How to Assess Pain?

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Introduction

Pain is a universal phenomenon afflicting millions of individuals across the world and is in fact one of the commonest symptoms for which a patient seeks medical attention. The prevalence of pain interestingly is much higher than many common diseases like cancer, heart disease, diabetes put together and is a huge burden for the healthcare economy. Chronic pain is a public health concern affecting 20–30% of the population of Western countries. In our country, we do not have accurate statistics on the same till date. One important factor for this is the under-diagnosis and under-assessment of pain. The chronic pain experience is shaped by a myriad of biomedical, psychosocial (e.g. patients’ beliefs, expectations, and mood) and behavioural factors (e.g. context, responses by significant others). Assessing each of these three domains through a comprehensive evaluation of the person with chronic pain is essential for treatment decisions and to facilitate optimal outcomes.1

According to the International Association for the Study of Pain [IASP] definition,

“Pain is an unpleasant sensory and emotional experience arising from actual or potential tissue damage”.2 Clinically, pain is whatever the person says he or she is experiencing whenever he or she says it occurs. Pain is commonly categorised along a continuum of duration. Acute pain usually lasts hours, days or weeks and is associated with tissue damage, inflammation, a surgical procedure, or a brief disease process.

Acute pain serves as a biological warning that something is wrong. Chronic pain in contrast has no useful function and can worsen and intensify over time and persist for months, years or a lifetime. It accompanies disease processes such as cancer, arthritis, fibromyalgia, diabetes and HIV/AIDS. Chronic pain can also accompany an injury that has not resolved over time such as reflex sympathetic dystrophy, low back pain or phantom limb pain. It is also found in patients who have undergone surgeries like thoracotomy, mastectomy, hernioplasty and amputation.

In 1996, the American Pain Society (APS) introduced the phrase “pain as the 5th vital sign.” This initiative emphasises that pain assessment is as important as assessment of the standard four vital signs and that clinicians need to take action when patients report pain.

Uncontrolled pain can have several physical and psychological ill-effects hence it is imperative to address it satisfactorily. The key to comprehensive, effective and an individualised solution to a pain problem lies in an accurate assessment of pain. Besides guiding institution of correct management, it also aids in monitoring the response of the pain to the different modalities when serial assessment in the same manner is carried out.

The aim of this chapter therefore is to give an overview of how to assess pain.

Challenges in Assessment of Pain

The key to an accurate diagnosis is a comprehensive history and detailed examination but is often difficult for the following reasons:

1. Pain is subjective, personal and invisible and there is no tool for objective assessment

2. The experience of pain is multidimensional and may be described at several levels as follows:
   - Sensory dimension: Intensity, location and character of the pain sensation
   - Affective dimension: Emotional component of pain and how pain is perceived
   - Impact: Disabling effects of pain on the person’s ability to function and participate in society

The concept of Total pain encompasses the multidimensional factors that contribute to the patient’s experience of
3. One has to have special skills to assess pain in patients in extremes of age and in patients with cognitive decline, communication or language problems.
4. The severity of pain is also affected by individual pain thresholds, previous pain experience, personal beliefs, motivation, environmental factors and litigation issues.
5. Lack of standard national guidelines which can be applied for initial and serial assessment of pain even by different clinicians or different centres.

Comprehensive Assessment of Pain

There is no one-to-one relationship between the extent and type of organic pathology and pain intensity as there is an interplay of various elements resulting in overall total pain experience.

Turk and Meichenbaum suggested three central questions which should guide the assessment in patients with chronic pain.4
1. What is the extent of the patient’s disease or injury (physical impairment)?
2. What is the magnitude of the illness? That is, to what extent is the patient suffering, disabled, and unable to enjoy usual activities?
3. Does the individual’s behaviour seem appropriate to the disease or injury, or is there any evidence of symptom amplification for any of a variety of psychological or social reasons (e.g. benefits such as positive attention, mood-altering medications and financial compensation)

The clinician’s primary objective is to obtain information that will help identify the cause of the pain and guide management. This is achieved during the initial assessment by:
1. Pain history
2. Clinical examination

Fig. 1: Multidimensional pain experience

Fig. 2: Unidimensional Scales for Pain Assessment

3. Appropriate and relevant investigations
4. Assimilation of all the above to come to a conclusion about the potential pain generator and to guide management.
1. Pain History:
   a. Intensity of Pain
   b. Pain location and radiation
   c. Pain character indicating pathophysiology
   a. Intensity of Pain : The ability to quantify the intensity of pain is essential when caring for persons with acute and chronic pain. Though this is difficult as no scale is suitable for all patients, we will discuss some of the commonly used scales like unidimensional self-report scales, multidimensional instruments and pain diaries. Experts recommend the use of multidimensional tools in the assessment of complex or persistent pain. As pain is subjective the intensity is the most difficult to quantify and several scales have been used to determine an approximate level.5

Some of the commonly used scales are as follows (Figure 2):
1. Verbal Descriptor Scale: This describes pain from a list of adjectives to reflect gradation of pain intensity from no pain to worst possible pain.
2. Numeric Rating Scale [NRS]: The NRS is the most commonly used rating scale. Patients rate pain on a scale of 0-10 or 0-100 with 0 representing “no pain at all” and 10 or 100 representing the worst imaginable pain.” Pain intensity levels are measured at the initial encounter, following treatment and periodically as guided by clinical situation.
3. Faces Pain Scale [FPS]: For adults with communication or cognitive difficulties FPS or Wong-Baker Faces Rating Scale are categorical scales with visual descriptors. It consists of eight images of faces with various expressions [e.g. Smiling, Frowning and Grimacing]. The patient selects the face that is consistent with his or her current level of pain. The scale shows a close linear relationship with visual analogue pain scales across the age range of 4-16 years.
4. Visual Analogue Scale: The VAS consists of a 10-cm line, with anchors at either end. One end is marked “no pain” and the other end is marked as worst
Multidimensional tools: Although not used as often as they should be, multidimensional tools provide important information about the pain’s characteristics and effects on the patients’ daily life. These tools are designed for patient self-report, but a clinician may assist the patient.

1. Initial Pain Assessment Tool: This tool, which was developed for use in the initial patient evaluation, elicits information about characteristics of the pain, the patient’s manner of expressing pain, and the effects of the pain on the patient’s life (e.g., daily activities, sleep, appetite, relationships and emotions). It includes a diagram for indicating pain location(s), a scale for the patient to rate pain intensity, and a space for documenting additional comments and management plans.

2. Brief Pain Inventory (BPI): This tool is quick and easy to use and quantifies both pain intensity and associated disability. It consists of a series of questions that addresses aspects of the pain experienced over the preceding 24 hours (e.g., pain location and intensity, impact on the patient’s life, type and effectiveness of any treatments). The BPI generally takes about 5 to 15 minutes to complete and is useful for a variety of patient populations. This was originally applied for cancer pain assessment where it is mainly used even in present time.

3. McGill Pain Questionnaire (MPQ): The MPQ is one of the most extensively tested multidimensional scales in use. This tool assesses pain in three dimensional (i.e., sensory, affective, and evaluative) context based on words that patients select to describe their pain. Descriptive words from all three major dimensions of pain [i.e. sensory, emotional and evaluative] are further subdivided into 20 subclasses each containing words of varying degrees. Three scores are obtained one for each dimension and total score is documented. Studies have shown this to be the most reliable tool in clinical research. The MPQ can be combined with other tools to improve diagnostic accuracy. A briefer form of the MPQ, the short-form McGill Pain Questionnaire, is also available which takes about three minutes to complete.

A number of other multidimensional tools for pain assessment exist. Some are designed to measure chronic pain in general, while others are specific to particular pain syndromes. Patients who experience a loss of ability to perform normal life activities as a result of chronic pain may benefit from having a recurring assessment on a consistent basis for baseline comparison as a patient’s treatment progress. This may allow for continual assessment of the effectiveness of the care plan or treatment interventions. Some examples are:

- Palliative Performance Scale (Karnofsky Scale)
- Oswestry Low Back Disability Index
- SF-36

The self-complete Leeds Assessment of Neuropathic Symptoms and Signs and the neuropathic pain scale screen for and evaluate neuropathic pain conditions. The recently developed Neuropathic Pain Scale provides information about the type and degree of sensations experienced by patients with neuropathic pain. It evaluates eight common qualities of neuropathic pain (i.e., sharp, dull, hot, cold, sensitive, itchy, and deep versus surface pain). The patient rates each item on a scale from 0 to 10, with 0 for none and 10 for the “worst imaginable.” Although still in its developmental form, this scale may hold diagnostic and therapeutic promise. Early data suggest that this scale is easy to use and sensitive to treatment effects.

When the patient cannot report his/her subjective pain experience, proxy measurements of pain must be used, such as pain behaviour and reactions that may indicate that the person is suffering painful experiences. Besides communication difficulties caused by language problems, patients in the extremes of age, and critically ill patients also can be evaluated in the same manner.

Reassessment of pain is integral to effective pain management. Many factors influence its frequency, scope, and methods. Clinicians should instruct outpatients to contact them to report changes in pain’s characteristics, side effects of treatment, and treatment outcomes. Periodic reassessment is recommended in patients with chronic pain to evaluate improvement, deterioration, or treatment-related complications. Patients who have not responded to treatment and/or have complex types of pain (e.g. neuropathic pain) often require more comprehensive reassessment of pain. A pain diary may facilitate this process. A pain diary or log is a patient-generated record that is used to track various aspects of the pain and its management (e.g. pain intensity, associated activities, medication use, side effects, and other responses to treatment). Noting pain level as NRS on a regular basis or in relation to various positions, with activities and in response to medications and other treatment modalities may reflect pain more accurately than retrospective
b. Pain Location and Radiation: The location and distribution of pain helps to understand the pathophysiology of pain. Body diagrams found in some assessment charts are useful in knowing areas of pain involvement (Figure 3).

a. Is the pain localised or radiating? e.g. facet origin pain is generally localised as against nerve root pain which will radiate along the entire course of the nerve. One also has to understand referred pain e.g. Pain from liver metastasis in a patient with pancreatic malignancy will refer to shoulder due to phrenic nerve irritation.

b. Is the pain superficial or visceral?
   Pain from nociceptors in skin, mucous membranes, teeth etc is localised and limited in distribution whereas visceral pain due to fewer nociceptors is often poorly localised and associated with autonomic signs such as sweating, tachycardia, hypertension and so on.

c. Aggravating/Alleviating factors: Asking the patient to describe the factors that aggravate or alleviate the pain will help plan the interventions. A typical question might be, “What makes the pain better or worse?” Analgesics, non-pharmacologic approaches (massage, relaxation, music or visualisation therapy, biofeedback, heat or cold) and nerve blocks are some interventions that may relieve the pain. Other factors (movement, physical therapy, activity, mental anguish, depression, sadness, bad news) may intensify the pain.

d. Pain character: Since different types of pain respond to different therapies it is essential to assess exact nature of pain. It can be categorised as follows:

   Nociceptive or Somatic pain-Due to stimulation of nociceptors which are present in all tissues except central nervous system. This pain is clinically proportionate to number of afferent fibres recruited and it can be acute or chronic such as postoperative pain vs cancer pain. This pain is localised, throbbing or deep-aching and generally continuous in nature.

   Neuropathic pain: This is as a result of injury or disease of nervous system anywhere from peripheral nociceptor to cortical neuron. This type of pain can be described as burning, shooting, lancinating often associated with tingling and numbness. Sometimes patients say that their pain is like a fire or an electrical jolt. Sympathetically mediated pain [SMP] is pain characterised by evidence of oedema, colour changes, abnormal Psudomotor activity with features like allodynia, hyperalgesia, hyperpathia.

   Visceral pain: Squeezing, cramping or colicky which is diffuse and deep-seated in nature.

   Pain assessment should be ongoing (occurring at regular intervals), individualised, and documented so that all involved in the patient’s care understand the pain problem and its response to the therapy.

   It is also important to make a note of details of treatment modalities a patient has received before approaching you. It is useful to obtain details of other co-morbidities patient has to correlate clinically e.g. presence of diabetes will lead to the possibility of pain due to diabetic neuropathy.

   Cognitions or thoughts the patient has exert powerful effects on emotional reactions, behavioural responses, and interpretations of pain. Beliefs are a foundation for cognitions. For example, the belief that the aetiology of pain can be “fixed” or “cured” affects expectations of and satisfaction with treatment. Catastrophising is a cognitive and emotional process that involves magnification of pain-related stimuli, feeling of helplessness and a negative orientation to pain and life circumstances. Examples of catastrophic statements include “I can’t handle this pain,” “There is nothing I can do about my pain,” and “My pain is uncontrollable”. The effect of catastrophising should not be underestimated. Catastrophising is associated with depression, decreases in physical functioning, increased pain, risk of death by suicide, and interpersonal distress. Catastrophising predicts poor outcomes for patients with chronic pain and should be treated with cognitive-behavioural therapy.

Physical Examination

The initial assessment of a patient with pain includes a physical examination. The clinician uses this examination to help identify the underlying cause(s) of the pain and reassure the patient that his or her complaints of pain are taken seriously. During this examination, the clinician appraises the patient’s general physical condition, with special attention to the musculoskeletal and neurological systems and site(s) of pain (Table 1). The clinician also may evaluate the effect of various physical factors (e.g.,
Table 1: Physical Examination of patient with pain

<table>
<thead>
<tr>
<th>Region</th>
<th>Method or Potential finding</th>
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<tbody>
<tr>
<td>General</td>
<td>Observe and/or identify:</td>
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<tr>
<td></td>
<td>• Patient’s general appearance and vital signs</td>
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<tr>
<td></td>
<td>• Evidence of overt abnormalities (e.g., weight loss, muscle atrophy, deformities, trophic changes)</td>
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<td></td>
<td>• Any subjective manifestations of pain (e.g., grimacing, splinting)</td>
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<tr>
<td>Site of pain</td>
<td>Inspect the pain site(s) for abnormal appearance or colour of overlying skin or visible muscle spasm</td>
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<td></td>
<td>Palpate the site(s) to assess for tenderness and correlate tenderness with any associated subjective or objective findings</td>
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<td>Use percussion (or jarring) to elicit, reproduce, or evaluate the pain and any tenderness on palpation</td>
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<td></td>
<td>Use the brush, pinch, pin prick, and/or scratch tests to assess for allodynia, hyperalgesia, or hyperaesthesia</td>
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<tr>
<td></td>
<td>Determine the effects of physical factors (e.g., motion, applied heat or cold, deep breathing, changes in position) on pain</td>
</tr>
<tr>
<td>Other regions</td>
<td>Examine other regions as directed by the patient history or assessment of pain site</td>
</tr>
<tr>
<td>Neurological System</td>
<td>At minimum, perform a screening neurological examination (i.e., assess cranial nerves, spinal nerves, sympathetic nervous system function, coordination, and mental status) to screen for:</td>
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<tr>
<td></td>
<td>• Sensory deficits (e.g., impaired vision or hearing) or abnormal sensations (e.g., paraesthesia, dysesthesia, allodynia, hyperpathia)</td>
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<td></td>
<td>• Motor abnormalities or deficits (e.g., weakness, exaggerated or diminished reflexes)</td>
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<td></td>
<td>• Lack of coordination</td>
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<td></td>
<td>• Evidence of sympathetic nervous system dysfunction (e.g., skin flushing, unusual sweating)</td>
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<td></td>
<td>• Abnormalities or deficits in orientation, recent or remote memory, parietal sensory function, language function, and mood</td>
</tr>
<tr>
<td>Musculoskeletal system</td>
<td>Body type, posture, and overall symmetry</td>
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<td></td>
<td>Abnormal spine curvature or limb alignment and other deformities</td>
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<td></td>
<td>Abnormal movements and/or irregular gait during walking</td>
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<td></td>
<td>Range of motion (spine, extremities)</td>
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<td></td>
<td>For muscles in neck, upper extremities, trunk, and lower extremities:</td>
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<tr>
<td></td>
<td>• Assess multiple parameters (e.g., tone, volume, contour, strength and power, range of motion)</td>
</tr>
<tr>
<td></td>
<td>• Observe for any abnormalities (e.g., weakness, atrophy, hypertrophy, irritability, tenderness, trigger points)</td>
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Diagnostic Studies: The need for and type of diagnostic studies are determined by characteristics of the pain and suspected underlying condition. Appropriately selected tests can lead to accurate diagnosis and improve outcomes (e.g., reduce pain and adverse effects of therapy; improve function and quality of life). However, diagnostic studies are meant to supplement, not replace, comprehensive patient history and physical examination. Imaging studies show anatomy, not pain. Thus, there may be false positives where “abnormalities” are revealed that are unrelated to the patient’s pain, or false-negatives where the anatomy is “normal”, yet pain continues. In some difficult pain conditions, drug challenges can be used to predict its utility and help assess pain aetiology e.g. IV Lignocaine infusion to establish response to sodium channel blockers, but this again has been a topic of debate. QST or quantitative Sensory Testing is most commonly performed neurophysiological test performed in pain clinic which evaluates patient’s response to carefully quantified physical stimuli. Table 2 summarises examples of diagnostic studies used in patients with pain.

Thermography is a non-invasive method of displaying body’s temperature. Tissue pathology associated with chemical and metabolic changes may cause abnormal thermal patterns by altering vascularity as in CRPS but is not very specific. As EMG and NCV measure the functioning of large nerve fibres, they are not useful in diagnosing many neuropathic conditions that result from small-fibre damage or dysfunction. Small fibre neuropathy can be objectively confirmed by punch biopsy of skin confirming intra-epidermal nerve fibre density [IENFD]. Functional brain imaging in form of PET and functional MRI scan at present are investigational tool to highlight areas of pain processing in brain.

In some complex persistent pain problems a multidisciplinary team may need to have a joint consultation to analyse the available data and reach a working diagnosis to outline the management to optimise the outcome.

Conclusion

Successful management of patients with chronic pain can only be accomplished if our assessment efforts focus on the entire person, not just the organic
Table 2: Diagnostic Studies

| Screening laboratory tests | Includes CBC, Biochemistry profile (e.g. electrolytes, liver enzymes, BUN, creatinine), Urinalysis, ESR | Screen for illnesses, Organ dysfunction |
| Disease-specific laboratory tests | Includes autoantibodies, sickle cell test | Autoimmune diseases, SCD |
| Imaging studies | Includes Radiographs (X-rays), CT, MRI, USG, Myelography, Bone Densitometry [DEXA Scans], PET Scans | Detection of tumours, Metastasis, Other structural abnormalities |
| Diagnostic procedures | Includes Lumbar puncture, Thoracentesis, Biopsy Paracentesis, | Specific conditions |
| Electro-diagnostic tests | Include EMG (direct examination of skeletal muscle via needle electrodes) and NCV (examination of conduction along peripheral sensory and motor nerves or plexuses) | Detection of myopathies, some neuropathies, MS |
| Diagnostic nerve block | Nerve block (injection of a local anaesthetic to determine the source/mechanism of the pain) | Multiple uses, including Identification of the pain generator (e.g., sacroiliac or facet joint blocks) Differentiation between types of pain [SMP vs SIP] |

pathology. As chronic pain is multidimensional it requires comprehensive assessment of multiple facets to institute the most appropriate treatment.21 Assessment of pain can be challenging and intensive for a variety of reasons. Believing in patient and establishing a good rapport are of utmost importance.

A systematic approach, grounded in knowledge of anatomy and physiology will assist the clinician in determining the pathophysiology of pain complaint. With this essential knowledge, management plan can be drawn, initiated and reassessed as necessary to control pain. The primary goal of chronic pain management should be to improve all domains of functioning and quality of life.

References


