Association between Low Back Pain in Activities of Daily Living and Quality of Life —A Population-based Cohort Study—

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Disclosure

The authors have no potential conflicts of interest with this presentation.
Epidemiology of Low Back Pain (LBP)

- The **lifetime prevalence** of low back pain (LBP) is reported to be as high as **84%**.

- The **global point prevalence** of LBP was **7.8%** (577 million people).

The purpose of this study was to examine

1. the influence of the extent of LBP on the activity of daily living (several situations/positions) on quality of life (QoL) issues

2. the factors associated with LBP-related QoL in a medical examination of mountain village inhabitants.
Methods

- A medical examination of inhabitants at least 50 years-old was conducted in Japanese mountain village in 2019.

- 286 inhabitants (79 men, 207 women; mean age: 72.2 years-old) completed an interviewer-administered questionnaire that included the presence of LBP and the evaluation of QoL.

- Evaluation of LBP and health-related QoL
  - The Oswestry Disability Index (ODI)
  - EuroQoL-5D (EQ-5D)
  - EuroQol-visual analog scale (EQ-VAS)
Evaluation of LBP

- To assess the location of LBP and the extent of LBP in several different situations/positions, physical examinations were performed by an orthopedic surgeon.
- LBP intensity was measured on an 11-point pain intensity numerical rating scale (NRS).
- Participants with any of NRS scores more than three were defined as the LBP-positive group.
- The extent of LBP in the following situations/positions was assessed:
  1. morning awakening
  2. walking
  3. standing
  4. half-sitting posture
  5. sitting
  6. lying-down
## Results

### Distribution

- **n=188**
- **LBP-positive**: 34.2%
- **LBP-negative**: 65.8%

### Comparison

<table>
<thead>
<tr>
<th></th>
<th>LBP-negative</th>
<th>LBP-positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>70.9</td>
<td>74.7</td>
<td>72.2</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>51/136</td>
<td>28/70</td>
<td>79/207</td>
</tr>
<tr>
<td><strong>NRS</strong></td>
<td>0.6</td>
<td>4.4</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>ODI (%)</strong></td>
<td>8.2</td>
<td>21.2</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>EQ-5D</strong></td>
<td>0.90</td>
<td>0.78</td>
<td>0.87</td>
</tr>
<tr>
<td><strong>EQ-VAS</strong></td>
<td>76.9</td>
<td>67.6</td>
<td>73.6</td>
</tr>
</tbody>
</table>

*P<0.01*
Evaluation of LBP in several situations/positions

Percentage of LBP-positive group

- Morning awakening: LBP-positive 17%, n=50
- Walking: LBP-positive 17%, n=35
- Standing: LBP-positive 17%, n=49
- Half-sitting posture: LBP-positive 50%, n=143
- Sitting: n=38
- Lying-down: n=18

Extent of LBP

- Morning awakening
- Walking
- Standing
- Half-sitting posture
- Sitting
- Lying-down

P=0.064
# Correlation between LBP in several situations/positions and QoL

## Correlation coefficient

<table>
<thead>
<tr>
<th></th>
<th>NRS score of LBP</th>
<th>Morning awakening</th>
<th>Walking</th>
<th>Standing</th>
<th>Half-sitting posture</th>
<th>Sitting</th>
<th>Lying-down</th>
<th>Maximum of NRS</th>
<th>Total NRS score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ODI</strong></td>
<td>0.512**</td>
<td>0.375**</td>
<td>0.418**</td>
<td>0.448**</td>
<td>0.371**</td>
<td>0.350**</td>
<td>0.328**</td>
<td>0.405**</td>
<td>0.494**</td>
</tr>
<tr>
<td><strong>EQ-5D</strong></td>
<td>-0.327**</td>
<td>-0.238**</td>
<td>-0.277**</td>
<td>-0.304**</td>
<td>-0.305**</td>
<td>-0.252**</td>
<td>-0.288**</td>
<td>-0.318**</td>
<td>-0.357**</td>
</tr>
<tr>
<td><strong>EQ-VAS</strong></td>
<td>-0.280**</td>
<td>-0.314**</td>
<td>-0.207**</td>
<td>-0.233**</td>
<td>-0.264**</td>
<td>-0.228**</td>
<td>-0.211**</td>
<td>-0.273**</td>
<td>-0.319**</td>
</tr>
</tbody>
</table>

**P<0.001**
### Factors associated with QoL scores

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ODI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRS score of LBP</td>
<td>2.098</td>
<td>0.435</td>
<td><strong>0.354</strong></td>
<td>4.819</td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>Extent of LBP in <em>lying-down</em></td>
<td>1.559</td>
<td>0.680</td>
<td><strong>0.127</strong></td>
<td>2.293</td>
<td><strong>0.023</strong></td>
</tr>
<tr>
<td>Extent of LBP in <em>standing</em></td>
<td>0.969</td>
<td>0.476</td>
<td><strong>0.147</strong></td>
<td>2.034</td>
<td><strong>0.043</strong></td>
</tr>
<tr>
<td><strong>EQ-5D</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total NRS score of LBP in several situations/positions</td>
<td>-0.008</td>
<td>0.001</td>
<td><strong>-0.357</strong></td>
<td>-6.428</td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td><strong>EQ-VAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total NRS score of LBP in several situations/positions</td>
<td>-0.655</td>
<td>0.116</td>
<td><strong>-0.319</strong></td>
<td>-5.655</td>
<td><strong>&lt;0.001</strong></td>
</tr>
</tbody>
</table>
Summary points

- This study showed the relationship between the extent of LBP in an activity of daily living and the influence of the location of LBP on QoL in a medical examination of mountain village inhabitants.

- The total NRS score of LBP on daily living activity (several situations/positions) was associated with QoL.

- The results of this population-based study suggest that the clinical evaluation of the extent of LBP in different situations/positions would be of great importance for the treatment of LBP because of their involvement with reduced QoL.