Mental Health and Service Use in Rural versus Non-rural Areas

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Impact of Medicaid Managed Care Study

• Samples of school-aged children with Medicaid in TN and MS
• Part of a national study on the impact of managed care on Medicaid
• Baseline interview was conducted when the family agreed to participate
• Followed children and their families for a year

Possible Explanations for Observed Differences

• Differences in children’s level of need
• Differences in family help seeking behavior
• Community structural barriers
• Supply side influences

Study Questions

• To what extent are there differences in mental health status between children in rural areas compared to those in non-rural areas?
• Are there significant differences in family and caregiver characteristics such as income, caregiver strain, and caregiver education?
• Are there differences in caregiver-reported barriers to care?
• To what extent are there differences in mental health service use between rural and non-rural youth after controlling for mental health status, family and caregiver characteristics, and barriers to care?

Defining Rural

• A primary question for the field
  • Population density
  • Economy (e.g., agriculture, mining)
  • Proximity to metropolitan area
  • Distance to treatment
Rurality Operationalized

- Focus urbanicity of child’s county of residence
- Percentage of the county population living in Census-defined urban area
- Suspect a curvilinear relationship between service use and rural residence
- Also tested a linear relationship and several dichotomous variables (i.e., 20, 25, 30, 35 percent urban)

Children in the Study

Medicaid enrolled children with emotional or behavioral disorders in
- Tennessee managed care system ($N = 332$)
- Mississippi fee-for-service system ($N = 344$)

Data

- Baseline information on child and family variables collected during caregiver interviews
- Service use variables constructed from Medicaid claims for a 13-month period (one month before to 12 months after the baseline interview)

Child Variables

<table>
<thead>
<tr>
<th>Clinical Status</th>
<th>Tennessee</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean CBCL Externalizing</td>
<td>67.36</td>
<td>67.32</td>
</tr>
<tr>
<td>Mean CBCL Internalizing</td>
<td>64.33</td>
<td>65.10</td>
</tr>
<tr>
<td>Mean Columbia Impairment Score</td>
<td>25.20</td>
<td>24.23</td>
</tr>
</tbody>
</table>

Demographics

- Mean Age: 11.5 years in Tennessee, 11.5 years in Mississippi
- % Male: 68% in Tennessee, 69% in Mississippi
- % African American: 21% in Tennessee, 67% in Mississippi

Caregiver and Family Variables

<table>
<thead>
<tr>
<th>Family Resources and Strengths</th>
<th>Tennessee</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household per Capita Income</td>
<td>$334</td>
<td>$296</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caregiver Resources and Strengths</th>
<th>Tennessee</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment Epidemiological Scale – Depression</td>
<td>19.19</td>
<td>20.10</td>
</tr>
<tr>
<td>% Completed High School</td>
<td>73%</td>
<td>66%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caregiver Strain Questionnaire</th>
<th>Tennessee</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective Strain</td>
<td>2.35</td>
<td>2.08</td>
</tr>
<tr>
<td>Subjective Externalizing</td>
<td>2.00</td>
<td>1.92</td>
</tr>
<tr>
<td>Subjective Internalizing</td>
<td>3.21</td>
<td>3.07</td>
</tr>
</tbody>
</table>

Service Use Variables

13 Month Period

<table>
<thead>
<tr>
<th>Amount of Services Used</th>
<th>Tennessee</th>
<th>Mississippi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Number of Encounters</td>
<td>17</td>
<td>59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Types of Services Used</th>
<th>Used</th>
<th>Mean Days</th>
<th>Used</th>
<th>Mean Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Services</td>
<td>33%</td>
<td>15</td>
<td>68%</td>
<td>22</td>
</tr>
<tr>
<td>Traditional Outpatient</td>
<td>55%</td>
<td>11</td>
<td>76%</td>
<td>18</td>
</tr>
<tr>
<td>Intermediate Outpatient</td>
<td>7%</td>
<td>13</td>
<td>27%</td>
<td>102</td>
</tr>
<tr>
<td>Residential / Inpatient</td>
<td>15%</td>
<td>38</td>
<td>48%</td>
<td>76</td>
</tr>
</tbody>
</table>
Rural vs. Non-rural
Demographics
- Regression analysis controlled for site
- None of the rural variables predicted
  - Family income
  - Caregiver education
  - Race*
* Race predicted by site by rural interaction terms

Rural vs. Non-rural
Child Characteristics
- Regression analysis controlled for family income, caregiver education, race, and site
- None of the rural variables predicted
  - Internalizing symptoms
  - Externalizing symptoms
  - Social functioning

Rural vs. Non-rural
Family Characteristics
- Regression analysis controlling for child symptoms and social functioning, family income, caregiver education, race, and site
- Relationship between percent urban and
  - Objective strain (linear, quad, cubic)
  - Subjective internalized strain (linear, quad, cubic)
  - Caregiver depression (cubic only)

Rural vs. Non-rural
Barriers to Care
- Regression analysis controlling for child symptoms and social functioning, family income, caregiver education, race, and site
- Relationship between percent urban
  - Family perception barriers (linear, quadratic, cubic)
- No relationship found between percent urban and
  - Location and time barriers
  - Provider/payer barriers

Rural vs. Non-rural
Service Use
- Regressed amount of services on child symptoms, social functioning, caregiver strain, family income, caregiver education, race, percent urban, site, and percent urban by site interaction term
- Cubic relationship found between percent urban and amount of services
- Other significant predictors included
  - Site
  - Site by (percent urban)^3 interaction term
  - Child externalizing problems (+)
  - Caregiver education (+)

Percent Urban by Amount of Service Use

Percent Urban Declines
Conclusions

- No differences in mental health need found among children living in more and less rural counties
- Curvilinear relationship between rural residence and some caregiver and system variables may provide the best estimate
- Relationship between rural residence and service use also appears to be curvilinear
- Differences in the relationship between service use and rural residence appear to exist across service systems
- That this was a Medicaid-enrolled population limits the generalizability of findings

Future Research

- Analyses need to be repeated in multiple systems and with different populations
- Alternative definitions of rural residence need to be applied
- Closer consideration of supply side influences on service use in rural and non-rural areas is needed