Evaluating the Role of Parent Engagement in a Digital Graded Exposure Intervention

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Introduction

Chronic pain affects **1 in 4 youth**, impacting emotional, physical, and social function. The Interpersonal Fear Avoidance Model highlights how parents' distress and protective behaviors can worsen outcomes for youth, making their involvement in treatment imperative. GET Living is an in-person graded exposure treatment that targets pain-related fear and avoidance in youth and their caregivers. Despite demonstrating efficacy at improving outcomes, access to care barriers limit engagement. To overcome this, we developed iGET Living. **iGET Living is a digital graded exposure intervention for youth and their caregivers**. The caregiver intervention was separate but parallel to the youth intervention (**Figure 1**).

The caregiver intervention consisted of 20 modules designed for short brief (~5 minutes) daily engagement. Content includes: Education on chronic pain, related impairment, and exposure, values clarification exercises, skill-building to support management of parent distress in the context of their child's pain, and physiological regulation skills. The aim of the current study was to examine feasibility and preliminary efficacy of iGET Living in caregivers of youth with chronic pain.

Figure 1. iGET Living for Caregivers

Methods

- **Measures (**Collected at baseline, discharge, and 3-month follow-up)
  - Demographics information
  - Adult Responses to Children's Symptoms (ARCS) – Protect subscale ranges from 0-4, with higher scores indicating greater maladaptive protective behaviors
  - Parent Fear of Pain Questionnaire, Short Form (PFOPQ-SF) – Fear and Avoidance ranges from 0-84, with higher scores indicating greater levels of pain related fear and avoidance
  - Pain Catastrophizing Scale for Parents (PCS-P) ranges from 0-52 with higher scores indicating more catastrophizing
- **Data Analysis Plan**
  - Analyses were conducted using SPSS v.26. Descriptive statistics were conducted examine demographic information, module completion, and mean outcomes at each time point.
  - Pearson's correlations were conducted to examine the association between module completion and outcomes. Repeated measure ANOVA were conducted to examine change in outcomes across time points.
- **Participants**
  - Caregivers (*N* = 35) were mostly mothers (80% female) with a mean age of 46 years old (*SD* = 12.12)
  - 48.6% of caregivers reported a history of chronic pain, with 31.1% reporting current pain. Average pain was 4.67 (out of 10)

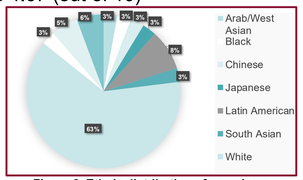

Figure 2. Ethnic distribution of caregivers

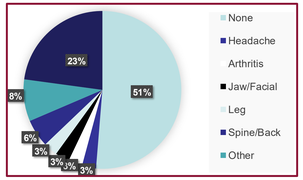

Figure 3. Caregiver pain history

Results

Caregiver Functioning at Baseline:

At baseline, caregivers reported elevated pain-related fear (*M* = 11.51, *SD* = 6.62), avoidance (*M* = 10.20, *SD* = 4.67), pain catastrophizing (*M* = 24.51, SD = 11.98), and maladaptive protective behaviors (*M* = 1.5, *SD* = 0.60).

Caregiver Engagement in iGET Living:

Overall, module completion was high, with mean module completion 15 (out of 20 total)

- 82.9% of caregivers completed 50% or more of the modules, with 65.7% completing 85% or more.
- 5 caregivers completed all 20 modules.

Module completion was significantly associated improved outcomes at discharge and 3-month follow-up (**Table 1**):

- Specifically, greater number of modules completed with significantly associated with a decrease in protective behaviors at discharge and 3-month follow-up.
- Additionally, greater module completion was significantly associated with decreases in parent pain-related fear, avoidance, and pain catastrophizing at 3-month follow up.

	ARCS Dx	ARCS 3m	Fear Dx	Fear 3m	Avoid Dx	Avoid 3m	PCS-P Dx	PCP 3m
Module Completion	-0.47**	-0.51**	-0.16	-0.45*	-0.15	-0.50*	-0.22	-0.43*

Note: * $p < 0.05$, ** $p < 0.001$

Table 1: Pearson's correlation coefficients

Changes in Outcomes Over Time:

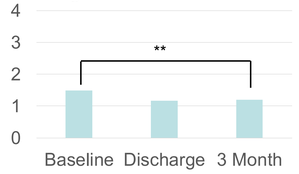

Figure 4. ARCS Protect mean scores

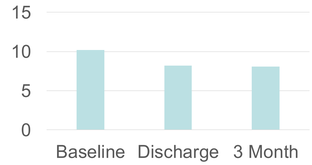

Figure 5. Pain-Related Avoidance mean scores

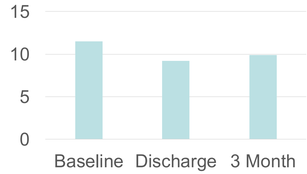

Figure 6. Fear of Pain mean scores

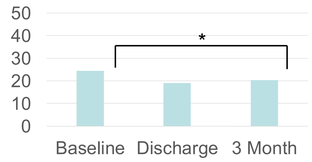

Figure 7: Pain Catastrophizing mean scores

Note: * $p < 0.05$, ** $p < 0.001$

Changes in Outcomes Over Time

- Repeated measures ANOVA demonstrated significant decrease in outcomes across timepoints, with large effects for protective behaviors (ARCS) and pain catastrophizing (PCS-P).
- Parent pain-related fear and avoidance also decreased across time with moderate effect sizes.

Table 2: Repeated Measures ANOVA

	Baseline M (SD)	Discharge M (SD)	3 Month FU M (SD)	Partial Eta^2
ARCS	1.48 (0.60)	1.17 (0.57)	1.20 (0.54)	0.296**
PFOPQ Avoidance	10.20 (4.67)	8.23 (4.64)	8.08 (6.21)	0.106
PFOPQ Fear	11.51 (6.62)	9.23 (6.41)	9.92 (8.40)	0.100
PCS-P	24.51 (11.98)	19.151 (11.51)	20.360 (14.04)	0.227*

Note: * $p < 0.05$, ** $p < 0.001$

Conclusions

- This pilot study demonstrates that iGET Living, a brief digital graded exposure intervention for caregivers of youth with chronic pain, **produced significant reductions in maladaptive protective behaviors and parent pain catastrophizing with large effects**.
- Although changes in pain-related fear and avoidance were nonsignificant, moderate effects suggest clinical relevance. High engagement in iGET Living was associated with greater improvement, indicating a preliminary dose-response relationship.
- Limitations include small sample size, lack of a control group, and a predominantly while, self-selected sample.
- While this study presents data collected at primary endpoints (baseline, discharge and 3-month follow-up), caregivers also completely short daily diary assessments. Using Single Case Experimental Design (SCED) methodology, future directions include analyzing these data to evaluate within person change and variability.

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