Outcomes in Socioeconomically Disadvantaged Patients with Spinal Cord Injury: A Systematic Review

Ahmed Jorge, Ph.D. and Nitin Agarwal, M.D.
University of Pittsburgh

Poster Number: 42227
Disclosures

• No disclosures
Introduction

• Individuals with a spinal cord injury (SCI) in socioeconomically disadvantaged settings (e.g. rural or low income) have different outcomes than their counterparts; however, a contemporary literature review identifying and measuring these outcomes has not been published.

• Our aim was to perform a systematic review and identify these parameters in hopes of providing tangible targets for future clinical research efforts.
Methods

• A systematic review was performed to include English articles published from 2007 to 2017 in PubMed/Medline, EMBASE, and Cochrane databases.

• Studies evaluating any outcomes related to patients with a SCI and in a low resource setting were included.

• We followed a PRISMA flowchart: from 403 articles found, 31 underwent complete review and 26 were chosen for this review.

• Exclusion criteria included any case studies, studies in developing countries, studies not separating other types of neurological disorders, studies not assessing the effects of a low resource setting and outcomes, and those studying the causes of spinal cord injury in this type of setting.
Our PRISM Flowchart

- PubMed 2007-2017: 107 Citation(s)
- EMBASE 2007-2017: 152 Citation(s)
- SCOPUS 2007-2017: 144 Citation(s)

112 Non-Duplicate Citations Screened

- Exclusion Criteria Applied: 81 Articles Excluded After Title/Abstract Screen

31 Articles Retrieved

- Exclusion Criteria Applied: 4 Articles Excluded After Full Text Screen
- 1 Article Excluded During Data Extraction

26 Articles Included
Results

• In SCI patients, lower income is a predictor of mortality (OR = 2.1, CI=1.7-2.6, p=0.0002).

• Moreover, secondary outcomes, such as pain intensities (OR=3.32, CI=2.21-4.49, p<0.001), emergency room visits (11% more likely, probit estimate=-0.06, p=0.006), and pressure ulcer formation (OR=2.1, CI=1.5-3.0, p<0.001) are significantly higher in lower income brackets.

• Rurality is also a factor and significantly associated with increased emergency room visits (OR=1.5, CI=1.1-2.1, p=0.01) and lower outpatient service utilization (IRR=0.57, CI 0.35-0.93, p<0.05).
## Sample of Table 1

### Table 1. Income and Spinal Cord Injury Outcomes

<table>
<thead>
<tr>
<th>Reference and Year</th>
<th>Type</th>
<th>Period Covered</th>
<th>Number of subjects</th>
<th>Main Finding(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armet et al. 2015</td>
<td>Patient Survey</td>
<td>2005-2009</td>
<td>1549 patients (50% of patients with a SCI in Switzerland)</td>
<td>Patients with a SCI in the middle and high income tertiles are more prone to use a handbike versus the low income tertile (24%, 29% versus 16%). The overall impatient mortality rate was 2.6%. The impatient mortality in the urban setting had an OR = 0.5 (CI 0.2-0.8, p&lt;0.01) when compared to the rural setting. Strangely, the impatient mortality for patients in the $40k to $60k income level range had an OR = 3.4 (CI 1.8 – 6.6, p&lt;0.01) when compared to those patients with an income of &lt;$40k. Both high income and low income individuals experienced a global satisfaction decline over the years. Disparities in social isolation and income resources at the onset of injury remained unchanged over time. Nonetheless, initial vocational disparities among these two groups disappeared over time.</td>
</tr>
<tr>
<td>Brodell et al. 2014</td>
<td>retrospective Cohort study</td>
<td>2003-2010</td>
<td>16,213 patients (only patients with central cord syndrome)</td>
<td></td>
</tr>
<tr>
<td>Cao et al. 2014</td>
<td>Cohort Study Living with SCI</td>
<td>1998 - 2008</td>
<td>434 across 3 hospitals</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

• We have showed that individuals in a low resource setting whom have suffered a SCI have significantly different outcomes than their counterparts. These specific outcomes are promising targets for future research efforts that wish to focus on improving health conditions among this population.
Summary Points

• Up to date, there has not been a quantitative systematic review of socioeconomic factors affecting SCI outcomes.

• We have provided an initial review with tangible and significant factors in hopes of taking them into account in future research.