Patient Reported Outcome Measures

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Patient Reported Outcome Measures (PROM)

• Provide additional ‘patient-centered’ data which is unique in capturing the patient’s own opinion on the impact of their disease or disorder, and its treatment, on their life.

• Psychometric Properties:
  – Reliable
  – Valid
  – Clinically Meaningful (MDC, MCID)

• PROMs are used by clinicians to guide patient care, or for the purposes of audit, and are already firmly embedded in clinical research.
Objectives

– Discuss PROM selection process in an orthopedic setting
– Identify common PROMs currently being administered at an orthopedic setting
– Describe common outcome measure(s) by specific body region
– Interpret PROM scores
– Review psychosocial barriers to function and collection
– Compare intervention approaches based on PROM scores
– Formulate patients’ plan of care based on evidence, communication, and best practice
Selection Process

- The American Physical Therapy Association (APTA) and Evaluation Database to Guide Effectiveness (EDGE) workgroups have identified a list of tests and measures for the highest-volume conditions in the orthopaedic section:
  - Lower Extremity Functional Scale (LEFS)
  - Modified Low Back Pain Disability Questionnaire (MDQ)
  - Neck Disability Index (NDI)
  - Disabilities of the Arm, Shoulder, and Hand Scale (QuickDASH).
Lower Extremity Functional Scale (LEFS)

20 item questionnaire

Test-retest Reliability (all subjects): $r = 0.86$ (Binkley et al., 1999)

MDC = 9 (Binkley et al., 1999)

MCID = 9 (Binkley et al., 1999)

Used to evaluate the functional impairment of a patient with a disorder of one or both lower extremities
Lower Extremity Functional Scale (LEFS)

1. Any of your usual work, housework, or school activities

6. Squatting

7. Lifting an object, like a bag of groceries from the floor.

14. Standing for 1 hour

15. Sitting for 1 hour

16. Running on even ground
Lower Extremity Functional Scale (LEFS)

Interpretation of Scores

- 20 questions on a 5 point scale
  - 0 (Extremely Difficult) – 4 (No Difficulty)
  - Higher scores indicate a lower level of disability and severity
Lower Extremity Functional Scale (LEFS) Q1 2016 Data

- Number of Patients (n): 397
- Average Initial Score: 39.4
- Average Discharge Score: 73.1
- Average Change in Score: 33.7
- Minimal Detectable Change (MDC)²: 9.0

Nova's Average Change In Score Is 3.7x Greater
Modified Low Back Pain Disability Questionnaire (MDQ)

- 10 item questionnaire
- Test-retest Reliability: $r = 0.90$ (Fritz and Irrgang, 2001)
- MDC= 5 (based off of Modified Oswestry Disability Index)
- MCID= 6 (Fritz & Irrgang, 2001)
- Used to evaluate the functional impairment of a patient with back pain
Modified Low Back Pain Disability Questionnaire (MDQ)

- **Pain Intensity:**
  - From “I can tolerate the pain I have without having to use pain medication” to “Pain medication provides has no effect on my pain”

- **Lifting**
  - From “I can lift heavy weights without increased pain” to “I cannot lift or carry anything at all”

- **Employment/Homemaking**
  - From “My normal homemaking/job activities do not cause pain” to “Pain prevents me from performing any job or homemaking chores”
Modified Low Back Pain Disability Questionnaire (MDQ)

**Interpretation of Scores**
- 10 questions on a 6 point scale
- 0 (1st statement) – 5 (Last statement)
- Higher scores indicate a higher level of disability and severity
Modified Low Back Pain Disability Questionnaire (MDQ)

Q1 2016 Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients (n)</td>
<td>448</td>
</tr>
<tr>
<td>Average Initial Score</td>
<td>17.1</td>
</tr>
<tr>
<td>Average Discharge Score</td>
<td>2.0</td>
</tr>
<tr>
<td>Average Change in Score</td>
<td>15.0</td>
</tr>
<tr>
<td>Minimal Detectable Change (MDC)</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Nova's Average Change In Score Is 3x Greater
Neck Disability Index (NDI)

- 10 item questionnaire
- Test-retest Reliability: \( r = 0.90 \) (Macdermid, 2009)
- MDC= 5 (Cleland et al, 2006)
- MCID= 7 (Cleland et al, 2006)
- Used to evaluate the functional impairment of a patient with neck pain
Neck Disability Index (NDI)

• **Concentration**
  - From “I can concentrate fully when I want with no difficulty” to “I cannot concentrate at all”

• **Lifting**
  - From “I can lift heavy weights without extra pain” to “I cannot lift or carry anything at all”

• **Driving**
  - From “I can drive my car without any neck pain” to “I cannot drive my car at all”
Neck Disability Index (NDI)

- Interpretation of Scores
  - 10 questions on a 6 point scale
  - 0 (1st statement) – 5 (Last statement)
- Higher scores indicate a higher level of disability and severity
Neck Disability Index (NDI)  
Q1 2016 Data

<table>
<thead>
<tr>
<th>Number of Patients (n)</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Initial Score</td>
<td>16.7</td>
</tr>
<tr>
<td>Average Discharge Score</td>
<td>2.4</td>
</tr>
<tr>
<td>Average Change in Score</td>
<td>14.3</td>
</tr>
<tr>
<td>Minimal Detectable Change (MDC)(^8,9)</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Nova's Average Change In Score Is 2.9x Greater
Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH)

- 11 item questionnaire and 4 item Work Module
- Test-retest Reliability: $r =.96$ (Beaton, 2001)
- MDC= 11 (Polson, 2010))
- MCID= 19 (Polson 2010, 2010)
- Used to assess physical function and symptoms in individuals with any or multiple musculoskeletal disorders of the upper limb.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>NOT AT ALL</th>
<th>SLIGHTLY</th>
<th>MODERATELY</th>
<th>EXTREMELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Open a tight or new jar</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>Do heavy household chores (e.g., wash dishes, groceries)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Carry a shopping bag or briefcase</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Work your back</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Use a knife to cut food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>NOT LIMITED AT ALL</th>
<th>SLIGHTLY LIMITED</th>
<th>MODERATELY LIMITED</th>
<th>VERY LIMITED</th>
<th>UNLIMITABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbours or groups?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please rate the severity of the following symptoms in the last week (circle number)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>NOT</th>
<th>MODERATE</th>
<th>SEVERE</th>
<th>EXTREME</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Arm, shoulder or hand pain</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>Splintering (pins and needles) in your arm, shoulder or hand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (circle number)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH)

- “Use a knife to cut food”
  - From “No Difficulty” to “Unable”
- “…were you limited in your work or other regular daily activities as a result….”
  - From “Not limited at all” to “Unable”
- Rate the severity of the following symptoms: “Tingling in your arm, shoulder or hand”
  - From “None” to “Extreme”
Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH)

- Did you have any difficulty:
  - Using your usual technique for your work?
  - Doing your usual work b/c of arm, shoulder, or hand pain?
  - Doing your work as well as you would like?
  - Spending your usual amount of time doing your work?
Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH)

- **Interpretation of scores**
  - Scored in two components:
    - the Disability/symptom section (11 items, scored 1-5)
    - Work module section (4 items, scored 1-5).
  - The higher the score indicates greater disability

<table>
<thead>
<tr>
<th>Activity</th>
<th>NOT DIFFICULTY</th>
<th>MODERATE DIFFICULTY</th>
<th>SEVERE DIFFICULTY</th>
<th>UNABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Open a tight or near jar</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Do heavy household chores (e.g., wash walls, floor)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Carry a shopping bag or briefcase</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Wash your back</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Use a knife to cut food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Homemade activities where you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbors or groups?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Please rate the severity of the following symptoms in the last week (check number)**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>NOT DIFFICULTY</th>
<th>MODERATE DIFFICULTY</th>
<th>SEVERE DIFFICULTY</th>
<th>UNABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Arm, shoulder or hand pain</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Holding items and needles in your arm, shoulder or hand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (check number)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH)
Q1 2016 Data

<table>
<thead>
<tr>
<th></th>
<th>11 item</th>
<th>(Work Module)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Patients (n)</strong></td>
<td>504</td>
<td>457</td>
</tr>
<tr>
<td><strong>Average Initial Score</strong></td>
<td>30.0</td>
<td>12.3</td>
</tr>
<tr>
<td><strong>Average Discharge Score</strong></td>
<td>14.2</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Average Change in Score</strong></td>
<td>15.9</td>
<td>7.2</td>
</tr>
<tr>
<td><strong>Minimal Detectable Change (MDC)(^{11})</strong></td>
<td>11.0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Nova's Average Change In Score Is 1.5x Greater
Barriers
Psychosocial Barriers

• “Investigators have demonstrated a strong relationship between elevated fear avoidance beliefs and chronic disability due to LBP”

• “Examination of fear-avoidance beliefs may serve as a useful screening tool for identifying patients who are at risk for prolonged work restrictions.”
Fear Avoidance Components Scale (FACS)

- 20 item questionnaire
- Test-retest Reliability: \( r = 0.90 \) (Neblett, 2015)
- No MDC or MCID
- used to comprehensively evaluate fear avoidance (FA) in patients with painful medical conditions
Fear Avoidance Components Scale (FACS)

- Interpretation of Scores
  - 20 questions on a 6 point scale
    - From “Completely Agree”=5 to “Completely Disagree”=0
  - 5 Severity Levels
    - Subclinical (0 to 20)
    - Mild (21 to 40)
    - Moderate (41 to 60)
    - Severe (61 to 80)
    - Extreme (81 to 100)
Fear Avoidance Components Scale (FACS)

- Fear Avoidance Components
  - Activity Avoidance
    - “I try to avoid activities and movements that make my pain worse”
  - Vulnerability to injury or re-injury
    - “My painful medical condition puts me at risk for future injuries for the rest of my life”
Fear Avoidance Components Scale (FACS)

**Fear Avoidance Components**

- Pain-related anxiety/catastrophizing
  - “I believe that my pain will keep getting worse until I won’t be able to function at all”
- Normal duties/chores at home and/or work
  - “Due to my painful condition I have avoided the following. My full duties and chores at home and/or work”

---

**FACS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>ID #:</th>
<th>Date:</th>
</tr>
</thead>
</table>

**Instructions:** People respond to pain in different ways. We want to find out how you think and feel about your painful medical condition and how it has affected your activity level. Please think about how you have been over the past week, and circle one number between “0” and “5” from the scale below to answer each question.

- **5** = Completely Agree
- **4** = Mostly Agree
- **3** = Slightly Agree
- **2** = Slightly Disagree
- **1** = Mostly Disagree
- **0** = Completely Disagree

**Over the past week, how much do you agree with these statements about your painful medical condition?**

1. I try to avoid activities and movements that make my pain worse. .................................................. 5 4 3 2 1 0
2. I worry about my painful medical condition. ................................................................. 5 4 3 2 1 0
3. I believe that my pain will keep getting worse until I won’t be able to function at all. ................................................................. 5 4 3 2 1 0
4. I am overwhelmed by fear when I think about my painful medical condition. ................................................................. 5 4 3 2 1 0
5. I don’t attempt certain activities because I am fearful that I will injure or re-injure myself. ................................................................. 5 4 3 2 1 0
6. When my pain is really bad, I also have other symptoms such as nausea, difficulty breathing, heart pounding, trembling, and/or diarrhea. ................................................................. 5 4 3 2 1 0
7. It is unfair that I have to live with my painful medical condition. .................................................................
“successful management likely requires both the selection of the appropriate intervention and attention to the psychological distress of the patient.”

“the intervention for patients with LBP and a high level of fear-avoidance beliefs may require a cognitive behavioral approach utilizing graded exposure to the activities creating the fear”
Barriers to Collection

- Not Administered
- Language Barrier
- Learning Impairment
- Incomplete Questionnaires
Plan of Care

• Communication
  – Common language using PROM

• Thorough Evaluation
  – Tracking PROMs

• Interpretation of Scores
  – Incorporating responses into plan of care and progression
Case Example

- **65 y.o. male**
- **Medical Dx:** Lateral epicondylitis, RIGHT elbow M77.11
- **Occupation:** Porter
- **Comorbidities:** Depression/Anxiety, DM, HTN
- **Final MD Evaluation:**
  - Pt Subjective: Near 100% Improvement. Patient states that overall the symptoms have resolved. Range of motion returned to normal. Pain resolved. Patient reports a pain level of (Visual Analog Scale) 0

Last PT TN (6th visit):
  “He verbalized increased symptoms w/ pronation/supination and red putty pull aparts. He was quick to fatigue during strengthening. Patient may benefit from continued PT to address symptoms and to facilitate a full RTW w/o restrictions.”

*No Outcome Measures were administered*
Case Example

- 57 y.o. female
- **Medical Dx:** Contusion of unspecified part of head, subsequent encounter S00.93XD
  Sprain of ligaments of cervical spine, subsequent encounter S13.4XXD
- **Occupation:** Cosmetology Educator
- **FACS Score:** 100/100 Extreme

- **Per MD:** “Objectively patient responded well to PT meeting most of functional goals for return to work. Yet she continued to report high levels of pain with simulated activities that continued thorough out course of PT.”
CPTGs

10) % Completion of Outcome Measures
   (click to see your ranking)
   Legend
   Weight: 7
   Trending Graph

11) % Functional Ability at Discharge
    (click to see your ranking)
    Legend
    Weight: 7
    Trending Graph

<table>
<thead>
<tr>
<th>Location</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston Southwest</td>
<td>90.1%</td>
</tr>
<tr>
<td>Lubbock</td>
<td>90.0%</td>
</tr>
<tr>
<td>San Antonio Northwest</td>
<td>89.5%</td>
</tr>
<tr>
<td>Atlanta Marietta</td>
<td>89.3%</td>
</tr>
<tr>
<td>Houston Med Center</td>
<td>88.5%</td>
</tr>
<tr>
<td>DFW Ft Worth Central</td>
<td>88.5%</td>
</tr>
<tr>
<td>Brownsville</td>
<td>88.3%</td>
</tr>
<tr>
<td>Memphis Airport East</td>
<td>87.3%</td>
</tr>
<tr>
<td>Memphis Airport West</td>
<td>87.3%</td>
</tr>
<tr>
<td>Houston Humble</td>
<td>87.1%</td>
</tr>
<tr>
<td>Bryan</td>
<td>87.1%</td>
</tr>
<tr>
<td>Midland</td>
<td>87.0%</td>
</tr>
<tr>
<td>Chattanooga</td>
<td>83.7%</td>
</tr>
</tbody>
</table>

- MDQ (3): 98.0%
- QuickDASH (5): 91.0%
- LEFS (8): 89.6%
- NDI (2): 96.0%
- QuickDASH (Work Module) (4): 88.0%
- Lubbock: 90.0%
- NDI (2): 100.0%
- LEFS (4): 97.5%
- MDQ (5): 93.0%
- QuickDASH (3): 90.0%
- QuickDASH (Work Module) (3): 79.3%
Looking Forward...

• Additional Outcome Measures
  – Performance-based measures

• Professional Development
  – Continuing education

• Programming
  – More detailed reporting
References

• Beaton D. Measuring the whole or the parts: Validity, reliability, and responsiveness of the disabilities of the arm, shoulder and hand outcome measure in different regions of the upper extremity. Journal of Hand Therapy. 2001. Apr 14(2): 128-142


• Fritz, J., George, S. Identifying Psychosocial Variables in Patients with Acute Work-Related Low Back Pain: The Importance of Fear-Avoidance Beliefs. PHYS THER. 2002; 82:973-983


Your jokes are becoming Unbearable
Q & A

Come On Pick Me!!!! Pick Me !!!!