The Relationship of Co-Morbidities and Self-Efficacy in Regimen Management

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Objectives

1. To examine the overall impact of the number of co-morbidities on self-efficacy in regimen management and potential mediating factors, across study populations

2. To examine study and/or population differences in the relationship between co-morbidities and self-efficacy
Specific Aim

• To determine the influence of number of diagnoses (co-morbidities) on self-efficacy
Sample

- The sample included the pooled subjects from the HABIT (n=167), 3M (n=91), and Concordance (n=73) studies – each of which focused upon medication adherence (n= 331)

- White 232 (70%)
- Female 210 (63%)
- Married/living with 189 (57%)
- Employed full or part-time 118 (35.5%)
- Age (range = 29-94) $M = 61.79 \pm 11.47$
  - 62.7% <65yr; 37.3% ≥65yr
- Years of Education (range = 8-30yr) $M = 14.55 \pm 2.99$
## Measures

Baseline Common Measures from 3 Studies

<table>
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<tr>
<th>Measure</th>
<th>Range of Scores</th>
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<td>Self-reported diagnosed conditions</td>
<td>1-23</td>
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<td>Self-reported number of medications</td>
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<td>SF36 Physical Component Scale (0-100)</td>
<td>7.7-64.2</td>
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<td>SF36 Mental Component Scale (0-100)</td>
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<td>Beck Depression Inventory II (0-63)</td>
<td>0-42</td>
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<td>Chronic Disease Self-Efficacy Scale (1-10)</td>
<td>1.7-10</td>
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</table>
Average Scores on Measures
N=290

Self-Efficacy 7.6 ± 1.7
# Diagnoses 7.6 ± 3.5
# Medications 7.6 ± 3.7
SF36-physical 42.7 ± 11.3
SF36-mental 47.0 ± 12.6
BDI II 11.7 ± 9.2
Methods

• Data from the relevant variables at baseline were pooled to create one data set
• Pearson Product Moment Correlations between variables
• Regression Analysis
Does the Number of Co-morbidities Affect Self-Efficacy?

YES As the number of conditions increases, self-efficacy decreases.

$R^2 = .099$ But the variance accounted for is small (<1%)

$F = 35.455, \, df = 1,321, \, p = .000$

$\text{Beta} = -.315, \, SE = .029, \, t = -5.954, \, p = .000, \, CI = -.231, -.116$

Number of diagnoses is moderated by age, such that

$> 65$ years old is associated with higher self-efficacy than

$< 65$ years old.

$\text{Beta} = .213, \, SE = .210, \, t = 3.966, \, p = .000, \, CI = .420-1.248$
Does the Number of Medications Affect Self-Efficacy?

YES As the number of medications prescribed increases, self-efficacy decreases.

\[ R^2 = .019 \]
\[ F = 5.6, \; df \; 1,290, \; p=.019 \]
\[ \text{Beta} = -.138, \; \text{SE} = .031, \; t=-2.367, \; p=.019, \; \text{CI} = -.133, -.012 \]

The relationship is moderated by age such that >65 years old is associated with greater self-efficacy than <65 years old.
\[ \text{Beta} = .182, \; \text{SE} = .236, \; t=-3.093, \; p=.002, \; \text{CI} = .266, 1.196 \]
Does the Level of Physical Function (Physical Component Summary SF-36) Affect Self-Efficacy?

YES

As the physical component summary declines, level of self-efficacy decreases.

$R^2 = 0.123$

$F = 44.644, df=1,318, p=.000$  
$Beta = 0.351, SE=0.009, t=6.682, p=.000, CI=0.042,0.076$

The relationship is moderated by age such that >65 years old is associated with higher self-efficacy than <65 years old.  
$Beta = 0.158, SE=0.209, t=2.962, p=.003, CI=0.208,1.032$
Does Mental Health (Mental Component Summary SF-36) Affect Self-Efficacy?

YES   As the mental component summary declines, self-efficacy declines.

\[ R^2 = 0.382 \]
\[ F = 196.904, \text{df}=1,318, p=0.000 \]
\[ \text{Beta} = 0.618, \text{SE}=0.007, t=14.032, p=0.000, \text{CI}=0.080, 0.107 \]

The relationship between mental component summary and self-efficacy is moderated by age, such that >65yo is associated with higher self-efficacy than <65yo,
\[ \text{Beta}=0.002, \text{SE}=0.185, t=0.043, p=0.043, \text{CI}=0.356, 0.372 \]

And is further mediated by the interaction between race and number of co-morbidities.
\[ \text{Beta} = -0.209, \text{SE}=0.043, t=-2.039, p=0.042, \text{CI}=-0.170, -0.003 \]
Is The Mental Component Summary (SF-36) Associated With Depression (BDI)?

YES

The correlation between the MDS-SF36 and the BDI scores, measured concurrently, is $r = -0.736$, $p = 0.000$

Thus, over 54% of the variance in the mental component summary scores can be accounted for by depression.
Does Depression Affect Self-Efficacy?

YES  As depression increases, self-efficacy declines.

$R^2 = .365$

$F=184.184, df=1,321, p=.000$

$\text{Beta}=-.604, \text{SE}=.009, t=-13.571, p=.000, \text{CI}=-.141, -.106$

The relationship between depression and self-efficacy is not moderated or mediated by any other measured variable or interaction term.
Overall Model of the Relationship of Co-morbidities And Self-Efficacy

- Co-morbidities alone: $R^2 = .113$
- Co-morbidities with mediators: $R^2 = .539$
  - Physical component summary $t = 4.855, \ p = .000$
  - Mental component summary $t = 8.054, \ p = .000$
  - Depression $t = -2.524, \ p = -.012$
- Not significant mediators/moderators:
  - Number of medications
  - Race
  - Gender
  - Age
  - Interactions between variables
Implications for Translation of Adherence Interventions

• A significant body of work has demonstrated the relationship between self-efficacy and sustainability of a treatment regimen

• Our studies demonstrate that individuals with multiple co-morbidities, particularly those with poorer physical and/or mental health function including depression, are most likely to be at risk for low self-efficacy for treatment and disease management

• Studies are needed to demonstrate the strategies most likely to be effective in raising efficacy among such persons