Shoulder Pain and Disability Index (SPADI)

Description

The Shoulder Pain and Disability Index (SPADI) was developed to measure current shoulder pain and disability in an outpatient setting. The SPADI contains 13 items that assess two domains; a 5-item subscale that measures pain and an 8-item subscale that measures disability. There are two versions of the SPADI; the original version has each item scored on a visual analogue scale (VAS) and a second version has items scored on a numerical rating scale (NRS). The latter version was developed to make the tool easier to administer and score (Williams et al 1995). Both versions take less than five minutes to complete (Beaton et al 1996, Williams et al 1995). The questionnaire was developed and initially tested in a mixed diagnosis group of male patients presenting to ambulatory care reporting shoulder pain (Roach et al 1991). The SPADI has since been used in both primary care on mixed diagnosis (Beaton et al 1996, MacDermaid et al 2006) and surgical patient populations including rotator cuff disease (Ekeberg et al 2008), osteoarthritis, and rheumatoid arthritis (Christie et al 2010), adhesive capsulitis (Staples et al 2010, Tveita et al 2008), joint replacement surgery (Angst et al 2007), and in a large population-based study of shoulder symptoms (Hill et al 2011).

The SPADI is available free of charge at several sites, eg, www.workcover.com/public/download.aspx?id=799

Instructions to the client and scoring: In the original version the patient was instructed to place a mark on the VAS for each item that best represented their experience of their shoulder problem over the last week (Roach et al 1991). Each subscale is summed and transformed to a score out of 100. A mean is taken of the two subscales to give a total score out of 100, higher score indicating greater impairment or disability. In the NRS version (Williams et al 1995) the VAS is replaced by a 0–10 scale and the patient is asked to circle the number that best describes the pain or disability. The total score is derived in exactly the same manner as the VAS version. In each subscale patients may mark one item only as not applicable and the item is omitted from the total score. If a patient marks more than two items as non applicable, no score is calculated (Roach et al 1991).

Reliability and validity: Reproducibility of the SPADI in the original description was poor, with an intraclass correlation coefficient (ICC) of 0.66. A more recent systematic review has found reliability coefficients of ICC $\geq$ 0.89 in a variety of patient populations (Roy et al 2009). Internal consistency is high with Cronbach α typically exceeding 0.90 (Roy et al 2009, Hill et al 2011). The SPADI demonstrates good construct validity, correlating well with other region-specific shoulder questionnaires (Paul et al 2004, Bot et al 2004, Roy et al 2009). It has been shown to be responsive to change over time, in a variety of patient populations and is able to discriminate adequately between patients with improving and deteriorating conditions (Beaton et al 1996, Williams et al 1995, Roy et al 2009). No large floor or ceiling effects for the SPADI have been observed (Bot et al 2004, Roy et al 2009).

The minimal clinically important difference has been reported to be 8 points; this represents the smallest detectable change that is important to the patient (Paul et al 2004). When the SPADI is used more than once on the same subject, eg, at initial consultation and then at discharge, the minimal detectible change (MDC 95%) is 18 points (Angst et al 2008, Schmitt et al 2004). Thus some caution is advised with regard to repeated use of the instrument on the same patient. A change score of less than this value could be attributed to measurement error.

Commentary

Shoulder pain affects 22% of the population (Hill et al 2010) and shoulder problems form a large part of clinical practice (Oster et al 2005). Therefore it is no surprise that there are also a large number of shoulder regional-based questionnaires available in the literature. The SPADI was one of the earliest of to be developed that was answered entirely by the patient – a true subjective self-assessment.

The SPADI is short, easy to understand and takes less than five minutes to complete and score. This is a valuable attribute for time poor clinicians. It also has reasonably good clinimetric properties so the clinician can be sure that the scores that are obtained are an accurate reflection of the patient's state. If the measurement of pain and disability are of primary interest, the SPADI is a useful tool for a wide range of patients with most shoulder problems.

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