

## **DOULEUR NEUROPATHIQUE EN 4 QUESTIONS (DN4)**

### **BRAZILIAN PORTUGUESE 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 (Brazilian Portuguese) questionnaire**

*Reference*

Santos JG, Brito JO, de Andrade DC, Kaziyama VM, Ferreira KA, Souza I, Teixeira MJ, Bouhassira D, Baptista AF. Translation to Portuguese and validation of the Douleur Neuropathique 4 questionnaire. *J Pain* 11: 484-490, 2010.

PMID: <http://www.ncbi.nlm.nih.gov/pubmed/20015708>

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

*Purpose*

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

*Language*

Brazilian Portuguese

*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 completed by one healthcare professional with experience in the subject matter, and one professional translator. The consensus forward translation was reverse translated by two native French speakers who were fluent in Portuguese; one translator was a healthcare professional and

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the other a professional translator. The reverse translated questionnaire was compared to the original for literal and semantic equivalence by an expert panel. The next version of the Portuguese DN4 was then assessed for understanding by 10 patients with pain complaints and 10 healthcare professionals; the healthcare professionals suggested modifications to the wording. The modified version of the questionnaire was then reassessed for understanding in the same group of patients and healthcare professionals.

### *Changes from original questionnaire:*

The instructions on the original French questionnaire refer to “4 questions”, but there are 10 items on the questionnaire. This discrepancy caused some confusion, so the instructions were changed to “Answer the 4 questions below, marking only 1 alternative for each item”.

The term “electrical discharges” was changed to “electric shock” (*choque elétrico*), “pins and needles” was first translated only to “pinprick” (*agulhada*), but both the patients and the professionals preferred the original term (“pins and needles” - *alfinetada e agulhada*).

### *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 pinprick 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 (**confirmed by exploratory analysis of the Portuguese DN4**).

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### *Scoring direction*

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

### *Validation population*

One-hundred and one (101) adult Portuguese-speaking pain patients, who had had pain of moderate to severe intensity for at least three months were recruited to the study. Patients with mixed pain syndromes, pain of unknown origin, diffuse pain, headaches, severe depression, substance abuse or who were not able to understand the questions were excluded from the study. Pain was clinically diagnosed as being neuropathic in 42 patients and non-neuropathic in 59 patients. The neuropathic pain group consisted of 34 patients with peripheral neuropathy, 8 with central neuropathic pain. The non-neuropathic pain group and neuropathic pain group had similar pain intensity, sex ratios and age ranges. Participants were assessed once with the translated questionnaire.

### *Psychometric properties*

**Factor analysis** (constrained to 3 factors with Eigen values  $> 1$ )

Factors loadings were generally high (0.50 to 0.82), but there was poor coherence between items loading onto each factor.

Factor 1: Itching sensation, hypoaesthesia to touch, hypoaesthesia to prick, hypersensitivity to brushing

Factor 2: Burning, electric shock, tingling, pins and needles, numbness

Factor 3: Painful cold.

**Diagnostic validity** (using a threshold score  $\geq 4$ )

Sensitivity: 100%

Specificity: 93.2%

Youden Index: 0.93

Positive predictive value: 91.3%

Negative predictive value: 100%

Agreement with clinical diagnosis: 96% (Cohen's kappa = 0.92)

Receiver-operating characteristic (ROC): Area under the curve (AUC) = 0.97

Calculation of Youden indices for different threshold scores confirmed that the threshold score of  $\geq 4$  was the optimal score for the Portuguese translation.

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### **Construct validity**

Not assessed

### **Convergent/criterion validity**

Not assessed

### **Reliability**

Internal consistency: Moderate (Cronbach's alpha = 0.76; all individual items contributed to the assessment of the construct).

*Validation studies of translated questionnaire for specific pain conditions*

n/a

*Additional information*

n/a