SCOPE OF WORK

Quantifying the Impact of SCI Multi-Morbidities: A Measure of SCI Frailty

17 Sept 2020

1. Introduction/Background

Individuals with spinal cord injury (SCI) have multiple secondary health conditions (including as a consequence of the injury as well as pre-existing co-morbidities). Individuals with SCI are 2.7 more likely to have contact with physicians and 2.6 more likely to be re-hospitalized compared to the general population (DeJong et al., 1991; Guilcher et al., 2012; Dryden et al., 2004).

Work on this project previously, and as part of the SCI Community Survey (Noonan et al., 2014), identified a list of 30 health conditions as being strong predictors of patient's outcomes in the traumatic SCI (tSCI) population. Health care utilization (HCU), quality of life and life satisfaction were the main outcomes examined and this index was called the Multi-Morbidity Index (MMI). Currently, Praxis is working to expand this study to the non-traumatic SCI (ntSCI) population. (The framework used to analyse the data is presented on page 3 of the article.)

2. Economics Research Questions

What is the value of SCI frailty in the SCI population? NB: SCI frailty is defined as MMI score.

Questions to be addressed internally/by Praxis:

a) Can SCI frailty predict health care utilization?
b) Can SCI frailty predict health status (physical and mental components)?
c) Can SCI frailty predict quality of life?
d) Can SCI frailty predict life satisfaction?

Questions to be addressed by contracted health economics services (potentially with internal Praxis analysis support, if needed):

e) If SCI frailty is related to outcomes, what are the cost savings/benefits?
f) How might cost savings be different in tSCI in comparison with ntSCI populations?

3. Population, Setting, Intervention and Control/Comparison Group

A. Sample

The sample for this analysis comes from two sources:

Traumatic SCI - The 1,137 survey participants were divided into 3 groups: group 1 (n = 292), group 2 (n = 194), and group 3 (n = 650). Group 1 had the greatest number of secondary health conditions (15.14 ± 3.86) followed by group 2 (13.60 ± 4.00) and group 3 (12.00 ± 4.16) (P < .05). Participants were grouped using the 7-item HCU questionnaire (group 1 did not receive needed care and/or rehospitalized; group 2 received needed care but rehospitalized; group 3 received needed care and not rehospitalized).

Non-traumatic SCI – analysis on the 412 non-traumatic survey participants is currently underway.

B. Data Sources

Praxis can provide aggregated analysis results and run project-specific requested analyses. If direct access to the data is needed then additional approvals will be required.

The SCI Community Survey data covers:
- personal, injury, and environmental factors;
- multi-morbidity (presence/absence of 30 comorbidities/complications);
- health status (Short Form-12); and
- quality of life measures (Life Satisfaction-11 first question and single-item quality of life measure)

Associations among these variables were assessed using multivariate analysis.

C. Costs Avoided

Potential costs avoided include:
- Costs of rehospitalization e.g., CIHI cost per hospital stay (Canada/most recent)
- Costs of (other) care received – in hospital, outside hospital, by province, by HCP
- Costs associated with a change in:
    - Health status (SF-12 physical or mental component score)
    - Quality of life (1-question)
    - Life satisfaction (LiSAT-11)

4. Outcomes

Earlier work found that multi-morbidity and HCU were significant risk factors for having a lower SF-12 Mental ($P < .001$) and Physical Component Score ($P < .001$). They in turn were associated with participants reporting a lower quality of life ($P < .001$, for both questions).

Potential outcomes from this analysis could include costs avoided for changes in:
- Health status (physical or mental component scores)
- Health care utilization (rehospitalizations; other care)
- Quality-adjusted life years (QALY)
- Life satisfaction (LiSAT-11 index variable or first question only)

5. Time Frame and Budget

Study activities are planned in 2021/22. The table below shows the proposed tasks/activities. All project deliverables will be provided to Praxis in English.

The budget for this analysis is sis is CDN $9,000 to $18,000.

	Schedule
TASKS	**TBD**
Request Proposals/Review/Select and Set Up Contract	
Start Up Meeting/Confirm Scope of Work	
Develop Analysis Plan	
Conduct Analyses	
Summarize Results	
Draft/Final Report	

List of References

DeJong G, Batavia AI. **Toward a health services research capacity in spinal cord injury**. *Paraplegia*. 1991;29(6):373–89.

Dryden DM, Saunders LD, Rowe BH, et al. **Utilization of health services following spinal cord injury: A 6-year follow-up study**. *Spinal Cord*. 2004;42(9):513–525.

Guilcher SJT, Craven BC, Calzavara A, McColl MA, Jaglal SB. **Is the emergency department an appropriate substitute for primary care for persons with traumatic spinal cord injury?** *Spinal Cord*.
2013;51(3):202–208.

Noonan, Vanessa K., PhD, PT, Fallah, Nader, PhD, Park, So Eyun, BMLSc, Dumont, Frédéric S., PhD, Leblond, Jean, PhD, Cobb, John, BScOT, and Noreau, Luc, PhD**. Health Care Utilization in Persons with Traumatic Spinal Cord Injury: The Importance of Multimorbidity and the Impact on Patient Outcomes**, 2014, Top Spinal Cord Inj Rehabil 2014;20(4):289–301