Planning and Structuring Spinal Cord Injury Rehabilitation: The Needs Assessment Checklist

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The study aimed to evaluate the Needs Assessment Checklist (NAC) as a clinically appropriate assessment tool for use during spinal cord injury (SCI) rehabilitation. Data were obtained during routine clinical assessments from 193 patients admitted to the National Spinal Injuries Centre, UK, from September 2007 to November 2009. Reliability analyses yielded high internal consistency coefficients (mean $\alpha = .889$, $SD .051$), and the mean item internal validity correlation was $.534$ ($SD .136$). All subscales of the NAC were found to be highly significant to change between administrations (mean $P < .001$). Several differences were found on the NAC subscales with respect to gender, age, and mobility. Pain and psychological issues were associated with poorer rehabilitation outcomes. The NAC is demonstrated to be a clinically reliable assessment tool that can be used to structure rehabilitation progress by the generation of person-centered goals. The results highlight the importance of assessing psychological issues and pain during SCI rehabilitation. **Key words:** assessment, measurement, rehabilitation, spinal cord injury

The heterogeneous pattern of motor and sensory impairment caused by spinal cord injury (SCI), the psychological impact, and the diverse population group of people who sustain injuries mean that SCI rehabilitation requires a comprehensive consideration of needs. It is argued that rehabilitation should be assessed and organized according to client need rather than being therapist led as this encourages engagement in rehabilitation.¹ The Needs Assessment Checklist (NAC²) and goal planning approach was developed at the National Spinal Injuries Centre (NSIC), UK, and addresses the rehabilitation needs of patients within a biopsychosocial framework, taking into consideration everything from skin care and bowel management through to psychological issues and discharge coordination. This person-centered interdisciplinary assessment ensures that rehabilitation is tailored to the patient's individual needs by feeding this information into regular goal planning meetings. The NAC has previously been subject to psychometric analysis³ and has received favourable evaluation in a review of SCI outcome measures.⁴ The aim of this study is to provide further support for the NAC as a clinically efficient and effective tool for structuring individually tailored SCI rehabilitation.

Method

Participants

Data were collected consecutively from a series of 193 patients completing routine NACs from September 2007 to November 2009. The sample consisted of 143 men and 50 women, with a mean age of 46.6 years (range, 17.4-87.86). Most of the sample had tetraplegia (30 complete, 56 incomplete) rather than paraplegia (41 complete, 36 incomplete). Information on injury type was not available for 30 patients.

Measures

The NAC² consists of 10 specific SCI rehabilitation domains: physical health care (PHC), activities of daily living (ADL), skin care, bladder management, bowel management, mobility, wheelchair and equipment (W&E), community preparation (CP), psychological issues, and discharge coordination

Figure 1. Rehabilitation improvement between Needs Assessment Checklist (NAC) administrations. PHC = physical health care; ADL = activities of daily living; W&E = wheelchair and equipment; CP = community preparation; DC = discharge coordination.

(DC). Each domain is subdivided into 3 levels: the domain (ie, skin), the goal (independent in performing skin checks), and the specific target (knowledge of where and what to look for). Rating scores range from 0 to 3 (0 = *completely independent*; 1 = *mostly dependent*; 2 = *moderately dependent*, or 3 = *completely independent or not applicable*). No distinction is made between persons who are verbally and physically independent, which enables the patients to achieve full independence, regardless of severity of injury. Overall scores for each domain are computed and an overall percentage achieved score is obtained to indicate the patient's level of independence in each area of rehabilitation.

Procedure

At the NSIC, a NAC is administered by a trained member of the multidisciplinary team within 2 weeks of the patient's mobilization. A second

NAC is routinely administered when a patient moves to the predischARGE ward or 6 weeks prior to discharge. For those patients whose rehabilitation is managed over a longer period of hospitalization, a third NAC may be administered. All staff involved with NAC administration are required to attend a 1-day training workshop.

Results

Reliability analyses yielded high internal consistency coefficients (mean $\alpha = .889$, $SD .051$) with all subscales scoring higher than the specified level of .7. Mean item internal validity correlation was .534 ($SD .136$). Paired samples t tests revealed that all subscales of the NAC were highly significant to change between administrations (mean $P < .001$) (see **Figure 1**).

When comparing subgroup performance, independent samples t tests and one-way analyses

of variance (ANOVAs) revealed the following significant results; men scored significantly lower than women on psychological issues, $t(108) = -2.39$, $P = .019$, $\eta^2 = .05$; women scored consistently higher than men on issues relating to sexuality (mean $P = .012$, mean $\eta^2 = .08$); younger patients scored higher than older patients on W&E, $t(106) = -2.65$, $P = .009$, $\eta^2 = .06$, and DC, $t(33.53) = -2.24$, $P = .032$, $\eta^2 = .06$; patients with less physical mobility scored significantly lower on PHC ($\eta^2 = .23$), ADL ($\eta^2 = .27$), and bowel management ($\eta^2 = .18$).

Pearson r correlation analyses revealed a significant relationship between pain severity and mood ($r = .31$). Individuals whose pain interfered with rehabilitation at the first NAC had lower mobility scores on the second NAC, $t(77) = 2.01$, $P = .048$. Scores on psychological issues were significantly related to scores on ADL ($r = .31$), skin care ($r = .41$), and mobility ($r = .21$).

Conclusion

The results of this second investigation of the NAC have provided further support for its clinical utility in SCI rehabilitation. It shows good internal consistency, acceptable internal validity, and is sensitive to change. The NAC provides a person-centered approach to SCI rehabilitation, highlighting achievements, identifying areas that require further support, and feeding this information into individual goal plans. In this sense, the NAC is not only a tool with which to assess functioning, but also one against which rehabilitation is structured and guided. The results highlight the importance of assessing psychological issues and pain as these factors may affect rehabilitation progress.

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