Sex Differences in Profiles & Outcomes of Patients with Traumatic Brain Injury in an Inpatient Rehabilitation Sample

Dr. Angela Colantonio
Vincy Chan
Tatyana Mollayeva
Traumatic brain injury (TBI):
• Damage to the brain after birth by traumatic events
• Leading cause of death & disability worldwide
• Cost of TBI is considerable, indirect costs expected to increase significantly
Background & Significance

Sex differences in TBI population outcomes:

- Women more likely than men to be discharged to care facilities
- Association between TBI & depression, substance use, anxiety
- Comorbidities influence discharge destination
Background & Significance

However

- Paucity of research on TBI outcomes that consider sex differences
- Scarce population based information on the range of health conditions that affect patients with TBI in inpatient rehabilitation
Specific Aims

- Examine *sex differences in profiles and outcomes of patients with TBI* in a population based province wide rehabilitation sample
- Explore the range of *medical comorbidities* in this population
Methods

Sample:
• All patients in inpatient rehabilitation with a TBI diagnostic code between fiscal year 2004/05 and 2007/08
• Only the first inpatient rehabilitation admission for each patient was considered

Data Sources:
• National Rehabilitation Reporting System (NRS)
• Mandatory reporting in Ontario = population based
National Rehabilitation Reporting System

- Clinical outcomes, characteristics of rehabilitation activities
- Data from every inpatient rehabilitation bed within acute care or free standing rehab hospitals in Ontario, Canada
- Cases grouped by Rehabilitation Client Groupings (RCG)
- Inclusion in study: RCG 2.2, 2.21, 2.22 (TBI)
Methods

Key variables:

• Demographic:
  • Age, sex, language, geographic location of residence

• Clinical:
  • Comorbid health conditions
  • Length of stay
  • Total function score, cognitive and motor rating from the FIM™ Instrument
Results by Age and Sex (N=1,791)
Average Length of Stay

Days

Age Groups

<65 Years

65+ Years

Males

Females
FIM™ Scores & Ratings: Admission

Average FIM™ Score & Ratings

- Total Function Score
- Motor Rating
- Cognitive Rating

Male
Female

<table>
<thead>
<tr>
<th>Score</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Function Score</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Motor Rating</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Cognitive Rating</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>
FIM™ Scores & Ratings: Discharge

Average FIM™ Score & Rating

- Total Function Score
- Motor Rating
- Cognitive Rating

Male | Female
--- | ---
100 | 100
80 | 80
40 | 40
1+ Comorbid Health Conditions: Admission

Age Groups

- <65 Years
- 65+ Years

Males

Females
1+ Comorbid Health Conditions: Discharge

- <65 Years
- 65+ Years

Males

Females
Summary

• More females had at least one comorbid health condition at admission and at discharge

• Types of comorbid health conditions differed by sex and age groups
Limitations

- Extensive validation not done on all variables
- Not all desired variables available
- Sample limited to patients coded as having a TBI in the NRS
Implications

Important to understand the influence of comorbidities on rehabilitation outcomes by sex:

- **Awareness** of comorbidities can help treat and incorporate them into the rehabilitation program and to prevent missed/delayed diagnoses
- Inpatient rehabilitation may present an opportunity to prevent re-injury
Implications

Understanding the interface between comorbid conditions and TBI by sex and age can:

• Inform planning of rehabilitation services
• Prepare community support and services for the TBI population after inpatient rehabilitation
Acknowledgements

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For more information:
www.abiresearch.utoronto.ca

Vincy Chan: vincy.chan@uhn.ca