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(116) Assessment of anxiety as mediator of the relationship between sleep disturbance and pain catastrophizing in chronic pain

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One of the most commonly reported issues of chronic pain sufferers is sleep disturbance, which causes decreases in productivity and quality of life for 70-88% of the chronic pain population.³ These patients also often suffer from anxiety and pain catastrophizing (PC), a negative emotional and cognitive state regarding actual or anticipated pain; however, it is unclear how these psychological conditions contribute to their disrupted sleep. Thus, we conducted the largest known retrospective review of sleep disturbance, anxiety, and PC scores using the Stanford-NIH Collaborative Health Outcomes Measurement Information Registry (CHOIR),¹ including measures from the Patient Reported Outcomes Measurement Information System (PROMIS). Data were obtained for 637 chronic pain patients who were seeking new medical evaluation at a tertiary pain clinic (390 females, 247 males, mean age=48.8). Anxiety is known to highly correlate with PC² and with sleep disturbance² thus, we hypothesized a significant relationship between patients' sleep disturbance and PC scores and that anxiety would specifically mediate this relationship because psychological and physiological responses to anxiety are known to disrupt sleep. Univariate analysis showed a significant direct relationship between sleep disturbance scores and PC scores ($p < .001$). Anxiety was also independently and significantly correlated to sleep disturbance ($p < .001$). We conducted multivariate modeling with anxiety and PC scores as predictors for sleep disturbance, controlling for average pain intensity. The overall model was highly significant ($p < .001$) and PC scores became insignificant, suggesting complete mediation from anxiety. These results elucidate the important role of anxiety in sleep disturbance and have implications for research and treatment of sleep disturbance in chronic pain populations. (1. Kao et al. *J Pain*, 2014; 2. Monti et al. *Sleep Med Rev*, 2000; 3. Smith. *Sleep Med Rev*, 2004; 4. Sullivan et al. *Psychol Assessment*, 1995.) Funding: NIH NIDA (K24 DA029262 Neuroimaging and Mentoring in Translational Pain Research).

(117) Development and initial validation of a brief multi-faceted cognitive functioning measure in fibromyalgia

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Cognitive dysfunction, sometime referred to as "fibrofog," is a common, distressing, and disabling symptom in fibromyalgia (FM). Evidence suggests that fibrofog is a generic term representing a wide variety of underlying neuropsychological deficits. Clinical and research efforts to meaningfully address fibrofog have been stymied due to the lack of a comprehensive and valid measure of cognitive dysfunction in FM. The purpose of this study was to leverage existing cognitive functioning item banks that were developed as part of the Patient Reported Outcomes Measurement Information System (PROMIS[®]) so as to devise a brief 10-item short form of multi-faceted cognitive functioning for FM. In Study 1, a nationwide (US) sample of 1035 adults reporting to have FM (age range: 18-82, 95.2% female) completed two cognitive item pools. Factor analyses and item response theory (IRT) analyses were used to identify dimensionality and optimally-performing items. A recommended 10-item short form measure of cognitive functioning was created, including items with good content coverage across cognitive functioning subdomains (i.e., memory, attention, language, executive functioning, and general mental clarity). In Study 2, 254 adults reporting with FM completed the items of the newly developed short form as well as a lengthy (38-item) legacy measure of cognitive functioning that has been used in multiple FM clinical trials, the Multiple Abilities Self-Report Questionnaire (MASQ). The 10-item short form showed excellent internal reliability (Cronbach's alpha = 0.95) and was strongly correlated with the MASQ ($r = -.82, p < .0001$). Results indicate that the newly developed cognitive short form has excellent convergent validity, covers relevant cognitive domains for FM, and is much briefer than legacy measures of the same constructs.

(118) Differentiating among veterans who evidence clinically meaningful improvement in pain and those who don't: a longitudinal analysis

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The ability to differentiate individuals with chronic pain who fail to report improvement in pain intensity over time from those who report improvement may offer valuable information about potential mechanisms that contribute to improvement along with potential targets of intervention. We examined two waves of survey data from a cohort of recently returning veterans to identify demographic and clinical variables that differentiate those who evidence clinically meaningful improvement in pain intensity from those who don't. The longitudinal Women Veterans Cohort Study survey includes 662 veterans (54% female). Demographic variables included gender, marital status and race. Clinical variables included baseline pain intensity and interference, depressive and PTSD symptoms, combat and military sexual trauma, smoking status, perceived support and family conflict. Altogether, 540 veterans completed a one year follow-up survey. Of these, 290 veterans (54%) reported pain of at least 3 months duration at both time points (chronic pain). Utilizing the pain intensity subscale from the BPI, those reporting a reduction of 20% or greater from baseline to follow-up were classified as demonstrating clinically meaningful improvement (CMI). Among those reporting chronic pain at both time points, 256 (88%) did not evidence CMI, while 34 (12%) did. Relative to those who didn't meet criterion for CMI, those who did reported higher baseline pain intensity [$M=5.17(1.55)$ vs. $M=3.39(1.95)$], pain interference [$M=4.38(2.08)$ vs $M=3.25(2.42)$], PTSD symptoms [$M=45.52(20.14)$ vs. $M=38.49(17.44)$] and family conflict [$M=3.36(1.32)$ vs. $M=3.84(1.08)$]. A multivariable logistic regression including these variables revealed that only pain intensity reliably and uniquely distinguished these two groups [OR=1.66, 95% CI (1.26-2.18), $p < .001$]. Higher baseline pain intensity predicted greater improvement at follow-up. Future research will need to elucidate whether the clinically meaningful improvement observed in the group marked by more significant vulnerability is best explained by regression to the mean, greater motivation to seek care, and/or other factors.

(119) Characterization of chemotherapy-induced neuropathy using patient reported outcome measures

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Cancer chemotherapy-induced neuropathy (CIN) is a common neurologic complication of cancer treatment. Because no effective preventative or treatment strategies are available for CIN, it can result in delays or cessation of chemotherapy. Patients with CIN can experience pain, decreased functional status, and poorer quality of life that can persist after the completion of chemotherapy. The subjective and objective characteristics of CIN remain unknown. As part of a larger cross-sectional, descriptive study, the purpose of this study was to evaluate for differences in pain characteristics in the hands and feet of patients who had CIN in both extremities. A cohort of 154 patients who had completed chemotherapy and self-reported CIN in their hands and feet were evaluated with a detailed questionnaire about pain characteristics (i.e., intensity, qualities, and interference with function). Compared to their hands, patients rated pain in their feet as significantly worse on intensity ($p < .0001$) and duration ($p = .005$). Pain interference scores for general activity, mood, walking ability, relations with others, sleep, and enjoyment of life were significantly higher in the feet (all $p < .0001$). For all of the qualities on the Pain Qualities Assessment Scale, ratings were significantly higher for the feet (i.e., intense, sharp, hot, dull, cold, sensitive, shooting, numb, electrical, tingling, cramping, heavy, unpleasant (all $p < .001$), tender ($p = .032$), itchy ($p = .037$), radiating ($p = .003$), throbbing ($p = .004$), and aching ($p = .015$)). Results from this study provide a detailed characterization of self-reported pain characteristics associated with chronic CIN, and striking differences between the differential severity of characteristics in the feet versus the hands. Additionally, these results suggest CIN is associated with decrements in functional status and mood. Findings from this study support the need for further research that evaluates subjective and objective characteristics of CIN that can be used to guide the development of future intervention studies.