

IWH Research Alert
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Aarhus L, Karheim K, Heikkinen S, Martinsen JI, Pukkala E, Selander J, et al. Occupational noise exposure and vestibular schwannoma: a case-control study in Sweden. *American Journal of Epidemiology*. 2020; 189(11):1342-1347.

<https://doi.org/10.1093/aje/kwaa091>

Abstract: It has been suggested that the association between self-reported occupational noise exposure and vestibular schwannoma (VS), found in several studies, represents recall bias. Therefore, we aimed to study the relationship in a large case-control study using occupational noise measurements. We performed a case-control study using data from Sweden for 1,913 VS cases diagnosed in 1961-2009 and 9,566 age- and sex-matched population controls. We defined occupational history by linkage to national censuses from 1960, 1970, 1980, and 1990. We estimated occupational noise exposure for each case and control using a job-exposure matrix. There was no association between occupational noise exposure and VS. Among subjects assessed as ever exposed to occupational noise levels of ≥ 85 dB (214 cases and 1,142 controls), the odds ratio for VS per 5 years of exposure was 1.02 (95% confidence interval: 0.90, 1.17). Workers with noise levels of ≥ 85 dB for at least 15 years (5-



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year latency period), showed no increased risk of VS (odds ratio = 0.98, 95% confidence interval: 0.73, 1.31) compared with those who had never been exposed to noise levels of 75 dB or higher. In summary, our large study does not support an association between occupational noise exposure and VS.

Coggon D, Croft P, Cullinan P, and Williams A. Assessment of workers' personal vulnerability to COVID-19 using 'COVID-age'. Occupational Medicine. 2020; 70(7):461-464.

<https://doi.org/10.1093/occmed/kqaa150> [open access]

Crane AG, Cormier ML, Taylor RN, and Parker JDA. Teaching emotional and social competencies: efficacy of a work readiness program designed for vulnerable youth. Work. 2020; 67(2):407-418.

<https://doi.org/10.3233/WOR-203290>

Abstract: BACKGROUND: As emotional and social competency training proliferates within a work readiness context, concerns remain regarding their efficacy. Data on these programs tends to be scarce and outcome objectives are often poorly defined. OBJECTIVE: Authors developed and tested a work readiness emotional and social competency program specifically designed for at-risk young adults, tailored with best practices in mind. METHOD: 84 clients of a community organization that provides employment support to young adults with disabilities (48 men and 36 women) with a mean age of 28.17 years (SD =11.64) completed measures of emotional intelligence and alexithymia on either side of the 4-week intervention. RESULTS: Men's interpersonal scores and women's adaptability scores showed significant improvement across the intervention. In addition, women's scores in both identifying and describing feelings improved significantly, as did men's scores in describing feelings. CONCLUSIONS: Within the context of work readiness, participants in an intervention to improve emotional and social competencies can see key improvements to competencies linked to occupational attainment

Green BN, Pence TV, Kwan L, and Rokicki-Parashar J. Rapid deployment of chiropractic telehealth at 2 worksite health centers in response to the COVID-19 pandemic: observations



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from the field. **Journal of Manipulative and Physiological Therapeutics. 2020; 43(5):404.e1-404.e10.**

<https://doi.org/10.1016/j.jmpt.2020.05.008> [open access]

Abstract: OBJECTIVE: The purpose of this paper is to describe the rapid deployment of telehealth, particularly real time video conference, for chiropractic services as a response to COVID-19. METHODS: Two health centers at 2 campuses of a large California corporation have chiropractic care integrated into physical medicine services. Care was suspended beginning on March 17, 2020 to prevent spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) among patients and staff. On March 19, the Governor of California issued a stay at home order. With musculoskeletal problems being common in the employee patient population, telehealth services were quickly developed to continue chiropractic care for patients. Using existing infrastructure, several members of the health center team developed chiropractic telehealth operations within 2 days. RESULTS: Musculoskeletal telehealth services included examinations, risk assessment, advice, and rehabilitative exercises. These telehealth visits facilitated care that would have otherwise been unavailable to employees. Patients reported that the appointments were helpful, addressed their concerns, and provided a safe method to see their doctor. Regular interprofessional teamwork and relations between the clinic operator and client company were key contributors to operationalizing this service in our integrated healthcare environment. CONCLUSION: We were able to quickly implement real time video conferencing and other forms of telehealth for chiropractic services at 2 worksite health centers. This paper includes information and insights to providers about setting up similar telehealth systems so they may also provide this benefit for patients in their communities during pandemics or disasters

Harma M, Koskinen A, Sallinen M, Kubo T, Ropponen A, and Lombardi DA. Characteristics of working hours and the risk of occupational injuries among hospital employees: a case-crossover study. Scandinavian Journal of Work, Environment & Health. 2020; 46(6):570-578.

<https://doi.org/10.5271/sjweh.3905> [open access]

Abstract: Objectives We investigated the association of working hours with occupational injuries in hospital shift work. Methods Registry



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data of occupational injuries of hospital employees from 11 towns and 6 hospital districts were linked to daily payroll data to obtain working hours for 37 days preceding the first incidence of the injury (N=18 700). A case-crossover design and associated matched-pair interval analysis were used to compare working hour characteristics for three separate hazard windows among the same subjects. Conditional logistic regression was used to calculate odds ratios (OR) with 95% confidence intervals (CI). Results We found an elevated risk of an occupational injury for workdays with evening shifts (OR 1.09, 95% CI 1.03-1.14) and workdays following night shifts (OR 1.33, 95% CI 1.17-1.52). After excluding commuting injuries, the risk increased during the evening shifts (OR 1.15, 95% CI 1.09-1.23) and the work days following night shifts (OR 1.44, 95% CI 1.24-1.69), but was no more significant during the morning shifts. Injury risk increased following a week of ≥ 5 morning shifts or ≥ 3 evening shifts, but did not increase according to the number of preceding night shifts or quick returns. The length of the work shift (OR 1.22, CI 1.06-1.42) - not the length of the weekly working hours - was associated with an increased risk. Conclusions The results indicate an increased occupational injury risk during the evening shifts and during work days following night shifts, with the risk increasing according to the number of evening but not night shifts

Kar G and Hedge A. Effect of workstation configuration on musculoskeletal discomfort, productivity, postural risks, and perceived fatigue in a sit-stand-walk intervention for computer-based work. *Applied Ergonomics*. 2021; 90:103211.

<https://doi.org/10.1016/j.apergo.2020.103211>

Abstract: OBJECTIVE: Compare musculoskeletal discomfort, productivity, postural risks, and perceived fatigue for a sit-stand-walk intervention between two workstation configurations - one, individually customized for office workers according to ergonomic guidelines (Ergo-Fit); another, self-adjusted by office workers according to their preference (Self-Adjusted). METHODS: 36 participants performed a 60-min computer typing task in both configurations using a within-participants, counterbalanced design. Musculoskeletal discomfort and perceived fatigue were reported through surveys; productivity was operationalized by typing speed and typing error; postural risks were assessed by RULA for seated



work, and REBA for standing work. RESULTS: Musculoskeletal discomfort and perceived fatigue did not vary significantly between configurations. Postural risks for seated and standing work were significantly lower for Ergo-Fit configuration; productivity was significantly higher for Self-Adjusted configuration. CONCLUSION: Use of Ergo-Fit configuration for a sit-stand-walk intervention can facilitate postural transitions and increase physical activity, while enabling neutral postures in seated and standing work to minimize postural risks

Kearney GD, Berkner AN, Langley RL, Little NRG, and Wambui DW. Occupational hazards and health and safety risks for Latino tree trimmers in the pine forest industry. *New Solutions*. 2020; 30(3):183-191.

<https://doi.org/10.1177/1048291120947480>

Abstract: A pilot project was conducted to evaluate the working conditions and work-related body pain among Latino immigrant tree trimmers (n=57) in the commercial pine forest service industry. Participants were interviewed about personal and work characteristics, job-related occupational hazards, and body pain. A structured questionnaire and a body pain diagram were used as measures for evaluating associations between personal and work characteristics and body pain. The most common health complaints were physical exhaustion (80.7 percent) and headache (33.9 percent). The reported percent of work-related body pain was 54.4 percent. Statistically significant associations were identified between experiencing body pain in knees, working more than two years, and working more than six hours per day ($p < 0.05$) as a tree trimmer. Thorough clinical evaluations are needed to confirm these findings. Future research including a larger sample size and more in-depth evaluations are needed to better evaluate worker tasks, musculoskeletal risk factors, and safety climate issues among this highly vulnerable occupational group

Marois E, Coutu MF, and Durand MJ. Feasibility evaluation of a return-to-work program for workers with common mental disorders: stakeholders' perspectives. *Work*. 2020; 67(2):331-343.

<https://doi.org/10.3233/WOR-203283>



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Abstract: **OBJECTIVE:** This study aimed to evaluate the feasibility of a newly developed return-to-work program for workers with common mental disorders from the perspective of stakeholders (insurers, employers, unions, and workers). **METHODS:** We used a sequential mixed design. First, we conducted a survey to evaluate the levels of stakeholder agreement with the program's feasibility. Second, we conducted a number of independent, homogeneous-group discussions or individual interviews to deepen stakeholders' reflections and allow co-construction of a shared perspective of the program's feasibility. **RESULTS:** Overall, the stakeholders (insurers (n=6), employers (n=7), unions (n=8), and workers (n=3)), agreed partly to totally with the feasibility of the specific/intermediate objectives, components/tasks, and duration of the components. They identified obstacles that could hinder program implementation. These obstacles pertained mainly to employers' contexts, e.g., difficulty/impossibility of offering job accommodations. They also proposed facilitators to counteract most of these obstacles. Diverging views were found regarding both the role of union representatives and health professionals in the program, and for the duration of the components. **CONCLUSION:** Overall, the program was perceived as feasible to implement, provided that the potential factors discussed are taken into account. The next step will be to evaluate its implementation in real practice settings

Munch PK, Norregaard Rasmussen CD, Jorgensen MB, and Larsen AK. Which work environment challenges are top of mind among eldercare workers and how would they suggest to act upon them in everyday practice? Process evaluation of a workplace health literacy intervention. Applied Ergonomics. 2021; 90:103265.

<https://doi.org/10.1016/j.apergo.2020.103265> [open access]

Abstract: The purpose of this study was to identify challenges and action plans from 2.497 structured communication sessions between employee and supervisor and to gain insight into the processes of a quasi-experimental stepped wedge clustered intervention, which implemented workplace health literacy for reducing musculoskeletal pain among eldercare workers. Most challenges concerned staffing (17%), organisation of tasks (15%) and team work (14%). Most action plans concerned communication (18%), team-work (16%) and



handling residents (14%). Half of the plans were solved at another level in the organisation than the challenge appeared. Actions planned on the individual level had the highest implementation rate (52%). The results underline the advantages in considering solutions to work environment and health challenges broadly at all levels in the organisation and the relevance of involving both the employee and the organisation/management in identifying and implementing solutions

Mutsaers BJ, Janssen FJF, Koes BW, Pool-Goudswaard A, and Verhagen AP. Differences in patient characteristics, number of treatments, and recovery rates between referred and self-referred patients with nonspecific neck pain in manual therapy: a secondary analysis. Journal of Manipulative and Physiological Therapeutics. 2020; 43(6):559-565.

<https://doi.org/10.1016/j.jmpt.2019.10.008>

Abstract: OBJECTIVE: In various countries, patients can visit a physiotherapist via self-referral. The aims of this study were to evaluate whether there are differences between individuals with nonspecific neck pain who consult a manual therapist via self-referral and those who do so via referral by a physician concerning patient characteristics, number of treatments, and recovery; and whether (self-)referral is associated with recovery. METHODS: This study is part of a prospective cohort study with posttreatment and 12-month follow-up in a Dutch manual-therapy setting. Adult patients with nonspecific neck pain were eligible for participation. Baseline measurements included demographic data and data concerning neck pain. At follow-up, number of treatments, recovery, and satisfaction were assessed. To evaluate differences between the groups, we used the χ^2 test and the independent t test. A logistic regression analysis was used to evaluate the association between referral status and recovery. RESULTS: In total, 272 manual therapists participated and 1311 patients were included. Of 831 patients whose referral data are available, about half patients consulted a manual therapist by self-referral. The mean number of treatments was 5.4, which did not differ between the 2 groups. We found no differences between the groups concerning age, sex, pain intensity at baseline, or recovery rate. Patients in the self-referral group experienced acute neck pain more frequently, had recurrent complaints more often, and reported



less disability compared to the referred group. Referral status was not associated with recovery. CONCLUSION: We found several small differences between self-referred and referred patients

Salmani Nodooshan H, Rastipisheh P, Yadegarfar G, Daneshmandi H, Alighanbari N, and Taheri S. The effect of work-related psychosocial stressors on musculoskeletal disorder symptoms in hospital attendants. Work. 2020; 67(2):477-486. <https://doi.org/10.3233/WOR-203297>

Abstract: Background: Psychosocial stress at work is an important issue among hospital attendants. Objective: This study aimed to examine psychosocial stressors in the work environment and assess their impacts on WMSD symptoms among hospital attendants in Shiraz, southern Iran. Methods: This cross-sectional study was conducted on 198 hospital attendants from Shiraz. The study data were collected using a basic demographic questionnaire, Nordic Musculoskeletal Questionnaire (NMQ), the Persian version of Effort-Reward Imbalance Questionnaire (F-ERIQ), and an individual risk assessment (Evaluación del Riesgo Individual [ERIN]). The data were entered into SPSS version 16 and analyzed using Mann-Whitney U, Chi-square, and Spearman's correlation tests. Results: The prevalence of WMSD symptoms was 29.8% in the lower back, 25.3% in knees, and 20.7% in ankles/feet. Posture analysis by the ERIN technique demonstrated that 95.5% of the postures were high risk for WMSDs. F-ERIQ identified that 83.4% of the hospital attendants belonged to the "1 < ER-ratio" category. Besides, the "effort" subscale of the F-ERIQ was significantly associated with reporting of MSD symptoms in the neck, shoulders, wrists/hands, and lower back. In addition, a significant correlation was observed between effort ($r = 0.367$, $p = 0.028$), esteem ($r = -0.273$, $p = 0.041$), security ($r = -0.253$, $p = 0.045$), and over-commitment ($r = 0.301$, $p = 0.019$) and the total score of the ERIN technique. Conclusion: Intervention programs and coping strategies for reduction of work-related stress and, subsequently, prevention of WMSD symptoms are recommended among hospital attendants.

Russo F, Di Tecco C, Fontana L, Adamo G, Papale A, Denaro V, et al. Prevalence of work related musculoskeletal disorders in Italian workers: is there an underestimation of the related



occupational risk factors? BMC Musculoskeletal Disorders. 2020; 21(1):738.

<https://doi.org/10.1186/s12891-020-03742-z> [open access]

Abstract: **BACKGROUND:** Work-related musculoskeletal disorders (WMSDs) represent an important socio-economic burden. The current risk assessment and management involved in the etiopathogenesis of WMSDs is based on observational tools and checklists, which have some limitations in terms of accuracy and reliability. The aim of this study was to assess WMSD prevalence and identify possible correlations with several socio-demographic and work-related variables in a large cohort representative of Italian workers in order to improve our understanding of the WMSD phenomenon. **METHODS:** This study includes data from INSuLa, a cross-sectional nationally representative survey of health and safety at work, developed by the Italian Workers' Compensation Authority. A total of 8000 Italian workers were included. Multivariate logistic regression analyses were performed to evaluate the association of independent variables, such as workers' perceptions of exposure to biomechanical/ergonomic and video display unit (VDU) risks (Risk Perceived) and the actual risk exposure (Risk Detected) on Back, Lower and Upper limb pain. Socio-demographic, occupational and other health-related variables were included to investigate possible association with musculoskeletal disorders. **RESULTS:** Workers perceiving a significant exposure to biomechanical/ergonomic and VDU risks but not included in a health surveillance program for them (Risk Perceived/No Risk Detected) have had significantly higher odds of reporting musculoskeletal disorders. Regarding the biomechanical/ergonomic risk these workers are in the 19-24 age range (39.9%), transportation, warehousing/information and communication sectors (38.9%) and are employed in companies with more than 250 workers (35.8%). Regarding VDU risk, workers are in the 45-54 age range (24.5%), professional, financial and business services (38.0%) and come from companies with more than 250 employees (25.6%). **CONCLUSIONS:** Within the occupational safety and health management systems an appropriate assessment of occupational risk factors correlated to musculoskeletal disorders (mainly biomechanical/ergonomic and VDU) and the correct definition of their exposure levels is essential to adequately prevent the onset of WMSDs. In this regard, our findings provide useful information to



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design novel approaches, aimed at improving our understanding of emerging risks, identifying gaps in current risk assessment strategies and enhancing workplace interventions are mandatory to improve the occupational risk assessment and management process and therefore implement the subsequent health surveillance systems

Sekkay F, Imbeau D, Dube PA, Chinniah Y, de Marcellis-Warin N, Beauregard N, et al. Assessment of physical work demands of long-distance industrial gas delivery truck drivers. *Applied Ergonomics*. 2021; 90:103224.

<https://doi.org/10.1016/j.apergo.2020.103224>

Abstract: AIM: The aim of this study was to assess the work-related physical demands of long-distance truck drivers employed by a large gas delivery company in Canada. METHODS: A total of 15 truck drivers participated in a data collection that included self-reporting assessments, field observations, and direct measurements to describe daily tasks organization, postural demands, physical workload, and force exertions. RESULTS: Truck drivers' work was characterized by long working days ranging from 9.9 to 15.1 h (mean =11.4 h), with half (49%) of the total working time spent behind the wheel. The overall workload as measured by relative cardiac strain (18.7% RHR) was found excessive for the long term given the shift duration. Peaks of heart rate in excess of 30 beats per minute above the daily average occurred mainly while operating valves and handling heavy hoses during gas deliveries. The task of delivering gas at a client's site required a moderate work rate on average (8.3 mlO₂/kg/min) requiring 24.4% or maximum work capacity on average. CONCLUSION: Based on multiple data sources, this study highlights the risks of over-exertion and of excessive physical fatigue in the truck drivers' work that are coherent with the high prevalence of self-reported musculoskeletal pain in this group of workers

Steffgen G, Sischka PE, and de Henestrosa MF. The quality of work index and the quality of employment index: a multidimensional approach of job quality and its links to well-being at work. *International Journal of Environmental Research and Public Health*. 2020; 17(21):7771.

<https://doi.org/10.3390/ijerph17217771> [open access]

Abstract: (1) Background: Job quality is a multidimensional and



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elusive concept that is back in vogue among social scientists and policymaker. The current study proposes a new job quality approach that is compared with the European Working Conditions Survey framework and structured with the help of the Job Demands-Resources model. Two new measures of job quality, the Quality of Work Index (QoW) and the Quality of Employment Index (QoE) are developed and validated in three different languages (German, French, Luxembourgish). The QoW is composed of 43 items, focusing on four areas of work-work intensity, job design, social conditions, and physical conditions (subdivided in eleven components)-which are particularly important for employees' well-being. The QoE is composed of 13 items that cover training opportunities, career advancement, job security, employability, work life conflict, and income satisfaction. (2) Methods: Data were collected via computer-assisted telephone interviews in a representative sample of 1522 employees working in Luxembourg (aged 17-67 years; 57.2% male). (3) Results: Confirmatory factor analysis confirmed the proposed factors structure and scalar measurement invariance for the three different language versions. Internal consistencies were satisfactory for all subscales (Cronbach's $\hat{\alpha}$ between 0.70 and 0.87). Correlations and hierarchical regression analyses with different psychological health measures (i.e., burnout, general well-being, psychosomatic complaints, work satisfaction, vigor) and subjective work performance confirmed the construct validity of the new instruments. (4) Conclusions: The QoW and the QoE are globally and on the level of the sub-categories effective tools to measure job quality, which could be used to compare job quality between organizations and different countries. Furthermore, the current study confirms associations between the different components of the QoW and QoE and employees' health

Vindrola-Padros C, Chisnall G, Cooper S, Dowrick A, Djellouli N, Symmons SM, et al. Carrying out rapid qualitative research during a pandemic: emerging lessons from COVID-19. Qualitative Health Research. 2020; 30(14):2192-2204.

<https://doi.org/10.1177/1049732320951526>

Abstract: Social scientists have a robust history of contributing to better understandings of and responses to disease outbreaks. The implementation of qualitative research in the context of infectious



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epidemics, however, continues to lag behind in the delivery, credibility, and timeliness of findings when compared with other research designs. The purpose of this article is to reflect on our experience of carrying out three research studies (a rapid appraisal, a qualitative study based on interviews, and a mixed-methods survey) aimed at exploring health care delivery in the context of COVID-19. We highlight the importance of qualitative data to inform evidence-based public health responses and provide a way forward to global research teams who wish to implement similar rapid qualitative studies. We reflect on the challenges of setting up research teams, obtaining ethical approval, collecting and analyzing data in real-time and sharing actionable findings

Yang J, Ye G, Xiang Q, Kim M, Liu Q, and Yue H. Insights into the mechanism of construction workers' unsafe behaviors from an individual perspective. *Safety Science*. 2021; 133:105004. <https://doi.org/10.1016/j.ssci.2020.105004>



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