Criterion validation of the Living with Medicines Questionnaire (LMQ-3)

a patient-reported measure of medicine-related burden

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Medicines Optimisation: Helping patients to make the most of medicines

Good practice guidance for healthcare professionals in England

May 2013

Endorsed by

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Academy of Medical Royal Colleges
ABPI

Improved patient outcomes

Principle 1
Aim to understand the patient’s experience

Principle 2
Evidence based choice of medicines

Principle 3
Ensure medicines use is as safe as possible

Principle 4
Make medicines optimisation part of routine practice

Patient-centred approach

Aligned measurement & monitoring of medicines optimisation
Prescription medicine use experiences

Analysis

We need minimally disruptive medicine

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Research Article

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Issues potentially affecting quality of life arising from long-term medicines use: a qualitative study

Janet Kriska, Charles W. Morecroft, Helen Poole, Philip H. Rowe
The Living with Medicines Questionnaire

• The LMQ is a novel, generic, patient-reported measure of medicine-related burden developed in the UK.³

• LMQ Version 3 (LMQ-3) is a 41-item tool with 8 domains:⁴
  o Lack of effectiveness
  o Side effects
  o Practical difficulties
  o Interferences with day-to day life
  o Communication problems with health care professionals (HCPs)
  o General concerns
  o Cost-burden
  o Lack of autonomy

Overall medicine burden is measured by the LMQ-3 total score.

LMQ - Development & Validation steps to-date

Development
- New item generation by patient interviews, literature review & expert/team discussions

Validity testing
- Face/content validation by cognitive interviews
- Construct validation by factor analyses
- Criterion validation using standard measures of related/distinct concepts – Today’s Talk.

Reliability testing
- Internal consistency
- Test-retest reliability

LMQ-3
Aim of research study

- To investigate the criterion-related validity of the LMQ-3 against standard measures of treatment satisfaction and health-related quality of life (HRQoL).
Methods – Study instruments

The LMQ-3 (burden) was tested alongside two standard questionnaires:

[1] TSQM-II, the Treatment Satisfaction Questionnaire for Medication
It is an 11-item measure of satisfaction with four aspects of medicines use:
  - Effectiveness
  - Side effects
  - Convenience
  - General satisfaction

[2] EQ-5D-5L, the EuroQol five-dimensional questionnaire
It is a 5-item generic measure of aspects of health-related quality of life:
  - Mobility
  - Self-care
  - Pain/discomfort
  - Anxiety/depression
  - Usual activities

All five items are scored from 1 to 5 for ‘no problems’ to extreme problems.
General health status is rated from 0 to 100 for ‘worst’ to ‘best’ imaginable health.
A priori Hypothesised relationships

1. Treatment satisfaction (TSQM-II)
   - A negative relationship between overall medicine burden and aspects of treatment satisfaction.
   - Predicted strength of correlations - moderate-strong (Spearman’s $r$, 0.4 - 0.79);

2. Health-related Quality of Life (EQ-5D-5L)
   - A negative relationship between overall medicine burden and general health status.
   - A positive relationship between overall medicine burden and increasing problems with mobility, self-care, pain/discomfort, anxiety/depression & usual activities.
   - Predicted strength of correlations - weak-moderate (Spearman’s $r$, ≤ 0.59).
Methods- Recruitment

- **Inclusion**: participants were adults (18 years or older), using at least one long-term prescription medicine for any disease/condition, and living in England.

- **Distribution**: Questionnaires were distributed by hand to patients in community pharmacies, general practices and hospital out-patient departments in south-east England.

- **NHS Ethics approval** was obtained and study information was provided to all participants.
Results- response rates & characteristics

Response rates:
• Overall, 422/1306 completed questionnaires were returned (32.3%);
  o 29.4% (n=275/936) outpatient clinics;
  o 36.4% (n=80/220) for GP practices;
  o 44.7% (n=67/150) for community pharmacies

Participant characteristics:
• 52.8% (n=208) were female, mean (SD) age was 56.1 (18.17), and the mean (SD) number of medicines used was 4.6 (3.67).
Results-

Correlations between Medicine burden (LMQ-3) & Treatment satisfaction (TSQM-II)
<table>
<thead>
<tr>
<th>LMQ-3</th>
<th>TSQM-II Satisfaction with Effectiveness</th>
<th>Satisfaction with Side-Effects</th>
<th>Satisfaction with Convenience</th>
<th>General satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspects of medicine burden</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of effectiveness</td>
<td>-0.628</td>
<td>-0.376</td>
<td>-0.424</td>
<td>-0.571</td>
</tr>
<tr>
<td>Side effects</td>
<td>-0.414</td>
<td>-0.597</td>
<td>-0.449</td>
<td>-0.516</td>
</tr>
<tr>
<td>Practical difficulties</td>
<td>-0.367</td>
<td>-0.405</td>
<td>-0.529</td>
<td>-0.426</td>
</tr>
<tr>
<td>Interferences with day-to-day living</td>
<td>-0.360</td>
<td>-0.560</td>
<td>-0.451</td>
<td>-0.430</td>
</tr>
<tr>
<td>Communication problems with HCPs</td>
<td>-0.476</td>
<td>-0.278</td>
<td>-0.360</td>
<td>-0.394</td>
</tr>
<tr>
<td>General concerns</td>
<td>-0.406</td>
<td>-0.469</td>
<td>-0.401</td>
<td>-0.410</td>
</tr>
<tr>
<td>Cost-burden</td>
<td>-0.141</td>
<td>-0.193</td>
<td>-0.157</td>
<td>-0.232</td>
</tr>
<tr>
<td>Lack of autonomy</td>
<td>0.139</td>
<td>0.010</td>
<td>0.057</td>
<td>0.121</td>
</tr>
<tr>
<td>Overall burden</td>
<td>-0.554</td>
<td>-0.623</td>
<td>-0.564</td>
<td>-0.616</td>
</tr>
</tbody>
</table>
Results-

Correlations between Medicine burden & aspects of Health-related Quality of Life
<table>
<thead>
<tr>
<th>EQ-5D-5L HRQoL aspects</th>
<th>LMQ-3 total score (Overall medicine burden)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>0.306</td>
</tr>
<tr>
<td>Self-care</td>
<td>0.284</td>
</tr>
<tr>
<td>Usual activities</td>
<td>0.318</td>
</tr>
<tr>
<td>Pain/discomfort</td>
<td>0.382</td>
</tr>
<tr>
<td>Anxiety/depression</td>
<td>0.436</td>
</tr>
<tr>
<td>General health</td>
<td>-0.383</td>
</tr>
</tbody>
</table>

• Higher medicine burden scores were weakly associated with problems in the five specific HRQoL aspects, and negatively associated with general health status.
Hypothesised relationships- all achieved

1. Treatment satisfaction (TSQM-II)
   - A negative relationship between overall medicine burden and aspects of treatment satisfaction. Predicted strength of correlations, moderate-strong (Spearman’s $r \leq 0.628$).

2. Health-related Quality of Life (EQ-5D-5L)
   - A positive relationship between overall medicine burden and increasing problems with mobility, self-care, pain/discomfort, anxiety/depression, & usual activities.
   - A negative relationship between overall medicine burden and general health status. Predicted strength of correlations - weak-moderate (Spearman’s $r$, 0.284-0.436)

All correlations were below 0.8 suggesting that burden, satisfaction & HRQoL are three distinct concepts, though with some overlap.
Conclusion

• Findings from this project support the validity of the LMQ-3 as a measure of medicine-related burden and suggest it assesses a distinct concept negatively related to treatment satisfaction and health-related quality of life.
Future work on LMQ-3

- **Development**
  - Item generation by patient interviews, literature review & expert/team discussions

- **Validity testing**
  - Face/content validity
  - Construct validity
  - Criterion validity

- **Reliability testing**
  - Internal consistency
  - Test-retest reliability

1. To shorten LMQ-3.
2. Test LMQ-3 in different patient populations.
3. Test sensitivity to change as a vital property.
Acknowledgements

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- Thanks to the EuroQol Research Foundation & the Quintiles Inc® for permitting the use of the EQ-5D-5L & TSQM-II respectively.
- Many thanks to students that helped with data collection.
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Medicines and Your Day-to-Day Life – Living with Medicines Questionnaire

The following statements cover different aspects of using medicines.

Please read each statement carefully and tick the response box that is closest to your personal opinion. Please **tick only one box** for each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral opinion</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find getting my <strong>prescriptions</strong> from the doctor difficult.</td>
<td></td>
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<tr>
<td>I find getting my <strong>medicines</strong> from the pharmacist difficult.</td>
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<tr>
<td>I am <strong>satisfied</strong> with the effectiveness of my medicines.</td>
<td></td>
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<tr>
<td>I am <strong>comfortable</strong> with the times I should take my medicines.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I worry about <strong>paying</strong> for my medicines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For permission to use the LMQ-3®, please contact: [J.Krska@kent.ac.uk](mailto:J.Krska@kent.ac.uk)

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