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

Antonangeli LM, Sbrissa LPE, Casali MB, and Bonzini M. Two decades of fatal workplace accidents in Milan and Monza, Italy: trends, work sectors, and causes from autoptic data. *La Medicina del Lavoro*. 2024; 115(4):e2024023.

<https://doi.org/10.23749/mdl.v115i4.15872> [open access]

Abstract: BACKGROUND: Work-related fatalities represent an important global public health threat, accounting for over 300,000 deaths annually. Despite preventive strategies, fatalities persist, necessitating comprehensive investigations. Autoptic investigations, when ordered, offer comprehensive data on fatal accidents, in particular with detailed information about the type of accident, lesions, and type of work, enabling a thorough analysis of various factors contributing to workplace deaths. This study investigates work-related fatalities in Milan and Monza Brianza, Lombardy, analyzing patterns, industries, and factors leading to death among workers. METHODS: This retrospective study analyzed all fatal work accident data from the Autopsy Database of the Legal Medicine Institute of Milan from January 2000 to December 2022. We also estimated the risk of fatal accidents per 1.00.000 workers using ISTAT data for the different work sectors. RESULTS: Of the 17,841 violent deaths in Milan and Monza Brianza, 308 resulted from work-related accidents. The majority were male (95.1%). The secondary sector showed the higher estimated risk (27 /106 vs. 19/106 in primary and 2.3/106 in tertiary sector) accounted for 78.5% of fatalities, with specialized workers (35.1%) and construction workers (25%) being the most affected. Falls from above were the leading cause of death (36.7%). A decreasing trend in fatal accidents over the study period was observed, with July having the greatest frequency. The most common causes of death were polytrauma (36.4%) and head injuries (19.2%). Non-Italian workers constitute a noteworthy percentage of fatal cases (24%). CONCLUSIONS: The secondary sector has the most fatal accidents at work despite a decrease in accidents over the observed time period. There is a need for rigorous

analysis and interventions, using forensic autopsy case data to help understand causes, and collaboration between institutions is encouraged to develop effective preventive policies

Barnekow T, Peters C, Dulon M, and Nienhaus A. Impact of pre-existing conditions on the severity of post-COVID syndrome among workers in healthcare and social services in Germany. *Journal of Occupational Medicine and Toxicology*. 2024; 19(1):32.

<https://doi.org/10.1186/s12995-024-00431-8> [open access]

Abstract: BACKGROUND: The underlying mechanisms of post-COVID syndrome (PCS) are still not fully understood. While pre-existing conditions have been described as a risk factor for severe PCS in the general population, data specific to different occupational groups in this context is lacking. This study aimed to investigate the impact of pre-existing conditions on severe post-COVID syndrome among the occupational group of healthcare and social services employees. METHODS: Baseline data from a longitudinal, observational study were analysed. In February 2021, health workers who had a COVID-19 infection in 2020 were surveyed about sequelae of the infection. Factors influencing severe PCS with at least one persistent symptom categorised as severe were subjected to a multivariate logistic regression analysis. RESULTS: Of a total of 2,053 participants, 21.5% had severe PCS. Underlying respiratory (OR 1.94; CI 1.44-2.61), cardiovascular (OR 1.35; CI 1.04-1.77) and urogenital (OR 1.79; CI 1.10-2.91) disease were risk factors for severe PCS overall. Respiratory and mental illnesses had a statistically significant impact on persistent fatigue/exhaustion, concentration/memory difficulties and shortness of breath categorised as severe. Urogenital disease was associated with severe fatigue/exhaustion. Other significant risk factors for severe PCS were female sex, smoking, physical exercise and hospitalisation due to COVID-19 infection. CONCLUSION: Workers in healthcare and social services with pre-existing conditions may face a higher risk of developing severe PCS. Additional analyses performed as part of the longitudinal study will show if and how this result changes over time

Correa LA, Mathieson S, Hancock M, Verhagen A, Nogueira LAC, Young A, et al. Questionnaires assessing knowledge and beliefs about musculoskeletal conditions are potentially suitable for use, but further research is needed: a systematic review. *Journal of Clinical Epidemiology*. 2024; 172:111398.

<https://doi.org/10.1016/j.jclinepi.2024.111398> [open access]

Abstract: Objectives: To evaluate the measurement properties of Patient-reported outcome measures (PROMs) for knowledge and/or beliefs about musculoskeletal conditions. Study design and setting: A systematic review was performed according to the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) guidelines. This review was prospectively registered on PROSPERO - ID: CRD42022303111. Electronic databases, reference lists, forward citation tracking, and contact with experts were used to identify studies. Eligible studies were reports developing or assessing a measurement property of a PROM measuring musculoskeletal condition specific-knowledge and/or beliefs. We assessed the methodological quality and measurement properties of included studies. A modified Grading of Recommendations Assessment Development and Evaluation approach was used to rate the quality of evidence for each PROM. Results: The literature search was performed from inception to 11th September 2023. Sixty records were included, reporting 290 individual studies, and provided information on 25 PROMs. Five PROMs presented sufficient structural validity, three presented sufficient cross-cultural validity, ten presented sufficient reliability, three

presented sufficient criterion validity, six presented sufficient hypothesis-testing, and four presented sufficient responsiveness. No PROM presented sufficient evidence for content validity, internal consistency, and measurement error. Based on the available evidence, no PROM was classified as suitable for use according to the COSMIN recommendations. Twenty-four PROMs are potentially suitable for use, and one PROM is not recommended for use. Conclusion: No PROM designed to assess knowledge and/or beliefs about musculoskeletal conditions meets the COSMIN criteria of suitable for use. Most PROMs identified in this systematic review were considered as potentially suitable for use and need further high-quality research to assess their measurement properties.

Danielsson L, Frantz A, and Holmgren K. Work-related stress is associated with low work ability, but not with poor self-rated health: a cross-sectional study in primary healthcare. *Work*. 2024; 78(4):1043-1053.

<https://doi.org/10.3233/WOR-230141> [open access]

Abstract: Background: People seeking care at primary healthcare centres may be exposed to work-related stress, increasing the risk of future sick leave. Thus, it is important to identify work-related stress, and to explore how stress relates to work ability and health. Objective: To investigate the association between work-related stress and a) work ability, and b) self-rated health, among working women and men seeking care for physical or mental health complaints. Methods: This cross-sectional study analyzed baseline data (n = 232) from a randomized controlled trial investigating the effects of a brief intervention to prevent sick leave. Data regarding work-related stress, work ability and self-rated health were analyzed using binary logistic regression models. Results: In models adjusted for age, gender and education, high work-related stress measured by the Work Stress Questionnaire was significantly associated with low work ability. The highest odds ratio (OR 3.27, 95% CI 1.66-6.42) was found between the domain "interference between work and leisure time" and work ability, suggesting a more than three times higher odds for low work ability when perceiving that work interferes with leisure time. No significant association was found between work-related stress and self-rated health. Conclusion: Health professionals should explore patients' work-related stress when they seek care for physical or mental complaints in primary healthcare. Patients' perceived balance between work and leisure time seems particularly important to address. Increased awareness might facilitate timely, relevant strategies to reduce stress and promote work ability.

Girardi P, Rigoni S, Ferrante D, Silvestri S, Angelini A, Cuccaro F, et al. Asbestos exposure and asbestosis mortality in Italian cement-asbestos cohorts: dose-response relationship and the role of competing death causes. *American Journal of Industrial Medicine*. 2024; 67(9):813-822.

<https://doi.org/10.1002/ajim.23629>

Abstract: OBJECTIVES: In Italy, asbestos was used intensively until its ban in 1992, which was extended for asbestos cement factories until 1994. The aim of this study was to evaluate the dose-response between asbestos exposure and asbestosis mortality across a pool of Italian occupational cohorts, taking into account the presence of competing risks. METHODS: Cohorts were followed for vital status and the cause of death was ascertained by a linkage with mortality registers. Cause-specific (CS) Cox-regression models were used to evaluate the dose-exposure relationship between asbestosis mortality and the time-dependent cumulative exposure index (CEI) to asbestos. Fine and Gray regression models were computed to assess the effect of competing risks of death. RESULTS: The cohort included 12,963 asbestos cement workers. During the follow-up period (1960-2012), of a total

of 6961 deaths, we observed 416 deaths attributed to asbestosis, 879 to lung cancer, 400 to primary pleural cancer, 135 to peritoneal cancer, and 1825 to diseases of the circulatory system. The CS model showed a strong association between CEI and asbestosis mortality. Dose-response models estimated an increasing trend in mortality even below a CEI of 25 ff/mL-years. Lung cancer and circulatory diseases were the main competing causes of death. CONCLUSIONS: Asbestos exposure among Italian asbestos-cement workers has led to a very high number of deaths from asbestosis and asbestos-related diseases. The increasing risk trend associated with excess deaths, even at low exposure levels, suggests that the proposed limit values would not have been adequate to prevent disability and mortality from asbestosis

Haukenes I and Hammarstrom A. Workplace gender composition and sickness absence: a register-based study from Sweden. *Scandinavian Journal of Public Health*. 2024; 52(6):678-684.

<https://doi.org/10.1177/14034948231176108> [open access]

Abstract: Aims: This study aimed to examine the association between gender composition in the workplace and sickness absence days during a one-year period. Methods: The study population was drawn from the Northern Swedish Cohort (wave 3; 2007) by Statistics Sweden and consisted of all participants belonging to a specific workplace (n=837) as well as all co-workers at the workplace of the participants (n=132,464; 67,839 women and 64,625 men). Exposure was the gender composition of the workplace, and outcome was cumulative sickness absence days (≥ 90 days or not) during 2007, provided through a link to the Database for Health Insurance and Labour Market Studies of Statistics Sweden. Covariates were gender, age, educational level and branch of industry from the same data source. We performed descriptive analyses and multivariable regression analyses. Results: Workers in extremely female-dominated workplaces had a significantly higher risk of cumulative sickness absence days (≥ 90 days) compared with gender-equal workplaces (fully adjusted odds ratio (OR)=1.27; 95% confidence interval (CI) 1.09-1.48), whereas those working in extremely and moderately male-dominated workplaces had a significantly lower sickness absence risk (OR=0.62 and 0.66, respectively). Stratified by gender, the higher absence risk at female-dominated workplaces was fully explained by variation in branches of industry. Women working in extremely male-dominated workplaces had a significantly lower absence risk (OR=0.75), as did men working in moderately male-dominated workplaces (OR=0.78). Conclusions: Workplaces dominated by women had a significantly higher risk of days lost to sickness absence compared to gender-equal workplaces. Stratified by gender, this higher risk was explained by branch of industry..

King EC, Chan J, Benn A, Michener MB, Van Belle TA, and McKay SM. Shifting the safety culture: evaluation of a novel approach to understanding and responding to workplace harassment and violence experienced by homecare workers. *Workplace Health & Safety*. 2024; 72(7):274-282.

<https://doi.org/10.1177/21650799241232148> [open access]

Abstract: BACKGROUND: Workplace violence and harassment are commonplace for healthcare workers and most incidents are unreported. Normalization of these experiences, lack of confidence in reporting systems, and fear of the consequences of reporting contribute to the invisibility of these experiences. Challenges are exacerbated in homecare settings and for precarious workforces including Personal Support Workers (PSWs). We created, piloted, and evaluated an intervention to enhance safety culture and encourage reporting of workplace violence and harassment. METHODS: A multi-stakeholder steering committee designed an intervention combining policy changes, a pre-visit

screening tool, education, and brief end-of-visit reporting. This was piloted with a PSW care team which provided >55,000 client visits during the 32-week intervention. Operational metrics characterized screening, education, and reporting uptake. Pre- and post-intervention surveys characterized PSWs' experiences with workplace violence and harassment, reporting experiences, training history and intervention feedback. FINDINGS: PSWs reported increased comfort discussing workplace violence and harassment, and increased confidence managing client-to-worker incidents. The screening went smoothly with most clients in private homes. Most PSWs (75%) engaged at least once with end-of-visit reporting and nearly half submitted reports regularly. During the pilot, 21% of PSWs reported incidents and 52% of reports shared client-specific strategies for managing these situations. APPLICATION TO PRACTICE: Changes in comfort and behavior with reporting indicated a shift toward a more open culture surrounding workplace violence and harassment. Tools created for this intervention and lessons for implementation are shared for consideration by occupational health practitioners throughout the homecare sector

Lax M. Occupational disease in New York State: the political economic context. *New Solutions*. 2024; 34(2):95-111.

<https://doi.org/10.1177/10482911241260404>

Abstract: In 1987 Landrigan and Markowitz co-authored a report entitled "Occupational Disease in New York State." They found that death and illness from occupational disease were common and that the costs of exposure to hazardous conditions warranted public funding for new occupational health infrastructure in New York State. A recent confirmatory report recognized a wider spectrum of contemporary hazards and emphasized how public health problems connect to work. These reports provide factual snapshots at 2 points in time, but they do not explain nor analyze the changing conditions they describe. Including macro-contexts such as globalization, financialization, and neoliberalism, this article demonstrates several unique occupational safety and health implications by clarifying key themes related to the state's role, especially regulation and healthcare delivery systems. Conclusions directly tie the trajectory of occupational disease to workers' collective ability to confront and roll back neoliberalism while pushing occupational disease out of its medical/science silo

Lingard H, Hayes P, and Turner M. Work-related risk factors for mental ill-health among Australian wildland firefighters. *Safety Science*. 2024; 178:106619.

<https://doi.org/10.1016/j.ssci.2024.106619> [open access]

Abstract: A qualitative study of Australian wildland firefighters employed by a state government agency was undertaken to: (i) explore the perceived impact of work-related stress factors on participants' psychological health; and (ii) identify organisational strategies or approaches that firefighters believe could help to protect or improve their psychological health. Twenty-five participants took part in the first round of interviews and 24 participants took part in the second round of interviews. A theoretical model of work-related determinants of psychological health developed by Harvey et al. (2017) was used to inform the thematic coding of interview data. Participants reported a wide variety of work-related stressors that they believe affect their psychological wellbeing. All of the stressors identified by Harvey et al. (2017) were evident in the firefighters' descriptions of work characteristics and experiences that they believe affect their psychological health, including job insecurity, high job demands, low job control, low social support, work-family conflict and issues related to recognition and reward. However, the wildland firefighters

also identified exposure to dangerous work, limited training opportunities, inconsistent application of organisational policies and procedures and administrative workload and demands associated with the community interface as affecting their psychological health. The findings indicate that wildland firefighters perceive no single work-related factor as contributing to psychological ill-health. Rather, the firefighters indicated that their psychological health is affected by the experience of multiple psychosocial risk factors that co-exist and interact with one another in the work environment. Firefighters also identified a wide variety of organisational strategies that they believe could reduce the risk of psychological ill-health associated with work stress. Participants' suggestions provide practical, actionable solutions with the potential to reduce exposure to stressors in the organisational work environment and better protect wildland firefighters against harm to their psychological health.

Martindale N, Wood AJ, and Burchell BJ. What do platform workers in the UK gig economy want? *British Journal of Industrial Relations*. 2024; 62(3):542-567.

<https://doi.org/10.1111/bjir.12797> [open access]

Abstract: Despite the considerable debate concerning the gig economy, research has yet to investigate what platform workers themselves want. In part, this is due to the difficulty of undertaking traditional social surveys in this sector. Therefore, this article makes use of a novel research design that generates a strategic non-probability sample of 510 platform workers with which to investigate workers' preferences regarding labour rights, representation and voice. Findings suggest strong support for labour rights, trade unions and co-determination. The low pay, insecurity, risk and lack of organizational voice that we find provides a rationale for these preferences. Moreover, platform workers' preferences are seemingly influenced by wider inequalities, with significant differences according to gender and country of birth

Olakivi A, Kouvonen A, Koskinen A, Kempainen L, Kokkinen L, and Vaananen A. Sickness absence among migrant and non-migrant care workers in Finland: a register-based follow-up study. *Scandinavian Journal of Public Health*. 2024; 52(5):539-546.

<https://doi.org/10.1177/14034948231168434> [open access]

Abstract: AIMS: This study aimed to compare the sickness absence (SA; over 10 days) rates of migrant and non-migrant care workers in Finland. METHODS: Two cohorts were randomly sampled from nationwide registers and analysed together in a three-year follow-up design (2011-2013, 2014-2016). The pooled data consisted of 78,476 care workers, of whom 5% had a migrant background. Statistical methods included cross-tabulations and Poisson regression modelling. RESULTS: Thirty-five percent of the Finnish-born care workers had at least one SA during the follow-up. Care workers from the post-2004 EU countries (30%, at least one SA), Russia, the Former Soviet Union and the Balkan states (25%) and the Global South and East (21%) had fewer episodes of SA than the Finnish-born care workers. The two latter groups also had lower SA rates after we controlled for occupation, gender, age, income and region of residence. Care workers from Western Europe and the Global North (36%) had higher SA rates than the Finnish-born care workers. CONCLUSIONS: The following explanations were discussed: population-level health differences - migrants from lower-income non-EU countries are generally healthier than the Finnish-born population (due to, e.g., the 'healthy migrant effect'); discrimination in recruitment and employment - migrants from lower-income non-EU countries need to be healthier than Finnish-born jobseekers to gain employment (in the care sector or more broadly); and sickness presenteeism - migrants from lower-income non-EU countries underuse their right to

sickness allowance (due to, e.g., job insecurity). It is likely that these mechanisms affect migrants differently depending on, for example, their countries of origin and social status in Finland

Shi Y, Wu J, Lan L, and Lian Z. Interactive effects of indoor environmental factors on work performance. *Ergonomics*. 2024; 67(7):897-912.

<https://doi.org/10.1080/00140139.2023.2243407>

Abstract: Among a variety of environmental factors, operative temperature, relative humidity and ventilation rate are generally considered to be factors that significantly affect work performance, and the interactions among these three factors were quantitatively studied in this paper. Eighteen participants were recruited to complete the neurobehavioral ability tests in different environments by central composite design, and their performance was analysed by regression fitting and multi-factor coupling analysis. By defining the interval coefficient β , the interaction effects between the factors were calculated quantitatively. The results showed that: for the performance of perception and expression tasks, there was an antagonistic effect between operative temperature and relative humidity ($\beta = 0.50 \sim 0.82$), between operative temperature and ventilation rate ($\beta = -0.29$ to -0.38), and among the three factors ($\beta = 0.38-0.67$). There was a synergy effect between relative humidity and ventilation rate ($\beta = 1.71-2.28$). For the performance of reasoning tasks, the interaction effect among the three factors and their combinations is antagonistic effect ($\beta = 0.67-0.83$). Practitioner summary: We proposed a method to calculate the quantitative relation of multi-factor interactions. In recent ergonomics studies, more and more factors have been included. This method can well describe the synergistic or antagonistic effect of the changes of other factors on the target factors.

Turvill AJ, Sheffield D, and Taylor L. Musculoskeletal pain and working practices in the UK early childhood education workforce. *Safety Science*. 2024; 178:106592.

<https://doi.org/10.1016/j.ssci.2024.106592> [open access]

Abstract: This research investigates role demands and musculoskeletal pain (MSP) in UK Early Childhood Education (ECE) workforce (N = 196). Associations between frequency of actions construing higher risk to musculoskeletal health, and MSP, need to take sickness absence and considering changing jobs are considered. Differences between practitioners and leaders are investigated. Evaluation of pain severity, frequency, are gathered, and for the first time in ECE staff, pain duration, onset and bothersomeness. 98 % of participants reported pain associated with carrying out work-related tasks, with lower back the most reported area (89 %). Average onset was reported as > 12 months, average frequency every 7–14 days, and average duration of experience 1–2 weeks. Regression analysis controlling for age, and other demographic factors indicated frequency of exposure to occupational MSK risk predicted pain frequency and pain onset. Greater participant age predicted the duration of pain events. Greater number of years working in ECE predicted a greater number of pain locations (independently of age). Sickness absence was predicted by pain intensity, and frequency of pain caused by carrying out high MSK risk actions (e.g. lifting, stooping, working at low heights, and floor level). Consideration of leaving ECE employment was predicted by pain frequency, bothersomeness, number of locations and perceived need for greater provision of musculoskeletal protective measures. Findings presented here show for the first time the significant burden of pain with chronic characteristics present in UK ECE workforce. Findings highlight the need for ECE workplaces to better protect and promote the physical health of their staff.

Whittenburg HN, Rooney-Kron M, Carlson SR, Malouf ET, and Taylor JP. Use of research-based transition recommendations for youth with disabilities in Workforce Innovation and Opportunity Act plans. *Rehabilitation Counseling Bulletin*. 2024; 67(4):283-294.

<https://doi.org/10.1177/00343552231155218>

Zieringer RC and Zapf D. The effects of an employee assistance program on productivity at work, workability, absenteeism, and smartphone measures of heart rate and heart rate variability. *Journal of Occupational Health Psychology*. 2024; 29(4):280-298.

<https://doi.org/10.1037/ocp0000380>

Abstract: Employee Assistance Programs (EAPs) have been shown to effectively reduce absenteeism, workplace injury rates, and health-related productivity impairments. However, established measures for determining its impact on employee-level productivity have rarely been used, nor have studies employed biological measures of well-being. Drawing on the allostatic load theory, we examine the effects of an EAP on biological measures (heart rate, heart rate variability), established measures of health-related productivity (Workability Index, Health and Work Performance Questionnaire, Workplace Limitations Questionnaire), and absenteeism 4 weeks and 6 months after clients started to receive counseling. We conducted a quasi-experimental study comparing an EAP (n = 73) with a matched control group (n = 134) using propensity score matching. We found that an EAP improves health-related productivity 4 weeks and 6 months after enrolling in counseling, above and beyond changes in the control group. Biological measures changed in the hypothesized directions, but differences between the groups did not reach significance. Absenteeism did not change in the EAP group 6 months after enrolling in counseling. In an exploratory analysis, we found that individuals requiring many sessions in the first 4 weeks showed worse productivity outcomes, demonstrating a negative dose-response relationship. Our study provides an example of how to include biological measures in EAP research. It adds to the scientific evidence of the usefulness of EAP services in restoring employee-level productivity. We calculate that the marginal productivity improvements per employee using the EAP are as much as \$15,600 per annum. (PsycInfo Database Record (c) 2024 APA, all rights reserved)

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