Spinal Cord Independence Measure III (SCIM-III)

Assessment Overview

Assessment Area

ICF Domain: Activity
Subcategory: Self-care
Subscales: Self-care, Respiration & Sphincter Mgmt., Mobility

Summary

The Spinal Cord Independence Measure (SCIM) is a clinician-administered disability scale developed to specifically address the ability of SCI patients to perform basic activities of daily living independently. The SCIM assesses 3 areas: Self-care, Respiration and Sphincter Management, and Mobility (including toileting). Clinicians score the SCIM based on their observations of patients’ performance of a number of tasks. The SCIM is currently in its third version. It is quickly becoming one of the most frequently used research tools within the SCI population and has high clinical relevance for the rehabilitation for individuals with SCI. Ceiling and floor effects may be an issue for individuals at either who have very high or low level lesions. Minimal staff/patient burden is required as the variables collected are important to patient care, reflect basic areas of patient concern, and are routinely collected as a component of standard practice. A self-report version of SCIM (SCIM-SR) is also available and is comparable to the observation-based SCIM in reliability and validity. Since the SCIM-SR does not require task observation, it generally takes less time to complete.

You Will Need

Length: 30 minutes by observation or 10-15 minutes by interview; 17 items (Q2 and Q3 have 2 parts, so there are 19 questions to answer)
Scoring: Items scores ranges from 0-2 to 0-15. Subscale scores and total scores are the sums of the respective items.

Availability

Languages: English, Brazilian, Greek, Spanish, Thai, Turkish

Assessment Interpretability

Minimal Clinically Important Difference

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<tr>
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<th>Total: 4.20</th>
<th>Self-Care: 1.15</th>
<th>Resp. Sphinct. Mgmt.: 1.82</th>
<th>Mobility Rm. &amp; Toilet: 0.61</th>
<th>Mobility In/Outdoors: 1.21</th>
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<tbody>
<tr>
<td>(Scivoletto et al., 2013; N=255, 199 male, traumatic or ischemic SCI, mixed injury types, mean (SD) time since injury = 51.6(36.8) days)</td>
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Statistical Error

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<th>Minimal Detectable Change:</th>
<th>Total: 8.20</th>
<th>Self-Care: 2.64</th>
<th>Resp. Sphinct. Mgmt.: 6.07</th>
<th>Mobility Rm. &amp; Toilet: 1.59</th>
<th>Mobility In/Outdoors: 1.96</th>
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<td>(Scivoletto et al., 2013; N=255, 199 male, traumatic or ischemic SCI, mixed injury types, mean (SD) time since injury = 51.6(36.8) days)</td>
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Typical Values

Mean (SD) Admission/Discharge Scores:
- Total: 29.6-29.8(16.9-17.7) / 50.5-50.6(21.7-22.1)
- Self-Care: 7.2(5.3-5.5) / 11.4(5.6-5.7)
- Respiration & Sphincter Mgmt.: 15.8-15.9(8.8) / 15.3-25.5(10.1-10.2)
- Mobility Rm. & Toilet: 3.0(2.9-3.0) / 5.8-5.9(3.5-3.7)
- Mobility In/Outdoors: 3.5-3.7(3.4-4.0) / 7.0-7.8(21.7-22.1)

(Anderson et al., 2011; N=390, 294 male, mixed injury types, inpatient, mean(SD) age at injury = 45.3(17.9))
### Measurement Properties

**Validity – Low to High**

- **High correlation with Modified Barthel Index:**
  \[ r = 0.905 \]
  (Korean QUEST 2.0; Hwang et al., 2015; N=70, 55 male, mixed injury types, mean (SD) time since injury = 31 (59) years)

- **High correlation with Functional Independence Measure (FIM):**
  \[ r = 0.839-0.835 \]
  (Bluvstein et al., 2011; N=261, male/female ratio = 5:2, mixed injury types, study conducted between admission and discharge of rehabilitation)

- **High correlation with Functional Independence Measure (FIM) subscales:**
  \[ \rho = 0.56-0.90 \] (SCIM self-care subscale only)
  (Velstra et al. 2015; N=74, 51 male, cervical SCI, mixed injury severity, \( \leq \) 10 days post-SCI at enrollment, study conducted over 1 year post-SCI)

- **Moderate correlation with Short Form 36 (SF-36):**
  \[ r = 0.339 \]
  (Turkish SCIM; Unalan et al., 2015; N=204, 144 male, mixed injury types, mean (SD) time since injury = 75.4 (85.2) months)

- **Low correlation with Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST):**
  \[ r = -0.075 \]
  (Korean QUEST 2.0; Hwang et al., 2015; N=70, 55 male, mixed injury types, mean (SD) time since injury = 31 (59) years)

**Number of studies reporting validity data: 28**

**Reliability – Moderate to High**

- **Moderate to High Inter-rater Reliability:**
  Cohen’s \( \kappa = 0.683-1.000 \)
  (Turkish SCIM; Unalan et al., 2015; N=204, 144 male, mixed injury types, mean (SD) time since injury = 75.4 (85.2) months)

- **High Internal Consistency:**
  \( \alpha = 0.828-0.832 \)
  (Turkish SCIM; Unalan et al., 2015; N=204, 144 male, mixed injury types, mean (SD) time since injury = 75.4 (85.2) months)

**Number of studies reporting reliability data: 14**

### Responsiveness

- **Floor/Ceiling Effect:**
  No overall floor/ceiling effect detected
  (Prodinger et al., 2016; N=1530, 1093 male, mixed injury types, mean (SD) time post-SCI = 16.84 (12.7) years)

  - \( \geq 50\% \) at ceiling for: 2 items (T1-12), 1 item (CS-8), 1 item (T7-12);
  - \( \geq 50\% \) at floor for: 2 items (C1-4), 6 item (C1-5), 1 item (C1-6), 1 item (all levels except T7-12), 1 item (all levels)

  (Ackerman et al., 2010; N=114, 92 male, mixed injury types, \( \leq \) 12 months post-SCI)

  Floor effect evident for “transfer
When examined for the total sample, each of the four age groups, type (paraplegia/tetraplegia), severity (complete/incomplete) and NL, SCIM-III total scale showed negligible ceiling effects (<2%). However, ceiling effects were present in the SC subscale for:
the oldest age group (16-17yrs) (24%)
neurological level (NL) L1-S4/5 (35.5%)

and the In-room mobility subscale:
Age 6–12 years (45.7%)
Age 13–15 years (30.43%)
Age 16–17 years (60%)
paraplegia (42.4%)
tetraplegia (37.1%)
Incomplete injuries (50%)
T2-T12 (38%)
NL L1-S4/5 (100%)

(Mulcahey et al. 2018; N=127, 69 male, mean age: 10.8 years, mixed injury types)