

IWH Research Alert
July 3, 2020

Missed an issue? Catch up on previous *Research Alerts* available on the IWH website <https://www.iwh.on.ca/journal-articles/research-alerts>

Research Alert is a service provided to you by the Institute for Work & Health (IWH) to help you keep abreast of recent literature in the areas of occupational health and safety, epidemiology, public health and others within the IWH mandate. Please note that these articles have not been reviewed by Institute scientists to assess the quality of the studies. *Research Alerts* should not be considered an endorsement of the findings. Readers are cautioned not to act on the results of single studies, but rather to seek bodies of evidence. It should also be noted that the Institute for Work & Health cannot provide full-text of articles listed in *Research Alerts* to individuals outside of the organization, as this violates copyright legislation.

Abrams T and Abbott D. Disability, deadly discourse, and collectivity amid coronavirus (COVID-19). *Scandinavian Journal of Disability Research*. 2020; 22(1):168-174.

<https://doi.org/10.16993/sjdr.732> [open access]

Abstract: As COVID-19 crosses the globe, disabled people are subject to new medical and discursive realities. Focusing on the consequences of the latter, we utilize news reports from Canada and the UK to argue the current language of pre-existing conditions represents disability as non-life, explaining away the material realities facing disabled persons. This language ignores the distribution of care work in our societies, poverty, and other forms of exclusion facing disabled people and the population more generally. Work on ventilator users points to these existing inequalities, obscured as they may be. This story is not new. Outlining existing narratives within disability studies challenging disability as deadly biological and economic deficiency and situating the 'pre-existing' terminology therein, we look to work in disability studies and bioethics to challenge the disability–death equation. We end reviewing counter-narratives by and for disabled people, highlighting the ongoing and life-affirming resistance throughout the disability rights movement.

Bonde JPE, Flachs EM, Madsen IE, Petersen SB, Andersen JH, Hansen J, et al. Acute myocardial infarction in relation to physical activities at work: a nationwide follow-up study based on job-exposure matrices. Scandinavian Journal of Work, Environment & Health. 2020; 46(3):268-277.

<https://doi.org/10.5271/sjweh.3863> [open access]

Abstract: Objective This study aimed to evaluate sex-specific risks of acute myocardial infarction (AMI) according to lifting and standing/walking at work. Methods The study population included 1.15 million Danish wage earners. Annual job codes from 1976 onwards were linked to specific exposures using job-exposure matrices (JEM). Cases of AMI during follow-up 1996-2016 were retrieved from national registers. Incidence rate ratios (IRR) were computed by Poisson regression adjusting for demographic and JEM-assessed lifestyle factors. Models addressed physical activities at work the previous 0-2 years (short-term risk) and cumulative physical activities (long-term risk). Results During 21.4 million person-years of follow-up, 22 037 AMI occurred in men and 6942 in women. Exposure-response relationships between recent physical activities at work and AMI were not evident. In men, the fully adjusted long-term IRR for the highest of five exposure categories compared to the lowest were 1.09 [95% confidence interval (CI) 1.03-1.15] for lifting and 1.01 (95% CI 0.96-1.07) for standing/walking. In women, the corresponding figures were 1.27 (95% CI 1.15-1.40) and 1.18 (95% CI 1.07-1.30). The latter risk estimate was strongly attenuated, and the trend became insignificant when adjusted for lifting. Findings were only partially supported by sensitivity analyses. Conclusion The study provides limited support to the hypothesis that long-term lifting and standing/walking at work is related to increased risk of AMI. Possible effects of acute physical exertion are not addressed and bias towards the null because of crude exposure assignment cannot be ruled out

Collie A, Sheehan L, Lane TJ, and Iles R. Psychological distress in workers' compensation claimants: prevalence, predictors and mental health service use. Journal of Occupational Rehabilitation. 2020; 30(2):194-202.

<https://doi.org/10.1007/s10926-019-09862-1> [open access]

Abstract: Purpose To determine the prevalence and predictors of psychological distress among injured and ill workers and their mental

health service use. Methods Cross-sectional national survey of adults with work-related musculoskeletal or mental health conditions, accepted workers' compensation claims and at least 1 day off work. Psychological distress was measured using the Kessler-6 scale. Mental health service use was measured using self-report. Results A total of 3755 workers were included in the study (Musculoskeletal disorder = 3160; Mental health condition = 595). Of these, 1034 (27.5%) and 525 (14.0%) recorded moderate and severe psychological distress, respectively. Multivariate ordinal logistic regression revealed that being off work, poor general health, low work ability, financial stress, stressful interactions with healthcare providers and having diagnosed mental health conditions had the strongest associations with presence of psychological distress. Of the subgroup with musculoskeletal disorders and psychological distress (N = 1197), 325 (27.2%) reported accessing mental health services in the past four weeks. Severe psychological distress, being off work, worse general health and requiring support during claim were most strongly associated with greater odds of service use. Conclusions The prevalence of psychological distress among workers' compensation claimants is high. Most workers with musculoskeletal disorders and psychological distress do not access mental health services. Screening, early intervention and referral programs may reduce the prevalence and impact of psychological distress.

Dianat I, Afshari D, Sarmasti N, Sangdeh MS, and Azaddel R. Work posture, working conditions and musculoskeletal outcomes in agricultural workers. International Journal of Industrial Ergonomics. 2020; 77:102941.

<https://doi.org/10.1016/j.ergon.2020.102941>

Ding Y, Cao Y, Duffy VG, and Zhang X. It is time to have rest: how do break types affect muscular activity and perceived discomfort during prolonged sitting work. Safety and Health at Work. 2020; 11(2):207-214.

<https://doi.org/10.1016/j.shaw.2020.03.008> [open access]

Abstract: BACKGROUND: Prolonged sitting at work can lead to adverse health outcomes. The health risk of office workers is an increasing concern for the society and industry, with prolonged sitting work becoming more prevalent. OBJECTIVE: This study aimed to

explore the variation in muscle activities during prolonged sitting work and found out when and how to take a break to mitigate the risk of muscle symptoms. **METHODS:** A preliminary survey was conducted to find out the prevalence of muscle discomfort in sedentary work. Firstly, a 2-hsedentary computer work was designed based on the preliminary study to investigate the variation in muscle activities. Twenty-four participants took part in the electromyography (EMG) measurement study. The EMG variations in the trapezius muscle and latissimus dorsi were investigated. Then the intervention time was determined based on the EMG measurement study. Secondly, 48 participants were divided into six groups to compare the effectiveness of every break type (passive break, active break of changing their posture, and stand and stretch their body with 5 or 10 mins). Finally, data consisting of EMG amplitudes and spectra and subjective assessment of discomfort were analyzed. **RESULTS:** In the EMG experiment, results from the joint analysis of the spectral and amplitude method showed muscle fatigue after about 40 mins of sedentary work. In the intervention experiment, the results showed that standing and stretching for 5 mins was the most effective break type, and this type of break could keep the muscles' state at a recovery level for about 30-45 mins. **CONCLUSIONS:** This study offers the possibility of being applied to office workers and provides preliminary data support and theoretical exploration for a follow-up early muscle fatigue detection system

Feary J, Cannon J, Fitzgerald B, Szram J, Schofield S, and Cullinan P. Follow-up survey of patients with occupational asthma. Occupational Medicine. 2020; 70(4):231-234.

<https://doi.org/10.1093/occmed/kqaa049> [open access]

Abstract: **BACKGROUND:** Occupational asthma (OA) is often associated with a poor prognosis and the impact of a diagnosis on an individual's career and income can be significant. **AIMS:** We sought to understand the consequences of a diagnosis of OA to patients attending our clinic. **METHODS:** Using a postal questionnaire, we surveyed all patients attending our specialist occupational lung disease clinic 1 year after having received a diagnosis of OA due to a sensitizer (n = 125). We enquired about their current health and employment status and impact of their diagnosis on various aspects of their life. Additional information was collected by review of clinical

records. RESULTS: We received responses from 71 (57%) patients; 77% were referred by an occupational health (OH) provider. The median duration of symptoms prior to referral was 18 months (interquartile range (IQR) 8-48). At 1 year, 79% respondents were no longer exposed to the causal agent. Whilst the unexposed patients reported an improvement in symptoms compared with those still exposed (82% versus 53%; $P = 0.023$), they had poorer outcomes in terms of career, income and how they felt treated by their employer; particularly those not currently employed. Almost all (>90%) of those still employed had been referred by an OH provider compared with 56% of those currently unemployed ($P = 0.002$). CONCLUSIONS: The negative impact of OA on people's careers, livelihood and quality of life should not be underestimated. However, with early detection and specialist care, the prognosis is often good and particularly so for those with access to occupational health

Haghani M, Bliemer MCJ, Goerlandt F, and Li J. The scientific literature on Coronaviruses, COVID-19 and its associated safety-related research dimensions: a scientometric analysis and scoping review. Safety Science. 2020; 129:104806.

<https://doi.org/10.1016/j.ssci.2020.104806> [open access]

Abstract: The COVID-19 global pandemic has generated an abundance of research quickly following the outbreak. Within only a few months, more than a thousand studies on this topic have already appeared in the scientific literature. In this short review, we analyse the bibliometric aspects of these studies on a macro level, as well as those addressing Coronaviruses in general. Furthermore, through a scoping analysis of the literature on COVID-19, we identify the main safety-related dimensions that these studies have thus far addressed. Our findings show that across various research domains, and apart from the medical and clinical aspects such as the safety of vaccines and treatments, issues related to patient transport safety, occupational safety of healthcare professionals, biosafety of laboratories and facilities, social safety, food safety, and particularly mental/psychological health and domestic safety have thus far attracted most attention of the scientific community in relation to the COVID-19 pandemic. Our analysis also uncovers various potentially significant safety problems caused by this global health emergency which currently have attracted only limited scientific focus but may

warrant more attention. These include matters such as cyber safety, economic safety, and supply-chain safety. These findings highlight why, from an academic research perspective, a holistic interdisciplinary approach and a collective scientific effort is required to help understand and mitigate the various safety impacts of this crisis whose implications reach far beyond the bio-medical risks. Such holistic safety-scientific understanding of the COVID-19 crisis can furthermore be instrumental to be better prepared for a future pandemic

Jung H, Jung SY, Lee MH, and Kim MS. Assessing the presence of post-traumatic stress and turnover intention among nurses post-middle east respiratory syndrome outbreak: the importance of supervisor support. *Workplace Health & Safety*. 2020; 68(7):337-345.

<https://doi.org/10.1177/2165079919897693> [open access]

Abstract: Background: South Korea faced the Middle East Respiratory Syndrome (MERS) outbreak for the first time in 2015, which resulted in 186 infected patients and 39 deaths. This study investigated the level of post-traumatic stress disorder (PTSD) and turnover intention, the relationship between PTSD and turnover intention, and the buffering effect of supervisor support among nurses post-MERS outbreak. Methods: In total, 300 nurses from three of 15 isolation hospitals in South Korea were invited to participate. We collected data pertaining to PTSD, turnover intention, supervisor support, work-related factors, and socio-demographic factors through a structured survey distributed to the nurses at the hospitals after the outbreak. For the statistical analyses, descriptive statistics and multiple regression were employed. Findings: Of the 147 participants, 33.3% were involved in the direct care of the infected patients, whereas 66.7% were involved in the direct care of the suspected patients. More than half (57.1%) of the nurses experienced PTSD, with 25.1% experienced full PTSD and 32.0% with moderate or some level of PTSD. The mean score of turnover intention was 16.3, with the score range of 4 to 20. The multiple regression analysis revealed that PTSD was positively associated with turnover intention, and supervisor support had a strong buffering effect.

Conclusion/Application to Practice: These findings confirmed that after a fatal infectious disease outbreak like MERS, nurses

experience high level of PTSD and show high intention to leave. Organizational strategies to help nurses to cope with stress and to prevent turnover intention, especially using supervisor support, would be beneficial

Lund T, Petersen SB, Flachs EM, Ebbehøj NE, Bonde JP, and Agner T. Risk of work-related hand eczema in relation to wet work exposure. *Scandinavian Journal of Work, Environment & Health*. 2020; 46(4):437-445.

<https://doi.org/10.5271/sjweh.3876> [open access]

Abstract: Objective Arbeit a pivotal risk for the development of hand eczema (HE), the exposure-response relationship between wet work and HE remains to be further investigated. Knowledge on exposure-response is important regarding preventive measures, medico-legal regulations and job-counseling. Recently, a job-exposure matrix (JEM) for wet work was developed, providing information on the likelihood of wet work. By combining the JEM with data on HE we aimed to investigate the relationship between extent of wet work and HE. **Methods** This study is a case-referent study including patients registered in the National Database of Contact Allergy, Denmark, and comprises data on sex, age, atopic dermatitis, HE, face eczema and patch testing results. Patients with HE served as cases and patients with facial eczema served as referents. Information on profession was retrieved from the DOC*X database in accordance with the DISCO-88 classification system. A wet-work-specific JEM provides - for each profession - an estimate for (i) the likelihood of wet work lasting ≥ 2 hours/day and (ii) the average number of hours of wet work per day. **Results** After two hours of wet hands and glove wear, the odds ratio (OR) was 3.49 and 3.19, respectively, for females and 2.41 and 1.82, respectively, for males. Females had a higher risk of HE than males with probability of wet hands $< 75\%$ (OR 2.34, 95% CI 2.12-2.58 compared to males 1.68, 95% CI 1.22-2.31) and regarding glove wear at all exposure levels. **Conclusion** Our data confirms a close association between wet work and HE. Exposure lasting less than the current definition of wet work (having wet hands for ≥ 2 hours per day) may be of importance.

Mehri F, Jenabi E, Bashirian S, Shahna FG, and Khazaei S. The association between occupational exposure to silica and risk of

developing rheumatoid arthritis: a meta-analysis. Safety and Health at Work. 2020; 11(2):136-142.

<https://doi.org/10.1016/j.shaw.2020.02.001> [open access]

Abstract: Background: Rheumatoid arthritis (RA) is an autoimmune disease with systemic inflammatory arthritis. This meta-analysis was conducted to examine the association between occupational exposure to silica and the risk of developing RA among different workers.

Methods: In this meta-analysis, we searched relevant published studies using major electronic databases including Scopus, PubMed, ISI Web of Science, and Google Scholar search engine up to October 2019, and the references of retrieved articles were also checked for further possible sources. A random-effects model was used to account for heterogeneity among the results of the studies using the pooled odds ratios (ORs) and their 95% confidence intervals (CIs). The Q-statistic and I² tests were calculated to assess heterogeneity between the studies.

Results: The pooled calculation of OR indicated a significant association between occupational exposure to silica and risk of developing RA among different workers (OR = 2.59, 95% CI = 1.73 to 3.45). In addition, the pooled estimates of OR in smokers were statistically significant (OR = 2.49, 95% CI = 1.13 to 3.86).

Conclusions: The findings of the present study reveal that occupational exposure to silica may be associated with increased risk of developing RA.

Ordway AR, Johnson KL, Amtmann D, Bocell FD, Jensen MP, and Molton IR. The relationship between resilience, self-efficacy, and employment in people with physical disabilities.

Rehabilitation Counseling Bulletin. 2020; 63(4):195-205.

<https://doi.org/10.1177/0034355219886660>

Pradeepkumar H, Sakthivel G, and Shankar S. Prevalence of work related musculoskeletal disorders among occupational bus drivers of Karnataka, South India. Work. 2020; 66(1):73-84.

<https://doi.org/10.3233/WOR-203152>

Abstract: BACKGROUND: Work-related health problems result in an economic loss of 4-6% in GDP (Gross domestic Product) of the most countries. In the industrialized countries, 1/3rd of the health-related

absence to duty are due to musculoskeletal disorders. Professional driving is one such occupation which looks like sedentary occupation, but involves many risk factors that contribute to work-related musculoskeletal disorders (WMSD) due to its nature of working and work environment. This research describes the various risk factors associated with WMSDs and their effects on drivers health.

OBJECTIVE: To assess the prevalence of WMSD and its associated risk factors among the bus drivers of Karnataka State Road Transport Corporation (KSRTC), Karnataka. **METHODS:** Subjects considered in this study are 301 full-time bus drivers from the central division KSRTC which consists of 6 depots in Bengaluru. Information regarding reported WMSD symptoms during immediate past 7 days to 12 months, the intervention of WMSD in their day-to-day life and the overall comfort of the body are determined through Standardized Nordic Questionnaire and also by direct observation. The survey questionnaire is conducted by face to face interview. **FINDINGS:** From the statistical analysis, it is found that around 55.8% of the study population has experienced WMSD. The prevalence of WMSD is most common in the age group of 29-39 years (53.5%) followed by the age group of >40 years. **CONCLUSION:** In this study, some of the work-related and lifestyle/health-related factors show significant association with WMSD in bus drivers of Karnataka. Musculoskeletal disorders can be prevented by designing the driver's workspace ergonomically so that the design suits to all sorts of drivers and the drivers should also be trained on basics of vehicle ergonomics (posture, seat adjustments, in-vehicle controls adjustments). **INTERPRETATION:** KSRTC should educate drivers on the basics of vehicle ergonomics, harmful use of tobacco/alcohol, unhealthy food habits and also to involve in physical exercise at least 75-150 mins weekly. If not, the trend of drivers suffering from WMSD belonging to mid-age will increase exponentially. **SCOPE FOR FUTURE WORK:** Statistical result and direct observation insist on undertaking further studies on ergonomic interventions at driver's cabin, lifestyle/occupational health factors which mitigate WMSD in different parts of the body during driving

Ranasinghe U, Jefferies M, Davis P, and Pillay M. Resilience engineering indicators and safety management: a systematic review. Safety and Health at Work. 2020; 11(2):127-135.

<https://doi.org/10.1016/j.shaw.2020.03.009> [open access]

Abstract: A safe work environment is crucial in high-risk industries, such as construction refurbishment. Safety incidents caused by uncertainty and unexpected events in construction refurbishment systems are difficult to control using conventional safety management techniques. Resilience engineering (RE) is proposed as an alternative to traditional safety management approaches. It presents a successful safety management methodology designed to deal with uncertainty in high-risk work environments. Despite the fact that RE resides in the safety domain, there is no common set of RE indicators to measure and assess resilient in the work environment. The main aim of this research is to explore RE indicators that have been identified as important in developing and assessing the resilient work environment in high-risk industries, particularly in construction refurbishment. Indicators have been attained through a systematic literature review of research and scholarly articles published between the years 2004 and 2019. The literature review explored RE indicators in various industries. Descriptive analysis and co-occurrence-based network visualization were used for data analysis. The findings revealed 28 RE indicators in 11 different high-risk industries. The results show that the four commonly used indicators were: top-management commitment, awareness, learning, and flexibility, all of which have a strong relationship with RE. The findings of this study are useful for stakeholders when making decisions concerning the most important RE indicators in the context of their research or practice as this would avoid the ambiguity and disparity in the identification of RE indicators

Salas-Nicas S, Moncada S, Llorens C, Morina D, and Navarro A. A complex view of perceived job insecurity: relationship between three domains and their respective cognitive and affective components. Safety Science. 2020; 129:104796. <https://doi.org/10.1016/j.ssci.2020.104796>

Skagseth M, Fimland MS, Rise MB, Johnsen R, Borchgrevink PC, and Aasdahl L. Effectiveness of adding a workplace intervention to an inpatient multimodal occupational rehabilitation program: a randomized clinical trial. Scandinavian Journal of Work, Environment & Health. 2020; 46(4):356-363.

<https://doi.org/10.5271/sjweh.3873> [open access]

Abstract: Objectives This study aimed to evaluate the effectiveness of a workplace intervention (WI) added to an inpatient multimodal occupational rehabilitation program (I-MORE) on sickness absence. **Methods** In this researcher-blinded randomized controlled trial with parallel groups, individuals on sick leave due to musculoskeletal, unspecified- or common mental health disorders were randomized to I-MORE (N=87) or I-MORE+WI (N=88). I-MORE lasted 2+1 weeks (with one week at home in between) and consisted of "acceptance and commitment therapy", physical exercise, and work-related problem solving. The additional WI consisted of a preparatory part, a workplace meeting involving the sick-listed worker, the employer, and the primary rehabilitation therapist at the rehabilitation center, and follow-up work related to the meeting. The primary outcomes were number of sickness absence days and time until sustainable return to work (RTW) during 12 months of follow-up, measured by registry data. **Results** The median number of sickness absence days during the 12-month follow-up for I-MORE was 115 days [interquartile range (IQR) 53-183] versus 130 days (IQR 81-212) for I-MORE+WI. The difference between groups was not statistically significant (P=0.084). The hazard ratio for sustainable RTW was 0.74 (95% confidence interval 0.48-1.16; P=0.192) in favor of I-MORE. **Conclusions** This study provided no evidence in favor of I-MORE+WI compared to only I-MORE for long-term sickness absent individuals with musculoskeletal-, common mental- or unspecified disorders

Wegrzynek PA, Wainwright E, and Ravalier J. Return to work interventions for chronic pain: a systematic review.

Occupational Medicine. 2020; 70(4):268-277.

<https://doi.org/10.1093/occmed/kqaa066>

Abstract: **BACKGROUND:** Chronic pain (CP) remains the second commonest reason for being off work. Tertiary return to work (RTW) interventions aim to improve psychological and physical capacity amongst workers already off sick. Their effectiveness for workers with CP is unclear. **AIMS:** To explore which tertiary interventions effectively promote RTW for CP sufferers. **METHODS:** We searched eight databases for randomized controlled trials evaluating the effectiveness of tertiary RTW interventions for CP sufferers. We employed the Cochrane Risk of Bias (ROB) and methodological

quality assessment tools for all included papers. We synthesized findings narratively. Meta-analysis was not possible due to heterogeneity of study characteristics. RESULTS: We included 16 papers pertaining to 13 trials. The types, delivery format and follow-up schedules of RTW interventions varied greatly. Most treatments were multidisciplinary, comprising psychological, physical and workplace elements. Five trials reported that tertiary interventions with multidisciplinary elements promoted RTW for workers with CP compared to controls. We gave a high ROB rating for one or more assessment criteria to three out of the five successful intervention trials. Two had medium- and low-risk elements across all categories. One compared different intensity multidisciplinary treatment and one comprised work-hardening with a job coach. Seven trials found treatment effects for secondary outcomes but no RTW improvement. CONCLUSIONS: There is no conclusive evidence to support any specific tertiary RTW intervention for workers with CP, but multidisciplinary efforts should be considered. Workers' compensation is an important area for RTW policymakers to consider