Advanced Practice Physiotherapist Role in Orthopedic Surgery Not Limited to Experienced Senior Physiotherapists

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INTRODUCTION
Problem

- Problem with **accessibility** to orthopedic care in Canada
- **Orthopedic surgeons (OS)** have to see all patients referred to orthopedics = **limiting factor**
• **Emerging role**

• **Advanced practice physiotherapist (APP)** = physiotherapist taking on a non-traditional role outside of the usual scope of practice\(^1,2\)

• Interdisciplinary collaboration in orthopedics\(^3,4\):
  - New consultations
  - Surgical triage
  - Patient follow-up

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APP Training

- Extensive **clinical experience** in orthopedics (> 5 years)\(^1, \, 2\)
- **Academic degrees** beyond what is required as a physiotherapist\(^2\)
- **Intensive internships** in their work environment\(^2\)
- No **standardized** or **recognized** training

When should we start training **APP**?
During their physiotherapy program?

OBJECTIVES
Objectives

Main Objective
• To evaluate the level of agreement for clinical decisions taken by a graduating physiotherapy student (PS) and orthopedic surgeons (OS) in a collaborative orthopedic outpatient clinic model

  o Diagnosis  
  o Surgical Triage  
  o Management
METHODS
Methods

• Prospective descriptive study
• CIUSS de l’Estrie-CHUS Fleurimont and Hôtel-Dieu
• 7 participating OSs
Methods

• 1 **PS** took on the role of **APP**
  o last year of physiotherapy program (Masters)
  o selected for his capabilities and interests

![Timeline of clinical placement](image)

**Figure 1** – Timeline of clinical placement
Study Population

• Inclusion Criteria
  o Age > 18 years
  o **New** referral for consultation at outpatient clinic
  o **Gonarthrosis, coxarthrosis** or **shoulder** problem
  o **Available** during study period
  o **Apt** to consent
  o Capable of understanding and reading **French** or **English**

• Exclusion Criteria
  o No other parameters
1. **PS evaluated each patient** independently
   - Patient history
   - Physical exam
   - Imaging interpretation

2. **PS recorded his clinical decisions**

3. **PS reviewed with OS**

4. **OS evaluated the patient** and decided the final management

5. **OS recorded his clinical decisions**

1. Clinical diagnosis
2. Surgical triage
3. Management
Statistical Analyses

- SPSS Statistics version 20
- **Raw percent agreement**
  - # concordant elements between evaluators / # total elements evaluated
- **Cohen’s Kappa**
  - Statistical measure for agreement
  - Takes into account agreement by chance

Table – Ladis et Koch Kappa Agreement Scale

<table>
<thead>
<tr>
<th>Kappa Observed</th>
<th>Level of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0-0.20</td>
<td>Slight agreement</td>
</tr>
<tr>
<td>0.21-0.40</td>
<td>Fair agreement</td>
</tr>
<tr>
<td>0.41-0.60</td>
<td>Moderate agreement</td>
</tr>
<tr>
<td>0.61-0.80</td>
<td>Strong agreement</td>
</tr>
<tr>
<td>0.81-1.0</td>
<td>Almost perfect</td>
</tr>
</tbody>
</table>

Landis et Koch (1977)
Sample Size

- Calculation according to method proposed by Flack et al (1988)
- Main variable = Surgical triage
  - Surgical approach
  - Conservative approach
- Bilateral test
- Power : 80%
- Alpha : 5%
- Expected Kappa of 0.70
- Theoretical Kappa of 0.40 (moderate agreement)

75 participants needed

RESULTS
Sociodemographic Data

- **n** = 86 patients
- **Mean Age**: 63.4 years (95% CI: 41.4 – 85.4)
- **Gender**: 
  - Female **n** = 34 (40%)
  - Male **n** = 52 (60%)
- **Affected Joint**: 
  - Knee **n** = 45 (52%)
  - Shoulder **n** = 31 (36%)
  - Hip **n** = 10 (12%)
- **Time of Consultation**: 
  - Weeks 1 and 2 **n** = 37 (43%)
  - Weeks 3 and 4 **n** = 49 (57%)
Table 1. Main clinical diagnoses of participants

<table>
<thead>
<tr>
<th>Clinical diagnosis</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonarthrosis</td>
<td>34</td>
<td>39.5%</td>
</tr>
<tr>
<td>Rotator Cuff Tear</td>
<td>13</td>
<td>15.1%</td>
</tr>
<tr>
<td>Coxarthrosis</td>
<td>9</td>
<td>10.5%</td>
</tr>
<tr>
<td>Glenohumeral Osteoarthritis</td>
<td>5</td>
<td>5.8%</td>
</tr>
<tr>
<td>Unicompartmental Gonarthrosis</td>
<td>5</td>
<td>5.8%</td>
</tr>
<tr>
<td>Shoulder Impingement</td>
<td>4</td>
<td>4.7%</td>
</tr>
<tr>
<td>Acromio-Clavicular Osteoarthritis</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Anterior Shoulder Instability</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Rotator Cuff Arthropathy</td>
<td>3</td>
<td>3.5%</td>
</tr>
<tr>
<td>Meniscal Tear</td>
<td>2</td>
<td>2.3%</td>
</tr>
<tr>
<td>Patellofemoral Osteoarthritis</td>
<td>2</td>
<td>2.3%</td>
</tr>
<tr>
<td>Baker’s Cyst</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Patellofemoral Syndrome</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Trochanteric Bursitis</td>
<td>1</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Raw Agreement = 95.3%
Surgical Triage

Table 3. Inter-examinator agreement table for surgical triage

<table>
<thead>
<tr>
<th>Surgical Triage</th>
<th>Orthopedic Surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conservative</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>58</td>
</tr>
<tr>
<td>Student</td>
<td>1</td>
</tr>
</tbody>
</table>

- Raw agreement = 94.2%
- $\kappa = 0.86$ (95% CI: 0.74 – 0.98)
  - almost perfect agreement
- 5 discordant cases
  - 3/5 cases: encountered early during study (1st and 2nd week)
  - 2/5 cases: more complex cases

68.6% of patients did not require surgery
Surgical Triage x Time

- Time comparison
- Improvement?

Table 4. Inter-examiner agreement table for surgical triage in a) patients seen during 1st half of study and b) patients seen during 2nd half of study

<table>
<thead>
<tr>
<th></th>
<th>Surgical Triage</th>
<th>Orthopedic Surgeon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weeks 1 + 2</td>
<td>Conservative</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>Conservative</td>
<td>28</td>
</tr>
<tr>
<td>Student</td>
<td>Surgical</td>
<td>0</td>
</tr>
<tr>
<td>Raw agreement</td>
<td>91.9%; κ = 0.75</td>
<td>95% CI: 0.49–1.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Triage chirurgical</th>
<th>Orthopedic Surgeon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semaine 3 + 4</td>
<td>Conservative</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>Conservative</td>
<td>30</td>
</tr>
<tr>
<td>Student</td>
<td>Surgical</td>
<td>1</td>
</tr>
<tr>
<td>Raw agreement</td>
<td>95.9%; κ = 0.91</td>
<td>95% CI: 0.79–1.00</td>
</tr>
</tbody>
</table>
Imaging Recommendations

Table 6. Additional imaging recommended by the PS and OSs

<table>
<thead>
<tr>
<th>Recommended Management</th>
<th>Physiotherapy Student</th>
<th>Orthopedic Surgeons</th>
<th>Agreement (κ)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>Imaging</td>
<td>13</td>
<td>15.1%</td>
<td>26</td>
</tr>
<tr>
<td>X-Ray</td>
<td>9</td>
<td>10.5%</td>
<td>19</td>
</tr>
<tr>
<td>CT-Scan</td>
<td>3</td>
<td>3.5%</td>
<td>5</td>
</tr>
<tr>
<td>MRI</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
</tr>
<tr>
<td>Other Imaging*</td>
<td>1</td>
<td>1.2%</td>
<td>1</td>
</tr>
</tbody>
</table>

* Includes bone mineral density (PS) and ultrasound (OS)

- Moderate agreement
- PS recommended imaging less often?¹
  - diagnostic vs. surgical planning
  - not trained to prescribe and interpret imaging

Treatment Recommendations

Table 7. Additional treatments recommended by PS and OS

<table>
<thead>
<tr>
<th>Recommended Management</th>
<th>Physiotherapy Student</th>
<th>Orthopedic Surgeon</th>
<th>Agreement (κ)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>Conservative Treatments</td>
<td>66</td>
<td>76.7%</td>
<td>71</td>
</tr>
<tr>
<td>Advice and Education</td>
<td>43</td>
<td>50.0%</td>
<td>43</td>
</tr>
<tr>
<td>Ajustement to Medication</td>
<td>24</td>
<td>27.9%</td>
<td>20</td>
</tr>
<tr>
<td>Corticosteriod Injection</td>
<td>44</td>
<td>51.2%</td>
<td>40</td>
</tr>
<tr>
<td>Walking Aid/Orthotics</td>
<td>5</td>
<td>5.8%</td>
<td>13</td>
</tr>
<tr>
<td>Exercises</td>
<td>35</td>
<td>40.7%</td>
<td>24</td>
</tr>
<tr>
<td>Physiotherapy Referral</td>
<td>11</td>
<td>12.8%</td>
<td>13</td>
</tr>
</tbody>
</table>

- **Fair agreement**
  - many OS implicated, different preferences

- Study **not constructed** for this data collection
  - does not take into account the complexity of clinical reasoning
CONCLUSION
1. A practice model consisting of a graduating PS in the APP role in an orthopedic outpatient clinic is feasible;

2. The PS’s diagnoses agreed well with those of the OS;

3. The PS was capable of making similar surgical triage recommendations as OS;

4. Clinical experience alone is not a prerequisite for physiotherapists to help increase accessibility to orthopedic care
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ACKNOWLEDGEMENTS

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REFERENCES


• ETMIS (2009). Infirmière pivot et clinique interdisciplinaire musculosquelettique: Le modèle de CSSS d'Arthabaska-et-de-l'Érable. Sherbrooke, ÉTMIS.


QUESTIONS?