

Measurement of Trigeminal Neuralgia Pain Penn Facial Pain Scale



John Y.K. Lee, MD, MSCE

KEYWORDS

- Barrow Neurological Institute Pain Intensity Score
- Brief pain inventory
- McGill Pain Questionnaire
- Numeric rating scale
- Patient-reported outcomes
- Trigeminal neuralgia
- Visual analog scale
- Penn Facial Pain Scale

KEY POINTS

- The subjective and multidimensional quality of pain makes it challenging to study and emphasizes that a patient's perception of pain should be accepted as the most valid reporting.
- Patient-reported outcome (PRO) tools capture patient's pain ratings in a structured and reproducible format that also allows patients to evaluate their current condition and treatment.
- The Penn Facial Pain Scale is a multidimensional pain scale that assesses facial pain intensity and facial pain interference with activities of daily living and facial-specific activities.
- A composite questionnaire that combines multiple PROs should address the six domains of the Initiative on Methods, Measurement, and Pain Assessment in Clinical trials.

INTRODUCTION

Pain is a personal experience—it is impossible for a person to understand or experience another person's pain. Even patients who experience the same pain stimuli or interventions have wide variability of their pain ratings.¹ Pain is also more than just a sensory experience; it has physical, emotional, and social implications. The subjective and multidimensional quality of pain makes it challenging to study and emphasizes that a patient's perception of pain should be accepted as the most valid reporting.^{2–4} Patient-reported outcome (PRO) tools are an excellent way to capture those pain ratings because they provide a structured and reproducible format that also allows patients to evaluate their current health condition and treatment.⁵ PROs are instrumental for measuring pain because patients are the only source of information, clinical assessments may not parallel a patient's actual pain or disability, and patients

should be the ones to decide whether or not their clinical change is actually meaningful.^{5,6}

The purpose of this article is to provide an overview of different PROs that can be used to measure pain and outcomes in trigeminal neuralgia (TN). There are several scales that can be used to measure pain, and readers are encouraged to choose the most appropriate outcome measure. Although there are several different PROs that can be used, the main issue with evaluating treatment response and efficacy is the lack of a consensus on which scale to use and defined criteria for outcomes.¹ With the availability of many treatment options for TN, which range from conservative pharmacotherapy to neurosurgical intervention with Gamma Knife radiosurgery (RS), percutaneous stereotactic radiofrequency lesioning (RFL), and microvascular decompression (MVD), it is necessary to develop a uniform process of measuring pain in TN to compare the outcomes of different treatments. The PROs

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Department of Neurosurgery, University of Pennsylvania, 235 S. 8th Street, Philadelphia, PA 19107, USA

E-mail address: john.lee3@uphs.upenn.edu

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discussed in this article have been evaluated for practicality, applicability, comprehensiveness, reliability, validity, and sensitivity to measuring TN pain in addition to adherence to the six domains outlined by the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) (Tables 1 and 2).

REVIEW OF PAIN SCALES AND PATIENT-REPORTED OUTCOME MEASURES

Visual Analog Scale

Format

The visual analog scale (VAS) is a simple, 1-dimensional (1-D) scale that measures pain intensity (Fig. 1). It is a 10-cm horizontal line with word anchors on either end. The word anchors can be changed to represent different dimensions of pain.⁷ The anchors most commonly used in pain studies are “no pain” and “worst possible pain.” Specific points along the line can be labeled with intensity-denoting adjectives or numbers; the scale is then referred to as a graphic rating scale. Patients are asked to mark the point on the line that represents the intensity of their pain. The VAS score is determined by measuring the distance in millimeters from the left hand side of the line to the point where the patient marked the line. The scale requires special materials (pen and paper), vision, and dexterity.

Evaluation

The VAS has been widely used and is well validated, reliable, and internally consistent when used to measure the intensity of pain.^{7,8} It has been used in several studies evaluating different treatments of TN, including pharmacotherapy, Gamma Knife RS, RFL, and MVD.^{9–12} The VAS is

comprehensive and also a form of cross-modality matching because it uses a direct scaling technique. Thus, results can be presented as a ratio rather than as an interval, which allows for more meaningful statements regarding pain magnitude.^{7,13} For example, when a group of patients have shown a change in pain intensity of 80 to 40, their pain has been reduced by half.

The major critique of the VAS is that a majority of patients have difficulty discerning pain intensity, distress caused by pain, and how pain affects their quality of life. Scores on the VAS are often affected by changes in functional status, emotional effects, physical limitations, and pain-associated symptoms.¹⁴ Therefore, VAS scores may not singularly represent pain intensity; they may actually be more representative of pain intensity and distress caused by the pain.¹⁴ Although the VAS score can be affected by many different aspects of pain, it only specifically addresses the pain domain from the IMMPACT recommendations. Another limitation of the VAS is its impracticality—it requires special materials (paper form and pen) and dexterity. Therefore, the scale can only be administered in person or mailed, and it excludes populations with limited dexterity and vision, such as the geriatric population. It cannot be administered over the telephone because it is a graphic measure of pain, but it does provide a continuous outcome variable, which can be useful for evaluation.

Numeric Rating Scale for Pain Intensity

Format

The numeric rating scale for pain intensity (NRS-PI) is a 1-D scale used to measure pain intensity (Fig. 2). It is a series of numbers ranging from

Table 1
Evaluation and selection criteria for outcome measures

Criteria	Description
Applicable	Content and emphasis of the measure are relevant and disease-specific
Practical	Minimal respondent and administrative burden
Comprehensive	Addresses multidimensional components of disease burden (physical, psychosocial, etc.)
Reliable	Acceptable test-retest, inter-rater, and internal consistency reliability
Valid	Criterion: accuracy of the measure compared with gold standard Construct: ability to measure what it intends to measure Content: measurement is representative of the construct it is intended to measure
Sensitive	Correctly identify patients with disease and ability to detect differences that would be considered significant

Adapted from Deyo RA. Measuring functional outcomes in therapeutic trials for chronic disease. *Control Clin Trials* 1984;5(3):223–40; and Deyo RA, Centor RM. Assessing the responsiveness of functional scales to clinical change: an analogy to diagnostic test performance. *J Chronic Dis* 1986;39:897–906.

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