

Conclusion: CTD risk factors are present in the workplace, home, and community - caused by the physical, temporal, spatial, and social demands in these environments. The genetic, environmental, and phenomenological characteristics of individuals can place them at risk for CTDs. When symptoms negatively impact performance of daily tasks and prevent meeting internal and external demands to perform, the person becomes perplexed, angry, confused, and frustrated. The combined experience of increasing difficulty in occupational performance, few objective symptoms to identify the cause, no coping mechanisms to draw upon, and little social support – all serve to create an overwhelming psychosocial challenge. This study has provided important clues regarding the limited effectiveness of current CTD evaluation and intervention methods. An approach that embodies a more theoretical and holistic approach offers the basis for a person-centered approach for therapists that promises to provide a better yield from the therapeutic process. The research presented can positively influence how therapy practitioners evaluate and treat their clients with CTDs.

5

Practice Patterns of a Hand Therapy Student Experiential Learning Clinic

R.L. WHALLEY, R. MCANDREW, V. KASKUTAS

Occupational Therapy, Washington University in St. Louis, Saint Louis, MO, United States

Purpose: Student clinics are an important part of the US health-care system, providing services to under-resourced patients and opportunities for students to apply knowledge in a real-world setting under clinician's supervision. It has been shown that combining biomechanical and occupation-based interventions improves hand therapy outcomes.

Conceptual frameworks can help demonstrate the societal and personal impact of the hand therapy profession. This research uses the Occupational Therapy (OT) Practice Framework (OTPF) and the Person-Environment-Occupation-Performance Model (PEOP) to analyze practice patterns of a hand therapy student experiential learning clinic (HT-SELCL) in a non-Medicaid expansion state. We assigned mock billing codes and estimated costs for services provided to examine the economic impact on the community.

Methods: Ten OT students participating in this HT-SELCL were trained in hand conditions and rehabilitation, intervention types and approaches per AOTA's OTPF, use of the PEOP model, and assigning billing codes. Data from 26 consenting patients referred to the HT-SELCL from our medical center's free hand surgeon clinic were entered into a secure database, including demographics, percent of treatment time spent delivering each intervention type and approach, mock billing codes, and person/environment/occupation factors addressed during each patient visit. We used the locality and carrier numbers defined by the Centers for Medicaid Services (CMS) to compute the fee amount for mock billing. Descriptive statistics computed counts and central tendencies.

Results: The majority of our patients had surgery (69%) and were unemployed (42%) or employed but not working (23%). Common patient diagnoses were fractures (42%), nerve injury (19%) and soft tissue injuries or tendonitis (19%). Patients frequently self-discharged (57%). Patients frequently received their injury due to an act of violence (39%), and this violent injury group (VIG) received the majority of treatment visits (52%).

The intervention approach utilized most often was establish-restore (69%), followed by modify (13%), create-promote (7%), maintain (7%), and prevent (4%). The percentage of intervention types delivered across all treatments were 48% preparatory tasks, 29% occupations and activities, 19% education and training, 13% preparatory methods, and 1% advocacy. Person factors were addressed in all visits, including 96% motor, 86% sensory, 84%

physiological, 65% psychological, 28% spiritual, and 13% cognitive. Environmental factors were addressed 97% of the time, including 62% physical, 61% technological, 52% social, 22% policy, 10% virtual, and 10% cultural. Occupations were addressed in all sessions; health management was used most often (79%), followed by work (68%), leisure (63%), social participation (52%), home management (42%), and rest/sleep (38%). Psychological, social, and sensory factors were addressed more often in the VIG group (25%, 23%, and 18% respectively), while physical environment was addressed 20% less frequently when compared to those with non-violent injuries.

Of the 26 evaluations performed, 12 were low complexity (ICD-10 code 97615) and 14 were moderate complexity (ICD-10 code 97166); and 26 re-evaluations (ICD-10 code 97168) were performed. The total number of mock billing units for all intervention sessions was 482 over 136 treatment visits, for a mean 3.54 units per session. The most frequently logged mock billing codes included 38% therapeutic exercise (ICD-10 code 97110), followed by 26% therapeutic activities (ICD-10 code 97530), 14% hot/cold pack (ICD-10 code 97010), 12% massage (ICD-10 code 97123), and 4% community work reintegration (ICD-10 code 97537). Total mock billing fees as defined by the CMS were \$18,039.66.

Conclusion: Student therapists integrate the PEOP model and use a blend of intervention approaches and types in the HT-SELCL. Occupations addressed most often in the HT-SELCL (health management and work) are well-aligned with literature in this population. Practice in our HT-SELCL was consistent with traditional hand therapy practice (motor, sensory and physiological factors addressed most often); however, our focus on psychological factors is unique, but consistent, with the prevalence of psychological concerns reported in this population. Increased focus on psychological burdens in the VIG group (25% higher than non-VIG group) is supported by literature regarding violent injuries. Social determinants of health often seen in under-resourced patients could explain high rates of self-discharge noted in the HT-SELCL. Billing data demonstrate that the HT-SELCL provides a substantial economic benefit to a population in need. We will use this data to demonstrate the efficacy of this tracking method to shape practice and improve patient outcomes.

6

Development of a Patient-Derived Expectations Survey for Degenerative Wrist Arthritis Surgery

A. WOLFF, S.W. WOLFE, C. MANCUSO, E. ZUSSTONE

Hospital for Special, New York, NY, United States

Purpose: Our purpose was to develop and validate a patient-derived expectations survey for degenerative wrist arthritis surgery.

Methods: Patients were eligible if they were undergoing wrist surgery for degenerative wrist arthritis and were recruited in-person or by telephone. Qualifying diagnoses for recruitment included: scapholunate advanced collapse (SLAC), scaphoid nonunion advanced collapse (SNAC), scapholunate interosseous ligament (SLIL) tear, post-traumatic arthritis, and Kienböck disease.

The survey was developed in three phases. During phase 1, 22 patients were interviewed preoperatively and asked open-ended questions about their expectations of surgery; a draft survey was assembled by categorizing responses. During phase 2, the survey was administered twice to another group of 27 patients preoperatively to assess test-retest reliability and concordance was measured with weighted kappa values and intraclass correlations. All patients also completed valid standard wrist outcome measures (Patient Rated Wrist Evaluation (PRWE) and Canadian Occupational Performance Measure (COPM)). During phase 3 (ongoing), the survey is being administered to a final group of patients at one year post-operatively and scores are compared to pre-operative expectations and standard wrist outcome measures. Measures of

responsiveness will be assessed by comparisons of change in the expectation survey scores to change in the PRWE and COPM.

Results: In phase 1, 244 expectations were volunteered from which 22 distinct categories were discerned and became the items for the draft survey. In phase 2, the draft survey was completed twice, 3-5 days apart. In phase 3, all 22 items were retained for the final survey. The items addressed pain, mobility, sports, resumption of functional activities, active lifestyle, future function, and psychological well-being. An overall score is calculated from the number of items expected and the amount of improvement expected, and ranges from 0-100; higher represents increased expectations. For phase 2 patients, mean scores for both administrations were 74.5(±17.8, range = 37.5-98.9) and 76(±21.2, range 30.7-100).

Cronbach alpha coefficients were .91 and .93, and the intraclass correlation coefficient between administrations was .85. The range of endorsement for items was 63% (remove need for pain medications) to 100% (relieve pain with tasks and activities; stop wrist condition from getting worse). The range of weighted kappa values was .39 to .96, and for 18 of 22 items the weighted kappa value was > .60 Phase 3 results are pending.

Conclusion: We developed a patient-derived survey that is reliable and addresses a spectrum of expectations for patients undergoing degenerative wrist arthritis surgery. The survey is designed to generate an overall score that is easy to calculate and interpret and offers a practical and comprehensive way to record patients' pre-operative expectations.

Defining individual patient expectations and understanding how well different interventional methods achieve those self-defined expectations can lead to customized patient care, where clinician and patient together select the treatment that best meets the specific needs of the patient. Ultimately, information from this tool can be used to define and align expectations, choose the right treatment for the patient, and measure post-operatively how closely expectations have been met.

7

The Impact of Mental Health and Pain on Patient-Reported Physical Function in Traumatic Versus Non-Traumatic Upper Extremity Conditions

S. COCHRANE¹, A. DALE^{1,2}

¹Occupational Therapy, Washington University in St. Louis, Saint Louis, MO, United States

²Department of Medicine, Washington University in St. Louis, Saint Louis, MO, United States

Purpose: Individuals with orthopedic conditions are at greater risk for experiencing depression, anxiety, and pain that interferes with functional ability. However, it is not clear how these factors may influence the effect of upper extremity musculoskeletal conditions on a patient's perceived function over the course of treatment. This study was conducted to determine if the effects of mental health and pain factors on perceived function differed between patients presenting with traumatic and non-traumatic upper extremity conditions.

Methods: This case-control study analyzed retrospective data from orthopedic patients presenting to a tertiary hand center between April 2016 and November 2017. Patients 18 years of age and older completed self-administered PROMIS Anxiety, Depression, Pain Interference, and Physical Function computer adaptive tests at each visit. Patients were assigned to non-traumatic condition if diagnosed with ICD-10 codes for Carpal Tunnel Syndrome, Cubital Tunnel Syndrome, DeQuervain's Tenosynovitis, or Trapeziometacarpal Arthritis. Patients were assigned to traumatic

injury if diagnosed with Distal Radius Fracture, Metacarpal or Phalanx Fracture. We examined Pearson correlation between all PROMIS measures. Multivariable linear regression models showed the effect of PROMIS depression, anxiety, and pain interference scores at initial visit to PROMIS physical function scores at initial and follow-up visits, accounting for age, sex, race, and socioeconomic deprivation index (SDI).

Results: The 3,524 patients were predominantly Caucasian (82.4%), female (61.6%), and had an average age of 52.0 (±16.6) years. SDI scores ranged from 0 to 99 and 32.2% had traumatic injuries. PROMIS scores showed high correlation for baseline pain and function ($r = -0.64$) and moderate correlation for anxiety ($r = -0.48$) and for depression ($r = -0.41$) to function. We stratified the data and ran separate models for traumatic and non-traumatic cases.

First we examined baseline mental health and pain scores to the absolute function scores at follow up in multivariable linear regression models adjusting for covariates. Results showed significant relationships between depression, anxiety, and pain to physical function scores at follow up ($p < 0.001$) for each model.

Next we examined baseline mental health and pain interference scores to a change in function scores (from baseline to follow up), separately for traumatic and non-traumatic cases. In traumatic cases, baseline depression was significantly associated with a change in function score (Beta 0.09; $p = 0.04$) but no association with non-traumatic cases (Beta 0.02; $p = 0.88$). Models with PROMIS anxiety significantly predicted functional changes for traumatic (Beta = 0.15; $p < 0.01$) and non-traumatic cases (Beta 0.07, $p = 0.01$). Pain interference showed strong associations in both traumatic (Beta 0.36; $p < 0.01$) and non-traumatic (Beta 0.22 $p < 0.01$) models.

Finally, we examined models to assess whether high levels of depression, anxiety, or pain interference were associated with functional change scores. Mental health predictors were dichotomized at clinical threshold scores (depression 59.9; anxiety 60.2) and pain interference at 1 standard deviation above the mean (pain 60.0) and entered in separate models to predict functional change scores. Results showed high levels of depression was not associated with function in traumatic nor non-traumatic cases. High pain was strongly associated with a change in function scores (2.2 points in non-traumatic, 5.3 points in traumatic cases). High levels of anxiety was not associated with functional change among non-traumatic cases ($p = 0.11$). In the traumatic model, high anxiety scores were associated with a functional change of 2.7 points ($p = 0.009$), in addition to changes from high pain interference of 4.7 points ($p < 0.001$).

Conclusion: Baseline depression, anxiety, and pain scores are associated with change in function, primarily driven by pain with greater effects in traumatic cases. Depression had no effect on non-traumatic cases. High levels of pain and anxiety were directly associated with large changes in function in traumatic cases, with lesser changes in non-traumatic cases. These findings suggest that there is therapeutic value to addressing and making efforts to reduce reported symptoms of anxiety. Anxiety symptoms may stem from pain, fear of surgery, inability to perform essential occupations, or from a lack of understanding the recovery timeline and expected functional outcomes. Therapists can use anxiety reducing techniques to promote empathetic care, to educate patients on physical and functional expectations, and to best prepare patients for stressful experiences. The PROMIS measures may be used to assess patient mental health and functional status periodically during the rehab process and to provide insight into factors affecting functional recovery of the patient.