



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

Martha Bayliss, MSc; Regina Rendas-Baum, MS; Michelle K. White, PhD; Mark Maruish, PhD; Jakob Bjorner, MD PhD
QualityMetric Incorporated, Lincoln, RI

Background

- Chronic conditions are the leading reason for people seeking medical care in the U.S. [1] 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. [2,3,4,5,6]
- 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™v2 Health Survey [SF-36] Physical Component Summary [PCS] and Mental Component Summary [MCS] scores) and assess the incremental burden of physical and mental comorbid CC's.
 - 1a. Examine the impact of one or more physical CC on HRQoL.
 - 1b. Examine the impact of one or more mental CC on HRQoL.
 - 2a. Examine the impact of a mental CC in addition to a physical index CC compared to the physical CC only.
 - 2b. Examine the impact of a physical CC in addition to mental index CC compared to the mental CC only.
 3. 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

- QualityMetric 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/knpanel/KNPanel-Design-Summary.html>).
- Self-report data were collected via Internet between June and October, 2009.
- Measures used for these analyses included the SF-36v2, 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 18 conditions.
- Subjects were considered to have a major mental CC if they had been told by a doctor or health care professional that they had clinical depression or an alcohol or drug use disorder, or if they reported currently having anxiety.

Statistical Analyses

- Four major morbidity groups were created:
 - Healthy:** no lifetime physical or mental CCs
 - Physical:** reported "yes" to 1+ physical CC but no mental CC
 - Mental:** reported "yes" to 1+ mental CC but no physical CC
 - Physical and Mental:** reported "yes" to 1+ physical and 1+ mental CC
- Each physical CC was further classified into one of the following five disease clusters:
 - Cardiovascular:** heart attack in past year; congestive heart failure; angina or coronary artery disease; other heart conditions such as problems with heart valves or rhythm of heartbeat
 - Gastrointestinal:** liver disease such as Hepatitis B or C; stomach disease, such as gastritis or duodenitis; 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

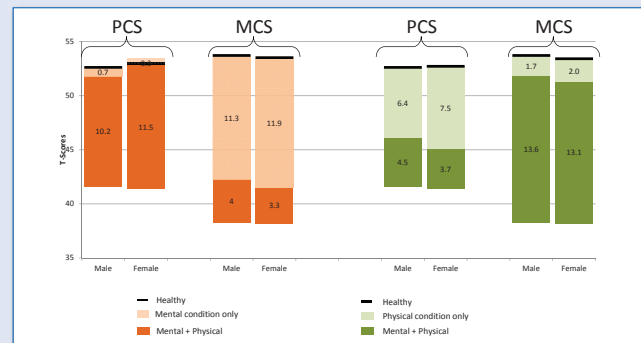


Figure 2. Decrements in Mental Health (MCS) Due to Physical Comorbidity, across Disease Clusters

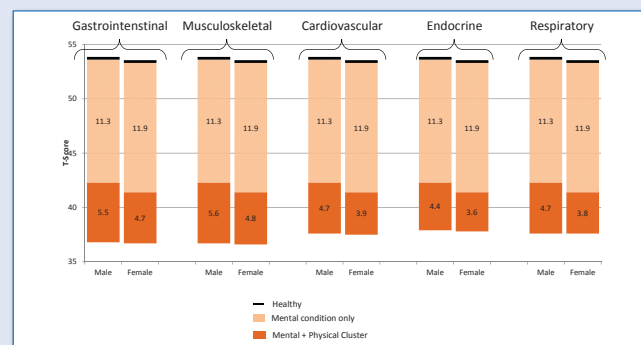
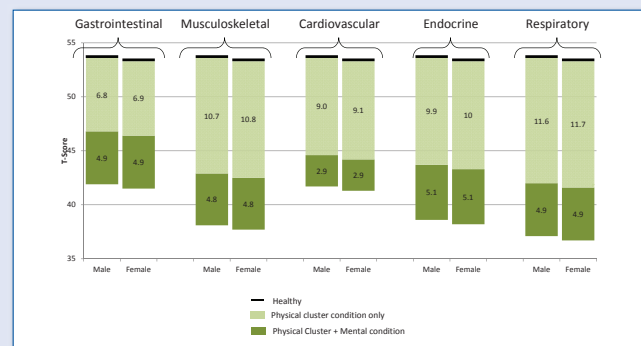


Figure 3. Decrements in Physical Health (PCS) Due to Mental Comorbidity, across Disease Clusters



Results

Characteristics

- Subjects were mostly white (80.8%), equally male and female (49.3% 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'; 1,522 'Physical'; 236 'Mental'; and 614 'Physical and Mental'.

Physical and mental morbidity

- Relative to 'Healthy' subjects, subjects in the 'Physical' group had major decrements in PCS (Δ 95% CI: males = -6.4, [-7.3, -5.4]; females = -7.5, [-8.6, -6.4]) and small decrements in mean MCS (males = -1.7, [-2.7, -0.7]; females = -2.1, [-3.2, -0.9]) (Figure 1).
- Relative to 'Healthy' subjects, subjects in the 'Mental' group had major decrements in MCS (males = -11.3, [-13.3, -9.3]; females = -11.9, [-14.7, -9.0]) but no clear decrement in PCS (males = -0.7, [-2.6, 1.2]; females = -0.3, [-2.5, 3.1]) (Figure 1).

Physical and mental comorbidity

- Physical comorbidity: Relative to the 'Mental' group, subjects in the 'Physical & Mental' group had larger decrements in PCS (males = -10.2, [-12.3, -8.1]; females = -11.5, [-14.3, -8.6]), and noticeable additional decrements in MCS (males = -4.0, [-6.2, -1.8]; females = -3.3, [-6.2, -0.4]) (Figure 1).
- Mental comorbidity: Relative to the 'Physical' group, subjects in the 'Physical & Mental' group had large decrements in MCS (males = -13.6, [-15.0, -12.2]; females = -13.1, [-14.3, -11.9]), but also noticeable additional decrements in PCS (males = -4.5, [-5.9, -3.2]; females = -3.7, [-4.9, -2.5]) (Figure 1).

Physical and mental comorbidity in specific disease clusters

- Physical comorbidity was associated with significant decrements in mental health for all disease cluster, ranging from -3.6 for females in the endocrine cluster ([-6.6, -0.6]) to -5.6 for males in the musculoskeletal cluster ([-7.8, -3.4]). Decrements in MCS were larger for males than for females across the 5 disease clusters (Figure 2).
- Mental comorbidity was associated with significant decrements in PCS, ranging from -2.9 ([-4.7, -1.2]) for females in the cardiovascular cluster to -5.1 ([-6.8, -3.4]) for males in the endocrine cluster. Decrements in PCS were nearly identically across gender for all 5 disease clusters (Figure 3).

Conclusions

- 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.

Discussion

Limitations

- The study used self-reported information with no diagnostic assessment or clinical records.
- Subjects in the 'Healthy' group may have undiagnosed 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.

Implications

- Our findings underscore the complexity of managing patients with multiple CCs.
- Patients with an index physical CC should be screened for co occurring mental health conditions (including substance abuse or dependence).

References

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Table 1. Sample Characteristics by Major Comorbidity Group

	Physical			Mental & Mental		Entire Sample (3,877)
	Healthy (1,505)	Physical (1,522)	Mental (236)	& Mental (614)		
Age, mean (SD)	44.5 (16.2)	58.9 (15.8)	40.0 (14.4)	51.4 (14.5)	51.0 (17.2)	
Age - 4 Categories						
18-29	23.7	6.6	31.8	9.9	15.3	
30-44	29.1	12.6	32.2	22.8	21.8	
45-59	26.0	25.4	25.4	36.0	27.3	
60+	21.2	55.5	10.6	31.3	35.6	
Gender, % male	56.8	47.9	41.9	37.5	49.3	
Race						
Missing	4.1	3.0	2.5	3.3	3.4	
White	78.4	82.8	83.5	80.5	80.8	
Black or African American	10.6	8.9	5.9	8.1	9.3	
American Indian or Alaskan Native	0.5	0.9	0.8	1.6	0.9	
Asian	2.3	1.2	1.7	0.5	1.5	
Other	4.1	3.2	5.5	6.0	4.1	
Education, % (N)						
Less than high school	6.5	9.3	7.6	10.7	8.3	
High school	28.7	32.3	27.5	29.8	30.2	
Some college	30.6	29.7	32.2	34.7	31.0	
Bachelor's degree or higher	34.2	28.8	32.6	24.8	30.5	
Current employment status, %(N)						
Working	66.9	42.8	64.4	40.4	53.1	
Not working (looking)	9.8	3.8	15.3	8.5	7.6	
Retired	13.3	40.1	6.8	19.1	24.3	
Not Working (not looking)	10.0	13.3	13.6	32.1	15.0	
Marital status, % (N)						
Married/Living with partner	60.1	61.2	51.7	49.7	58.4	
Widowed	3.2	10.4	0.8	7.0	6.5	
Separated/Divorced	11.4	14.4	13.1	24.1	14.7	
Never married	25.2	14.0	34.3	19.2	20.4	
Selected physical conditions, mean (SD)	0.0 (0)	1.9 (1.2)	0.0 (0)	2.6 (1.7)	1.2 (1.5)	
Total number of conditions, mean (SD)	0.7 (0.8)	3.5 (2.0)	1.6 (1.2)	5.5 (2.7)	2.6 (2.5)	