Health Literacy As a Mediator of Racial Disparities in Patient Activation

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Background

• Empowering patients to actively participate in their health care is important for improved health care quality and clinical outcomes

• Patient activation encompasses
  – Effective self-management of symptoms/problems
  – Being involved in treatment and diagnostic choices
  – Selecting providers/provider organizations based on performance or quality
Patient Activation Measure

• Assesses aspects of patient engagement to distinguish passive and proactive behaviors

• Four stages of patient activation
  – Believes the patient role is important
  – Possesses the confidence and knowledge necessary to take action
  – Takes an active role in health care
  – Maintains an active role in personal health care even under stress
Patient Activation Measure

• “I am confident that I can follow through on medical treatments I need to do at home”
  – Strongly agree
  – Agree
  – Disagree
  – Strongly disagree
Health literacy

Figure 2-5. Percentage of adults in each health literacy level, by race/ethnicity: 2003

- **White**
  - Below Basic: 9%
  - Basic: 19%
  - Intermediate: 58%
  - Proficient: 14%

- **Black**
  - Below Basic: 24%
  - Basic: 34%
  - Intermediate: 41%
  - Proficient: 2%

- **Hispanic**
  - Below Basic: 41%
  - Basic: 25%
  - Intermediate: 31%
  - Proficient: 4%

- **Asian/Pacific Islander**
  - Below Basic: 13%
  - Basic: 18%
  - Intermediate: 52%
  - Proficient: 18%

- **American Indian/Alaska Native**
  - Below Basic: 25%
  - Basic: 23%
  - Intermediate: 45%
  - Proficient: 7%

- **Multiracial**
  - Below Basic: 9%
  - Basic: 28%
  - Intermediate: 59%
  - Proficient: 3%

Results from the 2003 National Assessment of Adult Literacy
Racial Disparities and Patient Activation

• Hibbard et al, demonstrated that Whites scored higher than Blacks in national and Medicaid samples
  – No racial differences when looking at socio-environmental and clinical outcomes

• Cunningham et al, found racial differences with patient activation
  – Highest level of activation
    • Whites (45.3%)
    • Blacks (39.5%)
    • Hispanics (24.8%)
Hypothesis

- The association of race and patient activation is mediated by health literacy
Methods

• Study population – Data collected from the Elder Walk Study

• Inclusion criteria
  – Age ≥ 65
  – English-speaking
Methods

• Exclusion criteria
  – Cognitive impairment
  – Significant depressive symptoms
  – Answering “Strongly agree” to all PAM items
    • 25 individuals excluded
Methods

• Variables of interest
  – Demographics
  – Health literacy
    • Short Test of Functional Health Literacy in Adults (S-TOFHLA)
  – Patient Activation Measure (13 item)
    • Low Activation
    • High Activation
    • 240 patients completed the PAM
Methods - Analysis

• Bivariate associations between PAM (grouped into three categories, Stage 1/Stage 2, Stage 3, and Stage 4)
• Baseline characteristics were assessed through the chi-square test and Kruskal-Wallis test
• Four separate linear regression models were fit, with continuous PAM score as the dependent variable and race as the independent variable
• Model fit was summarized with the R² statistic
<table>
<thead>
<tr>
<th>Test of Functional Health Literacy in Adults (TOFHLA)</th>
<th>All (N=225)</th>
<th>Stage 1/Stage 2 (N=48)</th>
<th>Stage 3 (N=113)</th>
<th>Stage 4 (N=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low literacy (1-22)</td>
<td>99 (39.9)</td>
<td>30 (62.5)</td>
<td>46 (40.7)</td>
<td>23 (26.4)</td>
</tr>
<tr>
<td>High literacy (23-36)</td>
<td>149 (60.1)</td>
<td>18 (37.5)</td>
<td>67 (59.3)</td>
<td>64 (73.6)</td>
</tr>
</tbody>
</table>

**Proportions listed as (percentages)**

< 0.01
Table 1 – Baseline Characteristics

|                | All (N=225) | Stage 1/Stage 2 (N=48) | Stage 3 (N=113) | Stage 4 (N=87) |  
|----------------|-------------|------------------------|-----------------|----------------|---
| **Race**       |             |                        |                 |                | 0.02 |
| Black          | 161 (64.9)  | 40 (83.3)              | 74 (65.5)       | 47 (54.0)      |    |
| White          | 71 (28.6)   | 7 (14.6)               | 31 (27.4)       | 33 (37.9)      |    |
| Other          | 16 (6.5)    | 16 (6.5)               | 8 (7.1)         | 7 (8.0)        |    |
| **Education**  |             |                        |                 |                | < 0.01 |
| < High School  | 54 (21.8)   | 16 (33.3)              | 28 (24.8)       | 10 (11.5)      |    |
| High School/GED| 75 (30.2)  | 16 (33.3)              | 38 (33.6)       | 21 (24.1)      |    |
| > High School  | 119 (48.0)  | 16 (33.3)              | 47 (41.6)       | 56 (64.4)      |    |

**Proportions listed as (percentages)**
## Results

Table 2 - PAM scores by Race/Ethnicity

<table>
<thead>
<tr>
<th>Race</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>151</td>
<td>61.53</td>
<td>11.85</td>
</tr>
<tr>
<td>White</td>
<td>59</td>
<td>64.83</td>
<td>11.57</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>66.69</td>
<td>13.87</td>
</tr>
</tbody>
</table>
## Results

### Model 1

<table>
<thead>
<tr>
<th>Race</th>
<th>Estimate</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (ref)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-4.67</td>
<td>(-9.51, 0.17)</td>
<td>0.0296</td>
</tr>
<tr>
<td>Other</td>
<td>1.16</td>
<td>(-7.23, 9.55)</td>
<td></td>
</tr>
<tr>
<td>Model R²</td>
<td></td>
<td>0.06</td>
<td></td>
</tr>
</tbody>
</table>

**Adjusted for clinic location, age, sex, comorbidities, PHQ-9**
Results

Model 2

<table>
<thead>
<tr>
<th>Race</th>
<th>Coefficient (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (ref)</td>
<td></td>
<td>0.1330</td>
</tr>
<tr>
<td>Black</td>
<td>-3.27 (-8.23, 1.68)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.79 (-6.49, 10.07)</td>
<td></td>
</tr>
</tbody>
</table>

**Adjusted for education, clinic location, age, sex, comorbidities, PHQ-9**
## Results

### Model 3

<table>
<thead>
<tr>
<th>Race</th>
<th>95% CI</th>
<th>Model $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (ref)</td>
<td></td>
<td>0.3349</td>
</tr>
<tr>
<td>Black</td>
<td>-2.24 (-7.38, 2.89)</td>
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</tr>
<tr>
<td>Other</td>
<td>1.92 (-6.35, 10.18)</td>
<td></td>
</tr>
<tr>
<td>Model $R^2$</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

**Adjusted for health literacy, clinic location, age, sex, comorbidities, PHQ-9**
### Results

**Model 4**

<table>
<thead>
<tr>
<th>Race</th>
<th>Estimate (95% CI)</th>
<th>Model R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (ref)</td>
<td></td>
<td>0.3919</td>
</tr>
<tr>
<td>Black</td>
<td>-1.88 (-7.06, 3.31)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.17 (-6.06, 10.40)</td>
<td></td>
</tr>
<tr>
<td>Model R²</td>
<td>0.12</td>
<td></td>
</tr>
</tbody>
</table>

**Adjusted for education, health literacy, clinic location, age, sex, comorbidities, PHQ-9**
Conclusions

• Racial differences in patient activation are mediated by health literacy and education
  – Racial disparities dictated by patients with low health literacy and those without post-secondary school instruction
  – Findings remained significant even after controlling for known factors associated with patient activation
• Important considerations when thinking of ways to strengthen physician/patient relationships and increase patient engagement
Limitations

• Sample size
  – Limited to metropolitan Boston area
  – Limited to native English speakers
  – Patients with severe depression and cognitive impairment excluded

• Unclear which domain of health literacy is important in this study
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