The Influence of Patient Activation, Pain Self-Efficacy, and Resilience on Patient-Reported Pain and Function in Patients with Hip and Knee Arthritis

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To achieve comprehensive care, we must be patient-centered

**Current State**

- Imaging Centers
- Physical Therapists
- Orthopaedic Surgeons
- Primary Care Physicians
- Hospitals
- Outpatient Physiatrists

**Ideal State**

- Physician
- Associate Provider
- Care Coordinator
- Nutrition
- Mental Health
- Career Stressors
- Family
- Home Environment
- Exercise
- Pain Management

Musculoskeletal Example

*In-office care team
External contributors to health*
What is value?

Value = Outcomes / Cost

Porter and Teisberg, Redefining Health Care: Creating Value-based Competition on Results. 2006
Patient-reported outcomes (PROs)

Pain - Visual Analog Scale (VAS)

How would you rate your pain on average?

No pain

Global Health Satisfaction

Condition-specific PROs

HOOS, JR

Hip Disability and Osteoarthritis Outcomes Score – Joint Replacement

KOOS, JR

Knee Injury and Osteoarthritis Outcomes Score – Joint Replacement
Satisfaction after joint replacement

Are there factors associated with dissatisfaction after TJA?

Satisfaction after TJA\(^1\)

- Not satisfied: 19%
- Satisfied: 81%

\(^1\)Scott et al. *J Bone Joint Surg [Br]*. 2010
Psychosocial health has an impact on outcomes.

Impact of Psychological Distress on Pain and Function Following Knee Arthroplasty

By Elizabeth A. Lingard, BPhty, MPhil, MPH, and Daniel L. Riddle, PT, PhD, FAPTA

The unhappy total knee arthroplasty (TKA) patient: higher WOMAC and lower KSS in depressed patients prior and after TKA

Michael T. Hirschmann • Enrique Testa • Felix Amsler • Niklaus F. Friederich

Preoperative Pain Catastrophizing Predicts Pain Outcome after Knee Arthroplasty

Daniel L. Riddle PT, PhD, FAPTA, James B. Wade PhD, William A. Jiranek MD, Xiangrong Kong PhD
Definitions

**Patient activation**
Knowledge, skills, and confidence to actively manage health

**Pain self-efficacy**
Confidence in performing normal activities in spite of pain

**Resilience**
Ability to bounce back or recover from stress
Previous studies

**Patient activation**

Associated with better pain relief, better symptom relief, and higher patient satisfaction after surgery\(^1\)

<table>
<thead>
<tr>
<th>Postoperative Findings</th>
<th>P-value</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better pain relief</td>
<td>0.048</td>
<td>0.311</td>
</tr>
<tr>
<td>Better symptom relief</td>
<td>0.021</td>
<td>0.272</td>
</tr>
<tr>
<td>Higher patient satisfaction</td>
<td>0.023</td>
<td>0.048</td>
</tr>
</tbody>
</table>

\(^1\)Andrawis et al. *Clin Orthop Relat Res.* 2015
Previous studies

**Pain self-efficacy**

Associated with more pain relief and better symptom relief after carpal tunnel release

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<tr>
<th>Postoperative Findings</th>
<th>r</th>
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<tr>
<td>Better pain relief</td>
<td>-0.28</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Better symptom relief</td>
<td>-0.34</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

1Vranceanu et al. *J Hand Surg.* 2010
Previous studies

**Resilience**
Associated with better function after shoulder replacement\(^1\)

\(^1\)Tokish et al. *J Shoulder Elbow Surg.* 2017
Research questions

To what degree are patient activation, pain self-efficacy, and resilience associated with 1) pain and 2) function in patients with hip and knee arthritis?

How do these measures correlate with one another?
Methods – recruitment

— Patients with hip and/or knee arthritis

Eligible

Non-operative care

Operative care

Not Eligible

Surgery

3 months after surgery
Methods – data & statistical analysis

**Measures**

- Numeric rating scale for pain intensity (0-10)
- HOOS, JR and/or KOOS, JR
- Patient Activation Measure
- Pain Self-Efficacy Questionnaire-2
- Brief Resilience Scale

**Data analysis**

- Pearson correlation
- Multivariable logistic regression
Results – study population

**Study population** \((n = 108)\)
- 69% women
- 84% white, 9.3% black, 6.5% other
- Joint(s) affected
  - 60% knee, 30% hip, 10% both hip and knee
- 45% previous arthroplasty
Results – correlation with pain

Pain self-efficacy

Multivariable Analysis

Regression coefficient = -0.33
95% CI = -0.50 to -0.16
Partial $R^2 = 0.16$
p<0.001
Results – correlation with hip & knee symptoms

HOOS, JR

Patient activation
Pain self-efficacy
Resilience

KOOS, JR

Patient activation
Pain self-efficacy

Bivariate analysis only

PAM: r = 0.23 [95% CI 0.01-0.44], p = 0.042
PSEQ-2: r = 0.24 [95% CI 0.01-0.44], p = 0.040
Results – PAM, PSEQ-2, and BRS correlate with each other

<table>
<thead>
<tr>
<th>Pearson correlation coefficients (r)</th>
<th>PAM</th>
<th>PSEQ-2</th>
<th>BRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAM</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSEQ-2</td>
<td>0.36</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>BRS</td>
<td>0.47</td>
<td>0.33</td>
<td>1.0</td>
</tr>
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</table>

**Bold** indicates statistical significance (p<0.05)
Limitations

Generalizability of results

Study design – cross-sectional

Nearly half of patients underwent previous joint replacement

• Routine follow-up

• Persistent symptoms
Discussion and future directions

Pain self-efficacy is associated with lower pain intensity\(^1\)

Some correlation with knee symptoms but not hip symptoms

Can interventions targeting pain self-efficacy and patient activation improve patient care?

\(^1\)Vranceanu et al. *J Hand Surg Am.* 2010; \(^2\)Menendez ME and Ring D. *Hand Clin.* 2016
The end goal = patient-centered care

We must take a comprehensive approach to help our patients get and stay healthy
Thank you!

Questions?