Racial/Ethnic Disparities in Nursing Home Rehabilitation Care

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Collaborators

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  - Zhou Yang, Ph.D.

- Texas A&M
  - Christopher Johnson, Ph.D.
Research Objective

- Are there racial/ethnic differences in the case-mix adjusted utilization of speech, occupational, and physical therapies for post-acute nursing home residents with stroke?
Stroke and Rehab Care

- **Stroke**
  - 3rd leading cause of death
  - Most common neurological reason for hospital admission
  - Leading cause of adult disability
  - Primary reason for post-acute medical rehabilitation

- Lack of widely applicable interventions that minimize or reverse the effects of stroke

- Majority of stroke survivors need rehabilitation services that enhance their recovery and minimize their disability
Nursing Homes and Rehab Care

- Rehabilitation services offered through a variety of acute and post-acute settings, such as hospitals, inpatient rehabilitation facilities, nursing homes, and home health agencies
- Nursing homes increasingly expanding their role in the provision of rehabilitation care and post-acute care
Racial/Ethnic Differences in Rehab Care

- Minorities comprised 21% of those diagnosed with stroke in nursing homes in 2002
- Prior research suggests the presence of racial/ethnic disparities in nursing home care
  - Howard et al. (2002) found that blacks were concentrated in facilities with lower ratings of cleanliness/maintenance and lighting
  - Grabowski (2004) found that blacks were disproportionately admitted to nursing homes with a higher number of deficiencies
  - Christian et al. (2003) found that racial/ethnic minorities in nursing homes were less likely to receive medications for secondary prevention of stroke
Medicare and Rehab Care

- Medicare the primary payer for post-acute rehabilitation care in nursing homes
  - Medicare provides 100% coverage of the first 20 days and 80% of the next 80 days of eligible nursing home stays
  - Case-mix adjustment based on the Resource Utilization Group (RUG III) classification of a patient as reflected by the MDS
  - Rehabilitation RUG levels determined by the amount of therapy services. The incremental change in reimbursement between RUG levels is set so that a facility will benefit financially from providing more therapy
Behavioral Model of Health Services Utilization (Andersen, 1998)

- Predisposing
- Enabling
- Need

Utilization of Rehab Services
Data

- 2002 Nursing Home Minimum Data Set (MDS)
  - 14-day Medicare MDS assessments
- 50,238 residents
  - Sample limited to those with a stroke diagnosis, whose care was paid by Medicare Part A
  - Exclude hospital-based facilities
  - Include only residents admitted from hospitals
Dependent Variables

- Therapy utilization for speech, occupational, and physical therapy
  - # of minutes of therapy provided to the resident in the 7-day observation period
Independent Variables

- **Predisposing variables**
  - Race/ethnicity
    - White, Black, Hispanic, Asian, American Indian
  - Age
  - Gender

- **Enabling variables**
  - Support person
  - Desire to be discharged
  - Type of secondary insurance

- **Need variables (Stroke severity)**
  - Cognitive Performance Scale
  - ADL Function Scale
## Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Asian</th>
<th>Am. Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>40,813</td>
<td>6,536</td>
<td>2,028</td>
<td>707</td>
<td>154</td>
</tr>
<tr>
<td>Physical Therapy Minutes</td>
<td>199</td>
<td>168</td>
<td>171</td>
<td>168</td>
<td>210</td>
</tr>
<tr>
<td>Occupational Therapy Minutes</td>
<td>174</td>
<td>152</td>
<td>142</td>
<td>139</td>
<td>158</td>
</tr>
<tr>
<td>Speech Therapy Minutes</td>
<td>58</td>
<td>55</td>
<td>44</td>
<td>48</td>
<td>39</td>
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</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>Less than 65 (%)</td>
<td>4</td>
<td>12</td>
<td>7</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Over 80 (%)</td>
<td>59</td>
<td>39</td>
<td>46</td>
<td>49</td>
<td>36</td>
</tr>
<tr>
<td>Male (%)</td>
<td>37</td>
<td>41</td>
<td>45</td>
<td>46</td>
<td>49</td>
</tr>
<tr>
<td>Medicaid (%)</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Self pay (%)</td>
<td>52</td>
<td>53</td>
<td>49</td>
<td>49</td>
<td>58</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>Desire Discharge (%)</td>
<td>69</td>
<td>51</td>
<td>48</td>
<td>44</td>
<td>64</td>
</tr>
<tr>
<td>Caregiver (%)</td>
<td>67</td>
<td>51</td>
<td>54</td>
<td>54</td>
<td>66</td>
</tr>
<tr>
<td>MDS CPS</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>MDS ADL</td>
<td>17</td>
<td>20</td>
<td>20</td>
<td>21</td>
<td>17</td>
</tr>
</tbody>
</table>
Analysis

- Two-part model of health services utilization of rehabilitation services
  - First part: logistic regression to estimate the probability of any use of services within the population
  - Second part: multivariate regression analysis to predict utilization conditional on whether the enrollee used any rehab therapy services
- Huber/White correction to account for potential correlation among observations from the same facility
- Facility fixed effects
Logistic Regression Results
(Probability of Receiving Any Therapy)

<table>
<thead>
<tr>
<th>RACE</th>
<th>Physical Therapy (O.R.)</th>
<th>Occupational Therapy (O.R.)</th>
<th>Speech Therapy (O.R.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>0.75***</td>
<td>0.88**</td>
<td>0.83***</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.67****</td>
<td>0.71****</td>
<td>0.64***</td>
</tr>
<tr>
<td>Asian</td>
<td>0.70*</td>
<td>0.81</td>
<td>0.75*</td>
</tr>
<tr>
<td>American Indian</td>
<td>0.93</td>
<td>0.61</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Compared to Whites; *p<0.05  **p<0.01  ***p<0.001
Results

- When compared to Whites, Black, Hispanic and Asian nursing home residents with stroke had a lower probability of receiving therapies
  - Blacks
    - 25% lower odds for PT, 17% lower odds for ST, and 12% lower odds for OT
  - Hispanics
    - 36% lower odds for ST, 33% lower odds for PT, and 29% for OT
  - Asians
    - 30% lower odds for PT and 25% for ST
## Predicted Therapy Utilization (Minutes)

<table>
<thead>
<tr>
<th></th>
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<th>American Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Therapy</strong></td>
<td>195.1</td>
<td>186.3*</td>
<td>187.6*</td>
<td>185.1*</td>
<td>201.2*</td>
</tr>
<tr>
<td><strong>Occupational Therapy</strong></td>
<td>170.9</td>
<td>163.9*</td>
<td>163.9*</td>
<td>167.4*</td>
<td>159.2*</td>
</tr>
<tr>
<td><strong>Speech Therapy</strong></td>
<td>58.9</td>
<td>51.7*</td>
<td>43.4*</td>
<td>47.5*</td>
<td>39.7*</td>
</tr>
</tbody>
</table>

P<0.001
Results

- Conditional upon receiving therapy, racial/ethnic minorities with stroke received less therapy minutes than Whites in nursing homes across all therapy types
  - PT differences from 10 minutes for Asian to 7 minutes for Hispanics
  - OT differences from 12 minutes for American Indians to 3 minutes for Asians
  - ST differences from 19 minutes for American Indians to 7 minutes for Blacks

- American Indians received 6 minutes more of PT compared to Whites
Conclusions

- Racial/ethnic differences are observed in the utilization of rehabilitation services of post-acute nursing home residents with stroke even when covered by Medicare. These differences are observed even after accounting for patient and facility characteristics.
- Nursing homes should use address the observed racial/ethnic differences in processes of care as part of their quality improvement efforts.
Conclusions

- Further research is needed to examine the causes for the observed racial/ethnic differences in the use of rehabilitation services
  - Provider bias
  - Cultural differences
  - Selection bias

- Further research is needed to examine the impact of the observed lower utilization of rehabilitation therapies on outcomes of care among racial/ethnic minorities with stroke in nursing homes
  - Walk improvement
  - ADL improvement
Acknowledgments

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