Gender Differences in Health Related Quality of Life in Multiple Sclerosis Patients with Increasing Disability

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Background
- Previous research has shown that greater disability is correlated with worse health related quality of life (HRQOL) in men, but this association is not always observed in women.
- In fact, when compared to men with high disability levels, women with high disability levels have reported better HRQOL on some patient reported outcome (PRO) measures.
- If these results could be validated, investigations of potential mechanisms would be important.

Objective
- To compare PROs between men and women with MS within low, medium, and high levels of disability.

Methods
- Participants
  - Participants in this analysis were subjects in the Comprehensive Longitudinal Investigation of Multiple Sclerosis at the Brigham and Women’s Hospital (CLIMB) Study at the Partners MS Center, an ongoing prospective observational study.
  - Subjects in the CLIMB study undergo EDSS disability evaluations as part of their annual neurologic exam; participants in this analysis completed PRO measures biennially.

- Measures
  - Medical Outcomes Survey Short Form 36 (SF-36): a generic, health-related quality of life (HRQOL) instrument that provides mental component (MCS) and physical component (PCS) summary scores.
  - Center for Epidemiological Studies Depression Rating Scale (CES-D): focuses on the cognitive and affective aspects of depression.
  - Modified Fatigue Impact Scale (MFIS): measures the physical, cognitive, and psychosocial aspects of fatigue.
  - State-Trait Anxiety Inventory (STAI): assesses current condition of “state anxiety” and more general and longstanding condition of “trait anxiety.”
  - MOS Modified Social Support Survey (MSSS): assesses various dimensions of social support including emotional/informational, tangible, affectionate, and positive social interaction.

- Statistics
  - Multiple linear regression was used to compare the genders in terms of mean PRO scores and to assess the interaction between gender and disability level on mean PRO scores.
  - All analyses controlled for age.

Results
- Men and women within the cohort were similar in terms of demographic and baseline clinical characteristics (p > 0.1 for each comparison).
- No significant difference between the genders was observed for any of the summary scores (p > 0.05), but women generally had scores indicating better functioning.
- Mean scores in both groups showed subjects had limited impact on any of the PROs.
- A significant interaction was found only in the analysis of the MFIS. Men and women had similar fatigue at the low EDSS level, but men had greater fatigue at the high EDSS level.
- For all scales, with the exception of the MSSS, the low EDSS category saw the smallest difference between genders and the high EDSS category saw the largest difference, with women having better HRQOL, although these differences did not reach significance.

Table 1. Cohort demographics and clinical characteristics

<table>
<thead>
<tr>
<th>Age (years, IQR)</th>
<th>Race (n, %)</th>
<th>Ethnicity (n, %)</th>
<th>EDSS (median, (IQR))</th>
<th>Disease duration (years, (SD))</th>
</tr>
</thead>
<tbody>
<tr>
<td>47.59 (11.14)</td>
<td>47.51 (11.16)</td>
<td>47.78 (11.15)</td>
<td>0.8369</td>
<td>0.1397</td>
</tr>
<tr>
<td>671 (322)</td>
<td>677 (324)</td>
<td>677 (324)</td>
<td>1.5 (1.5)</td>
<td>1.5 (1.5)</td>
</tr>
</tbody>
</table>

Table 2. Cohort gender and disability characteristics

<table>
<thead>
<tr>
<th>EDSS level</th>
<th>Men, n (%)</th>
<th>Women, n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;5.5</td>
<td>3 (3.06)</td>
<td>7 (7.22)</td>
<td>0.1376</td>
</tr>
<tr>
<td>4.0-5.5</td>
<td>13 (4.05)</td>
<td>21 (9.56)</td>
<td>0.0539</td>
</tr>
<tr>
<td>&lt;4.0</td>
<td>21 (6.81)</td>
<td>14 (6.19)</td>
<td>0.5906</td>
</tr>
</tbody>
</table>

Table 3. Patient Reported Outcomes

<table>
<thead>
<tr>
<th>SF-36: PCS (mean, (SD))</th>
<th>SF-36: MCS (mean, (SD))</th>
<th>CES-D (mean, (SD))</th>
<th>MSSS (mean, (SD))</th>
<th>STAI-S (mean, (SD))</th>
<th>STAI-T (mean, (SD))</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.24 (9.32)</td>
<td>53.18 (7.20)</td>
<td>46.44 (9.34)</td>
<td>34.01 (9.78)</td>
<td>40.32 (9.34)</td>
<td>42.54 (9.34)</td>
</tr>
</tbody>
</table>

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Figure 1: Gender comparison across three disability levels: MFIS

Figure 2: Gender comparison across three disability levels: SF-36, CES-D, MSSS, STAI

Conclusions
- Based on our sample, men and women were generally similar in terms of PROs.
- Limitations to this analysis included the overall low level of disability (median EDSS=1.5) and the underrepresentation of men (women n=225, men n=97) in the cohort.
- Future work in larger samples will be required to further investigate the impact of gender and disability on HRQOL.

References