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

***Kinitz DJ, Shahidi Faraz V, Kia H, MacKinnon K, MacEachen E, Gesink D, et al. Precarious employment: a neglected issue among lesbian, gay, bisexual, and transgender workers. *Sexuality Research and Social Policy*. 2024; [epub ahead of print].**

<https://doi.org/10.1007/s13178-024-00950-3>

Albrecht SC, Leineweber C, Kecklund G, and Tucker P. Prospective effects of work-time control on overtime, work-life interference and exhaustion in female and male knowledge workers.

***Scandinavian Journal of Public Health*. 2024; 52(2):205-215.**

<https://doi.org/10.1177/14034948221150041> [open access]

Abstract: Aims: Employee-based flexible working hours are increasing, particularly among knowledge workers. Research indicates that women and men use work-time control (WTC; control over time off and daily hours) differently: while men work longer paid hours, women use WTC to counteract work-life interference. In a knowledge-worker sample, we examined associations between WTC and overtime, work-life interference and exhaustion and tested whether gender moderates the mediating role of overtime. Methods: The sample contained 2248 Swedish knowledge workers. Employing hierarchical regression modelling, we examined effects of control over time off/daily hours on subsequent overtime hours, work-life interference and exhaustion in general and in gender-stratified samples. Using conditional process analysis, we tested moderated mediation models. Results: Control over time off was related to less work-life interference ($\beta_{men} = -0.117$; 95% confidence interval (CI): -0.237 to 0.003; $\beta_{women} = -0.253$; 95% CI: -0.386 to -0.120) and lower exhaustion ($\beta_{men} = -0.199$; 95% CI: -0.347 to -0.051; $\beta_{women} = -0.271$; 95% CI: -0.443 to -0.100). For control over daily hours, estimates were close to zero. While men worked more overtime (42 min/week), we could not confirm gender moderating the indirect effect of control over time off/daily hours on work-life

interference/exhaustion via overtime. Independent of gender, effects of control over time off on work-life interference were partly explained by working fewer overtime hours. Conclusions: Control over time off was related to lower exhaustion and better work-life balance (in particular for women). We found no evidence for men's work-life interference increasing with higher WTC owing to working more overtime. Knowledge workers' control over time off may help prevent work-life interference and burnout.

Brandt T, Heinz E, Klaaben Y, Limbara S, Morsdorf M, Schinkothe T, et al. The MedXFit-study: CrossFit as a workplace health intervention: a one-year, prospective, controlled, longitudinal, intervention study. *Frontiers in Public Health*. 2024; 12:1304721.

<https://doi.org/10.3389/fpubh.2024.1304721> [open access]

Abstract: Introduction: Workplace health interventions aim to motivate employees toward healthy behaviors to improve fitness and health in the long-term. We investigated whether CrossFit® is an effective training concept to achieve these goals in inactive employees with sedentary occupations. Methods: The study followed a prospective, controlled intervention design. Employees were invited to participate in intervention group (IG) or control group (CG) on their own preferences. Inclusion criteria were a predominantly sedentary occupation and execution of less than two muscle and/or mobility enhancing training sessions per week at the time of enrolling. The IG did at least two times a week a CrossFit training of 1 h. Mobility, strength, well-being, and back-issues were measured at the beginning, after 6, and 12 months. Participants in the CG were free to choose any other activities offered at the same time (e.g., circuit training, meditation, full body stability training). Adherence, respectively, behavioral change and maintenance qualities were evaluated based on the COM-B system and presence of behavior maintenance motives. Results: 89 employees were enrolled into the trial, from where 21 dropped out due to external factors (24%). From the remaining participants, 10 out of 39 (26%) in the IG and 1 out of 29 (4%) in the CG stopped for intrinsic reasons, leading to a non-adherence to the intervention of 22 percentage points. Motivation for behavioral change and maintenance in the IG was primarily driven by enhanced physical and psychological capability. Development of physical capability was evident by significant improvements ($p < 0.001$) in the IG compared to the CG for mobility ($d = 3.3$), maximal isometric strength (min. $d = 1.7$, max. $d = 2.5$), as well as reduction in pain intensity ($p = 0.003$, $r = 0.4$) and frequency ($p = 0.009$, $r = 0.35$) after 12 months. Significant improvements between the 6-month and the 12-month measurement in mobility and 6 out of 8 strength measures within the IG indicated the effectiveness of CrossFit beyond the beginner phase. Conclusion: CrossFit is a motivating training concept that led to long-term health and fitness improvements in inactive employees doing sedentary work and should be given greater consideration in workplace health promotion.

Cao S. Examining information systems use to facilitate the workplace accommodation process. *Work*. 2024; 77(3):933-947.

<https://doi.org/10.3233/WOR-220716>

Abstract: BACKGROUND: The workplace accommodation process is often affected by ineffective and inefficient communications and information exchanges among disabled employees and other stakeholders. Information systems (IS) can play a key role in facilitating a more effective and efficient accommodation process since IS has been shown to facilitate business processes and effect positive organizational changes. OBJECTIVE: Since there is little to no research that exists on IS use to facilitate

the workplace accommodation process, this paper, as a critical first step, examines how IS have been used in the accommodation process. **METHODS:** Thirty-six interviews were conducted with disabled employees from various organizations. Open, axial, and selective coding were part of the analysis. Fuzzy set qualitative comparative analysis was used to identify different levels of IS use based on participants' descriptions. **RESULTS:** An IS used in the workplace accommodation process consists of electronic request form, accommodation checklist, special budget, specific role, ancillary service, formal policy and procedure. There are different levels of IS use in the current accommodation process. The high-level IS use often results in a better accommodation performance than the low-level IS use, including high efficiency, high effectiveness, and low emotional tolls. Nevertheless, the high-level IS use often uses a specific, inflexible template as well as disregards human elements in the accommodation process. **CONCLUSION:** This work provides implications that future IS design should raise awareness of disability and accommodation, account for individual differences, involve multiple stakeholder inputs, as well as address the fundamental social issues in the accommodation process

Chatham AA, Petruzzi LJ, Patel S, Brode WM, Cook R, Garza B, et al. Structural factors contributing to compassion fatigue, burnout, and secondary traumatic stress among hospital-based healthcare professionals during the COVID-19 pandemic. *Qualitative Health Research*. 2024; 34(4):362-373.

<https://doi.org/10.1177/10497323231213825> [open access]

Abstract: High levels of burnout among healthcare providers (HCPs) have been a widely documented phenomenon, which have been exacerbated during the COVID-19 pandemic. In the United States, qualitative studies that are inclusive of HCPs in diverse professional roles have been limited. Therefore, we utilized a qualitative-quantitative design to examine professional quality of life in terms of compassion fatigue, burnout, and secondary traumatic stress among hospital-based HCPs, including social workers, hospitalists, residents, and palliative care team members during COVID-19. HCPs (n = 26) participated in virtual semi-structured focus groups or individual interviews and online surveys (n = 30) including the Professional Quality of Life (ProQOL) Scale. While ProQOL scores indicated low levels of compassion fatigue, burnout, and secondary traumatic stress, thematic analysis of our qualitative data included rich descriptions of compassion fatigue, burnout, and secondary traumatic stress. Safety concerns and value misalignment characterized structural stressors perceived to contribute to HCP compassion fatigue, burnout, and secondary traumatic stress. The discrepancy between our qualitative and quantitative findings may be indication that modifications to current screenings are warranted. These findings also suggest a need to identify and implement structural and policy changes that increase HCPs' physical and emotional safety and promote better alignment of institutional interests with HCP values

Dervish J, Arfuch VM, Murley C, McKay KA, Machado A, Wennman-Larsen A, et al. Disclosing or concealing multiple sclerosis in the workplace: two sides of the same coin-insights from a Swedish population-based survey. *Frontiers in Public Health*. 2024; 12:1331746.

<https://doi.org/10.3389/fpubh.2024.1331746> [open access]

Abstract: **BACKGROUND:** People with multiple sclerosis (PwMS) face health and social challenges of living with a chronic and potentially disabling condition. To disclose or conceal MS at work may critically affect individuals' work situation, career opportunities, and health. PwMS may experience a dilemma when assessing if the possible benefits of disclosing the diagnosis outweigh the possible risks. However, concealing in the long-term may have health implications and prevent opportunities

for support and work adjustments. Few studies have examined what drives PwMS to disclose or conceal MS at work and the consequences of these ways of managing MS. OBJECTIVES: To explore the reasons PwMS report for disclosing and/or concealing their MS diagnosis in the workplace, as well as the consequences they have experienced. METHODS: A web-based survey of PwMS was conducted in 2021. All individuals aged 20-50 listed in the Swedish MS registry were invited to participate. The response rate was 52% and among these participants, 3,810 (86%) completed questions regarding workplace disclosure and/or concealment of MS. Free-text responses on these topics were analyzed using inductive content analysis. RESULTS: It was common to disclose MS in the workplace (85%). Identified drivers for disclosure and concealment related to four categories: Work-related, Social, Personal and Circumstantial. Work-related drivers focused on employment or protecting one's career, and changing one's work situation versus maintaining it. Social drivers included the need for support, addressing or preventing stigma, and being considerate of others. Personal drivers were linked to moral values/personal beliefs and processing of the diagnosis. Circumstantial drivers related to involuntary or unforeseen events, timing factors, one's medical condition and external opinion/advice. Identified consequences for disclosure and concealment related to three categories: Work-life, Social, and Personal. Work-life consequences included work arrangements, and career opportunities. Social consequences were linked to MS awareness, stigma, interactions and social support, as well as dynamics of work relationships. Personal consequences involved levels of disease acceptance, and attitudes toward managing MS. CONCLUSION: PwMS often described the question of disclosure as challenging and navigated it with caution, as both disclosure and concealment can yield favorable and unfavorable outcomes

Han E, Lee Y, Lee S, Kim S, Ham S, Lee W, et al. Association between flexible work arrangement and sleep problems among paid workers: using 6th Korean working conditions survey. *Safety and Health at Work*. 2024; 15(1):53-58.

<https://doi.org/10.1016/j.shaw.2023.12.005> [open access]

Abstract: BACKGROUND: As social distancing persists and interest in work-life balance grows, more companies are adopting flexible work policies. While there have been studies on sleep disorders associated with different types of work, such as shift work, research exploring the relationship between flexible work schedules and sleep disorders is still limited, particularly among Korean workers. METHODS: We performed a secondary analysis of the 6(th) Korean Working Conditions Survey, focusing on 31,243 paid workers out of a total of 50,538 participants. We defined flexible workers as those who set their own working hours. Sleep disorders were divided into three categories: 'difficulty falling asleep,' 'frequent waking during sleep,' and 'waking up feeling exhausted and fatigued.' Using scores derived from three specific symptoms, the Minimal Insomnia Symptoms Scale (MISS) was calculated to assess the prevalence of insomnia. We used chi-square tests to analyze demographic and job-related differences. A multivariate logistic regression analysis was employed to identify any relationship between flexible work schedules and sleep disorders. RESULTS: Significant differences were found between flexible and non-flexible workers regarding age, income level, education level, and job type. Flexible workers reported sleep-related symptoms significantly more often. The odds ratio for insomnia was 1.40 (95% CI 1.21-1.61). For males, the odds ratio was 1.68 (1.36-2.08). CONCLUSION: This study establishes a correlation between flexible work schedules and sleep disorders among Korean salaried workers. Potential causes could include changes in circadian

rhythm, increased work demands, and extended working hours. To precisely determine causality and associated diseases, further research is required

Jahn A, Nielsen ML, Kyndi M, and Dalboge A. Association between night work and prostate cancer: a systematic review and meta-analysis. *International Archives of Occupational & Environmental Health*. 2024; 97(2):207-215.

<https://doi.org/10.1007/s00420-023-02037-9>

Abstract: OBJECTIVE: The aim was to conduct a systematic review and meta-analysis to study the association between night work and the development of prostate cancer. METHODS: A systematic literature search was conducted in CINAHL, Embase, MEDLINE, and Web of Science. Studies were included based on a PECOS; the population included men in/above the working age, exposure defined as night work, outcome defined as prostate cancer, and study design restricted to cohort studies. The exclusion of articles, risk-of-bias assessment, and data extraction were performed by two reviewers. A meta-analysis was conducted using a random-effects model, including a sensitivity analysis stratified based on the risk-of-bias assessment. We evaluated publication bias using a funnel plot and Egger's test, and the level of evidence was assessed using GRADE. RESULTS: A total of 528 articles were identified, and eight cohort studies were included. Three studies had a moderate risk of bias, while five studies had a high risk of bias. The meta-analysis showed a pooled hazard ratio (HR) of 1.0 (95% CI 0.6-1.7). In the sensitivity analysis, moderate vs. high risk-of-bias studies showed a pooled HR of 1.2 (95% CI 0.3-4.1) and 0.9 (95% CI 0.6-1.3), respectively. Based on GRADE, the level of evidence was rated low. CONCLUSION: We found no association between night work and the development of prostate cancer. The evidence was assessed as limited and inconsistent. Future studies encompassing consistent definitions of night work, including objective exposure data, are highly warranted

Lin J, Bao S, Howard N, and Lee W. Compendium of physical ergonomics exposures to hand, shoulder, and low back during routine janitorial activities. *International Journal of Industrial Ergonomics*. 2024; 99:103544.

<https://doi.org/10.1016/j.ergon.2023.103544>

Mehlig K, Toren K, LaMontagne AD, Wahlstrom V, Nyberg J, Waern M, et al. Occupation-specific risk estimates for suicide and non-fatal self-harm from a Swedish cohort of male construction workers followed 1987-2018. *Occupational & Environmental Medicine*. 2024; 81(3):142-149.

<https://doi.org/10.1136/oemed-2023-109246> [open access]

Abstract: Objectives: While suicidal behaviour has become less prevalent in non-manual workers in recent decades, rates have increased in manual workers. We aimed to identify occupations within the construction industry with excess risk of suicide and non-fatal self-harm. Methods: This cohort of Swedish construction workers comprises 389 132 individuals examined 1971-1993 and followed 1987-2018 using national hospital and cause of death registers. More than 200 job titles were merged into 22 occupational groups. For 296 891 men alive in 1987 and active in the construction sector, survival was calculated from baseline to first event of non-fatal self-harm or suicide and censored for emigration, long-term unemployment, disability pension, retirement, death from other causes or end of follow-up. HRs with 95% CIs were obtained from multiple Cox proportional hazard regression. Results: Overall, 1618 cases of suicide and 4774 events of non-fatal self-harm were registered. Self-harm before baseline was the single largest risk factor for suicide, HR 9.3 (95% CI 7.5 to 11.6). Compared with the overall mean, labourers and rock workers had excess risk for suicide, HR 1.4 (95%

CI 1.1 to 1.7) and 1.5 (95% CI 1.0 to 2.3), respectively, while electricians, clerks and foremen had reduced risk. Labourers, concrete workers, sheet metal workers, painters, glaziers and the group 'other construction workers' were at increased risk for non-fatal self-harm. Almost all categories of manual workers were at increased risk for suicidal behaviour relative to clerks and foremen. Conclusions: Specific occupations within the construction sector were associated with excess risk for suicidal behaviour. Future studies should identify underlying risk factors to inform tailored interventions.

Reho T, Atkins S, Korhonen M, Siukola A, Viljamaa M, Sumanen M, et al. Occupational health patients' parallel use of primary- and secondary-care services and linkage to work disability: a follow-up study in Finland. *Scandinavian Journal of Public Health*. 2024; 52(2):128-135.

<https://doi.org/10.1177/14034948221130438> [open access]

Abstract: AIMS: This study aimed to investigate occupational health (OH) primary-care patients' use of other health-care services and whether parallel use affects their likelihood to have sickness absences (SA) or disability pensions (DP). METHODS: Primary-care services in Finland are provided through three parallel health-care sectors, all available to the working population: public, private and OH sectors. Patients may also be referred to secondary care. This follow-up study combines real-world medical record data containing SA data from a nationwide OH provider with health-care attendance data from public and private primary-care sectors and public secondary care, sociodemographic data and DP decisions. Patients between 18 and 68 years of age who used OH primary care at least once during the study years 2014-2016 were included. The total study population comprised 59,650 patients. Odds ratios were used to analyse association between parallel service use and SA or DP. RESULTS: Females and patients with a lower educational level were more likely to use services in other health-care sectors in addition to OH than others. Those patients who used any other health-care sector in addition to OH primary care had an increased likelihood of having long SA or receiving DP. CONCLUSIONS: OH primary-care patients using the services of several health-care sectors in parallel have an increased likelihood of receiving disability benefits - either SA or DP. There is need for care coordination to ensure adequate measures for work-ability support

Russo F, Di Tecco C, Russo S, Petrucci G, Vadala G, Denaro V, et al. Importance of an integrated assessment of functional disability and work ability in workers affected by low back pain. *Safety and Health at Work*. 2024; 15(1):66-72.

<https://doi.org/10.1016/j.shaw.2023.11.004> [open access]

Abstract: Background: This study examines the relationship between functional disability and work ability in workers affected by low back pain (LBP) through an analysis of correlations between the Oswestry Disability Index (ODI) and Work Ability Index (WAI). The role of personal and work factors on functional disability/work ability levels has also been studied. LBP is the most common musculoskeletal problem and a major disabling health problem worldwide. Its etiology is multifactorial. Multidisciplinary approaches may help reduce the burden of pain and disability and improve job continuity and reintegration at work. Methods: A cohort of 264 patients affected by LBP from an Italian outpatient clinic were included in a clinical diagnostic/therapeutic trial aiming at rehabilitation and return to work through an integrated investigation protocol. Data were collected during the first medical examination using anamnestic and clinical tools. The final sample is composed of 252 patients, 57.1% man, 44.0 % blue collars, 46.4% with the high school degree, 45.6% married.

Results: WAI and ODI reported a negative and fair correlation ($r = -0.454$; $p = .000$). Workers with acute LBP symptoms have a higher probability of severe disability than those with chronic LBP symptoms. White collars without depressive symptoms reported higher work ability - even in chronic disability conditions - than those with depressive symptoms. Conclusion: The study found that ODI and WAI have a convergent validity and this suggests that the two tools measure capture distinctive aspects of disability related to personal, environmental, and occupational characteristics. The most important and modifiable prognostic factors found for ODI and WAI were depressive symptoms, workday absence, and intensity of back pain. The study also found a mild association between age and ODI. The study's findings highlight the importance of using a multidisciplinary approach to manage and prevent disability due to LBP.

Schmidt L, Mohamed S, Meader N, Bacardit J, and Craig D. Automated data analysis of unstructured grey literature in health research: a mapping review. *Research Synthesis Methods*. 2024; 15(2):178-197.

<https://doi.org/10.1002/jrsm.1692>

Abstract: The amount of grey literature and 'softer' intelligence from social media or websites is vast. Given the long lead-times of producing high-quality peer-reviewed health information, this is causing a demand for new ways to provide prompt input for secondary research. To our knowledge, this is the first review of automated data extraction methods or tools for health-related grey literature and soft data, with a focus on (semi)automating horizon scans, health technology assessments (HTA), evidence maps, or other literature reviews. We searched six databases to cover both health- and computer-science literature. After deduplication, 10% of the search results were screened by two reviewers, the remainder was single-screened up to an estimated 95% sensitivity; screening was stopped early after screening an additional 1000 results with no new includes. All full texts were retrieved, screened, and extracted by a single reviewer and 10% were checked in duplicate. We included 84 papers covering automation for health-related social media, internet fora, news, patents, government agencies and charities, or trial registers. From each paper, we extracted data about important functionalities for users of the tool or method; information about the level of support and reliability; and about practical challenges and research gaps. Poor availability of code, data, and usable tools leads to low transparency regarding performance and duplication of work. Financial implications, scalability, integration into downstream workflows, and meaningful evaluations should be carefully planned before starting to develop a tool, given the vast amounts of data and opportunities those tools offer to expedite research

von Schrader S, Shaw L, and Colella A. Perceptions of federal workplace attributes: interactions among disability, sex, and military experience. *Journal of Disability Policy Studies*. 2024; 34(4):239-249.

<https://doi.org/10.1177/10442073221128917>

Takala J, Hamalainen P, Sauni R, Nygard CH, Gagliardi D, and Neupane S. Global-, regional- and country-level estimates of the work-related burden of diseases and accidents in 2019. *Scandinavian Journal of Work, Environment & Health*. 2024; 50(2):73-82.

<https://doi.org/10.5271/sjweh.4132> [open access]

Abstract: OBJECTIVE: This study provides the global-, regional- and country-level estimates on the work-related burden of diseases and accidents for 2019, including deaths, disability adjusted life years

(DALY) and economic losses. **METHODS:** Data on occupational illnesses and injuries from international organizations, institutions, and public websites were used. Risk ratios (RR) and population attributable fractions (PAF) for the risk factor-outcome pairs were derived from the literature. Estimated mortality and DALY for a group of seven major diseases covering 120 risk-outcome pairs attributable to work were calculated for 181 countries. **RESULTS:** Globally, 2.9 million deaths were attributed to work, with 2.58 million deaths due to work-related diseases and 0.32 million related to occupational injuries. Globally, work-related diseases with a long latency period are increasing, while the number of occupational injuries has decreased. Work-related circulatory diseases were the major cause of 912 000 deaths globally, followed by 843 000 work-related malignant neoplasms. In high-income, American, Eastern European and Western Pacific World Health Organization (WHO) regions, however, work-related malignant neoplasms comprised the biggest disease group. DALY attributable to work were estimated to be 180 million in 2019, with an associated economic loss of 5.8% of global GDP. New estimates of psychosocial factors increased the global loss. **CONCLUSIONS:** The burden of work-related diseases and injuries increased by 26% from 2.3 million annual deaths in 2014 to 2.9 million in 2019. The DALY attributable to work have also substantially increased from 123 million in 2014 to 180 million in 2019 (47% increase). We found large regional and country variations

Xu H, Cai J, Sawhney R, Jiang S, Buys N, and Sun J. The effectiveness of cognitive-behavioral therapy in helping people on sick leave to return to work: a systematic review and meta-analysis. *Journal of Occupational Rehabilitation*. 2024; 34(1):4-36.

<https://doi.org/10.1007/s10926-023-10116-4> [open access]

Abstract: Purpose: Previous research has systematically studied the effectiveness of Cognitive Behavioral Therapy (CBT)-based interventions in managing both mental and physical symptoms of chronic disease including depression, stress-related mental disorders (SMD), and chronic pain that are common causes of sick leave. However, a systematic review focusing on the effectiveness of CBT in facilitating RTW is lacking. This study compiles research on utilizing CBT-based interventions for helping employees on sick leave return to work. **Methods:** Randomized controlled trials (RCT) published between 1 January 1990 and 27 June 2022 were searched in MEDLINE, EMBASE, The Cochrane Library, Scopus, PsycINFO, Web of Science, and PubMed. The primary outcome variables included a return to work (RTW) measure and sickness absences. The secondary outcomes include psychological conditions (mental illness, stress, anxiety, and depression) and physical condition (working ability, fatigue, and physical function). **Results:** Thirty-four RCTs were included in the analysis. Fifteen RCTs with 1727 participants reported on sick leave. Results showed that participants who completed CBT intervention had reduced sick leave in days (mean reduction - 3.654; 95%CI - 5.253, - 2.046; $p < 0.001$) compared to the control group. Sixteen papers with 2298 participants reported that the intervention group RTW 1.5 days earlier (95%CI 1.019, 1.722; $p < 0.05$). CBT-based interventions were effective in managing fatigue, mental illness, and depression, and improving physical function while it showed no effects in managing stress, anxiety and working ability. **Conclusions:** The findings indicate that CBT-based interventions are effective in reducing the length of sick leave and facilitating the RTW of employees in the intervention group.

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