Northwest (HHS Region 10)
ATTC Addiction Technology Transfer Center Network
Funded by Substance Abuse and Mental Health Services Administration

Northwest ATTC presents:

Pain Self-Management: An Essential Adjunct for Opioid Use Disorder Populations

Marian Wilson, PhD, MPH, RN-BC
Washington State University

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Pain self-management for OUD

Marian Wilson, PhD, MPH, RN-BC

- Registered Nurse & Assistant Professor, Washington State University
- Certified in pain management nursing
- Research funding from NIDA, NCCIH, & HRSA
  - Opioid dose effects for adults with chronic pain
  - Pain and sleep in veterans
  - Pain and opioid use training in rural clinics

Pain self-management: an essential adjunct for opioid use disorder populations

Treat the addiction AND the pain

Marian Wilson, PhD, MPH, RN-BC, Assistant Professor
Washington State University College of Nursing
Spokane, WA

Pain care management a success!?

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ED visits for chronic pain reduced 77%:

3,689 visits pre-enrollment
852 post-enrollment

RESEARCH

Pain Care Management in the Emergency Department: A Retrospective Study to Examine One Program's Effectiveness

Authors: Bat Masterson, RN, and Marian Wilson, MPH, RN-BC, Coeur d'Alene, ID, and Spokane, WA

Masterson, B., Wilson, M. (2012). Journal of Emergency Nursing, 38(5), 429-434.

Symptom Overload

- 54% of ED patients treated for chronic pain have major depressive disorder symptoms
- 8 weeks later pain and mood symptoms unimproved

ARTICLE IN PRESS

RESEARCH

Depression and Pain Interference Among Patients With Chronic Pain After ED Encounters

Authors: Marian Wilson, MPH, RN, John Roll, PhD, Patty Pritchard, BSN, RN, Bat Masterson, RN, Donelle Howell, PhD, and Celestina Barbosa-Leiker, PhD, Spokane, WA, and Pullman, WA

Introduction: Patients with chronic pain who frequent emergency departments present a challenge to health care providers. Mental health, substance abuse, and pain issues are difficult to distinguish in fast-paced clinical settings, and significant symptoms may remain unaddressed. This pilot study sought to determine whether electronically delivered screening tools measuring pain and mood could identify areas to target for improving emergency care.

Methods: A prospective, descriptive pilot study used repeated measures of validated instruments to investigate the status of patients after their ED encounter. Persons with chronic pain not related to cancer and documented opioid use were recruited by nursing personnel after an ED encounter. Consenting participants (n = 52) were invited to perform an online survey that included self-reported measurements of pain intensity, pain interference, depression, subjective health, and health distress. The survey was repeated after 8 weeks.

Results: The baseline survey was completed by 42.3% of 52 patients who provided consent (n = 22, 68.2% female). The mean pain severity score was 5.96 (SD 1.57) and the mean pain interference score was 7.52 (SD 1.81) using 0 to 10 scales of the Brief Pain Inventory. Personal Health Questionnaire Depression Scale ratings indicated that a major depressive disorder should be considered for 54% of the participants.

Discussion: Online surveys delivered to patients with chronic pain detected unmet needs for depression and persisting high levels of pain interference after ED encounters. Adding mood-specific screening tools to pain assessments may be necessary in clinical settings to identify depression and refer for appropriate treatment.

Key words: Chronic pain; Pain interference; Depression

STIGMATIZATION

What terms have you heard?
“Frequent flyers”
“Drug-seeking”
“Non-compliant”
“Addict”
“Sinner”
“Clock-watcher”

“They’re all addicted. They just don’t know it”

Definitions

Physical dependence: physical condition caused by chronic use of a tolerance forming drug - drug withdrawal causes unpleasant physical symptoms.

Misuse: Incorrect use of a medication by patients, using drug for a purpose other than that for which it was prescribed (too little or too much, taken in ways not intended by the prescriber).

Addiction = Substance Use Disorder: primary, chronic disease of brain reward, motivation, memory, and related circuitry. Characterized by inability to abstain or control use, craving, and dysfunctional emotional response.

Chronic Pain and Opioid Misuse

"Misuse" of opioids = taken other than prescribed

Other 24.8% (e.g. Relax, Ease Tension)

To Feel Good or Get High 12.9%

Relieve Physical Pain 62.3%

11.5 million in U.S. **misused** prescription pain relievers in 2016

(CDC, 2016; SAMHSA, 2017)

DSM-5 Criteria for Opioid Use Disorder (OUD)

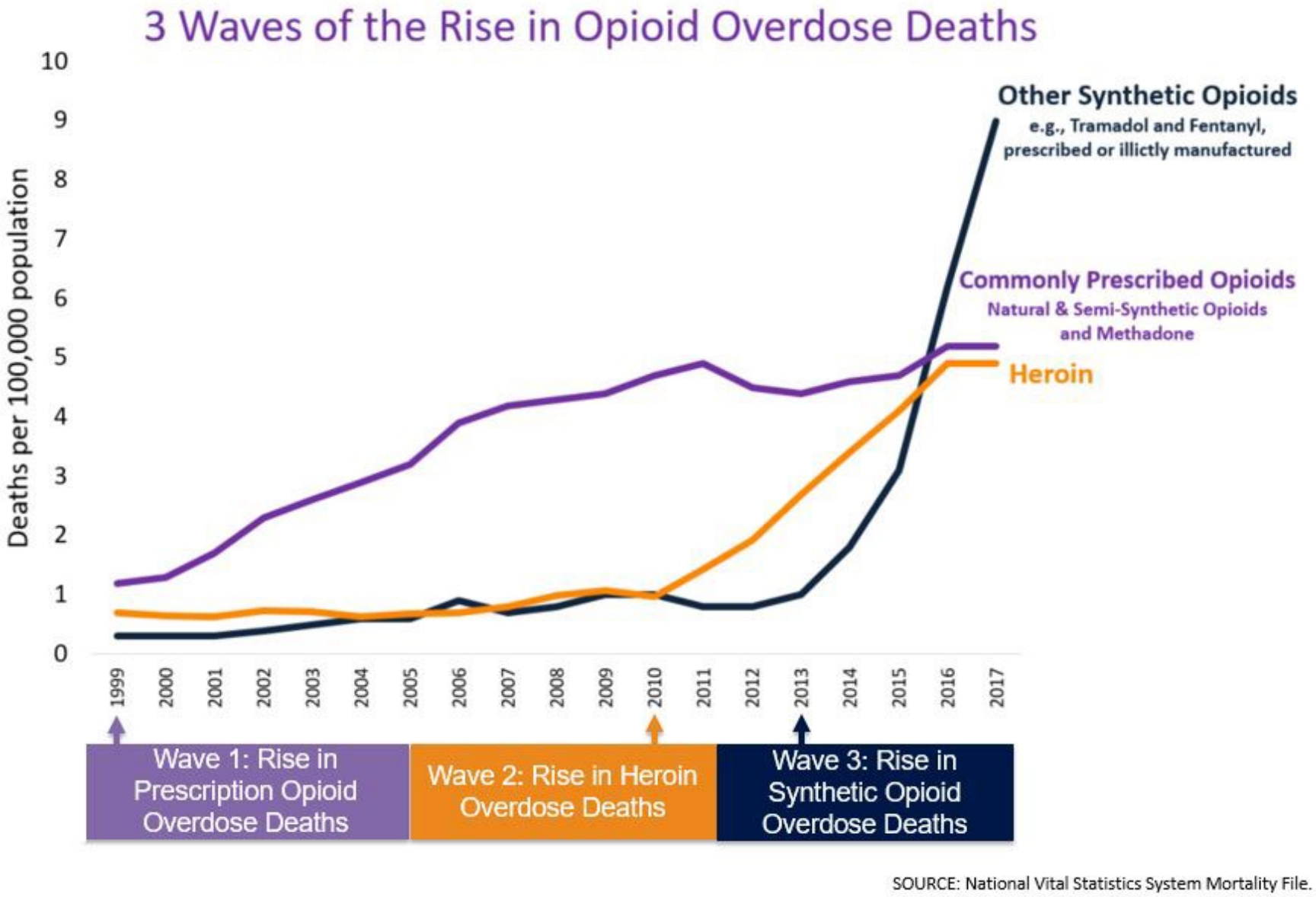
A problematic pattern of opioid use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. Opioids are often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
3. A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
4. Craving, or a strong desire or urge to use opioids.
5. Recurrent opioid use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.

How many on opioids for pain might qualify?

7. Important social, occupational, or recreational activities are given up or reduced because of opioid use.
8. Recurrent opioid use in situations in which it is physically hazardous.
9. Continued opioid use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
10. Tolerance, as defined by either of the following: a. A need for markedly increased amounts of opioids to achieve intoxication or desired effect. b. A markedly diminished effect with continued use of the same amount of an opioid.
11. Withdrawal, as manifested by either of the following: a. The characteristic opioid withdrawal syndrome. b. Opioids (or a closely related substance) are taken to relieve or avoid withdrawal symptoms.

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (Copyright 2013). American Psychiatric Association. **Note: This criterion is not considered to be met for those individuals taking opioids solely under appropriate medical supervision.**



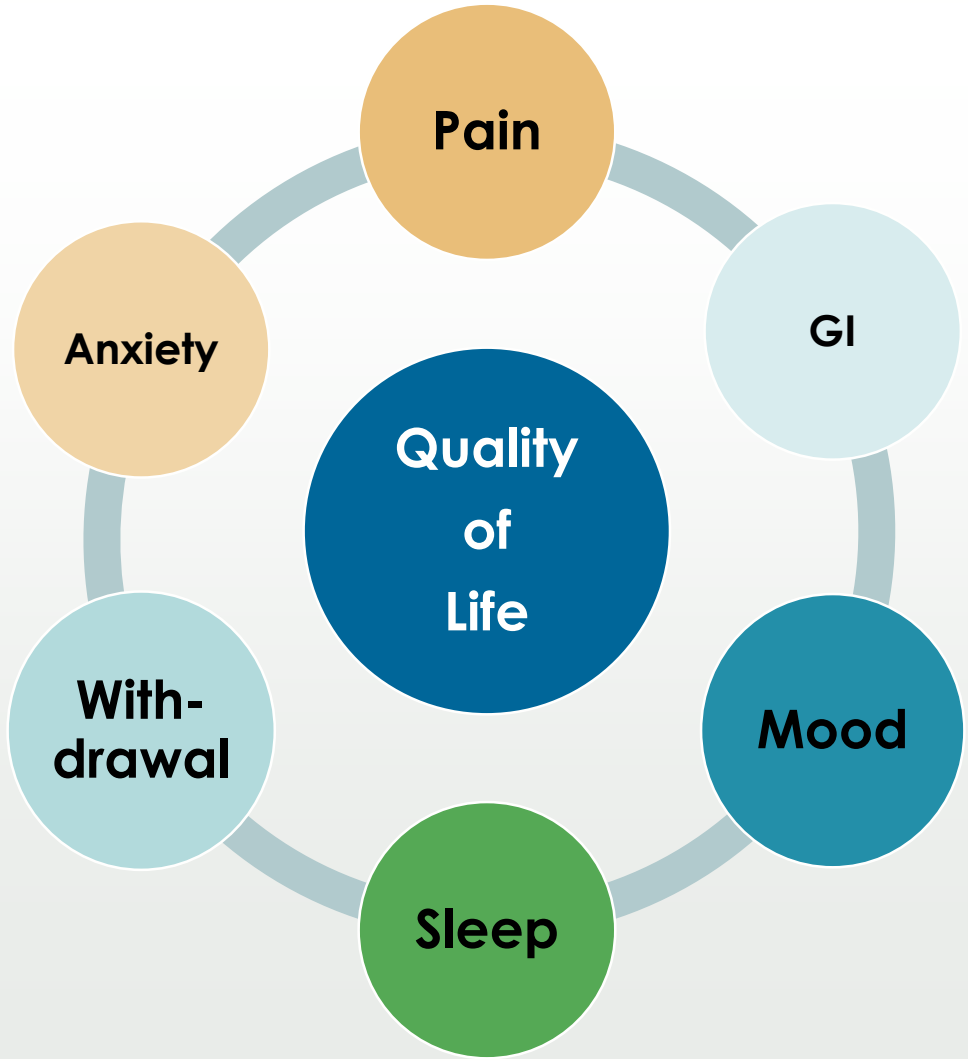
SOURCE: National Vital Statistics System Mortality File.

Heroin-related overdose deaths increased five-fold from 2010 to 2017.

Advancing science for undertreated symptoms in adults with chronic pain and opioid use disorder

How do symptoms interact and influence QOL and recovery?

How can we relieve symptom burdens using concepts of self-efficacy?



What symptoms respond to non-pharmacological or behavioral therapies?

Pain is ...

an unpleasant ***sensory*** and ***emotional*** experience associated with actual or potential tissue damage, or described in terms of such damage

(International Association for the Study of Pain, 2011)

Is pain different for people with substance use disorder?

Medication-assisted treatment (MAT) for opioid use disorder

- The highest rise in opioid overdose deaths involved heroin - 6.2-fold increase from 2002 to 2015.
- 60-80% of those on methadone for treatment of opioid use disorder have persistent pain.
- Pain is frequently managed inadequately or inappropriately among MAT populations.

Poor access to specialized pain care or skills training:

"My doctor kicked me to the curb."

Gaps in care for opioid treatment population

The presence of pain significantly impacts quality of life and can negatively affect addiction treatment. (Eyler, 2013)

- Treatment complicated by:
  - heightened sensitivity to pain (hyperalgesia)
  - high opioid tolerance
  - cross-tolerance to pain medicines
  - illicit substance use
  - may need to stabilize addiction before pain can be addressed.
    - *"Treat the addiction, not the pain."*

Pain care standards

POPULATION HEALTH MANAGEMENT
Mary Ann Liebert, Inc. publishers
Journals | Search | Alerts

Popul Health Manag. 2014 Apr 1; 17(2): 79–89.
doi: 10.1089/pop.2013.0041
PMCID: PMC3996998

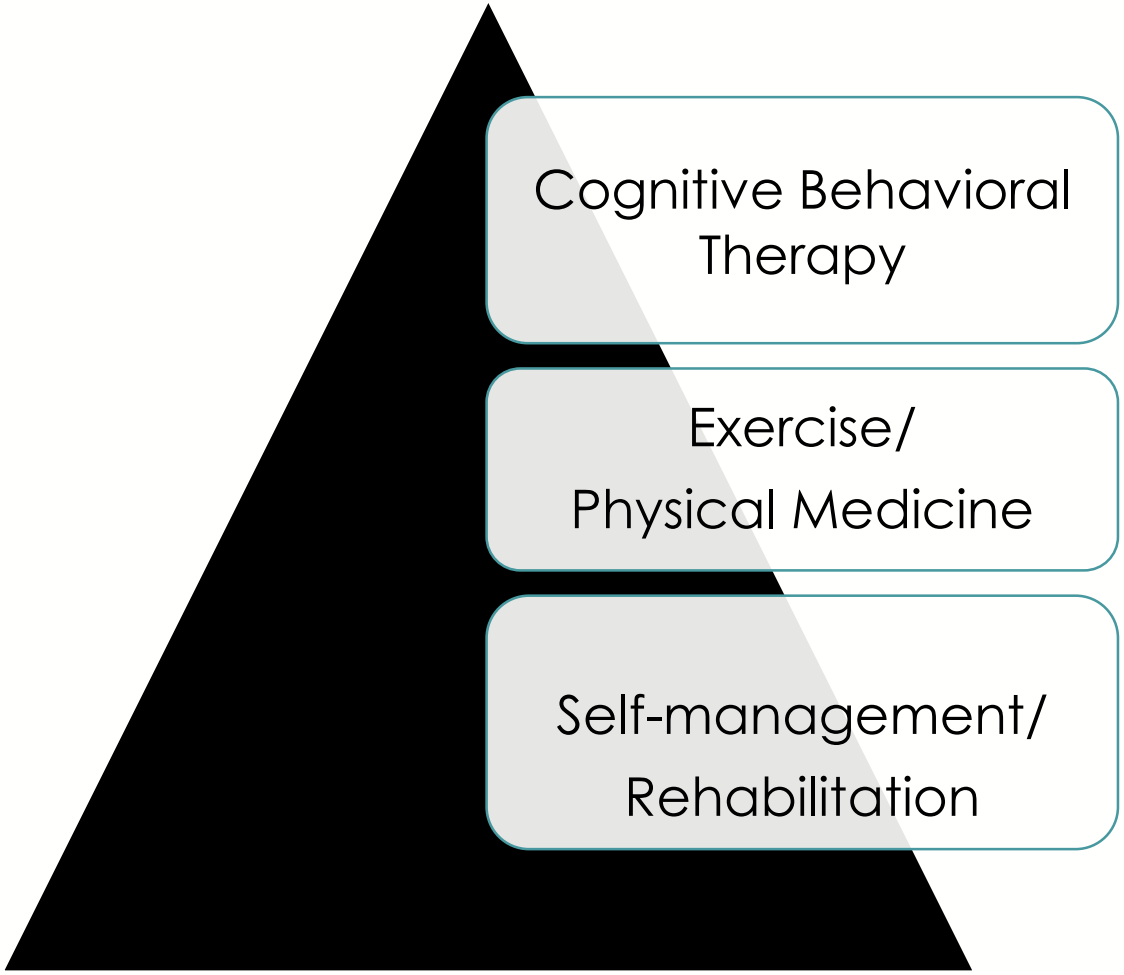
Treating Pain in Addicted Patients: Recommendations from an Expert Panel

Martin Cheatle, PhD,[1] Dominique Comer, PharmD,[2] Martha Wunsch, MD,[3] Alexis Skoufalos, EdD,[2] and Yeshwant Reddy, MD[4]

"They may continue to be treated for pain with non-opioid medications and nonpharmaceutical agents; however…, ***they are at risk for overdose until opioid addiction is adequately treated.*** *" Not pain??*

Strongest evidence of complementary therapies for chronic pain

New CDC Guidelines 2016
Multimodal, multi-disciplinary biopsychosocial approaches

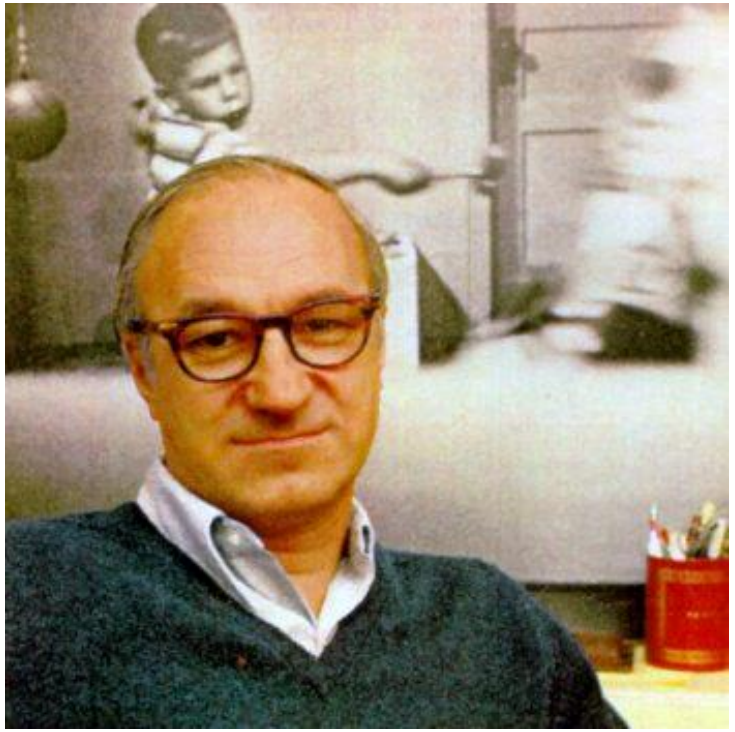


Theoretical background for self-management

Self-efficacy =
confidence to carry out a behavior necessary to reach a desired goal.

Confidence in controlling pain experiences can have positive impact on physical & psychological functioning.

Gatchel et al., 2007



Dr. Albert Bandura

Does concept of self-efficacy apply to people with substance use disorder?

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Move from an opioid-centric paradigm using self-management for pain in all settings

The tasks individuals must undertake to live with chronic health conditions.

Lorig & Holman, 2003; Bender et al, 2011

Goal-setting:
Adopt new behaviors/skills

Coping:
Build confidence, ***self-efficacy***

Cognitions:
Address thoughts & feelings

How does this model fit SUD treatment?

Group persuasion:
Social support/QOL

Education:
Adherence/Knowledge

Primary randomized controlled trial


Contents lists available at ScienceDirect

Addictive Behaviors

journal homepage: www.elsevier.com/locate/addictbeh

Engagement in online pain self-management improves pain in adults on medication-assisted behavioral treatment for opioid use disorders

Marian Wilson[a,b,*], Myles Finlay[a,b], Michael Orr[a,b], Celestina Barbosa-Leiker[a,b], Naghmana Sherazi[b,c], Mary Lee A. Roberts[a,b], Matthew Layton[b,c], John M. Roll[a,b,c]

[a] College of Nursing, Washington State University, Spokane, WA, USA
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[c] Elson S. Floyd College of Medicine, Washington State University, Spokane, WA, USA

HIGHLIGHTS

- Online pain programs can reduce symptoms for people with pain and opioid use disorders.
- Pain self-efficacy is inversely related to pain, depression and opioid misuse.
- Strategies to improve online program engagement are needed.

Does not mean that all on opioids are "addicted."

Majority of participants (n=44; 73%) reported that their first use of opioids was *in response to a painful event.*

Setting:
Medication-assisted outpatient opioid treatment program

Opioid replacement therapy to reduce cravings:

- ✓ Methadone/Buprenorphine
- ✓ Daily dose
- ✓ Weekly “carries”

Spokane comprehensive treatment center

Purpose

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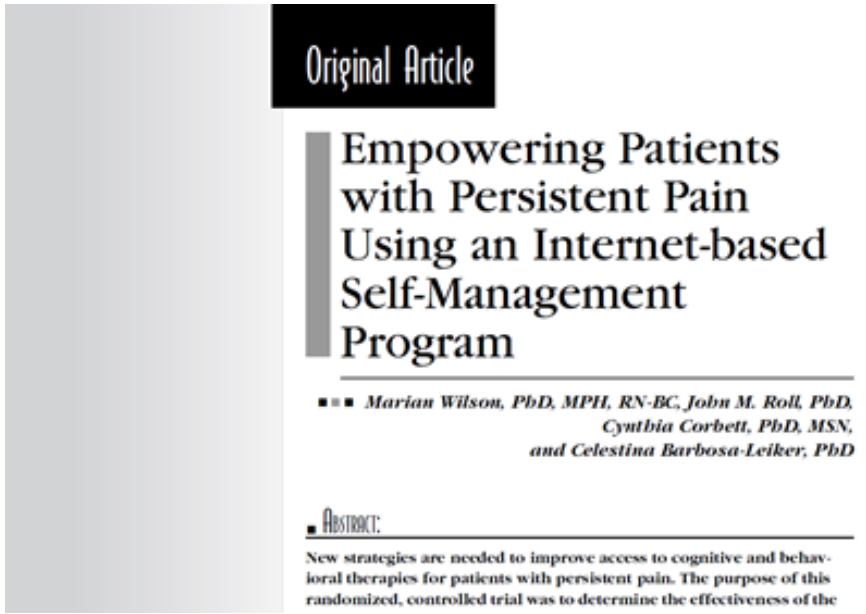
- Understand more about status of those in opioid addiction treatment with co-existing persistent pain

- Pilot test online Chronic Pain Management Program (CPMP) in new population

  - EMPOWER study underway testing in primary care chronic pain population for effect on morphine equivalency dose



Original Article

Empowering Patients with Persistent Pain Using an Internet-based Self-Management Program

Marian Wilson, PhD, MPH, RN-BC, John M. Roll, PhD, Cynthia Corbett, PhD, MSN, and Celestina Barbosa-Leiker, PhD

Abstract:

New strategies are needed to improve access to cognitive and behavioral therapies for patients with persistent pain. The purpose of this randomized, controlled trial was to determine the effectiveness of the

Methods

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Design

- Prospective, longitudinal, randomized controlled experimental design with repeated measures of primary outcomes

- Treatment group trialing CPMP versus attention control wait-list group

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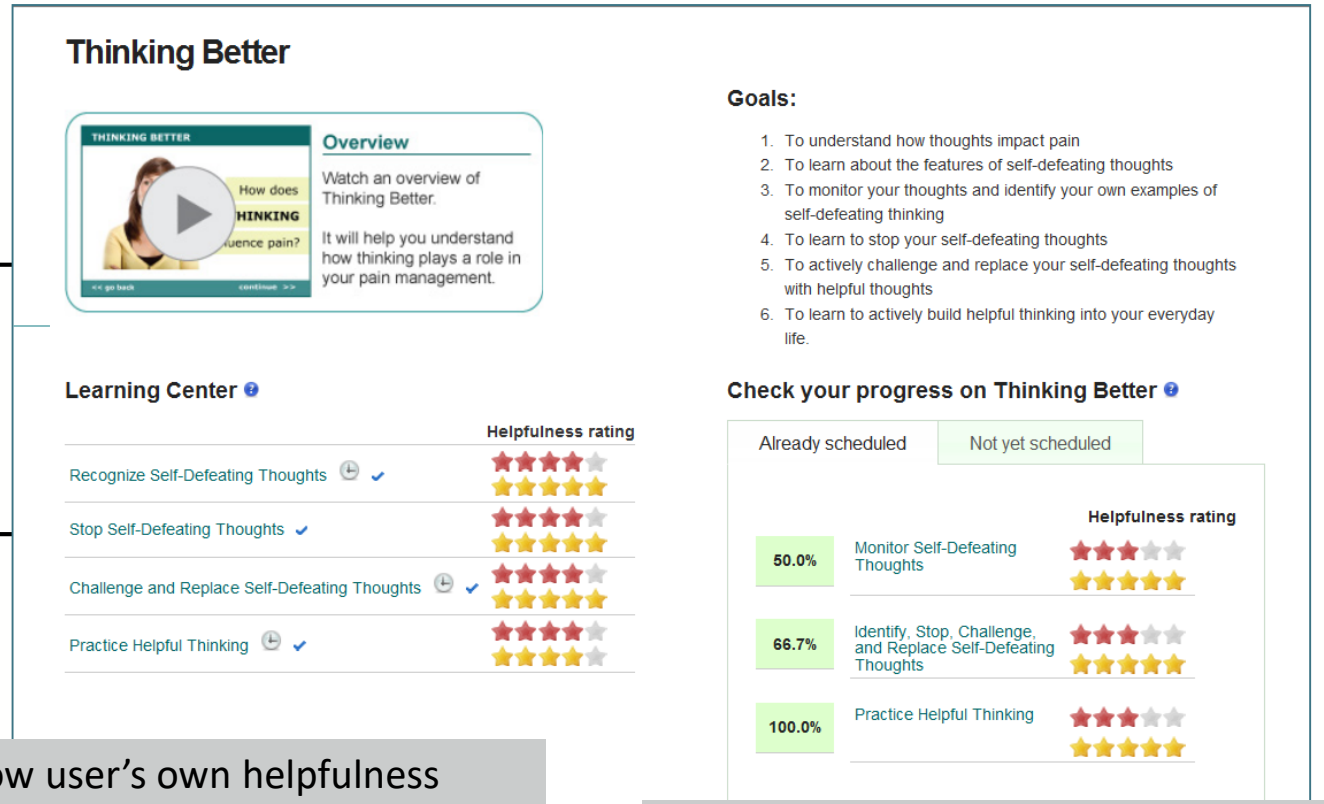
Web-based 8-week pain self-management program: *CBT-based Learning Centers*

Goalistics
Your Future Is Waiting

All centers have video overview

Interactive activities that open when clicked



Helpfulness ratings show user's own helpfulness ratings and average of all users

Clicking on a scheduled activity will open "My Progress" tab

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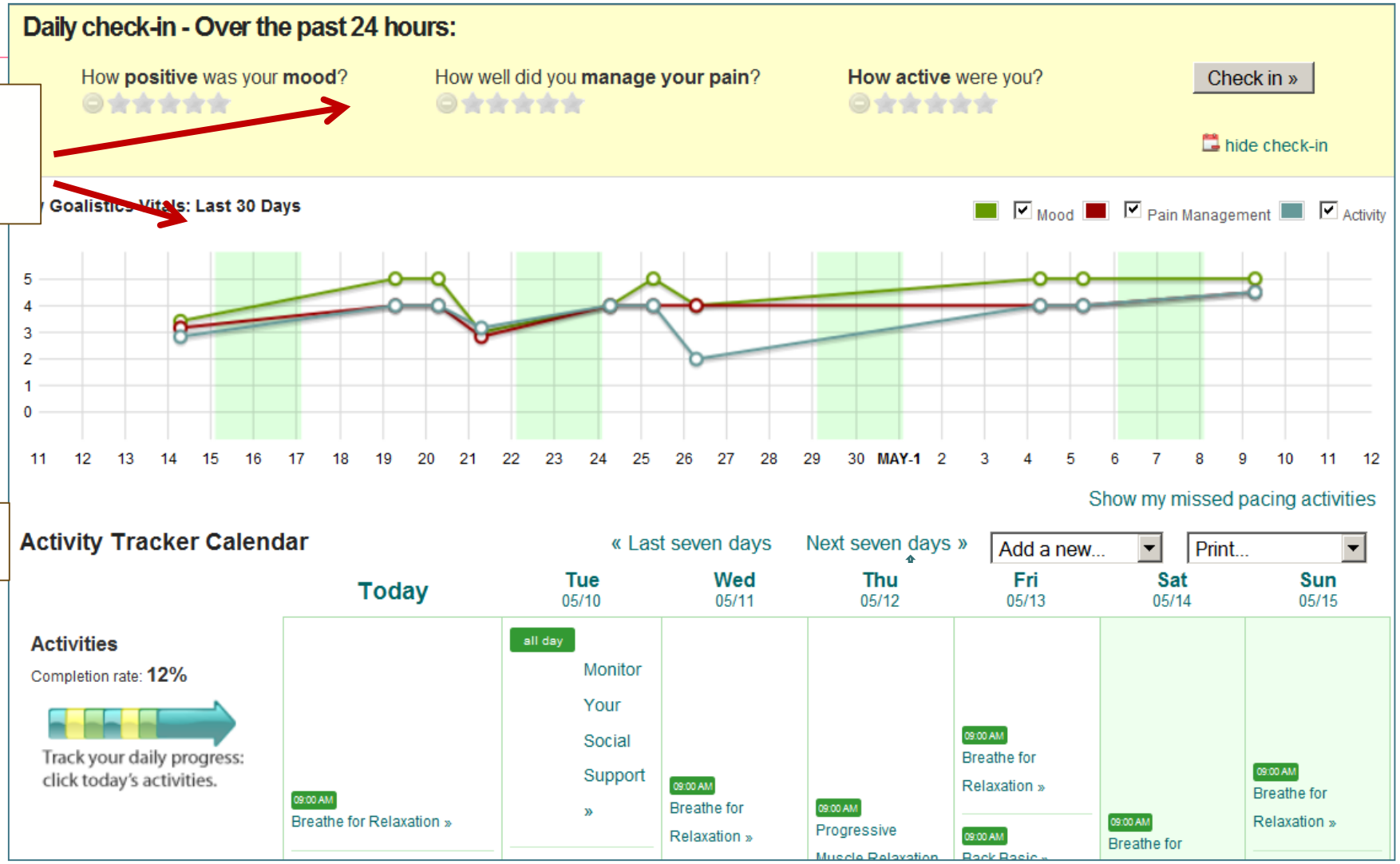
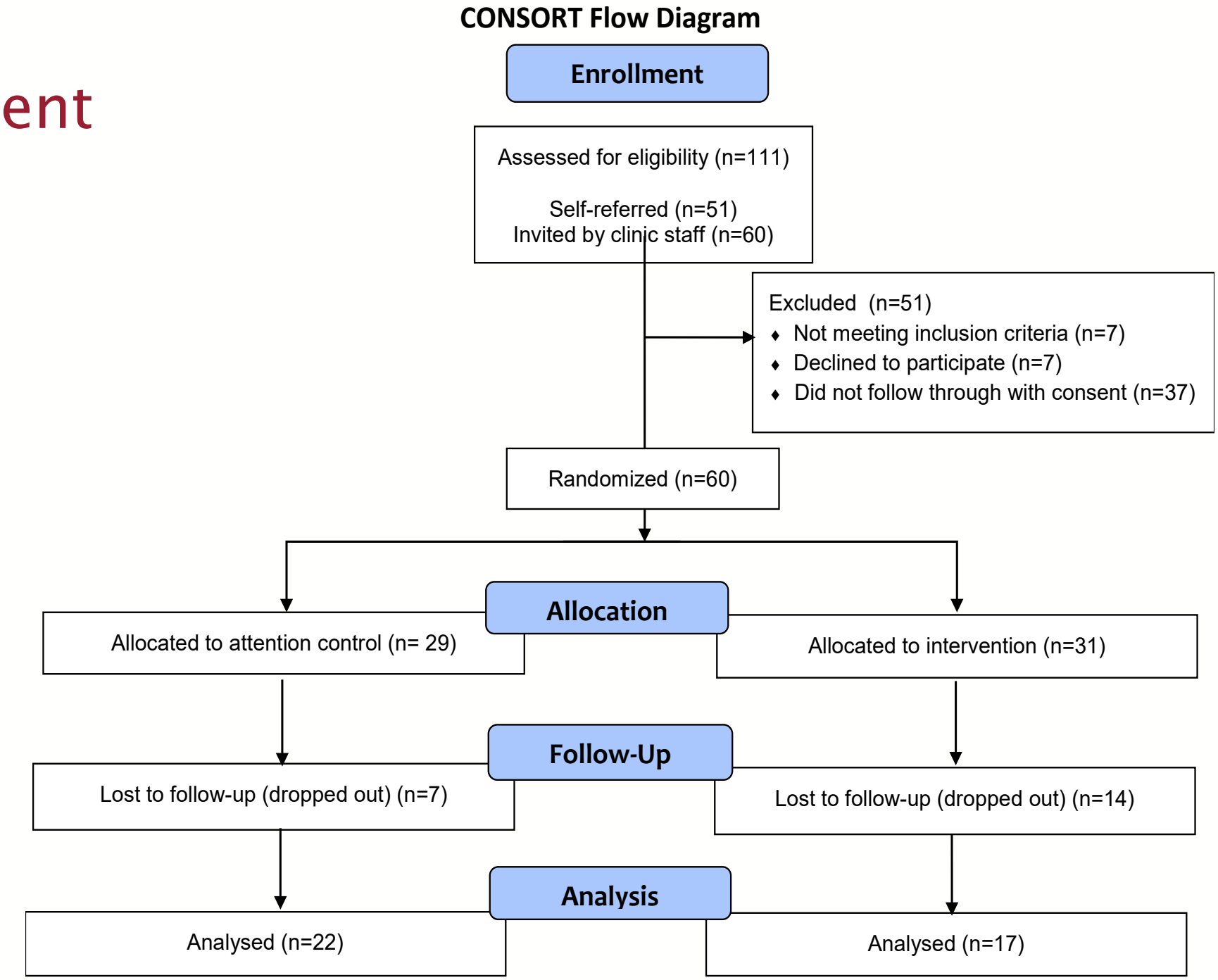
Screen Shot: Components of the Navigator

Daily Check-In and Graph

Tracker Calendar



Recruitment



Procedures

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1. Baseline measurements via secure computer survey system: TX group receives program and prompts to engage

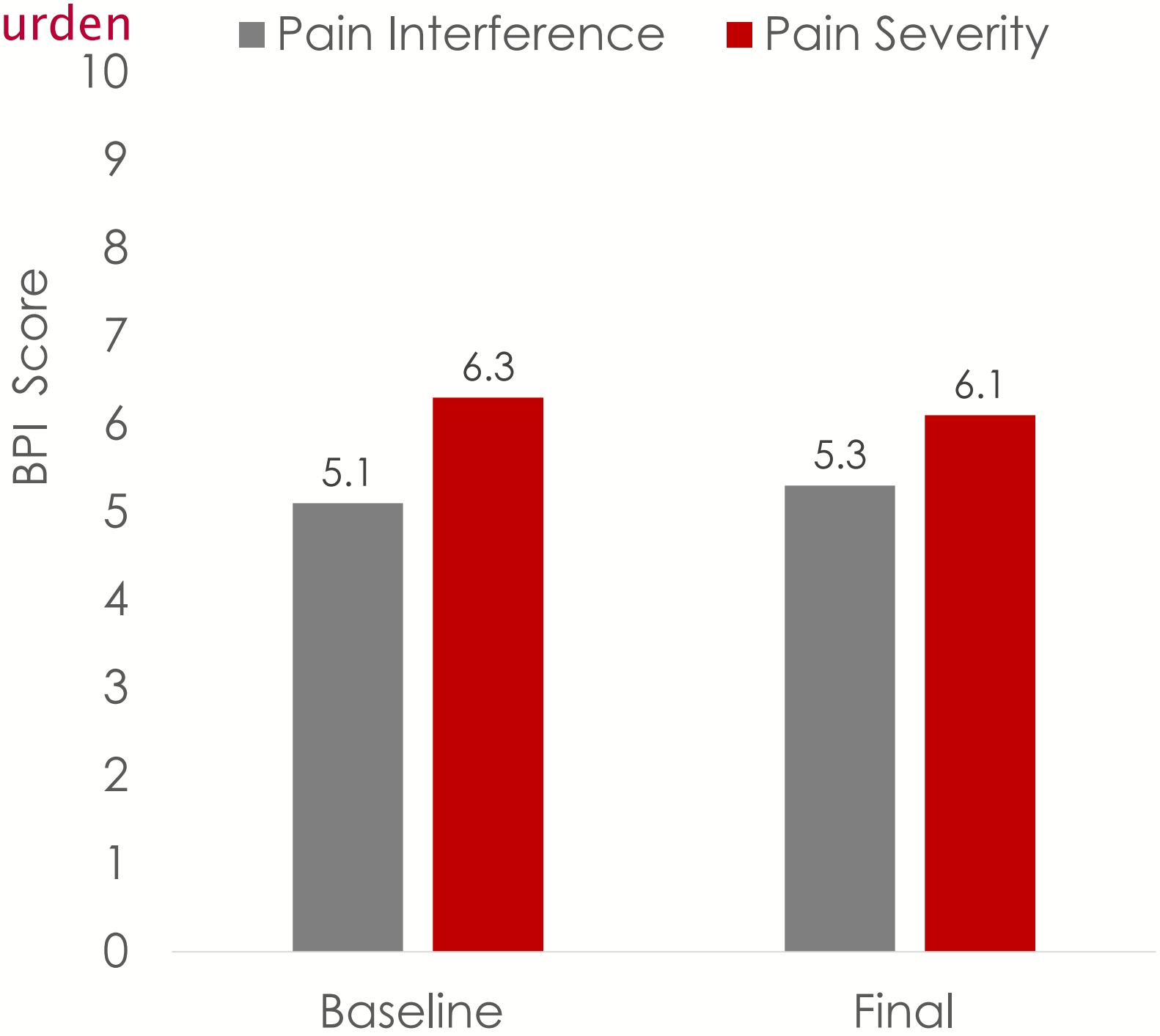
2. Both groups tested at 4 & 8 weeks: pain, depression, anxiety, withdrawal, opioid misuse measure.

3. Wait-list control group offered program

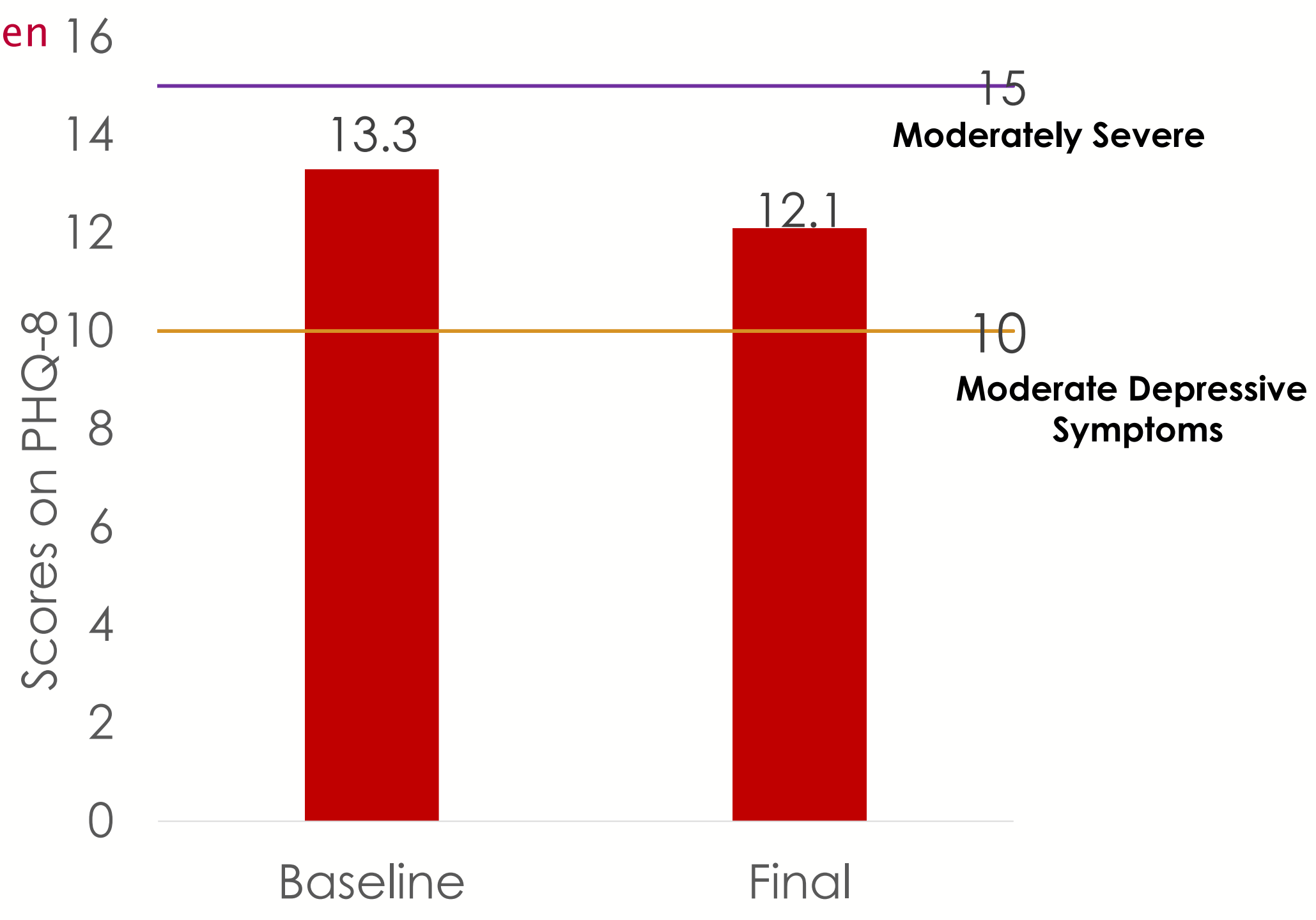
Participant Characteristics

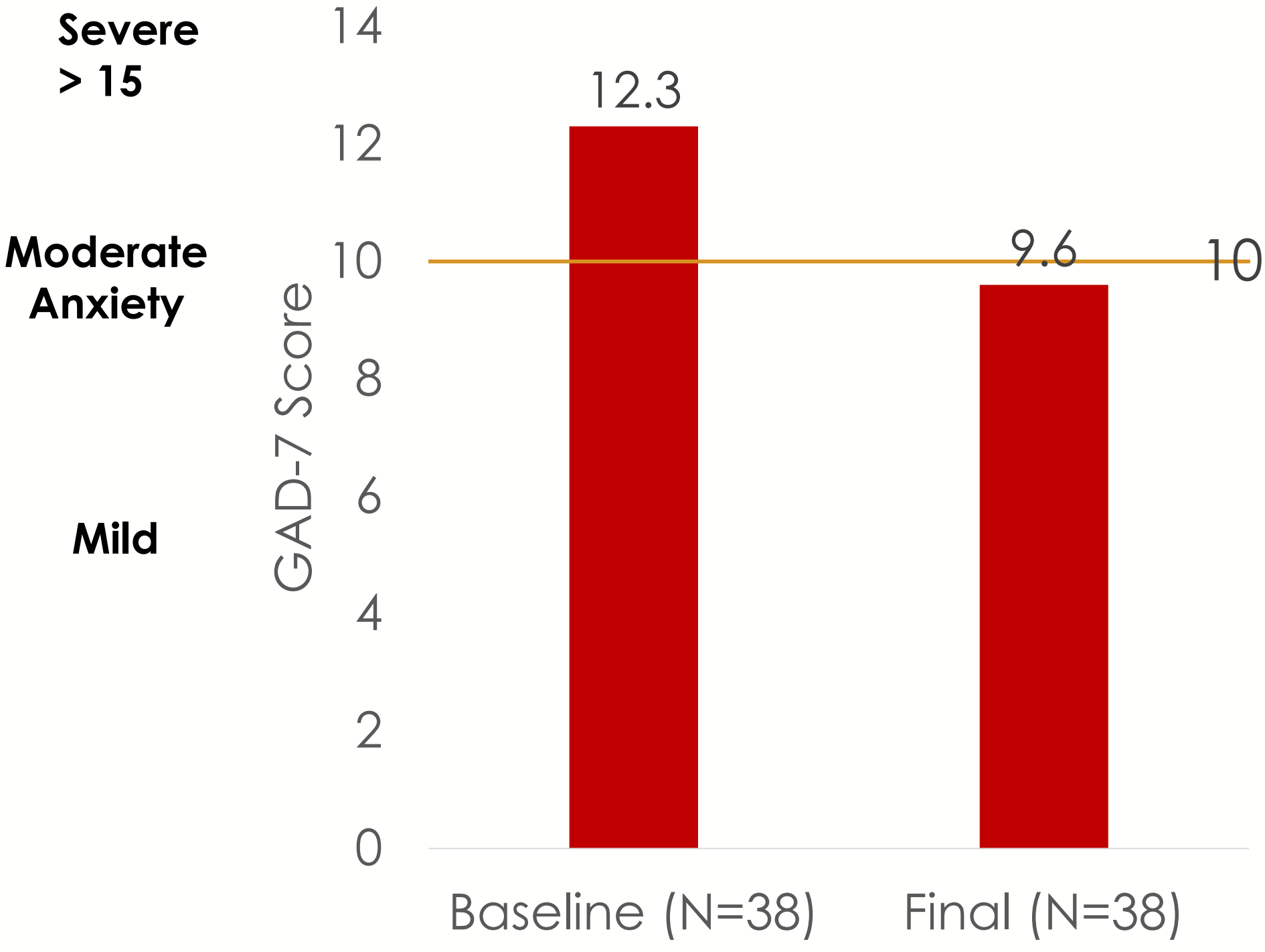
- Mean age 44 years (+/- 12)
- Male 53%
- Divorced/separated 26%
- White 78%, Native American 13%
- First opioid use pain event 73%
- Primary pain diagnosis:
  - Spine and Back 45%
  - Nerve pain 12%
  - Post-surgical pain 8%
  - Fibromyalgia 7%

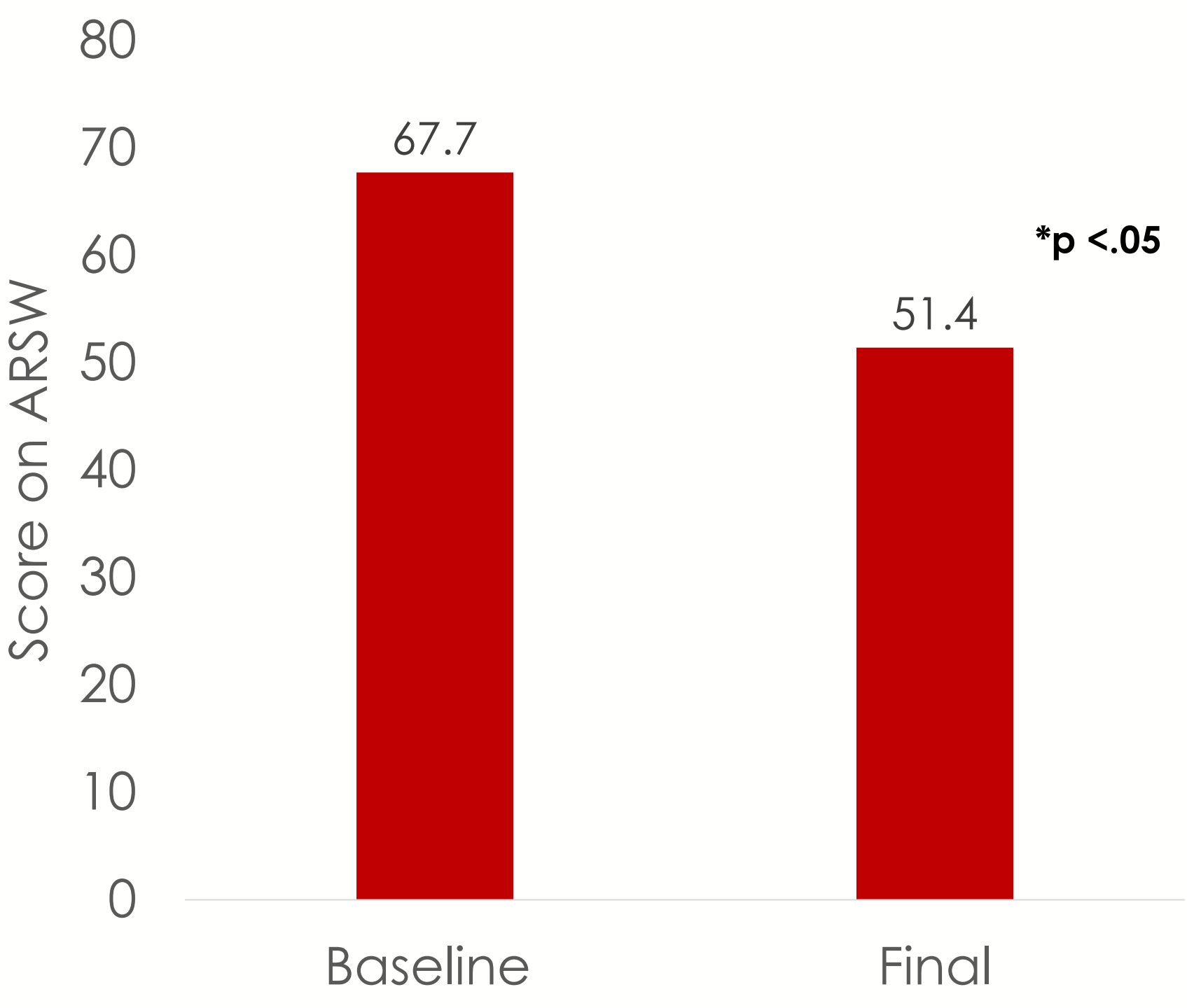
Symptom burden



Symptom burden




Severe
> 15
Moderate
Anxiety
Mild
14
12
10
8
6
4
2
0
GAD-7 Score
12.3
9.6
10
Baseline (N=38)
Final (N=38)


80
70
60
50
40
30
20
10
0
Score on ARSW
67.7
51.4
*p <.05
Baseline
Final

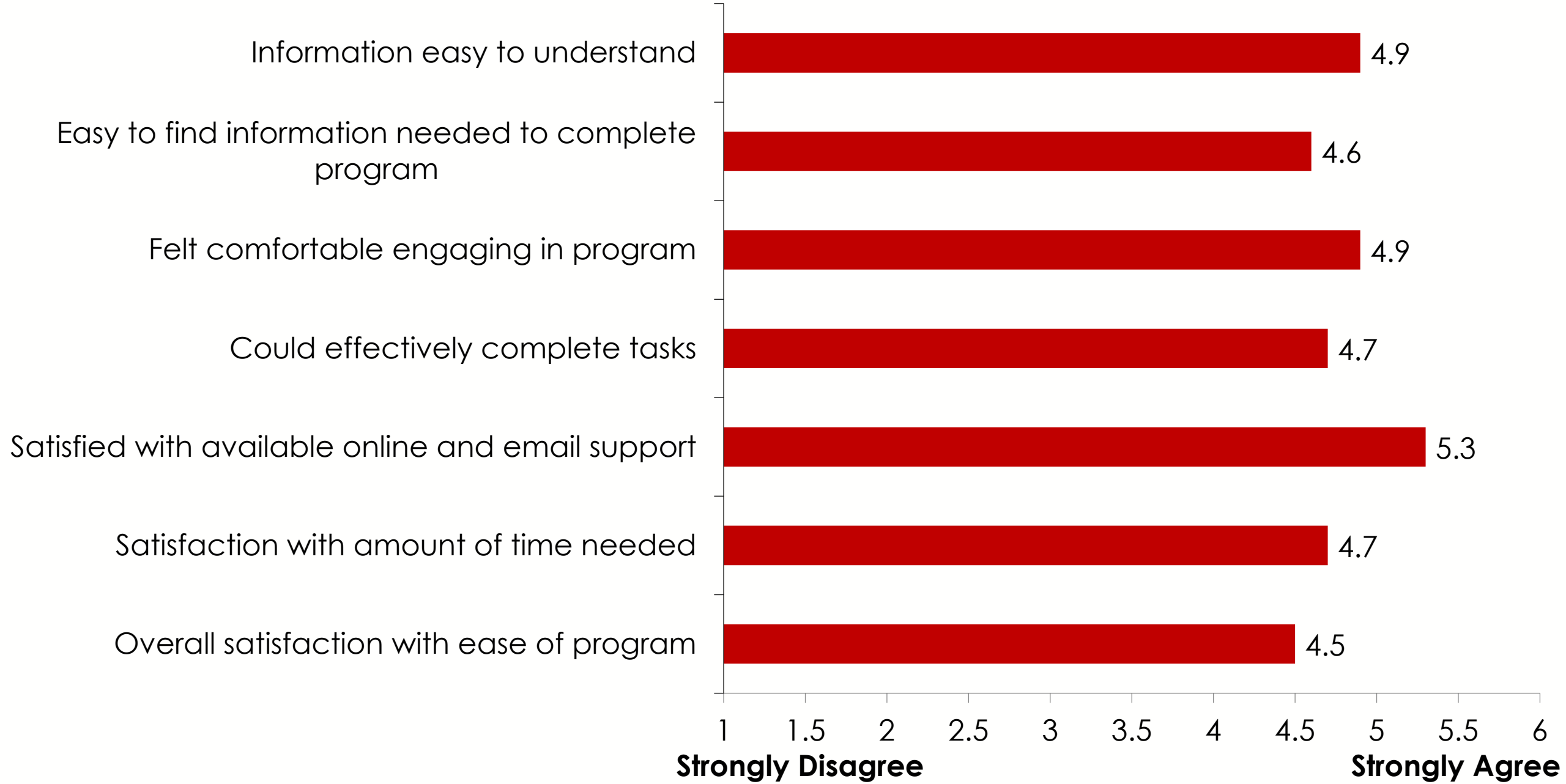
Adjective Rating Scale Withdrawal Most Common Symptoms		
	Pre	Post
Muscle Cramps	5.33 (2.25)	3.97 (2.92)
Painful Joints	6.08 (2.37)	5.29(2.50)
Trouble getting to sleep	5.33 (2.76)	4.44 (3.25)
Irritable	5.3 (2.38)	4 (2.42)
Fitful Sleep	5.18 (3.15)	4.08(3.10)

Main findings

- Those who engage improved self-reported pain severity, pain interference, pain self-efficacy
- Reduce opioid misuse, depressive symptoms
- High symptom burdens despite frequent contact with clinicians

- Engagement was sub-optimal; anxious, hurried
  - Barriers of transportation, computer and email access, motivation
  - Reminders, 1:1 time helps complete tasks

Participant Satisfaction with Online Program n=17



What is the process involved when adults first initiate opioids to treat pain through enrollment in MAT?

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Opioid Initiation to Substance Use Treatment

"They Just Want to Feel Normal"

Marian Wilson ▼ Michele R. Shaw ▼ Mary Lee A. Roberts

Background: Opioid use disorder has drastically increased in recent years within adult populations. Limited understanding exists regarding how people enter medication-assisted treatment (MAT) for opioid use disorder—particularly those who initiate opioid use to treat a painful condition.

Methods

Design:

- This study used a grounded theory qualitative approach.
- Approach was chosen because it has the ability to provide in-depth detail from ***participants' perspectives*** of living with persistent pain, taking opioid medicines, and the eventual need to enter into a treatment program for opioid addiction.
- The end result is the development of theory. (Corbin & Strauss, 2015)

Participants:

- Inclusion criteria: adults who were currently enrolled in medication-assisted treatment and reported the reason they initiated opioid use was for pain (recruited from RCT).
- 10 adults who were enrolled in a single outpatient methadone clinic in the Pacific Northwest.
- 10 initial interviews & 3 follow up interviews = 13 total interviews

Results

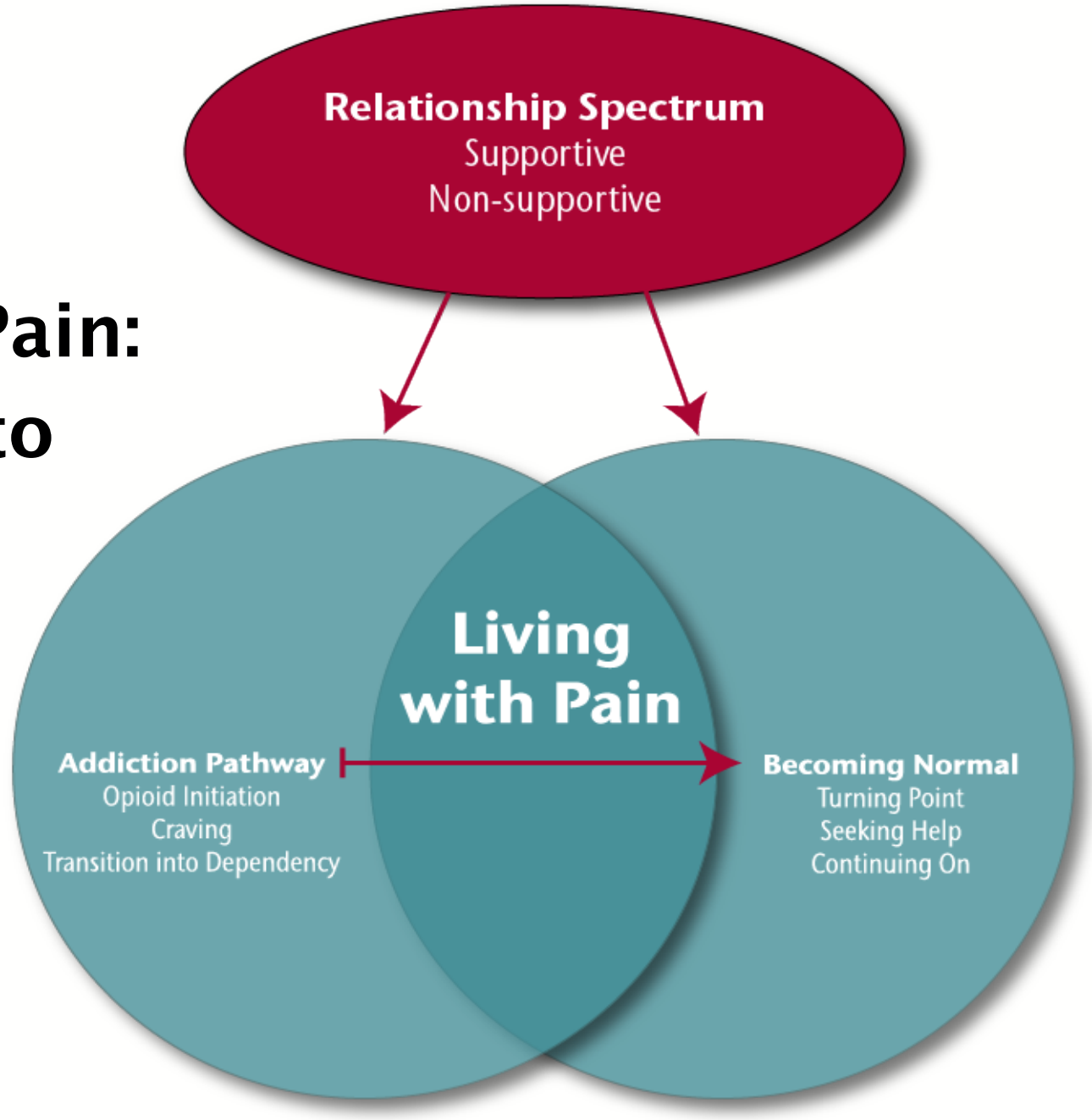
- The study resulted in the development of a new theory titled:

  "Living with Persistent Pain: From Opioid Initiation to Substance Use Treatment."

- The theory includes three predominant categories that were supported from the participant data (transcripts):
  - Addiction pathway
  - Becoming normal
  - Relationship spectrum

Figure of Theory

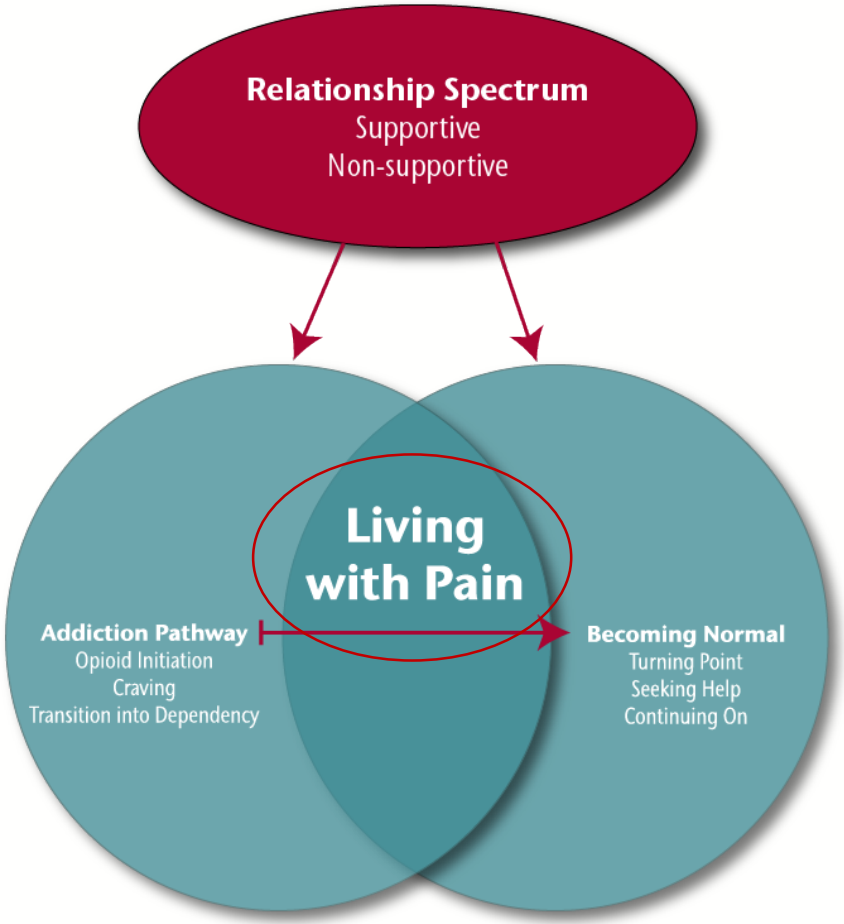
Living with Persistent Pain: From Opioid Initiation to Substance Use Treatment



Core Category: Living with Pain

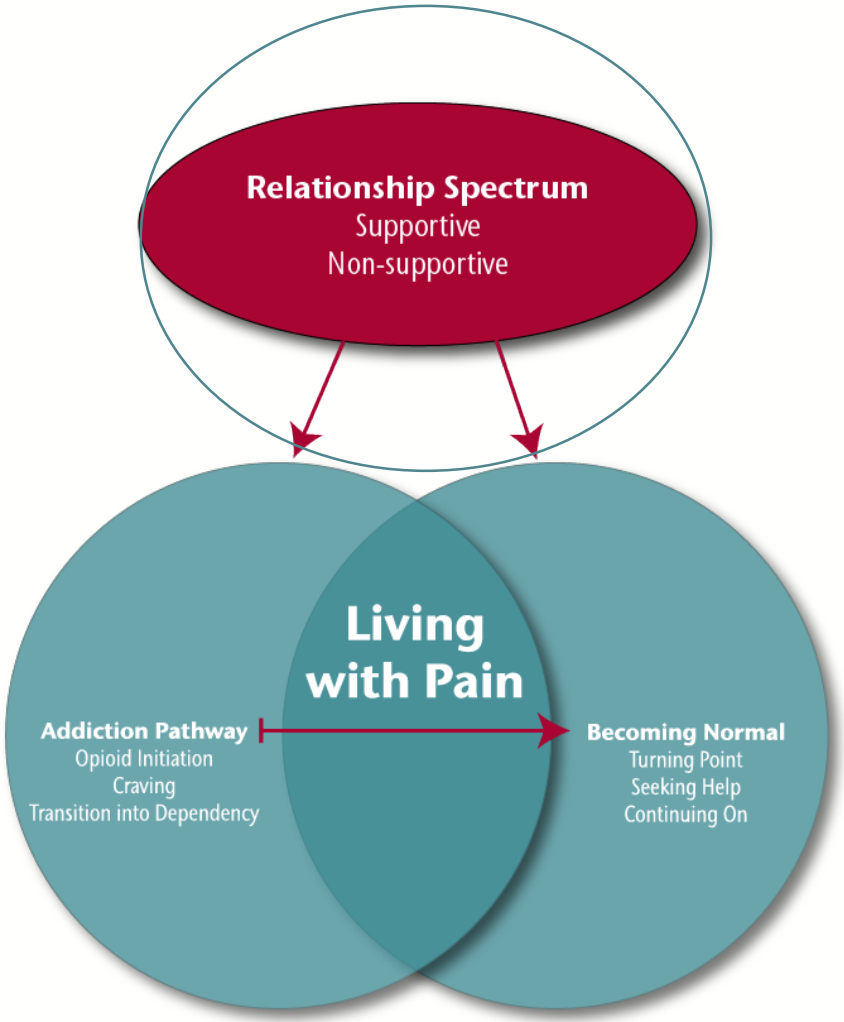
Overarching theme most consistently identified in the data and relatable to every category

- *"But there's no trapdoor. There's no out from it [pain]. There's things that help, but it's always there…I start thinking about that fact, unless something changes, this is going to be here for the rest of my life…that's when I start getting depressed and feel hopeless."*
- *"…it creates a lot of underlying stress when you have that pain all the time and there's no escape from it…it starts to make you feel almost claustrophobic."*



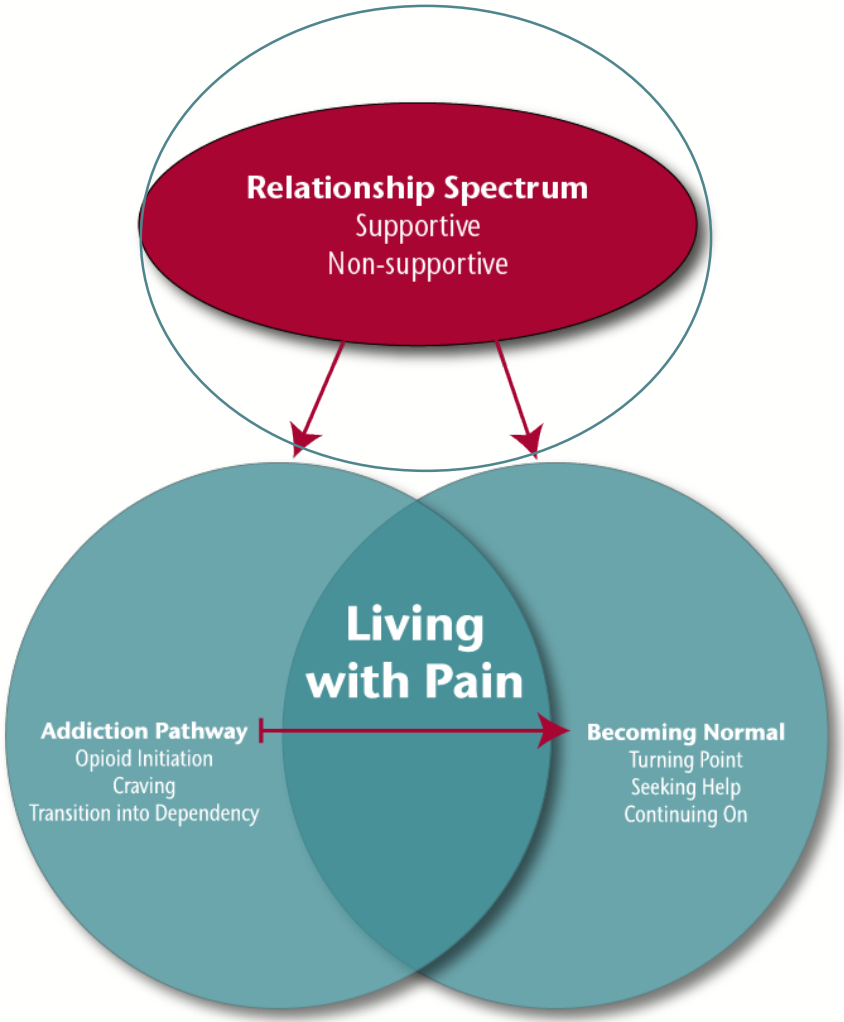
Category: Relationship Spectrum

- *"…it was also a lot easier for my boyfriend to control me, I think, that way also with the pain pills. He knew that – that was a big way to control me in the ways that he wanted to. I didn't see that until I got out of the relationship…So at first it seemed like he was supporting me and loving me and everything, but after a time, I saw that it wasn't really support or love."*
- *"There was a reason they (providers) didn't let me die….My cardiologist came in and saw me and he told me…"You're going to go to the Methadone clinic." Oh, I am? "I'm not asking you. You're going….we can't have this. I'm not going to have you die, not after everything we've been through. We're not doing that, so you're going to the Methadone Clinic."*



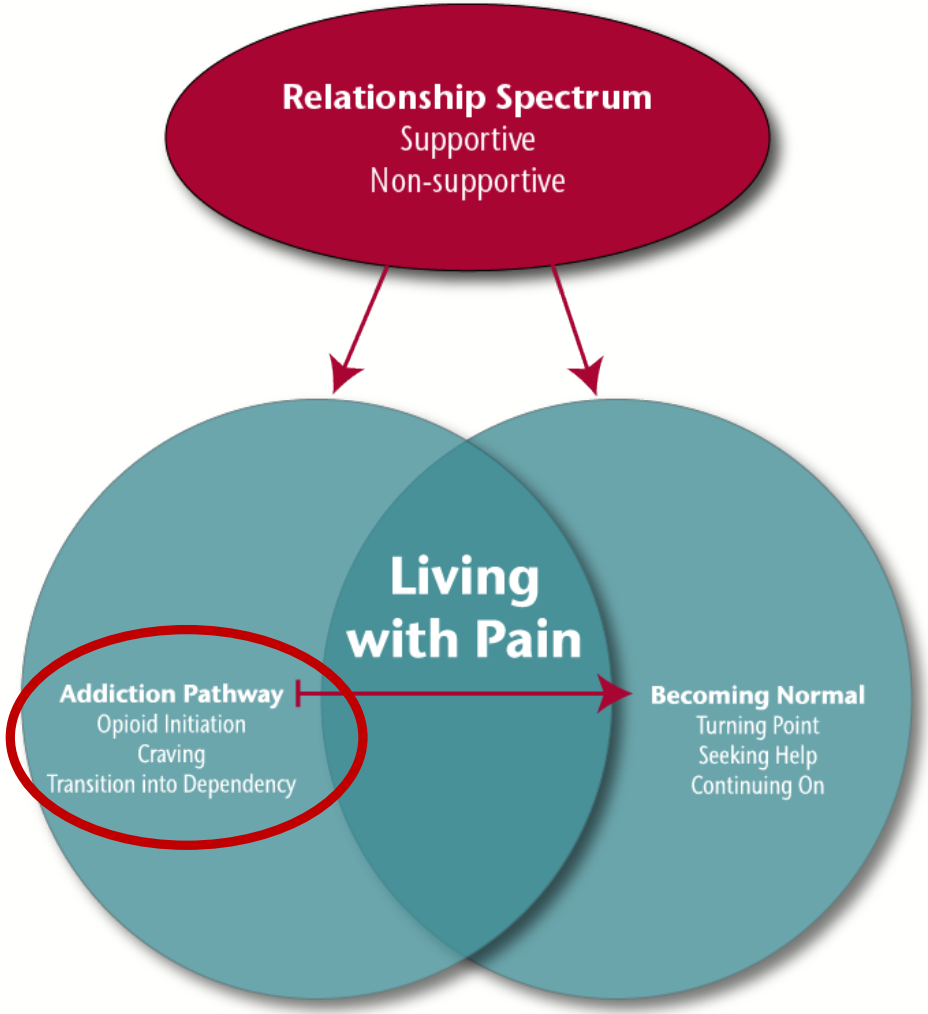
Category: Relationship Spectrum

- *"I hear [from my family] …'When are you finally going to get off of that stuff?" And I tell 'em, you know, I might not ever be able to get off that stuff [methadone], so – you know, they don't understand the 'maintenance' part of the methadone."*
- *"The first thing he [my doctor] told me was, 'Don't expect to get anything from me," pretty much. Which is wrong, I mean, that's totally wrong. I can't get past that to – to address all of my pain issues."*



Category: Addiction Pathway

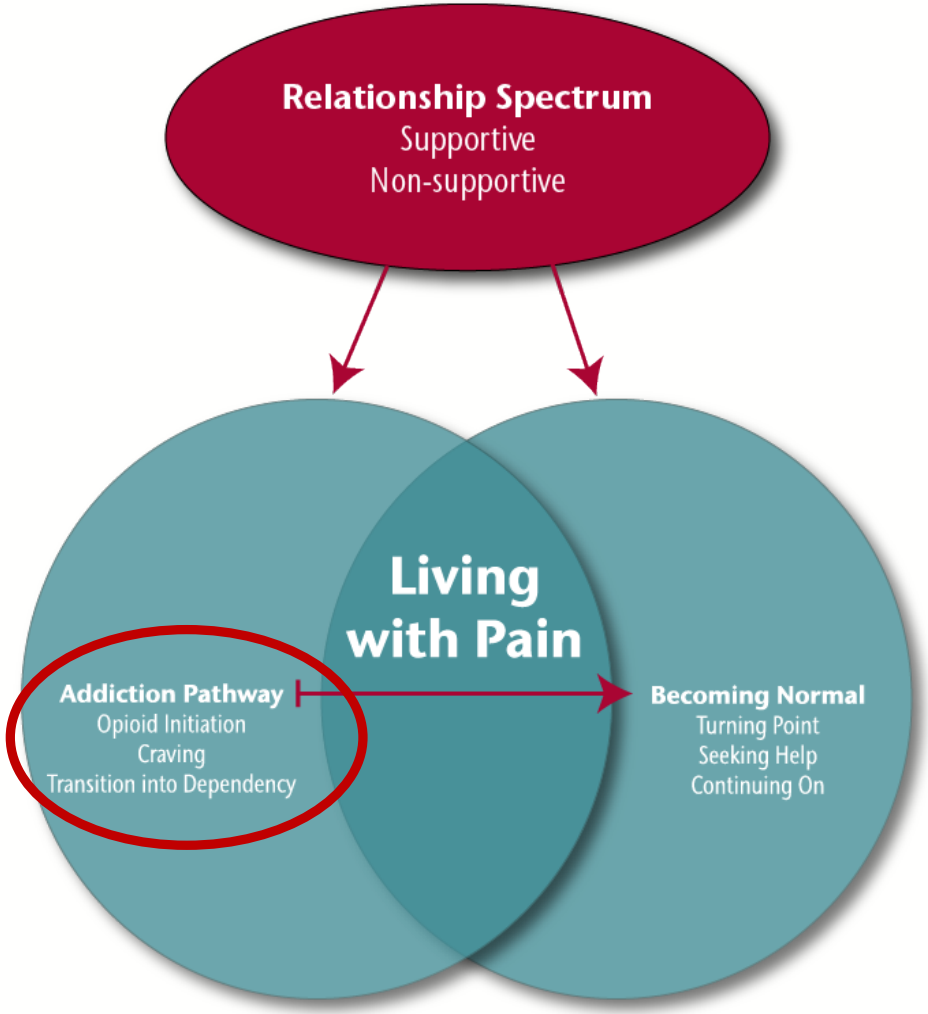
- Described as the process that eventually resulted in opioid misuse and addiction.
- What most often began as a prescription for a medical issue, commonly turned into participants misusing opioids by increasing the amount and frequency of medications that they used.
- This category includes 3 supporting concepts:
  - Opioid initiation
  - Craving
  - Transition into dependency



Category: Addiction Pathway | Concept: Opioid Initiation

- *"I was actually just about to turn eighteen years old and I was in a car accident. I got set up with a doctor and he started giving me, ah, pain pills for it….I think it was like a year-and-a-half later I was still on those pain pills. I wasn't really given any other options than,…chronic pain pills and opioids for it."*

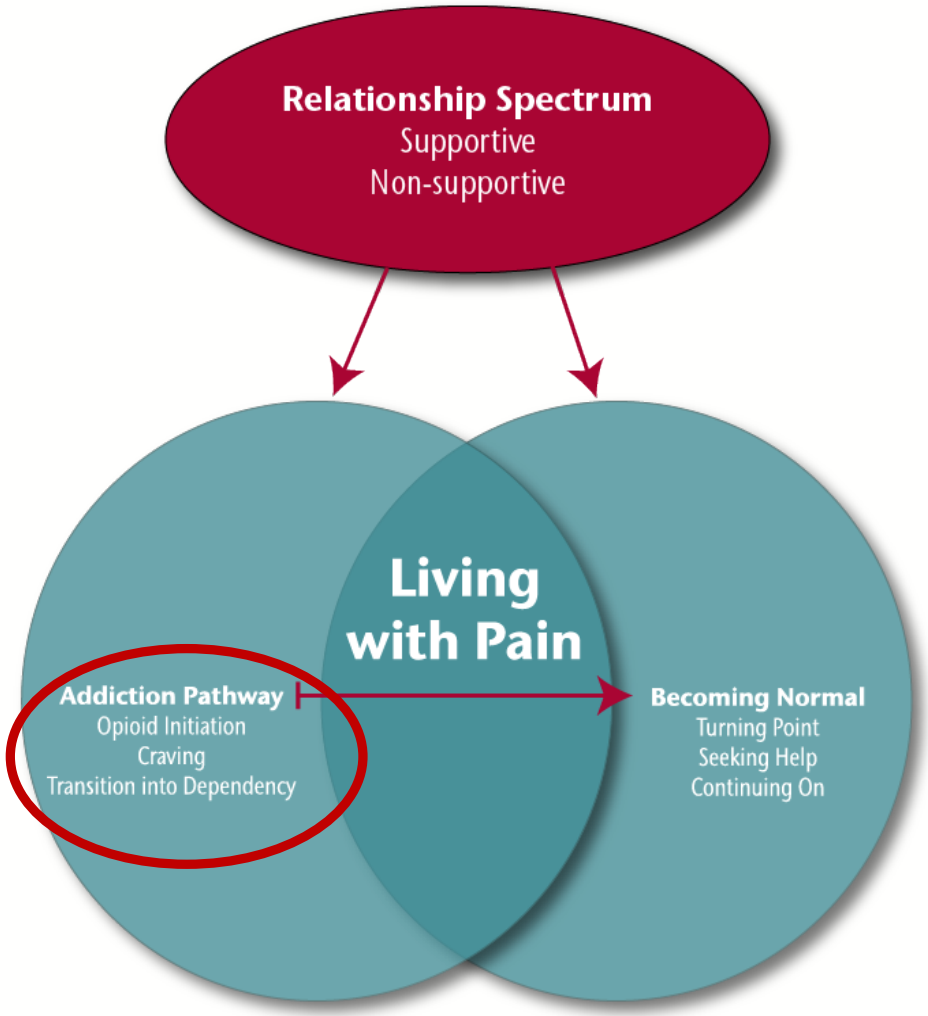
- *"I gave birth to my 4th pregnancy, and my sacrum was fractured and it never healed… It was interrupting my day and night - my life in all facets… I was given opioids for the pain."*



Category: Addiction Pathway | Concept: Craving

- *"…and it was just like this loud- not a voice, but, you know, just this loud thought of just go get the pain pills. It will fix this. Because it was such a, um, debilitating thing and such an unwanted feeling."*

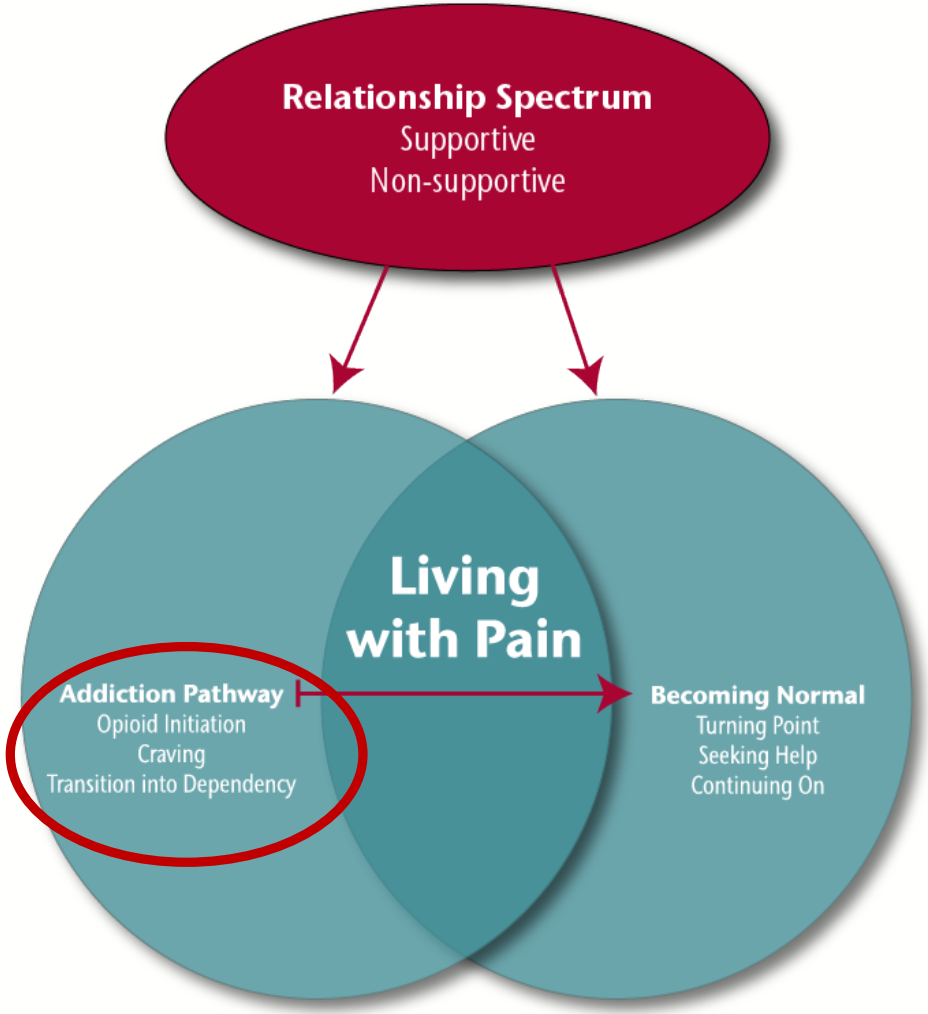
- *"It was just like…one of the hamster wheels…it seemed to never stop - getting off the hamster wheel and thinking, my brain would tell me, you know, this pain can stop if you just go get pain pills."*



Category: Addiction Pathway | Concept: Transition into Dependency

- *"When it comes to opioids, you don't realize you're addicted until you try to quit. You know that when you're trying to quit or not take 'em and you get sick….it's like having the flu cause your whole body aches….a miserable feeling."*

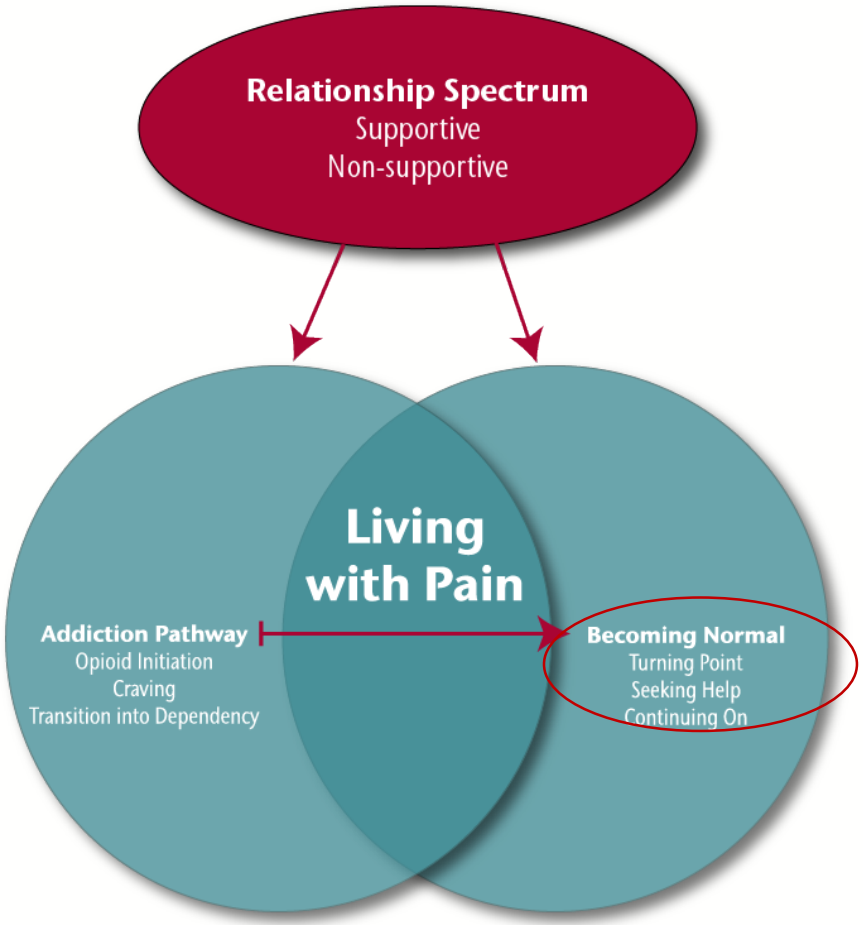
- *"What happens is we get to the point that we are willing to give everything we have to it, and we do. We give to it. We keep giving until we have given all we have to give."*



Category: Becoming Normal | Concepts: Turning Point/ Seeking Help

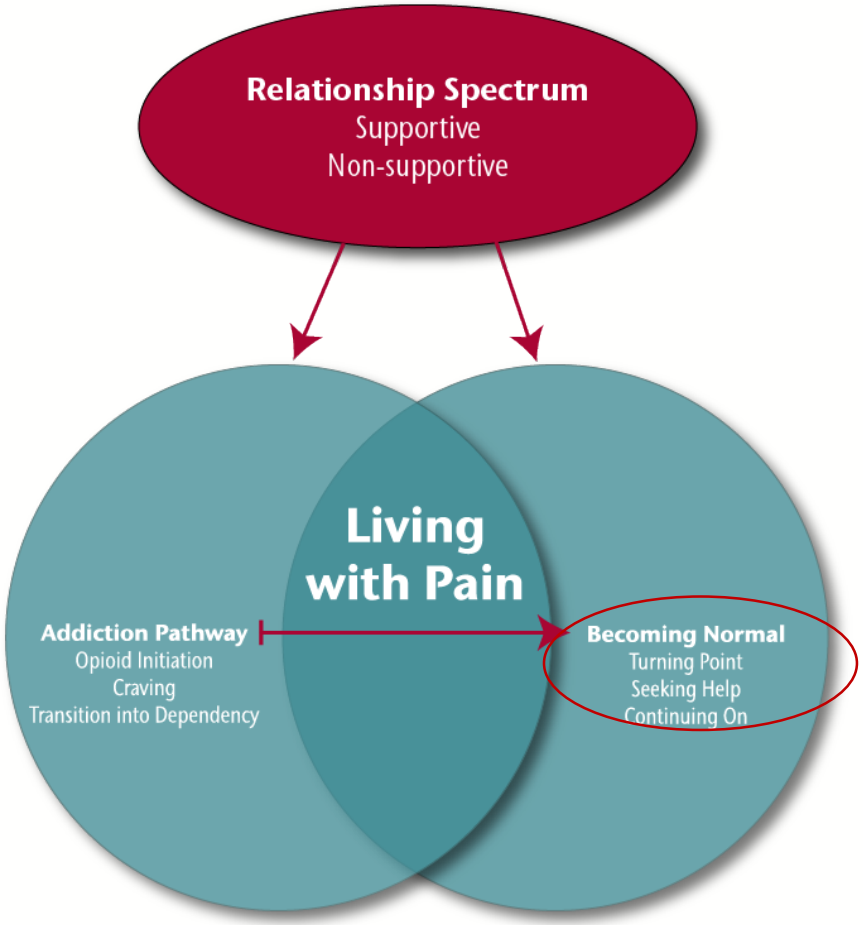
- *"So one day I just said 'Enough's enough. I don't want to do this anymore.'"*

- *"…I decided to do something proactive and make a change. And I went out – the very next day after I got out of the hospital after that incident, I went to the methadone clinic."*



Category: Becoming Normal | Concept: Continuing on

- *"I would say ninety percent of the people that come to these [Medication Assisted Treatment] clinics… they just want to feel normal."*
- *"…eventually, you got to a point where it was what it (methadone) should do- just take away the withdrawal symptoms and the cravings and allow you to wake up in the morning without having those awful cravings and thoughts…it really does help you to feel just normal and I guess normal being not in pain, um, aware and alert."*
- *"Not all days are rosy, but there's days I'm happy – where I'm happy in this journey of my life."*



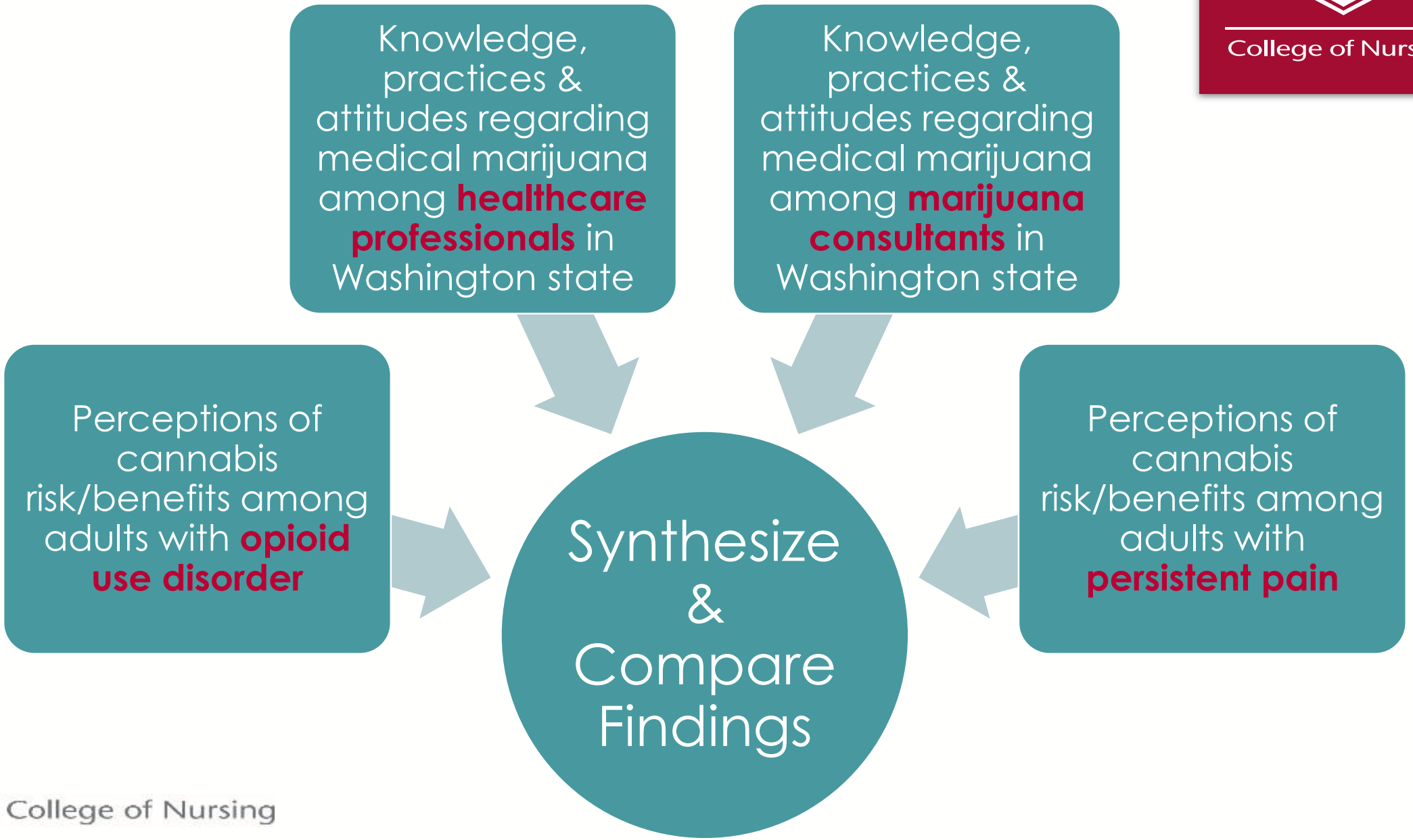
Implications for Nurses & other Healthcare Providers

1. Discuss non-opioid and non-pharmacological options for pain early on.
2. Establish collaborative ***relationships*** with patients = shared decision making in developing realistic pain management goals.
3. Educate patients about potential pitfalls and realistic benefits of using opioid medications before initiation and often throughout course of treatment – assess for substance use risk.
4. Begin to discuss tapering plan early on and support patients throughout.
5. Ensure that MAT populations with chronic pain receive coping skills training that addresses their capability to deal with stress and distressing symptoms – build self-efficacy.
6. Discuss treatment options (MAT, Counseling) and desire for ***becoming normal.***
7. Offer hope – supportive healthcare relationships encourage, support, and accept.

Summary

- "Living with pain" was a complex and tumultuous process from the original painful experience, to initial use of opioids, to ongoing recovery in MAT.
- Relationships that either support or detract from recovery are critical to decision points and quality of life.
- Decision to enter medication-assisted treatment was key to "becoming normal."
- Continued need to develop and test more options to assist in managing pain within context of medication-assisted treatment.
- Physical and emotional pain should be addressed with compassion in all phases of treatment.
- Trusting relationships that provide nonjudgmental support and advocacy are essential for people with pain and comorbid substance use.

*Wilson, M., Shaw, M., Shaw, M. (2018). Opioid initiation to substance use treatment: "They just want to feel normal." *Nursing Research, Epub ahead of print.*


Knowledge, practices & attitudes regarding medical marijuana among healthcare professionals in Washington state
Knowledge, practices & attitudes regarding medical marijuana among marijuana consultants in Washington state
Perceptions of cannabis risk/benefits among adults with opioid use disorder
Perceptions of cannabis risk/benefits among adults with persistent pain
Synthesize & Compare Findings

OUD symptom self- management

Addictive Behaviors 77 (2018) 225–231

Contents lists available at ScienceDirect

Addictive Behaviors

journal homepage: www.elsevier.com/locate/addictbeh

Cannabis use moderates the relationship between pain and negative affect in adults with opioid use disorder

Marian Wilson[a,b,c,*], Hannah Y. Gogulski[d], Carrie Cuttler[c,d], Teresa L. Bigand[a,b], Oladunni Oluwoye[b,e], Celestina Barbosa-Leiker[a,b,c], MaryLee A. Roberts[a,b]

- Among OUD patients 1/2 reported using cannabis in the past 12 months to manage aches or pains.
- Most common reasons: “recreation” or “social” (80%), pain (60%), sleep (53%), anxiety/stress (49%), and withdrawal (34%).
- Frequency of cannabis use was not related to symptom level for pain, depression, anxiety.
- Frequency of use was negatively correlated with self-efficacy for managing emotions ($F_{1,265} = 12.77$, $p<0.001$).

Current study:

Influence of Hyperbaric Oxygen on Withdrawal Signs and Sleep/Pain Symptoms in Human Subjects with Opioid Use Disorder

Sleep improves when hyperbaric oxygen therapy is administered before and after methadone dose reduction for adults with opioid use disorder

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Introduction

- Sleep disturbances are a significant problem for as much as 80% of subjects enrolled in medication-assisted behavioral treatment (MAT) for opioid use disorder [1].
- A preliminary study by our team showed that treatment with hyperbaric oxygen therapy (HBOT) may reduce withdrawal intensity in subjects following a 10% reduction in their daily methadone dose.
- This study was designed to determine the influence of HBOT (100% oxygen and high atmospheric pressure) on the quality of sleep following a 10% reduction in their daily methadone dose.

Methods and Materials

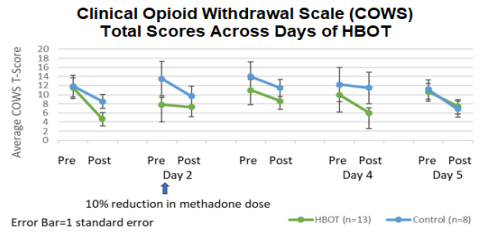
- **Subjects:** 11 male and 20 female subjects were recruited from an opioid treatment program to participate in this study. They were randomized into a 5-day medically-supervised treatment arm or a 5-day (unblinded) attention control arm.
- **HBOT:** HBOT was administered for 5 consecutive days in 90-min sessions at 2.0 atmospheres absolute (ATA)—15 min compression, 30 min at depth, and 15 min decompression—via individualized oxygen hoods in a 12-seat sealed, pressurized chamber at the Spokane Hyperbaric Center (Spokane Valley, WA).
- **Reduction in daily methadone dose:** Participants agreed to a 10% reduction in current methadone dose or a reduction of 5.0 mg— whichever was smaller—starting on day 2 of the 5-day study.
- **Assessment of opioid withdrawal:** The intensity of withdrawal signs and symptoms were assessed by patient use of the Adjective Rating Scale of Withdrawal (ARSW) [2] and by a trained research assistant using the Clinical Opiate Withdrawal Scale (COWS) [3]. Assessments were collected every day during the 5-day study and post-HBOT at 1 week, 1 month and 3 months.

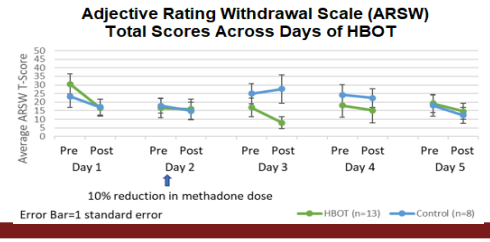
Methods and Materials (continued)

- **Self-assessment of sleep quality:** The short-form PROMIS Sleep Disturbance Scale was the primary sleep measure collected at baseline and post-HBOT at 1 week, 1 month and 3 months.
- **Actigraphy assessment of sleep quality:** Objective sleep measures were captured one week pre- and post-HBOT via wrist-worn actigraphy.
- **Statistical analysis:** For ARSW and COWS, total scores were analyzed. For PROMIS measures, T-scores were analyzed. All statistical testing was two-sided (α=0.05) and performed using SAS 9.4 (Cary, NC).

Results

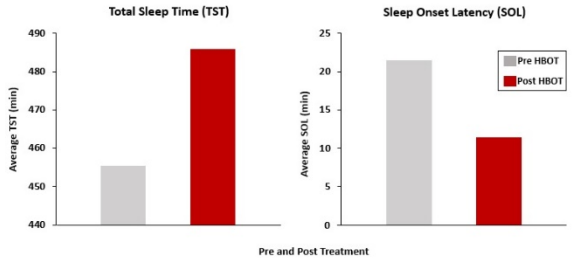
- **Daily opioid withdrawal:** Average daily withdrawal symptoms across five days of treatment were less for the HBOT group than the attention control group. GLMM analyses revealed a statistically significant group×day interaction using ARSW (p=0.039) but not COWS (p=0.874).





Results (continued)

- **Sleep results:** PROMIS Sleep Disturbance results showed that the mean sleep disturbance for the control group increased from baseline to post-intervention at each measurement time point while it trended downward for the HBOT group, indicating less sleep disturbance at each time point after HBOT.
- Post-treatment actigraphy results support the self-report findings, showing an approximate 30-min increase in total sleep time and a 16-min reduction in sleep onset latency in the week following HBOT.



Conclusion

These findings support the working hypothesis that clinically significant improvements in sleep duration and time to fall asleep are possible when HBOT is administered before and after opioid dose reduction.

References

[1] Sharkey *et al.*, *Drug Alcohol Depend.* 113:245-248, 2011.
[2] Barbosa-Leiker *et al.*, *J. Subst. Abuse Treatment* 46:251-256, 2014.
[3] Wesson & Ling, *J. Psychoactive Drugs* 35:253-259, 2003.

Acknowledgments

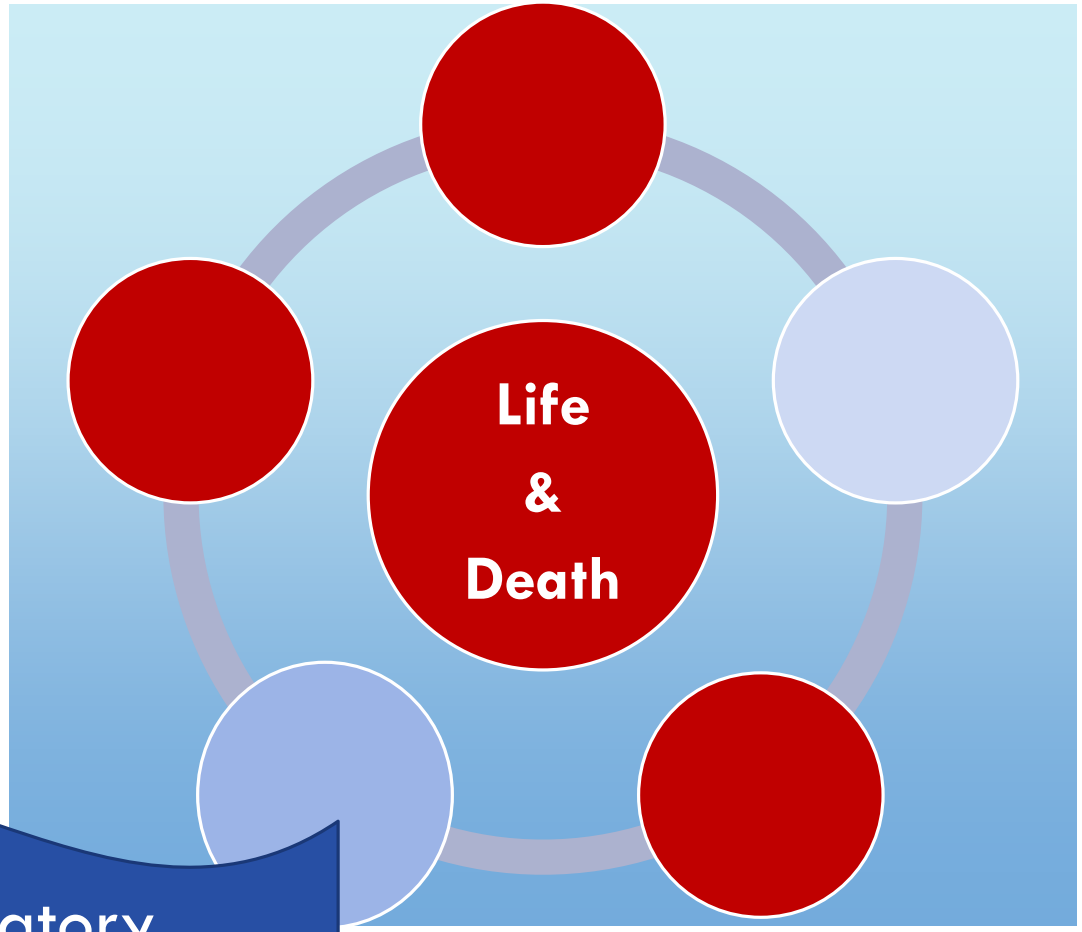
This research was supported in part by funds provided for medical and biological research by the State of Washington initiative Measure No. 171.

SYMPTOMS ARE *NOT* INSIGNIFICANT

"…when their last dose of drugs starts to wear off, they'll take anything to avoid withdrawal, which they describe as the flu on steroids with fever, vomiting, diarrhea and high anxiety."

www.npr.org

Fentanyl Adds A New Terror For People Abusing Opioids
April 6, 2017



Respiratory Depression/Overdose

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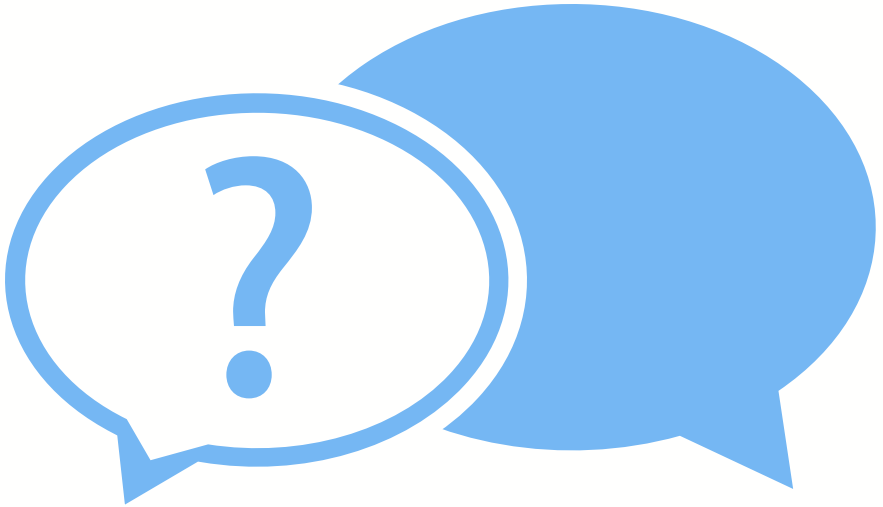

Upcoming Events

Join us for our next webinar!

Building Trauma-Informed Medication Supported Recovery Services

Lydia Bartholow
November 20, 2019, 12-1pm

gracias cảm ơn bạn ধন্যবাদ 고맙습니다

شكرا جزيلا salamat благодарю вас 谢谢

Dziękuję Ci **Thank** ευχαριστώ

quyana tack **you!** አመሰግናለሁ

धन्यवाद danke asante grazie

híkʼʷuʔ merci תודה obrigado ขอบคุณ

ありがとうございました спасибі mahalo