Methods

• Prospective observational study – 50 consecutive patients (mean age 41) recruited from an outpatient surgery center
  - Inclusion criteria - patients within the ages of 18-70 undergoing any knee arthroscopic procedure
  - Exclusion criteria - patients who underwent a procedure that was primarily open/non-arthroscopic as well

• Patients surveyed with all PROs pre-operatively and a mean of 3.6 months post-operatively with 90% follow-up

• Statistics
  - Internal responsiveness evaluation – paired t-tests on the changes in measures and calculation of two measures of effect
    size: Cohen’s D and standardized response mean (SRM)
  - External responsiveness evaluation – Pearson correlation measures between the changes in disease-specific reference measures and changes in generic PROs.
  - 95% bias-corrected bootstrap confidence intervals for each measure and their differences were calculated

• Effect sizes, values at 0.5 represent moderate effect sizes, and values at 0.8 represent large effect sizes

Results

The most common procedures included meniscectomy (62% of patients) and primary anterior cruciate ligament reconstruction (30% of patients).

Table 1. Internal responsiveness measures

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean Change (95% CI)</th>
<th>T-test p-value</th>
<th>Cohen’s D</th>
<th>SRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-5D</td>
<td>0.10 (-0.06,0.25)</td>
<td>0.001*</td>
<td>0.547</td>
<td>0.704</td>
</tr>
<tr>
<td>EQ-5D VAS</td>
<td>0.91 (+263.48)</td>
<td>0.8</td>
<td>0.037</td>
<td>0.038</td>
</tr>
<tr>
<td>VR-12 Physical</td>
<td>7.21 (4.03,10.39)</td>
<td>0.001*</td>
<td>0.627</td>
<td>0.683</td>
</tr>
<tr>
<td>VR-12 Mental</td>
<td>0.95 (1.81,3.71)</td>
<td>0.49</td>
<td>0.088</td>
<td>0.103</td>
</tr>
<tr>
<td>PROMIS 10 Physical</td>
<td>4.40 (-2.56,2.6)</td>
<td>0.001*</td>
<td>0.507</td>
<td>0.721</td>
</tr>
<tr>
<td>PROMIS 10 mental</td>
<td>0.54 (+1.42,2.51)</td>
<td>0.58</td>
<td>0.058</td>
<td>0.083</td>
</tr>
<tr>
<td>KOOS Pain</td>
<td>25.37 (19.30,31.44)</td>
<td>0.001*</td>
<td>1.119</td>
<td>1.256</td>
</tr>
</tbody>
</table>

External Responsiveness Measures and Comparisons

• Internal responsiveness measures and comparisons for the EQ-5D, PROMIS Global Health, and VR-12 Questionnaires in Knee Arthroscopy

Conclusions

• Internal Responsiveness:
  - Disease specific KOOS Pain is most responsive
  - EQ-5D, VR-12 Physical, and PROMIS 10 Physical scales showed a statistically significant change in score after treatment and effect size statistics with moderate change
  - EQ-5D, VR-12 Physical, and PROMIS 10 Physical instruments showed significantly higher Cohen’s D and SRM effect size compared to the mental and VAS PRO measures, but no statistical differences among themselves

• External Responsiveness:
  - EQ-5D, VR-12 Physical, and PROMIS 10 Physical instruments showed high correlation with the disease specific reference measure, KOOS Pain
  - EQ-5D, VR-12 Physical, and PROMIS 10 Physical instruments showed no statistically significant differences among themselves, and showed higher external responsiveness than mental and VAS PROs

References


More Responsive Tier

Less Responsive Tier

EQ-5D, VR-12 Physical, and the PROMIS 10 Physical

EQ-5D VAS, VR-12 Mental, and the PROMIS 10 Physical

No statistical difference between the EQ-5D, VR-12 Physical, and PROMIS 10 Physical instruments in terms of internal or external responsiveness to change in knee arthroscopy

• Researchers and administrators have the flexibility to choose any of the general PROs among the EQ-5D, VR-12 Physical, and PROMIS 10 Physical instruments to best capture responsiveness to change

• Patient reported outcomes (PROs) – questionnaires completed by patients to assess their perception of health, function, and quality of life
• Valuable in tracking and evaluating effectiveness of surgical interventions
• Generic PROs - assess patients’ general health status by measuring multiple domains and are valuable in comparing health status by measuring multiple PROs to detect changes in health status
• Disease specific PROs - focus on the impact of a single condition
• Knee injury and Osteoarthritis outcomes Score (KOOS) Pain scale
• PROMIS 10 Global Health, and VR-12 Questionnaires in Knee Arthroscopy

Background

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Responsiveness Comparison of the EQ-5D, PROMIS Global Health, and VR-12 Questionnaires in Knee Arthroscopy