

Non-pharmacological approaches to address concurrent pain and substance use

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Outline

Background

The state of the science:

- Mechanisms
- Treatment
- Prevention

Key Gaps

Background

Chronic pain is best seen as a biopsychosocial phenomenon - it very rarely occurs in isolation

Patients with chronic pain are more likely than the general population to report tobacco use, alcohol use, and substance misuse

Many people who use substances report that they do so to treat pain

Many people who use substances use more than one substance, and they impact each other in a variety of ways

Many people with chronic pain who use substances also meet criteria for another mental health condition (e.g., depression).

Mechanisms

Several hypothesized mechanisms (with some overlap):

- Reciprocal model

- Involvement of the reward system and dysregulated dopamine

- Emotion regulation as a transdiagnostic underlying factor

Many substances are a short term analgesic

Substance use can be conceptualized as a maladaptive coping response to pain

All hypothesized mechanisms point to the potential value of behavioral interventions to change patterns of reinforcement, modify dysfunction in the reward system, and teach skills to modify coping responses.

The Neurobiology of Reward

Reward learning processes may contribute to persistence and amplification of pain

Addictive substances take over the reward system

The search for pain relief may also take over the reward system in a similar way

Both substance use disorder (SUD) and pain-relief seeking behaviors activate, and over-stress, the reward system

In both SUD and pain, an over-activated reward system may cause stress, negative affect, and impulsivity

In both SUD and chronic pain, the executive function of the pre-frontal cortex may become impaired, thus preventing activities that promote recovery

Emotion Regulation

Emotion regulation may be a transdiagnostic factor underlying the co-occurrence of chronic pain and problematic substance use

Emotion regulation includes emotion identification, strategy selection, and strategy implementation

Chronic pain is associated with difficulties with emotion identification and strategy implementation

- Strategy implementation includes the up- and down-regulation of both positive and negative emotion.

There is limited research examining emotion regulation in chronic pain and substance use

Treatments: Behavioral

Rooted in cognitive-behavioral therapy, mindfulness/mindfulness-based stress reduction, acceptance and commitment therapy, dialectical behavior therapy, or other mind-body approaches

2016 Review (Chronic Pain, Depression and SUD): Six studies with 696 participants receiving behavioral interventions (e.g., CBT, ACT) showed promising improvements across all studies, albeit with small to moderate effects.

2019 meta analysis (Acute or Chronic Pain and Opioids): 60 reports with 6404 participants receiving mind-body therapies (e.g., meditation, relaxation, CBT) concluded that most mind-body therapies were associated with moderate improvements in pain and small reductions in opioid dose.

Cognitive-Behavioral

Cognitive-behavioral therapy provides coping skills training to manage chronic pain and substance use disorder. Each of the studies highlighted below incorporated skills from CBT-CP and CBT-SUD into their treatment protocols.

Study	CP + & n	Setting	Treatment	Outcomes
Morasco 2016	SUD + HCV n=21	Outpatient VAMC	Group CBT	Pain interference, substance use
Barry 2018	Methadone n=40	Methadone treatment program	Individual CBT	Improved abstinence
Wachholtz 2022	OUD, on MOUD n=14	Community addiction treatment center	Group CBT and self regulation	Feasibility and acceptability; functional improvement and decreased pain severity

Third-Wave Therapies

Acceptance and Commitment Therapy for Chronic Pain focuses on decreasing pain's interference on functioning, particularly with regard to meaningful activities. Exploration of values, willingness/acceptance, and mindfulness are typically core components.

Study	CP + & n	Setting	Treatment	Outcomes
Ilgen 2016	SUD n=129	VHA SUD treatment program	ACT/CBT	Pain intensity/function; alcohol consumption
Ilgen 2020	SUD n=510	Residential SUD treatment program	ACT/CBT	Pain intensity, pain-related function, behavioral pain tolerance; frequency of drug and alcohol use
Vowles 2020	Hazardous opioid use n=37	Patients in VHA chronic pain clinic	ACT/MB SR	Feasibility and acceptability; opioid misuse, pain interference, pain behavior
Barrett 2020	Prescribed opioids n=17	Outpatient clinic	DBT	Feasibility and acceptability, pain acceptance, depression, opioid dose

Mind-Body and Mindfulness-Based

. Mindfulness-Oriented Recovery Enhancement (MORE) is a mindfulness-based intervention targeting chronic pain and opioid misuse Treatment includes mindfulness, reappraisal, and savoring positive experiences.

MORE has been evaluated in over 10 randomized trials though not all of them have focused on opioid misuse or SUD. Ongoing trials are evaluating MORE for pain + OUD

Study	CP + & n	Setting	Treatment	Outcomes
2022	Opioid misuse n=250	Primary care	MORE	Pain severity, pain interference, opioid dose, emotional distress, opioid craving
2024	OUD on MOUD n=154	Methadone treatment clinics	MORE	Return to use, treatment dropout, methadone adherence, pain, depression, anxiety

Common Elements of Behavioral Treatments

Emphasize a psychosocial model of pain

Functional analysis of behavior focused on pain and substance use

Conceptualizing substance use as a maladaptive coping response to pain

Teaching pain coping skills (pacing, relaxation, cognitive restructuring, mindfulness)

Addressing mood disorders (e.g., behavioral activation)

Coping with cravings, relapse prevention

Treatments: Movement-Based

PAIN ALONE:

A range of movement-based interventions have a strong evidence base including physical therapy, aqua therapy, yoga, and walking programs

SUD ALONE:

Few studies, but in general, exercise may be an effective adjunctive treatment. Exercise may reduce cigarette craving, tobacco withdrawal symptoms, and negative affect. Aerobic exercise in particular may reduce drug cravings.

For co-occurring pain and SUD, there are very few studies:

- One pilot study examined the feasibility of yoga in a methadone treatment program for people with pain and OUD
- A sampling of residential SUD programs found 2.9% of programs incorporated a chronic pain program with movement approaches such as physical therapy, yoga, or exercise.
- One evaluation of a residential treatment programs incorporating movement therapies alongside other modalities and found improvements in pain and SUD-related outcomes (e.g., pain severity, pain interference, tapering, remaining on MOUD)

Treatments: Interdisciplinary Models

Residential SUD treatment programs incorporating pain treatment

Pain treatment may include CBT, movement-based treatments, or both

Interdisciplinary pain management programs incorporating SUD treatment into multimodal pain treatment

Conducted in integrated healthcare systems

Focused on opioid use/misuse

Most research has focused on behavioral treatment, not movement-based approaches

VHA teams must include expertise in pain, addiction, behavioral approaches, and rehabilitation approaches

Prevention

Very limited work in this area that targets both pain and SUD.

If substance use/misuse is conceptualized as a maladaptive coping response:

- Prevention of pain chronification

- Prevention of pain-related disability

- Early intervention to teach adaptive coping skills

May prevent substance use/misuse among people with chronic pain

Similarly, early intervention to reduce unhealthy substance use may prevent the development of substance use disorders

Summary

Behavioral treatments: cognitive-behavioral and third-wave therapies demonstrate some evidence for improving pain and substance-related outcomes, primarily focused on opioid misuse

Movement-based approaches: limited research

Prevention: limited research

Gaps and Future Directions

Treatment considerations

Definitional problems in conceptualizing opioid use/misuse/ODU

Non-opioid substances

Movement-based interventions

Prevention

Translating interdisciplinary care into non-VA setting

Social determinants of health and disparities

Gaps and Future Directions

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Gaps and Future Directions: Treatment Considerations

Treatment accessibility

Expertise needed to deliver treatment

Treatment setting

Co-occurrence of multiple SUDs and/or mental health disorders

Gaps and Future Directions: Opioid Misuse

Studies operationalize opioid use, misuse, and opioid use disorder in a variety of ways, leading to difficulties in comparing results across studies

The field lacks consensus on this topic

Delphi Study to explore a new diagnosis for "ineffective" long-term opioid therapy for chronic pain proposed creation of a new diagnosis with key features:

- Benefits of LTOT no longer outweigh harms
- Difficulty tapering: when a taper is attempted, patient exhibits psychological or physical symptoms
- Exhibits withdrawal symptoms

Prevalence of “iatrogenic opioid use disorder”

- National Survey on Drug Use and Health (NSDUH) method of assessing for opioid use disorder

Gaps and Future Directions: Non-Opioid Substances

Majority of work in this area has focused on opioids

A few studies have evaluated integrated treatments for pain and tobacco use, but with limited success

High rates of alcohol use and using alcohol to cope with pain are concerning

Limited work that considers multiple substances

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Bonus Slides

Background

Substance	
Tobacco	People with pain smoke at higher rates (24-68%) than people without pain. People who use tobacco are at increased risk for develop chronic pain and report greater pain intensity.
Alcohol	People with pain report current or past alcohol dependence or heavy drinking at high rates (16-25%). People presenting for AUD treatment report high rates of moderate-to-severe pain (43-73%). People in primary care who are high-risk alcohol users often report using alcohol to treat pain (79%)
Opioids	81% of patients who misuse opioids say they do so to treat pain
Other illicit substances	In primary care, people reporting illicit substance use report high levels of pain (87% chronic pain, 50% severe pain). 51% say they use illicit substances to treat pain

Mind-Body Therapies for Opioid-Treated Pain

Intervention Type	# of Studies	Pain population	Pain Intensity Improved?	Opioid Outcomes Improved?
Meditation	5	3 acute, 2 chronic	5 out of 5*	4 out of 5
Hypnosis	23	21 acute, 2 cancer-related	15 out of 23*	12 out of 16
Relaxation	16	12 acute, 4 cancer-related	12 out of 16	3 out of 12
Guided Imagery	9	7 acute, 2 cancer-related	3 out of 9	2 out of 9
Therapeutic Suggestion	6	6 acute	2 out of 6*	3 out of 6
CBT	7	1 acute, 2 cancer-related, 4 chronic	3 out of 7*	4 out of 7

*significant effect in meta-analysis