Chronic Pain and Suicide: Understanding the Link

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Overview

People with chronic pain are twice as likely to experience suicidal thoughts as those without pain.

Raise awareness of the connection between chronic pain and suicide, discuss current research findings, and provide strategies for healthcare practitioners.

Understanding Chronic Pain and Its Impact

- Statistics and Scientific Findings
- Contributing Factors to Suicide Risk
- Screening and Assessment
- Interventions and Prevention Strategies

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Introduction

- Definition and Types: Common chronic pain conditions include fibromyalgia, arthritis, and neuropathic pain.
- Psychological and Emotional Impact: Depression, anxiety, and social isolation often result from chronic pain.
- Stigma and Misconceptions: Stigma around chronic pain can contribute to feelings of hopelessness.
- Health system factors: Factors related to pain treatment and opioid epidemic

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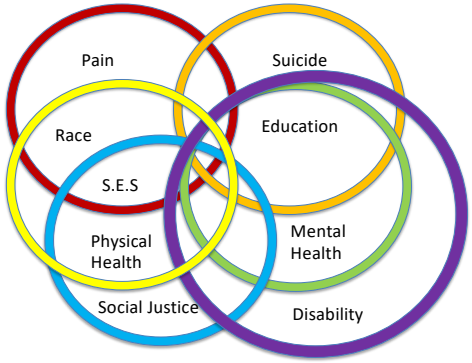
Epistemological Humility



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Epidemiology of Chronic Pain

- The CDC estimated 51.6 million U.S. adults (20.9%) experienced chronic pain in 2021
  - Of those, 17.1 million (6.9%) experienced high-impact chronic pain, which is defined as pain that interferes with daily activities, such as walking, work, or school
- More common among women than men
  - Increases with age
  - Higher in lower socioeconomic status groups
  - Certain ethnic and racial groups
  - Those with other chronic health conditions

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Chronic Pain and Suicide

- Approximately 20% of chronic pain patients report suicidal ideation.
- Risk Factors:
  - Lack of adequate pain management
  - History of trauma
  - Substance use disorders
- High-Risk Conditions: Migraine, back pain, and neuropathic pain are associated with elevated suicide risk.

Edwards, R. R., Smith, M. T., Kudel, I., & Haythornthwaite, J. (2006). Pain-related catastrophizing as a risk factor for suicidal ideation in chronic pain. Pain, 126(1-3), 272-279. https://doi.org/10.1016/j.pain.2006.07.004

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PAIN

The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises

Srinivasa N. Raja[a,*], Daniel B. Carr[b], Milton Cohen[c], Nanna B. Finnerup[d,e], Herta Flor[f], Stephen Gibson[g], Francis J. Keefe[h], Jeffrey S. Mogil[i], Matthias Ringkamp[j], Kathleen A. Sluka[k], Xue-Jun Song[l], Bonnie Stevens[m], Mark D. Sullivan[n], Perri R. Tutelman[o], Takahiro Ushida[p], Kyle Vader[q]

Abstract

The current International Association for the Study of Pain (IASP) definition of pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" was recommended by the Subcommittee on Taxonomy and adopted by the IASP Council in 1979. This definition has become accepted widely by health care professionals and researchers in the pain field and adopted by several professional, governmental, and nongovernmental organizations, including the World Health Organization. In recent years, some in the field have reasoned that advances in our understanding of pain warrant a reevaluation of the definition and have proposed modifications. Therefore, in 2018, the IASP formed a 14-member, multinational Presidential Task Force comprising individuals with broad expertise in clinical and basic science related to pain, to evaluate the current definition and accompanying note and recommend whether they should be retained or changed. This review provides a synopsis of the critical concepts, the analysis of comments from the IASP membership and public, and the committee's final recommendations for revisions to the definition and notes, which were discussed over a 2-year period. The task force ultimately recommended that the definition of pain be revised to "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage," and that the accompanying notes be updated to a bulleted list that included the etymology. The revised definition and notes were unanimously accepted by the IASP Council early this year.

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Chronic Pain Taxonomy

Feature	Nociceptive Pain	Neuropathic Pain	Nociplastic Pain
Trigger	Tissue damage or inflammation	Nerve damage or dysfunction	Altered central nervous system processing. No tissue damage
Pain quality	Sharp, dull, aching, throbbing	Burning, stabbing, tingling, numbness	Diffuse, widespread, fluctuating, allodynia, hyperalgesia
Location	Localized to the area of tissue damage	Follows the distribution of the injured nerve	Widespread, may not correspond to a specific injury
Underlying mechanism	Activation of nociceptors, peripheral sensitization	Damage or dysfunction of peripheral or central nervous system	Central sensitization, altered pain processing in the brain and spinal cord
Comorbidity	Often associated with tissue injury or inflammation	May be associated with other neurological conditions, such as diabetes or shingles	May be associated with other chronic pain conditions, such as fibromyalgia or migraine
Diagnostic criteria	History of tissue damage or inflammation, physical examination	Clinical symptoms and signs of nerve damage, nerve conduction studies	Clinical symptoms and signs of pain that do not fit other categories

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Chronic Pain is Complex

Acute Pain
Life sustaining symptom

- **Adaptive** by eliciting motivation to minimize harm and allow healing

Chronic Pain
Can be a disease in itself

- **Maladaptive**, pathologic, disorder of the somatosensory pain signaling pathways influenced by genetic and epigenetic factors

- Associated with higher risk of fatal and nonfatal suicide attempts*

*Petrosky E, et al. *Ann Intern Med.* 2018
Ilgen MA, et al. *JAMA Psychiatry*. 2013
Tang NK et al. *Psychol Med*. 2006

Dzau VJ, Pizzo PA. *JAMA*. 2014
Walk D, Poliak-Tunis M. *Med Clin N Am*. 2016
Argoff CE, et al. *Pain Med*. 2009

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Contributing Factors to Suicide Risk in Chronic Pain Patients

- Biological Factors: Neurotransmitter imbalances, medication side effects, comorbid health conditions.
- Psychosocial Factors: Social isolation, relationship challenges, financial stress, loss of purpose, ***family stigma.***
- Healthcare System Factors: Poor access to care, inadequate pain management, and ***stigma*** within the healthcare system.

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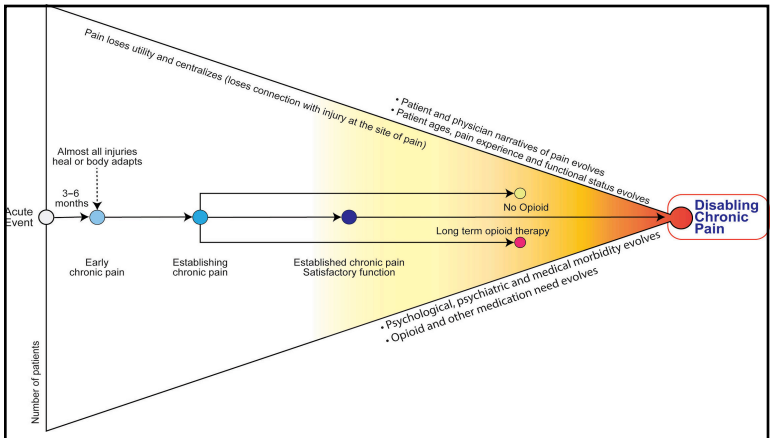

Pain chronification involves neuroplasticity (central nervous system learning and adapting) in pain-processing central nervous pathways and downward pain-inhibition pathways. Such neuroplasticity causes changes in several domains related to pain, including perception, cognition, attention, emotion, learning, memory, and motivation.

Manhapra, Becker, Pain and Addiction: An Integrative Therapeutic Approach, Medical Clinics of North America,Volume 102, Issue 4, 2018,Pages 745-763,

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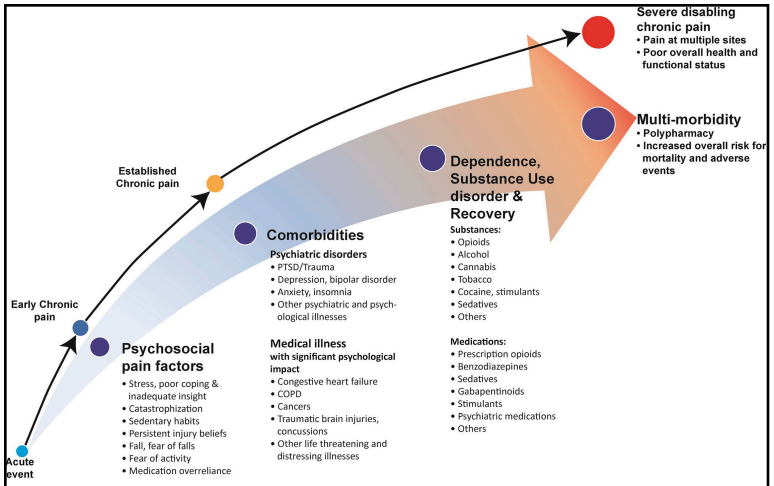

Medical, psychological, psychiatric and social conditions impact the trajectory of chronic pain and its treatment. Multi-morbidity = "Part of your problem is that you have more than one problem."

Manhapra, Becker, Pain and Addiction: An Integrative Therapeutic Approach, Medical Clinics of North America,Volume 102, Issue 4, 2018,Pages 745-763,

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Biological Factors

- In chronic pain, the brain's **reward system** (which usually responds to positive stimuli) becomes weakened, while the **anti-reward system** (which handles aversion and negative stimuli) becomes overactive.
- This imbalance leads to increased stress, depression, and a decreased ability to experience pleasure (anhedonia).

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Biological Factors

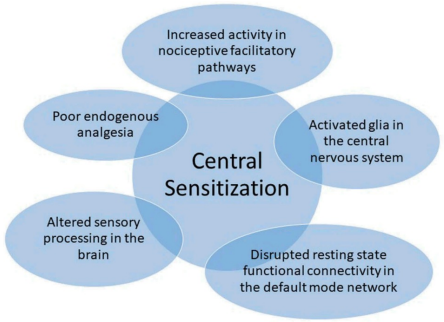

Figure 1. Central nervous system dysfunctions contributing to central sensitization.

Nijs, Jo & Leysen, Laurence & Vanlauwe, Johan & Logghe, Tine & Ickmans, Kelly & Polli, Andrea & Malfliet, Anneleen & Coppieters, Iris & Huysmans, Eva. (2019). Treatment of central sensitization in patients with chronic pain: time for change?. Expert Opinion on Pharmacotherapy. 20. 1-10. 10.1080/14656566.2019.1647166.

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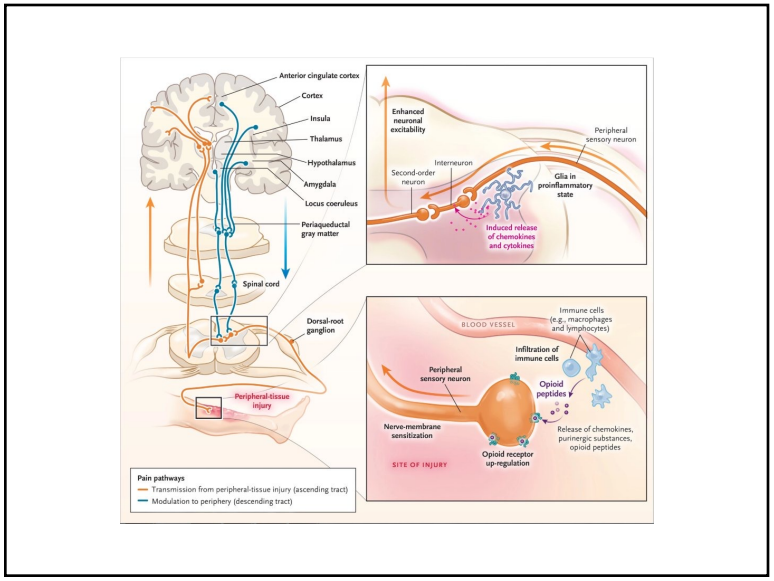
Anterior cingulate cortex
Cortex
Insula
Thalamus
Hypothalamus
Amygdala
Locus coeruleus
Periaqueductal gray matter
Spinal cord
Dorsal-root ganglion
Peripheral-tissue injury
Enhanced neuronal excitability
Peripheral sensory neuron
Interneuron
Second-order neuron
Glia in proinflammatory state
Induced release of chemokines and cytokines
BLOOD VESSEL
Immune cells (e.g., macrophages and lymphocytes)
Infiltration of immune cells
Peripheral sensory neuron
Opioid peptides
Nerve-membrane sensitization
Release of chemokines, purinergic substances, opioid peptides
Opioid receptor up-regulation
SITE OF INJURY
Pain pathways
Transmission from peripheral-tissue injury (ascending tract)
Modulation to periphery (descending tract)

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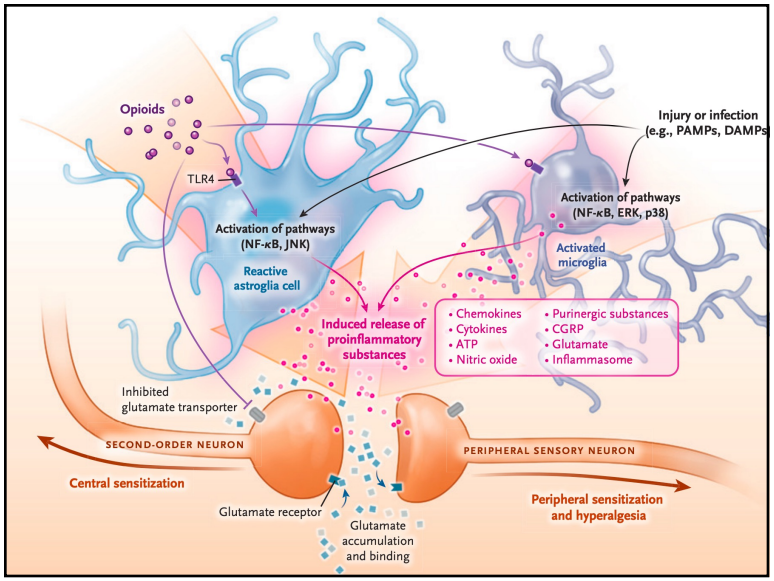
Opioids
TLR4
Activation of pathways (NF-κB, JNK)
Reactive astroglia cell
Injury or infection (e.g., PAMPs, DAMPs)
Activation of pathways (NF-κB, ERK, p38)
Activated microglia
Induced release of proinflammatory substances
• Chemokines
• Cytokines
• ATP
• Nitric oxide
• Purinergic substances
• CGRP
• Glutamate
• Inflammasome
Inhibited glutamate transporter
SECOND-ORDER NEURON
PERIPHERAL SENSORY NEURON
Central sensitization
Peripheral sensitization and hyperalgesia
Glutamate receptor
Glutamate accumulation and binding

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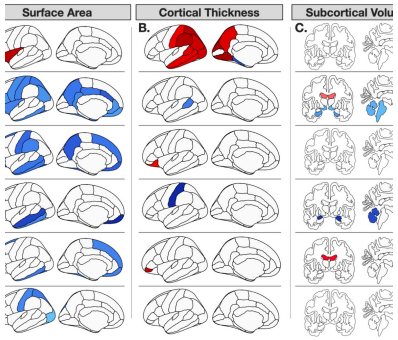
Biological factors

- **Chronic Pain Changes the Brain**: Chronic pain isn't just about physical discomfort; it alters the brain's structure in different ways depending on the type of pain.
- **Link to Emotional Well-being**: Changes in brain regions tied to emotions and self-reflection may explain why chronic pain is often linked to depression, negative thoughts, and suicidal behavior.



Mapping Brain Structure Variability in Chronic Pain: The Role of Widespreadness and Pain Type and Its Mediating Relationship With Suicide Attempt Bhatt, Ravi R. et al.Biological Psychiatry, Volume 95, Issue 5, 473 - 481

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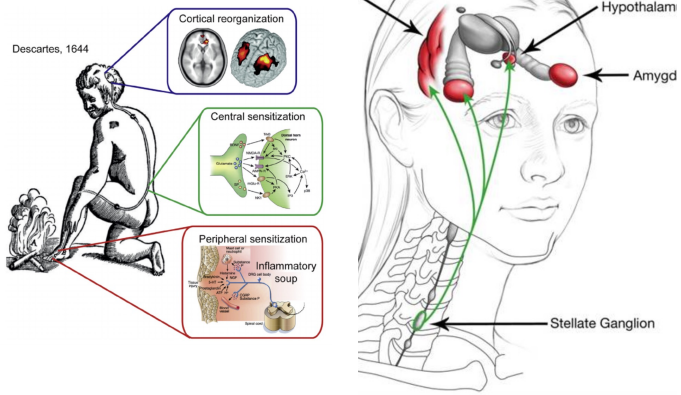

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Stigma & Demoralization

- **Self-Stigma and the Role of Family**:
  - Individuals with chronic pain often internalize negative attitudes learned from family members, leading to feelings of shame, guilt, and failure.
  - Many participants in the study reported that family members either stigmatized their condition or acted as a source of support, creating complex emotional dynamics.

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Stigma & Isolation

- **Enacted Stigma and Missed Connections**:
  - Those with chronic pain and SI experience social isolation due to the invisibility of their conditions and others' inability to empathize.
  - Many individuals reported frustration with friends or acquaintances who responded with unsolicited advice or problem-solving instead of empathy. This led to feelings of disconnection and social withdrawal, complicating their ability to form meaningful relationships.

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Stigma and Discrimination

- **Anticipated Stigma and Workplace Discrimination**:
  - Many participants anticipated discrimination at work, fearing that disclosing their condition would lead to being perceived as unreliable or less productive.
  - This anticipation often resulted in non-disclosure of health issues, which created further stress and job-related challenges. Some participants even reported losing their jobs or being underemployed due to their health conditions.

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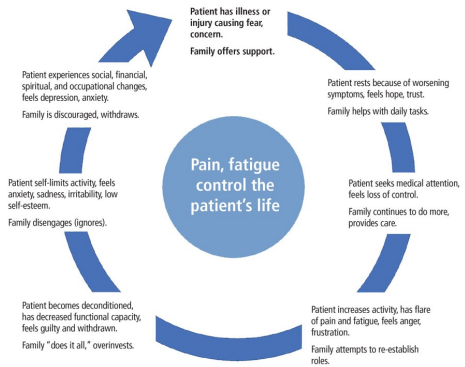
The cycle of pain and fatigue in central sensitization, showing patient behaviors and emotions and family response.



Mary M. Volcheck et al. CCJM 2023;90:245-254

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Screening, Assessment, and Communication

- Screening Tools: PHQ-9, BDI-II, and visual analog scales.
- Best Practices: Use empathy, open-ended questions, and active listening to assess suicide risk.
- Communicating with Patients: Discuss suicidal ideation without judgment or stigma.
- ***"Have you ever felt so discouraged you just felt like giving up?"***

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Interventions and Prevention Strategies

- Integrated Treatment: Multidisciplinary approach involving pain specialists, psychologists, and support groups.
- Pharmacological and Non-Pharmacological Strategies:
  - Opioids, antidepressants, targeted medications
  - Mindfulness, CBT and non-drug interventions.
- Community and Support Resources: Suicide hotlines, online communities, and patient advocacy groups.

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Addressing the Risks of Abrupt Opioid Discontinuation

- Gradual Tapering: Implement a structured tapering plan individualized to each patient's needs.
- Patient Education: Provide information about the tapering process and withdrawal symptoms.
- Support Systems: Ensure access to mental health support, addiction specialists, and pain management alternatives.

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Abrupt Cessation of Prescription Opioid Medications - Risks

- Abrupt discontinuation of opioid treatment can lead to severe withdrawal symptoms and increased pain sensitivity.
  - may trigger emotional distress, anxiety, and an increased risk of suicidal ideation.
- Proper tapering and patient support are crucial to mitigate these risks.

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Conclusion and Call to Action

- Chronic pain and suicide are closely linked, and both must be addressed in patient care.
- Integrate routine suicide risk assessments in chronic pain management.
- Educate patients and caregivers about the neurobehavioral effects of chronic pain.
- Incorporate principles of trauma-informed care into health care delivery systems and clinics
- Avoid abrupt opioid cessation, abandonment, stigmatizing language

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Questions?

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Chronic Pain and Suicide

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The presentation titled "Chronic Pain and Suicide: Understanding the Link" by David P. Russo at Columbia Pain Management explores the complex relationship between chronic pain and suicide. It provides an in-depth examination of the biological, psychological, and social aspects of chronic pain, illustrating how this condition influences the nervous system and leads to severe emotional consequences, including depression, isolation, and suicidal thoughts.

The presentation begins by noting the prevalence of chronic pain, which affects millions of people in the U.S., with approximately 20% of chronic pain patients reporting suicidal ideation. Conditions such as fibromyalgia, arthritis, and neuropathic pain are among the most common, with chronic pain being more prevalent in women, older adults, and those from lower socioeconomic groups. Chronic pain frequently coexists with other health conditions and is associated with significant functional impairment.

Biological Aspects of Chronic Pain

Chronic pain fundamentally alters the nervous system. The presentation highlights how chronic pain leads to central sensitization, a phenomenon where the nervous system becomes hyper-responsive to pain stimuli. Neuroplasticity, or the brain's ability to reorganize itself, plays a critical role in the chronification of pain, as the brain's pain pathways and pain inhibition mechanisms are restructured. This restructuring is responsible for dysregulating the brain's reward and anti-reward systems.

Under normal circumstances, the brain's reward system is activated in response to positive stimuli, but in chronic pain patients, this system is weakened. At the same time, the anti-reward system, which deals with negative stimuli, becomes overactive. This imbalance results in a diminished ability to experience pleasure, also known as anhedonia, and increases stress and depression. The altered pain processing affects cognitive functions, attention, memory, and emotions, contributing to neurocognitive changes that exacerbate emotional distress and increase the risk of suicidal behavior.

Psychological and Emotional Impacts

Psychologically, chronic pain can lead to significant emotional disorders. Depression and anxiety are common in chronic pain patients, compounded by feelings of hopelessness and helplessness, especially when pain management is inadequate. Losing physical function often leads to losing essential life roles, such as employment, family responsibilities, or hobbies, further deepening the sense of worthlessness. The social isolation that frequently accompanies chronic pain, especially when patients are misunderstood or stigmatized, intensifies these feelings.

The presentation also addresses the role of stigma in the lived experience of chronic pain patients. Self-stigmatization occurs when individuals internalize the negative attitudes of others, leading to guilt, shame, and a sense of failure. Family members and healthcare providers may unknowingly contribute to this stigma, either by not taking the patient's pain seriously or by offering unsolicited advice that fails to address the emotional aspects of the condition.

Social and Healthcare System Contributions

Social factors, including isolation and financial stress, along with healthcare system barriers, such as poor access to adequate pain management, also heighten the risk of suicidal ideation. The stigma around chronic pain, both in personal relationships and within the healthcare system, can further isolate patients and contribute to demoralization.

The presentation concludes by emphasizing the need for healthcare providers to integrate suicide risk assessments into chronic pain management. A multidisciplinary approach that includes pain specialists, mental health professionals, and support systems is critical for addressing the complex biopsychosocial aspects of chronic pain and preventing its devastating emotional consequences, including suicide.