Prognostic factors for the two-year course of activity limitations in early osteoarthritis of the hip and/or knee: results from the CHECK cohort

Jasmijn FM Holla, PhD researcher, Reade Centre for Rehabilitation and Rheumatology, Amsterdam

Projectgroup: Martijn PM Steultjens, PhD, Leo D Roorda, MD PhD, Martijn Heymans, PhD, Saskia ten Wolde, MD PhD & Joost Dekker, PhD
Activity limitations refer to difficulties an individual may have in executing activities of daily living (WHO, 2001)

- e.g. walking, stair climbing, dressing, shopping, etc.

Knee and hip osteoarthritis (OA):

- Activity limitations are common (Arden et al. 2006)
- The course of activity limitations is highly variable (Dekker et al. 2009)
Activity limitations in knee and hip osteoarthritis:

- Demographic, physical & psychological factors have been linked to activity limitations (Dekker et al. 2009)
- Most research is directed at established osteoarthritis (OA)
- This study: early OA
Background

Clinical relevance of the present study:
Objective

To predict the two-year course of activity limitations in patients with early knee and/or hip OA

Pragmatic approach: exploration of the predictive value of baseline variables which are routinely measured or easy measurable by physicians at an early stage of the disease
Methods

Study population

- CHECK: Cohort Hip and Cohort Knee
  - 10-year multicentre cohort study in The Netherlands
  - 1002 participants
  - 45-65 years old
  - Pain and stiffness in the knee and/or hip
  - Separate analyses for participants with knee (N = 832) and participants with hip symptoms (N = 588)
Outcome measure

- Activity limitations were measured with the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)

- Dichotomous outcome definition:
  - poor vs. good 2-year outcome on the WOMAC scale for activity limitations (Sharma et al. 2003)
Methods

Selection of prognostic factors

- Based on clinical applicability, expert opinions and the literature
- 52 potential prognostic factors:
  1. Demographics
  2. Symptoms
  3. Comorbidity and interventions
  4. Participation and lifestyle
  5. Physical examination
  6. Laboratory/radiographic examination
  7. Self-report questionnaires

Statistical techniques

- Univariable and multivariable logistic regression analyses
## Baseline characteristics study population (n = 1002)

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Percentage or mean ± SD</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>56 ± 5</td>
</tr>
<tr>
<td>Gender, female</td>
<td>79 %</td>
</tr>
<tr>
<td>BMI</td>
<td>26 ± 4</td>
</tr>
<tr>
<td>Comorbidity count ≥ 1</td>
<td>73%</td>
</tr>
<tr>
<td>Paid employment</td>
<td>51%</td>
</tr>
<tr>
<td>WOMAC-PF T0</td>
<td>16 ± 12</td>
</tr>
<tr>
<td>KL-score knee ≥ 2</td>
<td>7%</td>
</tr>
<tr>
<td>KL-score hip ≥ 2</td>
<td>6%</td>
</tr>
</tbody>
</table>
Results

Two-year course of activity limitations

- On average: no clinically relevant change in activity limitations
- Large between-subject variation
## Results

**Prognostic factors of a poor two-year outcome on activity limitations T0 → T2**

<table>
<thead>
<tr>
<th>Knee stratum (N = 832)</th>
<th>Hip stratum (N = 588)</th>
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<tbody>
<tr>
<td>High Body Mass Index [OR = 1.06 (1.02–1.11)]</td>
<td>Morning stiffness knee [OR = 1.73 (1.20–2.50)]</td>
</tr>
<tr>
<td>High pain score (SF-36) [OR = 0.98 (0.97–1.00)]</td>
<td>Poor health perception [OR = 0.98 (0.97–0.99)]</td>
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<tr>
<td>Bilateral hip pain [OR = 2.76 (1.33–5.74)]</td>
<td>Reduced active hip flexion [OR = 0.98 (0.96–0.99)]</td>
</tr>
<tr>
<td>Non-western ethnicity [OR = 4.03 (1.06–15.83)]</td>
<td>Bilateral hip pain [OR = 2.22 (1.11–4.45)]</td>
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<tr>
<td>Morning stiffness knee [OR = 1.37 (0.99–1.88)]</td>
<td>Comorbidity count ≥ 3 [OR = 1.82 (1.05–3.14)]</td>
</tr>
<tr>
<td>Young age [OR = 0.97 (0.94–1.00)]</td>
<td>Pain coping: transformation [OR = 1.07 (0.98–1.14)]</td>
</tr>
<tr>
<td>Poor health perception [OR = 0.99 (0.98–1.00)]</td>
<td>Few activity limitations T0 [OR = 0.98 (0.97-1.00)]</td>
</tr>
<tr>
<td>Pain coping: distraction [OR = 1.26 (0.98–1.62)]</td>
<td></td>
</tr>
<tr>
<td>Comorbidity count ≥ 3 [OR = 1.53 (0.93–2.53)]</td>
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</tr>
</tbody>
</table>
Conclusions

• Large between-subject variation

• Strongest predictors: BMI, pain, multiple joint pain, morning stiffness knee, poor health perception, reduced hip flexion

• Already at an early stage of knee and hip OA prognostic factors for the course of activity limitations can be identified

• Prediction remains difficult
Conclusions

Longer follow-up time → better prediction possible?
- Next study prediction of the 5-year course of activity limitations

Clinical Relevance:

- Identification of prognostic factors
- Uncertainty physician and patient
- Factors not amenable to modification
- Selection of patients at risk
- Factors amenable to modification
- Intervention
Discussion / Questions

Background | Objective | Methods | Results | Conclusions | Discussion / Questions

Bedankt voor uw aandacht!

Jasmijn Holla (j.holla@reade.nl)

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