What Predicts Hospital Admission for People Living with Dementia?

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Outline
- Introduction
- EACHD program
- Literature review
- Aim of this study
- Method
- Findings & Discussion
- Limitations
- Implications

Introduction
- People living with dementia prefer to live at home, however
- High risk of hospital admissions, nursing home admissions, and death
- Burden on health system resources and individuals

Extended Aged Care At Home Dementia (EACHD)
- In operation since 2006
- A publicly funded community-based case management program
- An alternative to high residential care
- Providing nursing care, personal care, home help, allied health, etc.

Cont’d
- Targeting community-dwelling older people experiencing behavioral and psychological symptoms associated with dementia (BPSD)
- At 30 June 2012, 4,180 EACHD places in operation & 3,383 care recipients

Literature review
- Many studies focus on predictors of nursing home admissions
- Some studies explore predictors of mortality
- Predictors: socio-demographic characteristics, functioning, stress factors, health status etc.
- Consistent predictors: functioning disabilities & dementia
Scant literature explores risk factors for hospital admissions among community-dwelling frail older adults living with dementia.

No literature examines these risk factors at different times.

This study aimed to find out:

- Risk factors for hospitalization in the short term (six & nine months) and long term (16 months) in a sample of community-dwelling frail older people using EACHD packages.

Method

Data source

- The EACHD National Evaluation Project
  - A sub-project of the National Evaluation of the Dementia Initiative
  - A time-series study starting from October 2007 until January 2009
  - Sample size: 354 EACHD clients

Data used in this study

- Sample size: 284 clients
  - Of the original study sample (354 EACHD clients), 70 clients were excluded for analysis
    - Sixty-five clients only having baseline assessment
    - Five clients having baseline and discharge assessments occurring at the same date
  - Event (dependent variable): hospitalization

Each client information was collected from case managers, including:

- Client characteristics at baseline
- Client functioning, BPSD, disease diagnoses and service use, as well as carer stress at baseline, 3-month intervals and discharge
- Reasons for discharge: permanent nursing home admission, hospitalization, death and others.
Calculation of time to event

- 16-month study period: the number of days from the study entry to hospitalization (last observation for censored cases)
- 6- and 9-month study periods: the number of days from the study entry to hospitalization (last observation or at the end of the study period for censored cases)

Independent variables

- Baseline client variables (during the past 3 months)
  - Socio-demographical characteristics
  - Functioning (severity): GDS, ADLs & IADLs
  - Behavioral problem (BPSD) (severity)
  - Service use (yes or no): inpatient hospital admissions, community care, etc.
  - Medical diagnoses (yes or no): heart diseases, falls etc.
- Baseline carer stress level (during the past 3 months)

Data analysis

- Cox proportional hazards regression (backward step-wise)
- Two steps: bivariate & multivariate regression

Results

Socio-demographical characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>%</th>
<th>Variables</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>Carer relationships</td>
<td></td>
</tr>
<tr>
<td>0-64</td>
<td>6.7</td>
<td>Relatives/friends</td>
<td>17.6</td>
</tr>
<tr>
<td>65-84</td>
<td>52.1</td>
<td>Partner/spouse</td>
<td>42.6</td>
</tr>
<tr>
<td>85 and over</td>
<td>41.2</td>
<td>Son/daughter/in-law</td>
<td>39.8</td>
</tr>
<tr>
<td>Female gender</td>
<td>64.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government pension</td>
<td>83.3</td>
<td>No carer</td>
<td>10.6</td>
</tr>
<tr>
<td>Living alone</td>
<td>29.6</td>
<td>Co-resident carer</td>
<td>63.1</td>
</tr>
<tr>
<td>Australian-born</td>
<td>61.6</td>
<td>Non-resident carer</td>
<td>24.3</td>
</tr>
<tr>
<td>Speaking English</td>
<td>85.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Service use & health status (past 3 months)

<table>
<thead>
<tr>
<th>Service use</th>
<th>%</th>
<th>Health status</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED visits</td>
<td>2.1</td>
<td>ADL score</td>
<td>58.6(0-100)</td>
<td>24.9</td>
</tr>
<tr>
<td>Inpatient hospital</td>
<td>30.6</td>
<td>IADL score</td>
<td>3.5(0-9)</td>
<td>2.3</td>
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<tr>
<td>Home nursing</td>
<td>12.3</td>
<td>GDS score</td>
<td>3.0(1-7)</td>
<td>1.0</td>
</tr>
<tr>
<td>Specialist care</td>
<td>28.2</td>
<td>BPSD score</td>
<td>27.2(0-107)</td>
<td>20.7</td>
</tr>
<tr>
<td>Community care</td>
<td>78.5</td>
<td>Carer stress score</td>
<td>10.40(0-55)</td>
<td>9.8</td>
</tr>
<tr>
<td>CM support (Hs)</td>
<td>1.8</td>
<td>1.8(0-30)</td>
<td>3.0</td>
<td></td>
</tr>
</tbody>
</table>
Medical diagnoses (past 3 months)

<table>
<thead>
<tr>
<th>Health conditions</th>
<th>%</th>
<th>Health conditions</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>95.5</td>
<td>Incontinence</td>
<td>12.7</td>
</tr>
<tr>
<td>Hypertension</td>
<td>37.7</td>
<td>Hearing impairment</td>
<td>12.0</td>
</tr>
<tr>
<td>Arthritis</td>
<td>23.4</td>
<td>Osteoporosis</td>
<td>10.6</td>
</tr>
<tr>
<td>Heart disease</td>
<td>22.2</td>
<td>Stroke</td>
<td>9.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>17.3</td>
<td>Parkinson diagnosis</td>
<td>8.8</td>
</tr>
<tr>
<td>Vision impairment</td>
<td>16.5</td>
<td>Falls</td>
<td>8.8</td>
</tr>
<tr>
<td>Lung disease</td>
<td>13.7</td>
<td>Digestion system</td>
<td>8.5</td>
</tr>
<tr>
<td>Depression</td>
<td>13.0</td>
<td></td>
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Predictors (bivariate analyses)

- 6-month: GDS (p=0.002), ADL (p=0.003), inpatient hospital care (p=0.001)
- 9-month: GDS (p=0.000), ADL (p=0.000), inpatient care (p=0.001)
- 16-month: GDS (p=0.000), ADL (p=0.000), IADL (p=0.044), inpatient care (p=0.000), carer relationship (p=0.047)

Predictors (multivariate regression)

- Previous hospital admissions: predicting 6-month (HR=3.12; P=0.001), 9-month (HR=2.80; P=0.001) & 16-month (HR=2.93; P=0.001) hospitalization
- Worse cognitive condition: predicting 6-month (HR=0.58; P=0.003), 9-month (HR=0.57; P=0.001) & 16-month (HR=0.65; P=0.028) hospitalization
- No previous community care use: predicting 6-month (HR=0.42; P=0.019) hospitalization

Summary

These results tested the assumption of the proportional hazard model that previous hospital admissions & worse cognitive status had consistent significant independent effects on time to hospitalization over time

Discussion

- Studies have reported that
- Previous hospital admissions predict subsequent hospital admission
- Prior use (using services/using more services/using services more frequently) of community care is significantly associated with lower risk of some adverse health events, e.g., death

Cont’d

- Cognitive impairment is a risk factor for some adverse health events, e.g., permanent nursing home admission and death
- The effects of significant factors (e.g., previous community care use) are affected by the length of the study period
Limitations

- Short study period (16 months)
- Small sample size (including numbers of events and participants)
- Sample representativeness issue
- Unable to examine the effects of factors related to carers, case managers, system resources etc.
- Unable to examine the effects of time-dependent variables, such as ADLs and IADLs
- Worth exploring the effects of the severity of medical conditions

Implication for practice

- In their practice, case managers may be aware that
- Previous hospital admissions and worse cognitive status are consistent risk factors for client hospitalization in the short and long term
- Previous use of community care can prevent client hospitalization in the short term

References


Thank you

Any comments?

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