Health-Related Quality of Life (HRQoL) of Patients with Chronic Conditions (CC's):
Excess Burden of Comorbid Physical and Mental CC's

Martha Baylis, MSc; Regina Rendas-Baum, MS; Michelle K. White, PhD; Mark Maruish, PhD; Jakob Bjorné, MD PhD

QualityMetric Incorporated, Lincoln, RI

Background

• Chronic conditions are the leading reason for people seeking medical care in the U.S. It is projected that by 2020, 157 million Americans will have one chronic condition (CC) with 81 million (52% of those) having two or more CCs.
• Individuals with one CC experience impaired health-related quality of life (HRQoL), and there is evidence from studies using the SF-36™ Health Survey that comorbid conditions lead to additional burden on HRQoL. Many studies of comorbid conditions focus on the presence of one specific comorbid CC (such as depression) on another single CC (such as diabetes type I). Other studies focus on only physical comorbid CCs.
• Understanding the additional burden imposed by more than one CC has significant implications for the assessment, treatment, and prognosis of the patient's index condition, and overall health and well-being.

Aims

• To examine the HRQoL of subjects with one or more CC (as measured by the SF-36™ Health Survey [SF-36™ Physical Component Summary [PCS] and Mental Component Summary [MCS]] scores) and assess the incremental burden of physical and mental comorbid CCs.
• To examine the impact of one or more physical CC on HRQoL.
• To examine the impact of one or more mental CC on HRQoL.
• To examine the impact of a mental CC in addition to a physical index CC compared to the physical CC only.
• To examine the impact of a physical CC in addition to mental index CC compared to the mental CC only.
• To examine the extent to which the HRQoL decrements of physical or mental comorbid CCs varied by gender and across five disease clusters.

Methods

Study Design

Qualicryptic conducted a study of the U.S. general population of adults aged 18+ who were fluent in English from a panel maintained by Knowledge Networks (http://www.knowledgenetworks.com/ImpanelX/PanelDesign/Summary.html).

A feasibility data was collected via internet between June and October, 2003.

Measures used for these analyses included the SF-36™, demographic information, and a chronic condition checklist.

Subjects were considered to have a major physical CC if they had been told by a doctor or health care professional that they had at least one of the following five disease clusters:
• Cardiovascular: heart attack in past year, congestive heart failure, artery or coronary artery disease; other heart conditions such as problems with heart valves or rhythm of heart beat.
• Gastrointestinal: liver disease such as Hepatitis B or C, stomach disease, such as gastritis or duodenum; irritable bowel syndrome.
• Endocrine: diabetes type I or II.
• Musculoskeletal: rheumatoid arthritis, osteoarthritis, degenerative arthritis, osteoporosis.
• Respiratory: COPD.

Mean PCS and MCS scores for each group were estimated using multivariate regression models with group membership, age, and an interaction term between group and age as the independent variables.

To obtain meaningful comparisons across gender, comorbidity and disease groups, mean PCS and MCS values were estimated by setting age at the mean of the entire sample (51 years).

Figure 1. Decrements in Physical (PCS) and Mental (MCS) Health Due to Morbidity and Comorbidity

Results

Characteristics

• Subjects were mostly white (80.8%), equally male and female (48.3% male), working (53.1%), married or living with a partner (58.4%), and educated (30.2%) high school diploma or GED: 31% some college, 30.5% bachelor’s degree or higher.

• Subjects had an average of 2.6 CCs.

• Of the 3,877 subjects, 1,505 were classified as 'Healthy', 1,152 as 'Physical', 1,152 as 'Mental', and 50 as 'Physical and Mental'.

Physical and mental morbidity

• Relative to 'healthy' subjects, subjects in the 'Physical' group had major decrements in PCS (11.3, CI = [7.1, 15.9], females = [7.5, 8.6, 6.9]) and small decrements in mean MCS (females = 0.7, [2.8, 2.1, -2.8] (Figure 1).

• Relative to 'healthy' subjects, subjects in the 'Mental' group had major decrements in MCS (11.3, CI = [-13.3, -9.3], females = [11.0, [14.7, -0.3]) but no clear decrement in PCS (males = 0.7, [2.8, 2.1, -2.8] females = -0.3, [-2.5, 2.1] (Figure 1).

Physical and mental comorbidity

• Physical morbidity: Relative to the 'Mental' group, subjects in the 'Physical and Mental' group had larger decrements in PCS (males = [10.2, [12.3, -8.1], females = [11.5, [14.6, -8.6]) and noticeable additional decrements in MCS (males = [4.6, [4.2, -1.8] females = -3.9, [-4.6, -2.0] (Figure 1).

• Mental morbidity: Relative to the 'Physical' group, subjects in the 'Physical and Mental' group had large decrements in MCS (males = [13.6, [15.0, -11.8], females = [13.3, [14.3, -11.5]), but also noticeable additional decrements in PCS (males = [5.8, [5.2, -7.2] females = 3.4, [-4.6, 1.2] (Figure 1).

Discussion

• As expected, the presence of a physical CC (absent of mental CC) was primarily associated with decrements in physical health and slight decrements in mental health. Similarly, the presence of a mental CC (absent of physical CC) was associated with decrements in mental health but not physical health.

• However, those with mental CCs showed an unexpected further reduction in mental health in the presence of a physical comorbid CC.

• Similarly, those with physical CCs showed an unexpected further reduction in physical health in the presence of a mental comorbid CC.

Conclusions

• The study used self-reported information with no diagnostic assessment or clinical records.

• Subjects in the 'Healthy' group may have underdiagnosed conditions or conditions not included in our list leading to underestimation of the impact of Physical only and Mental only morbidity.

• Those with many severe CCs (particularly mental health conditions) may not have been able to participate in a panel, and therefore may be underrepresented.

• Our findings underscore the complexity of managing patients with multiple CCs.

• Patients with an index physical CC should be screened for no occurring mental health conditions (including substance abuse or dependence).

References

<table>
<thead>
<tr>
<th>Age, mean (SD)</th>
<th>44.5 (16.2)</th>
<th>56.9 (15.8)</th>
<th>51.4 (14.4)</th>
<th>51.0 (17.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender % male</td>
<td>60+</td>
<td>45-59</td>
<td>30-44</td>
<td>18-29</td>
</tr>
<tr>
<td>Race</td>
<td>American Indian or Alaska Native</td>
<td>Black or African American</td>
<td>White</td>
<td>Missing</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>Other</td>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Education % (N)</td>
<td>Less than high school</td>
<td>High school</td>
<td>Some college</td>
<td>Bachelor's degree or higher</td>
</tr>
<tr>
<td>Current employment status, % (N)</td>
<td>Working</td>
<td>Not working (not looking)</td>
<td>Not working (looking)</td>
<td>Retired</td>
</tr>
<tr>
<td>Marital status, % (N)</td>
<td>Married/Living with partner</td>
<td>Widowed</td>
<td>Separated/Divorced</td>
<td>Never married</td>
</tr>
<tr>
<td>Selected physical conditions, mean (SD)</td>
<td>0.7 (0.2)</td>
<td>1.4 (0.2)</td>
<td>1.3 (0.2)</td>
<td>0.9 (0.2)</td>
</tr>
<tr>
<td>Total number of conditions, mean (SD)</td>
<td>2.6 (1.7)</td>
<td>3.5 (2.0)</td>
<td>3.5 (2.0)</td>
<td>3.5 (2.0)</td>
</tr>
</tbody>
</table>

Table 1: Sample Characteristics by Major Comorbidity Group