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# MOST COMMONLY USED PAIN ASSESSMENT TOOLS:A LITERATURE REVIEW

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## Abstract

Pain assessment is a crucial component of effective pain management in various clinical settings. The goal of this review of the literature is to look at and evaluate the methods for measuring pain that are most frequently employed in various medical specialties. The review focuses on the criterion for selection, psychometric characteristics, and clinical applicability of the identified pain assessment tools. The most often used instruments in both research and clinical practice are the Face Rating Scale, Visual Analogue Scale, and Numeric Rating Scale, according to findings from the literature. The psychometric properties of these tools were assessed in terms of reliability, validity, responsiveness, and clinical utility. This study emphasises the significance of choosing the right pain assessment instruments based on the particular environment, patient group, and desired outcome measurements. For effective pain assessment and management, which enhances patient outcomes and overall quality of care, healthcare providers must have a thorough awareness of the advantages and disadvantages of these tools.

**KEY POINTS:** Faces Pain Rating Scale, Visual Analogue Scale, and Numeric Rating Scale - revised

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## INTRODUCTION:

Each patient's experience of pain is unique and multifaceted. Different biological responses, psychological states and qualities, and social circumstances affect how people experience pain differently.<sup>[1,2,3]</sup> The most frequent issues following day surgery, both before and after discharge, are severe pain and side effects from painkillers<sup>[4]</sup>. Many organs are negatively impacted by inadequate postoperative pain management, and postoperative complications might result.<sup>[5,6]</sup> Acute pain generated by surgical injury can result in neuronal remodelling and central or peripheral sensitization within a few hours, leading to prolonged postoperative pain.<sup>[7]</sup> Hence, adequate postoperative pain management in the PACU is essential, despite the relatively brief duration.<sup>[8]</sup> Effective clinical care and research depend on a valid and trustworthy pain assessment. Generally, patients feel severe pain following surgery due to tissue damage and inflammation at the operation site. The first step towards making an informed decision about analgesic therapy, which is crucial for ensuring patient comfort, mobility, and satisfaction and cutting healthcare costs, is a careful assessment of pain using a valid and trustworthy tool<sup>[9]</sup>. The primary goal of this review is to examine the characteristics of the most popular pain rating scales.<sup>[10]</sup>

## TYPES :

The most commonly used pain rating scales are

- The Visual Analogue scale (VAS)
- The Verbal Rating Scale (VRS)
- The Numerical Rating Scale (NRS)
- The Faces Rating Scale (FRS)

## COMPLEXITY OF PAIN:

Intensity is not the only significant aspect of the feeling of pain;

pain occurs within a context. In cancer patients, the evaluation-emotional portion of pain is more significant than the sensory component<sup>[11,12]</sup> The patient's perception of the pain's significance and its anticipated duration determine its intensity<sup>[13]</sup>.

## THE VISUAL ANALOGUE SCALE (VAS):

The VAS is typically shown as a 10-cm line anchored by verbal adjectives, such as "no pain" and "worst imagined suffering." The patient is instructed to mark a 100 mm line to indicate the level of pain. The score is determined by subtracting the patient's mark from the zero anchors. Using a millimetre scale to determine the patient's score will result in 101 levels of pain severity. The graphic orientation of the VAS affects the statistical distribution of the data gathered using it. Researchers discovered that data were normally distributed when the VAS was used horizontally, but not when it was used vertically<sup>[14]</sup>. The vertical scale displayed less inaccuracy than the horizontal scale in a study of Chinese patients<sup>[15]</sup>. The major advantage of this instrument over others appears to be that the difference in pain intensity assessed at two separate times corresponds to the actual magnitude of discomfort<sup>[16,17]</sup>.

## THE VERBAL RATING SCALE:

The Verbal Rating Scale (VRS) includes an array of adverbs that indicate progressive pain levels. The most common pain statements were "no discomfort," "mild pain," "moderate pain," and "severe or terrible agony." To make it easier for their use in the recording, these descriptions have been assigned numbers. These rank numbers may give you the false impression that there are equal intervals between each description. Nevertheless, this is not the case, and following this advice could result in errors<sup>[18]</sup>. Even though respondents must

read the complete list before answering, which is time-consuming, the responder compliance is often as good as or even better than with other instruments<sup>[19,20]</sup>.

### **THE NUMERICAL RATING SCALE:**

The NRS is an 11, 21, or 101-point scale with endpoints representing no pain, pain as severe as possible, and worst pain. The NRS can be presented visually or orally. When displayed graphically, the numbers are frequently surrounded by boxes, and the scale is known as an 11- or 21-point box scale, depending on the number of levels of discrimination supplied to the patient. There are only 11 potential responses in a 0–10 point NRS, 21 in a 0–20 point NRS, and 101 in a 0–100 point NRS, as only the numbers themselves are valuable. Much research has demonstrated strong connections between numeric rating scales and other pain evaluation instruments<sup>[11,19]</sup>.

### **THE FACES RATING SCALE:**

Faces scales are a popular approach for assessing the severity of pain in paediatric populations. Faces scales employ several facial expressions to represent a spectrum of pain intensity. There exist numerous face-based rating scales. Faces scales are ordinal outcome measures composed of a restricted number of categorical responses organised in a predetermined way. Although there is controversy about the optimal form of facial expression<sup>[21,22]</sup>.

### **COMPARISON BETWEEN THE SCALES:**

Utilising a variety of validated self-report pain scales, such as the visual analogue scale (VAS), the numeric rating scale (NRS), and the verbal rating scale (VRS), to assess and manage postoperative pain is recommended by recent guidelines for postoperative pain management<sup>[23]</sup>. The NRS and VAS are the two most popular self-report pain measures, however they have the drawback of requiring a high

level of abstract reasoning to relate pain experience to an ordinal number or a point on a line. In a study that compared the VRS, NRS, and VAS on patients with cognitive impairment, the VRS had a greater response rate<sup>[20]</sup>. Three times, at five minutes following admission to the PACU, twenty minutes following the initial evaluation, and immediately before the patient was released from the PACU, the pain intensity was measured using the NRS and VRS.

In all 3 examinations, the level of pain as measured by VRS and NRS significantly correlated. After being admitted to the PACU, patients' NRS scores ranged from 7 (IQR 5-8) to 10, with 74.8 percent reporting moderate to severe pain (NRS 5-10). In the VRS (VRS 2-3), 63.2% of respondents reported moderate to severe discomfort<sup>[24]</sup>.

According to post-hoc analysis, each VRS category at a given time point differed significantly from all the other categories at that same moment. As well as comparing the value of VRS and NRS for assessing postoperative pain in the PACU, The key findings are as follows: VRS and NRS have a substantial correlation, and each category of VRS exhibits a distinct variation in pain intensity as determined by NRS. Comparing VRS to NRS, patients in the PACU had a greater response rate. In light of this, VRS may be an acceptable method for patients coming out of anaesthesia to quantify pain intensity. Self-report pain scales, like the NRS, are challenging for patients to complete when they first enter the PACU. Depending on their degree of consciousness and drowsiness, patients' capacity to evaluate their pain may vary. Following evaluations in this study saw an increase in the NRS response rate. The self-report pain scale response rate is influenced by the patient's degree of consciousness.

In light of the patients in the PACU who exhibit the aforementioned traits, VRS may be a valuable pain

assessment technique in the PACU, particularly right after surgery. Despite the fact that NRS is more adept at spotting subtle changes in pain than VRS<sup>[10]</sup>, its application in PACU patients may be constrained by the low response rate of the system. Further research is needed on the impact of VRS on postoperative pain control in comparison to other methods before it can be used as the primary way of pain evaluation in the PACU.

## CONCLUSION:

Scales for assessing pain have a crucial role in clinical practice. According to the data, patients can use them to express their discomfort and how they are reacting to treatment. The patient's ability to use the tools provided and the healthcare practitioners' thorough interpretation of the scores are crucial to effective pain treatment. When utilising a pain rating scale, patients convey far more information about their pain than just its intensity. Due to its ability to provide ratio-level statistics, the VAS is statistically the most reliable. The data isn't always properly distributed, though. The VAS has the highest failure rate of the three scales and is the most challenging to apply in clinical practice. The least sensitive of the three tools is the VRS, but it is still simple to use. One of the main worries with this tool is that the clinician can be misled about the quality of the data it delivers by the rank numbers offered for convenience of recording. Although little research has been done on the VRS, it is likely valid and dependable. The NRS offers data at the interval level and has a similar sensitivity to the VAS. The scale is simple to use, record, and gives patients the option of using 11 or 21 intensity points. Patients like the NRS for sensitivity and the VRS for simplicity, albeit the evidence is not clear-cut. The VAS, which is the least preferred tool and has the highest failure rate, is also the toughest to use.

When measuring acute postoperative pain in the PACU, VRS and NRS have a significant association. Each VRS category has a notable variation in pain intensity as determined by NRS. Because VRS has a higher response rate than NRS does, it might be the method of choice in a PACU scenario.

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## CONFLICT OF INTEREST

There is no conflict of interest between the authors.

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