Social Support, Depression and Treatment Adherence Among Type 2 Diabetes Patients

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Background

• Treatment nonadherence is common:
  • ½ of adults with diabetes have HbA1c above 7.0%
    Shaya et al., 2010
  • Suboptimal rates of adherence
    • 65% to 85% among type 2 diabetes patients
      Rubin, 2005
    • Only 1/3 of patients are adherent > 90% of days over 1 year
      Donnan et al., 2002

• Nonadherence has been associated with:
  • Hyperglycemia, hypertension, and dyslipidemia
  • Increased risk for hospitalization and mortality
    Ho et al., 2006
Background

• Social support is associated with better adherence
  DiMatteo, 2004

• Depression associated with poorer adherence
  Gonzalez et al., 2008

• Support and depression are negatively related
  Cohen & Wills, 1985

• Interaction predicting adherence has not been examined
Purpose

• To examine:

1) interrelationships among social support, depression, and diabetic medication adherence.

2) evidence for a moderating role of depression in explaining the relationship between social support and diabetic medication adherence.
Methods

• Participants
  – Massachusetts General Hospital and affiliated primary care practices throughout Boston, MA.

• Inclusion Criteria:
  – Type 2 Diabetes
  – Between the ages of 18 and 70
  – Taking oral medication or insulin to treat diabetes

• Exclusion Criteria:
  – Cognitive condition
    • e.g., psychosis, mental retardation, dementia
Measures

• Questionnaires:
  • Social Support Questionnaire-Short Form (SSQSR) (Sarason et al., 1987).
    • Number of social supports and perceived satisfaction with social support
  • Depression Symptom Severity. The Montgomery-Asberg Depression Rating Scale (MADRS) (Montgomery & Asberg, 1979)
  • Medication Adherence: Diabetes Self-Care Behaviors: The Summary of Diabetes Self-Care Activities (SDSCA) (Toobert et al., 2000).
Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>147</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>56 (9.3)</td>
</tr>
<tr>
<td>Male</td>
<td>57%</td>
</tr>
<tr>
<td>White</td>
<td>79%</td>
</tr>
<tr>
<td>Married</td>
<td>56%</td>
</tr>
<tr>
<td>Education (years)</td>
<td>14.49 (3.4)</td>
</tr>
<tr>
<td>HbA1c</td>
<td>8.3 (1.6)</td>
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<tr>
<td># of Diabetes Related Complications</td>
<td>0.5 (0.5)</td>
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<tr>
<td>Prescribed Insulin Therapy</td>
<td>50%</td>
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<tr>
<td># of Medications Prescribed</td>
<td>7.7 (3.8)</td>
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</table>
Means and standard deviations of the depression, social support, and medication adherence.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Depression</td>
<td>21.4</td>
<td>9.9</td>
</tr>
<tr>
<td># of Supports</td>
<td>3.02</td>
<td>2.16</td>
</tr>
<tr>
<td>Support Sat</td>
<td>4.33</td>
<td>1.33</td>
</tr>
<tr>
<td>Medication Adherence</td>
<td>6.10</td>
<td>1.6</td>
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</table>
## Quantitative Analyses

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<tr>
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<th>Depression (r)</th>
<th>p value</th>
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<tbody>
<tr>
<td>Number of Supports</td>
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<td>.058</td>
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<tr>
<td>Support Satisfaction</td>
<td>-.14</td>
<td>.09</td>
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Moderating role of depression in the relationship between number of social supports and medication adherence

<table>
<thead>
<tr>
<th>Variable</th>
<th>R</th>
<th>R²</th>
<th>ΔR²</th>
<th>ΔF</th>
<th>β</th>
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</thead>
<tbody>
<tr>
<td># of Supports</td>
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<td>.003</td>
<td>.003</td>
<td>.43</td>
<td>-.058</td>
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<td>Depression, # of Supports</td>
<td>.19</td>
<td>.035</td>
<td>.03</td>
<td>4.1</td>
<td>-.18</td>
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<td>Depression x # of Supports</td>
<td>.24</td>
<td>.056</td>
<td>.02</td>
<td>2.9</td>
<td>-.15</td>
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</tbody>
</table>

N = 129
Moderating role of depression in the relationship between perceived social support and medication adherence

N = 146

<table>
<thead>
<tr>
<th>Variable</th>
<th>R</th>
<th>R²</th>
<th>ΔR²</th>
<th>ΔF</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Support Sat</td>
<td>.02</td>
<td>.000</td>
<td>.000</td>
<td>.04</td>
<td>.016</td>
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<tr>
<td>2. Depression, Support Sat</td>
<td>.16</td>
<td>.03</td>
<td>.03</td>
<td>3.7</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>.056</td>
</tr>
<tr>
<td>3. Depression x Support Sat</td>
<td>.25</td>
<td>.06</td>
<td>.04</td>
<td>5.6</td>
<td>-.195</td>
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<tr>
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</table>

*p < .05
Post-hoc Probing Analysis

Panel A

- Low Depression (b=0.23, $\beta=0.20$)
- High Depression (b=0.19, $\beta=-0.17$)
Post-hoc Probing Analysis

Panel B

- Low Sat w Support (b=0.0, β=0.002)
- High Sat w Support (b=-0.57, β=-0.36)*
Conclusions

• Significant interaction between depression and social support in relation to adherence
  – No evidence of a synergistic effect
  – Depression was not related to adherence at low levels of support
  – Depression effect was most pronounced at *high* levels of support

• Addressing depression at low levels of social support may have little effect on adherence

• Need to consider the interplay between support and depression in adherence intervention research and clinical care
Questions?
References


