Self-Report Measures of Hand Pain Intensity
Current Evidence and Recommendations

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KEYWORDS

• Assessment • Pain intensity • Hand • Numerical rating scales • Visual analog scales • Verbal rating scales • Australian/Canadian Osteoarthritis Hand Index • Patient-Rated Wrist/Hand Evaluation

KEY POINTS

- A comprehensive evaluation of pain and its effects is an important first step in its successful management and in evaluating the effectiveness of treatments.
- Pain intensity is the most common pain domain evaluated, and self-report scales are the gold standard for its measurement.
- The use of psychometrically sound pain intensity questionnaires is fundamental to adequate assessment of pain intensity.
- Five measures (3 single-item rating scales and 2 multi-item measures) that measure pain intensity are presented and discussed: the Visual Analog Scale, the Numerical Rating Scale, the Verbal Rating Scale, the Australian Canadian Osteoarthritis Hand Index, and the Patient-Rated Wrist/Hand Evaluation.
- The strengths and weaknesses of these measures should be considered when selecting among them.

INTRODUCTION

Pain is a common complaint associated with musculoskeletal conditions, including hand-related problems.[1] Pain often has a negative impact on the quality of life of the person with pain.[2] A comprehensive evaluation of pain and its effects is an important first step in successful pain management. Pain assessment requires special attention because of the complex nature and multidimensionality of pain; a proper approach requires one to pay close attention to its sensory, emotional, affective, and cognitive aspects.[3]

Although pain is a complex biopsychosocial phenomenon influenced by many factors,[4] pain intensity is the single most common pain domain assessed in clinical settings and research studies, probably because it is the feature of pain that causes patients to seek treatment and is also the domain most commonly targeted for treatments. During the last several decades, significant gains have been made in the development and evaluation of measures that provide valid and reliable information about pain intensity. Progress in this area has allowed clinicians and researchers to

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better understand the characteristics of the pain experience in both research subjects and patients.

Because of the private nature of pain, self-report is viewed as the gold standard for assessment. Often, patients are asked to recall pain intensity over a specified time period (eg, average pain in the past 24 hours, worst pain in the past week). Using such recall ratings has several advantages that should be considered, primary among which is that the rating comes directly from the patient, and the patient is in the best position to observe and rate his or her own pain. Furthermore, self-report rating scales, including recall rating scales, are well accepted by most patients.

One weakness of recall ratings is that they can be influenced by factors other than just pain intensity, such as emotional states (anxiety, fear), beliefs/thoughts, and other contextual factors.[5] To address these issues, clinicians and researchers should attempt to control contextual factors whenever possible; for example, by measuring pain under similar conditions such as the same time of day, in the same place, or in presence of the same people.

ASSESSING HAND PAIN INTENSITY

Pain intensity reflects the magnitude of felt pain. It is the most commonly measured pain domain, and the clinical decisions of most health practitioners are based on this parameter.[6] Patients are often familiar with the task of rating their pain intensity using self-report scales, and are usually (but not always) able to provide a reasonably rapid and valid response to rating scales. Several pain intensity scales have been developed for this purpose and have been successfully used in both clinical and research settings.

Self-report measures and rating scales of pain intensity can be used to assess the primary domain of pain intensity, or can be used as part of a questionnaire that assesses multiple pain domains. The most common single-item ratings scales used for assessing pain intensity are the Visual Analog Scale (VAS), the Numerical Rating Scale (NRS), and the Verbal Rating Scale (VRS), the strengths and weaknesses of which are presented herein and summarized in **Table 1**. The most commonly used multidimensional measures of hand function that include ratings of hand pain intensity are the Australian/Canadian Osteoarthritis Hand Index (AUSCAN) and the Patient-Rated Wrist/Hand Evaluation (PRWHE).[a]

Single-Dimensional Pain Intensity Scales

Visual analog scales

A VAS consists of a horizontal line, usually 10 cm long, anchored by pain descriptors at each extreme; for example, “No pain” at one end and “Pain as bad as it could be” at the other end. Patients are asked to make a mark along the line to represent the point that best reflects their pain intensity. The VAS score is obtained by measuring the distance (usually in millimeters) from the “No pain” end of the line to the point that the participant has indicated. Higher scores indicate higher levels of pain. Its ease of use for many patients (except for individuals at risk for cognitive deficits such as the very elderly or persons taking high doses of analgesics that affect cognitive function) makes the VAS a well-accepted measure among many professionals and patients.

A large body of literature supports the reliability and validity of VAS scores when used in general pain populations. The VAS is also a commonly used measure in hand pain populations.[7,8] VAS scale scores have been shown to be strongly correlated with reports from other self-report scales measuring the same construct[9–11] and from observed pain behavior.[12] Discriminant validity of VAS scale scores has also been supported by research showing relatively weak associations with scores from measures of other aspects of the pain experience, such as pain unpleasantness.[13] The VAS has also been shown to be able to detect clinically important treatment effects,[14–16] including treatments of hand-related conditions.[7,17] For example, in a randomized controlled trial aimed to determine whether oxygen supplementation reduced pain associated with the use of a tourniquet in patients undergoing hand surgery, White and colleagues[17] found that the VAS was able to identify a reduction of 29% in pain scores recorded at 2-minute intervals.

In addition, the scores obtained with the VAS seem to have ratio properties[18,19]; that is, differences in pain measurement in groups (but not necessarily in individuals) represent fairly accurate estimates of differences in magnitude. For

[a]The Disabilities of the Arm, Shoulder, and Hand questionnaire (DASH),[82] one of the most commonly used scales in the assessment of upper extremity problems, also includes some items that assess arm, shoulder, and hand pain. However, information about the psychometric properties of this scale are not included in this article, for several reasons. First, the 30-item DASH includes only 2 that assess pain severity: one assessing overall arm, shoulder, or hand pain severity and the other pain severity when performing an activity. More importantly, the 2 pain-severity items are not scored separately into their own scale score; the DASH provides a global score of arm/shoulder/hand disability. Consequently, the DASH should not be viewed specifically as a measure of hand pain.