Incidence of low back pain related occupational diseases in the Netherlands

Harald S. Miedema ¹,²
Henk F. van der Molen ³
Paul P.F.M. Kuijer ³
Bart W. Koes ²
Alex Burdorf ⁴

Affiliations
1 Research Centre Innovations in Care, Rotterdam university of Applied Sciences
2 Dpt. of General Practice, Erasmus university Medical Center, Rotterdam
3 Neth. Center for Occupational Diseases, Coronel Inst. of Occupational Health, Academic Medical Center / University of Amsterdam
4 Dpt. of Public Health, Erasmus university Medical Center, Rotterdam
Low back pain (LBP) and Work

High prevalence (±45%) and incidence (±25%) 15% of sick leave days in Netherlands Association with workrelated factors in many studies
Workers opinions about workrelatedness

- Mainly caused by my work
- Partly caused by my work
- Not caused by work
- Don’t know

Bron: TNO/CBS (NEA, gemiddelde van 2005-2010)
Problem: no clear assessment tool to support the recognition of LBP as occupational disease
2003: Method for development of practical tool

Systematic literature review

Decision model

Practical tool

2 National Expert Meetings

International Invitational Conference (Amsterdam)

Evaluation of applicability
Workshop report
doi:10.5271/sjweh.877

Assessing the work-relatedness of nonspecific low-back pain
by Kuiper JI, Burdorf A, Frings-Dresen MHW, Kuijer PPFM,
Spreeuwers D, Lötters FJB, Miedema HS
Decision model: from population based attributable fraction to individual attributable risk

\[ \text{Probability of LBP} = \text{apriori prob.} + \text{WR Risk factor 1} + \text{WR Risk factor 2} + \text{etc} \]

**Probability of LBP due to WR factors**

*Original article*
doi:10.5271/sjweh.749

Model for the work-relatedness of low-back pain
by Lötters F, Burdorf A, Kuiper J, Miedema H
## Meta-analysis non-specific LBP

### Risk Factors
*from systematic reviews*

<table>
<thead>
<tr>
<th>Physical risk factors</th>
<th>Risk estimate (pooled Odds Ratio)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Materials Handling (MMT)</td>
<td>- 1.51</td>
</tr>
<tr>
<td>Frequent Bending/Twisting Trunk (FBT)</td>
<td>- 1.68</td>
</tr>
<tr>
<td>Whole Body Vibrations (WBV)</td>
<td>- 1.39</td>
</tr>
<tr>
<td>High Physical WorkLoad</td>
<td>- 1.13 <em>NS</em></td>
</tr>
</tbody>
</table>

### Psychosocial risk factors

| Monotonous Work                                           | - 1.00 *NS*                      |
| Job Dissatisfaction                                       | - 1.30                           |
**Manual materials handling**

- **Score**

  **A1** Does worker handle objects > 15kg during > 10% of working day?
  - Yes, score 7 & go to **B**
  - No, go to **A2**

  **A2** Does worker handle objects > 5kg during > 2x per min for total of > 2 hours per working day, or objects >25 kg >1x per working day?
  - Yes, score 4
  - No, score 0

**Frequent bending / twisting of trunk**

- **Score**

  **B1** Does worker work with trunk bend and/or twisted > 40° for >1/2 hour per working day?
  - Yes, score 7 & go to **C**
  - No, go to **B2**

  **B2** Does worker work with trunk bend and/or twisted > 20° for > 2 hours per working day?
  - Yes, score 5
  - No, score 0

**Whole body vibration**

- **Score**

  **C1** Has worker been exposed to average vibration levels > 1m/s² per working day for >5 yr?
  - Yes, score 5
  - No, go to **C2**

  **C2** Is worker exposed to average vibration levels > 0,5m/s² per working day?
  - Yes, score 3
  - No, score 0

**Total score (0-19)**

12
## Probability of work-relatedness

<table>
<thead>
<tr>
<th>Exposure score</th>
<th>Age (years)</th>
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<tbody>
<tr>
<td></td>
<td>&lt; 35</td>
<td>35 – 45</td>
<td>&gt; 45</td>
<td></td>
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<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>1</td>
<td>7</td>
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<td>6</td>
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<td>18</td>
<td>66</td>
<td>60</td>
<td>56</td>
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</table>

**Example:**
- Age < 35 jr
- Exposure score = 12
- prob. = 55%
Interpretation of results

work-relatedness: probability & other relevant information
(e.g. NIOSH lifting index > 2 or WBV > 1.15 m/s² (Directive 2002/44/EC))

• Case-management
  personal vs workplace interventions

• Occupational disease?
Criteria document

- Report with short background, development and application of practical tool and brief interpretation of possible outcomes:

Now possible to register part of LBP as occupational disease

When LBP is largely due to risk factors occurring at work or in a work environment: probability > 50\%

and/or

NIOSH lifting index > 2 or WBV > 1.15 m/s²

Notification legal obligation for Occupational Physicians in the Netherlands

National registry of occupational diseases
Increase of OD-notifications due to LBP directly after guideline introduction

Number of notified Occupational Diseases due to Low Back Pain in the register of the NCOD

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-specific Low Back Disorder (NLBP)</th>
<th>Specific Low Back Disorder (SLBP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>1.7% / 0.7%</td>
<td>8.9% / 1.7%</td>
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<tr>
<td>2005</td>
<td>2.1% / 8.9%</td>
<td>8.2% / 2.3%</td>
</tr>
<tr>
<td>2006</td>
<td>2.3% / 8.2%</td>
<td>11.4% / 2.3%</td>
</tr>
<tr>
<td>2007</td>
<td>2.6% / 11.4%</td>
<td>13.0% / 2.6%</td>
</tr>
<tr>
<td>2008</td>
<td>1.8% / 9.1%</td>
<td>9.4% / 1.8%</td>
</tr>
<tr>
<td>2009</td>
<td>2.1% / 9.1%</td>
<td>9.4% / 2.1%</td>
</tr>
<tr>
<td>2010</td>
<td>1.9% / 9.1%</td>
<td>9.4% / 1.9%</td>
</tr>
</tbody>
</table>

% of total number of occupational diseases for SLBP / NLBP
Dynamic prospective cohort study within registry

- 5 year dynamic prospective cohort study
- Data for this study 2009-2011
- Participation of ± 180 Occupational Physicians (9.1 %)
- 1,538,756 worker years (± ½ million workers per year)
- 2009-2011: 14.2% of OD-notifications due to LBP from this cohort population
Incidence of occupational diseases due to LBP in the Netherlands

- Overall mean incidence rate:
  19.2 NLBP / 100,000 worker years
  4.9 SLBP / 100,000 worker years

- 91% of notifications male workers incidence rate NLBP men 31.3 / 100,000 worker years

- Incidence raises with age:
  31-40 yrs: 20.1 / 100,000 worker years
  41-50 yrs: 23.3 / 100,000 worker years
  51-60 yrs: 26.9 / 100,000 worker years

- Construction: 150 / 100,000 worker years
- Transport & storage: 97 / 100,000 worker years
Although low back pain (LBP) is one of the largest groups of workrelated disorders and the relationship between workrelated factors and occurrence of LBP has been shown in many studies, there is hardly any literature about the demarcation of a subgroup of LBP that can be qualified as occupational disease.

The incidence of LBP related occupational diseases can be estimated at 25.1 cases per 100,000 worker years (19.2 for non-specific LBP), based upon the assessment of workrelatedness with a practical evidence based tool and using data from the National Registry of Occupational Diseases in the Netherlands.
Conclusion: LBP as Occupational Disease

With the instrument for the assessment of the work-relatedness of non-specific LBP a practical evidence based tool is available for recognition of occupational diseases due to LBP.

With this instrument and the registration guideline it is possible to quantify the part of LBP that has a clear work-related origin that should be addressed by preventive measures.

Due to the high ‘background’ incidence of NLBP the subgroup that has a probability of over 50% of being work-related is relatively small; about 1 in every 1,000 – 1,500 incident cases of NLBP among workers can be qualified as occupational disease.
Discussion

- Implementation of obligation for Occupational Physicians to notify every case of occupational disease far from realised
- Underreporting in the Netherlands of occupational diseases among female workers in general as well as due to LBP
- Not yet equal distribution of notifications of occupational diseases over economic sectors
Thank you for your attention

Harald Miedema
h.s.miedema@hr.nl