

Spinal Cord Independence Measure III (SCIM-III)

Assessment Overview

Assessment Area

ICF Domain:

Activity

Subcategory:

Self-care

Subscales:

Self-care

Respiration & Sphincter Mgmt.

Mobility

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.

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.

Availability

Available for free here:

<http://www.rehab.research.va.gov/jour/07/44/1/pdf/catzappend.pdf>

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

Assessment Interpretability

Minimal Clinically Important Difference

| | |
|------------------------|------|
| Total: | 4.20 |
| Self-Care: | 1.15 |
| Resp. Sphinct. Mgmt.: | 1.82 |
| Mobility Rm. & Toilet: | 0.61 |
| Mobility In/Outdoors: | 1.21 |

(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)

Statistical Error

Minimal Detectable Change:

| | |
|------------------------|------|
| Total: | 8.20 |
| Self-Care: | 2.64 |
| Resp. Sphinct. Mgmt.: | 6.07 |
| Mobility Rm. & Toilet: | 1.59 |
| Mobility In/Outdoors: | 1.96 |

(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)

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):

$r = 0.839-0.835$

(Bluvshstein et al., 2011; N=261, male/female ratio = 5:2, mixed injury types, study conducted between admission and discharge of rehabilitation)

$r = 0.77-0.92$

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

High correlation with Capabilities of Upper Extremity Test (CUE-T):

$\rho = 0.617$

(Marino et al., 2015; N=50, 36 male, mixed injury types, outpatient)

Moderate to **High** correlation with Graded Redefined Assessment of Strength, Sensibility and Prehension (GRASSP) subscales:

$\rho = 0.56-0.90$ (SCIM self-care subscale only)

(Velstra et al. 2015; N=74, 51 male, cervical SCI, mixed injury severity, ≤ 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)

Cohen's $\kappa = 0.56-0.81$

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

ICC = 0.880-0.977

(Itzkovich et al., 2007; N=425, 309 male, mixed injury types, study conducted between admission and discharge of rehabilitation)

(Itzkovich et al., 2018; N=35, 19 male, Mean age: 62 \pm 15 years, 4 traumatic, 31 non traumatic injuries)

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)

$\alpha = 0.850-0.890$

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

$\alpha = 0.847-0.849$

(Itzkovich et al., 2007; N=425, 309 male, mixed injury types, study conducted between admission and discharge of rehabilitation)

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 (C5-8), 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, ≤ 12 months post-SCI)

Floor effect evident for "transfer

Effect Size:

Self-care subscale:

Between 1 and 12 months post-enrollment: 1.28

Between 6 and 12 months post-enrollment: 0.42

(Velstra et al. 2015; N=74, 51 male, cervical SCI, mixed injury severity, ≤ 10 days post-SCI at enrollment, study conducted over 1 year post-SCI; other time periods available in article)

Number of studies reporting responsiveness data: 11

ground/wheelchair" item (62%)

(Glass et al., 2009; N=86, 72 males, mixed injury types, inpatient)

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)