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Journal articles marked with an asterisk indicate an IWH scientist or adjunct scientist is included in the list of authors.

***Barraclough M, Erdman L, Diaz-Martinez JP, Knight A, Bingham K, Su J, Kakvan M, Grajales CM, Tartaglia MC, Ruttan L, Wither J, Choi MY, Bonilla D, Appenzeller S, Parker B, Goldenberg A, Katz P, Beaton D, et al. Systemic lupus erythematosus phenotypes formed from machine learning with a specific focus on cognitive impairment. *Rheumatology*. 2023; 62(11):3610-3618.**

<https://doi.org/10.1093/rheumatology/keac653> [open access]

Abstract: Objective To phenotype SLE based on symptom burden (disease damage, system involvement and patient reported outcomes), with a specific focus on objective and subjective cognitive function. Methods SLE patients ages 18–65 years underwent objective cognitive assessment using the ACR Neuropsychological Battery (ACR-NB) and data were collected on demographic and clinical variables, disease burden/activity, health-related quality of life (HRQoL), depression, anxiety, fatigue and perceived cognitive deficits. Similarity network fusion (SNF) was used to identify patient subtypes. Differences between the subtypes were evaluated using Kruskal–Wallis and χ^2 tests. Results Of the 238 patients, 90% were female, with a mean age of 41 years (S.D. 12) and a disease duration of 14 years (S.D. 10) at the study visit. The SNF analysis defined two subtypes (A and B) with distinct patterns in objective and subjective cognitive function, disease burden/damage, HRQoL, anxiety and depression. Subtype A performed worst on all significantly different tests of objective cognitive function ($P < 0.03$) compared with subtype B. Subtype A also had greater levels of subjective cognitive function ($P < 0.001$), disease burden/damage ($P < 0.04$), HRQoL ($P < 0.001$) and psychiatric measures ($P < 0.001$) compared with subtype B. Conclusion This

study demonstrates the complexity of cognitive impairment (CI) in SLE and that individual, multifactorial phenotypes exist. Those with greater disease burden, from SLE-specific factors or other factors associated with chronic conditions, report poorer cognitive functioning and perform worse on objective cognitive measures. By exploring different ways of phenotyping SLE we may better define CI in SLE. Ultimately this will aid our understanding of personalized CI trajectories and identification of appropriate treatments.

Anderson O, McLennan V, and Randall C. Choice and outcomes in worker injury rehabilitation: a mixed methods study. *Journal of Vocational Rehabilitation*. 2023; 9(3):311-320.

<https://doi.org/10.3233/JVR-230048>

Biesenbeek C and Volkerink M. The price of flexible jobs wage differentials between permanent and flexible jobs in the Netherlands. *De Economist*. 2023; 171:367-401.

<https://doi.org/10.1007/s10645-023-09429-9>

Bunn TL, Costich JF, Mirzaian M, Daniels LK, Wang D, and Quesinberry D. Interrupted time series analysis of drug overdose fatalities in service-related industries versus non-service-related industries during the COVID-19 pandemic, 2018-2021. *Injury Prevention*. 2023; 29(6):511-518.

<https://doi.org/10.1136/ip-2023-044894> [open access]

Abstract: Background Variation among industries in the association between COVID-19-related closing or reopening orders and drug overdose deaths is unknown. The objectives of this study were to compare drug overdose decedent demographics, annual drug overdose fatality rates and monthly drug overdose fatality rates by specific industry within the service-related industry sector, and to perform an interrupted time series analysis comparing weekly drug overdose mortality counts in service-related and non-service-related industries, examining the COVID-19 pre-pandemic and pandemic phases by Kentucky closing and reopening orders. Methods Kentucky drug overdose death certificate and toxicology testing data for years 2018–2021 were analysed using X2 and interrupted time series methods. Results Before the pandemic, annual drug overdose fatality rates in service-related industries were higher than in non-service-related industries. However, these trends reversed during the pandemic. Both service-related and non-service-related industry groups experienced increased fatal drug overdoses at change points associated with the gubernatorial business closure orders, although the magnitude of the increase differed between the two groups. Young, female and black workers in service-related industries had higher frequencies of drug overdose deaths compared with decedents in the non-service-related industries. Conclusion Spikes in drug overdose mortality in both service-related and non-service-related industries during the pandemic highlight the need to consider and include industries and occupations, as well as worker populations vulnerable to infectious diseases, as integral stakeholder

groups when developing and implementing drug overdose prevention interventions, and implementing infectious disease surveillance systems.

Cardwell K, Quigley J, Clyne B, Tyner B, Carrigan M, Smith SM, et al. Systematic review finds processes used internationally, to update clinical guidelines, lack consistency and detail. Evidence & Policy. 2023; 19(4):572-590.

<https://doi.org/10.1332/174426421X16854447463061> [open access] Abstract:

Background: Clinical guidelines (CGs) need to be updated to ensure the ongoing validity of recommendations. Aims and objectives: This systematic review identified and described the most recent CG update processes, including prioritisation methods, used by international or national groups who provide methodological guidance for developing and updating CGs. Methods: Methodological handbooks were identified by searching a predefined list of national and international organisations, and by grey literature searching. A systematic literature search (2011–2021) of Medline, Embase and the Cochrane Library was conducted to identify peer-reviewed articles that described the development and or evaluation of update processes. Data were extracted by one reviewer and checked by a second. Quality assessment was conducted independently by two reviewers. A narrative synthesis was undertaken. Findings: In total, 16 handbooks from 11 organisations and three peer-reviewed articles were included. Few handbooks provided comprehensive details beyond whether an update was indicated, with processes for prioritisation of updates and required resources generally lacking; terminology and definitions differed across organisations. In general, evidence synthesis methods used to update CGs were the same as those used to develop CGs de novo. Discussion and conclusion: Updating CGs is critical to support policy and practice. It is an iterative process that is both resource-intensive and time-consuming. International or national groups who provide methodological guidance for developing and updating CGs should consider providing more comprehensive guidance and standardising the terminology used to facilitate optimal updating of CGs and prioritisation of CGs for updating.

Choi B and Seo Y. Developing a short standard questionnaire for assessing work organization hazards: the Healthy Work Survey (HWS). Annals of Occupational and Environmental Medicine. 2023; 35:e7.

<https://doi.org/10.35371/aoem.2023.35.e7> [open access]

Abstract: BACKGROUND: At present, no short standard questionnaire exists for assessing and comparing major work organization hazards in the workplaces of the United States.

METHODS: We conducted a series of psychometric tests (content validity, factor analysis, differential-item functioning analysis, reliability, and concurrent validity) to validate and identify core items and scales for major work organization hazards using the data from the 2002-2014 General Social Surveys (GSSs), including the Quality of Worklife (QWL) questionnaire. In addition, an extensive literature review was undertaken to find other major work organization hazards which were not addressed in the GSS. RESULTS: Although the overall validity of the GSS-QWL questionnaire was satisfactory in the psychometric tests,

some GSS-QWL items of work-family conflict, psychological job demands, job insecurity, use of skills on the job, and safety climate scales appeared to be weak. In the end, 33 questions (31 GSS-QWL and 2 GSS) were chosen as the least, but best validated core questions and included in a new short standard questionnaire (called the Healthy Work Survey [HWS]). And their national norms were established for comparisons. Furthermore, based on the literature review, fifteen more questions for assessing other significant work organization hazards (e.g., lack of scheduling control, emotional demands, electronic surveillance, wage theft) were included in the new questionnaire. Thus, the HWS includes 48 questions in total for assessing traditional and emerging work organization hazards, which covers seven theoretical domains: work schedule/arrangement, control, support, reward, demands, safety, and justice.

CONCLUSIONS: The HWS is a short standard questionnaire for assessing work organization hazards which can be used as a first step toward the risk management of major work organization hazards in the workplaces of the US

Edmund NNK, Suxia L, Ebenezer L, and Kachie ADT. Emotional intelligence as a conduit for improved occupational health safety environment in the oil and gas sector. Scientific Reports. 2023; 13(1):19698.

<https://doi.org/10.1038/s41598-023-46886-3> [open access]

Abstract: To address the issue of promoting occupational health and safety at the workplace, this study aimed to evaluate the mediating effect of four different dimensional constructs of Emotional Intelligence (EI) on the influence Occupational Health and Safety Management Practices (OHSMP) hold on safety performance and workplace accidents among oil and gas workers. The study is explanatory research that adopted a cross-sectional survey design. Convenience and stratified sampling techniques were used to select 699 respondents from the three major government-owned oil and gas organizations. The multiple standard regression and bootstrapping mediation methods were used for data analysis after subjecting the data to exploratory and confirmatory factor assessments. Results indicated that OHSMP significantly predicts EI, safety performance, and workplace accidents. Again, EI was found to predict safety performance and workplace accidents significantly. Results also indicated that all the construct dimensions for measuring EI significantly explain the relationship between OHSMP and safety performance, as well as the influence of OHSMP on workplace accidents. The theoretical basis for these findings is that workers with high-level EI are likely to cope with occupational health and safety lapses or safety-related challenges at the workplace by participating and complying with the organization's safety management practices or procedures. Such employees are likely to exhibit safe working behaviors and contribute to improving safety performance in the organization

Januario LB, Mathiassen SE, Bergstrom G, and Jackson JA. Did the COVID-19 pandemic influence inequality in self-reported work environment conditions based on gender and place of birth? A study of a Swedish commercial laundromat. *Applied Ergonomics*. 2024; 114:104113.

<https://doi.org/10.1016/j.apergo.2023.104113> [open access]

Abstract: We evaluated differences in work environment conditions and health by gender and place of birth in a commercial laundromat prior to (baseline) and at the end of the first wave of the COVID-19 pandemic (follow-up). Using survey data, including dimensions from the Copenhagen Psychosocial Questionnaire, from forty-one workers, we assessed work environment conditions and health at baseline, follow-up and in change scores between baseline and follow-up. At baseline, men and women reported similar scores, while foreign-born (FB) workers reported better work environment conditions than Swedish-born (SB) workers. During the pandemic, conditions generally declined for all workers, but FB reported smaller declines than SB. A consistent inequality hierarchy across the 4 groups was not clear at baseline, follow-up or in change scores between time points. The study suggests potential cultural differences may exist in how work environment conditions are experienced. This should be considered in future studies and when managing future crises

Li M, Lin Q, and Jin H. Research on near-miss incidents monitoring and early warning system for building construction sites based on blockchain technology. *Journal of Construction Engineering and Management*. 2023; 149(12):04023124.

<https://doi.org/10.1061/JCEMD4.COENG-13979>

Overgaard C, Jespersen M, Hogedahl L, and Thomsen TL. Migrants' work environment in the Danish construction sector: a scoping study. *Nordic Journal of Working Life Studies*. 2023; 13(3):71-93.

<https://doi.org/10.18291/njwls.135435> [open access]

Abstract: This study of existing research maps out what is known about the work environment of migrant workers employed in the construction sector in Denmark. Through the systematic approach offered by a scoping study and using two conceptual models identifying determinants of worker health and safety as analytical frameworks, we identify an overall paucity of research concerned specifically with the health and safety of migrants. A broader literature shows that migrants are vulnerable workers who are channeled into 3D jobs and face job insecurity. Migrants also face poor treatment and segregation. We conclude by identifying 10 gaps in the current literature, including a lack of valid evidence concerning accidents and risks.

Reuter M, Pischke CR, Rigo M, Diehl K, Spallek J, Richter M, et al. Health inequalities among young workers: the mediating role of working conditions and company characteristics. *International Archives of Occupational & Environmental Health*. 2023; 96(10):1313-1324.

<https://doi.org/10.1007/s00420-023-02010-6> [open access]

Abstract: Objective Few studies have investigated health inequalities among young workers. The objectives of this study are to assess the extent of health inequalities in a sample of job starters and to explore the contribution of job demands and organisational factors. Methods We analyze data from the BIBB/BAuA Youth Employment Survey 2012. The cross-sectional survey includes a representative sample of 3214 German employees, apprentices, and trainees aged 15–24 years. Individuals were grouped by their years of schooling into low (< 12 years) and high levels of education (\geq 12 years). Regression analysis estimated the link between education and four health outcomes: self-rated health, number of health events, musculoskeletal symptoms, and mental health problems over the last 12 months. Counterfactual mediation analysis tested for indirect effects of education via working conditions (i.e., physical and psychosocial job demands) and company characteristics (i.e., company size, health prevention measures, financial situation, downsizing). All analyses were adjusted for age, sex, nationality, region, working hours, job tenure, employment relationship, and economic sector. Results Highly educated workers reported better self-rated health ($b = 0.24$, 95% CI 0.18–0.31) and lower numbers of health events (Rate Ratio (RR) = 0.74, 95% CI 0.67–0.82), musculoskeletal symptoms (RR = 0.73, 95% CI 0.66–0.80) and mental health problems (RR = 0.84, 95% CI 0.76–0.93). Total job demands explained between 21.6% and 87.2% of the educational differences (depending on health outcome). Unfavourable company characteristics were associated with worse health, but showed no or only small mediation effects. Conclusions Health inequalities are already present at the early working career due to socio-economically stratified working hazards. To enhance prevention measures that aim at reducing inequalities in workplace health, we propose shifting attention towards earlier stages of life.

Shaw L, Thoren C, and Joudrey K. Retrospective review of work transition narratives: advancing occupational perspectives and strategies. *Work*. 2023; 76(3):969-978.

<https://doi.org/10.3233/WOR-230362>

Abstract: BACKGROUND: In 2009 the journal WORK commenced a new column for the publication of Work Transition Narratives. Fourteen persons with lived experience published their narratives on approaches that helped them through work disruptions and change. OBJECTIVE: A review of the articles was conducted to understand how people navigated challenges and obstacles and made sense of their in-transition experiences to return to work or to find new employment. METHODS: A retrospective review was conducted using a convenience sample of N=14 published narratives. A template approach was developed using micro (individual) and macro (social, cultural, political, structural) level issues to extract and analyze descriptive content. A senior researcher and two Masters of Science students independently reviewed the narratives and extracted data. A dialogic and inductive approach

was used to achieve consensus on the description of the types of mechanisms used to move forward. **RESULTS:** The mechanisms evident in the narratives used by people to navigate work disruptions included drawing on anchors, catalysts, champions, opportunities, learning, coming to terms, critical conversations, and critical reflections. **CONCLUSION:** Mechanisms used to navigate in-transition experiences add to the knowledge on negotiating the dialectical relationship of micro and macro level challenges in occupational transitions of work. This review and analysis revealed commonly used strategies that may assist others in addressing in-transition work challenges. In addition, the findings have implications for ongoing research and the development of occupational mindfulness approaches that may help people through the overwhelming and often daunting experience of work transitions

Singh J, Carleton RN, and Neary JP. Cardiac function and posttraumatic stress disorder: a review of the literature and case report. *Health Promotion and Chronic Disease Prevention in Canada. 2023; 43(10-11):472-480.*

<https://doi.org/10.24095/hpcdp.43.10/11.05> [open access]

Abstract: **INTRODUCTION:** Posttraumatic stress disorder (PTSD) can induce an elevation in sympathetic tone; however, research pertaining to the cardiac cycle in patients with PTSD is limited. **METHODS:** A literature review was conducted with PubMed, MEDLINE and Web of Science. Articles discussing changes and associations in echocardiography and PTSD or related symptoms were synthesized for the current review. We have also included data from a case report of a male participant aged 33 years experiencing potentially psychologically traumatic events, who wore a noninvasive cardiac sensor to assess the timing intervals and contractility parameters of the cardiac cycle using seismocardiography. The intervals included systolic time, isovolumic contraction time (IVCT) and isovolumic relaxation time (IVRT). Calculations of systolic (IVCT/systole), diastolic (IVRT/systole) and myocardial [(IVCT+IVRT)/systole] performance indices were completed. **RESULTS:** The review identified 55 articles, 14 of which assessed cardiac function using echocardiography in patients with PTSD symptoms. Cardiac dysfunction varied across studies, with diastolic and systolic impairments found in patients with PTSD. Our case study showed that occupational stress elevated cardiac performance indices, suggesting increased ventricular stress and supporting results in the existing literature. **CONCLUSIONS:** The literature review results suggest that a controlled approach to assessing cardiac function in patients with PTSD is required. The case study results further suggest that acute bouts of stress can alter cardiac function, with potential for sustained occupational stress to induce changes in cardiac function. Cardiac monitoring can be used prospectively to identify changes induced by potentially psychologically traumatic event exposures that can lead to the development of PTSD symptoms

Stelson EA, Dash D, McCorkell L, Wilson C, Assaf G, Re'em Y, et al. Return-to-work with long COVID: an Episodic Disability and Total Worker Health® analysis. *Social Science & Medicine*. 2023; 338:116336.

<https://doi.org/10.1016/j.socscimed.2023.116336>

Abstract: A growing number of working individuals have developed long COVID (LC) after COVID-19 infection. Economic analyses indicate that workers' LC symptoms contribute to workforce shortages. However, factors that affect return-to-work from perspectives of people with LC remain largely underexplored. This qualitative study of people with LC conducted by researchers living with LC aimed to identify participants' return-to-work experiences using Total Worker Health® and Episodic Disability frameworks. 10% of participants who participated in a mixed-method global internet survey, had LC symptoms >3 months, and responded in English were randomly selected for thematic analysis using NVivo12. 15% of responses were independently double-coded to identify coding discrepancies. Participants (N = 510) were predominately white and had at least a baccalaureate degree. Four primary work-related themes emerged: 1) strong desire and need to return to work motivated by sense of purpose and financial precarity; 2) diverse and episodic LC symptoms intersect with organization of work and home life; 3) pervasiveness of LC disbelief and stigma at work and in medical settings; and 4) support of medical providers is key to successful return-to-work. Participants described how fluctuation of symptoms, exacerbated by work-related tasks, made returning to work challenging. Participants' ability to work was often predicated on job accommodations and support. Non-work factors were also essential, especially being able to receive an LC medical diagnosis (key to accessing leave and accommodations) and help at home to manage non-work activities. Many participants described barriers accessing these supports, illuminating stigma and disbelief in LC as a medical condition. Qualitative findings indicate needs for workplace accommodations tailored to fluctuating symptoms, continuously re-evaluated by workers and supervisors together. Reductions in medical barriers to access work accommodations is also critical since many medical providers remain unaware of LC, and workers may lack a positive COVID test result.

Testa V, Bennett A, Jutai J, Cantor Z, Burke P, McMahon J, et al. Applying the theoretical domains framework to identify police, fire, and paramedic preferences for accessing mental health care in a first responder operational stress injury clinic: a qualitative study. *Health Promotion and Chronic Disease Prevention in Canada*. 2023; 43(10-11):431-449.

<https://doi.org/10.24095/hpcdp.43.10/11.02> [open access]

Abstract: INTRODUCTION: First responders and other public safety personnel (PSP; e.g. correctional workers, firefighters, paramedics, police, public safety communicators) are often exposed to events that have the potential to be psychologically traumatizing. Such exposures may contribute to poor mental health outcomes and a greater need to seek mental health care. However, a theoretically driven, structured qualitative study of barriers and facilitators of help-seeking behaviours has not yet been undertaken in this population. This study used

the Theoretical Domains Framework (TDF) to identify and better understand critical barriers and facilitators of help-seeking and accessing mental health care for a planned First Responder Operational Stress Injury (OSI) clinic. **METHODS:** We conducted face-to-face, one-on-one semistructured interviews with 24 first responders (11 firefighters, five paramedics, and eight police officers), recruited using purposive and snowball sampling. Interviews were analyzed using deductive content analysis. The TDF guided study design, interview content, data collection, and analysis. **RESULTS:** The most reported barriers included concerns regarding confidentiality, lack of trust, cultural competency of clinicians, lack of clarity about the availability and accessibility of services, and stigma within first responder organizations. Key themes influencing help-seeking were classified into six of the TDF's 14 theoretical domains: environmental context and resources; knowledge; social influences; social/professional role and identity; emotion; and beliefs about consequences. **CONCLUSION:** The results identified key actions that can be utilized to tailor interventions to encourage attendance at a First Responder OSI Clinic. Such approaches include providing transparency around confidentiality, policies to ensure greater cultural competency in all clinic staff, and clear descriptions of how to access care; routinely involving families; and addressing stigma

Tolera ST, Diriba W, Gutema GD, and Kaweti G. Determinants of occupational health and safety outcomes among sanitation workers across worldwide: a systematic review on cross-sectional studies. *Inquiry*. 2023; 60.

<https://doi.org/10.1177/00469580231210525> [open access]

Abstract: As a result of working conditions, a variety of determinants or risk factors lead to the development of occupational health and safety impairments or outcomes such as injuries and musculoskeletal disorders among sanitary personnel, which must be identified in order to anticipate concerns. PubMed, Medline, Embase, and Lilacs databases were used from 2010 to April 2022. Searched strategies used logical words "AND/OR": Occupational *OR Work AND Injuries OR Musculoskeletal Disorder AND Associated Factors [Socio-demographic *OR Behavioral factors *OR Institution Factors *OR Work pattern] AND Sanitary workers [Waste collectors and emptier *OR Street Sweepers *OR Sewage workers *OR Health facilities Cleaners] AND Cross-Sectional Studies. The databases and other collected data and reports yielded a total of 86 studies and finally 16 studies were included. From total of sanitary workers (5833), 4990 (85.5%) were solid waste collectors, and 618 (10.6%) and 225 (3.9%) were and healthcare cleaners and street sweepers, respectively. Regarding associated factors, Age (OR: 22.57, 7.29-69.88); education (OR: 2.22, 1.22-4.00); and experience (OR: 1.92, 1.11-3.31) were predictors for occurrence of injuries. Smoking cigarettes (OR:2.6, 1.55-4.34); sleeping disturbance (OR: 2.57, 1.48-4.47); eating/smoking/drinking at work (OR: 3.85, 1.34-11.06); and lack of personal protective equipment (OR: 2.62; 1.48-4.63) are the other predictors. On other side, Education (OR: 6.73, 1.92-23.51), age (OR: 7.56, 2.18-26.18), and job experience (OR: 10.79, 3.49-33.38) are socio-demographic variables that impact the development of MSDs. Cigarette smoking (OR: 0.14, 0.03-0.64) and job satisfaction (OR:

11.43, 2.04-64.08) are behavioral factors. While, working longer than 8 h (OR: 3.5, 1.543-8.204) and time pressure (OR: 3.25, 1.08-9.77), working for more than 2 h (OR: 8, 2.25; 28.85) and having a bad back (OR: 15.7, 6.47-38.18) were risk factors for MSDs where all P-value < .05. According to current reviewed evidence, socio-demographic indicators, occupational safety with work pattern features, and behavioral factors all significantly contributed to musculoskeletal disorders; occupational injuries among sanitation workers, which require emphasis from government policy and other initiatives.

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