(156) Predictors of pain following total knee arthroplasty

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Although total knee arthroplasty (TKA) has provided dramatic improvements in function and pain for the majority of patients with end-stage knee arthritis, recent studies have demonstrated that 15-20% of patients report persistent pain and dissatisfaction with their results. The purpose of this prospective cohort study was to determine which preoperative characteristics predict moderate to severe movement and resting pain at 6-months post TKA using a comprehensive set of physiological and psychological variables. 215 preoperative TKA patients had multiple demographic variables recorded, completed psychological questionnaires assessing anxiety, depression, and pain catastrophizing, underwent quantitative sensory testing and scored pain intensity at rest and with knee range-of-motion (ROM) on a 0-20 numeric rating scale. At 6-months, pain intensity ratings were scored again. Predictors were determined by multivariate logistic regression analyses. Patients with severe knee ROM pain prior to TKA had a 10x higher odds of moderate to severe ROM, relative to none or minimal pain, at 6 months. A second model was fitted to identify other explanatory variables of persistent ROM pain in addition to preoperative ROM pain, which found trait anxiety as the only other variable to be significant with an odds ratio of 1.4. Whilst depression, anxiety and pain catastrophizing have been demonstrated in prior studies to predict poor outcomes following TKA; we have demonstrated a simple test of pain intensity with active ROM preoperatively as an overriding predictor of persistent pain at 6 months following TKA. If these findings are corroborated in larger studies, strategies to address this particular patient group may improve overall satisfaction rates of TKA.

(157) Fear of movement in the early aftermath of a motor vehicle collision is an independent predictor of pain interference at six weeks

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Persistent pain and associated disability after motor vehicle collision (MVC) is a common and costly problem. The fear-avoidance model hypothesizes that individuals with acute pain who have greater fear of movement (FOM) will have greater activity avoidance and will develop more severe persistent pain. In this prospective observational study, we investigated the influence of FOM on pain severity and pain interference six weeks after MVC. European Americans $\geq$18 and $\leq$65 years of age presenting to one of eight emergency departments (EDs) in four no-fault insurance states within 24 hours of MVC who did not have a fracture or other injury requiring hospital admission were enrolled. Baseline ED assessment included an evaluation of FOM (Tampa Scale for Kinesiophobia), current neck and overall pain intensity (each assessed on a 0-10 scale), and psychological symptoms and traits. Six-week telephone follow-up evaluation included an assessment of neck pain intensity, overall pain intensity, and pain interference (Brief Pain Inventory), which is an assessment of functional limitations resulting from the burden of chronic pain. 129 participants were enrolled and 125 (97%) completed six-week follow-up. FOM was significantly correlated with pain catastrophizing (r=.44) and expectations for physical (r=.22) and emotional (r=.20) recovery, but not with anxiety (r=.13), depression (r=.06), or peritraumatic distress (r=.08). FOM did not predict neck or overall pain severity at six weeks, but did predict pain interference (B = 0.66, p<.01). In a multivariable linear regression model adjusted for participant age, sex, and ED neck pain severity, FOM remained associated with pain interference six weeks after MVC (B = 0.50, p<.05). These results suggest that FOM has a specific effect on the impact of persistent pain on function. Further studies are needed to better understand the contribution of FOM to the development of persistent pain symptoms following MVC. Supported NIAMS R01AR056328.

(158) Prediction of persistent clinically important back pain among older adults beginning a new episode of care for back pain

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Despite the high prevalence of back pain among older adults, little is known concerning prognosis in this population. The objectives of this large, longitudinal observational study were to describe back pain outcomes over time and to develop a model for predicting outcomes among older patients initiating a new episode of care for back pain. We hypothesized that greater back pain duration, back pain intensity, leg pain intensity, physical disability (Roland score), pain interference (Brief Pain Inventory), depression (PHQ-2), and anxiety (GAD-2), and lower recovery expectations, at baseline would be risk factors for moderate to severe back pain intensity (5-10 on 0-10 scale of average back pain in the past week) 6 months later. 2625 patients aged 65 years or older with a new visit for back pain (i.e., none in the past 6 months) at 3 geographically diverse large U.S. health care systems enrolled and completed baseline measures. Six months later, 2225 of these patients (85%; median age 73 years, 66% female, and 72% non-Hispanic Caucasian) completed outcome measures; 961 (43%) rated their average back pain as 5 or greater. In univariate analyses, all hypothesized baseline predictors were associated significantly (P < 0.05) with 6-month back pain intensity, in the expected directions. Also, older, black, and less educated patients were more likely to have moderate to severe back pain at 6 months. A multivariable model that included all hypothesized baseline predictors plus age, gender, race/ethnicity, and education predicted 6-month back pain intensity (area under the receiver operating characteristic curve = 0.78; 95% CI, 0.76-0.80). In sum, 43% of older adults initiating a new episode of care for back pain reported moderate to severe back pain 6 months later, and a combination of baseline sociodemographic and self-report measures predicted this outcome with acceptable accuracy. Supported by AHRQ grant 1R01 HS019222.

(159) Predicting pain after joint surgery

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Predicting which patients will endure greater postoperative pain after joint surgery and the level of benefit these patients will receive from pain reduction interventions is often difficult. This study grouped psychosocial predictors into larger domains for enhanced prediction. Adult patients (> 18 years-old) scheduled for joint surgery (e.g., hip or knee replacement) were enrolled. N = 51 patients completed a packet of baseline questionnaires including the Pain Medication Attitudes Questionnaire, Pain Anxiety Symptoms Scale, Pain Disability Index, Pain Self-Efficacy Questionnaire, State-Trait Anxiety Inventory, Pain Locus of Control Scale, Center for Epidemiologic Studies Depression Scale, Marital Adjustment Test, Daily Stress Inventory, and McGill Pain Questionnaire. To determine if items/subscales could be grouped into latent domains for use in future prediction research, a principal component analysis was conducted using the subscales for each questionnaire. A daily pain diary was then completed by the patients for 2 months after surgery and analyzed using hierarchical linear models. Eight psychosocial domains were identified that represented large constructs that predicted several aspects of pain after surgery. Initial levels of pain were predicted by domains such as affective distress, external locus of control, distrust of healthcare, and high perceived need of medication (p's < 0.05). Quicker reductions in pain were predicted by several domains. For example, each standard deviation increase in affective distress was associated with a -0.70 diminished reduction in McGill Pain Questionnaire total pain score in each day after surgery (95% CI: -0.90 to -0.50, p <0.0001). The results support the utility of latent domains for predicting pain reduction after joint surgery. Because these super domains are more reliable than individual scales and cover unique dimensions of patient experience, they have a very large potential to be used in predicting pain outcomes in future studies.