

IWH Research Alert
May 8, 2020

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Ballo JG. Labour market participation for young people with disabilities: the impact of gender and higher education. *Work, Employment and Society*. 2019; 34(2):336-355.
<https://doi.org/10.1177/0950017019868139>

Bosson-Rieutort D, Sarazin P, Bicout DJ, Ho V, and Lavoue J. Occupational co-exposures to multiple chemical agents from workplace measurements by the US occupational safety and health administration. *Annals of Work Exposures and Health*. 2020; 64(4):402-415.
<https://doi.org/10.1093/annweh/wxaa008>

Abstract: OBJECTIVES: The occupational environment represents an important source of exposures to multiple hazards for workers' health. Although it is recognized that mixtures of agents may have different effects on health compared to their individual effects, studies generally focus on the assessment of individual exposures. Our objective was to identify occupational co-exposures occurring in the United States using the multi-industry occupational exposure databank of the Occupational Safety and Health Administration (OSHA). METHODS: Using OSHA's Integrated Management Information System (IMIS), measurement data from workplace

inspections occurring from 1979 to 2015 were examined. We defined a workplace situation (WS) by grouping measurements that occurred within a company, within the same occupation (i.e. job title) within 1 year. All agents present in each WS were listed and the resulting databank was analyzed with the Spectrosome approach, a methodology inspired by network science, to determine global patterns of co-exposures. The presence of an agent in a WS was defined either as detected, or measured above 20% of a relevant occupational exposure limit (OEL). RESULTS: Among the 334 648 detected exposure measurements of 105 distinct agents collected from 14 513 US companies, we identified 125 551 WSs, with 31% involving co-exposure. Fifty-eight agents were detected with others in >50% of WSs, 29 with a proportion >80%. Two clusters were highlighted, one for solvents and one for metals. Toluene, xylene, acetone, hexone, 2-butanone, and N-butyl acetate formed the basis of the solvent cluster. The main agents of the metal cluster were zinc, iron, lead, copper, manganese, nickel, cadmium, and chromium. 68 556 WS were included in the analyses based on levels of exposure above 20% of their OEL, with 12.4% of co-exposure. In this analysis, while the metal cluster remained, only the combinations of toluene with xylene or 2-butanone were frequently observed among solvents. An online web application allows the examination of industry specific patterns. CONCLUSIONS: We identified frequent co-exposure situations in the IMIS databank. Using the spectrome approach, we revealed global combination patterns and the agents most often implicated. Future work should endeavor to explore the toxicological effects of prevalent combinations of exposures on workers' health to prioritize research and prevention efforts

Burgess MG, Brough P, Biggs A, and Hawkes AJ. Why interventions fail: a systematic review of occupational health psychology interventions. International Journal of Stress Management. 2020; 27(2):195-207.

<https://doi.org/10.1037/str0000144>

Coggon D, Ntani G, Walker-Bone K, Felli VE, Harari R, Barrero LH, et al. Associations of sickness absence for pain in the low back, neck and shoulders with wider propensity to pain. Occupational & Environmental Medicine. 2020; 77(5):301-308.

<https://doi.org/10.1136/oemed-2019-106193> [open access]

Abstract: **OBJECTIVES:** To explore the association of sickness absence ascribed to pain at specific anatomical sites with wider propensity to musculoskeletal pain. **METHODS:** As part of the CUPID (Cultural and Psychosocial Influences on Disability) study, potential risk factors for sickness absence from musculoskeletal pain were determined for 11 922 participants from 45 occupational groups in 18 countries. After approximately 14 months, 9119 (78%) provided follow-up information about sickness in the past month because of musculoskeletal pain, including 8610 who were still in the same job. Associations with absence for pain at specific anatomical sites were assessed by logistic regression and summarised by ORs with 95% CIs. **RESULTS:** 861 participants (10%) reported absence from work because of musculoskeletal pain during the month before follow-up. After allowance for potential confounders, risk of absence ascribed entirely to low back pain (n=235) increased with the number of anatomical sites other than low back that had been reported as painful in the year before baseline (ORs 1.6 to 1.7 for ≥ 4 vs 0 painful sites). Similarly, associations with wider propensity to pain were observed for absence attributed entirely to pain in the neck (ORs up to 2.0) and shoulders (ORs up to 3.4). **CONCLUSIONS:** Sickness absence for pain at specific anatomical sites is importantly associated with wider propensity to pain, the determinants of which extend beyond established risk factors such as somatising tendency and low mood. Better understanding of why some individuals are generally more prone to musculoskeletal pain might point to useful opportunities for prevention

Eslamian F, Jahanjoo F, Dolatkah N, Pishgahi A, and Pirani A. Relative effectiveness of electroacupuncture and biofeedback in the treatment of neck and upper back myofascial pain: a randomized clinical trial. Archives of Physical Medicine & Rehabilitation. 2020; 101(5):770-780.

<https://doi.org/10.1016/j.apmr.2019.12.009>

Abstract: **OBJECTIVE:** To determine the differences between clinical effects of electroacupuncture and biofeedback therapy in addition to conventional treatment in patients with cervical myofascial pain syndrome (MPS). **DESIGN:** Randomized clinical trial. **SETTING:** Physical medicine and rehabilitation clinic of a university hospital.

PARTICIPANTS: Fifty patients (N=50) aged 25-55 years of both sexes with chronic neck pain diagnosed with MPS (characterized by trigger points within taut bands) were randomly assigned to 2 equal groups of 25 individuals. **INTERVENTIONS:** The patients in electroacupuncture group were treated with standard acupuncture and concomitant electrical stimulation; those in biofeedback group received visual electromyography biofeedback therapy for muscle activity and relaxation. Both groups received the intervention 2 times a week for a total of 6 sessions. Basic exercise training and medicines were administered for all the patients. **MAIN OUTCOME MEASURES:** Pain severity based on the visual analog scale (VAS), functional status using Neck Disability Index (NDI), cervical range of motion (ROM) using an inclinometer, and pressure pain threshold (PPT) using an algometer were evaluated before and at 3 and 12 weeks after the treatment. Primary outcome was defined as 20% reduction in the 3-month neck pain and dysfunction compared to baseline, assessed through the NDI. **RESULTS:** Fifty patients (39 women, 11 men) with a mean age (years) +/- SD of 39.0+/-5.5 and neck pain duration (weeks) of 6.0+/-2.2 were analyzed. All parameters, except for PPT of the lower trapezius and paravertebral muscles were improved significantly in both groups, while baseline values were controlled. The primary outcome was achieved more significantly in the acupuncture group than in the biofeedback group: 20 (80.0%) vs 10 (40.0%); rate ratio=2 with 95% confidence interval (CI), 1.19-3.36; number needed to treat (NNT)=2.5 with 95% CI, 1.54-6.58. Advantages of acupuncture over biofeedback were observed according to values obtained from the NDI, VAS, extension and left lateral-bending ROM, and PPT on the left upper trapezius after the last session of intervention until 3 months (P<.05). **CONCLUSIONS:** Both electroacupuncture and biofeedback therapies were found to be effective in management of MPS when integrated with conventional treatment. However, intergroup differences showed priority of acupuncture in some parameters vs biofeedback. Thus, electroacupuncture seems to be a better complementary modality for treatment of MPS in the neck and upper back area

Glimne S, Brautaset R, and Osterman C. Visual fatigue during control room work in process industries. Work. 2020; 65(4):903-914.



<https://doi.org/10.3233/WOR-203141>

Abstract: **BACKGROUND:** Working in front of computer screens is visually demanding and related to adverse eye symptoms. Occurrence of glare further increases visual fatigue. **OBJECTIVE:** This paper presents results from an examination of visual ergonomics in control room environments at two Swedish process industries. **METHODS:** Visual conditions were examined and evaluated in nine control rooms and eighteen process operators answered questions about their perceived workload and visual experiences. **RESULTS:** When working in the control rooms, the mental workload was rated significantly higher by the participants, compared to experienced performance. The operators further experienced significantly higher visual fatigue and blurred vision compared to double vision and sore eyes. Visual demands were increased in conditions where contrast glare was present, as well as frequent changes of focusing distances, and low contrast between background and characters in computer screens. **CONCLUSIONS:** Suboptimal visual working conditions in the control rooms contributes to increased visual demands on the operators. Presence of glare is leading to visual fatigue and an unnecessary high mental load. The findings support the relevance of considering principles of general and visual ergonomics when designing and organizing work in control rooms. Workstation design should also be flexible to allow for individual and contextual adjustments

Harris MA, MacLeod J, Kim J, Pahwa M, Tjepkema M, Peters P, et al. Use of a Canadian population-based surveillance cohort to test relationships between shift work and breast, ovarian, and prostate cancer. *Annals of Work Exposures and Health*. 2020; 64(4):387-401.

<https://doi.org/10.1093/annweh/wxaa017>

Abstract: **OBJECTIVES:** Shift work with circadian disruption is a suspected human carcinogen. Additional population-representative human studies are needed and large population-based linkage cohorts have been explored as an option for surveillance shift work and cancer risk. This study uses a surveillance linkage cohort and job-exposure matrix to test relationships. **METHODS:** We estimated associations between shift work and breast, ovarian, and prostate cancer using the population-based Canadian Census Health and

Environment Cohort (CanCHEC), linking the 1991 Canadian census to national cancer registry and mortality databases. Prevalence estimates from population labour survey data were used to estimate and assign probability of night, rotating, or evening shifts by occupation and industry. Cohort members were assigned to high (>50%), medium (>25 to 50%), low (>5 to 25%), or no (<5%) probability of exposure categories. Cox proportional hazards modelling was used to estimate associations between shift work exposure and incidence of prostate cancer in men and ovarian and breast cancer in women. RESULTS: The cohort included 1 098 935 men and 939 520 women. Hazard ratios (HRs) indicated null or inverse relationships comparing high probability to no exposure for prostate cancer: HR = 0.96, 95% confidence interval (CI) = 0.91-1.02; breast cancer: HR = 0.94, 95% CI = 0.90-0.99; and ovarian cancer: HR = 0.99, 95% CI = 0.87-1.13. CONCLUSIONS: This study showed inverse and null associations between shift work exposure and incidence of prostate, breast, or ovarian cancer. However, we explore limitations of a surveillance cohort, including a possible healthy worker survivor effect and the possibility that this relationship may require the nuanced exposure detail in primary collection studies to be measurable

Khalifa G, Sharif Z, Sultan M, and Di Rezze B. Workplace accommodations for adults with autism spectrum disorder: a scoping review. Disability and Rehabilitation. 2020; 42(9):1316-1331.

<https://doi.org/10.1080/09638288.2018.1527952>

Abstract: Purpose: To identify workplace accommodations that can contribute to obtaining or maintaining employment for adults with autism spectrum disorder in the peer-reviewed literature. Method: A scoping review of peer-reviewed articles published between January 1987 and March 2018 was performed. Three independent reviewers searched seven databases. Inclusion criteria for selected studies included adult with autism participants (≥ 18 years), intervention studies that described support for securing or maintaining employment/skills training, and education for employee/employers to support adults with autism. Results were organized based on environmental domains within the World Health Organization's International Classification of Functioning, Disability, and Health: (1)

natural environment; (2) products and technology; (3) support and relationships; (4) attitudes; (5) services, systems, and policies. Results: The initial search identified 829 articles, of which 25 met the inclusion criteria. The majority of the selected studies described accommodations under more than one environmental domain. Most studies categorized in the Support and Relationships domain were also categorized under another domain. Conclusion: The majority of studies (21) were categorized as providing interventions related to employment support and relationships. One of the most common examples of support involved job coaching using different strategies. Technology is another area that is emerging and requires further exploration. Implications for Rehabilitation Successful workplace strategies for individuals with autism spectrum disorder were: minimizing distractions, reducing noise, and predictable job duties. Environmental considerations related to using technology could play an important role in improving performance and work experience. Employers and co-workers support is an important aspect that contributes to a positive work environment

Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open. 2020; 3(3):e203976.

<https://doi.org/10.1001/jamanetworkopen.2020.3976> [open access]

Abstract: Importance: Health care workers exposed to coronavirus disease 2019 (COVID-19) could be psychologically stressed. Objective: To assess the magnitude of mental health outcomes and associated factors among health care workers treating patients exposed to COVID-19 in China. Design, Settings, and Participants: This cross-sectional, survey-based, region-stratified study collected demographic data and mental health measurements from 1257 health care workers in 34 hospitals from January 29, 2020, to February 3, 2020, in China. Health care workers in hospitals equipped with fever clinics or wards for patients with COVID-19 were eligible. Main Outcomes and Measures: The degree of symptoms of depression, anxiety, insomnia, and distress was assessed by the Chinese versions of the 9-item Patient Health Questionnaire, the 7-item Generalized Anxiety Disorder scale, the 7-item Insomnia

Severity Index, and the 22-item Impact of Event Scale-Revised, respectively. Multivariable logistic regression analysis was performed to identify factors associated with mental health outcomes. Results: A total of 1257 of 1830 contacted individuals completed the survey, with a participation rate of 68.7%. A total of 813 (64.7%) were aged 26 to 40 years, and 964 (76.7%) were women. Of all participants, 764 (60.8%) were nurses, and 493 (39.2%) were physicians; 760 (60.5%) worked in hospitals in Wuhan, and 522 (41.5%) were frontline health care workers. A considerable proportion of participants reported symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]), and distress (899 [71.5%]). Nurses, women, frontline health care workers, and those working in Wuhan, China, reported more severe degrees of all measurements of mental health symptoms than other health care workers (eg, median [IQR] Patient Health Questionnaire scores among physicians vs nurses: 4.0 [1.0-7.0] vs 5.0 [2.0-8.0]; $P = .007$; median [interquartile range {IQR}] Generalized Anxiety Disorder scale scores among men vs women: 2.0 [0-6.0] vs 4.0 [1.0-7.0]; $P < .001$; median [IQR] Insomnia Severity Index scores among frontline vs second-line workers: 6.0 [2.0-11.0] vs 4.0 [1.0-8.0]; $P < .001$; median [IQR] Impact of Event Scale-Revised scores among those in Wuhan vs those in Hubei outside Wuhan and those outside Hubei: 21.0 [8.5-34.5] vs 18.0 [6.0-28.0] in Hubei outside Wuhan and 15.0 [4.0-26.0] outside Hubei; $P < .001$). Multivariable logistic regression analysis showed participants from outside Hubei province were associated with lower risk of experiencing symptoms of distress compared with those in Wuhan (odds ratio [OR], 0.62; 95% CI, 0.43-0.88; $P = .008$). Frontline health care workers engaged in direct diagnosis, treatment, and care of patients with COVID-19 were associated with a higher risk of symptoms of depression (OR, 1.52; 95% CI, 1.11-2.09; $P = .01$), anxiety (OR, 1.57; 95% CI, 1.22-2.02; $P < .001$), insomnia (OR, 2.97; 95% CI, 1.92-4.60; $P < .001$), and distress (OR, 1.60; 95% CI, 1.25-2.04; $P < .001$). Conclusions and Relevance: In this survey of health care workers in hospitals equipped with fever clinics or wards for patients with COVID-19 in Wuhan and other regions in China, participants reported experiencing psychological burden, especially nurses, women, those in Wuhan, and frontline health care workers directly engaged in the diagnosis, treatment, and care for patients with COVID-19

McAllister A. Gatekeeping disability income support: a conceptual model. *Social Policy & Administration*. 2020; 54(3):327-344.

<https://doi.org/10.1111/spol.12527>

Musselwhite C, Avineri E, and Susilo Y. Editorial JTH 16: the Coronavirus Disease COVID-19 and implications for transport and health. *Journal of Transport & Health*. 2020; 16:100853.

<https://doi.org/10.1016/j.jth.2020.100853> [open access]

Perlini C, Donisi V, Rossetti MG, Moltrasio C, Bellani M, and Brambilla P. The potential role of EMDR on trauma in affective disorders: a narrative review. *Journal of Affective Disorders*. 2020; 269:1-11.

<https://doi.org/10.1016/j.jad.2020.03.001>

Abstract: BACKGROUND: Eye Movement Desensitization and Reprocessing (EMDR) is a psychotherapeutic approach that has originally been developed to treat post-traumatic stress disorder (PTSD). Recently it has been suggested as a complementary therapy in a wide range of clinical conditions. In particular, affective disorders as bipolar disorder (BD) and major depressive disorder (MDD) have a higher lifetime prevalence of traumatic or stressful life events (SLEs) compared to the general population, which makes them good candidates for the application of EMDR. METHODS: A bibliographic search on PUBMED, Scopus, and ScienceDirect of studies applying EMDR to people with a primary diagnosis of bipolar disorder (BD) and major depressive disorder (MDD) (with or without a comorbid PTSD) was conducted. RESULTS: Literature search retrieved 15 studies, of which 3 were focused on BD and 12 on MDD. Overall, they suggest EMDR as an effective tool in reducing trauma-related but also manic and depressive symptoms, with few effect sides and high adherence rates. LIMITATIONS: Few small studies exist with heterogeneous and not gold-standard methodology, especially for BD. CONCLUSIONS: Overall, retrieved studies can be considered as first attempts at investigating the applicability of EMDR in affective disorders. Although far to be conclusive, preliminary evidence suggests EMDR as a useful adjunctive approach in the treatment of BD and MDD, especially when other treatments have failed. It is now

the time to implement such trauma-focused therapy to larger samples of patients using more rigorous methods

Stetten N, Pomeranz J, Moorhouse M, Yurasek A, and Blue AV. The level of evidence of medical marijuana use for treating disabilities: a scoping review. Disability and Rehabilitation. 2020; 42(9):1190-1201.

<https://doi.org/10.1080/09638288.2018.1523952>

Abstract: Purpose: Twenty-nine states have bypassed federal regulations by legalizing marijuana (MJ) either medicinally, recreationally or both. The FDA states that there is no empirical evidence that MJ is effective to treat these disorders. With over a billion individuals living with a disability across the globe, it is crucial to fully research the efficaciousness and safety of medical MJ to treat this population. The purpose to present the results of a scoping review of studies focused on the levels of evidence currently available on medical MJ's efficacy in treatment across a large range of disabilities. Methods: Databases were searched for research articles on the current level of evidence to support medical MJ use among people with disabilities. Results: Forty-one peer reviewed articles met the inclusion criteria. Articles focused on attention deficit hyperactivity disorder, post-traumatic stress disorder, depression, schizophrenia, spinal cord injury, multiple sclerosis/movement disorders, fibromyalgia, epilepsy, with some that focused on multiple disabilities. Conclusions: The level of evidence for the use of medical MJ among people with disabilities varies greatly, and has a clear lack of methodologically sound studies. Overall, medical MJ does not improve the level of functioning, but it may improve the overall quality of life for people with disabilities. Implications for Rehabilitation Epilepsy can be a disabling chronic disorder which not only impacts physically but can restricts quality of life. Quality of life is diminished even more with treatment resistant epilepsy. Chronic pain is the leading cause of disability and is the most common cause of long-term disability. There is sufficient evidence that medical marijuana is effective in treating epileptic seizures and chronic pain. Medical marijuana may improve the level of functioning and quality of life for individuals with certain disabilities

Whittenburg HN, Cimera RE, Willis C, Taylor J, and Thoma CA. Comparing employment outcomes for youth with learning disabilities and postsecondary educational experience. Journal of Vocational Rehabilitation. 2020; 52(3):303-315.

<https://doi.org/10.3233/JVR-201079>

Wippich C, Rissler J, Koppisch D, and Breuer D. Estimating respirable dust exposure from inhalable dust exposure. Annals of Work Exposures and Health. 2020; 64(4):430-444.

<https://doi.org/10.1093/annweh/wxaa016> 0 [open access]

Abstract: In the sector of occupational safety and health only a limited amount of studies are concerned with the conversion of inhalable to respirable dust. This conversion is of high importance for retrospective evaluations of exposure levels or of occupational diseases. For this reason a possibility to convert inhalable into respirable dust is discussed in this study. To determine conversion functions from inhalable to respirable dust fractions, 15 120 parallel measurements in the exposure database MEGA (maintained at the Institute for Occupational Safety and Health of the German Social Accident Insurance) are investigated by regression analysis. For this purpose, the whole data set is split into the influencing factors working activity and material. Inhalable dust is the most important predictor variable and shows an adjusted coefficient of determination of 0.585 (R^2 adjusted to sample size). Further improvement of the model is gained, when the data set is split into six working activities and three material groups (e.g. high temperature processing, adj. $R^2 = 0.668$). The combination of these two variables leads to a group of data concerned with high temperature processing with metal, which gives rise to a better description than the whole data set (adj. $R^2 = 0.706$). Although it is not possible to refine these groups further systematically, seven improved groups are formed by trial and error, with adj. R^2 between 0.733 and 0.835: soldering, casting (metalworking), welding, high temperature cutting, blasting, chiseling/embossing, and wire drawing. The conversion functions for the seven groups are appropriate candidates for data reconstruction and retrospective exposure assessment. However, this is restricted to a careful analysis of the working conditions. All conversion functions are power functions with exponents between 0.454 and 0.946. Thus,

the present data do not support the assumption that respirable and inhalable dust are linearly correlated in general