Special Article

Comprehensive and Multidimensional Assessment and Measurement of Pain

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Abstract

Current theories of pain and clinical experience support a multidimensional framework for the experience of pain that has implications for assessment and management in any setting. Six major dimensions have been identified: physiologic, sensory, affective, cognitive, behavioral, and sociocultural. Any clinical assessment process must address relevant dimensions of pain in the given setting. In acute care settings, for example, clinicians may focus on physiologic and sensory dimensions, whereas in chronic care settings, the affective, cognitive, and behavioral dimensions might assume priority. Various tools are available for multidimensional assessment of pain, spanning the dimensions of the experience from physiologic to sociocultural. The clinician in any setting must use appropriate tools that provide useful information. Guidelines helpful in a selection process include identification of relevant dimensions of pain, type of pain, patient population and setting, psychometric properties of the tool, and issues of time, clinical relevance, and feasibility. When a careful selection process occurs, the resulting data should simultaneously meet clinicians' needs for information as well as provide the foundation for initiation of multidisciplinary interventions. J Pain Symptom Manage 1992;7:312-319.

Key Words
Pain assessment, pain measurement, experience of pain, multiple dimensions of pain

Introduction

Pain assessment in the clinical setting is an essential activity that must occur prior to initiation of therapy and throughout treatment. Many clinicians, however, feel less than optimally prepared for this process, and the literature is replete with documentation of poor assessment practices. Thus, assessment is one of the ongoing, unresolved issues in pain management.

The purpose of this paper is to discuss, from a broad perspective, the comprehensive and multidimensional assessment of pain in the clinical setting. The difference between measurement and assessment are clarified, and a multidimensional conceptualization of pain is presented, with examples from different disease states. The goals and process of assessment are explained, and the roles of health-care providers in this process are delineated. Finally assessment tools are briefly reviewed and considerations in selecting tools are discussed.

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Measurement versus Assessment

Measurement and assessment are two different processes. A look at formal dictionary definitions is useful in clarifying some of the differences. One definition of measurement is "... to ascertain the quantity, mass, extent, or degree of in terms of a standard unit or fixed amount usually by means of an instrument or container marked off in units. ..." Another important point is the comparison to a standard of some kind. In relation to pain, Donovan noted that measurement is used, particularly in laboratory research, to quantify pain in an objective, bias-free manner. Syrjala described measurement as a means to quantify pain.

Assessment is "... to analyze critically and judge definitively the nature, significance, status, or merit ..." This process involves an analysis of and judgment about the nature, significance, and other properties of an entity. When the word assessment is applied to pain, it involves an overall appraisal of the experience of pain. Rather than rigorous evaluation in a bias-free manner, it connotes a more generalized judgment that is made for clinical purposes.

In the clinical setting, assessment of pain can be put into a broader framework of surveillance (N. Hester, personal communication, 1990). Surveillance, according to Dougherty and Mollen, is "... the application of behavioral and cognitive processes in the systematic collection of information used to make judgments and predictions. ..." This notion, although originally described for critical care patients, is equally applicable to patients with pain, or those for whom pain is a potential problem. It implies a state of constant watchfulness to anticipate, or predict, so that early interventions may be initiated. The collection of data allows decisions about primary interventions, both nursing and other. A framework of surveillance helps the clinician determine when to intervene, with what, and why. It thus helps establish objectives and priorities and allows planning and structure in the delivery of care. Ultimately, diagnosis and treatment are enhanced because more accurate predictions are made.

Multiple Dimensions of the Pain Experience

During the past several decades, and particularly following the introduction and refinement of the Gate Control Theory of Pain, a conceptualization of pain as a multidimensional, subjective, and uniquely personal experience has emerged. Ahles and colleagues developed the notion of a five-dimensional model for cancer pain, which they substantiated with research findings. A sixth dimension has been proposed as well. These six dimensions—physiologic, sensory, affective, cognitive, behavioral, and socio-cultural—are applicable not only to individuals with cancer-related pain, but also to individuals with pain caused by other conditions. Components of the dimensions are shown in Table 1. They occur together in any individual, may overlap, and are often interrelated in ways that clinicians and researchers are only beginning to understand. Each dimension is described briefly below.

The physiologic dimension is concerned primarily with the organic etiology of the pain. Other components include location, onset, duration, and type of pain. In cancer pain, for example, the etiology may be tumor, treatment, something else, or a combination of these, and it may be acute and/or chronic. The pain may be visceral, somatic, neuropathic, or some combination of these.

The sensory dimension is related to how the pain actually feels to the individual who has it. Components such as intensity, quality, and pattern comprise this dimension. Various studies have found that pain in different disease conditions or specific syndromes of pain is characterized by specific patterns and qualitative sensations. For example, cancer-related pain due to tumor is often described as constant or continuous. Its qualitative characteristics may vary depending on location and syndrome (somatic is often sharp and stabbing, whereas visceral pain is dull and aching, and neuropathic pain is burning and/or paroxysmal).

For the individual experiencing pain, many feelings are engendered. This aspect of pain is the affective dimension, which is related to how the pain makes the sufferer feel. Pain has effects on and is related to one's mood, outlook, sense of well-being, and other emotional states. Affective factors often associated with pain include depres-
Table 1

<table>
<thead>
<tr>
<th>Multiple Dimensions of the Pain Experience</th>
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<tbody>
<tr>
<td>Physiologic dimension</td>
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<tr>
<td>Location</td>
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<td>Onset</td>
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<td>Duration</td>
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<tr>
<td>Etiology</td>
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<td>Syndrome</td>
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<td>Sensory dimension</td>
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<tr>
<td>Intensity</td>
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<tr>
<td>Quality</td>
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<tr>
<td>Pattern</td>
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<tr>
<td>Affective dimension</td>
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<tr>
<td>Mood state</td>
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<td>Anxiety</td>
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<td>Depression</td>
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<td>Well-being</td>
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<td>Cognitive dimension</td>
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<tr>
<td>Meaning of pain</td>
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<tr>
<td>View of self</td>
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<tr>
<td>Coping skills and strategies</td>
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<td>Previous treatment</td>
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<tr>
<td>Attitudes and beliefs</td>
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<tr>
<td>Factors influencing pain</td>
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<td>Behavioral dimension</td>
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<tr>
<td>Communication</td>
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<td>Interpersonal interaction</td>
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<td>Physical activity</td>
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<td>Pain behaviors</td>
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<td>Medications</td>
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<tr>
<td>Interventions</td>
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<tr>
<td>Sleep</td>
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<tr>
<td>Sociocultural dimension</td>
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<tr>
<td>Ethnocultural background</td>
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<td>Family and social life</td>
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<td>Work and home responsibilities</td>
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<tr>
<td>Recreation and leisure</td>
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<td>Environmental factors</td>
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<tr>
<td>Attitudes and beliefs</td>
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<tr>
<td>Social influences</td>
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</table>

The presence of pain causes or contributes to a number of behaviors that may be termed pain-related and comprise the behavioral dimension of pain. Some behaviors (see Table 1) are often undertaken to decrease the severity of pain, although others are actually indicators of the presence of pain. Many such behaviors will increase as the severity of pain increases and decrease when it lessens.

Finally, the sociocultural dimension of pain is comprised of a broad range of ethnocultural, demographic, spiritual, social, and other factors related to an individual’s perception of and response to pain. These factors are still not well understood but are acknowledged to have a powerful influence on the experience of pain. Their impact is manifested not only in the individual who has pain, but in those who are involved in the experience as supporters (e.g., family or friends) or caregivers (e.g., nurses or physicians). Attitudes and beliefs about pain are critical to its acknowledgment as a legitimate situation requiring action.

In summary, it is important to reiterate that these six dimensions cannot be easily separated. The human being, as an integrated organism constantly adapting to the environment, also experiences and responds to pain in an integrated way. Some dimensions are more relevant than others in certain pain situations (see Table 2). In chronic rheumatic pain, for example, the affective dimension was found to distinguish this type of pain from acute postoperative pain, and sensory aspects were different as well. Pain in the postanesthesia unit is obviously very different, and recent research on its assessment indicates that the behavioral component, manifested by restlessness, muscle tension, frowning/grimacing, and vocalization is paramount. Pain in newborns is different still, with the behavioral dimension assuming primary importance (crying, fussiness, grimacing) and the physiologic dimension (increased heart and respiratory rates, diaphoresis) being manifested as well. Finally, pain in the hospice setting is receiving increasing attention from researchers, whose collective work has also supported the six dimensions of the pain experience (see Table 3). Thus, the relevance of the different dimensions changes according to the etiology of pain, whether it is acute or chronic, and by disease state as well.
Table 2  
Relevant Dimensions of Pain in Specific Clinical Situations

| Pain in rheumatoid arthritis
dimension—rheumatic pain and acute postoperative pain continuous, steady, constantr
| Affective dimension—distinguished rheumatic
| Cognitive dimension—focus on pain, no effects on self-esteem, distraction, religious faith
| Behavioral dimension—rest/fatigue, physical activity, heat
| Sociocultural—talking with others about pain

Assessment of pain in postanesthesia recovery unit
dimension—restlessness, muscle tension, frowning/grimacing, vocalizations
Sensory indicator—pain intensity (self-report)
Different indicators at different points in recovery time

Assessment of pain in newborns
Behavioral indicators—fussiness, crying, grimacing selected "usually" or "always"
Physiologic indicators—increased heart rate/respiration rate and diaphoresis "usually"
Behavioral indicators—facial expression, facial color, limb movement, torso activity, breathing, cry, state (alert, asleep)
Sensory indicators—level of pain was indicated by severity of behavior

Goals and Process of Assessment

The goals of assessment are to assist in establishing a baseline, selecting interventions, and evaluating the individual's response to treatment. The impact of assessment is important, as particular outcomes can be anticipated when a systematic process is used. Benefits of assessment for patients include the facts that pain is identified, recognized as legitimate, quantified and described, documented and followed, and used to evaluate interventions. Additionally, the patient becomes an active participant in his or her care, and as a result becomes more comfortable and functional. These positive outcomes are important to all patients in pain, but perhaps most especially those who are at the end of life.

The impact of assessment on care providers can be extremely positive as well, including, similarly, the identification and recognition of pain as a problem, its quantification and documentation, and its use as an indicator of therapeutic success. Appropriate assessment of pain allows caregivers to be more fully cognizant of pain status, more responsible and accountable for the management of pain, more collegial in managing it, and finally, less frustrated and impotent in their attempts to relieve pain.

All clinicians involved in the care of patients with pain have an essential role to play in the assessment process. Foley described the physician's role as including (1) obtaining the medical history, (2) assessing psychosocial status, (3) performing medical and neurologic exams, (4) ordering appropriate diagnostic tests, (5) determining extent of disease, (6) selecting methods of pain control, and (7) evaluating response to treatment.

The nurse's role in assessing pain, while described initially some years ago, has recently been formally integrated into a description of the nurse's scope of practice in the Oncology
Nursing Society position paper on cancer pain.3

This description includes (1) describing the phenomenon, (2) identifying aggravating and relieving factors, (3) determining the meaning of pain to the individual, (4) determining its cause, (5) determining definitions of optimal pain relief, (6) deriving nursing diagnoses, (7) assisting in selecting interventions, and (8) evaluating efficacy of interventions. Additionally, the position paper delineates a scope of nursing practice in relation to patients in pain that emphasizes the need to coordinate care and communication for those with pain.

There is obvious overlap in the roles nurses and physicians play in assessing pain, but they have different and unique functions as well. Nurses may focus more on the identification of a patient's definition of optimal relief, psychosocial and physical problems that are amenable to nursing interventions, and an evaluation of the individual's overall response to treatment. Physicians, on the other hand, may focus on diagnosing and treating the cause of the pain as well as an evaluation of overall response. The overlapping and complementary aspects of caregivers' roles in assessing pain point clearly to the need for a multidisciplinary, collaborative approach to assessment and management of pain.

Lastly, other individuals have an important role to play in assessing pain. Parents of a patient, family members, friends, or others who are around the individual for any time will certainly have observations or other information to contribute to the assessment of pain. In many instances, particularly in the home-care setting, family members are the assessors of pain. Although they have their own stresses and burdens, the information they provide is essential to caregivers who are assisting in the management of pain.

**Tools for Assessing Pain**

How does one assess this multidimensional experience of pain? Like a diner reading a menu in a restaurant and choosing an entree, selection of a tool is simply a matter of picking a variation on a theme. The theme is multidimensionality and the variation is the specific assessment needs of a given patient and health-care provider. There are two major approaches to assessing pain.

First is the unidimensional approach which is adopted if the clinician wishes to assess components of only a single dimension such as pain location or intensity or relief. Tools can be used to assess components of the physiologic (location), sensory (intensity), affective (distress), cognitive (perceived relief), and behavioral (specific pain-related behaviors) dimensions. Table 4 shows some examples of common instruments. Although detailed description and discussion of these tools is beyond the scope of this paper, they are reviewed in several chapters on assessing and measuring pain.

The second approach to assessing pain is the multidimensional method, in which two or more dimensions of the experience are assessed simultaneously, either with the same or combined tools. Many tools have been developed by psychologists, nurses, physicians, and others to assess various dimensions of pain. Some of them, also highlighted in Table 4, are familiar and have good reliability and validity. Several others are less well known, but offer excellent possibilities for baseline and ongoing assessment of pain.

The tools shown in Table 4 also offer ample opportunity for the documentation of assessment data in ways that can be made readily available to clinicians involved in patient care. Documentation of assessment data is key to adequate management of pain. The selection of specific tools for specific settings is a careful process with components that are delineated below.

### Table 4

**Examples of Tools for Assessing Pain**

<table>
<thead>
<tr>
<th>Unidimensional assessment</th>
<th>Multidimensional assessment</th>
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<tbody>
<tr>
<td>Body diagrams</td>
<td>Pain Assessment Tool and Flow Sheet&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Visual analogue scales</td>
<td>Brief Pain Inventory&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Graphic rating scales</td>
<td>McGill Pain Questionnaire (short and long)&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>Verbal descriptor scales</td>
<td>Memorial Pain Assessment Card&lt;sup&gt;e&lt;/sup&gt;</td>
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<tr>
<td>Behavioral rating scales</td>
<td>Pain/Comfort Journal&lt;sup&gt;f&lt;/sup&gt;</td>
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<tr>
<td>Pain/Comfort Journal&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Body Chart&lt;sup&gt;g&lt;/sup&gt;</td>
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<sup>a</sup>See references 10, 11, and 53–55.
<sup>b</sup>See reference 60.
<sup>c</sup>See reference 56.
<sup>d</sup>See references 51 and 58.
<sup>e</sup>See reference 57.
<sup>f</sup>See reference 59.
<sup>g</sup>See reference 61.
Selecting Assessment Tools

In the selection of an assessment tool, the foremost need is to decide which dimensions of pain are of most interest. Determination of those that predominate in particular painful situations is helpful. Additionally, consideration of the therapeutic approach to pain is helpful. For example, if the clinician is using interventions to decrease perception or sensation of pain (e.g., pharmacologic agents), assessment tools that address primarily the sensory and behavioral dimensions of pain are appropriate. If interventions to diminish the suffering component of pain are used (e.g., distraction, hypnosis), then tools addressing the affective, cognitive, and sociocultural dimensions may be more appropriate. Finally, if the cause of the pain is being treated (e.g., antineoplastic drugs), assessment should focus primarily on the physiologic dimension. The use of multidimensional tools gives more comprehensive information. With any tool, adequate psychometric properties such as reliability and validity are important, as are previous use in similar types of patients and “goodness of fit” with the current patient population.

Other important areas of consideration are shown in Table 5. Subjectivity versus objectivity is a major concern. Although self-report is clearly preferable, certain conditions must be present to facilitate its use. There are situations in which behavioral observations may be necessary or even preferable. Characteristics of the patient population and setting will have a strong impact on decisions about which tools to use. Both demographic and clinical factors should be considered. Finally, issues related to time, feasibility, and relevance in the specific clinical setting are of paramount importance.

Conclusion

Clearly, assessment is the key to relief of pain. A systematic process, with appropriate tools and documentation procedures, enhances the clinician’s ability to carefully evaluate pain through the collection of subjective and objective data. Such evaluation, when performed initially and throughout treatment, enables clinicians to achieve the goals of pain relief and patients to achieve the goals of increased comfort and improved functioning.

References


