

Tonya M. Palermo, Ph.D., Anna C. Wilson, Ph.D., Meaghan Peters, M.A. & Hannah E. Somhegyi

Department of Anesthesiology and Perioperative Medicine, Oregon Health & Science University, Portland, OR 97239, USA

INTRODUCTION

- Cognitive behavioral therapy (CBT) is a promising treatment for children with chronic pain. Multiple barriers to traditional outpatient CBT exist for this population (e.g., limited access, travel distances, and scheduling difficulties for children and families). The Internet provides an alternative medium to provide CBT.
- Study Aims:** (1) Evaluate the efficacy of an Internet-delivered family CBT program at reducing activity limitations and pain in children and teens with chronic pain; (2) Examine acceptability of the Internet-delivered CBT treatment for families.

METHODS

Sample

- Inclusion criteria:** 11-17 years, pain ≥ 1 x/wk, present for ≥ 3 months, pain not due to serious medical condition
- $N=48$, age $M=14.8$ years, 72.5% female
- Primary pain diagnoses: abdominal pain (50%), headache (25%), and musculoskeletal pain (25%)
- At baseline: Pain severity $M=6.4$ (0-10 scale); 73% had daily pain

Random Assignment

- Following baseline assessment, children and their parents were assigned to two conditions: *Internet treatment* ($n=26$) or *Wait-list control* ($n=22$).

Internet Treatment: The Web-MAP Program

- Web-based Management of Adolescent Pain (Web-MAP) is an interactive web program with text, audio, and video content
- 8 modules designed to be completed weekly (approx. 9 hrs of treatment exposure per family). An online therapist responded to weekly assignments related to practicing new skills and behaviors
- Usability of the program evaluated (Long & Palermo, in press)

Child Module Content	Parent Module Content
1. Education about chronic pain, goal setting	
2. Role of stress and negative emotions	
3. Deep breathing and relaxation techniques	3. Behavior I: Responses to pain behaviors, praise of positive coping
4. Distraction and imagery	4. Behavior II: Reward systems
5. Cognitive skills	5. Modeling
6. Sleep hygiene and lifestyle	
7. Staying active	7. Communicating with teens
8. Relapse prevention	

MEASURES

- Children completed retrospective and online diary reports of pain and activity limitations pre-treatment, immediately post-treatment, and at 3-month follow-up
- Activity Limitations:** Child Activity Limitations Interview (CALI; Palermo et al., 2004)
- Pain Intensity:** 11 point NRS (0-10)
- Depressive Symptoms:** Children completed the Revised Children's Anxiety and Depression Scale (Chorpita et al., 2005)
- Acceptability:** Children and parents in the Internet treatment group completed 0-5 Likert scale ratings of treatment acceptability

ANALYSES

- ANCOVAs with pre-treatment values entered as covariates in models tested pre- to post-treatment group differences
- Chi-square analysis evaluated the clinically significant improvement in pain (50% reduction in pain intensity) by group
- All analyses conducted as intent-to-treat

Web-MAP SCREEN SHOTS

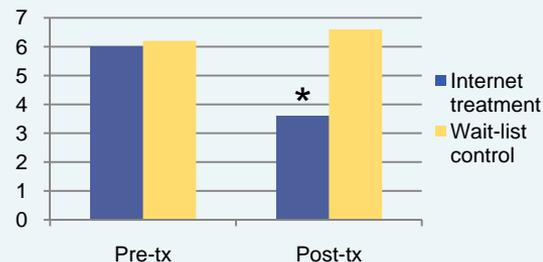


Child Home Page

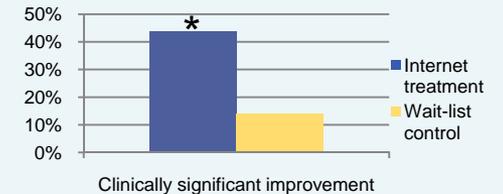
Parent Module Page

RESULTS: ACTIVITY LIMITATIONS

- Diary reports of activity limitations showed greater reduction in the Internet treatment group compared to the Wait-list control group: $F(1,45)=9.25$, $p=.004$, partial $\eta^2=.17$
- In the Internet treatment group, results were maintained at 3-month follow-up, $F(2,24)=14.03$, $p<.001$.



RESULTS: PAIN INTENSITY



- Higher rate of clinically significant pain reduction (50% or more) in the Internet treatment group compared to the Wait-list control group: $F(1,45)=4.49$, $p=.03$, $NNT=3.3$
- Diary reports of mean pain intensity showed greater reduction in the Internet treatment group compared to the control group: $F(1,45)=5.28$, $p=.03$, partial $\eta^2=.11$.
- Effects were maintained at 3-month follow-up in the Internet treatment group, $F(2,24)=15.02$, $p<.001$.

RESULTS: DEPRESSIVE SYMPTOMS

- Depressive symptoms were within the normal range at baseline (T score=56.08)
- No changes were observed in depressive symptoms from pre- to post-treatment in either group.

RESULTS: TREATMENT ACCEPTABILITY

- Parents and children rated the treatment as acceptable (0-5 ratings; Parent $M=3.82$; Child $M=3.55$)
- 91% found treatment acceptable (rating ≥ 3)

CONCLUSIONS

- Findings support the efficacy of Internet-delivered family CBT in significantly reducing activity limitations and pain intensity in children and adolescents with chronic pain
- Depressive symptoms were subclinical and not changed by this Internet-delivered treatment
- The vast majority of families rated the treatment as acceptable
- Advances in CBT treatment delivery are crucial for pediatric chronic pain populations, as many children and adolescents face barriers to accessing specialty care for pain
- Future research will enhance the Web-MAP program and investigate the efficacy of Internet-delivered CBT in a larger multi-site sample

Inquiries to: Tonya Palermo, Ph.D., palermot@ohsu.edu