

PROMIS Physical Function and Pain Correlation with ODI and VAS in the Surgical Lumbar Disc Herniation Patient Population

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Background

- **Legacy outcome measures** are essential for analyzing treatments for lumbar disc herniations (LDH)
 - Examples: **ODI** (Oswestry Disability Index) **VAS pain**
- **Administrative burdens** impose limits on completion of legacy measures
- Concerns exist over the reliability and precision with which legacy assessments capture primary outcomes of interest, and the ability to compare outcomes across disparate populations

Background

- The **PROMIS** group developed a patient outcome measure system to improve reporting of patient symptoms, function, and health and to reduce administrative burden
 - Early success seen with use in orthopedics
 - ODI and VAS scores have not been compared with PROMIS in patients with lumbar disc herniations undergoing surgery
- **Purpose:** Compare ODI and VAS pain with PROMIS physical function and pain interference scores to determine their correlations in a surgical patient population longitudinally

Methods

- **96 patients** with diagnosis of LDH that met inclusion criteria were included
 - All patients treated by 4 spine surgeons at tertiary spine center
- **PROMIS, ODI, and VAS scores** were collected preoperatively and in early follow up (within 6 months)
- Correlations between ODI and VAS with PROMIS physical function and pain respectively were quantified using Pearson correlation coefficient measurements and analyzed for significance with t-test

Results

- Demographic Data

| | Average | Range | Levels | N (%) |
|-----------------|-----------|-------|--------|------------|
| Age (years) | 45 | 19-73 | L1/L2 | 5 (5%) |
| Male (n, %) | 61 (63%) | | L2/L3 | 6 (6.3%) |
| Female (n, %) | 35 (37%) | | L3/L4 | 6 (6.3%) |
| Procedure | N (%) | | L4/L5 | 48 (50%) |
| Microdiscectomy | 96 (100%) | | L5/S1 | 31 (32.3%) |

Results

- **96 (100%)** of patients completed questionnaires at preop
- **68 (71%)** of patients completed questionnaires at early follow up
- Patients showed significant improvements in ODI, VAS, PROMIS physical function, and PROMIS pain interference ($p < 0.0001$)
- **ODI and PROMIS physical function correlation**
 - **Strong negative correlation**
 - $R = (-0.86, -0.82)$ (preop, early follow up)
- **VAS and PROMIS pain interference correlation**
 - **Moderate positive correlation**
 - $R = (0.57, 0.49)$ (preop, early follow up)

Results

- **Outcomes Data**

| Event | N | PROMIS PF | PROMIS PI | ODI | VAS |
|------------------|-----------|-----------|-----------|---------|---------|
| Baseline | 96 (100%) | 34.13 | 67.08 | 47.78 | 5.74 |
| Follow up | 68 (72%) | 40.28 | 59.04 | 26.98 | 2.71 |
| P value | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |

Legend: PROMIS PF = Patient Reported Outcomes Measurement Information System Physical Function, PROMIS PI = Patient Reported Outcomes Measurement Information System Pain Interference, ODI = Oswestry Disability Index, VAS = Visual Analog Scale – Back Pain

Results

- Correlation Data

| | ODI + PROMIS PF | | VAS + PROMIS PI | |
|---------------------|-----------------|---------------|-----------------|-------------|
| | Baseline | Follow up | Baseline | Follow up |
| R | -0.86 | -0.82 | 0.57 | 0.48 |
| R squared | 0.73 | 0.67 | 0.33 | 0.23 |
| 95% interval | (-0.93/-0.51) | (-0.91/-0.56) | (0.39/0.71) | (0.33/0.62) |
| P value | <.0001 | <.0001 | <0.0001 | <0.0001 |

Conclusions

- **PROMIS physical function** scores have a strong negative correlation with ODI scores at baseline and in the postoperative course in patients undergoing surgery for lumbar disc herniations
- **PROMIS pain interference** scores have a weak positive correlation with VAS pain scores at baseline and in the postoperative course

Conclusions

- Surgeons may factor these outcomes into the delivery and interpretation of patient reported outcome measures in patients with lumbar disc herniations undergoing surgery
- Use of PROMIS physical function for this patient population may improve completion of outcome measures in the office and reduce administrative burden while still providing reliable outcomes data

Disclosures

- No grant/research support, consultations, stock/shareholder, royalties, or other financial relationships to report