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Review Article

PAIN AS A MENTAL STATE: A NARRATIVE REVIEW OF THE MULTIDIMENSIONAL ASPECTS OF PAIN

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ABSTRACT

Introduction: Pain is a complex subjective experience that involves not only sensory-discriminative but also affective-motivational, cognitive-evaluative, behavioral and social dimensions. Contemporary perspectives on pain have shifted from simplistic linear models toward a conceptualization of pain as a multidimensional mental state generated by the brain. This narrative review aims to summarize the perspectives of pain within multidimensional aspects by understanding pain as an evolving framework associated with mental health, validated by assessment instruments, and its clinical implications.
Material and Methods: A comprehensive literature search was conducted via PubMed and ScienceDirect with keyword related to pain, chronic pain, acute pain, mental status, psychological state, mental health, multidimensional, biopsychosocial model, cognitive, affective, and sensory. A total of fifteen literatures were reviewed and analyzed.
Discussion: The literature indicates that pain is a brain-generated phenomenon integrating sensory-discriminative, affective-motivational, cognitive-evaluative, behavioral, and social dimensions. Strong associations were identified between chronic pain and depression, anxiety, and the mental state of pain patients. Validated multidimensional pain assessment instruments are available for adult and pediatric populations as well as for specific clinical conditions; however, gaps remain in cross-cultural validation and in assessments tailored to older adult populations.
Conclusion: Pain should be understood as a multidimensional mental state that requires comprehensive assessment and integrated intervention strategies. A biopsychosocial approach combining pharmacological management, psychological interventions, and functional rehabilitation represents best practice in chronic pain management. Future research should strengthen cross-population validation, integrate neurobiological measures with longitudinal psychosocial data, and develop mechanism-based personalized models of pain management.

Keywords: pain; mental state; multidimensional; biopsychosocial; pain assessment

INTRODUCTION

Pain is among the most common medical complaints and a leading reason for seeking health care. The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage, emphasizing that pain extends beyond a purely sensory phenomenon.[1] Over the past several centuries, the conceptualization of pain has evolved substantially,

reflecting advances in philosophy, neuroscience, and clinical medicine. Early Cartesian views in the 17th century framed pain as a mechanistic and linear phenomenon arising from peripheral tissue injury and transmitted directly to the brain, with a strict separation between mind and body that excluded psychological influence.[2] This mechanistic perspective was later refined during the early 20th centuriey through specificity theories, which conceptualized pain as a distinct sensory modality mediated by specialized receptors and dedicated neural pathways, closely tied to the magnitude of tissue damage.[2,3]

A major paradigm shift occurred in the 1960s with the introduction of the Gate Control Theory, which proposed that pain transmission is dynamically modulated at the spinal level and influenced by descending central processes, thereby incorporating cognitive and emotional factors into pain perception.[4] This shift laid the foundation for subsequent models that emphasized central nervous system contributions to pain.[5] In the 1990s, the neuromatrix theory further transformed pain science by conceptualizing pain as a brain-generated experience produced by a distributed neural network integrating sensory, affective, cognitive, and evaluative inputs, independent of ongoing peripheral nociception. This framework provided explanatory power for phenomena such as phantom limb pain and chronic pain without clear tissue pathology.[5,6]

Contemporary understanding is now dominated by the biopsychosocial model, which defines pain as a multidimensional mental state arising from the interaction of biological mechanisms, psychological processes, and social context.[7,8] Within this framework, pain is recognized as inherently subjective and accessible only through self-report, generated by central brain processes rather than passively transmitted from the periphery, and shaped by emotional, cognitive, behavioral, cultural, and contextual factors. Importantly, pain intensity does not consistently correlate with the degree of tissue damage, underscoring the limitations of

purely biomedical models. This multidimensional conceptualization carries profound implications for pain assessment and management, necessitating comprehensive approaches that integrate pharmacological, psychological, and social interventions rather than focusing solely on structural pathology.[1,7,9]

MATERIAL AND METHODS

Literature searches for this review were conducted using PubMed and ScienceDirect. The keywords utilized were: "pain" OR "chronic pain" OR "acute pain" AND "mental status" OR "mental health" AND "multidimensional". Fifteen articles included in this review were chosen for their pertinence to the subject matter. The articles were subsequently evaluated based on the title and abstract, as well as their inclusion criteria: peer-reviewed studies investigating pain within multidimensional aspects, empirical studies correlating pain with mental status, study validating pain assessment instrument, review articles and meta-analyses of theoretic pain, with the publication and/or abstract within English and Bahasa Indonesia. Exclusion criteria included duplicate results/follow-up, limited to specific diagnosis or treatment, focused only on peripheral nociceptive model, study done only on animal subjects, non-accessible text, non-peer-reviewed (non-data articles).

The literature selection process was conducted according to the PRISMA 2020 guidelines. A detailed flow diagram of the identification, screening, eligibility, and inclusion process is presented in **Figure 1**. Fifteen literature were included to be reviewed throughout their pain dimension view and were classified as five different dimensions for better understanding of pain: Sensory–Discriminative Dimension, Affective–Motivational Dimension, Cognitive–Evaluative Dimension, Behavioral Dimension, and Social Dimension. Main findings from each respective studies are explained in **Table 1.**

DISCUSSION

The Evolution of Pain Concepts

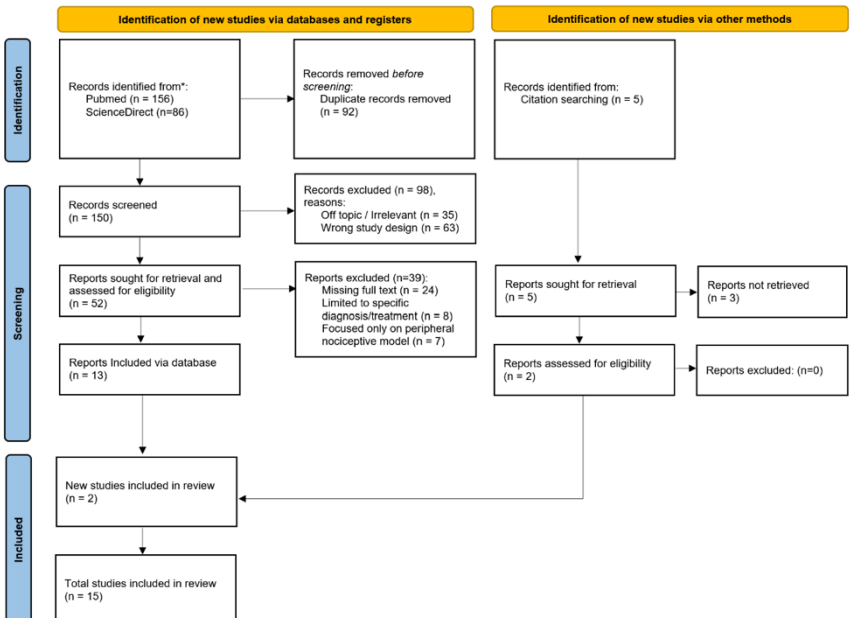

Figure 1. PRISMA 2020 Flow Diagram

The understanding of pain has evolved through several important stages:

1. **Cartesian Era (17th Century)**

Pain was initially explained through Cartesian dualism, in which René Descartes proposed that pain arose as a separate phenomenon transmitted in a mechanistic way from the periphery to the brain. Descartes compared pain as a fiber with a cord attached to a bell—by pulling on the other end of cord, the bell will ring. The bell was believed to be located within the "seat" of pain in the pineal gland, reflecting dualistic thinking of the era.[25]

2. **Specificity Theory Era (19th–Early 20th Century)**

Pain was conceptualized as a specific sensory modality distinct from other senses. Each type of sensation, including pain, was thought to travel via dedicated pathways and receptors to the brain. This sensory pathway also included smell, touch, warmth, and more sensory capability of human skin and sensory organs. The Bell-Magendie Law was presented as this theory of differentiation of spinal nerve was introduced.[2]

3. **Gate Control Theory/Modulation Era (1960s)**

The emergence of the Gate Control Theory by Ronald

Melzack and Patrick Wall in 1965 marked a key shift where the

Table 1. Summary of multidimensional understanding of pain

Pain Dimension View	Study	Main Findings
Sensory–Discriminative Dimension	Talbot et al (2019)[10]	Sensory pain can be selectively altered by cognitive manipulation
	Melzack and Katz (2013)[11]	Sensory discrimination remains tightly encoded by early processing networks, such as the somatosensory cortices and thalamocortical connections, which activate reflexive withdrawal and localization behaviors.
Affective–Motivational Dimension	Talbot et al (2019)[10]	Affective-Motivational Dimension of pain can be altered by suggestive hypnotic induction to 10-20% chronic pain
	Koopmans et al (2025)[12]	Virtual reality can significantly enhance the affective perception of pain, suggesting that affective responses are highly sensitive to contextual and experiential factors
	Rainville et al (1997)[13]	Hypnotic modulation towards of pain unpleasantness can change independently of pain intensity, with corresponding modulation in the ACC.
	Wiech K (2016)[14]	Emotional appraisal strongly influences subjective pain through prefrontal–limbic circuitry.
Cognitive–Evaluative Dimension	Kawasaki et al (2021) [15]	Cognitive–Evaluative aspect of pain persists and is slow to improve compared with the sensory components, illustrating distinct recovery trajectories
	Jaaniste (2019)[16]	Cognitive-Evaluative Dimension of pain in children often misinterpreted as sensory and affective experience. Children often believed as lacking cognitive maturity to self-report their pain experience.
	Kucyi & Davis (2015)[17]	Spontaneous fluctuations in attention alter the pain experience. The study assumed that there is an invariant baseline of neurocognitive state during which a "normal" response to nociceptive input occurs.
Behavioral Dimension	Vlaeyen et al (1987)[18]	Catastrophic interpretations lead to avoidance behaviors and chronic disability.
	Crombez (2012)[19]	Pain-related fear predicts attentional bias and behavioral avoidance, contributing to chronic pain maintenance.
Social Dimension	Potthoff et al (2025)[20]	There are relevant social dimension that contribute to chronicity of pain, including: gender relations and gender inequity, stigmatization, discrimination, and marginalization based on social identity, adversities, harsh living and working con- ditions, high expectations regarding work or school, cultural and religious beliefs and values, loneliness, and lifestyle factors
	Karos et al (2018)[21]	Pain inherently threatens our social needs in three wats: it shifts control away from the person with pain to others, it excludes injustice, and it is often associated with injustice.

	Bautista (2025)[22]	There are growing efforts to explicitly study social contextual factors in pain research, revealing how culture, gender, and relational factors inform pain experience and reporting
	Stone (2025)[23]	Qualitative synthesis of chronic pain experiences demonstrates that social connections, occupation, lifestyle, and community engagement significantly shape how individuals live with and transition through states of pain
	Sharvit (2022)[24]	Social support and social signals can influence neural and subjective pain processes, implicating prefrontal and limbic systems

model proposed that pain is not simply a direct pathway but is modulated by interactions at the spinal level where "gates" in the dorsal horn could inhibit or facilitate nociceptive transmission. Psychological factors began to be acknowledged as influencing pain perception.[5,26] The key components of the gate control mechanism:[27,28]

1. The substantia gelatinosa (dorsal horn) functions as the spinal gate controlling nociceptive signal flow.
2. Large-diameter A-beta fibers carrying non-nociceptive information can inhibit pain transmission by engaging inhibitory interneurons, thereby closing the gate.
3. Small-diameter A-delta and C fibers carrying nociceptive signals can enhance transmission by reducing inhibitory control, thus opening the gate.
4. Descending pathways from the brain modulate gate activity and provide a neurophysiological basis for psychological influences on pain perception.

The Gate Control Theory was the first formal model to integrate psychological factors into a physiological framework of pain, bridging a longstanding divide between peripheral nociception and subjective experience. This theory explains why innocuous tactile stimulation (such as rubbing or pressure) can reduce pain through increased large-fiber activity that inhibits nociceptive transmission. Furthermore, the notion of spinal modulation

provided the physiological rationale for clinical pain management strategies such as transcutaneous electrical nerve stimulation (TENS), which selectively stimulates large-diameter fibers to achieve analgesia.[29,30]

4. Neuromatrix Era (1990s)

In the neuromatrix era, pain was conceptualized as a brain-generated experience produced by a distributed neural network integrating sensory, affective, cognitive, and evaluative inputs. Pain was no longer dependent on peripheral nociception alone, explaining phenomena such as phantom limb pain and chronic pain without ongoing tissue damage.[5,6] New key components of the neuromatrix introduced include:[5,31,32]

1. Somatosensory cortex: processes the sensory-discriminative aspects of pain such as location, intensity, and quality.
2. Limbic system: contributes to affective and motivational dimensions of the pain experience.
3. Thalamocortical circuits: serve as integrative and modulatory pathways linking sensory input with cortical processing.
4. Stress-regulation systems: interactions with neuroendocrine and autonomic systems influence how pain is processed and experienced.
5. Neurosignature: the characteristic pattern of neural activity generated by the body-self neuromatrix that directly underlies the subjective experience of pain. This matrix was shaped by both genetic factors and past experiences (each individual history of sensory exposures and learning). It can be activated by multiple types of inputs sensory, cognitive, and emotional (not only by noxious stimuli). This matrix also produce multidimensional outputs ruling the sensation,

emotion, cognition, and behavior of an individual experiencing pain, demonstrating neural plasticity where they can change through experience and influence persistent pain states.

5. Biopsychosocial (1990s–Present)

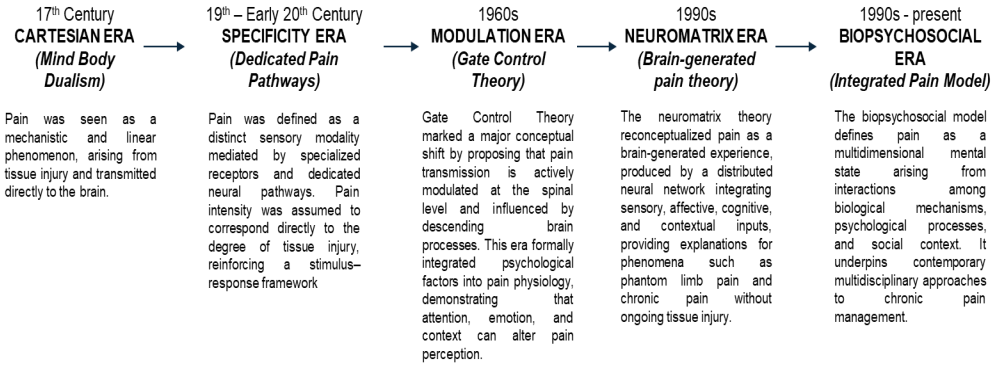

Figure 2. Timeline of the Evolution of Pain Conceptualization

The biopsychosocial model of pain proposes that pain and pain-related disability arise from complex interactions among biological, psychological, and social factors, rather than from purely biomedical mechanisms alone. This holistic framework argues that no single domain fully explains an individual's pain experience; biological processes (e.g., nociceptive and neuropathic mechanisms, neural plasticity), psychological processes (e.g., maladaptive cognitions, mood disturbances), and social contexts (e.g., support systems, work environment) are all integral to the development, maintenance, and modulation of pain. The model therefore emphasizes a dynamic and reciprocal relationship among these components in shaping the clinical presentation and outcomes of pain conditions.[7,25]

Biological factors include tissue pathology, nervous system physiology, nociceptive and neuropathic mechanisms, and neural plasticity. Psychological factors encompass cognition (such as pain beliefs, expectations, and catastrophizing), emotional states (e.g., depression, anxiety, fear-avoidance), and behavioral

responses (coping strategies, activity patterns). Social factors consist of interpersonal relationships and social support, occupational and economic contexts, health care access, and cultural norms that influence how pain is experienced and expressed.[25]

Pain as a Mental State

The conceptualization of pain as a mental state highlights several key principles:

1. **Pain is a subjective experience that cannot be objectively measured.** Pain is inherently personal and subjective; it cannot be directly measured using objective tools. Self-report remains the gold standard for assessing the experience of pain. Pain is described as an unpleasant sensory and emotional experience influenced by biological, psychological, and social factors.[1]
2. **Pain is generated by the brain, not merely transmitted from the periphery.** Pain is distinguished from nociception, which refers to the neural processing of noxious stimuli, which may not result in pain. Pain, on the other hand, is an output of brain processing and reflects a conscious experience rather than simple sensory transmission.[33]
3. **Pain is multidimensional, involving sensory, affective, cognitive, and behavioral aspects.** Pain arises from complex interactions among physiological, psychological, and social systems. Sensory input is transformed into cognitive appraisal, emotional reaction, and behavioral response, demonstrating that pain is not solely a sensory event. The biopsychosocial model explains that pain and disability reflect dynamic integration among biological, psychological, and social factors that influence the development, maintenance, and outcomes of chronic pain.[9,34]
4. **Pain intensity does not always correlate perfectly with the degree of tissue damage.** The

> IASP indicates that the relationship between pain severity and tissue pathology is often weak, particularly in chronic conditions where structural abnormalities may not explain the reported pain experience.[1]

This perspective has profound implications for pain assessment and management, requiring comprehensive approaches that address sensory, psychological, and social dimensions. The biopsychosocial model supports a multidisciplinary strategy for pain management that integrates medical, psychological, and social interventions rather than focusing solely on tissue pathology.

Multidimensional Dimensions of Pain

As stated before, pain always dynamically changes throughout the eras as a complex perceptual and psychological phenomenon rather than a purely sensory signal. The dimensions to understand pain also differs regarding which point of view does the study focused on, such as explained in **Table 1**.

1. **Sensory–Discriminative Dimension**

   The sensory–discriminative dimension involves basic perception of pain intensity, location, quality, and timing of a noxious stimulus and is largely mediated by somatosensory pathways.[10] Classic frameworks (e.g., Melzack & Casey) emphasize this component as foundational for identifying physical aspects of pain.[11]

2. **Affective–Motivational Dimension**

   Encompasses the emotional responses to pain and the motivational drive to escape or reduce the painful experience. Pain unpleasantness may be more central to the subjective experience of suffering than raw intensity. From a mental-state perspective, affective appraisal is a core determinant of pain severity. [10]

3. **Cognitive–Evaluative Dimension**

   Involves interpretation, appraisal, and beliefs related to pain. This dimension encompasses attention,

expectation, memory, catastrophizing, and meaning attribution. Cognitive evaluation determines how nociceptive signals are interpreted. Maladaptive beliefs (e.g., catastrophizing) may sustain pain even in the absence of ongoing tissue injury, reinforcing the concept of pain as a constructed mental state.[15]

4. **Behavioral Dimension**

Pain behavior includes avoidance, guarding, escape responses, and reduced activity. These behaviors are influenced by reinforcement learning and fear conditioning. Behavioral responses are not mere consequences of pain but active contributors to chronicity. Learned avoidance reinforces neural pain networks.[18]

5. **Social Dimension**

Pain occurs within a social context shaped by interpersonal relationships, cultural norms, and environmental stressors. Pain is co-constructed within interpersonal environments. Social isolation, invalidation, or stigma may amplify pain, whereas supportive contexts can attenuate it.[20]

Multidimensional Pain Assessment Instruments

Comprehensive pain assessment should measure multiple domains of the pain experience rather than pain intensity alone. International assessment tools such as IMMPACT (Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials) and PROMIS (Patient-Reported Outcomes Measurement Information System) have provided consensus recommendations for core outcome domains in chronic pain trials. These recommendations emphasize that pain is multidimensional and requires multidomain assessment. IMMPACT core domains include: Pain intensity, Physical functioning, Emotional functioning, Participant ratings of global improvement and satisfaction, Symptoms and adverse events, and Participant disposition. [35,36] Some of the pain assessment tools widely used in everyday practice:

1. **McGill Pain Questionnaire (MPQ)**

   The McGill Pain Questionnaire (MPQ), developed by Melzack (1975), is one of the most widely used multidimensional pain instruments. It assesses qualitative and quantitative aspects of pain through verbal descriptors. The MPQ demonstrates the test-retest reliability, internal consistency coefficients, strong construct and discriminant validity across pain syndromes, and sensitivity to clinical change. Components include:[37]

   - Sensory subscale (descriptors reflecting temporal, spatial, pressure, and thermal qualities)
   - Affective subscale (tiring, sickening, fearful, etc.)
   - Evaluative subscale (overall intensity judgment)
   - Miscellaneous descriptors
   - Present Pain Intensity (PPI) rating scale
   - Pain drawing/diagram

   Variants of MPQ are available on Short-Form MPQ (SF-MPQ) and SF-MPQ-2 which includes neuropathic descriptors.[38]

2. **Brief Pain Inventory (BPI)**

   The Brief Pain Inventory (BPI) developed by Cleeland and Ryan (1994) assesses both pain severity (worst, least, average, and current pain) and pain interference (general activity, mood, walking ability, work, relations, sleep, and enjoyment of life). The strengths of BPI include its brief assessment time (5-10 minutes), its validation in multiple languages and conditions, and its sensitivity to treatment effects.[39]

3. **Multidimensional Pain Inventory (MPI)**

   The West Haven–Yale MPI, developed by Kerns et al. (1985), evaluates the psychosocial dimensions of chronic pain. The inventory consists of three sections containing 12 scales that assess the impact of pain on patients' lives, others' responses to patients' expressions of pain, and the degree to which patients

engage in routine daily activities.[40]

- Section I: Pain Impact (Pain severity, Interference, Self control, Affective distress, Support)
- Section II: Responses of Others (Solicitous, Punishing, Distracting responses)
- Section III: Activity Level (Household chores, Outdoor work, Activities away from home, Social activities)

4. PainDETECT Questionnaire

The PainDETECT Questionnaire (PDQ) is a self-report screening tool developed to identify neuropathic pain components, particularly in patients with low back pain and other chronic pain conditions. It was designed to help clinicians detect neuropathic mechanisms without requiring specialized neurological testing. The scoring range categorizes probability of neuropathic pain by using psychometric properties and relies on subjective sensory descriptors, meaning it measures the perceptual interpretation of pain rather than tissue damage alone. The subjective of scoring also relies on pain quality descriptors, temporal pain patterns, pain radiation, and intensity ratings. This reflects central processing and cognitive representation of nociceptive input, reinforcing the multidimensional conceptualization of pain.[41]

5. Douleur Neuropathique 4 (DN4) Questionnaire

The DN4 questionnaire is a clinician-administered screening tool designed to distinguish neuropathic from nociceptive pain. It integrates patient-reported symptoms and simple bedside examination findings. The DN4 contains 7 items of symptoms to interview: burning, painful cold, electric shocks, tingling, pins and needles, numbness, itching; and 3 items to examine: hypoesthesia to touch, hypoesthesia to pinprick, brush-evoked pain (allodynia). A score of 4 or greater suggests neuropathic pain. Although partly examination-based, most DN4 items rely on patient phenomenology which is subjective experience of sensory abnormalities. This highlights that

neuropathic pain classification depends on perception and interpretation, not only pathology.[42,43]

6. **Pain Catastrophizing Scale (PCS)**

The Pain Catastrophizing Scale (PCS) measures maladaptive cognitive-emotional responses to pain. It is one of the most important psychological predictors of pain intensity, disability, treatment response, and chronic pain transition. Within its structure, PCS assesses 13 items from its three domains: rumination (persistent focus on pain), magnification (exaggeration of threat value), and helplessness (perceived inability to cope). The PCS demonstrates strong reliability, predictive validity, and cross-cultural robustness. The PCS is central to modern pain models because it operationalizes the cognitive dimension of pain. It consistently predicts pain severity, disability, emotional distress, and surgical outcomes.[44,45]

7. **German Pain Questionnaire (DSF)**

The *Deutscher Schmerzfragebogen* (DSF) is a biopsychosocial modular assessment tool developed for German pain clinics and validated in large samples (~3,000 patients). It includes modules assessing pain characteristics, functional impairment, psychological variables, treatment history, and patient expectations.[46]

8. **Pediatric and Older Adults Multidimensional Instruments**

Children require developmentally appropriate multidimensional tools which was introduced as instruments such as the Pediatric Pain Questionnaire (PPQ), Adolescent Pediatric Pain Tool (APPT), Bath Adolescent Pain Questionnaire (BAPQ). Systematic reviews indicate good internal consistency and construct validity but call for further psychometric refinement of brief tools.[47] Older adult's pain is also another challenge to assess, as older adults often have multiple pain etiologies (e.g., arthritis, neuropathy, chronic musculoskeletal pain) and comorbid conditions that

complicate assessment. Pain assessments should include a detailed pain history, physical examination, and validated tools tailored to older populations. In cases where self-report is not feasible, observational scales and behavioral indicators are useful alternatives. Systematic reviews of self-report instruments in older adults identify multiple tools used for pain measurement, including: Verbal Descriptor Scale (VDS) and Verbal Rating Scale (VRS), Numeric Rating Scale (NRS), and Geriatric Pain Measure (GPM), a multidimensional tool developed specifically for older adults.[48]

Clinical Implications and Integrated Multidimensional Approaches to Pain Management

Principles of Multidimensional Pain Management

Understanding pain as a multidimensional mental state requires a comprehensive treatment approach that addresses sensory, affective, cognitive, behavioral, and social dimensions. Contemporary pain science and international guidelines support the following core principles:[1,7]

1. Comprehensive assessment: evaluation across sensory, emotional, cognitive, behavioral, and social domains.
2. Patient-centered care: incorporating patient goals, preferences, and sociocultural context.
3. Interdisciplinary collaboration: integration of medical, psychological, and rehabilitation specialties.
4. Multimodal interventions: combining pharmacological, psychological, and physical therapies.
5. Functional restoration focus: prioritizing functional improvement over pain intensity reduction alone.
6. Self-management support: empowering patients with active coping skills.

Pharmacological Interventions

Conventional analgetics include the use of NSAIDs, acetamoniphen, and opioids. NSAIDs and acetaminophen are effective for mild-to-moderate nociceptive pain. NSAIDs have

limited efficacy in neuropathic or centralized (nociplastic) pain, and gastrointestinal, renal, and cardiovascular risks must be considered before use. Opioids, on the other hand are effective for acute and cancer-related pain, while opioids are controversial in chronic non-cancer pain. Risks of using opioids include dependence, tolerance, and even opioid- induced hyperalgesia.[49,50] Antidepressants such as tricyclics and SNRIs (duloxetine, venlafaxine) are effective in neuropathic pain and fibromyalgia, while SSRIs were found to be limited in analgesic efficacy but useful for psychiatric comorbidity related with pain. Anticonvulsants such as gabapentin/pregabalin are used as first-line treatments for neuropathic pain while carbamazepine as gold standard for trigeminal neuralgia.[51] Medication selection should consider the pain mechanism (nociceptive, neuropathic, nociplastic), psychiatric comorbidities (depression, anxiety), side-effect profile, and patient preferences.[52]

Psychological Interventions

Cognitive Behavioral Therapy (CBT) targets maladaptive cognitions and behaviors in chronic pain. Its core components include psychoeducation (biopsychosocial model), cognitive restructuring (catastrophizing), behavioral activation, relaxation training, and coping skills development. CBT was found to have moderate effect sizes for pain and disability.[53] Acceptance and Commitment Therapy (ACT) promotes psychological flexibility and value-based action. ACT processes include acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action.

Physical and Functional Rehabilitation

Rehabilitation for patients with pain, especially myalgia, comes in many choices, such as manual pressure therapy, TENS, heat/cold therapy, and acupuncture (moderate evidence for some chronic pain conditions).[54] Rehabilitation in pain had their own principles which includes graded activity (time-contingent progression),

pacing strategies, exercise therapy (aerobic, strengthening, flexibility).[55]

Multidisciplinary and Other Pain Intervention

The development of pain rehabilitation also includes intensive interdisciplinary programs that integrate medical optimization with physical therapy, occupational therapy, psychological treatment, pain neuroscience education, and vocational rehabilitation. Kamper et al. (2015) assessed multidisciplinary biopsychosocial rehabilitation with the result of moderate pain reduction, significant functional improvement, improved return-to-work rates.[56]

CONCLUSION

Pain is a progressive mental and neurobiological phenomenon, not merely a signal of tissue damage. Pain can be understood as a subjective experience constructed by the brain through the integration of sensory input, emotional appraisal, cognitive interpretation, learned behavior, and social context. Multimodal aspects of pain may be viewed from its sensory–discriminative dimension, affective–motivational dimension, cognitive–evaluative dimension, behavioral dimension, and social dimension. The weak and often inconsistent relationship between tissue pathology and reported pain intensity underscores the limitations of purely biomedical explanations, particularly in chronic pain conditions. The high prevalence of comorbid depression, anxiety, sleep disturbances, and suicide risk further demonstrates that pain cannot be separated from mental health. Recognition of pain as a multidimensional mental state necessitates comprehensive assessment strategies and integrated treatment approaches embracing this integrative perspective allows clinicians and researchers to move beyond symptom suppression toward restoring function, resilience, and overall quality of life in individuals living with pain.

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