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

**\*Dobson KG, Gignac MAM, Tucker L, and Jetha A. Double trouble! Do workplace supports mitigate lost productivity for young workers with both severe rheumatic diseases and depressive symptoms? *Journal of Occupational Rehabilitation*. 2024; [epub ahead of print].**

<https://doi.org/10.1007/s10926-024-10217-8> [open access]

**Abstract:** Background The objectives of this longitudinal study were to understand how comorbid rheumatic disease and depression symptoms were associated with at-work productivity among young adults, and to examine whether workplace support modified this association. Methods Seventy-six Canadian young adults who were employed and living with a rheumatic disease were surveyed three times over 27 months. Morbidity was defined by whether participants reported severe rheumatic disease symptoms and/or depressive symptoms. Participants were asked about presenteeism, absenteeism, and whether the workplace support needs (accommodation and benefit availability and use) were met. Generalized estimating equations were used to address study objectives. Results Seventeen participants experienced neither severe rheumatic disease nor depressive symptoms (no morbidity), 42 participants experienced either severe rheumatic disease or depressive symptoms (single morbidity), and 17 participants reported comorbidity at baseline. Participants with comorbidity reported greater presenteeism scores and were most likely to report absenteeism, compared to the other two morbidity levels. Having workplace support needs met was associated with decreased presenteeism over the 27-month period among participants with no and a single morbidity. Conversely, unmet support need was associated with greater presenteeism for participants with comorbidity. Having workplace support needs met did not modify the association between morbidity and absenteeism. Conclusion Comorbid rheumatic disease and depression burden reduce productivity among young adults. A supportive work environment has the potential to address at-work productivity challenges. Additional research is needed to understand how workplace supports

coupled with clinical interventions may tackle challenges at work for young adults living with rheumatic disease and depression.

**Appelbom S, Nordstrom A, Finnes A, Wicksell RK, and Bujacz A. Healthcare worker burnout during a persistent crisis: a case-control study. *Occupational Medicine*. 2024; 74(4):297-303.**

<https://doi.org/10.1093/occmed/kqae032> [open access]

Abstract: BACKGROUND: During the immediate outbreak of the COVID-19 pandemic, burnout symptoms increased among healthcare workers. Knowledge is needed on how early symptoms developed during the persistent crisis that followed the first pandemic wave. AIMS: To investigate if high levels of burnout symptoms during the first pandemic wave led to high burnout and depressive symptoms up to a year later, and if participation in psychological support was related to lower levels of symptoms. METHODS: A longitudinal case-control study followed 581 healthcare workers from two Swedish hospitals. Survey data were collected with a baseline in May 2020 and three follow-up assessments until September 2021. The case group was participants reporting high burnout symptoms at baseline. Logistic regression analyses were performed separately at three follow-ups with case-control group assignment as the main predictor and burnout and depression symptoms as outcomes, controlling for frontline work, changes in work tasks and psychological support participation. RESULTS: One out of five healthcare workers reported high burnout symptoms at baseline. The case group was more likely to have high burnout and depressive symptoms at all follow-ups. Participation in psychological support was unrelated to decreased burnout and depressive symptoms at any of the follow-ups. CONCLUSIONS: During a persistent crisis, healthcare organizations should be mindful of psychological reactions among staff and who they place in frontline work early in the crisis. To better prepare for future healthcare crises, preventive measures on burnout are needed, both at workplaces and as part of the curricula in medical and nursing education

**Chin B, Rundell SD, Sears JM, Fulton-Kehoe D, Spector JT, and Franklin GM. Identifying factors associated with physical therapy use versus non-use among injured workers with back pain in Washington State. *American Journal of Industrial Medicine*. 2024; 67(7):592-609.**

<https://doi.org/10.1002/ajim.23591>

Abstract: BACKGROUND: There is little information about predictors of physical therapy (PT) use among injured workers with back pain. The primary objective of this study is to investigate the associations between PT use and baseline factors not routinely captured in workers' compensation (WC) data. METHODS: We conducted a secondary analysis using the Washington State Workers' Compensation Disability Risk Identification Study Cohort, which combines self-reported surveys with claims data from the Washington State Department of Labor and Industries State Fund. Workers with an accepted or provisional WC claim for back injury between June 2002 and April 2004 were eligible. Baseline factors for PT use were selected from six domains (socio-demographic, pain and function, psychosocial, clinical, health behaviors, and employment-related). The outcome was a binary measure for PT use within 1 year of injury. Bivariate and multivariable logistic regression models were conducted to evaluate the associations between PT use and baseline factors. RESULTS: Among the 1370 eligible study participants, we identified 673 (49%) who received at least one PT service. Baseline factors from five of the six domains (all but health behaviors) were associated with PT use, including gender, income, pain and function measures, injury severity rating, catastrophizing, recovery expectations, fear avoidance, mental health score, body mass index, first provider seen for

injury, previous injury, and several work-related factors. **CONCLUSION:** We identify baseline factors that are associated with PT use, which may be useful in addressing disparities in access to care for injured workers with back pain in a WC system

**Kilbo Edlund K, Andersson EM, Andersson M, Barregard L, Christensson A, Johannesson S, et al. Occupational particle exposure and chronic kidney disease: a cohort study in Swedish construction workers. *Occupational and Environmental Medicine*. 2024; 81(5):238-243.**

<https://doi.org/10.1136/oemed-2023-109371> [open access]

**Abstract:** Objectives: Increasing epidemiological and experimental evidence suggests that particle exposure is an environmental risk factor for chronic kidney disease (CKD). However, only a few case-control studies have investigated this association in an occupational setting. Hence, our objective was to investigate associations between particle exposure and CKD in a large cohort of Swedish construction workers. Methods: We performed a retrospective cohort study in the Swedish Construction Workers' Cohort, recruited 1971-1993 (n=286 089). A job-exposure matrix was used to identify workers exposed to nine different particulate exposures, which were combined into three main categories (inorganic dust and fumes, wood dust and fibres). Incident CKD and start of renal replacement therapy (RRT) were obtained from validated national registries until 2021 and analysed using adjusted Cox proportional hazards models. Results: Exposure to inorganic dust and fumes was associated with an increased risk of CKD and RRT during working age (adjusted HR for CKD at age <65 years 1.15, 95% CI 1.05 to 1.26). The elevated risk did not persist after retirement age. Exposure to cement dust, concrete dust and diesel exhaust was associated with CKD. Elevated HRs were also found for quartz dust and welding fumes. Conclusions: Workers exposed to inorganic particles seem to be at elevated risk of CKD and RRT. Our results are in line with previous evidence of renal effects of ambient air pollution and warrant further efforts to reduce occupational and ambient particle exposure.

**Haraldsson P, Nylander E, Jonker D, Ros A, and Josefsson KA. Workplace interventions focusing on how to plan, organize and design the work environment in hospital settings: a systematic review. *Work*. 2024; 78(2):331-348.**

<https://doi.org/10.3233/WOR-230205> [open access]

**Abstract:** BACKGROUND: Occupational Health Service (OHS) is a service that should support employers and employees with their work environment. Previous research indicates the need for deeper knowledge about the effect of workplace interventions with a focus on planning, organizing and designing the workplace to improve work conditions in hospital settings. OBJECTIVE: The aim was to evaluate the outcomes, workplace interventions and intervention strategies in hospital settings. METHODS: A systematic literature review was conducted. CINAHL, MEDLINE, PsycInfo, Scopus, and Web of Science Core Collection were searched in September 2021. The Mixed Methods Appraisal Tool was used to evaluate the quality of the included studies. Study results are presented through a narrative synthesis. A protocol for this study was registered on the Open Science Framework. RESULTS: Twenty-six studies, published between 2010 and 2021, were included. These included randomized controlled trials (RCTs), non-RCTs, and mixed methods reports with moderate to good quality. The results support the use of workplace interventions to improve work conditions, health, and well-being in hospital settings. Combinations of different interventions, tailored to the specific organization, were used. Important intervention strategies commonly used in the start-up, evaluation,

and intervention of successful workplace interventions, were identified. Using a pragmatist complexity approach in workplace interventions can improve outcomes by providing clear intervention strategies and combinations of tailored interventions, related to context specific problems. CONCLUSION: OHS support in workplace interventions with clear intervention strategies will contribute to improve work conditions, health and well-being in hospital settings

**Ho K and Tenkate T. Safety data sheets as a hazard communication tool: an assessment of suitability and readability. *Safety and Health at Work*. 2024; 15(2):192-199.**

<https://doi.org/10.1016/j.shaw.2024.01.006> [open access]

**Abstract:** Background Safety data sheets (SDSs) are hazard communication materials that accompany chemicals/hazardous products in the workplace. Many SDSs contain dense, technical text, which places considerable comprehension demands on workers, especially those with lower literacy skills. The goal of this study was to assess SDSs for readability, comprehensibility, and suitability (i.e., fit to the target audience). Methods The Suitability Assessment of Materials (SAM) tool assessed SDSs for suitability and readability. We then amended the SAM tool to further assess SDSs for comprehensibility factors. Both the original and amended SAM tool were used to score 45 randomly selected SDSs for content, literacy demand, graphics, and layout/typography. Results SDSs performed poorly in terms of readability, suitability, and comprehensibility. The mean readability scores were Flesch–Kincaid Grade Level (9.6), Gunning Fog index (11.0), Coleman–Liau index (13.7), and Simple Measure of Gobbledygook index (10.7), all above the recommended reading level. The original SAM graded SDSs as "not suitable" for suitability and readability. When the amended SAM was used, the mean total SAM score increased, but the SDSs were still considered "not suitable" when adding comprehensibility considerations. The amended SAM tool better identified content-related issues specific to SDSs that make it difficult for a reader to understand the material. Conclusions In terms of readability, comprehensibility, and suitability, SDSs perform poorly in their primary role as a hazard communication tool, therefore, putting workers at risk. The amended SAM tool could be used when writing SDSs to ensure that the information is more easily understandable for all audiences.

**Kalliolahti E, Aalto V, Salo P, Lanki T, Ervasti J, and Oksanen T. Associations between commute mode use and self-rated health and work ability among Finnish public sector employees.**

***Scandinavian Journal of Public Health*. 2024; 52(4):468-475.**

<https://doi.org/10.1177/14034948231159212> [open access]

**Abstract:** AIM: To determine the extent to which level of active commute mode use is associated with self-rated health and work ability. METHODS: The data were sourced from the Finnish Public Sector Study survey in 2020 (n = 38,223). The associations between active commuting - assessed with the frequency of using active commute modes - and self-rated health and work ability were examined with negative binomial regression analyses. Passive commuting and low-to-moderate levels of active commuting were compared with active commuting, and the models were adjusted for sociodemographic factors, working time mode, and lifestyle risk factors. We also assessed separate associations between walking and cycling as a mode of commuting by additionally considering the commuting distance and the outcomes. RESULTS: After adjustment, when using active commuters as a reference, passive commuters had a 1.23-fold (95% confidence intervals (CI) 1.19 to 1.29) risk of suboptimal self-rated health and a 1.18-fold (95% CI 1.13 to 1.22) risk of suboptimal work ability. More frequent and/or longer distance by foot and especially by bicycle, was positively associated with

health and work ability. Never commuting by bicycle was associated with a 1.65-fold (95% CI 1.55 to 1.74) risk of suboptimal health and a 1.27-fold (95% CI 1.21 to 1.34) risk of suboptimal work ability when using high-dose bicycle commuting as a reference. CONCLUSIONS: Passive commuting was associated with suboptimal self-rated health and suboptimal work ability. Our results suggest that using active commute modes, particularly cycling, may be beneficial for employee health and work ability

**de Kort D and Bekker S. Excluded workers and exempted employers: a qualitative study on domestic workers' access to social protection in the Netherlands. *Social Policy & Administration*. 2024; 58(4):658-671.**

<https://doi.org/10.1111/spol.12989> [open access]

Abstract: Abstract In the Netherlands, many part-time domestic workers fall within the scope of a particular type of labour law, that gives them fewer social protection rights and that renders private actors (households and workers) responsible for exercising those rights. Over the years, this policy has been criticised for institutionalising the differential treatment of domestic workers, which goes against ideas propagated in international initiatives, like the European Pillar of Social Rights. This contribution explores Dutch domestic workers' access to social protection in greater detail. Drawing on semi-structured interviews with 30 domestic workers, we show that the actual access to social protection greatly varies over different workers and over different employment relationships of individual workers, but generally falls below par. Our findings indicate that this is partly due to the fact that the Dutch policy option underestimates domestic workers' wariness of placing demands on the households they work for, which raises questions over the desirability of non-mediated employment relationships in the sector. We conclude with a brief discussion and suggestions for future policy directions

**Lorino A, Talero Cabrejo P, and Coppola S. Occupational experiences of medication management among adults living with multiple chronic conditions. *OTJR : Occupation, Participation and Health*. 2024; 44(3):414-426.**

<https://doi.org/10.1177/15394492231172931>

Abstract: Adults with multiple chronic conditions (MCCs) often face difficulties with medication management, affecting their experiences of well-being and illness. The objective of this study was to identify and describe the occupational experiences of medication management and their impact on well-being and illness in adults living with MCCs. We used document analysis methods to analyze 134 illness narrative blog posts authored by 52 adults aged 18 and older with MCCs. Content and thematic analysis of their textual content was based on the Pan Occupational Paradigm. Medication management is enacted through the dimensions of doing, belonging, becoming, being, and knowing, in an interconnected, nonlinear manner, with a more notable impact on illness than well-being due to the complexities associated with medication management for MCCs. Occupational therapy practices for medication management should consider all occupational dimensions and their impact on health rather than focusing primarily on the performance of medication tasks and routines

**Park J, Park J, Jung Y, Na M, and Kim Y. Characteristics of work-related fatal injuries among aged workers in Republic of Korea. *Safety and Health at Work*. 2024; 15(2):158-163.**

<https://doi.org/10.1016/j.shaw.2024.03.002> [open access]

Abstract: Objectives The present paper aimed to examine whether an aging workforce is associated



with an increase in work-related fatal injuries and to explore the underlying reasons for this potential increase. Material and methods Aged workers were defined as those who were at least 55 years old. Work-related fatalities were assessed in aged and young workers who were registered with the workers' compensation system in 2021 in the Republic of Korea. Total waged workers, based on raw data from the Local Area Labor Force Survey in 2021, were used as the denominator to estimate the work-related fatality rates. Results Most work-related fatalities in the aged workers occurred among individuals working in the "construction sector" (58.9%), those with "elementary occupations (unskilled workers)" (46.1%), and those with the employment status of "daily worker" (60.8%). The estimated incidence (0.973/10,000) of work-related fatalities among aged workers was about four times higher than that (0.239/10,000) among younger workers. "Falling," "collision," "struck by an object," and "trip and slip" were more frequent types of work-related fatalities among aged workers relative to young workers. The category of "buildings, structures, and surfaces" was a more frequent cause of work-related fatalities among aged workers than among young workers. Conclusions Aged workers had a higher incidence of work-related fatalities than young workers. Frequent engagement in precarious employment and jobs, coupled with the greater physical vulnerability of aged workers, were likely causes of their higher level of work-related fatal injuries.

**Parnell R. Reflections of black married working mothers managing occupational roles and racism. OTJR : Occupation, Participation and Health. 2024; 44(3):396-404.**

<https://doi.org/10.1177/15394492231209681>

Abstract: Black married working mothers encounter forms of racism, on the job and in society. However, little attention is given to how these experiences affect their work and family lives. Qualitative thematic analysis was used to examine the narratives of 91 Black women, aged 20 to 55 years, to explore the effects of racism on their key occupational roles of wife, employee, and mother. Four major themes emerged for being a Black employee. Two themes were linked to Black mothering. Five themes were identified for being a Black wife. Also, two new culturally derived occupational roles emerged: advocate and pioneer. Findings suggest that Black married working mothers have unique transformative experiences in their occupational roles solely due to their minoritized status, which impacts their wellbeing. Occupation-based research should focus on racism's impact on the wellbeing of minoritized groups as they engage in desired and meaningful occupational roles

**Sabbath EL, Pan Y, McTernan ML, Peters SE, Lovett SM, Stelson EA, et al. Adding injury to insult: unfair treatment at work and occupational injury among hospital patient-care workers. American Journal of Industrial Medicine. 2024; 67(7):667-676.**

<https://doi.org/10.1002/ajim.23616>

Abstract: BACKGROUND: Hospital patient-care workers have high occupational injury rates. While physical hazards within hospital work environments are established determinants of injury, social exposures may also contribute. This study examined how reports of unfair treatment at work, a dimension of work-related experiences of discrimination, were associated with injury among hospital-based patient-care workers. METHODS: We used data from the Boston Hospital Workers Health Study, a longitudinal cohort of nurses and nursing assistants at two Boston-area hospitals. In 2018, we conducted a worker survey asking about three types of unfair treatment at work and occupational injuries during the past year. We used mixed-effects logistic regression models to evaluate associations between specific types, total load, and high-frequency exposure of unfair treatment with

injury, adjusting for age, gender, race and ethnicity, job title, and unit type. RESULTS: Among 1001 respondents, 21% reported being humiliated in front of others at work, 28% reported being watched more closely than other workers, and 47% reported having to work twice as hard as others for the same treatment. For each type of unfair treatment, we observed a monotonic relationship with occupational injury wherein increasing frequency of exposure was associated with increased odds of injury. We also observed monotonic relationships between total load and high-frequency exposure to unfair treatment and odds of injury. CONCLUSIONS: Work-related unfair treatment is associated with injury among hospital workers. Programs and policies that focus on preventing unfair treatment may lessen injury burden in hospital workers

**Sundberg T, Skillgate E, Gustavsson P, and Rudman A. Early career demanding psychosocial work environment and severe back pain and neck/shoulder pain in experienced nurses: a cohort study. *Scandinavian Journal of Public Health*. 2024; 52(4):427-433.**

<https://doi.org/10.1177/14034948231151992> [open access]

Abstract: AIMS: Back pain and neck/shoulder pain are common among nurses. The aim of this study was to investigate the association between nurses' exposure to a demanding psychosocial work environment during the first three years after graduation and the occurrence of severe back pain and neck/shoulder pain in the longer term, 11-15 years later. METHODS: The Longitudinal Analysis of Nursing Education (LANE) study (nursing graduates from 26 Swedish universities in the years 2002, 2004 and 2006) was used to create two risk cohorts of nurses not reporting severe back pain (n=1764) or neck/shoulder pain (n=1707). Nurses exposed to a demanding psychosocial work environment for one, two or three of the first three years in their career were compared to nurses not having a demanding psychosocial work environment for any of these three years regarding the incidence of severe back pain or neck/shoulder pain at follow-up, 11-15 years later. Relative risks (RR) with 95% confidence intervals (CI) were calculated using binomial regression. RESULTS: The RR (95% CI) of having severe back pain for nurses who had a demanding psychosocial work environment for one of the three years was 1.36 (0.82-2.28) and 2.08 (1.21-3.57) for two of the three years and 2.82 (1.43-5.55) for all three years. Corresponding RRs (95% CIs) for severe neck/shoulder pain were 1.35 (0.87-2.10), 1.49 (0.88-2.51) and 1.41 (0.62-3.20), respectively. CONCLUSIONS: Nurses who were repeatedly exposed to a demanding psychosocial work environment early in their career reported severe back pain to a higher extent in the longer term

**Takasaki H, Ozawa H, Kondo Y, Kitamura T, Takeuchi R, and Ito H. Supervised exercise therapy reduces presenteeism to greater extent than unsupervised self-care in workers with musculoskeletal pain: a systematic review and meta-analysis. *Journal of Occupational Rehabilitation*. 2024; 34(2):387-397.**

<https://doi.org/10.1007/s10926-023-10137-z>

Abstract: Purpose: Presenteeism is defined as the loss of work productivity due to health issues in workers, which can be measured subjectively. This study aimed to compare the effectiveness of supervised exercise therapy and unsupervised self-care in reducing presenteeism in workers with musculoskeletal disorders. Methods: PubMed, Embase, and Cochrane Library were searched for various keywords from their inception to January 2023. Two examiners independently assessed the eligibility of studies: (1) studies involving workers suffering from musculoskeletal pain, (2) those involving supervised exercise therapy intervention with interactive communication, and (3) those in

which the comparison group was subjected to interventions other than supervised exercise therapy, and (4) those including patient-reported outcome measures of presenteeism or work productivity or ability. Standardized mean differences (SMD) were calculated using a random effects model, with higher scores indicating reduced presenteeism in the intervention group compared with that in the comparison group. The GRADE assesses the overall certainty of the evidence. Results: Only the short-term effects of interventions on presenteeism could be obtained using four studies. The intervention group showed statistically significant short-term effects on presenteeism compared with the comparison group ( $p < 0.001$ ; SMD, 0.52; 95% confidence interval, 0.27-0.77). The GRADE score was downgraded by two levels from high to low due to concerns for indirectness. Conclusions: Although the certainty of the evidence was low, it was assumed that supervised exercise therapy was more effective than unsupervised self-care in reducing presenteeism in workers with musculoskeletal disorders.

**Yeung YYK, Chen PQ, Ng PHF, and Cheng ASK. Evaluation of the accuracy of the Smart Work Injury Management (SWIM) system to assist case managers in predicting the work disability of injured workers. *Journal of Occupational Rehabilitation*. 2024; [epub ahead of print].**

<https://doi.org/10.1007/s10926-024-10199-7>

**Abstract:** PURPOSE: Many countries have developed clinical decision-making support tools, such as the smart work injury management (SWIM) system in Hong Kong, to predict rehabilitation paths and address global issues related to work injury disability. This study aims to evaluate the accuracy of SWIM by comparing its predictions on real work injury cases to those made by human case managers, specifically with regard to the duration of sick leave and the percentage of permanent disability. METHODS: The study analyzed a total of 442 work injury cases covering the period from 2012 to 2020, dividing them into non-litigated and litigated cases. The Kruskal-Wallis post hoc test with Bonferroni adjustment was used to evaluate the differences between the actual data, the SWIM predictions, and the estimations made by three case managers. The intra-class correlation coefficient was used to assess the inter-rater reliability of the case managers. RESULTS: The study discovered that the predictions made by the SWIM model and a case manager possessing approximately 4 years of experience in case management exhibited moderate reliability in non-litigated cases. Nevertheless, there was no resemblance between SWIM's predictions regarding the percentage of permanent disability and those made by case managers. CONCLUSION: The findings indicate that SWIM is capable of replicating the sick leave estimations made by a case manager with an estimated 4 years of case management experience, albeit with limitations in generalizability owing to the small sample size of case managers involved in the study. IMPLICATIONS: These findings represent a significant advancement in enhancing the accuracy of CDMS for work injury cases in Hong Kong, signaling progress in the field

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