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A Pilot Mixed-Methods Study of Patient Satisfaction With Chiropractic Care for Back Pain

ACC-RAC 2008 Prize-Winning Paper

Robert Rowell, DC, MS, and Judith Polipnick, DC, PhD

Objective: Patient satisfaction is important to payers, clinicians and patients. The concept of satisfaction is multifactorial and measurement is challenging. Our objective was to explore the use of a mixed-methods design to examine patient satisfaction with chiropractic care for low back pain.

Methods: Patients were treated three times per week for three weeks. Outcomes were collected at week 3 and week 4. Qualitative interviews were conducted by the treating clinician and a nontreating staff member. Outcome measures included the Roland Morris Back Pain Disability Questionnaire, the Visual Analog Scale for pain, and the Patient Satisfaction Scale. Interviews were recorded and transcribed and analyzed for themes and constructs of satisfaction. We compared qualitative interview data with quantitative outcomes, and qualitative data from two different interviewers.

Results: All patients reported high levels of satisfaction. Clinical outcomes were unremarkable, with little change noted on Visual Analog Scale and Roland Morris Back Pain Disability Questionnaire scores. We categorized patient comments into the same constructs of satisfaction as those identified for the Patient Satisfaction Scale: Information, Effectiveness, and Caring. An additional construct (Quality of Care) and additional subcategories were identified. Satisfaction with care is not explained by outcome alone. The qualitative data collected from two different interviewers had few differences.

Conclusion: The results of this study suggest that it is feasible to use a mixed-methods design to examine patient satisfaction. We were able to refine data collection and analysis procedures for the outcome measures and qualitative interview data. We identified limitations and offer recommendations for the next step: the implementation of a larger study.

Interexaminer Reliability ofT2-Weighted Magnetic Resonance Imaging for LumbarBright Facet Sign

Gary Longmuir, MAppSc, DC, Raymond Conley, DC

Objective: The aims of this study were to characterize the bright facet response within the lumbar spine, to identify a constellation of findings associated with the response, and to quantify the interexaminer agreement on the previous objectives.

Methods: A retrospective study of lumbar magnetic resonance images obtained on 105 (N = 105) adult subjects (62 men and 43 women; age range, 18-84 years; mean age, 46.51 ± 16.01 years)

reviewed by two musculoskeletal radiologists for the presence of high signal within the facet articulations (bright facet response) on fast spin echo T2-weighted images.

Results: Of the 630 lumbar facet articulations imaged (L3/L4 through L5/S1), 340 (54%) and 346 (55%) respectively, per examiner, did show a bright facet response. Interexaminer agreement with respect to the level and grading of a bright facet response was almost perfect, with *k* ranging from 0.85 to 0.91 (SE, 0.06). Prevalence of bright facet responses averaged 40.5 percent at L5/S1, 56.5 percent at L3/L4, and 66.5 percent at the L4/L5 level. There was an association with both degenerative facet and disk changes.

Conclusion: The bright facet response was a common phenomenon on T2-weighted magnetic resonance imaging of the lumbar spine in these cases. There was sufficient agreement with respect to the presence and extent of the bright facet response to conclude that the examiners' determinations were not made by random chance. There exist sufficient repeatability and reliability that a single descriptive term can be applied to unify the bright facet response: the bright facet sign.

Student Course Performance and Collaborative Testing:A Prospective Follow-On Study

ACC-RAC 2008 Prize-Winning Paper

Christopher Meseke, PhD, Rita Nafziger, MBA, Jamie Meseke, MSM

Objective: This prospective study evaluated the efficacy of collaborative testing on student performance at a chiropractic college.

Methods: This study compared testing performance between two cohorts of chiropractic students taking a neuroanatomy course: a control group (n = 73) and an experimental group (n = 80). Scores examined for each cohort included weekly quizzes, unit examinations, and a comprehensive final examination. The control cohort completed weekly quizzes as individuals, whereas the experimental cohort completed the quizzes collaboratively in small groups. Both cohorts completed the unit examinations and the comprehensive final examination as individuals. Multivariate analysis of variance was used for statistical analysis.

Results: Overall, the experimental group differed from the control group (Wilks $\lambda = 0.300$; $F = 33.081$; $df = 10,142$; $P < .01$). In addition to the weekly quizzes and the final grades, the mean of the sums of the quiz scores and mean of the sums of the examination scores were significantly higher for the experimental group as compared with the control group ($P < .05$).

Conclusions: The results of this study reaffirmed previous study findings that collaborative testing appears to have increased student performance.

A Comparison of the Torsional Stiffness of the Lumbar Spine in Flexion and Extension

Kim J. Garges, MD, Ali Nourbakhsh, MD, Randall Morris, BS, et al.

Objective: The main mechanism of injury to the spine is torsion, especially when coupled with compression. In this study, the *in vitro* torsional stiffness of the lumbar spine segments is compared in flexion and extension positions by cyclic and failure testing.

Methods: Fifteen lumbar spines were sectioned from fresh cadavers into 15 L2/3 and 15 L4/5 motion segments. Each vertebral segment was then potted both superiorly and inferiorly in polymethylmethacrylate, effectively creating a bone-disk-bone construct. The potted spinal

segments were mounted in a mechanical testing system, preloaded in compression to 300 N, and axially rotated to 3° in both directions at a load rate of 1°/s. This was done over three cycles for each motion segment in flexion and extension positions. Each specimen was then tested to torsional failure in flexion or extension. Stiffness, torque, and energy were determined from both cyclic and failure testing.

Results: The results showed that in all cases of cyclic testing, the higher segment extension resulted in higher torsional stiffness. In relative extension, lumbar specimens were stiffer, generated higher torque values, and generally absorbed more energy than the relative flexion condition. There were no differences found in loading direction or failure testing.

Conclusions: Increasing the effective torsional stiffness of the lumbar spine in extension could provide a protective mechanism against intervertebral disk injury. Restoration of segmental extension through increasing the lumbar lordosis may decrease the strain and reinjury of the joints, which can help reduce the extent of pain in the lumbar spine.

Spinal Motion Palpation:A Comparison of Studies That Assessed Intersegmental End Feel vs. Excursion

Michael Haneline, DC, MPH, Robert Cooperstein, MA, DC, Morgan Young, DC, Kristopher Birkeland, BA

Objective: Spinal motion palpation (MP) is a procedure used to detect intersegmental hypomobility/hypermobility. Different means of assessing intersegmental mobility have been described, assessing either excursion of the segments (quantity of movement) or end feel (quality of motion when stressed against the paraphysiological space). The objective of this review was to classify and compare studies based on method of MP used, considering that some studies may have used both methods.

Methods: Four databases were searched: MEDLINE-PubMed, Manual Alternative and Natural Therapy System, Index to Chiropractic Literature, and Cumulative Index to Nursing and Allied Health Literature databases for the years 1965 through January 2007. Retrieved citations were independently screened for inclusion by two of the authors, consistent with the inclusion and exclusion criteria. Included studies were appraised for quality, and data were extracted and recorded in tables.

Results: The above search strategy generated 415 citations, and 29 were harvested from reference lists. After removing articles that did not meet the inclusion criteria, 44 were considered relevant and appraised for quality. Fifteen studies focused on MP excursion, 24 focused on end feel, and five used both. Eight studies reported high levels of reproducibility (k = ≥0.4), although four were not of acceptable quality, and two were only marginally acceptable. When only high-quality studies were considered, three of 24 end-feel studies reported good reliability compared with one of 15 excursion studies. There was no statistical support for a difference between the two groupings.

Conclusions: A difference in reported reliability was observed when the method of MP varied, although it was not statistically significant. There was no support in the literature for the advantage of one MP method over the other.

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