TRANSLATION AND VALIDATION: SWEDISH DN4 (SPINAL CORD INJURY)

DOULEUR NEUROPATHIQUE EN 4 QUESTIONS (DN4)

SWEDISH TRANSLATION (tested in spinal cord injury patients)

Bibliographic information for original (French) questionnaire

Reference

Bibliographic information for translated (Swedish) questionnaire

Reference

Contact details of author
Name: Helene Hallstrom
Email: helene.hallstrom@karolinska.se

Properties of the translated questionnaire

Purpose
Diagnostic/screening: To identify whether pain is likely to be neuropathic in origin in patients with spinal cord injury.

Language
Swedish

Translation process:
Duplicate forward and reverse translation, with consensus discussions after each phase of translation. Forward translation from the original French version of the DN4 was by two native Swedish speaking translators, one of whom was aware of the objective and concept of the tool and the study. Reverse translation was by two native French speaking translators.
**Translation and validation: Swedish DN4 (Spinal Cord Injury)**

*Changes from original questionnaire:*
None

**Assessment**

**Symptoms (Interview):**
Two questions addressing symptoms:
- Pain quality (presence of three symptoms assessed: burning, painful cold, electric shocks)
- Non-painful symptoms (presence of four symptoms assessed: numbness, tingling, itching, pins-and-needles)

**Signs (Clinical Examination):**
Two questions addressing sensory signs (requires a suitably trained person to administer the instrument):
- Assessments for mechanical hypoaesthesia (two modalities assessed: touch and pin-prick sensations)
- Assessment for mechanical dynamic allodynia (one modality assessed: brushing)

**Scoring system**
All items are answered in the affirmative ('yes') or negative ('No'). All 'yes' responses are scored as 1, and 'no' responses are scored as 0. The individual item scores are summed and a total score calculated. A score of 4 or greater indicates that the pain is likely to be of neuropathic origin (this threshold was confirmed during the validation of the translated questionnaire).

**Scoring direction**
Score ≥ 4 indicate that the pain is likely to be neuropathic in origin

**Validation population**
Forty (40) Swedish-speaking spinal cord injury patients (of at least one year), who had pain for at least six months, and the pain was at least 3 on a 0-10 numerical pain rating scale were recruited to the study. Pain was clinically diagnosed as being neuropathic in 28 patients and non-neuropathic in 12 patients. Participants were assessed twice using the tool, by independent assessors.
Translation and validation: Swedish DN4 (spinal cord injury)

Psychometric properties

Diagnostic validity (using a threshold score ≥ 4)
Sensitivity: 92.9%
Specificity: 75.0%
Agreement with clinical diagnosis: 87.5%
Receiver-operating characteristic (ROC): Area under the curve (AUC) = 0.81

Exploratory analysis confirmed that the threshold score of ≥ 4 was the optimal score for the Swedish translation.

Construct validity
Hypoaesthesia to touch was associated with a clinical diagnosis of neuropathic pain

Convergent/criterion validity
Not assessed

Reliability
Test-retest reliability: Good (Cohen’s kappa coefficient = 0.75)

Validation studies of translated questionnaire for specific pain conditions
n/a

Additional information
n/a