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Title: Pain Assessment in Palliative Medicine: Review of Pain Rating Scales

Michał Kotowicz[1*], Magdalena Zielińska[1], Paweł Szajewski[1], Aleksandra Zagórska[1], Joanna Ciećwierz[1], Maria Koczkodaj[2], Magdalena Bieniak-Pentchev[3]

1 - MD, Dr. Anna Gostyńska Wolski Hospital, Warsaw, Poland

2 - MD, Warsaw Southern Hospital, Warsaw, Poland

3 - MD, Praski Hospital of the Transfiguration of Our Lord, Warsaw, Poland

*Corresponding Author:

Michał Kotowicz

michalkotow@interia.pl

Abstract

Pain is one of the most prevalent and distressing symptoms in patients receiving palliative care, often leading to a profound reduction in quality of life. Effective pain control requires accurate and systematic assessment, yet the multidimensional and subjective nature of pain makes this process complex. This review summarizes the most commonly used pain rating tools in palliative medicine, including the Numeric Rating Scale (NRS), Visual Analog Scale (VAS), Verbal Rating Scale (VRS), Wong–Baker FACES Pain Rating Scale (WBS), FLACC Scale, McGill Pain Questionnaire (MPQ), and Abbey Pain Scale (APS). Each scale's characteristics, advantages, and limitations are discussed in relation to different patient populations, such as cognitively impaired or non-verbal individuals. The article emphasizes that the choice of assessment tool should be individualized, reflecting the patient's clinical condition, communication ability, and cognitive status. Accurate pain assessment forms the foundation of effective analgesic therapy and improved patient outcomes in palliative medicine.

Keywords: palliative medicine, pain rating scales, pain assessment, pain

1. Introduction

Pain is one of the most common symptoms among patients receiving palliative care and can significantly reduce patients' quality of life. The prevalence of chronic non-cancer pain has ranged from 14% to 34% in various studies. [1, 2] Pain management is an essential component of the definition of palliative care established by the World Health Organization in 2020: "Palliative care is an approach that improves the quality of life of patients (adults and children) and their families who are facing problems associated with life-threatening illnesses. It prevents and alleviates suffering through early identification, proper assessment, and treatment of pain and other physical, psychosocial, or spiritual problems." [3] According to this definition, one of the primary tasks of palliative care physicians is effective pain control. [4-6] A key element of this process is proper assessment, which enables the selection of appropriate therapeutic methods and the evaluation of treatment effectiveness. [4, 6] This task can be particularly challenging not only due to the subjective nature of pain but also its multidimensional character. [1, 2]

Numerous tools are available for pain assessment, and their application largely depends on the clinical condition of the patient, which in palliative care patients is highly variable (consciousness level, overall functioning, mobility). Therefore, pain assessment in these patients must be individualized, and the choice of method should consider patient-specific factors.

2. Definition

According to the International Association for the Study of Pain (IASP), pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in such terms. It is a personal phenomenon shaped by biological, psychological, and social factors. [7] Pain and nociception are distinct processes; pain should not be equated solely with sensory neuron activity, as its perception develops through individual life experiences. Therefore, each person's report of pain should be respected. [7]

Although pain has an adaptive function by signaling threat or injury, it may also impair functioning, mental health, and social relationships. Verbal communication is only one mode of expression — pain perception is independent of the ability to communicate, and even non-verbal individuals or animals can experience pain. [7]

Chronic pain includes nociceptive, neuropathic, and central (nociplastic) types. Nociceptive pain stems from tissue injury, neuropathic from nervous system damage, causing burning, stabbing, or electric sensations. Both involve peripheral and central sensitization, while central pain arises from altered central processing without peripheral injury. [8]

Central or nociplastic pain results from altered nociception without peripheral activation or tissue injury, reflecting plastic changes in the central nervous system that cause exaggerated pain responses to normally non-painful stimuli. [8]

3. Etiology

Pain in palliative care patients may have multiple causes, including nerve compression or infiltration by tumors, metastases, gastrointestinal obstruction, and many others. [1]

Moreover, conventional cancer treatments such as surgery, chemotherapy, radiotherapy, immunotherapy, or hormonal therapy can cause acute and chronic pain conditions, such as joint pain from aromatase inhibitors or chemotherapy-induced neuropathic pain. [9]

4. Epidemiology

Among palliative care patients, a large group consists of individuals with malignant tumors. According to a meta-analysis, 44.5% of these patients experience pain, and the prevalence of inadequate pain management in this population is 40.2%. [10]

A Swedish retrospective study of 315,000 palliative care patients analyzed pain prevalence in the last week of life. Pain was reported in most patients with terminal-stage malignancy (81%), as well as in patients with other conditions such as dementia (69%), heart failure (68%), and chronic obstructive pulmonary disease (COPD) (57%). Severe pain was observed in 35% of oncology patients and 17–21% of patients with non-cancer diseases. Effective pain management was possible in most cases — only 0.2% of patients experienced no improvement. [11]

Pain can also lead to significant psychological and social consequences. Chronic, especially poorly controlled, pain may cause emotional suffering, severe anxiety and uncertainty, depression, and even desire for hastened death. [12] It can also result in social withdrawal and isolation, depriving patients of support from family and others during end-of-life care. [11]

5. Pain Intensity Rating Scales

The use of pain assessment tools aims to objectify the subjective experience of pain and facilitate appropriate therapeutic decision-making. [1] Repeated measurements allow evaluation of treatment effectiveness and decisions regarding the need for intensification or de-escalation of interventions. [4] Proper tool selection is essential for accurate assessment and, consequently, effective intervention. [3]

When choosing a method, important factors should be considered, including clinical condition (consciousness, overall and cognitive functioning, age, underlying disease), availability of resources (specialized tools or questionnaires), time required, and the skill and experience of the assessor. [3, 4]

6.1 Numeric Rating Scale (NRS)

The 0–10 NRS, also known as NRS-11, is one of the most widely used methods for assessing pain intensity in both research and clinical practice globally. The patient selects a number that best corresponds to the intensity of their pain, where 0 indicates no pain and 10 represents the worst imaginable pain. [13] The NRS can be presented graphically or verbally. [14]

Current clinical practice recommendations and systematic reviews recognize NRS as the gold standard for pain intensity assessment. [15, 16] It is considered the most suitable tool for assessing pain in adult patients without cognitive impairment. [15, 17] In systematic reviews comparing different pain scales (NRS, VRS, VAS), NRS was likely superior to VRS and VAS. [15-17] NRS was easier to assess and use than VAS [15, 17, 18] and had the fewest incorrect responses. [13, 17] It was also the preferred choice among patients regardless of age and education. [13, 15, 17, 18]

NRS shows higher sensitivity to change than the six-point VRS [15, 18] and greater discrimination ability than the binary scale. [15, 17, 19] Comparisons with the Faces scale show equal understanding. [15] Most studies in systematic reviews (7/13) recommended NRS as the most appropriate scale for adult pain assessment across most situations, populations, cultures, and languages. [13, 15, 17, 18] This is supported by IMMPACT guidelines and NIH Toolbox pain assessment tools. [15] NRS is preferred for chronic non-cancer pain due to simplicity and standardized format. [17, 18] Older patients and those on high opioid doses also prefer NRS over VAS. [17] NRS shows higher repeatability for pain exacerbations than VRS. [17] Its 11-point scale is easily implemented in electronic systems. [15]

6.2 Visual Analog Scale (VAS)

The VAS is a 10-cm line with endpoints typically labeled “no pain” and “worst imaginable pain.” Patients mark a point on the 100-mm line corresponding to their pain, measured from the start of the scale. [13, 14, 20] The millimeter scale allows 101 levels of pain intensity. VAS can be horizontal or vertical, and its orientation should match local reading conventions. [14, 20] Limitations include need for paper or electronic use and sensitivity to copying or orientation changes. [14, 15] VAS detects small changes, is statistically most accurate, but repeat measurements can vary by up to 20%, affecting evaluation of clinically significant pain reduction (~30–33%). It is also the most challenging to apply in clinical practice. [13, 14, 19] Cognitive impairment and older age increase difficulty in using VAS. [13, 14, 20] Compared to NRS, older patients have higher incomplete measurement rates. [17] VAS is similar to NRS and less influenced by non-pain factors than VRS. [16] It is more sensitive than four-point VRS and as well accepted as the Faces scale. [15]

6.3 Verbal Rating Scale (VRS)

The VRS requires patients to rate their pain using adjectives that describe increasing levels of pain intensity. The most commonly used are: no pain, mild pain, moderate pain, and severe or intense pain. [14, 21] The adjectives are assigned numerical values (e.g., no pain = 0, mild pain = 1, etc.), [13, 14] which are often treated as interval or ratio data to allow for a quantitative description of pain and the evaluation of treatment-related changes. [21] However, this may create the false impression that the intervals between the descriptors are equal, which is not true. [14, 21]

The uneven intervals between categories in the verbal scale indicate that using interval-level assessments is inappropriate, and some categories, particularly “moderate,” may cover a wide range of pain intensities overlapping with adjacent categories. [17, 21] The words used to describe pain can be interpreted differently, which may lead to incorrect conclusions, and this is not dependent on the patient’s level of education. [15]

Increasing the number of verbal descriptors in VRS scales also encounters limitations due to difficulties in distinguishing and ranking such a large number of descriptors. [17]

The VRS is the least sensitive tool among the three (VRS, NRS, VAS), but its use is very simple. One of the main problems associated with this scale is the limited number of categories, which means that a much larger change in pain intensity is required to be recorded. The lack of sensitivity of the VRS may lead to overestimation or underestimation of changes in pain. [14] Probably due to the smaller number of categories in the VRS, the VAS and NRS have shown better sensitivity to change. [17]

Despite the higher reliability and validity of the NRS, even among older patients, the VRS is frequently used. [21] The time needed to learn how to use the VRS is often shorter than for the VAS. [14] The use of the VRS is generally supported by its ease of presentation, particularly in some patient populations. [17] The VRS is preferred by less educated individuals, older adults, and those with cognitive impairments, [16, 18] whereas the NRS is preferred by younger and better-educated individuals. [13]

The VRS has been commonly used mainly to facilitate communication, especially to express the need for analgesic administration, and the results were adjusted according to the participant’s preferences regarding analgesia and the expectations of the medical staff. [21] Researchers have traditionally assessed pain intensity using the VRS in the context of its impact on functioning. Pain intensity ratings on the VRS appear to reflect both the pain intensity itself (as measured by the NRS) and its impact on functioning and perceived unpleasantness. [16]

6.4 Wong–Baker FACES Pain Rating Scale (WBS)

Children aged three to seven years are able to assess the intensity of their pain, which allows the use of both observational scales and self-assessment methods. [22] One of the key methods used in this age group is the Wong–Baker FACES Scale (WBS), which presents a series of faces illustrating different levels of pain—from 0 (smiling face) to 10 (crying face), where 10 indicates the most severe pain. After a brief explanation, the child selects the face that best reflects their sensation. [22–24]

The WBS demonstrates excellent, increasing correlation with the VAS. [23, 24] A study conducted by Garra G, Singer A, Domingo A, and Thode H showed that, in school-aged children, fear does not significantly affect pain assessment using the Wong–Baker FACES Scale. Distinguishing between pain and fear plays a key role, especially when the WBS is used for pain assessment and treatment in emergency situations. The lack of clear separation between pain and fear or anxiety may lead to the administration of inappropriate medications for anxiety symptoms in children. Conversely, confusing pain with fear or anxiety may significantly reduce the chances of proper pain management. [23]

6.5 Face, Legs, Activity, Cry, Consolability Scale (FLACC)

Individuals unable to self-report pain represent a significant barrier to effective pain management. Some individuals with cognitive impairment are able to recognize the presence of pain; however, many, especially those with moderate or severe impairment, are not. [25, 26] Difficulties in assessing pain intensity are particularly evident among individuals with profound cognitive impairment and children, in whom the FLACC scale is applicable. [26] It can be used in children aged 2 months to 7 years. [20] This tool demonstrates reasonable reliability and validity in this patient group, as confirmed by a study conducted by Malviya S, Voepel-Lewis T, Burke C, Merkel S, and Tait A. [25, 26]

The FLACC scale is a simple tool that assesses pain based on five categories scored from 0 to 2 points, resulting in a total score ranging from 0 to 10. The assessed categories are: face, legs, activity, cry, and consolability. [24, 25]

However, it has been shown that the assessment of the legs and activity categories may correlate less well with actual pain intensity, which may result from underlying motor disorders such as spasticity that can mask the true clinical picture. In the revised version of the scale, new behavioral descriptions were added, such as verbal outbursts, changes in muscle tone, or breathing patterns, which significantly improved its reliability. On the other hand, a study by Crellin D, Harrison D, Santamaria N, and Babl F challenges the commonly held belief that the strong psychometric properties of the FLACC justify its use for pain assessment in children from infancy to adolescence in various clinical settings. [25]

The FLACC scale also allows individualization by incorporating unique behaviors indicated by parents, which further increases its effectiveness in assessing pain in children with communication difficulties. [26]

6.6 McGill Pain Questionnaire (MPQ)

Two versions of this scale are distinguished: the long form (LF-MPQ) and the short form (SF-MPQ). The LF-MPQ includes 78 verbal descriptors divided into 20 lists that assess various dimensions of pain: location (sensory dimension), intensity (sensory dimension), quality (sensory, affective, and cognitive dimensions), pattern (sensory dimension), and factors that alleviate or aggravate pain (behavioral dimension). [27–29] The Pain Rating Index (PPI), which is part of the LF-MPQ, provides an independent measure of pain intensity. [28]

The reliability and validity of the LF-MPQ have been confirmed in studies conducted on different groups of patients with various types of pain, making it one of the most versatile pain assessment tools. [28] The scale allows for the collection of both quantitative and qualitative data, which can be analyzed in detail. It is highly sensitive to treatment and intervention effects and does not require specialized training of personnel. [29] Due to translations into many languages and cultural adaptations, it is applicable in various clinical settings. [27]

However, completing the LF-MPQ can take up to 20 minutes, and the complex vocabulary of the descriptors can be difficult for some patients to understand. [27–29] Additionally, the three pain patterns included in the MPQ are insufficient to accurately describe changes in pain perception in oncology patients. [27]

To overcome these difficulties, a shortened version of the McGill Questionnaire – the SF-MPQ – was developed. This scale includes 15 descriptors relating to the sensory and affective aspects of pain, as well as the PPI or VAS. Completing the SF-MPQ takes only 2–5 minutes. [28, 29] Research results suggest that the total SF-MPQ score reflects changes over time as effectively as the LF-MPQ. [28] It has also been confirmed that the SF-MPQ is sensitive in monitoring therapy effectiveness. [28, 29]

Although the SF-MPQ cannot completely replace the LF-MPQ, it is an excellent alternative for assessing pain in patients with chronic cancer pain, particularly those who have difficulty maintaining prolonged concentration. [28]

6.7 Abbey Pain Scale (APS)

The APS is an observational tool recommended by the Australian Pain Society and the British Geriatrics Society for patients with cognitive impairment. [30] It is dedicated to a specific group of patients, including those with dementia, communication disorders, delirium, sedation, or other cognitive impairments. [30–32] Communication with these patients can be difficult, making verbal self-assessment of pain often impossible. In such cases, patients may express pain in alternative ways, such as fear, aggression, fatigue, or nausea. Studies have shown that patients with dementia receive less optimal pain therapy compared to those without such disorders. [31, 32]

The APS was developed as a simple pain assessment tool comprising six categories: vocalization, facial expression, changes in body language, behavior, physiological, and physical parameters. Each of these categories contains specific examples, e.g., “vocalization: whimpering, moaning, crying.” The assessment is carried out on a 0–3 scale (none to severe), and the points are summed to give a total score. [30, 32] The tool is completed by a healthcare professional marking the appropriate boxes. The result is interpreted as follows: “no pain” (0–2 points), “mild pain” (3–7 points), “moderate pain” (8–13 points), “severe pain” (14–18 points). [30]

A retrospective Swedish study conducted by Ludvigsson C, Isaksson U, and Hajdarevic S showed that healthcare personnel working with cognitively impaired patients gained greater confidence in pain assessment after the APS was introduced into clinical practice. The use of the scale enabled objective pain monitoring, and faster, more effective pain relief was observed. In addition, using the scale reduced the risk of pain being overlooked by medical staff. The tool was found helpful in improving symptom management and alleviating pain in cognitively impaired patients receiving end-of-life care. [32]

However, the APS was developed mainly for patients with dementia, who often exhibit increased motor activity. It is not fully suitable for assessing patients with cancer pain, who are less likely to display such activity and express pain differently. Therefore, the results obtained with the APS may be less reliable in this patient group. Nevertheless, the scale may be useful for monitoring treatment response, especially if consistently used by the same staff member. [30]

In a study conducted by Sussi Tegenborg, Per Fransson, and Lisa Martinsson, the APS demonstrated usefulness in monitoring opioid response. However, it was not sufficiently valid or reliable and could not detect moderate or severe pain as effectively as the NRS in patients with advanced cancer. The study indicated limited clinical applicability of the APS in this patient group. [30]

6. Conclusions

Accurate pain assessment is a cornerstone of effective symptom management in palliative medicine. The use of validated and standardized pain rating scales allows clinicians to better understand the patient's subjective experience, tailor analgesic therapy, and evaluate treatment outcomes. No single scale is universally applicable to all patients — selection should be based on cognitive function, communication ability, and disease stage. The Numeric Rating Scale (NRS) remains the most practical and widely recommended tool for cognitively intact adults, while observational scales such as FLACC or Abbey Pain Scale are valuable in non-verbal or cognitively impaired individuals. Incorporating systematic pain assessment into routine palliative care practice enhances patient comfort, supports multidisciplinary decision-making, and ultimately improves the quality of end-of-life care.

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