

ORIGINAL RESEARCH

Promoting readiness and engagement in pain rehabilitation for youth and families: Developing a pediatric telehealth motivational interviewing protocol

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Funding information

Deborah Munroe Noonan Memorial Research Fund

Abstract

Objective: Intensive interdisciplinary pain treatment (IIPT) is a promising approach for youth with complex, disabling, refractory pain conditions. However, youth and families who initiate IIPT without sufficient acceptance of its focus on functional rehabilitation or readiness to adopt a self-management approach to their pain may face challenges in IIPT and/or experience suboptimal outcomes. Motivational interviewing (MI) techniques have been shown to enhance readiness to make a number of health behavior changes for adults and youth, but it has not been systematically examined in the context of pediatric IIPT. The authors developed an MI telehealth intervention protocol explicitly designed to prepare youth and families for admission to IIPT.

Method: The protocol development process is detailed here, including influential models, expert consultation, and feedback from IIPT clinical experts. The intervention protocol was then piloted with a group of eligible families to elicit feedback and prompt further refining. Feasibility and acceptability were explored through measures of treatment engagement and satisfaction.

Results: The Promoting Readiness and Engagement in Pain Rehabilitation (PREPaRe) intervention protocol contains four modules aimed to enhance youth and parent readiness to adopt a self-management approach to persistent pain, through a motivational interviewing approach. Initial responses from the test group suggested high levels of treatment engagement and treatment satisfaction with PREPaRe.

Conclusions: PREPaRe appears feasible to administer and acceptable to families of youth with persistent pain seeking IIPT. Implications for implementation are discussed. Further study via randomized control trial is warranted.

Trial registration: ClinicalTrials.gov identifier: NCT04093921.

KEYWORDS

motivational interviewing, pain rehabilitation, pediatric pain, readiness for change

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1 | INTRODUCTION

Persistent and recurrent chronic pain is not only prevalent (11%–38%) in children and adolescents,¹ it is also consequential. Youth with chronic pain experience considerable anxiety and depression, sleep disturbance, school and social impairment, functional disability, and reduced quality of life.^{2–4} Further, healthcare costs for pediatric chronic pain exert a significant economic burden on families and impact upon society, with annual costs estimated at \$19.5 billion in the United States.⁵ Youth with chronic pain utilize more medical care and report higher medication use than comparable community samples.⁶

2 | INTENSIVE INTERDISCIPLINARY PAIN TREATMENT (IIPT)

While some pediatric pain patients benefit from outpatient physical, pharmacological, and psychological interventions,⁷ those with moderate-severe pain often continue to experience considerable functional impairment.⁸ For youth with complex pain, intensive interdisciplinary pain treatment (IIPT) has emerged as a promising approach. Using a biopsychosocial framework,⁹ coordinated pain treatment is implemented by an interdisciplinary team of rehabilitation professionals in one facility in an integrated manner.¹⁰ IIPT typically utilizes a day-hospital, inpatient, or combined model of care, with participants receiving an average of 8 hours of treatment per day over several weeks. The focus of IIPT rests upon restoring function and reducing pain-related disability¹¹ by helping youth and parents adopt a self-management approach to pain.^{12,13}

Empirical support for the clinical effectiveness of IIPT has accumulated. IIPT outcome studies have continuously demonstrated significant decreases in pain, functional disability, and psychiatric symptoms^{14–18} at IIPT completion and follow-up. Simons et al.¹³ found that the vast majority of pediatric IIPT patients regained daily functioning by discharge and reported mild to no pain one month after treatment. When examining longer-term outcomes, five years after completing IIPT, most youth reported minimal to no functional disability, complete or partial resolution of pain symptoms, and progress toward developmentally appropriate goals.¹⁹

IIPT completion is also associated with subsequent reductions in healthcare utilization, parental work absenteeism, and subjective financial burden.^{20,21} Still, IIPT involves a significant commitment of time and financial resources for patients, caregivers, providers, and institutions.²² Therefore, there is a critical need to optimize the time spent in IIPT. For many families, adopting an active, self-management approach to chronic pain represents a substantial shift from the way they have previously approached pain treatment. Some families remain fixated on pain elimination and struggle to embrace IIPT's primary focus on functional restoration. Those who initiate IIPT without sufficient *readiness* to engage in the self-management approach may experience prolonged admissions, increased costs, and poorer outcomes.

3 | READINESS TO CHANGE

Readiness to change behavior has origins in the Transtheoretical Model (TTM) of Behavior Change,²³ which posits that individuals' readiness to engage in behavior change is a necessary precursor to actual change. Jensen et al.²⁴ applied the TTM to chronic pain management in adults. The resulting Motivational Model of Pain Self-Management suggested that the perceived importance of change and one's self-efficacy to make the change contribute to readiness, and readiness influences pain self-management coping behavior. Four of the original five TTM-based "stages of change" have been conceptualized specifically for chronic pain: Precontemplation (little perceived responsibility for pain management and no interest in implementing behavioral changes), Contemplation (awareness of personal responsibility for pain control and considering behavioral change), Action (active involvement in learning self-management strategies), and Maintenance (sense of personal responsibility for pain control and routine application of self-management strategies).²⁵ Higher levels of readiness to change (ie, more advanced stage) at the outset of chronic pain treatment have been linked with improvements in pain and psychological functioning at treatment completion in adults.^{25,26}

For youth, readiness to engage in self-management at IIPT admission is similarly associated with improved functional outcomes at IIPT discharge.¹² In a study examining trajectories of pain and functional impairment for patients who participated in IIPT, Simons et al.¹³ found that youth readiness to change at IIPT admission was the most robust, modifiable baseline predictor of IIPT response. In the same study, patients who were categorized in earlier stages of readiness to change had a *ninefold* increase in their likelihood of being characterized as non-responder to IIPT, even when controlling for age, pain characteristics, functional impairment, patient cognitive-affective characteristics, and parent cognitive-behavioral characteristics. Indeed, parents' readiness to embrace their child's self-management of pain is also relevant.^{12,27}

However, not every family arrives to IIPT ready to make the changes needed to support treatment success. Logan et al.¹² reported that, prior to initiating IIPT, 75% of youth were in Precontemplation (33%) or Contemplation (42%), indicating that they were either not yet thinking about or had recently begun considering taking a self-management approach for their pain. Only 25% were in Action/Maintenance, reporting readiness to adopt the self-management approach (or had already done so). A slightly different pattern emerged for parents, with 45% classified in Precontemplation or Contemplation, and 55% classified in Action or Maintenance. Guite et al.²⁷ found parallel breakdowns in a sample of youth and parents undergoing initial multidisciplinary pain clinic evaluations, prior to IIPT or other treatment recommendations. In this study, parents reported a higher, more advanced stage than the youth participant in the vast majority of cases.

Thus, it appears that the ability of IIPT to change long-held behaviors and attitudes about pain rests heavily on a patient and family's *readiness* to change those behaviors and attitudes. Interventions

that adequately prepare youth and families for the work of IIPT are needed, beginning with assessing and enhancing readiness to change. Prior studies^{12,13} have suggested screening patients/families on readiness to change prior to IIPT enrollment, developing interventions to facilitate engagement in patients/families who report low readiness, and/or a pre-IIPT intervention to increase readiness in *all* referred IIPT patients/families, to ensure that all admissions are optimized for success and efficiency.

4 | MOTIVATIONAL INTERVIEWING

Motivational interviewing (MI) may help youth with chronic pain and their families to increase their readiness to adopt a self-management approach to pain. MI refers to a group of counseling techniques that seek to enhance individuals' readiness to change health behaviors by activating patients' own motivation.²⁸ Presently, there is considerable evidence for the use of MI approaches to facilitate youth behavior change in pediatric health care settings²⁹ and parent engagement in psychological interventions for youth.³⁰ However, to our knowledge, MI has never been systematically examined in the context of preparing youth/families to engage in IIPT. Therefore, the aims of this study were (a) to describe the development of a novel telehealth MI-based intervention protocol that seeks to enhance readiness for change in all youth and families preparing to engage in IIPT and (b) to describe initial observations with regard to its feasibility and acceptability among a pilot group of patients/families.

5 | METHOD

5.1 | Participants

The target group for this intervention was patients and families seen for multidisciplinary evaluation in outpatient pain clinics and subsequently referred for IIPT. Such youth and their caregivers were eligible to participate in the intervention if they (a) had a chronic pain condition for >3 months with moderate-to-severe-associated functional disability, (b) were between 8 and 18 years of age, (c) were proficient in English, and (d) had access to an electronic device with internet capability. Potential participants were approached for recruitment by study staff once the family expressed interest in attending IIPT and the IIPT program had reviewed their referral for appropriateness. Study participation took place while the family awaited IIPT admission. This study is approved by the Institutional Review Board (#00033150).

Youth ($n = 8$, 88% female, $M_{\text{age}} = 14.38$ years) with chronic pain, awaiting admission to IIPT, participated along with their parent or caregiver. At baseline, 12.5% of youth participants reported being in the Precontemplation stage and 87.5% reported being in the Contemplation stage. None of the youth participants reported being in the Action/Maintenance stage. Half of the parent participants (50%) were in the Contemplation stage, and the other half were in

the Action stage. None of the parent participants reported being in the Maintenance stage.

6 | PROTOCOL DEVELOPMENT

A multi-method approach was used to develop, refine, and evaluate the feasibility and acceptability of the telehealth MI-based intervention protocol, PREPaRe: Promoting Readiness and Engagement for Pain Rehabilitation.

6.1 | Influential models

The PREPaRe protocol was heavily influenced by the tenets and clinical style of MI, drawing from MI interventions for the management of chronic pain in adults.³¹ The MI tenets of expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance, and supporting self-efficacy³² were intended to be woven throughout the protocol. The tone of the intervention was intended to reflect the clinical style of MI: "collaborative, evocative, and honoring autonomy," with the aim of patient-led change.³² The MI approach was selected with the intention of helping patients and families to recognize discrepancies between their present behavior (eg, limiting functioning due to pain) and their broader life goals or values (eg, participating in educational, leisure, and athletic pursuits), as well as to resolve ambivalence about taking a self-management approach to pain.

6.2 | Expert consultation

The original PREPaRe protocol was reviewed by an independent consultant specializing in MI. The consultant's vast experience in MI intervention development for adolescent health behavior was ideally suited to guide further protocol formation and revision. The consultant offered valuable insights regarding key distinctions between MI interventions and other clinical styles, assisted in adapting the intervention for our specific population (ie, age and diagnosis) and identified an ideal timeline for effective treatment delivery.

6.3 | Expert clinician feedback

Once revised in light of consultant feedback, the protocol was then shared with the expert IIPT clinical team, including physicians, psychologists, physical therapists, occupational therapists, and nurse practitioners. The IIPT team was ideally suited to provide feedback as they are well-informed regarding current research evidence in this specialized field and have clinical experience with the barriers youth and families face in IIPT. The clinicians reviewed the protocol and offered content- and process-oriented feedback that further shaped the intervention.

6.4 | Piloting the protocol for feasibility and acceptability

The PREPaRe protocol was then tested with families who met eligibility criteria for the study. Initially, the intervention author delivered the protocol, with another interventionist observing. In the latter portion of the pilot phase, roles were transposed, with an interventionist delivering the protocol and the intervention author observing. Youth and families were asked to provide both quantitative and qualitative feedback about their experience at the end of each session, as well as at the end of the protocol. Protocol revisions were iterative, with study team review and discussion after each pilot case, until no new feedback was generated.

7 | MODE OF DELIVERY

Telehealth is emerging as an effective and accessible strategy for delivering behavioral health services.³³ Many families coping with chronic pain and disability struggle to access qualified providers due to geographic, financial, or other barriers to specialized care.³⁴⁻³⁶ Given the scarcity of pediatric IIPT programs, families seek admission from a wide catchment area, nationally and internationally. A telehealth-based model of care can reach nearly all families planning to enroll in IIPT, regardless of home geographic location.

8 | INTERVENTIONIST TRAINING AND SUPERVISION

The intervention is designed to be delivered by a behavioral health professional with clinical experience in the care of youth with persistent pain. In this pilot, the intervention was provided by licensed pediatric pain psychologists. However, in the interest of exportability, the protocol is written to be accessible to therapists who may not be specifically trained in MI. Interventionists underwent training with the protocol author to discuss protocol content and MI principles, with supplemental resources provided as needed. Interventionists received weekly supervision to discuss the clinical implementation of the protocol. Sessions were recorded via a secure, HIPAA-compliant videoconferencing platform for training/supervision purposes, as well as for the study team to track treatment fidelity as the protocol was adapted.

9 | MEASURES

Data regarding the feasibility and acceptability of the PREPaRe protocol were collected via surveys completed individually by youth, parents, and interventionists. Both qualitative and quantitative data were obtained through open-ended prompts for feedback and formal questionnaires assessing treatment engagement and treatment satisfaction.

9.1 | Qualitative feedback

Both during and after the intervention, youth and parents were asked to respond individually to open-ended prompts in order to provide qualitative feedback about session content and their overall experience. Between each session, the prompts were as follows: *“Was anything about the content of this session difficult to understand? Were there technological difficulties that got in the way of your session? Do you have recommendations for improvements of this session specifically?”* At the end of the intervention, the prompts were as follows: *“What, if anything, did you learn from this program? Would you recommend this program to others? Why or why not? In your own words, what do you think was the main purpose of this program? Do you have any final recommendations for improving the program overall?”*

9.2 | Treatment engagement

A subset of questions was adapted from the Adolescent Substance Treatment Engagement Questionnaire³⁷ to assess participants' perception of engagement with the PREPaRe protocol. Youth and parents completed the adapted 10-item Treatment Engagement Questionnaire (TEQ) at the conclusion of the intervention. All items are rated on a five-point Likert-type scale, from strongly disagree to strongly agree, with higher total scores representing increased engagement. Sample youth items include, *“This program is encouraging me to think about the way I have been managing my pain,”* and *“In this program, I do not pay attention during discussions that focus on how I manage my pain,”* the latter being reversed scored. Parent items parallel youth item content/structure and include, *“This program is making me curious about whether my child could manage their pain in a different way,”* and *“I do not want any help with the way my child manages their pain,”* again, the latter being reverse-scored. The interventionist also completed an eight-item adaptation of the TEQ to offer a summative perspective on participant engagement over the course of the intervention. Sample interventionist items include, *“Expresses interest in learning how to manage pain in a different way,”* and *“Demonstrates consideration of session material between sessions.”* Internal consistency was acceptable ($\alpha = .73$) for the TEQ youth adaptation, good ($\alpha = 0.87$) for the TEQ parent adaptation, and good ($\alpha = 0.86$) for the TEQ interventionist adaptation.

9.3 | Treatment satisfaction

Youth and parents each completed the Treatment Satisfaction Inventory (TSI) at the conclusion of the intervention. The TSI was designed specifically for this study, based upon measures used in prior studies³⁸ of IIPT-affiliated interventions. All items are rated on a five-point Likert-type scale, with higher scores representing increased satisfaction. Items include, *“I liked the discussions and activities used in this program,”* and *“I had a positive reaction to this program.”* Internal consistency was acceptable ($\alpha = 0.70$) for the six-item TSI youth version and good to excellent ($\alpha = 0.91$) for the eight-item TSI parent version.

9.4 | Readiness to change

While this pilot study did not seek to examine intervention efficacy, the study team developed a process-oriented tool to monitor participants' evolving readiness to change during the intervention, based upon importance and confidence rulers inherent to MI.³² Participants are asked to rate each of the following, on a 0-10 numeric rating scale: (a) willingness to make their self-identified behavioral change, (b) perceived importance of making that change, (c) confidence that they can make that change, and (d) perceived awareness of what is needed to make that change. The questions are administered at the end of each session to youth and parents separately. Scores are summed for a total readiness score out of 40 possible points, with higher scores indicating a greater degree of a readiness for change.

Youth and parents completed their respective versions of the Pain Stages of Change Questionnaire (PSOCQ-A, PSOCQ-P)²⁷ to assess readiness to adopt a self-management approach to their/their child's pain at the outset of the intervention. Participants rate items on a five-point, Likert-type scale, ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*, with higher scores representing progression toward self-management. Items load onto subscale scores that represent the stages of change (Precontemplation, Contemplation, Action, and Maintenance, with the latter subscales collapsed into Action/Maintenance on the youth measure). Sample youth items include, "I still think despite what doctors tell me, there must be some surgery or medicine that would get rid of my pain" (Precontemplation) and "I have recently come to the

conclusion that it's time for me to change how I cope with my pain" (Contemplation). Sample parent items include "I have been wondering if there is something my child could do to manage his/her pain better," (Contemplation) and "I am encouraging my child to develop new ways to cope with his/her pain" (Action). Participants are categorized into stages based on their highest subscale score. When two subscale scores are equal, the participant is categorized into the stage representing more progression toward self-management. The PSOCQ-A and PSOCQ-P have both demonstrated reliability and validity in this population.²⁷ In this pilot study, these scores are reported solely to characterize the sample at baseline. PSOCQ-A and PSOCQ-P scores across all time-points will be reported as primary outcomes in the randomized controlled trial.

10 | RESULTS

10.1 | Promoting Readiness and Engagement in Pain Rehabilitation (PREPaRe) protocol

Promoting Readiness and Engagement in Pain Rehabilitation (PREPaRe) is a structured telehealth intervention, consisting of four modules. Modules are delivered over five one-hour sessions. Sessions are generally scheduled twice weekly and are supplemented with worksheets. Worksheets are utilized in session (on a shared screen) and assigned to be completed between modules. Table 1 details the content of each module in the intervention protocol. Modules 1 and 4

TABLE 1 PREPaRe detailed treatment description

Module	Topic	Content	Between session activity
1	Recognizing the Need for Change Joint	Introduce program; build rapport; review patient history; introduce motivation and behavior change as PREPaRe paradigm; relate concepts to IIPT preparation; explore personal continuums (functional restoration vs. pain elimination, self-management vs. external management, active vs. passive approaches); define personalized behavior change; elicit change talk; discuss role of choice; summarize module content; complete readiness ratings; show appreciation and voice confidence	Life in 5 Years
2a/2b	Building Commitment to Change Youth, then Parent ^a	Build rapport through review of Life in 5 Years activity; explore experience of activity and mismatch between vision and current status; present pain-disability cycle as explanation for mismatch; introduce values assessment (through initiating in Life Compass activity); identify potential discrepancies between values and current status; summarize module content; revise definition of behavior change as needed; complete readiness ratings; show appreciation and voice confidence	Life Compass
3	Identifying Barriers to Change Youth, then Parent, Joint	Review Life Compass briefly. Generate a Decisional Balance chart to explore perceived costs and benefits of current responses to pain vs. changing responses to pain (including fears/worries); explore additional reasons for confidence/barriers to success and alternative options; summarize module content; revise definition of behavior change as needed; complete readiness ratings; show appreciation and voice confidence	Letter to Future Self (while in IIPT)
4	Strengthening Commitment to Change Joint	Discuss Letter to Future Self activity; with permission, share additional IIPT information; collaboratively formulate Plan of Action (next steps, reminders of why, values-based goals); summarize module content; revise definition of behavior change as needed; complete readiness ratings; share graphed readiness ratings; elicit feedback; show appreciation and voice confidence	N/A

^aInterventionist uses clinical judgment to determine the manner in which Module 2 is to be conducted (ie, together/separate, order).

are “joint” sessions, with youth and parent participating concurrently. Modules 2 and 3 are conducted with youth and parent meeting separately with the interventionist, provided that this is developmentally appropriate for the youth participant. In Module 2, the interventionist provides youth and parent each with their own fully independent session (ie, two sessions covering parallel content for youth and then parent). In Module 3, the interventionist meets individually with youth and then with parent, again covering parallel content, but this time, this occurs within a single session. Additionally, youth, parent, and interventionist reconvene at the end of Module 3 to regroup before moving onto the final Module.

Module 1: Recognizing the Need for Change empathically explores patient/parent perceptions of their current situation, raises awareness of the impact of their current situation, and introduces the concepts of motivation and behavior change. In this session, patients and parents each define their own specific behavioral change that they are working toward for themselves, but in relation to the patient's pain. These can be collaborative if aligned (eg, “Be more open to active coping strategies” and “Support my child's use of active coping strategies”), or entirely independent (“Get out of the house once per day” and “Reduce the number of times I ask my child about their pain”). These behavioral change definitions are used in all future modules and for reference when responding to the readiness ratings described earlier. Module 2: Building Commitment to Change begins to explore individualized values and elicits discrepancies and dissonance between values/goals and current functioning. Module 3: Identifying Potential Barriers to Change explores the costs and benefits (decisional balance) of making the identified behavioral change. Module 4: Strengthening Commitment to Change supports self-efficacy and enhances optimism, by collaboratively forming an action plan and, with permission, exploring and clarifying family's specific expectations about IIPT.

Core MI tasks are completed within each module. These include summaries and reflections of module content and the family's perspectives, revising and confirming the youth's and parents' self-selected definitions of behavior change, and frequent voicing of appreciation and confidence in their abilities to make change. Ongoing assessment and exploration of readiness (via youth/parent ratings) are targeted to each participant's personal, self-selected behavioral change related to self-management of pain, identified in Module 1. In the final session, participants are presented with graphed ratings from all four modules to facilitate a discussion of their experience over time. Between-module worksheet activities include the participant describing their ideal life in five years, completing the value assessment initiated in session, and writing a letter to themselves in IIPT.

11 | REVISIONS TO PREPARE PROTOCOL BASED ON EXPERT AND PARTICIPANT FEEDBACK

The original PREPaRe protocol was lengthy and dense. Expert consultant and IIPT team feedback led to the elimination of content that

exceeded the purpose of MI and/or contradicted MI's patient-driven spirit. This resulted in a 50% reduction in the number of modules, from eight to four. Still, interventionists initially had difficulty covering the planned content in early modules in the time allotted. Therefore, content was redistributed across modules to ensure all key components were adequately addressed.

Relatedly, based on interventionist observations and qualitative participant feedback, the study team reassigned which family members are asked to attend each module. Many youth appeared to demonstrate increased engagement and effort (and parents appeared to more readily share candid perspectives) when meeting alone with the interventionist. One participant early in the pilot phase suggested, “*Maybe put more things to prompt kids separately into the program,*” in response to her experience of sharing all sessions with a parent. In response to this, the personal, self-reflective content of Modules 2 and 3 was later addressed individually, first with youth and then with parents. This was well-received: “*... it was productive to have separate sessions for my daughter and myself in order to speak freely about things that we may not have felt comfortable with the other person present.*”

The study team also addressed IIPT team and participant feedback to adjust terminology and explanations (eg, motivation, ambivalence, and decisional balance) for developmental appropriateness. For instance, one younger participant offered, “*Sometimes my mom had to explain what you were saying, but it wasn't too bad.*” This prompted a full protocol review to ensure that complex concepts had a variety of explanations for the interventionist to utilize. Further, several early participants requested access to the shared screen handouts and to “*make the documents more user-friendly,*” both of which were readily implemented. Later participants noted, “*It was helpful to have the slides/notes shared with us to refer back to.*” Table 2 details a selection of youth and parent feedback received via the end of the intervention prompts as well.

12 | FEASIBILITY AND ACCEPTABILITY

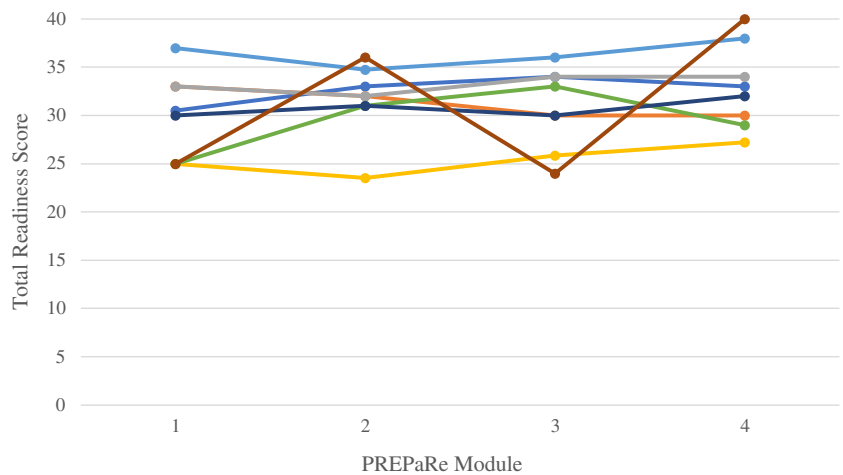
12.1 | Treatment engagement

With regard to treatment engagement for youth, TEQ scores ranged from 39 to 49 of 50 possible points ($M = 44.4$, $SD = 3.85$). Of the individual youth TEQ items, 92% of responses fell in the positive range (ie, agreement with statements that reflected treatment engagement), with the remaining 8% falling in the neutral range. For parents, scores ranged from 41 to 50 of 50 possible points ($M = 45.5$, $SD = 3.89$). Of the individual parent TEQ items, 96% of responses fell in the positive range, with the remaining 4% falling in the neutral range. Interventionist TEQ ratings of youth ranged from 27 to 40 of 40 possible points ($M = 33.38$, $SD = 4.21$). In examining specific interventionist TEQ ratings, 88% of responses fell in the positive range, with 9% in the neutral range, and 3% falling in the negative range (ie, disagreement with statements that reflected treatment

TABLE 2 PREPaRe end of treatment feedback prompt sand selected participant responses

Prompt	Selected patient responses	Selected parent responses
What did you learn from this program?	<ul style="list-style-type: none"> I thought more about the pros and cons of making changes... I was able to identify my own values and goals Why I want to get better [That]it would be bad for things to stay the way there are 	<ul style="list-style-type: none"> I need to make some changes in the way I am supporting my child...the importance of setting goals... Not to let pain decide what you do or how you live. Focusing on family values is [an] important component in keeping life goals. We looked at some of the obstacles to moving forward. How we can't go on living like we are now How [IIPT] will help her... [live] a normal life where our focus is on normal things and not revolving around pain
Would you recommend this program to others? Why or why not?	<ul style="list-style-type: none"> Yes because it helped me get ready to come [to IIPT]. Yes because it makes you focus and be more aware of what matters to you... I would...PREPaRe made it so I can do a lot more, a lot faster [in IIPT]. 	<ul style="list-style-type: none"> Yes... it was important to begin the work of recognizing the individual goals of my child... as well as for our family... Yes - it's [a] great idea to become more aware of thoughts and feelings around what has/hasn't worked. Yes. It really helped us to all be on the same page as a family as to the importance of [IIPT] and our shared goals as a family.
In your own words, what is the main purpose of the PREPaRe program?	<ul style="list-style-type: none"> To prepare for [IIPT] mentally ... gives you a head start so you can be more focused on your activities [in IIPT]. ... get started with the basic knowledge of what I'm there for... I think that will make it so I can get through it far quicker It helped me get ready for [IIPT]. 	<ul style="list-style-type: none"> To see whether or not working with providers in advance of participating [in IIPT] would better prepare the individuals for the program... To begin setting goals and getting ready for [IIPT]... to address some of the potential obstacles... To prepare us for the work we will be doing in [IIPT].

FIGURE 1 Youth readiness ratings across PREPaRe modules



engagement). The most common items to reflect decreased engagement on the interventionist TEQ were those that assessed between-session engagement: “Demonstrates consideration of session material between sessions” and “Completes between-session tasks.”

12.2 | Treatment satisfaction

With regard to treatment satisfaction for youth, TSI scores ranged from 24 to 27 out of 30 possible points (M = 25.00, SD = 1.41). Of the individual youth TSI items, 100% of youth responses fell in the positive range (ie, agreement with statements that reflected treatment satisfaction). Parents' scores ranged from 31 to 40 out of 40 possible points (M = 36.00, SD = 4.06). Of the individual parent TSI

items, 95% of responses fell in the positive range, with the remaining 5% falling in the neutral range.

12.3 | Readiness ratings

Figures 1 and 2 illustrate the readiness ratings for youth and parents respectively, across the four PREPaRe modules. For youth, there was a general increase in readiness ratings from Module 1 (M = 29.81, SD = 4.50) to Module 4 (M = 32.90, SD = 4.38). The same was true for parents, whose readiness ratings also increased from Module 1 (M = 32.13, SD = 3.60) to Module 4 (M = 35.64, SD = 2.23). There was considerable variability in readiness ratings between these two endpoints, particularly for youth participants.

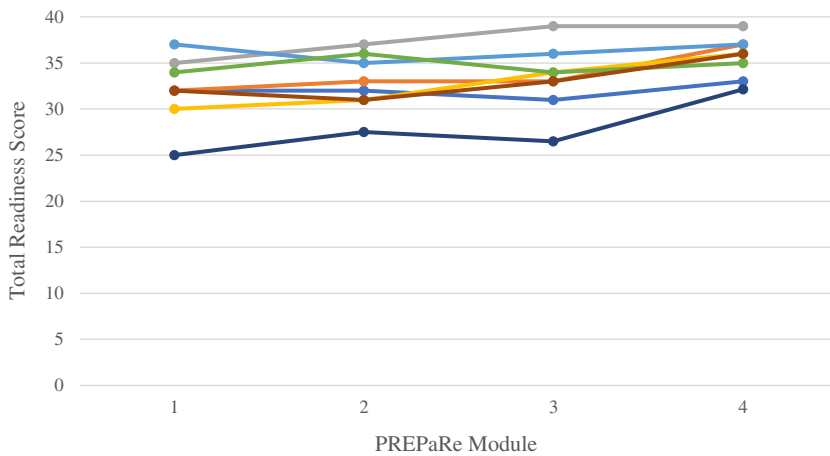


FIGURE 2 Parent readiness ratings across PREPaRe modules

13 | DISCUSSION

Patients and families enter IIPT with widely varying expectations, beliefs, and emotions that consequentially influence their readiness to engage in the overarching philosophy and treatment approach that IIPT offers. This philosophy, for many patients and families, represents a significant shift in the way pain had previously been conceptualized, approached, and treated. Further, engagement in IIPT necessitates true behavioral change for patients and families that can appear demanding, counterintuitive, and for some, seemingly impossible. Here, we have described the development of a telehealth MI-based intervention protocol (PREPaRe) that seeks to prepare youth and families referred for IIPT by enhancing their readiness to change and presented preliminary data on its feasibility and acceptability in this population through participant and interventionist reports of treatment engagement and satisfaction.

Lessons learned during protocol development and the pilot phase directly informed the intervention described and examined here. In this process, PREPaRe protocol shifted considerably in terms of scope and format, supported by literature indicating that brief MI interventions are both common and effective.³⁹ Several overarching clinical themes also emerged, which have implications for future examination and implementation of PREPaRe. The first of these themes is the importance of maintaining the spirit of MI. Many clinicians who treat pediatric chronic pain are well-versed in cognitive-behavioral therapy, which is often educational and clinician-led. Therefore, it will be important for clinicians who are trained in other pain management modalities to make a purposeful shift in style when delivering this protocol.

The second theme relates to the interventionists' experience in working with the pediatric pain population. Interventionists observed that, unlike other health behavior changes (eg, reducing substance use, healthy eating), adopting a self-management approach to pain can be a counterintuitive choice, where the costs and benefits may not always be immediately clear to families. Therefore, while clinicians of all backgrounds may have familiarity and comfort with motivational interviewing, clinicians with a specific background in pediatric pain management may be best prepared to respond to

questions that arise while participants are working to resolve ambivalence about change. Finally, as with any intervention developed for children and adolescents, a developmental framework is essential in order for the interventionist to meet the young person where they are, intellectually and emotionally. Providing a developmentally appropriate intervention requires that the clinician has a sense of each participant's reasoning, language ability, and self-understanding, as well as their environmental context.²⁹

Initial responses to the PREPaRe protocol from the pilot group suggest high levels of treatment engagement in PREPaRe, as reported by youth, parents, and interventionists alike. Interventionist engagement scores corroborated youth self-report about their engagement and highlighted between-session challenges for clinicians to be mindful of. Parents' engagement scores were slightly higher than youth engagement scores, though nearly all responses indicated high engagement with the intervention. Of note, efforts were made in early revisions of the protocol to more fully engage youth participants (eg, allowing youth to meet alone with the interventionist and adding more prompts to elicit their participation), as recommended by the participants themselves, which may partially explain this small difference. Youth and parent responses also indicated a high degree of treatment satisfaction with their PREPaRe experience. Far and away, the most common response to prompts for recommendations for improvement for each session or the program overall was "None!"

Although the size of the pilot sample precluded inferential analysis, observations of changes to youth and parents' readiness ratings are promising. Both groups reported overall increases in their readiness for change, via their ratings reflecting their willingness, importance, confidence, and perceived awareness of what is needed to make the change. Of note, many participants demonstrated considerable variability in readiness ratings over the course of the intervention. For instance, several youth participants reported an initial decrease in their readiness after the second session, before scores eventually increased to their highest point at the end of the intervention. This may reflect genuine engagement with the materials and grappling with ongoing ambivalence during the intervention. It may also reflect participants gaining a better understanding of what IIPT entails and reflecting the awareness of the challenges it may present.

These ratings also demonstrate what appears to be a ceiling effect, as most participants began the intervention reporting high readiness ratings at the start in Module 1. Of course, these scores may also be impacted by social desirability biases or observer effects. Overall, based upon this pilot group's report, PREPaRe appears feasible to administer, acceptable to families of youth with persistent pain who are seeking IIPT, and to have potential impact on readiness.

14 | LIMITATIONS AND FUTURE DIRECTIONS

The findings from this pilot study must be viewed in light of their limitations. As is the case with most pilot studies, the sample size was small. However, this group of participants was able to offer detailed, rich qualitative feedback as well as internally consistent responses to the formal quantitative questionnaires. Their feedback had direct implications for protocol revisions and was continuously incorporated until saturation. Additionally, the data presented here inform the reader about the feasibility and acceptability of this intervention protocol, based upon three perspectives: that of the youth participant, their parent, and the interventionist. While these results are promising and suggest positive experiences for the participants, the efficacy of this intervention (and its ability to impact participants' readiness to change) is yet to be examined. Still, the pilot group has solidified the critical first step in protocol development and the intervention now appears ready for a more rigorous evaluation of its efficacy.

It is also important to acknowledge the environmental context in which the entirety of this pilot study took place: the COVID-19 pandemic. While the intent from the start had been for PREPaRe to be a telehealth intervention, primarily to increase participant access, the impact of COVID-19-related challenges was still palpable. Though not directly assessed in this study or specifically mentioned in feedback, it is possible that both participants and providers alike may have been experiencing what has been colloquially referred to as "Zoom Fatigue."⁴⁰ Feelings of exhaustion from the frequent use of Zoom and other videoconferencing platforms for school, work, and socialization may have impacted participants' treatment engagement and satisfaction. Further, given its roots in MI principles, this intervention seeks to help participants to develop discrepancy between where things currently are and where they would like them to be. Because pandemic-related restrictions have limited opportunities for in-person socialization, in-person schooling, athletic endeavors, and general community participation outside of the home, it may have been unexpectedly more challenging for participants to increase their expectations, envision a post-COVID world, or to perceive a motivating degree of discrepancy between where they are and what was possible in light of the pandemic. As one parent noted, "It's just hard to judge anything as 'normal' given COVID." Ongoing consultation between the PREPaRe team and IIPT team may be useful for brainstorming strategies for overcoming such mental and physical barriers until pandemic-related restrictions are lifted.

Further examination of PREPaRe is warranted to determine the efficacy of the intervention for enhancing readiness to change (ie, to adopt a self-management approach for pain management) prior to IIPT admission. Given the positive response from participants regarding the intervention's feasibility and acceptability, our group is now conducting a randomized controlled trial (RCT) to evaluate the effects of PREPaRe on (a) readiness to change at IIPT admission, (b) reductions in disability and pain at IIPT discharge and short-term follow-up and (c) length of IIPT admission, through comparison of families who undergo PREPaRe with families who do not undergo PREPaRe. The comparison group will continue to receive standard care while awaiting IIPT admission, including continuation of typical outpatient therapies.

Once PREPaRe's efficacy in the individualized format is established, it may be worthwhile to examine its feasibility for administration in a group format. Completing five treatment modules prior to initiation of IIPT may be challenging to operationalize and implement with individual families in a clinic setting. Both interventionists and families may perceive this to be an intensive endeavor. Conducting PREPaRe in a group setting may potentially optimize resources and alleviate some of this burden. Families may experience added benefit of connecting and sharing perspectives with others. However, in order to be sure that participants in the group format still experience benefit, adaptations to the PREPaRe protocol may be required, given the highly personalized nature of the current version (eg, using each participant's own person definition of behavioral change), as well as its own empirical investigation. Ultimately, however, a recent meta-analysis⁴¹ indicated that MI is an effective and appropriate intervention for targeting youth health behavior change in both the individual and group formats, provided that both parent and youth partake in the sessions.

Lastly, future studies should also seek to identify the *ideal* PREPaRe participants. In this preliminary study as well as in the current RCT, *all* patients and families referred to IIPT were potentially eligible to participate, in order to best understand the impact of the intervention on individuals at various stages of change. Again, while intentionally preparing families for IIPT has the potential to greatly enhance IIPT outcomes, it is not without its own burden of time and resources. A better understanding of which patients and families truly need this level of support to benefit from IIPT will be a crucial next step. It is hoped that data from the RCT will help to inform this understanding.

15 | CONCLUSIONS

Overall, IIPT has had great success in facilitating the functioning of young people experiencing chronic pain. However, meeting patients and families where they are at the time an IIPT referral is made, which is more often than not in an early stage of readiness for change, may be essential to ensuring the success of every IIPT patient. When patients and families enter into IIPT without sufficient readiness for change, valuable rehabilitation treatment hours are often consumed by attempts to increase and elicit engagement, motivation, and confidence. While these are undoubtedly critical factors for continued

IIPT success, promoting and enhancing readiness to change prior to IIPT admission will likely promote better, more cost-effective outcomes. PREPaRe is designed to do just that, as noted by a PREPaRe participant: "To get families and children to be ready and open to hit the ground running when they start [IIPT]... to see the value in it and persevere when it gets tough."

ACKNOWLEDGEMENTS

The authors wish to thank Preeti Sandhu, PhD (interventionist), Pamela Burke, PhD, RN (MI consultant), and the families who piloted this intervention, all of whom offered invaluable feedback for protocol implementation. The authors also wish to thank Zineb Bouzid, Kelsey Jervis, Sarah Scharlin Ben-Hamoom, and Kallisti St. John, for assisting with the creation of study materials and overall study support. This study is funded by a grant from The Deborah Munroe Noonan Memorial Research Fund awarded to Dr Logan. The authors declare no conflict of interest.

CONFLICTS OF INTEREST

The authors declared there are no conflicts of interest.

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How to cite this article: Smith AM, Logan DE. Promoting readiness and engagement in pain rehabilitation for youth and families: Developing a pediatric telehealth motivational interviewing protocol. *Paediatr Neonatal Pain*. 2022;4:125-135. <https://doi.org/10.1002/pne2.12063>