

## DOULEUR NEUROPATHIQUE EN 4 QUESTIONS (DN4)

### SPANISH TRANSLATION

#### **Bibliographic information for original (French) questionnaire**

*Reference*

Bouhassira D, Attal N, Alchaar H, Boureau F, Brochet B, Bruxelle J, Cunin G, Fermanian J, Ginies P, Grun-Overdyking A, Jafari-Schluep H, Lantéri-Minet M, Laurent B, Mick G, Serrie A, Valade D, Vicaut E. Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). *Pain*. 114: 29-36, 2005.

PubMed identifier (PMID): <http://www.ncbi.nlm.nih.gov/pubmed/15733628>

#### **Bibliographic information for translated (Spanish) questionnaire**

*Reference*

Perez C, Galvez R, Huelbes S, Insausti J, Bouhassira D, Diaz S, Rejas J. Validity and reliability of the Spanish version of the DN4 (Douleur Neuropathique 4 questions) questionnaire for differential diagnosis of pain syndromes associated to a neuropathic or somatic component. *Health Qual Life Outcomes* 5: 66, 2007.

PMID: <http://www.ncbi.nlm.nih.gov/pubmed/18053212>

*Contact details of author*

Name: Concepcion Perez

Email: [concha\\_ph@terra.es](mailto:concha_ph@terra.es)

#### **Properties of the translated questionnaire**

*Purpose*

Diagnostic/screening: To identify whether pain is likely to be neuropathic in origin.

*Language*

Spanish

*Translation process:*

Duplicate forward and reverse translation, with consensus discussions after each phase of translation. The consensus group consistent of three pain management experts, one expert in methodology, and one expert in clinical research. Forward translation from the original French version of the DN4 was by two native Spanish speaking translators. The consensus

## TRANSLATION AND VALIDATION: SPANISH DN4

forward translation was tested in 12 patients, and the final version reverse translated by two native French speaking translators.

*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  $\geq 4$  indicate that the pain is likely to be neuropathic in origin

*Validation population*

One-hundred and fifty-eight (150) adult Spanish-speaking pain patients, who had had pain for at least three months, were recruited to the study. Pain was clinically diagnosed as being neuropathic in 99 patients and non-neuropathic in 59 patients. The neuropathic pain group consisted of 25 patients with peripheral neuropathy, 32 with central neuropathic pain, and 42

## TRANSLATION AND VALIDATION: SPANISH DN4

patients with mixed pain syndromes. The non-neuropathic pain group had a significantly greater proportion of women than the neuropathic pain group (80% vs. 47%), and was significantly older than the neuropathic pain group (65 years vs. 57 years). The two groups had similar education levels, analgesic treatment and reported similar pain intensity. Participants were assessed twice with the translated questionnaire, no more than two days apart, by two independent observers who had been trained in the use of the instrument, and who were not aware of the clinical diagnosis of the patient. A subsample of 67 patients was assessed for a third time within two days of their last assessment, by the same observer, to assess test-retest reliability.

### *Psychometric properties*

**Diagnostic validity (all patients, n =158)** (using a threshold score  $\geq 4$ )

Sensitivity: 79.8%

Specificity: 78.0%

Youden Index: 0.58

Positive predictive value: 85.9%

Negative predictive value: 69.7%

Agreement with clinical diagnosis: 79.1% (Cohen's kappa = 0.56)

Receiver-operating characteristic (ROC): Area under the curve (AUC) = 0.85

**Subset analysis of the cohort showed that all validity measures were significantly decreased in patients with mild pain (< 40mm on visual analogue scale), but were not adversely affected by education level.**

**Diagnostic validity (mixed pain patients excluded, n =116)** (using a threshold score  $\geq 4$ )

Sensitivity: 81.7%

Specificity: 78.0%

Youden Index: 0.60

Positive predictive value: 79.0%

Negative predictive value: 80.7%

Agreement with clinical diagnosis: 79.8% (Cohen's kappa = 0.60)

Receiver-operating characteristic (ROC): Area under the curve (AUC) = 0.87

**Diagnostic validity (mixed pain and central neuropathic pain patients excluded, n =84)**

(using a threshold score  $\geq 4$ )

Sensitivity: 82.1%

Specificity: 78.0%

## TRANSLATION AND VALIDATION: SPANISH DN4

Youden Index: 0.60

Positive predictive value: 63.9%

Negative predictive value: 90.2%

Agreement with clinical diagnosis: 79.3% (Cohen's kappa = 0.56)

Receiver-operating characteristic (ROC): Area under the curve (AUC) = 0.87

ROC analysis confirmed that the threshold score of  $\geq 4$  was the optimal score for the Spanish translation for the whole cohort, and after exclusion of mixed pain patients or central neuropathic pain and mixed pain patients.

### **Construct validity**

Not assessed

### **Convergent/criterion validity**

Not assessed

### **Reliability**

Inter-rater reliability: Excellent (Cohen's kappa coefficient = 0.79, intra-class correlation coefficient = 0.93)

Internal consistency: Moderate (Cronbach's alpha = 0.65 and 0.71 for the two observers; all individual items contributed similarly to the assessment of the construct).

Test-retest reliability: Excellent (Cohen's kappa coefficient (n = 67) = 0.79)

*Validation studies of translated questionnaire for specific pain conditions*

n/a

*Additional information*

n/a