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**April 17, 2020**

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**\*Reid-Musson E, MacEachen E, Bartel E, Saunders R, Meyer S, and Bigelow P. Occupational safety and the city: licensing regulation and deregulation in the taxi sector. *Relations Industrielles/Industrial Relations*. 2020; 75(1):101-122. [doi unavailable as of April 17, 2020]**

**Amiri S and Behnezhad S. Is job strain a risk factor for musculoskeletal pain? A systematic review and meta-analysis of 21 longitudinal studies. *Public Health*. 2020; 181:158-167. <https://doi.org/10.1016/j.puhe.2019.11.023>**

Abstract: OBJECTIVE: Given that job strain can be a risk factor for health, the researchers looked at the meta-analysis in which consequences of musculoskeletal pain in job strain is reviewed. STUDY DESIGN: Systematic review and meta-analysis. METHODS: After searching in databases based on keywords, studies were retrieved until January 2019. The extracted studies were combined altogether and the risk ratio was calculated. In addition, additional analysis was conducted at the end. RESULTS: The results showed that job strain as a risk factor for musculoskeletal pain was 1.62. The risk ratio is equal to 1.38 in men and 1.28 in women. Begg (P = 0.629) and Egger (P = 0.251) tests were not significant but trim-and-

fill method imputed 9 missing studies. CONCLUSIONS: Job strain was a risk factor for physical health and increased the risk of musculoskeletal pain. Therefore, it seems psychologically healthy work environment is essential for the prevention of health problems

**Amiri S and Behnezhad S. Job strain and mortality ratio: a systematic review and meta-analysis of cohort studies. Public Health. 2020; 181:24-33.**

<https://doi.org/10.1016/j.puhe.2019.10.030>

Abstract: OBJECTIVES: Research has explored the relationship between job strain and adverse effects on physical and psychological health. Accordingly, the effects of job strain on mortality risk were pooled based on longitudinal studies. STUDY DESIGN: Systematic review and meta-analysis. METHODS: Both researchers searched for published articles in scientific databases until May 2019. Then, the articles were screened based on the inclusion and exclusion criteria. The results were combined, and analyses of subgroups and reviewing the bias of the publication were performed as well. RESULTS: Seventeen longitudinal studies included in the meta-analysis were from three continents: Europe, Asia, and America. The risk ratio (RR) of mortality based on job strain was equal to 1.20, with a confidence interval (CI) of 1.04-1.37 ( $P = 0.00.10$ ). In men, the RR is 1.21, and the CI is 1.02-1.44 ( $P = 0.032$ ), and in women, the RR is 0.97 and CI is 0.84-1.12 ( $P = 0.686$ ). Evaluation of publication bias indicated nothing significant. DISCUSSION: Based on the findings, it was found that job strain was a risk factor for mortality, and this finding was more appropriate for men. Hence, reducing job strain can be a deterrent against the dangers that threaten health

**Cloete B, Yassi A, and Ehrlich R. Repeat auditing of primary health-care facilities against standards for occupational health and infection control: a study of compliance and reliability. Safety and Health at Work. 2020; 11(1):10-18.**

<https://doi.org/10.1016/j.shaw.2019.12.001> [open access]

Abstract: Background: The elevated risk of occupational infection such as tuberculosis among health workers in many countries raises the question of whether the quality of occupational health and safety (OHS) and infection prevention and control (IPC) can be improved by auditing. The objectives of this study were to measure (1) audited

compliance of primary health-care facilities in South Africa with national standards for OHS and IPC, (2) change in compliance at reaudit three years after baseline, and (3) the inter-rater reliability of the audit. Methods: The study analyzed audits of 60 primary health-care facilities in the Western Cape Province of South Africa. Baseline external audits in the time period 2011-2012 were compared with follow-up internal audits in 2014-2015. Audits at 25 facilities that had both internal and external audits conducted in 2014/2015 were used to measure reliability. Results: At baseline, 25% of 60 facilities were "noncompliant" (audit score < 50%), 48% "conditionally compliant" (score > 50 < 80%), and only 27% "compliant" (score > 80%). Overall, there was no significant improvement in compliance three years after baseline. Percentage agreement on specific items between internal and external audits ranged from 28% to 92% and kappa from -0.8 to 0.41 (poor to moderate). Conclusion: Low baseline compliance with OHS-IPC measures and lack of improvement over three years reflect the difficulties of quality improvement in these domains. Low inter-rater reliability of the audit instrument undermines the audit process. Evidence-based investment of effort is required if repeat auditing is to contribute to occupational risk reduction for health workers

**Freeman RC, Jr., Sukuan N, Tota NM, Bell SM, Harris AG, and Wang HL. Promoting spiritual healing by stress reduction through meditation for employees at a veterans hospital: a CDC framework-based program evaluation. Workplace Health & Safety. 2020; 68(4):161-170.**

<https://doi.org/10.1177/2165079919874795>

Abstract: Background: Employees in the Veterans Affairs (VA) hospital experience psychological stress from caring for vulnerable veteran populations. Evidence suggests that mindfulness meditation decreases stress in health care employees and military personnel. The purpose of this worksite program was to explore the acceptability of a mindfulness meditation program among VA workers. Methods: Chaplain residents developed the "Promoting Spiritual Healing by Stress Reduction Through Meditation" (Spiritual Meditation) program for employees in a VA hospital. To evaluate acceptability, a 13-multiple-choice-item survey with an open-ended question was administered after the intervention. Descriptive statistics and qualitative content analysis were performed. Findings: In 29

participants, 70% to 100% agreed with positive statements for the personal learning experience, program components, teacher quality, time to practice, and place to practice. Two categories emerged from qualitative responses: "positive practical experience of Spiritual Meditation" and "perceived values from Spiritual Meditation."

Conclusion/Application to Practice: Occupational health nurses are uniquely positioned to lead and collaborate with chaplains to deliver Spiritual Meditation in their workplace setting

**Holland P and Clayton S. Navigating employment retention with a chronic health condition: a meta-ethnography of the employment experiences of people with musculoskeletal disorders in the UK. Disability and Rehabilitation. 2020; 42(8):1071-1086.**

<https://doi.org/10.1080/09638288.2018.1519041>

Abstract: Purpose: Musculoskeletal disorders (MSDs) are associated with high rates of work disability in the UK. This review synthesized qualitative evidence concerning the employment experiences of people with MSDs to explore the factors shaping their employment trajectories post-onset and the resources they draw on to remain in work. Material and methods: Systematic database searches identified 16 qualitative studies of the employment consequences of having a chronic MSD in the UK. Meta-ethnographic methods were utilized to synthesize this body of evidence. This included a translation of concepts across studies to produce a line of argument synthesis. Results: The lack of certainty associated with often fluctuating and invisible MSD symptoms leads to employees struggling to maintain a stable work identity. Work retention is aided by having: a clear diagnosis, occupational tasks commensurate with altered abilities, and employers and colleagues who understand the nature of the condition. The ability to negotiate and implement workplace adjustments aids work retention but is dependent upon having good quality employee-employer relationships and the degree of autonomy available to the employee. Conclusion: Individuals with MSDs must draw on a range of personal, social, organizational and institutional resources to remain in or return to work post-onset. Implications for rehabilitation The fluctuating and invisible nature of chronic musculoskeletal disorders (MSDs) creates uncertainty for individuals about their ability to remain working or return-to-work. Individuals with

MSDs must draw on a range of personal, social, organizational, and institutional resources to remain in work following onset. Work retention is aided by having a clear diagnosis; occupational tasks commensurate with altered abilities; and understanding employers and coworkers. Organizational flexibility and the ability to act autonomously by changing occupations or self-implementing or requesting work adjustments are particularly important for work retention

**Janackovic G, Stojiljkovic E, and Grozdanovic M. Selection of key indicators for the improvement of occupational safety system in electricity distribution companies. Safety Science. 2020; 125:103654.**

<https://doi.org/10.1016/j.ssci.2017.07.009>

**Kreshpaj B, Orellana C, Burstrom B, Davis L, Hemmingsson T, Johansson G, et al. What is precarious employment? A systematic review of definitions and operationalizations from quantitative and qualitative studies. Scandinavian Journal of Work, Environment & Health. 2020; [epub ahead of print].**

<https://doi.org/10.5271/sjweh.3875>

**Abstract:** Objectives The lack of a common definition for precarious employment (PE) severely hampers the comparison of studies within and between countries, consequently reducing the applicability of research findings. We carried out a systematic review to summarize how PE has been conceptualized and implemented in research and identify the construct's dimensions in order to facilitate guidance on its operationalization. Methods According to PRISMA guidelines, we searched Web of Science and Scopus for publications with variations of PE in the title or abstract. The search returned 1225 unique entries, which were screened for eligibility. Exclusion criteria were (i) language other than English, (ii) lack of a definition for PE, and (iii) non-original research. A total of 63 full-text articles were included and qualitative thematic-analysis was performed in order to identify dimensions of PE. Results We identified several theory-based definitions of PE developed by previous researchers. Most definitions and operationalizations were either an accommodation to available data or the direct result of qualitative studies identifying themes of PE. The thematic-analysis of the selected articles resulted in a

multidimensional construct including the following three dimensions: employment insecurity, income inadequacy, and lack of rights and protection. Conclusions Despite a growing number of studies on PE, most fail to clearly define the concept, severely restricting the advancement of the research of PE as a social determinant of health. Our combined theoretical and empirical review suggests that a common multidimensional definition could be developed and deployed in different labor market contexts using a variety of methodological approaches

**Lax MB. Falling short: the state's role in workplace safety and health. *New Solutions*. 2020; 30(1):27-41.**

<https://doi.org/10.1177/1048291120903116> [open access]

**Liu H, Cheng Y, and Ho JJ. Associations of ergonomic and psychosocial work hazards with musculoskeletal disorders of specific body parts: a study of general employees in Taiwan. *International Journal of Industrial Ergonomics*. 2020; 76:102935.**

<https://doi.org/10.1016/j.ergon.2020.102935>

**Malmivaara A. Generalizability of findings from systematic reviews and meta-analyses in the leading general medical journals. *Journal of Rehabilitation Medicine*. 2020; 52(3):1-7.**

<https://doi.org/10.2340/16501977-2659> [open access]

**Abstract:** Objective: To assess how items relevant for the assessment of the generalizability of findings from randomized controlled trials were recorded in systematic reviews published in leading general medical journals.

**Methods:** All systematic reviews and meta-analyses published in the *Annals of Internal Medicine*, *BMJ*, *JAMA* (The Journal of the American Medical Association) and *Lancet* from 1 January 2016 to 28 February 2019 were searched via PubMed. Reporting of the characteristics of randomized controlled trials in the systematic reviews was documented by the benchmarking method.

**Results:** A total of 115 systematic reviews were found. Of these, 71% included pharmacological interventions, 35% included other conservative treatments, 13% included surgical interventions, and 0% included rehabilitation interventions. None of the systematic reviews assessed patient selection, 35% reported disorder-specific clinical

features, 25 % reported comorbid conditions, and 21% reported patients' behavioural factors in randomized controlled trials. Functioning, environmental factors and inequity-related factors were recorded in 3%, 0% and 9%, respectively, of the systematic reviews; and adherence to interventions, crossovers, and co-interventions in 7%, 0% and 2%, respectively; followup percentages in 8%; and adequacy of statistical analyses in 3%.

Conclusion: In all systematic reviews the recording of characteristics of patients, adherence to interventions, follow-up, and statistical analyses in the RCTs was insufficient. The data did not allow assessment of the clinical homogeneity of the randomized controlled trials, or provide justification for meta-analysis, or allow generalizability of the findings.

**Nilsson K. A sustainable working life for all ages: the swAge-model. *Applied Ergonomics*. 2020; 86:103082.**

<https://doi.org/10.1016/j.apergo.2020.103082>

**Pope-Ford R and Pope-Ozimba J. Musculoskeletal disorders and emergent themes of psychosocial factors and their impact on health in dentistry. *Work*. 2020; 65(3):563-571.**

<https://doi.org/10.3233/WOR-203110>

Abstract: BACKGROUND: Dentistry is a profession where musculoskeletal disorders are prevalent. Physical demands and static awkward postures increase the risks of dentists developing musculoskeletal disorders. In addition, researchers have identified psychosocial factors that can influence the health of workers.

OBJECTIVE: The aim of this research is to present self-reported pain regions and to assess psychosocial work factors as they relate to dentistry. METHOD: Fourteen dentists participated in the study. Data was collected via a questionnaire administered prior to the start of and during the study. Descriptive statistics were used for data analysis. RESULTS: All dentists self-reported to be in good to excellent health and only 50% sought medical treatment for work-related discomfort and pain. Thirteen of 14 reported being at least occasionally mentally and physically exhausted after work. A musculoskeletal disorder-work hour relationship model was created. Feedback given was linked to four psychosocial factors -job demand, job control, social interactions, and job future and career issues.

**CONCLUSIONS:** The dental profession is considered a highly cognitive profession where much attention has been placed on the physical demands due to awkward postures. While physical demands are validated, additional research will further validate the link between psychosocial and mental and physical demands

**Rollins SM, Su FC, Liang X, Humann MJ, Stefaniak AB, LeBouf RF, et al. Workplace indoor environmental quality and asthma-related outcomes in healthcare workers. American Journal of Industrial Medicine. 2020; 63(5):417-428.**

<https://doi.org/10.1002/ajim.23101>

**Abstract:** **BACKGROUND:** Asthma-related health outcomes are known to be associated with indoor moisture and renovations. The objective of this study was to estimate the frequency of these indoor environmental quality (IEQ) factors in healthcare facilities and their association with asthma-related outcomes among workers. **METHODS:** New York City healthcare workers (n = 2030) were surveyed regarding asthma-related symptoms, and moisture and renovation factors at work and at home during the last 12 months. Questions for workplace moisture addressed water damage (WD), mold growth (MG), and mold odor (MO), while for renovations they addressed painting (P), floor renovations (FR), and wall renovations (WR). Regression models were fit to examine associations between work and home IEQ factors and multiple asthma-related outcomes. **RESULTS:** Reports of any moisture (n = 728, 36%) and renovations (n = 1412, 70%) at work were common. Workplace risk factors for asthma-related outcomes included the moisture categories of WD by itself, WD with MO (without MG), and WD with MG and MO, and the renovation category with the three factors P, FR, and WR. Reports of home IEQ factors were less frequent and less likely to be associated with health outcomes. Data analyses suggested that MG and/or MO at work and at home had a synergistic effect on the additive scale with a symptom-based algorithm for bronchial hyperresponsiveness. **CONCLUSIONS:** The current study determined that moisture and renovation factors are common in healthcare facilities, potentially putting workers at risk for asthma-related outcomes. More research is needed to confirm these results, especially prospective studies



**Schneider D. Paid sick leave in Washington state: evidence on employee outcomes, 2016-2018. American Journal of Public Health. 2020; 110(4):499-504.**

<https://doi.org/10.2105/AJPH.2019.305481> [open access]

**Abstract:** Objectives. To estimate if Washington State's paid sick leave law increased access to paid sick leave, reduced employees' working while sick, and relieved care burdens. Methods. I drew on new data from 12 772 service workers collected before and after the law took effect in January 2018 in Washington State and over the same time period in comparison states that did not have paid sick leave requirements. I used difference-in-difference models to estimate the effects of the law. Results. The law expanded workers' access to paid sick leave by 28 percentage points ( $P < .001$ ). The law reduced the share of workers who reported working while sick by 8 percentage points ( $P < .05$ ). Finally, there was little evidence that the law served to reduce work-life conflict for Washington workers. Conclusions. Mandated paid sick leave increased access to paid sick leave benefits and led to reductions in employees' working while sick. However, covered workers did not experience reductions in work-life conflict in the period immediately following passage

**Sullman M. Using in-vehicle data monitors to reduce risky driving among sales representatives. Policy and Practice in Health and Safety. 2020; 18(1):55-64.**

<https://doi.org/10.1080/14773996.2019.1667094>

**Verbeek JH, Rajamaki B, Ijaz S, Sauni R, Toomey E, Blackwood B, et al. Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. Cochrane Database of Systematic Reviews. 2020; 4:CD011621.**

<https://doi.org/10.1002/14651858.CD011621.pub4>

**Abstract:** BACKGROUND: In epidemics of highly infectious diseases, such as Ebola, severe acute respiratory syndrome (SARS), or coronavirus (COVID-19), healthcare workers (HCW) are at much greater risk of infection than the general population, due to their contact with patients' contaminated body fluids. Personal protective equipment (PPE) can reduce the risk by covering exposed body parts. It is unclear which type of PPE protects best, what is the best

way to put PPE on (i.e. donning) or to remove PPE (i.e. doffing), and how to train HCWs to use PPE as instructed. OBJECTIVES: To evaluate which type of full-body PPE and which method of donning or doffing PPE have the least risk of contamination or infection for HCW, and which training methods increase compliance with PPE protocols. SEARCH METHODS: We searched CENTRAL, MEDLINE, Embase and CINAHL to 20 March 2020. SELECTION CRITERIA: We included all controlled studies that evaluated the effect of full-body PPE used by HCW exposed to highly infectious diseases, on the risk of infection, contamination, or noncompliance with protocols. We also included studies that compared the effect of various ways of donning or doffing PPE, and the effects of training on the same outcomes. DATA COLLECTION AND ANALYSIS: Two review authors independently selected studies, extracted data and assessed the risk of bias in included trials. We conducted random-effects meta-analyses where appropriate. MAIN RESULTS: Earlier versions of this review were published in 2016 and 2019. In this update, we included 24 studies with 2278 participants, of which 14 were randomised controlled trials (RCT), one was a quasi-RCT and nine had a non-randomised design. Eight studies compared types of PPE. Six studies evaluated adapted PPE. Eight studies compared donning and doffing processes and three studies evaluated types of training. Eighteen studies used simulated exposure with fluorescent markers or harmless microbes. In simulation studies, median contamination rates were 25% for the intervention and 67% for the control groups. Evidence for all outcomes is of very low certainty unless otherwise stated because it is based on one or two studies, the indirectness of the evidence in simulation studies and because of risk of bias. Types of PPE The use of a powered, air-purifying respirator with coverall may protect against the risk of contamination better than a N95 mask and gown (risk ratio (RR) 0.27, 95% confidence interval (CI) 0.17 to 0.43) but was more difficult to don (non-compliance: RR 7.5, 95% CI 1.81 to 31.1). In one RCT (59 participants), people with a long gown had less contamination than those with a coverall, and coveralls were more difficult to doff (low-certainty evidence). Gowns may protect better against contamination than aprons (small patches: mean difference (MD) -10.28, 95% CI -14.77 to -5.79). PPE made of more breathable material may lead to a similar number of spots on the trunk (MD 1.60, 95% CI -0.15 to 3.35) compared to more water-

repellent material but may have greater user satisfaction (MD -0.46, 95% CI -0.84 to -0.08, scale of 1 to 5). Modified PPE versus standard PPE The following modifications to PPE design may lead to less contamination compared to standard PPE: sealed gown and glove combination (RR 0.27, 95% CI 0.09 to 0.78), a better fitting gown around the neck, wrists and hands (RR 0.08, 95% CI 0.01 to 0.55), a better cover of the gown-wrist interface (RR 0.45, 95% CI 0.26 to 0.78, low-certainty evidence), added tabs to grab to facilitate doffing of masks (RR 0.33, 95% CI 0.14 to 0.80) or gloves (RR 0.22, 95% CI 0.15 to 0.31). Donning and doffing Using Centers for Disease Control and Prevention (CDC) recommendations for doffing may lead to less contamination compared to no guidance (small patches: MD -5.44, 95% CI -7.43 to -3.45). One-step removal of gloves and gown may lead to less bacterial contamination (RR 0.20, 95% CI 0.05 to 0.77) but not to less fluorescent contamination (RR 0.98, 95% CI 0.75 to 1.28) than separate removal. Double-gloving may lead to less viral or bacterial contamination compared to single gloving (RR 0.34, 95% CI 0.17 to 0.66) but not to less fluorescent contamination (RR 0.98, 95% CI 0.75 to 1.28). Additional spoken instruction may lead to fewer errors in doffing (MD -0.9, 95% CI -1.4 to -0.4) and to fewer contamination spots (MD -5, 95% CI -8.08 to -1.92). Extra sanitation of gloves before doffing with quaternary ammonium or bleach may decrease contamination, but not alcohol-based hand rub. Training The use of additional computer simulation may lead to fewer errors in doffing (MD -1.2, 95% CI -1.6 to -0.7). A video lecture on donning PPE may lead to better skills scores (MD 30.70, 95% CI 20.14 to 41.26) than a traditional lecture. Face-to-face instruction may reduce noncompliance with doffing guidance more (odds ratio 0.45, 95% CI 0.21 to 0.98) than providing folders or videos only. AUTHORS' CONCLUSIONS: We found low- to very low-certainty evidence that covering more parts of the body leads to better protection but usually comes at the cost of more difficult donning or doffing and less user comfort, and may therefore even lead to more contamination. More breathable types of PPE may lead to similar contamination but may have greater user satisfaction. Modifications to PPE design, such as tabs to grab, may decrease the risk of contamination. For donning and doffing procedures, following CDC doffing guidance, a one-step glove and gown removal, double-gloving, spoken instructions during doffing, and using glove disinfection may reduce contamination and

increase compliance. Face-to-face training in PPE use may reduce errors more than folder-based training. We still need RCTs of training with long-term follow-up. We need simulation studies with more participants to find out which combinations of PPE and which doffing procedure protects best. Consensus on simulation of exposure and assessment of outcome is urgently needed. We also need more real-life evidence. Therefore, the use of PPE of HCW exposed to highly infectious diseases should be registered and the HCW should be prospectively followed for their risk of infection

**Zhou Z and Guo W. Applications of item response theory to measuring the safety response competency of workers in subway construction projects. Safety Science. 2020; 127:104704. <https://doi.org/10.1016/j.ssci.2020.104704>**

\*IWH authored publication.