Differences in maintenance vs. acute care between a rural and urban Mississippi Medicare Advantage population with diabetes — A cross-sectional analysis

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Background

- Diabetes is a major health problem in the United States
  - 9.3% prevalence (29.1 million people, all ages) in 2012
  - Prevalence is higher than average in some groups:
    - Mississippi: 11.7% prevalence of diabetes in 2012
    - Persons covered by Medicare: 28% prevalence of diabetes in 2013
  - Type 2 diabetes accounts for 90%-95% of all diagnosed diabetes
  - Poor diabetes management increased risk of long-term complications

Prevalence of diabetes by state for Medicare beneficiaries

Rural vs. urban populations

Research shows disparities in diabetes management, rural vs. urban:
- Poorer access to and quality of clinical care
- Fewer physician office visits

Much of Mississippi is rural

Do rural residents of Mississippi who have diabetes experience healthcare disparities?

*According to Rural-Urban Commuting Area (RUCA) Codes

Study Objective
- To describe receipt of diabetes care screenings and health care resource utilization (HCRU) among rural and urban residents of Mississippi across the continuum of diabetes severity.

Methods

• Cross-sectional study using administrative data from Humana Inc.
  - Medical and pharmacy claims
  - Enrollment data

• Population
  - Medicare Advantage enrollees during 2013
  - Mississippi residents
  - Diagnosed with Type II diabetes

Outcomes and Analysis

• Outcome measures
  - Receipt of diabetes care screenings, compared using Chi-squared tests for categorical variables:
    - Annual check for proteinuria
    - Annual testing of low density lipoprotein (LDL)
    - Annual test of hemoglobin A1c (A1c)
  - Healthcare utilization, compared using Wilcoxon-Mann-Whitney tests for nonparametric data:
    - All-cause physician office visits
    - Emergency room (ER) visits

• Explanatory measures
  - RUCA code to account for geographic location
  - Diabetes Complication Severity Index (DCSI)

Diabetes Complication Severity Index (DCSI)

- Validated tool to measure disease severity according to number and severity of diabetes complications
  - Strongly associated with utilization\(^1,2\)
  - 29% increased risk of hospitalization with each 1-point increase in DCSI
  - Categorized as low, medium, or high

Results

Sample characteristics

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>Low Severity</th>
<th>Medium Severity</th>
<th>High Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>n=3,799</td>
<td>n=2,068</td>
<td>n=171</td>
</tr>
<tr>
<td>Urban</td>
<td>n=5,573</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;65 years</td>
<td>1,112 (29.3)</td>
<td>2,293 (24.8)</td>
<td>14 (24.6)</td>
</tr>
<tr>
<td>&gt;65 years</td>
<td>2,687 (70.7)</td>
<td>568 (75.2)</td>
<td>29 (25.4)</td>
</tr>
<tr>
<td>Female gender, n (%)</td>
<td>3,079 (52.6)</td>
<td>326 (51.3)</td>
<td>24 (42.1)</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td></td>
</tr>
<tr>
<td>Dual Medicaid eligibility, n (%)</td>
<td>677 (17.8)</td>
<td>164 (21.7)</td>
<td>15 (26.3)</td>
</tr>
<tr>
<td>Disabled, n (%)</td>
<td>1,857 (48.9)</td>
<td>384 (50.9)</td>
<td>34 (59.6)</td>
</tr>
<tr>
<td></td>
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<td></td>
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Receipt of diabetes care screenings

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<tr>
<td>Rural</td>
<td>n=3,799</td>
<td>n=1,313</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>n=5,573</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1c Test</td>
<td>74.5%*</td>
<td>74.0%*</td>
<td>74.0%*</td>
</tr>
<tr>
<td>LDL Test</td>
<td>63.5%*</td>
<td>66.6%*</td>
<td>61.4%</td>
</tr>
<tr>
<td>Proteinuria Screening</td>
<td>62.9%</td>
<td>53.5%</td>
<td>61.4%</td>
</tr>
</tbody>
</table>

Healthcare utilization

<table>
<thead>
<tr>
<th>Disease severity</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>7.71</td>
<td>11.42</td>
<td>13.04</td>
</tr>
<tr>
<td>Urban</td>
<td>7.87</td>
<td>12.73</td>
<td>16.64</td>
</tr>
</tbody>
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<td>1.56</td>
<td>2.24</td>
<td>2.14</td>
</tr>
<tr>
<td>Urban</td>
<td>1.59</td>
<td>1.93</td>
<td>1.56</td>
</tr>
</tbody>
</table>

Conclusions

- Our study showed that rural residents covered by Medicare:
  - Were less likely to receive diabetes care screenings
  - Experienced fewer physician office visits and more ER visits
- Variations by diabetes severity:
  - Greater utilization with higher severity
- Possible explanations for rural–urban disparities
  - Variable distance from facilities
  - Characteristics associated with rural residents, such as younger age and greater disability

Future Directions

- Improving the engagement of rural residents diagnosed with diabetes may:
  - Encourage preventive care and slow disease progression
  - Avoid unnecessary utilization of emergency services
- Future research topics:
  - Reasons for rural–urban disparities
  - Variation in rural–urban disparities across severity levels
Limitations

- No adjustments for differences in individual characteristics
- Small high severity subgroup
- May not be generalizable to non-Medicare populations or states other than Mississippi
- Subject to limitations related to claims data (e.g., coding errors, missing data, fixed variables)

For related questions or further discussion please contact:

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www.Humana.com/Research