

## Appraisal

## Clinimetrics: Neck Pain and Disability Scale (NPDS)

## Summary

**Description:** The Neck Pain and Disability Scale (NPDS or NPAD) is a questionnaire aiming to quantify neck pain and disability.<sup>1</sup> It is a patient-reported outcome measure for patients with any type of neck pain, of any duration, with or without injury.<sup>1,2</sup> It consists of 20 items: three related to pain intensity, four related to emotion and cognition, four related to mobility of the neck, eight related to activity limitations and participation restrictions and one on medication.<sup>1,3</sup> Patients respond to each item on a 0 to 5 visual analogue scale of 10 cm. There is also a nine-item short version.<sup>4</sup>

**Feasibility:** The NPDS is published and available online (<https://mountainphysiotherapy.com.au/wp-content/uploads/2016/08/Neck-Pain-and-Disability-Scale.pdf>).<sup>1</sup> The NPDS is an easy to use questionnaire that can be completed within 5 to 8 minutes.<sup>1,5</sup> There is no training needed to administer the instrument but its validity is compromised if the questionnaire must be read to the patient.<sup>2</sup> Higher scores indicate higher severity (0 for normal functioning to 5 for the worst possible situation 'your' pain problem has caused you).<sup>2</sup> The total score is the sum of scores on the 20 items (0 to 100).<sup>1</sup> The maximum acceptable number of missing answers is three (15%).<sup>4</sup> Two studies found a minimum important change of 10 points (sensitivity 0.93; specificity 0.83) and 11.5 points (sensitivity 0.74; specificity 0.70), respectively.<sup>6,7</sup> The NPDS is available in English,

Dutch, Finnish, French, German, Italian, Hindi, Iranian, Korean, Turkish, Japanese and Thai.

**Reliability and validity:** Two systematic reviews have evaluated the clinimetric properties of 11 of the translated versions.<sup>5,8</sup> The Finnish, German and Italian translations were particularly recommended for use in clinical practice. Face validity was established and content validity was confirmed by an adequate reflection of all aspects of neck pain and disability.<sup>1,8</sup> Regarding structural validity, the NPDS is a multidimensional scale, with moderate evidence that the NPDS has a three-factor structure (with explained variance ranging from 63 to 78%): neck dysfunction related to general activities; neck pain and neck-specific function; and cognitive-emotional-behavioural functioning.<sup>4,5,9</sup> A recent overview of four systematic reviews found moderate-quality evidence of high internal consistency (Cronbach's alphas ranging from 0.86 to 0.93 for the various factors).<sup>10</sup> Excellent test-retest reliability was found (ICC of 0.97); however, the studies were considered to be of low quality.<sup>3,10</sup> Construct validity (hypotheses-testing) seems adequate when the NPDS is compared with the Neck Disability Index and the Global Assessment of Change with moderate to strong correlations ( $r = 0.52$  to  $0.86$ ), based on limited moderate-quality studies.<sup>3,11,12</sup> One systematic review reported good responsiveness to change in patients ( $r = 0.59$ ).<sup>12</sup>

## Commentary

The advantage of the NPDS over other neck pain scales is that it comprehensively assesses the multidimensional nature of neck pain and dysfunction in a quick and easy way.<sup>9</sup> The NPDS has demonstrated a well-balanced distribution of items across the International Classification of Functioning, Disability and Health's body function, activity and participation components. In addition, the NPDS is the only neck pain and disability questionnaire that assesses contextual factors.<sup>3</sup> With this the NPDS is not solely based on the illness itself, but emphasises functioning as a health component including environmental influences on the accomplishment of activities and tasks. In addition, the NPDS is suitable for patients taking pain medication. Calculation of the total scale is recommended in the literature, despite the proven multidimensional scale including three factors. The frequently used Neck Disability Index is favoured over the NPDS, with high-quality evidence for good to excellent validity and reliability. Nevertheless, the NPDS is among the four most clinimetrically sound frequently used self-rated pain scales for neck pain (along with the Northwick Park Neck Pain Questionnaire and the Copenhagen Neck Functional Disability Scale).<sup>10</sup>

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