

# Understanding and Treating Children and Adolescents with Chronic Pain and Other Somatic Symptoms

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## Learning Objectives

- ▶ Define chronic pain and identify common presentations of pain and other somatic symptoms
- ▶ Identify at least three factors that may increase youth risk for developing chronic pain and other somatic symptoms
- ▶ Describe interventions and accommodations for children and adolescents with chronic pain and other somatic symptoms.



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## Overview of Presentation

- ▶ Background information
- ▶ Effectiveness of psychological intervention for chronic pain
- ▶ Intervention components for chronic pain/somatic symptoms
- ▶ Resources through Children's Hospital of Pittsburgh
- ▶ Other resources
- ▶ Questions

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## Background Information – Definitions and Key Terms

- ▶ Acute versus Chronic pain

Characteristics	Acute Pain	Chronic Pain
Cause	Known	May be known or unknown
Duration	>3 months	<3 months
Progression	Improves with time	can worsen with time or be inconsistent
Rest	Typically helpful, promotes healing	Typically makes pain worse
Outcome Goals	Full healing of injury, full resolution of pain	Focus on quality of life and pain control, not cure

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## Background Information – Definitions and Key Terms

- ▶ Functional Neurological Disorder (formerly conversion disorder)
  - ▶ Somatic symptoms (e.g. blackouts, seizure-like episodes, paralysis, abnormal movements, visual disturbance, etc.) that are not explained by medical condition
  - ▶ Functional versus Conversion
    - ▶ Functional: Indicates symptoms that cannot be explained by a known medical condition and/or are greater than would be expected for a given medical condition. Functional conditions are poorly understood, but are thought to be the result of nervous system dysfunction
    - ▶ Conversion: Refers to the conversion of psychological distress into physical symptoms
- ▶ Somatic Symptom Disorder (formerly Somatization Disorder)
  - ▶ When patients experience extreme focus on physical symptoms – this includes (but is not limited to) pain
  - ▶ Excessive time and energy is spent on symptoms/health concerns
  - ▶ High level of anxiety about health symptoms
  - ▶ Somatic symptoms are distressing and result in impairment of daily functioning

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## Background Information – Definitions and Key Terms

- ▶ Illness Anxiety Disorder ("hypochondriasis")
  - ▶ Symptoms (including pain) are not present or are very mild
  - ▶ High level of anxiety about health and illness
  - ▶ Excessive health-related behaviors
  - ▶ Preoccupation with illness that interferes with functioning
- ▶ Factitious Disorder (Munchausen's syndrome)
  - ▶ Intentional induction or falsification of physical or psychological symptoms
  - ▶ Behavior occurs even when there is no secondary gain
- ▶ Adjustment Disorder
- ▶ Malingering
  - ▶ Falsification or exaggeration of an illness for secondary gain

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## Background Information – Common Presentations/Diagnoses

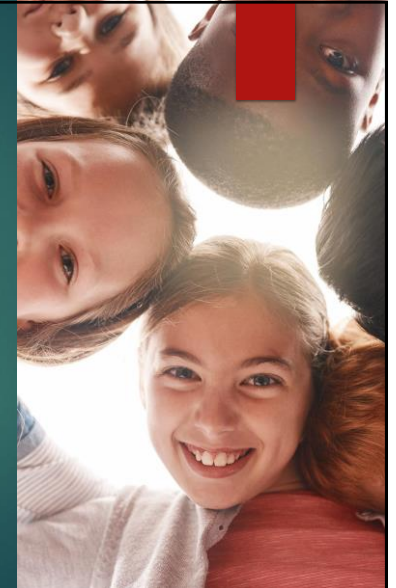
- ▶ Common Presentations/Diagnoses
  - ▶ Headaches (most common)
  - ▶ Amplified Musculoskeletal Pain Syndrome (AMPS)
  - ▶ Complex Regional Pain Syndrome (CRPS)
  - ▶ Gastrointestinal (GI)
  - ▶ Sickle Cell
  - ▶ Connective Tissue/hypermobility



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## Background Information – Prevalence

- 20-35% of children suffer from chronic pain worldwide
  - About 5% have severe chronic pain
- 73% of children and adolescents with chronic pain will continue to have pain in adulthood
- Most common somatic symptoms in children are abdominal pain, headache, fatigue, and nausea
- Symptoms can be group into 4 main clusters
  - GI
  - Pain
  - General/Pseudo-neurologic (e.g. fatigue)
  - Cardiopulmonary
- A single predominant symptom is more common in children than in adults



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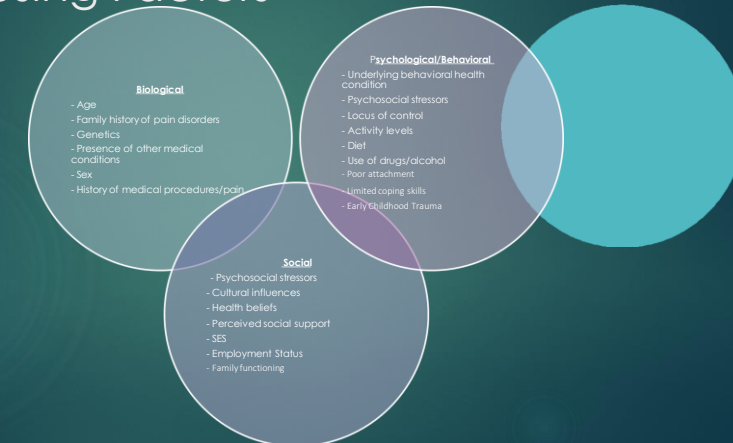
## Background Information – Impact and Clinical Significance

- ▶ Social
  - ▶ Fewer friends, increased isolation, more peer victimization
- ▶ Academic
  - ▶ More school absences
- ▶ Family
  - ▶ Increased parenting stress, hopelessness, financial difficulties
- ▶ Psychological
  - ▶ Symptoms of depression and anxiety, low self-worth
- ▶ Bigger Picture
  - ▶ Pediatric opioid prescription rates **doubled** from 1994 to 2007
  - ▶ Adults with a history of adolescent pain are more likely to abuse opioids
  - ▶ Annual economic cost of pediatric pain is \$19.5
  - ▶ When patients suffering from chronic pain were treated by an interdisciplinary pain team, savings to the hospital totaled \$36,228 per patient per year
  - ▶ Insurance companies saved \$11,482 per patient per year



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## Background Information – Predisposing Factors



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## The Role of Behavioral Health in Treatment of Pain

- ▶ Development and maintenance of chronic pain is best understood through a biopsychosocial framework
- ▶ Severity and duration of pain impact functioning AND psychosocial factors buffer or exacerbate pain related outcomes.
- ▶ In addition to potentially impacting the trajectory of client's chronic pain, behavioral health professionals can help clients cope with impact of pain

	Biological	Psychological	Social
Predisposing	Genetic factors Structural Disease	Personality Traits Depression / Anxiety	Adverse Experiences
Precipitating	Physical injury / illness Acute dissociation	Concern/ attention about bodily symptoms	Stressful Life Events
Perpetuating	Changes in nervous system function Subtle neuroendocrine changes	Worry about cause Avoidance of symptom provocation Anger / Frustration Depression	Not being believed Stigma of an "undiagnosed" illness Loss of job/independent income

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## Role of Behavioral Health Continued

- ▶ High correlation between chronic pain and co-occurring behavioral health diagnoses
  - ▶ Depression: 7 – 71%
  - ▶ Anxiety: 4-17%
  - ▶ Substance Abuse: .8-5%
- ▶ Evidence/best practice supports an interdisciplinary approach. Common interdisciplinary team:
  - ▶ Physician
  - ▶ PT
  - ▶ OT
  - ▶ Social Work
  - ▶ Behavioral Health

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## Treatment Effectiveness – Meta-analytic Support

- ▶ Pain Intensity (18 studies)
  - ▶ Psychological therapies reduced pain intensity in significantly more youth as compared to control conditions at post-treatment. At 3-month follow-up, similar effects on pain reduction were found.
    - ▶ 9 CBT, 6 relaxation, and 3 biofeedback. All 3 types of treatment yielded clinically significant pain reduction
- ▶ Disability (6 studies)
  - ▶ Psychological therapies had a small effect on disability in comparison to control conditions at post-treatment, but not significant
    - ▶ All six studies examined CBT treatment
- ▶ Emotional Functioning (6 studies)
  - ▶ Psychological therapies did not improve emotional functioning in youth compared to control conditions at post-treatment
    - ▶ 5 CBT, 1 biofeedback. All produced similar pattern of results.

Palermo et al., 2010

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## Further Support for Treatment Effectiveness

- ▶ Fisher et al 2014 meta-analysis identified 35 RCTs testing efficacy of pain focused psychological interventions
  - ▶ 21 treated children with headaches
  - ▶ 8 treated recurrent abdominal pain
  - ▶ 3 treated musculoskeletal pain
  - ▶ 3 treated multiple pain conditions
- ▶ Treatment Type Breakdown
  - ▶ 21 CBT studies
  - ▶ 12 relaxation training alone studies
  - ▶ 1 ACT
  - ▶ 1 biofeedback
- ▶ Treatment Dose
  - ▶ Treatment dose was reported in 28 studies.
  - ▶ Average = 5 hrs & 42 min
  - ▶ Range = 45 min to 12 hrs and 5 min

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## Further Support for Treatment Effectiveness: Headache

- ▶ Pain symptoms
  - ▶ Psychological interventions were beneficial and reduced headache by at least 50% in the experimental condition compared with the control condition posttreatment. Similar beneficial effects at follow-up.
- ▶ Disability
  - ▶ There was no clear evidence of benefit for psychological therapies on disability compared with control conditions posttreatment. No follow-up information.
- ▶ Depression
  - ▶ There was no clear evidence of benefit for psychological interventions on depression compared with control conditions posttreatment. No follow-up information.
- ▶ Anxiety
  - ▶ There was no clear evidence of benefit for psychological interventions on anxiety compared with control conditions posttreatment or at follow-up.

Fisher et al., 2014

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## Further Support for Treatment Effectiveness—Abdominal Pain

- ▶ Pain
  - ▶ Psychological therapies significantly reduced pain in children compared with control conditions posttreatment (moderate effect size). No significant effect at follow-up.
- ▶ Disability
  - ▶ Psychological therapies significantly reduced disability in children compared with control conditions posttreatment (small effect size). No significant effect at follow-up.
- ▶ Depression
  - ▶ Psychological interventions did not show any evidence of benefit for depression in children compared with control conditions posttreatment or at follow-up.
- ▶ Anxiety
  - ▶ There was no clear evidence of benefit for psychological therapies on anxiety in children compared with control conditions posttreatment or at follow-up.

Fisher et al., 2014

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## Further Support for Treatment Effectiveness—Musculoskeletal Pain

- ▶ Pain
  - ▶ Psychological therapies had a significant effect on improving pain in children with musculoskeletal pain compared with control conditions (moderate effect size). No significant effect at follow-up.
- ▶ Disability
  - ▶ Psychological therapies produced a small beneficial effect on reducing disability in children compared with control conditions posttreatment. Psychological therapies had a large beneficial effect on reducing disability in children compared with control conditions at follow-up.
- ▶ Depression
  - ▶ Psychological therapies had a small beneficial effect on improving depression in children compared with control conditions posttreatment. No significant effect at follow-up.
- ▶ Anxiety
  - ▶ There was no clear evidence of benefit for psychological interventions on anxiety compared with control conditions posttreatment. No effect at follow-up.

Fisher et al., 2014

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## Treatment Effectiveness – Takeaways

- ▶ Need for further research
- ▶ Multicomponent CBT package is most well-studied treatment in pediatric populations (Ehde, Dillworth, & Turner, 2014)
- ▶ Psychological intervention for pain conditions tends to decrease pain and functional disability associated with pain
  - ▶ At this time, unclear what are the "active ingredients" or which components are indicated for which clients
- ▶ Likely that depression, anxiety, and other psychological symptoms will need additional targeted treatment.
  - ▶ Some evidence that mood symptoms exacerbate pain related disability and pain intensity and that management of these symptoms can improve functioning (Cohen, Vowles, & Eccleston, 2010)

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## Research to Clinical Practice – Multicomponent CBT Packages

- ▶ Setting expectations and goals of treatment
- ▶ Psychoeducation
- ▶ Lifestyle factors
- ▶ Activity pacing/behavioral activation/exposure
- ▶ Relaxation training
- ▶ Identifying and changing unhelpful thoughts
- ▶ Distraction
- ▶ Biofeedback
- ▶ Family interventions

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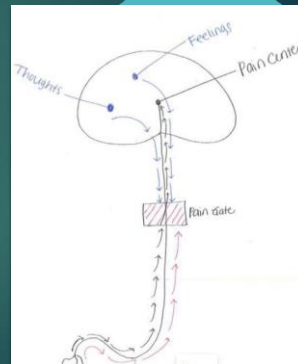
## Setting Expectations/Goals of Treatment

- ▶ Emphasis on quality of life and return to function **NOT** elimination of pain/symptoms
- ▶ Commitment to therapy
- ▶ Expectation of "homework"
- ▶ Expectation of parental involvement
- ▶ Parental Involvement
- ▶ Common Goals
  - ▶ Return to school
  - ▶ Return to sports/activities
  - ▶ Increased social activity
  - ▶ Improved ADLs
  - ▶ Increased ability to perform daily tasks
  - ▶ Management of other behavioral health symptoms
  - ▶ Increased compliance with recommendations from other disciplines (e.g. physical therapy, medication compliance, attending medical appointments, etc.)

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## Psychoeducation

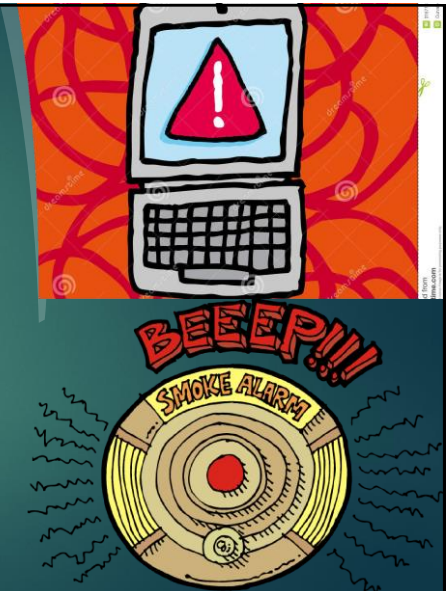
- ▶ Pain/Symptoms are REAL
- ▶ Development of chronic pain/somatic symptoms is influenced and maintained by biopsychosocial factors
  - ▶ Biological: genetics, triggering injury/illness, pain pathway sensitization
  - ▶ Psychological: psychiatric history, beliefs about pain/health, coping styles
  - ▶ Social/Environmental: parent modeling, parent functioning, social support
- ▶ Gate Control Theory of Pain
  - ▶ CBT provides skills to help close the pain gate, reduce path pathway sensitization, and increase functioning



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## Psychoeducation Continued

- ▶ Pain/somatic symptoms as nervous system disorder or dysregulation
  - ▶ Autonomic nervous system (particularly sympathetic branch) is responsible for responding to stressors
    - ▶ Stress is NOT just psychological.
  - ▶ If there are too many stressors or a really big one at one time the SNS overresponds, forgets to deactivate itself, causes symptoms
- ▶ CBT provides skills to deactivate SNS, retrain the brain, increase function, and reduce impairment



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## Lifestyle Factors

- ▶ Sleep
- ▶ Hydration
- ▶ Nutrition
- ▶ Physical Activity
- ▶ Mental Activity
- ▶ ADLs
- ▶ Hygiene

Sleep, Hydration, nutrition, activity, hygiene, etc.

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## Activity Pacing, Behavioral Activation, and Exposure

- ▶ Goal is to help youth find a balance between underactivity (and more long-term pain) and too much activity (and pain flair up)
- ▶ For Youth Who Would Benefit from Increased Activity
  - ▶ Staying active is important because pain can become worse or more difficult to deal with if youth become deconditioned. It is also important for QOL, prevention or intervention of depression/anxiety, social connection, etc.
    - ▶ Parental buy-in is key
  - ▶ Pick activity that youth used to do more of or is interested in trying
  - ▶ Develop well-defined realistic goals for engaging in activity for short periods of time with planned rest breaks.
  - ▶ Start small, celebrate successes, and build tolerance and stamina over time!

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## Activity Pacing Continued

- ▶ Some youth with chronic pain are chronically overextended. Again, the goal is to help youth move towards balance.
  - ▶ Pacing is important because too many stressors over time can cause the SNS to over-respond, forget to deactivate, and cause symptoms
  - ▶ Activity pacing may function as exposure/behavioral experiments to test prediction that there will be negative outcome
    - ▶ May need to use cognitive strategies to address perfectionistic thinking, all-or-nothing beliefs, and fear around failure.
    - ▶ Assertive communication skills and family interventions may also be needed
  - ▶ Start small, celebrate successes, and build tolerance and stamina over time!

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## Relaxation Training

### Diaphragmatic Breathing

- Square Breathing
- Star Breathing

### Progressive Muscle Relaxation

- Reduces stress, relieves physical tension in the body, increases body awareness
- Involves pairing diaphragmatic breathing with tensing/tightening and relaxing all of the body's major muscle groups in a systematic manner
- Active versus Passive

### Guided Imagery

- Involves pairing breathing with sensory-rich imagery to inspire calm/relaxation
- This skill is more effective when more senses are engaged



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## Modifying Unhelpful Thoughts

- ▶ Pain catastrophizing has been shown to be significant and unique predictor of pain intensity and pain related disability
- ▶ Target specific unhelpful thoughts as well as metacognitive beliefs

### Helplessness subscale

It is terrible and I think it is never going to get any better  
 It is awful and I feel that it overwhelms me  
 I worry all the time about whether the pain will end  
 I feel I can not stand it anymore  
 I feel I can not go on

There is nothing I can do to reduce the intensity of the pain

### Rumination subscale

I anxiously want the pain to go away  
 I can not seem to keep it out of my mind  
 I keep thinking about how much it hurts  
 I keep thinking about how badly I want the pain to stop

### Magnification subscale

I become afraid that the pain will get worse  
 I keep thinking of other painful events  
 I wonder whether something serious may happen

## Modifying Unhelpful Thoughts Continued

- ▶ Encourage development of
  - ▶ Acceptance and self-compassion
    - ▶ *I'm going through something difficult that takes a lot of strength to navigate*
  - ▶ Encouraging self-talk
    - ▶ *I know I can get through this*
  - ▶ Flexible thinking (it's not all or nothing!)
    - ▶ *While I'm not able to go for a run today, I can still take a short walk outside*
  - ▶ Problem solving orientation
    - ▶ *What can I do to make this moment better?*
    - ▶ *What accommodations can I make to still participate?*
  - ▶ Open mind
    - ▶ *I'm not sure if deep breathing will be helpful, but I'm willing to try*

## Distraction

- ▶ Benefits:
  - ▶ Improves pain tolerance and pain thresholds
  - ▶ Can reduce/stop NEEs
  - ▶ Reduction of stress/anxiety management
- ▶ When to use:
  - ▶ Especially helpful for flare-ups and medical procedures
- ▶ Optimization
  - ▶ Active is more effective than passive
  - ▶ Multi-sensory involvement
- ▶ Examples
  - ▶ Music
  - ▶ Distracting conversation
  - ▶ Engaging in a craft
  - ▶ Listening to music
  - ▶ Watching a television show
  - ▶ Fidget Toys



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## Biofeedback

- ▶ Client is given information, via an electronic monitor, about physiological processes that are normally involuntary (blood pressure, muscle tension, heart rate, etc.). Client then uses this information to gain voluntary control and modify those processes.
- ▶ Examples of biofeedback techniques include
  - ▶ Thermal biofeedback for skin temperature
  - ▶ Electromyographic (EMG) biofeedback for muscle tension
  - ▶ Neurofeedback (or EEG biofeedback) for brain activity
- ▶ Evidence biofeedback is helpful for headaches (Nestoriuc, Rief, & Martin, 2008) and abdominal pain (Sowder, Gevirtz, Shapiro, & Ebert, 2010).

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## Finding a Biofeedback Practitioner

- ▶ UPMC Center for Integrative Medicine
  - ▶ <https://www.upmc.com/services/integrative-medicine/services/biofeedback>
- ▶ Biofeedback Certification International Alliance (BCIA) maintains a list of providers certified in biofeedback
  - ▶ <https://www.bcia.org/>
- ▶ Association for Applied Psychophysiology and Biofeedback (AAPB) maintains a list of providers
  - ▶ <https://www.aapb.org/>

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## Family Interventions

- ▶ Psychoeducation
- ▶ Scaffolding
- ▶ Encourage Independence
- ▶ Eliminate "Pain Check-ins"
- ▶ Token Economy/Reinforcement Schedule for adaptive behaviors
- ▶ Eliminate reinforcers for unhelpful behaviors (e.g. staying home from school)
- ▶ Active Listening
- ▶ Family Therapy
- ▶ Advocacy
- ▶ Modeling adaptive behaviors
- ▶ Navigating caregivers who may also suffer from chronic pain



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## School Based Interventions

- ▶ Educate school staff
  - ▶ Pain is real
  - ▶ Symptom variability is normal
- ▶ Make recommendations aimed at improving school attendance and performance
  - ▶ Sunglasses, hat, noise cancelling headphones
  - ▶ Additional time to transfer between classes and not be counted as tardy
  - ▶ 2nd set of books to keep at school
  - ▶ Elevator use
  - ▶ Able to take 5-10 minute breaks in a quiet place
  - ▶ Able to stand up, stretch, and move around in the classroom as needed
  - ▶ Water bottle
  - ▶ Permanent bathroom pass
  - ▶ Modify work requirements
  - ▶ Allow for increased absences for medical appointments

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## Resources through UPMC Children's Hospital

- ▶ Chronic Pain Clinic
  - ▶ Recommended that a referral come from another physician (e.g. PCP, gastroenterology, rheumatology, neurology, etc.)
  - ▶ For patients who have been suffering from pain for >3 months
  - ▶ Interdisciplinary approach
- ▶ Comfort Ability Program
  - ▶ Program initially developed through Boston Children's Hospital and Harvard Medical School
  - ▶ Evidence-based
  - ▶ Virtual group therapy
  - ▶ Psychoeducational and skills-based
  - ▶ 4 groups for patients, 2 groups for parents
  - ▶ Requires initial diagnostic evaluation by a therapist



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## Resources – WebMAP Mobile



**WebMAP Mobile™**  
A free app designed to help teens cope with chronic pain

**Features:**

- Track your pain, mood, sleep and activities and create personalized graphs
- Learn about chronic pain, set goals for increasing physical activities, and learn how to use relaxation and imagery strategies
- Set up your profile to receive additional guidance on sleep and mood problems
- Discover the library with videos from other teens and useful tips for using each pain management skill
- Track the skills that you use and earn rewards

The WebMAP Mobile™ app was developed by the Pediatric Pain and Sleep Innovations research team at Seattle Children's Research Institute with our digital health partner Zillence Inc. To learn more, visit us by Zillence.

Research shows that WebMAP Mobile™ works for teens.

**Download For Free:** For Android: For iPhone

Search for "WebMAP Mobile" in your app store or scan a QR code with your phone's camera.

Recommended for ages 13 to 18 (with parental supervision for younger teens)

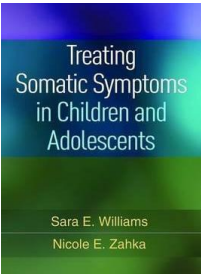
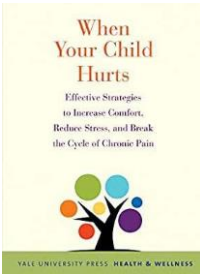
Seattle Children's

- ▶ Developed by Dr. Tonya Palermo at Seattle Children's Hospital
- ▶ Self-paced pain management curriculum based on CBT
- ▶ RCT comparing app use to usual care found kids regardless of group showed similar changes overtime in pain and disability. Kids using the app had perceived greater improvement, and greater engagement was associated with significantly greater reductions in pain and disability from pre-treatment to follow-up (Palermo et al., 2020)
- ▶ Free on android and iphone

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## Other Recommended Resources

- ▶ Cognitive Behavioral Therapy for Chronic Pain in Children and Adolescents (Palermo, 2012)
  - ▶ Access all appendices/worksheets and relaxation audio for free
    - ▶ <https://www.seattlechildrens.org/research/centers-programs/child-health-behavior-and-development/labs/pediatric-pain-and-sleep-innovations-lab/resources/>
- ▶ Treating Somatic Symptoms in Children and Adolescents (Williams & Zahka, 2017)
  - ▶ Reproducible handouts available at <https://www.guilford.com/companion-site/Treating-Somatic-Symptoms-in-Children-and-Adolescents/9781462529520>
- ▶ Managing Your Child's Chronic Pain (Palermo & Law, 2017)
- ▶ When Your Child Hurts: Effective Strategies to Increase Comfort, Reduce Stress, and Break the Cycle of Chronic Pain (Cookley, 2016)

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## Thank You!

- ▶ Questions?

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