision changes, Occupational health

**Evidence Level:** 6A

**Link:**

[https://journals.sagepub.com/doi/abs/10.1177/2165079919848444?rfr\\_dat=cr\\_pub%3Dpubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org&journalCode=whsd](https://journals.sagepub.com/doi/abs/10.1177/2165079919848444?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=whsd)

**Effects of a brief workplace-centered consultation for employees with musculoskeletal pain on health outcomes: a prospective cohort study**

This study analyzed data on pain and well-being from specialist consultations offered at a workplace for people with musculoskeletal (MSK)-complaints. Women reported significantly higher pain levels and less QoL than men. Independent of workload, significantly higher percentages of women had cervical- and upper limb-pain than men. QoL and MSK-pain improved significantly. Significant effects of a consultation by a MSK-specialist were shown in terms of improved MSK-pain and overall well-being. This workplace-centered consultation had significant effects on beneficial health-behavior such as decreased use of NSAID and increased engagement in gymnastics and physiotherapy.

**Leiss et al. 2019.**

**Scientific Reports, vol. 9, no. 1.**

**Keywords:** Musculoskeletal, Workplace, Employees, Pain, Well-being

**Evidence Level:** 4B

**Link:** <https://www.nature.com/articles/s41598-019-42387-4>

**The importance of chronic pain education and awareness amongst occupational safety and health professionals**

As chronic pain affects 20% of people, many pain-awareness campaigns and educational activities target healthcare professionals. This web-based cross-sectional study described knowledge and attitudes of OSH students with regard to chronic pain. OSH students exhibited poorer knowledge and more negative attitudes toward people suffering from chronic pain when compared to other groups assessed in the province of Quebec, including healthcare professionals, chronic pain patients, and people not suffering from chronic pain.

**Odenigbo et al. 2019.**

**Journal of Pain Research, vol. 12**

**Keywords:** Chronic pain education, Occupational safety, Workplace, Treatment, Chronic pain, Education

**Evidence Level:** 4A

**Link:** <https://www.dovepress.com/the-importance-of-chronic-pain-education-and-awareness-amongst-occupat-peer-reviewed-article-JPR>

*Work Ability*

**Occupied with classification: Which occupational classification scheme better predicts health outcomes?**

Work is often included as a component of social class rather than as a determinant. This paper develops the exposome, a life-course exposure model developed by Wild (2005), into the worksome, allowing for the explicit consideration of both physical and psychosocial exposures and effects derived from work and working conditions. This paper examines whether occupation better predicts health measures from the European Working Conditions Survey (EWCS). The study concluded that examining the relationship between health and work should be done with classifications specific to occupation or industry rather than socio-economic class classifications.

**Eyles et al. 2019.**

**Social Science & Medicine, vol. 227.**

**Keywords:** Occupational classification, Scheme, Health Outcomes, Prediction, Worksome

**Evidence Level:** 4A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0277953618305100?via%3Dihub>

### **Daily eudaimonic well-being as a predictor of daily performance: A dynamic lens**

This study examines the dynamic reciprocal relationship between the variability in office workers' eudaimonic well-being (i.e., activity worthwhileness) and their extra-role performance. The results show that eudaimonic well-being displays clear variability in a short time frame, with a significant positive relationship between the levels of state eudaimonic well-being in the afternoon and the increase in the levels of state extra-role performance from that afternoon to the next morning. The results suggest that the daily eudaimonic experience of meaning at work is an important factor in achieving better and more sustainable employee performance on a daily basis.

**Kozusznik et al. 2019.**

**PLOS One, vol. 14, no.6**

**Keywords:** Eudaimonic well-being, Employee, Well-being, Performance,

**Evidence Level:** 5B

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0215564>

### **Fatigue risk management for cabin crew: the importance of company support and sufficient rest for work-life balance - a qualitative study**

This study explored cabin crew fatigue associated with ultra-long range (ULR) flights through semi-structured focus group discussions. The primary causes of fatigue were sleep loss and circadian disruption, insufficient rest, high workload, the work environment, a lack of company support, and insufficient fatigue management training. The authors concluded that priority should be given to fatigue management training for cabin crew, which may also enhance perceived company support and assist with achieving a better work-life balance.

**Van den Berg et al. 2019.**

**Industrial Health**

**Keywords:** Cabin crew fatigue, Work-life balance, Flight, Rest, Fatigue management

**Evidence Level:** 5A

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub\\_2018-0233/article](https://www.jstage.jst.go.jp/article/indhealth/advpub/0/advpub_2018-0233/article)

### *Working hours*

### **Night shift work, long working hours and dementia: a longitudinal study of the Danish Work Environment Cohort Study**

This longitudinal study from Denmark investigated the effect of night shift work and long working hours on dementia. The study found a positive, but statistically insignificant association between night shift work and dementia. The dementia risk was significantly higher in permanent night workers, and participants working 38-44 hours/week compared with those working 37 hours/week. We found no indications of a higher risk of dementia in participants working <37 hours/week or ≥45 hours/week.

**Nabe-Nielsen et al. 2019.**

**BMJ Open, vol. 9, no. 5.**

**Keywords:** Night shift, Shift work, Dementia, Denmark, Risk factors

**Evidence Level:** 4B

**Link:** <https://bmiopen.bmj.com/content/9/5/e027027.long>

### **The effect of long working hours and overtime on occupational health: A meta-analysis of evidence from 1998 to 2018**

This meta-analysis examined the effects of long working hours on health or occupational health. The effects were measured by five conditions, namely, physiological health (PH), mental health (MH), health behaviours (HB), related health (RH), and nonspecified health (NH). The overall odds ratio between long working hours and occupational health was 1.245 (95% confidence interval (CI): 1.195-1.298). The condition of related health constituted the highest odds ratio value (1.465, 95% CI: 1.332-1.611). The potential moderators were study method, cut-point for long weekly working hours, and country of origin. Long working hours were shown to adversely affect the occupational health of workers.

**Wong et al. 2019.**

**Public health, vol. 16, no. 12.**

**Keywords:** Working hours, Overtime, Occupational health, Health, Long hours

**Evidence Level:** 1B

**Link:** <https://www.mdpi.com/1660-4601/16/12/2102>

### *Ageing*

#### **Associations between age discrimination and health and wellbeing: cross-sectional and prospective analysis of the English Longitudinal Study of Ageing**

This longitudinal observational population study examined associations between perceived age discrimination and health and wellbeing in England. The study found that among older adults living in England, perceived age discrimination was associated with increased odds of poor self-rated health and risk of incident serious health problems.

**Jackson et al. 2019.**

**Lancet Public Health vol. 4, no. 4.**

**Keywords:** Age discrimination, Health, Wellbeing, Ageing, Age stigma, Associations

**Evidence Level:** 4A

**Link:** [https://linkinghub.elsevier.com/retrieve/pii/S2468-2667\(19\)30035-0](https://linkinghub.elsevier.com/retrieve/pii/S2468-2667(19)30035-0)

#### **Role of age and health in perceptions of returning to work: a qualitative study**

This qualitative study explored the perceptions, attitudes, and experiences of returning to work after a period of unemployment (hereafter RTW) barriers among unemployed adults aged over 50 years who were engaged with the UK Government's Work Programme. The authors concluded that over-50s experienced multiple and interacting issues, at both the individual and societal level, that created RTW barriers. They recommended that employability interventions for the over-50s who have fallen out of the labour market should be holistic, covering healthcare, employability and the local labour market, providing treatment and skills training for both those out of work and for employers.

**Neary et al. 2019.**

**BMC Public Health, vol. 19, no. 1.**

**Keywords:** Age, Health, Return to work, Unemployment, Barriers, Older adults, Over 50

**Evidence Level:** 5A

**Link:** <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-019-6819-9>

### *Chronic Health Issues*

#### **A national Health and Work Strategy: a search for evidence.**

This study included web-based questionnaire studies of younger workers and OH professionals, and focus groups and tele-depth interviews with workplace health and safety professionals.

Mesothelioma, lung cancer, COPD, MSDs, hearing loss, stress and asthma were identified as the top seven priorities using criteria of (i) the preventability of the condition, (ii) the impact of the condition and (iii) the number of workers affected), Other more generic issues identified included ageing and work, obesity, newer technologies, and ethnicity and cultures of workforces.

**Fishwick et al. 2019.**

**Occupational Medicine, vol. 69, no. 2.**

**Keywords:** Health, Work, Strategy, Workplace health, Health priorities

**Evidence Level:** 5A

**Link:** <https://academic.oup.com/occmed/article/69/2/118/5428129>

### *Work Stations*

#### **Health and productivity at work: which active workstation for which benefits: a systematic review.**

This review article compared the benefits between standing, treadmill and cycling workstations. The authors concluded that the benefits associated with each type of active workstation may not be equivalent. Overall, cycling and treadmill workstations appear to provide more short-term beneficial physiological changes. Cycling, treadmill and standing workstations showed some possible short-term productivity benefits; however, treadmill workstations can reduce the performance of computer tasks.

**Dupont et al. 2019.**

**Occupational and Environmental Medicine, vol. 76, no. 5.**

**Keywords:** Active workstation, Standing workstation, Treadmill workstation, cycling workstations, Work health, Work productivity

**Evidence Level:** 1A

**Link:** <https://oem.bmj.com/content/76/5/281.long>

#### **The musculoskeletal and cognitive effects of under-desk cycling compared to sitting for office workers.**

This study evaluated the effect of two hours of sitting compared to sitting while under-desk cycling on musculoskeletal discomfort and cognitive function (sustained attention and creative problem solving). Discomfort increased significantly across all body areas with knee and ankle discomfort greater (in a clinically meaningful manner) in under-desk cycling. Sustained attention reaction time was the only cognitive measure to show a difference, being slower for under-desk cycling. This study found no clear benefit of under-desk cycling compared to just-sitting for musculoskeletal health and cognitive function measures.

**Baker et al. 2019.**

**Applied Ergonomics, vol. 79.**

**Keywords:** Under desk cycling, Musculoskeletal effects, Cognitive effects, Office workers

**Evidence Level:** 2A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0003687019300791?via%3Dihub>

#### **Consistency of sedentary behavior patterns among office workers with long-term access to sit-stand workstations**

This study explored patterns of sedentary behaviour in office workers with long-term access to sit-stand workstations. The study found that on average, workers spent 68% work time sitting; workers changed from sitting to standing/walking 3.2 times per hour; with bouts of sitting being 14.9 min long. About one-third of the workers spent >75% of their workday sitting. The finding

that many workers were extensively sedentary suggests that just access to sit-stand workstations may not be sufficient.

**Huysmans et al. 2019.**

**Annals of work exposures and health, vol. 63, no. 5.**

**Keywords:** Sedentary behavior, Sit-stand workstations, Office workers, Workday, Work environment

**Evidence Level:** 4A

**Link:** <https://academic.oup.com/annweh/article-abstract/63/5/583/5476055>

## Enhancing Employer Capability

### *Health Promotion*

#### **Job crafting as a mediator between work engagement and wellbeing outcomes: a time-lagged study.**

This time-lagged study, using the framework of the JD-R model, tested the mediating role of job crafting measuring: at T1, work engagement, workaholism and emotional exhaustion; at T2, job crafting; and, at T3, flourishing, job performance and job satisfaction. Respondents were 443 Spanish employees working in different companies. Results show that job crafting mediates the relationship between work engagement and some of its outcomes (job performance and flourishing). In particular, the job crafting component 'increasing structural job resources' mediates the positive effect of work engagement on flourishing and job performance, and the job crafting component 'increasing challenging demands' mediates the positive effect of work engagement on job performance. No job crafting mediation is found between work engagement and job satisfaction.

**Robledo et al. 2019.**

**International Journal of Environmental Research and Public Health, vol. 16, no. 8.**

**Keywords:** Work engagement, Job crafting, Wellbeing, Job performance, Job satisfaction

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1660-4601/16/8/1376>

#### **The nature of job crafting: Positive and negative relations with job satisfaction and work-family conflict**

This study investigated job crafting as mediator and its relation with job satisfaction and work-family conflict, considering job autonomy as antecedent. The research involved 389 participants working in a public organization. A structural equations model was estimated revealing that job autonomy is positively associated with job crafting and job satisfaction, and negatively associated with work-family conflict. Job crafting is positively related with job satisfaction and work-family conflict, as adverse effect of job crafting. As regards mediated effects, results show positive associations between job autonomy and both job satisfaction and work-family conflict through job crafting. This study contributes to literature, considering positive and negative outcomes, covering the lacking literature on job crafting and work-family conflict, and suggesting implications for employees' well-being.

**Zito et al. 2019.**

**International Journal of Environmental Research and Public Health, vol. 16, no. 7.**

**Keywords:** Job satisfaction, Job crafting, Work-family conflict, Job autonomy, Wellbeing

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1660-4601/16/7/1176>



## The Future of Work

### *Technology*

#### **Association between improvement in baseline mood and long-term use of a mindfulness and meditation app: Observational study.**

This study investigated the effects of use of a guided meditation and mindfulness smartphone app on users' emotional states. The authors reported that among long-term users of the app, there was an association between the length of use and a positive change in basal emotional state. Individuals who were anxious/depressed had a favorable long-term emotional transition after using the app for an extended period.

**Athanas et al. 2019.**

**Journal of Medical Internet Research – Mental Health, vol. 6, no. 5**

**Keywords: Mood, Emotional state, Mindfulness, Meditation, Smartphone application**

**Evidence Level: 4A**

**Link: <https://mental.jmir.org/2019/5/e12617/>**

#### **Big Data in occupational medicine: the convergence of-omics sciences, participatory research and e-health.**

**BACKGROUND:** New occupational hazards and risks are emerging in our progressively globalized society, in which ageing, migration, wild urbanization and rapid economic growth have led to unprecedented biological, chemical and physical exposures, linked to novel technologies, products and duty cycles. A focus shift from worker health to worker/citizen and community health is crucial. One of the major revolutions of the last decades is the computerization and digitization of the work process, the so-called "work 4.0", and of the workplace. **OBJECTIVES:** To explore the roles and implications of Big Data in the new occupational medicine settings. **METHODS:** Comprehensive literature search. **RESULTS:** Big Data are characterized by volume, variety, veracity, velocity, and value. They come both from wet-lab techniques ("molecular Big Data") and computational infrastructures, including databases, sensors and smart devices ("computational Big Data" and "digital Big Data"). **CONCLUSIONS:** In the light of novel hazards and thanks to new analytical approaches, molecular and digital underpinnings become extremely important in occupational medicine. Computational and digital tools can enable us to uncover new relationships between exposures and work-related diseases; to monitor the public reaction to novel risk factors associated to occupational diseases; to identify exposure-related changes in disease natural history; and to evaluate preventive workplace practices and legislative measures adopted for workplace health and safety.

**Dini et al. 2019.**

**La Medicina del Lavoro, vol. 110, no. 2.**

**Keywords: Big data, Occupational medicine, E-health, Computerization, Digitization**

**Evidence Level: 6A**

**Link: <http://www.mattioli1885journals.com/index.php/lamedicinadellavoro/article/view/7765>**

#### **Employee acceptance of wearable technology in the workplace**

This online survey study determined factors that predict employee acceptance of wearable technology. An employee's performance expectancy and their organizational safety climate were common predictors of acceptance. Organizations that plan to implement wearable technology should (a) focus its use on improving workplace safety, (b) advance a positive safety climate, (c) ensure sufficient evidence to support employees' beliefs that the wearable will meet its objective,

and (d) involve and inform employees in the process of selecting and implementing wearable technology.

**Jacobs et al. 2019.**

**Applied Ergonomics, vol. 78**

**Keywords:** Employee, Workplace, Wearable technology, Organizational safety, Device, Workplace safety

**Evidence Level:** 5A

**Link:** <https://www.sciencedirect.com/science/article/pii/S0003687018306094?via%3Dihub>

## Guiding and Supporting Mental Health

### *Psychosocial Issues*

**Are there bidirectional relationships between psychosocial work characteristics and depressive symptoms? A fixed effects analysis of Swedish national panel survey data.**

This study examined contemporaneous and lagged relationships between psychosocial work characteristics and depressive symptoms. The authors reported higher levels of job demands, job demands in relation to control, work efforts and efforts in relation to rewards were contemporaneously associated with more depressive symptoms, while higher levels of workplace social support, rewards at work and procedural justice were associated with less depressive symptoms. The results suggest that psychosocial work characteristics predominantly affect depressive symptoms immediately or with only a short time lag.

**Ahlin et al. 2018.**

**Occupational & Environmental Medicine, vol. 76, no. 7.**

**Key words:** Psychosocial work characteristics, Depression, Work environment, Job demands, Work efforts, Social support

**Evidence level:** 4A

**Link:** <https://oem.bmj.com/content/76/7/455.long>

**The effects of dietary improvement on symptoms of depression and anxiety: A meta-analysis of randomized controlled trials**

This systematic review and meta-analysis examined the effects of dietary interventions on symptoms of depression and anxiety. Dietary interventions significantly reduced depressive symptoms but not anxiety, with greater benefits observed in female subjects. Future research is required to determine the specific components of dietary interventions that improve mental health, explore underlying mechanisms, and establish effective schemes for delivering these interventions in clinical and public health settings.

**Firth et al. 2019.**

**Psychosomatic Medicine, vol. 81, no. 3.**

**Keywords:** Diet, Depression, Anxiety, Mental health, Wellbeing, Dietary intervention

**Evidence Level:** 1A

**Link:** <https://insights.ovid.com/pubmed?pmid=30720698>

**Post-traumatic stress disorder and asthma risk: A nationwide longitudinal study**

This study followed 5518 patients with PTSD and 22,072 age- and sex-matched healthy individuals from between 2001 and 2009 until the end of 2011. The authors reported that during the follow-up period, the patients with PTSD had an increased risk of asthma particularly those belonging to the youngest age group.

**Hung et al. 2019.**

**Psychiatry Research, vol. 276**

**Keywords:** Post-traumatic stress disorder, Immunological system, Asthma risk, Cardiovascular disease, Respiratory disease, Chronic pain

**Evidence Level:** 4B

**Link:** <https://www.sciencedirect.com/science/article/abs/pii/S0165178119301829?via%3Dihub>

**Occupational burnout and its overlapping effect with depression and anxiety.**

This study compared 2 burnout measures: the Maslach Burnout Inventory – General Survey (MBI-GS) and the Link Burnout Questionnaire (LBQ), by analyzing their connections with organizational and individual variables: including Areas of Worklife Survey, State-Trait Anxiety Inventory, NEO Five-Factor Inventory and Beck's Depression Inventory scales. Across both burnout models depression was identified as an important determinant of exhaustion.

**Golonka et al. 2019.**

**International Journal of Occupational Medicine and Environmental Health, vol. 32, no. 2.**

**Keywords:** Occupational burnout, Depression, Anxiety, Organizational factors

**Evidence Level:** 4B

**Link:** <http://ijomeh.eu/Occupational-burnout-and-its-overlapping-effect-with-depression-and-anxiety,93187,0,2.html>

**Mental illness and well-being: an affect regulation perspective.**

This paper presents a framework for exploring the role of affect generation (the cycle of attending to, appraising and responding to situations) and regulation (the decisions aimed at altering affect generation) in mental illness and well-being. Difficulties with these decisions, can contribute to manifestations of mental illness such as clinical symptoms, syndromes and disorders. The model offers a set of concepts for characterizing different affective states, highlighting interactions between affect generation and affect regulation; and is applicable to prevention and treatment of mental illness as well as to promotion and restoration of psychological well-being.

**Gross et al. 2019.**

**World Psychiatry, vol. 18, no. 2.**

**Keywords:** Mental illness, Wellbeing, Affective states, Prevention, Treatment

**Evidence Level:** 6A

**Link:** <https://onlinelibrary.wiley.com/doi/full/10.1002/wps.20618>

**Dissecting the effect of workplace exposures on workers' rating of psychological health and safety**

This study validated the factor structure of the Copenhagen Psychosocial Questionnaire (COPSOQ) in a North American population by exploring the associations between COPSOQ dimensions and a global rating of workplace psychological health and safety. This study identified dimensions of the psychosocial work environment that are strongly associated with the global rating of workplace psychological health and safety.

**Ramkissoon et al. 2019.**

**American Journal of Industrial Medicine, vol. 62, no. 5.**

**Keywords:** Workplace exposures, Psychological health and safety, Global rating, Workers

**Evidence Level:** 4B

**Link:** <https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.22964>

**Work hazards and workers' mental health: an investigation based on the fifth European Working Conditions Survey.**

Background: Workplace hazards are a significant source of health impairment for workers and of financial losses for firms. EU directives on workers' health and safety standards significantly contributed to reduce reported occupational injuries, yet the incidence and prevalence of work-related mental illness is still very high. Objectives: We investigated the association between work-related hazards and individuals' perceived mental health. We reviewed the existing evidence on the channels through which task-related factors, adverse agents and psychosocial factors are expected to affect workers' health, with specific regard to mental health. Methods: We used data from the fifth wave of the European Working Conditions Survey, covering over 40,000 face-to-face interviews with workers in 34 countries, which includes information on socio-demographic characteristics, firms and jobs attributes, employment status, as well as working conditions and health status. We carried out an empirical analysis with multivariate regression models in order to estimate the relationship between workers' mental health problems and workplace risk factors. Results: 21,020 interviews were used in the multivariate analysis. We found strong correlations between hazards and various indicators of mental health. Among hazardous agents, low temperatures ( $\beta=0.0287$ ) and contact with infectious materials ( $\beta=0.0394$ ) were positively associated with mental health outcomes. Among task/sequence-related factors, tiring or painful positions ( $\beta=0.0713$ ), repetitive hand/arm movements ( $\beta=0.0255$ ), working with VDUs ( $\beta=0.0301$ ), repetitive tasks <10 min ( $\beta=0.0859$ ) and working in evenings ( $\beta=0.00754$ ) were positively associated with mental health. Various psychosocial risk factors related to both the content of the job (for example, frequent disruptive interruptions:  $\beta=0.219$ , working in free time:  $\beta=0.0759$ , poor work-life balance:  $\beta=0.228$ ) as well as the job context (for example, bad employment prospects:  $\beta=0.177$ , low decisional autonomy:  $\beta=0.245$ , bad social relations:  $\beta=0.186$ , workplace violence:  $\beta=0.411$ ) were positively associated with mental health. The main results of the decomposition show that an important contribution to workers' overall mental distress at work is associated with psychosocial risk factors (up to 60% for depression/anxiety symptoms and sleep disorders), while the contribution of somatic factors is on average lower (up to 20% for overall fatigue). Conclusions: We argue that action is needed to improve workers' mental well-being, and reduce the economic costs for both the national health system and employers. Regulations and traditional economic measures are unlikely to prove successful in providing adequate standards of primary and secondary preventive measures in the work place without an appropriate and reliable Risk Assessment Procedure

**Russo et al. 2019.**

**La Medicina del lavoro, vol. 110, no. 2.**

**Keywords:** Work hazards, Mental health, Psychosocial factors, Workers health

**Evidence Level:** 4A

**Link:** <http://www.mattioli1885journals.com/index.php/lamedicinadelavoro/article/view/7640>

**Spending at least 120 minutes a week in nature is associated with good health and wellbeing.**

This study explored associations between recreational nature contact in the last week and self-reported health and well-being. The study reported that compared to no nature contact last week, the likelihood of reporting good health or high well-being became significantly greater with contact  $\geq 120$  mins. Positive associations peaked between 200-300 mins per week with no further gain.

**White et al. 2019.**

**Scientific reports, vol. 9, no. 1.**

**Keywords:** Health, Wellbeing, Nature, Natural environments, Nature exposure

**Evidence Level:** 4A

**Link:** <https://www.nature.com/articles/s41598-019-44097-3>

## *Occupational Stress*

### **Economic evaluation of an internet-based stress management intervention alongside a randomized controlled trial**

Background: Work-related stress is widespread among employees and associated with high costs for German society. Internet-based stress management interventions (iSMIs) are effective in reducing such stress. However, evidence for their cost-effectiveness is scant. Objective: The aim of this study was to assess the cost-effectiveness of a guided iSMI for employees. Methods: A sample of 264 employees with elevated symptoms of perceived stress (Perceived Stress Scale  $\geq 22$ ) was assigned to either the iSMI or a waitlist control condition (WLC) with unrestricted access to treatment as usual. Participants were recruited in Germany in 2013 and followed through 2014, and data were analyzed in 2017. The iSMI consisted of 7 sessions plus 1 booster session. It was based on problem-solving therapy and emotion regulation techniques. Costs were measured from the societal perspective, including all direct and indirect medical costs. We performed a cost-effectiveness analysis and a cost-utility analysis relating costs to a symptom-free person and quality-adjusted life years (QALYs) gained, respectively. Sampling uncertainty was handled using nonparametric bootstrapping (N=5000). Results: When the society is not willing to pay anything to get an additional symptom-free person (eg, willingness-to-pay [WTP]=euro0), there was a 70% probability that the intervention is more cost-effective than WLC. This probability rose to 85% and 93% when the society is willing to pay euro1000 and euro2000, respectively, for achieving an additional symptom-free person. The cost-utility analysis yielded a 76% probability that the intervention is more cost-effective than WLC at a conservative WTP threshold of euro20,000 (US \$25,800) per QALY gained. Conclusions: Offering an iSMI to stressed employees has an acceptable likelihood of being cost-effective compared with WLC. TRIAL REGISTRATION: German Clinical Trials Register DRKS00004749; <https://www.drks.de/DRKS00004749>. INTERNATIONAL REGISTERED REPORT IDENTIFIER (IRRID): RR2-10.1186/1471-2458-13-655.

**Kahlke et al. 2019.**

**JMIR Mental Health, vol. 6, no. 5.**

**Keywords:** Stress-management, Work-related stress, Employees, German, Cost-effective

**Evidence Level:** 2A

**Link:** <https://mental.imir.org/2019/5/e10866/>

### **Is higher resilience predictive of lower stress and better mental health among corporate executives?**

This cross-sectional survey study assessed the impact of resilience on measures of well-being, self-reported stress, and mental health diagnoses. The quality of life scores were positively associated with higher resilience, whilst self-reported mental health diagnoses were negatively associated with higher resilience. High resilience was positively associated with well-being and negatively associated with perceived stress. Our findings suggest that higher resilience in the executive workplace environment is associated with better mental health, reduced stress, and greater well-being.

**Kermott et al. 2019.**

**PLOS One, vol. 14, no. 6.**

**Keywords:** Mental health, Stress, Diagnoses, Higher resilience, Lower resilience, Well-being

**Evidence Level:** 4A

**Link:** <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218092>

### **Psychosocial stressors at work and well-being of male employees**

This survey study was conducted to determine the magnitude of psychosocial stressors on male employees' well-being. Psychosocial stressors (psychosocial safety climate, job demands and job resources) were significantly related to emotional exhaustion. Emotional exhaustion predicted by work stressors may act as a chain reaction which could result in uncontrolled eating and high BMI. The psychosocial stressors at work were significant factors for emotional exhaustion, which signifies the positive effect on uncontrolled eating behaviour and BMI among Malaysian male employees.

**Noor et al. 2019.**

**Medical Journal of Malaysia, vol. 74, no. 2.**

**Keywords:** Psychological stressors, Overeating, Male Employees, Well-being, Eating behavior, Body mass index

**Evidence Level:** 4B

**Link:** <http://www.e-mjm.org/2019/v74n2/psychosocial-stressors.pdf>

### **Effectiveness of occupational e-mental health interventions: a systematic review and meta-analysis of randomized controlled trials**

**Objective** This systematic review and meta-analysis investigated the effectiveness of occupational e-mental health interventions aimed at stress, depression, anxiety, burnout, insomnia, mindfulness, well-being, and alcohol misuse and their potential treatment moderators. **Methods** We systematically reviewed randomized control trials published in English using three electronic databases (MEDLINE, PsycINFO, CINAHL) and three register trials. A pooled effect size for each mental health area was calculated using random-effects modelling. For each meta-analysis, we conducted an analysis of potential moderators (ie, type of recruitment, age, gender, initial psychological symptoms, guidance, therapy type, and study quality). **Results** In total, 51 studies were included in the systematic review, and 36 studies were included in the meta-analyses. We noted moderate treatment effects on stress (Hedges'g=0.54), insomnia (g=0.70), and burnout (g=0.51) and small treatment effects on depression (g=0.30), anxiety (g=0.34), well-being (g=0.35), and mindfulness (g=0.42). The pooled effect on alcohol intake was small and nonsignificant. **Conclusions** Our results suggest that occupational e-mental health interventions are associated with significant health improvements. However, more research is required to understand which factors contribute to the variation in effectiveness of particular interventions depending on the mental health area and characteristics of participants and interventions.

**Phillips et al. 2019.**

**Scandinavian Journal of Work, Environment & Health**

**Keywords:** e-mental health interventions, Occupational, Stress, Depression, Anxiety, Well-being, Health

**Evidence Level:** 1A

**Link:** [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=3839](http://www.sjweh.fi/show_abstract.php?abstract_id=3839)

### **Association of derived patterns of musculoskeletal disorders with psychological problems: a latent class analysis**

**Background:** Musculoskeletal symptoms often occur in more than one anatomical site. The present study aimed to define specific patterns of multisite musculoskeletal disorders and examine how these patterns are related to common psychological problems. **Methods:** Using the data from an interview-based health survey of 358 samples of the industrial manufacturing male employees, we derived major patterns of musculoskeletal complaints using latent class analysis and investigated its association with psychological problems score extracted from depression,

anxiety, and stress measured by Depression/Anxiety/Stress Scale (DASS-21). Musculoskeletal disorders were assessed by Nordic Musculoskeletal Questionnaire (NMQ). The statistical analysis was carried out by Mplus 8. Results: Complaints in the lower back (42.1%) and neck (30.7%) had the highest prevalence, and in the hip (15.0%) and ankle (12.2%) the lowest. Three major patterns of musculoskeletal disorders were extracted using latent class analysis. Class 1 (12.9%) was characterized by a high rate of complaints in upper musculoskeletal sites, such as the neck, shoulder, and joints; class 2 (38.2%) was identified by a higher rate of complaints in the lower and upper back; and class 3 (48.9%) was marked by low rates of complaints in all musculoskeletal sites. After adjustment for confounding variables and specifying class 3 as the reference, it turned out that there was a statistically significant association between the psychological problems score and the chance of being in class 1 (OR = 2.47, 95% CI 1.66-3.68), but not a significant association with the chance of being in class 2 (OR = 1.51, 95% CI 0.83-2.72). Conclusion: Musculoskeletal disorders can be summarized in the latent class-derived patterns in the adult study population and provide additional prognostics. Common psychological problems are significantly associated with the type of musculoskeletal disorder patterns. The findings in this study could be useful for dealing with prevention and treatment programs.

**Yazdi et al. 2019.**

**Environmental Health and Preventive Medicine, vol. 21, no. 1.**

**Keywords:** Musculoskeletal disorders, Psychological problems, Manufacturing employees, Males

**Evidence Level: 4B**

**Link:** <https://environhealthprevmed.biomedcentral.com/articles/10.1186/s12199-019-0784-x>

### *Workplace Bullying & Harassment*

#### **The Impact of Workplace Harassment on Health in a Working Cohort.**

Background: Workplace abuse, including sexual harassment, is frequently experienced worldwide and is related to adverse mental health outcomes, and injuries. Flight attendants are an understudied occupational group and are susceptible to harassment due to working in a feminized, client-facing occupation with few protections or sanctioned responses against aggressive behaviors. Objective: We investigated the relationship between workplace abuse and health in a cohort of cabin crew. We also aimed to characterize perpetrator profiles. Methods: We conducted our study among 4,459 U.S. and Canada-based participants from the Harvard Flight Attendant Health Study using multivariate logistic regression. Our exposures of interest were episodes of workplace abuse in the past year. We evaluated several mental and physical health outcomes, including depression, fatigue, musculoskeletal injuries, and general workplace injuries. Results: We report that exposures to verbal abuse, sexual harassment, and sexual assault are common among cabin crew, with 63, 26, and 2% of respondents, respectively, reporting harassment in the past year alone. Workplace abuse was associated with depression, sleep disturbances, and musculoskeletal injuries among male and female crew, with a trend toward increasing odds ratios (ORs) given a higher frequency of events. For example, sexual harassment was related to an increased odds for depression (OR = 1.91, 95% confidence interval [CI]: 1.51-2.30), which increased in a dose response-like manner among women reporting harassment once (OR = 1.44, 95% CI: 0.93-1.95), 2-3 times (OR = 1.83, 95% CI: 1.29-2.38), and 4 or more times (OR = 4.12, 95% CI: 3.18-5.06). We found that passengers were the primary perpetrators of abuse. Conclusions: Our study is the first to comprehensively characterize workplace abuse and harassment and its relation to health in a largely female customer-facing workforce. The strong associations with health outcomes observed in our study highlights the question of how workplace policies can be altered to mitigate prevalent abuses. Clinicians could also consider how jobs with high emotional labor demands may predispose people to adverse health outcomes, educate

patients regarding their psychological/physical responses and coping strategies, and be aware of signs of distress in patients working in such occupations in order to direct them to the appropriate treatments and therapies.

**Gale et al. 2019.**

**Frontiers in Psychology, vol. 10.**

**Keywords:** Harassment, Occupational violence, Workplace abuse, Flight attendants, Health, Cabin crew

**Evidence Level:** 4A

**Link:** <https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01181/full>

### **Prevention through job design: Identifying high-risk job characteristics associated with workplace bullying**

Work environment hypothesis, a predominant theoretical framework in workplace bullying literature, postulates that job characteristics may trigger workplace bullying. This study assessed how job characteristics are related to perceived job characteristics reported by employees, which, in turn, are associated with self-reported workplace bullying. This study found that employees, whose work schedules are more irregular and whose work involves a higher level of conflictual contact report experiencing higher job demands, and higher exposure to bullying. Moreover, employees working in jobs structured to allow for more discretion in decision-making report experiencing more job autonomy and are less likely to experience bullying. Our findings also suggest that a job design perspective to redesign certain job characteristics may offer an additional viable approach to prevent workplace bullying.

**Li et al. 2019.**

**Journal of Occupational Health Psychology vol. 24, no. 2.**

**Keywords:** Workplace bullying, Characteristics, Employees, Exposure, Job perspective, Job design

**Evidence Level:** 4A

**Link:** <http://content.apa.org/journals/ocp/24/2/297>

### **Workplace bullying and medically certified sickness absence: direction of associations and the moderating role of leader behavior**

The aim of this study was to determine (1) associations between workplace bullying and subsequent risk and duration of medically certified sickness absence, (2) whether employees' perceptions of supportive, fair, and empowering leader behavior moderate the association between bullying and absence, and (3) whether prior sickness absence increases the risk of being a new victim of bullying. Altogether, 10,691 employees were recruited from 96 Norwegian organizations in the period 2004-2014. The study design was prospective with workplace bullying and leader behavior measured at baseline and then linked to official registry data on medically certified sickness absence for the year following the survey assessment. For analyses of reverse associations, exposure to bullying was reassessed in a follow-up survey after 24 months. The findings showed that workplace bullying was significantly associated with risk (risk ratio = 1.23; 95% CI = 1.13-1.34), but not duration (incidence rate ratio = 1.05; 95% CI = 0.89-1.25) of medically certified sickness absence after adjusting for age, gender, and supportive, fair, and empowering leader behavior. None of the indicators of leader behavior moderated the association between bullying and sickness absence (both risk and duration). Adjusting for baseline bullying, age, and gender, prior long-term sickness absence (>21 days) was associated with increased risk of being a new victim of bullying at follow-up (odds ratio = 1.86; 95% CI = 1.28-2.72). Effective interventions toward workplace bullying may be beneficial with regard to reducing sickness absence rates.



Organizations should be aware that long-term sickness absence might be a social stigma as sick-listed employees have an increased risk of being bullied when they return to work.

**Nielsen et al. 2019.**

**Frontiers in Psychology, vol. 10**

**Keywords:** Workplace bullying, Medically certified sickness absence, Employees, Behavior, Bullying, Stigma

**Evidence Level:** 4A

**Link:** <https://www.frontiersin.org/articles/10.3389/fpsyg.2019.00767/full>

### **Witnessing workplace bullying and employee well-being: A two-wave field study.**

This study aims to (a) explore the impact of witnessing workplace bullying on emotional exhaustion, work-related anxiety, and work-related depression and (b) determine whether the resources of trait optimism, coworker support, and supportive supervisory style buffer the effects of witnessed bullying. This study found that witnessing bullying undermined employees' well-being (work-related depression and anxiety), but only if the employees were low in optimism and lacked supervisor support. Strong coworker support weakened the relationship between witnessing bullying and well-being.

**Sprigg et al. 2019.**

**Journal of Occupational Health Psychology, vol. 24, no. 2.**

**Keywords:** Workplace bullying, Employee wellbeing, Emotional exhaustion, Work-related anxiety, Work-related depression

**Evidence Level:** 5A

**Link:** <https://psycnet.apa.org/record/2018-58791-001>

## **Enabling Healthy and Safe Workplaces**

### *Risk Assessment*

#### **Risk of mesothelioma after cessation of asbestos exposure: a systematic review and meta-regression.**

**PURPOSE:** A 'risk reversal' has been observed for several human carcinogens following cessation of exposure, but it is unclear whether it also exists for asbestos-related mesothelioma. **METHODS:** This systematic review and meta-analysis synthesized the literature on risk of mesothelioma after cessation of asbestos exposure, The Relative Risk (RR) of mesothelioma for 10-year interval since cessation of exposure was 1.02 [95% confidence interval (CI) 0.87-1.19] and for lung cancer was 0.91 (95% CI 0.84-0.98). The authors concluded that the risk of mesothelioma does not decrease after cessation of asbestos exposure, while lung cancer risk does.

**Boffetta et al. 2019.**

**International Archives of Occupational and Environmental Health.**

**Keywords:** Risk, Mesothelioma, Asbestos exposure, Carcinogens, Lung cancer

**Evidence Level:** 1A

**Link:** <https://link.springer.com/article/10.1007%2Fs00420-019-01433-4>

#### **Physical heaviness of work and sitting at work as predictors of mortality: a 26-year follow-up of the Helsinki Birth Cohort Study**

This prospective cohort study from the Helsinki Birth Cohort Study between years 1990 and 2015. Examined the physical heaviness of work and sitting at work as predictors of mortality. Over the 26-year follow-up, amongst men, physical heaviness of work was positively associated and sitting at work was negatively associated with all-cause, cardiovascular and external cause mortality but

they were not associated with cancer mortality. However in women, neither physical heaviness of work nor sitting at work was associated with mortality. The authors concluded that men in physically heavy work at their late-work career are at higher risk of death than men in physically light work.

**Mikkola et al. 2019.**

**BMJ Open, vol. 9, no. 5.**

**Keywords:** Physical heaviness, Mortality, Helsinki, Sitting, Cardiovascular

**Evidence Level:** 4B

**Link:** <https://bmjopen.bmj.com/content/9/5/e026280.long>

### **Characterizing the impact of heatwaves on work-related injuries and illnesses in three Australian cities using a standard heatwave definition- Excess Heat Factor (EHF).**

This study used workers compensation claims data from Australian cities with temperate (Melbourne and Perth) and subtropical (Brisbane) climates for the years 2006-2016.

Heatwaves of low-intensity had a protective or null effect on claims while claims increased during moderate/high-severity heatwaves compared with non-heatwave days. Vulnerable worker were: males, workers aged under 34 years, apprentice/trainee workers, labour hire workers, those employed in medium and heavy strength occupations, and workers from outdoor and indoor industrial sectors. The authors concluded that work-related injuries and illnesses increase during moderate/high-severity heatwaves in both sub-tropical and temperate climates.

**Varghese et al. 2019.**

**Journal of Exposure Science and Environmental Epidemiology.**

**Keywords:** Heatwaves, Work, Injuries, Illnesses, Health, Safety, Workers

**Evidence Level:** 4A

**Link:** <https://www.nature.com/articles/s41370-019-0138-1>

### *Occupational Exposures*

#### **Are platinum nanoparticles safe to human health?**

This review article analyzes literature data related to the toxicity and impact on human health of platinum nanoparticles (PtNPs). While PtNPs may be absorbed by the respiratory and digestive tract, and can penetrate through the epidermis, there is no evidence concerning their absorption through the skin. However very few studies regarding platinum nanoparticles toxicity have been conducted with no research studies on its carcinogenicity. Whilst fetal or maternal toxicity isn't evident, increased mortality and a decreased growth of offspring have been shown. Due to the lack of evidence a safe occupational exposure limit value is unclear; therefore caution is recommended to employees exposed to platinum nanoparticles

**Czubacka & Czerczak, 2019.**

**Medycyna pracy, vol. 70, no. 4.**

**Keywords:** Platinum nanoparticles, Safety, Human health, Toxic

**Evidence Level:** 6A

**Link:** <http://medpr.imp.lodz.pl/Are-platinum-nanoparticles-safe-to-human-health-103350,0,2.html>

#### **Validation of an asbestos job-exposure matrix (AsbJEM) in Australia: Exposure-response relationships for malignant mesothelioma**

This study of worker data collected from an annual health surveillance program who had at least 3-month occupational asbestos exposure, examined the accuracy of an asbestos job-exposure matrix (AsbJEM) in determining exposure-response relationships between asbestos exposure

estimates and malignant mesothelioma (MM) incidence. The study found significant associations between MM incidence and both cumulative and average occupational asbestos exposure intensity.

**Kamiya et al. 2019.**

**Annals of Work Exposures and Health**

**Keywords:** Asbestos, Exposures, Malignant mesothelioma, Asbestos exposures, Intensity

**Evidence Level:** 4A

**Link:** <https://academic.oup.com/annweh/advance-article-abstract/doi/10.1093/annweh/wxz038/5497616?redirectedFrom=fulltext>

### **Occupational exposure to inhaled nanoparticles: Are young workers being left in the dust?**

This review paper presents the differences in risks for occupational exposures to inhaled nanoparticles (NPs) and resulting health effects between young workers and adult workers via an examination of both physiological and occupational setting factors. The authors found that adolescents often face different exposure scenarios to occupational hazards when compared to adults, and different health effects. Early exposure to NPs increases the chances of developing long-latency disease earlier in life. The authors concluded that differences in exposures and health consequences from NPs on young workers are insufficiently understood.

**Graczyk & Riediker 2019.**

**Journal of Occupational Health.**

**Keywords:** Inhaled nanoparticles, Occupational exposure, Young workers, Worker health

**Evidence Level:** 6B

**Link:** <https://onlinelibrary.wiley.com/doi/full/10.1002/1348-9585.12056>

### **Health risk in road transport workers. Part I. Occupational exposure to chemicals, biomarkers of effect.**

This review article analyzed the biomarkers of effect of motor vehicle emissions and the hazard of occupational exposure of drivers. The study found that drivers working in car cabins are exposed to chemicals deriving from incomplete combustion of fuels, exhaust emissions from working engines and fuel evaporation, and whilst the concentrations were low (within applicable standards), some pose carcinogenic risk. The interaction of chemical substances with human cells and tissues can lead to a number of modifications of metabolic pathways at a cellular level.

**Gromadzinska & Wasowicz 2019.**

**International Journal of Occupational Medicine and Environmental Health, vol. 32, no. 3.**

**Keywords:** Health, Road transport workers, Occupational exposure, Chemicals, Biomarkers, Motor vehicle emission

**Evidence Level:** 1A

**Link:** <http://ijomeh.eu/Health-risk-in-road-transport-workers-Part-I-Occupational-exposure-to-chemicals-biomarkers,99520,0,2.html>

### **Health risk in transport workers. Part II. Dietary compounds as modulators of occupational exposure to chemicals**

Specific factors associated with driver tasks, including exposure to chemical substances, result in an increased risk of the development of many diseases, i.e., obesity, diabetes, heart disease, hypertension, extensive genitourinary pathology experienced by taxi drivers, lung cancer and other forms of cancer. This review article explored the role of a diet and dietary phytochemicals in the prevention of adverse health effects from air borne pollutants (benzo(a)pyrene, benzene and metals (lead, cadmium, chromium, nickel)) in transport workers. Although attempts at

interventional research that would change the principles of nutrition, as well as ensure physical activity and weight reduction, have been made, their results have been poor.

**Kozłowska et al. 2019.**

**International Journal of Occupational Medicine and Environmental Health**

**Keywords:** Transport workers, Health risk, Chemicals, Occupational exposure, Health

**Evidence Level:** 1A

**Link:** <http://ijomeh.eu/Health-risk-in-transport-workers-Part-II-Dietary-compounds-as-modulators-of-occupational,105520,0,2.html>

### **The effects of combined exposure of solvents and noise on auditory function - A systematic review and meta-analysis**

This review article assessed the combined effect of solvents and noise versus solvents only, or noise only, on the auditory function of workers. The prevalence of hearing loss in the noise and solvent group was significantly higher than the other groups in 10 out of the 13 studies analysed. Studies showed that 24.5% presented with hearing loss as a result of noise exposure only; 18% presented with hearing loss owing to solvent exposure only; and a total of 43.3% presented with hearing loss owing to combined noise and solvent exposure. The authors concluded that there were significantly higher odds of acquiring hearing loss when exposed to a combination of solvents and noise as opposed to solvents only.

**Nakhooda et al. 2019.**

**South African Journal of Communication Disorders, vol. 66, no. 1.**

**Keywords:** Chemical substances, Auditory system, Occupational hearing loss, Solvent, Noise

**Evidence Level:** 1B

**Link:** <https://sajcd.org.za/index.php/SAJCD/article/view/568>

### *Physical Activity*

#### **Is fatigue after work a barrier for leisure-time physical activity? Cross-sectional study among 10,000 adults from the general working population.**

**Aim:** In spite of the many health-related benefits of regular physical activity, fatiguing work may be a barrier to performing leisure-time physical activity.

This study explored the relationship between work-related fatigue and leisure-time physical activity in workers with sedentary and physically demanding jobs. The study found that among workers with physically demanding jobs, higher levels of work-related fatigue were associated with gradually lower levels of leisure-time physical activity. The duration of high-intensity leisure-time physical activity was lower among older workers ( $\geq 50$  years) compared to younger workers ( $< 50$  years). The authors concluded that the duration of high-intensity leisure-time physical activity gradually decreased with increased work-related fatigue in workers with physically demanding jobs.

**Blafoss et al. 2019.**

**Scandinavian Journal of Public Health, vol. 47, no. 3.**

**Keywords:** Fatigue, Leisure time, Physical activity, Work related fatigue, Workers

**Evidence Level:** 4A

**Link:** [http://journals.sagepub.com/doi/full/10.1177/1403494818765894?url\\_ver=Z39.88-2003&rfr\\_id=ori:rid:crossref.org&rfr\\_dat=cr\\_pub%3dpubmed](http://journals.sagepub.com/doi/full/10.1177/1403494818765894?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed)

**The effectiveness of a multidisciplinary exercise program in managing work-related musculoskeletal symptoms for low-skilled workers in the low-income community: A pre-post-follow-up study.**

Studies on work-related musculoskeletal symptoms (WRMSs) have been conducted mainly on different types of workforce but not many on low-skilled workers.

This study evaluated the effectiveness of an exercise program (involving a 21-movement stretching exercise and a 10-movement muscle-strengthening exercise) in decreasing the number of body parts with work-related musculoskeletal symptoms (WRMSs) for low-skilled workers. After 8 weeks the number of WRMS-affected body parts, job stress, and incidences of working through pain all decreased, and spine flexibility and handgrip strength had improved. The authors concluded that a community-based multidisciplinary program can reduce the number of body parts affected by WRMSs in low-skilled workers in low-income communities.

**Cheung et al. 2019.**

**International Journal of Environmental Research and Public Health, vol. 16, no. 9.**

**Keywords:** Exercise, Multidisciplinary program, Work related, Musculoskeletal symptoms, Low skilled workers, Low-income community

**Evidence Level:** 4B

**Link:** <https://www.mdpi.com/1660-4601/16/9/1548>

**Exploring the interplay between job strain and different domains of physical activity on the incidence of coronary heart disease in adult men.**

This study examined the associations of occupational (OPA) and sport physical activity (SpPA) and job strain on the incidence of coronary heart disease (CHD) events. Over the follow-up period (median=14 years), a higher CHD risk was found for high job strain. The study found that recommended and intermediate SpPA levels had a protective effect of on CHD risk among sedentary male workers, and whilst when jointly exposed to high job strain and sedentary work their risk further increases, this group benefited most from regular sport physical activity.

**Ferrario et al. 2019.**

**European Journal of Preventive Cardiology.**

**Keywords:** Job strain, Physical activity, Coronary heart disease, Occupational physical activity, Sport physical activity

**Evidence Level:** 4B

**Link:**

[https://journals.sagepub.com/doi/abs/10.1177/2047487319852186?rfr\\_dat=cr\\_pub%3Dpubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org&journalCode=cprc](https://journals.sagepub.com/doi/abs/10.1177/2047487319852186?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=cprc)

**Device-measured physical activity, sedentary behaviour and cardiometabolic health and fitness across occupational groups: a systematic review and meta-analysis**

Background: With approximately 8 hours of one's waking day spent at work, occupational tasks and environments are important influencers on an individual's physical activity (PA) and sedentary behaviours. Little research has compared device-measured physical activity, sedentary behaviour and cardiometabolic outcomes between occupational groups. Objective: (sedentary time [ST], light intensity physical activity [LPA], moderate-to-vigorous intensity physical activity [MVPA], and steps)

This review article compared device-measured movement across occupations and whether cardiometabolic and fitness outcomes differed by occupation. The study found that working adults spent ~ 60% of their working and waking time engaged in sedentary behavior, taking on average, 8124 steps/day. Office and call center workers' steps/day were among the lowest, while those of

postal delivery workers were highest. Office workers had the greatest sedentary time and the lowest time in light intensity physical activity however they had the greatest minutes spent in moderate-to-vigorous intensity physical activity. This review identified that occupational and wakeful time physical activity differed between occupations.

**Prince et al. 2019.**

**International Journal of Behavioral Nutrition and Physical Activity, vol. 16, no. 1.**

**Keywords:** Sedentary behavior, Device-measured physical activity, cardiometabolic health and fitness, Fitness, Workers

**Evidence Level:** 1A

**Link:** <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-019-0790-9>

**A move-a-thon event: A workplace demonstration of a proposed alternative strategy to incentivize workers to engage in physical activity**

This study explored the effect of a Move-A-Thon (MAT) event to help workers to optimize their physical activity levels by being incentivized for their participation through monetized donations to charity. The steps of 8 participants were monitored over the 2-week period. Participants who achieved a minimum of 3,000 daily steps for 2 weeks, earned a total donation of up to US\$20. The study found that the MAT event was successful at promoting physical activity among a small group of workers for 2 weeks.

**Reutman et al. 2019**

**Workplace Health and Safety, vol.67, no.4**

**Keywords:** Physical activity, Health promotion, Workers, Charity, Donation, Employees

**Evidence Level:** 5A

**Link:**

[https://journals.sagepub.com/doi/abs/10.1177/2165079918823211?rfr\\_dat=cr\\_pub%3Dpubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org&journalCode=whsd](https://journals.sagepub.com/doi/abs/10.1177/2165079918823211?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=whsd)

*Sleep*

**Workplace interventions to promote sleep health and an alert, healthy workforce**

This systematic review explored employer-initiated interventions to improve the sleep of workers and in turn improve health, productivity, absenteeism, and other outcomes that have been associated with sleep disorders or sleep deficiency. Workplace interventions included educational programs stressing sleep hygiene or fatigue management, timed napping before or after work, urging increased daytime activity levels, modifying workplace environmental characteristics such as lighting, and screening, and referral for sleep disorders treatment. The studies reviewed indicate that employer-sponsored efforts can improve sleep and sleep-related outcomes, through encouraging better sleep habits and general fitness. Improvements in sleep-related outcomes may be associated with reduced absenteeism and better overall quality of life.

**Redeker et al. 2019.**

**Journal of Clinical Sleep Medicine, vol. 15, no. 4.**

**Keywords:** Sleep, Workplace interventions, Workforce, Productivity, Fatigue management

**Evidence Level:** 1A

**Link:** <http://jcs.m.aasm.org/ViewAbstract.aspx?pid=31560>

**Working Time Society consensus statements: A multi-level approach to managing occupational sleep-related fatigue**

This paper presents control measures relevant to each level of the fatigue-risk trajectory model, developed by Dawson and McCulloch, which describes the events which preceding fatigue-related incidents (insufficient sleep opportunities, impaired sleep, fatigue-behavioral symptoms, and fatigue-related errors). Control measures include: (i) work scheduling strategies to include breaks for adequate sleep opportunities; (ii) training and educational programs to help workers make best use of recovery times for quality sleep; (iii) fatigue-detection devices to alert workers and safety managers of fatigue-related behaviors and errors.

**Wong et al. 2019.**

**Industrial health, vol. 52, no. 2.**

**Keywords:** Shift workers, Occupational health, Sleep-related fatigue, Fatigue-risk, Safety

**Evidence Level:** 6A

**Link:** [https://www.jstage.jst.go.jp/article/indhealth/57/2/57\\_SW-6/\\_article](https://www.jstage.jst.go.jp/article/indhealth/57/2/57_SW-6/_article)