

Research Summary – Stoke Mandeville Spinal Needs Assessment Checklist (SMS-NAC) – Self Care and Daily Living

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Eaton et al. , 2022 Retrospective longitudinal study National Spinal Injuries Centre (NSIC), Stoke Mandeville Hospital, Buckinghamshi re Healthcare NHS Trust, Aylesbury, UK.	N=191 139M, 56F Mean (SD) age: 53.0 (17.5) years Level and completeness of injury: • Tetraplegia complete (C1- C8 A/B/C): 51 • Paraplegia complete (T1-L5 A/B/C): 77 • Incomplete (C1- L5 D): 67 Mean (SD) time from injury to rehabilitation: 412.6 (2895.7) days			Typical values: See table 1. Responsiveness to change: • In the SMS-NAC, there was an average increase of 60% across all domains. Discharge coordination saw the greatest increase (95%) and psychological health the least (13%). All domains except psychological health demonstrated an increase of more than 20%. • Level of injury group differences:

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				In nine domains of the SMS-NAC, excluding mobility, there was a significant main effect of level of injury, though the effect sizes ranged from weak (partial $\eta^2 = 0.05$ for SMS-NAC psychological health, the smallest effect size) to moderate (partial $\eta^2 = 0.30$ for SMS-NAC activities of daily living, the largest effect size). This indicates that there were weak to moderate differences between rehabilitation scores obtained (taking the average of admission and

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				discharge scores) based on injury level.
Table 1. Normative data				
SMS-NAC Domains		Mean (Standard Deviation)		
	Complete tetraplegia	Complete paraplegia	All levels incomplete	
PHYSICAL HEALTH				
Admission	54.63 (13.9)	74.25 (15.3)	70.09 (15.2)	
Discharge	80.20 (14.1)	87.62 (12.3)	87.67 (11.9)	
ADL				
Admission	47.63 (29.0)	75.19 (16.3)	66.67 (24.8)	
Discharge	76.76 (20.9)	95.45 (6.68)	89.58 (12.0)	
SKIN AND POSTURE MANAGEMENT				
Admission	41.75 (21.5)	51.61 (24.2)	65.28 (24.1)	
Discharge	87.37 (13.7)	90.01 (12.2)	93.43 (8.22)	
BLADDER MANAGEMENT				
Admission	49.67 (16.6)	57.12 (19.3)	69.67 (18.8)	
Discharge	79.02 (15.3)	84.17 (12.2)	88.09 (9.05)	
BOWEL MANAGEMENT				
Admission	23.00 (22.3)	38.42 (32.0)	67.40 (31.0)	
Discharge	71.00 (26.5)	80.21 (22.3)	88.16 (17.7)	
MOBILITY				
Admission	43.71 (19.4)	45.97 (16.2)	44.85 (25.8)	
Discharge	76.49 (17.2)	77.22 (14.5)	80.76 (16.7)	

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	WHEELCHAIR AND EQUIPMENT			
	<i>Admission</i>	33.29 (19.1)	46.26 (19.6)	70.06 (20.4)
	<i>Discharge</i>	70.06 (20.4)	80.31 (16.5)	83.75 (17.7)
	COMMUNITY PREPARATION			
	<i>Admission</i>	31.27 (11.2)	38.9 (15.0)	38.46 (15.5)
	<i>Discharge</i>	66.24 (14.9)	74.08 (13.5)	70.21 (13.5)
	PSYCHOLOGICAL HEALTH			
	<i>Admission</i>	59.76 (13.2)	64.64 (13.9)	66.90 (13.9)
	<i>Discharge</i>	66.90 (16.5)	74.18 (14.6)	74.10 (16.7)
	DISCHARGE COORDINATION			
	<i>Admission</i>	24.35 (15.8)	34.78 (17.9)	41.60 (23.6)
	<i>Discharge</i>	58.94 (19.8)	67.49 (19.8)	70.87 (15.5)
Kennedy et al. 2012 Psychometric study National Spinal Injuries Centre, UK	N=193 143M, 50F Mean age: 46.6 years Tetraplegia: 30 complete, 56 incomplete; paraplegia: 41 complete, 36 incomplete; missing information: 30 patients		Internal consistency: Cronbach's α : - Overall: 0.889 - All subscales: > 0.7	

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Berry & Kennedy 2002 Consecutive series, psychometric validation study Tertiary care, spinal cord injury centre (National Spinal Injuries Centre), Stoke Mandeville Hospital, UK	N=43, 38M/5F Mean age 42.19 (14.6) years 13.9% complete tetraplegia 37.2% incomplete tetraplegia 23.3% complete paraplegia 25.6% complete paraplegia Mean time btwn SCI and: 1st NAC assessment: 17.5 (13.2) weeks 2nd NAC assessment: 38.6 (31.3) weeks	Pearson's r (P<0.01): - NAC ADL with: - SCIM self-care: 0.850 - SCIM total: 0.873 - NAC Bladder & Bowel Mgmt with: - SCIM Respiration & Sphincter Mgmt: 0.681 - SCIM total: 0.754 - NAC Mobility with: - SCIM Mobility: 0.691 - SCIM total: 0.696 - NAC Psychological	Internal consistency: Cronbach's α : - Overall: 0.8587 - Activities of Daily Living: 0.9697 - Skin Mgmt: 0.8830 - Bladder Mgmt: 0.8356 - Bowel Mgmt: 0.8097 - Mobility: 0.8729 - Wheelchair & Equipment: 0.9527 - Community Preparation: 0.7805 - Discharge Coordination: 0.9251 - Psychological Issues: 0.7347	Typical values: See table 1.

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		Issues (Mood subsection) with: ○ HADS Anxiety: -0.709 ○ HADS Depression : -0.633 ○ HADS total: -0.726 - NAC Psychological Issues (Full subscale) with: ○ HADS Anxiety: -0.501 ○ HADS Depression : -0.466 ○ HADS total: -0.523 *SCIM-II used	Test-retest, inter-rater, intra-rater: Test-retest Pearson's r: - Subscales mean = 0.8238 - Subscales: 0.694-0.904 (P≤0.01) - Mean Interval = 7.2 (2.88) days													
Table 1. Typical values																
<table><tr><th colspan="4">NAC Means (SD)</th></tr><tr><th>Subscale</th><th>Number of items</th><th>Scale mean</th><th>Scale SD</th></tr><tr><td>ADL</td><td>29</td><td>59.07</td><td>25.88</td></tr></table>					NAC Means (SD)				Subscale	Number of items	Scale mean	Scale SD	ADL	29	59.07	25.88
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	Skin Management	14	25.67	10.54
	Bladder Management	10	22.81	7.23
	Bowel Management	7	13.91	6.27
	Mobility	17	24.28	13.30
	Wheelchair and Equipment	33	46.09	27.27
	Community Preparation	24	39.28	12.73
	Discharge Coordination	32	47.86	25.52
	Psychological Health	19	45.49	7.99
Kennedy et al. 2003 Case series, consecutive sample, survey Tertiary care, spinal cord injury unit (National Spinal Injuries Centre), Stoke Mandeville Hospital	N=192, 147M/45F Mean age 40.7(16.5) 152 between 16-54 (older group), 40 between 55-85 (younger group) Male in 78% of older group & 76% of younger group Tetraplegia in 54% of older group & 42% of younger group Incomplete SCI in in 65% of older group & 39% of younger group		Internal consistency: Cronbach's α : - Overall: 0.83 - Activities of Daily Living: 0.9467 - Skin Mgmt: 0.8478 - Bladder Mgmt: 0.7753 - Bowel Mgmt: 0.8741 - Mobility: 0.8358 - Wheelchair & Equipment: 0.9239	

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			- Community Preparation: 0.7146 - Discharge Coordination: 0.8855 - Psychological Issues: 0.6729	