PSYCHOMETRIC COMPARISON OF EQ-5D AND EQ-5D-5L IN STUDENT POPULATION

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By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

**Mobility**
- I have no problems in walking about
- I have some problems in walking about
- I am confined to bed

**Self-Care**
- I have no problems with self-care
- I have some problems washing or dressing myself
- I am unable to wash or dress myself

**Usual Activities** *(e.g. work, study, housework, family or leisure activities)*
- I have no problems with performing my usual activities
- I have some problems with performing my usual activities
- I am unable to perform my usual activities

**Pain/Discomfort**
- I have no pain or discomfort
- I have moderate pain or discomfort
- I have extreme pain or discomfort

**Anxiety/Depression**
- I am not anxious or depressed
- I am moderately anxious or depressed
- I am extremely anxious or depressed

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To help people say how good or bad a health state is, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your health state is today.
By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

### Mobility
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### Self-Care
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EQ-5D-5L language versions (October 2010)

- Arabic (Israel)
- Cebuano (Philippines)
- Danish (Denmark)
- Dutch (Netherlands)
- English (Australia, Canada, India, New Zealand, Singapore, UK (includes Ireland), USA)
- French (Belgium, Canada, France)
- German (Austria, Germany)
- Hebrew (Israel)
- Hindi (India)
- Italian (Italy)
- Japanese (Japan)
- Kannada (India)
- Korean (Korea)
- Malay (Malaysia, Singapore)
- Malayalam (India)
- Polish (Poland)
- Portuguese (Brazil, Portugal)
- Russian (Israel, Russia)
- Spanish (Argentina, Chile, Mexico, Spain, US)
- Swedish (Sweden)
- Tagalog (Philippines)
- Tamil (India)
- Telugu (India)
- Ukrainian (Ukraine, Russia)
Background

- A pilot five-level version of EQ-5D questionnaire was successfully tested in patients with cancer (Pickard et al., Med. Care 2007).

- Ongoing studies, using the official EQ-5D-5L, in moderately or severely disabled populations of patients with:
  - Stroke (Poland),
  - Diabetes (Denmark),
  - Arthritis (Denmark),
  - Depression (England),
  - Liver diseases (Italy),
  - Personality disorders (Netherlands),
  - COPD (Scotland).

- Nothing is known about how EQ-5D-5L performs in relatively young and healthy populations.
Objectives

- To compare a polish version of the three-level EQ-5D questionnaire (3L) with the five level version (5L) in students, as a population without significant health limitations.
Methods

- Survey of all students from the Faculty of Pharmacy, Medical University in Warsaw

- Set of HRQoL questionnaires:
  - EQ-5D-5L
  - SF-36 v. 1
  - EQ-5D-3L

- Additional questions:
  - sex
  - age
  - year of study
  - average grade during the previous year of study
Methods

Analyses

- Percentage of reported problems
- Proportion and size of logical inconsistencies between 3L and 5L
- Ceiling effect
- Discriminatory power
- Convergent validity
Methods

Discriminatory power

Shannon index

- Absolute amount of informativity captured.

\[ H' = - \sum_{i=1}^{L} p_i \log_2 p_i \]

- 3L  \( H'_{\text{max}} = 1.58 \)
- 5L  \( H'_{\text{max}} = 2.32 \)

Shannon Evenness index

- Use of classification system (\( H' \)) given its potential \( H'_{\text{max}} \).

\[ j' = \frac{H'}{H'_{\text{max}}} \]
Methods

Analyses

- Percentage of reported problems
- Proportion and size of logical inconsistencies between 3L and 5L
- Ceiling effect
- Discriminatory power
- Convergent validity
Results

Baseline characteristics of respondents

- N = 443
- Age range: 20–28 years
- Women – 78.6%
- Mean EQ-VAS: 79.2 (SD 15.8)
- Mean EQ-index (Polish TTO value set): 0.93 (SD 0.08)
- Mean SF-6D: 0.71 (SD 0.10)
Results

Frequency of reported problems

EQ-5D-3L

- Mobility: 2%
- Self-Care: 0%
- Usual Activities: 10%
- Pain / Discomfort: 33%
- Anxiety / Depression: 44%
Results

Frequency of reported problems

<table>
<thead>
<tr>
<th>Category</th>
<th>EQ-5D-3L</th>
<th>EQ-5D-5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Self-care</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Usual activities</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Pain / Discomfort</td>
<td>33%</td>
<td>40%</td>
</tr>
<tr>
<td>Anxiety / Depression</td>
<td>57%</td>
<td>44%</td>
</tr>
</tbody>
</table>
Results

Number and size of logical inconsistencies

Mean rate = 3.0%
Results

Ceiling effect

EQ-5D-3L: 47%

EQ-5D-5L: 34%
Results

Comparison of information richness: Absolute informativity (Shannon Index; H’)

<table>
<thead>
<tr>
<th>Category</th>
<th>EQ-5D-3L</th>
<th>EQ-5D-5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>0.14</td>
<td>0.24</td>
</tr>
<tr>
<td>Self-Care</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Usual Activities</td>
<td>0.49</td>
<td>0.78</td>
</tr>
<tr>
<td>Pain / Discomfort</td>
<td>0.93</td>
<td>1.27</td>
</tr>
<tr>
<td>Anxiety / Depression</td>
<td>1.07</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Results

Comparison of information richness: Relative informativity (Shannon Evenness Index; J’)

<table>
<thead>
<tr>
<th></th>
<th>Mobility</th>
<th>Self-Care</th>
<th>Usual Activities</th>
<th>Pain / Discomfort</th>
<th>Anxiety / Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-5D-3L</td>
<td>0.09</td>
<td>0.01</td>
<td>0.31</td>
<td>0.59</td>
<td>0.67</td>
</tr>
<tr>
<td>EQ-5D-5L</td>
<td>0.11</td>
<td>0.01</td>
<td>0.34</td>
<td>0.55</td>
<td>0.73</td>
</tr>
</tbody>
</table>
Results
Convergent validity: correlations between 3L and 5L dimensions

<table>
<thead>
<tr>
<th>EQ-5D-5L</th>
<th>Mobility</th>
<th>Self-Care</th>
<th>Usual Activities</th>
<th>Pain / Discomfort</th>
<th>Anxiety / Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-5D-3L</td>
<td>0.42</td>
<td>*</td>
<td>0.64</td>
<td>0.71</td>
<td>0.64</td>
</tr>
</tbody>
</table>
**Results**

**Convergent validity: correlations between 3L or 5L dimensions and EQ-VAS**

<table>
<thead>
<tr>
<th></th>
<th>Mobility</th>
<th>Self-Care</th>
<th>Usual Activities</th>
<th>Pain / Discomfort</th>
<th>Anxiety / Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-5D-3L</td>
<td>-0.13</td>
<td>-0.06-0.06</td>
<td>-0.27</td>
<td>-0.36-0.37</td>
<td>-0.33</td>
</tr>
<tr>
<td>EQ-5D-5L</td>
<td>-0.17</td>
<td>-0.25</td>
<td>-0.25</td>
<td>-0.37</td>
<td>-0.40</td>
</tr>
</tbody>
</table>
Limitations

- Healthy population
- Unbalanced sample in terms of sex of respondents
- Fixed sequence of questionnaires: 5L and then 3L
Conclusions

- Results obtained in students support introduction of new 5-level version of EQ-5D in young and healthy populations.

- EQ-5D-5L appears to be more favourable than EQ-5D-3L in terms of ceiling effect and informativity.