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Barriers and Facilitators for Implementing Resilience Coaching for Youth With Chronic Musculoskeletal Pain: Pediatric Rheumatologists' Perspectives

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Objective. Promoting Resilience in Stress Management (PRISM) is a resilience coaching program designed for adolescents with chronic illness. We aimed to examine the perceived feasibility, acceptability, and appropriateness of PRISM among pediatric rheumatologists treating adolescents with chronic musculoskeletal pain and obtain recommendations for improvement to inform future implementation efforts.

Methods. We performed semistructured interviews with pediatric rheumatologists across several US institutions. Interviews were audio recorded and transcribed verbatim. Hybrid inductive-deductive coding was employed to capture emergent themes, guided by the Consolidated Framework for Implementation Research 2.0, and develop the codebook. We performed double coding for 20% (n = 2) of the transcriptions to develop the codebook and ensure interrater reliability.

Results. Ten pediatric rheumatologists were interviewed, and feedback on PRISM was uniformly positive in terms of perceived clinical value and favorability for local implementation. Perceived facilitators included PRISM's brevity, remote delivery, and the potential for a peer group session. Finding the funding and having enough staff for such a program as well as the concerns around competing demands and building PRISM into adolescents' busy schedules were the primary perceived barriers for implementation.

Conclusion. Pediatric rheumatologists report that PRISM would be valuable and of interest to their patients with chronic musculoskeletal pain, and the resilience coaching program could be further augmented by the addition of a peer support component. Implementation strategies are needed to support program costs and staffing to effectively deliver and sustain the program.

INTRODUCTION

Chronic musculoskeletal pain (CMP), defined as pain affecting the bones, muscles, ligaments, tendons, and nerves for three months or longer,[1] is common among children and adolescents. Prevalence estimates in this population range up to 25%, and approximately 30% of patients describe their pain as severe.[2–5] Evidence-based treatment for CMP consists of interdisciplinary care using physical, occupational, and psychologic therapy.[6–9] However, care is not readily accessible to all patients.[10] This may be related to the few medical facilities with interdisciplinary chronic pain programs for children and adolescents (~45 programs in the United States).[11] The catchment areas of these programs are large, leading to difficulty accessing treatment.[12] Scheduling challenges and long wait times make accessing prompt care challenging.[13,14]

Psychological resilience is the ability to bounce back from challenging experiences—a dynamic process of positive adaptation or continued development in the context of adversity.[15,16] Resilience in adolescents with CMP likely involves a set of

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SIGNIFICANCE & INNOVATIONS

- Resilience coaching was perceived by pediatric rheumatologists as a clinically important psychosocial support program to offer adolescents with chronic musculoskeletal pain as part of routine care.
- Resilience coaching programs have reasonable prospects to adequately address a portion of the psychological needs of youth with chronic musculoskeletal pain, potentially lessening access burdens for dedicated interdisciplinary pain clinics and reserving psychology practices for youth in greatest need of a higher level of care.

adaptive responses to chronic pain such that resilient adolescents exhibit better pain coping and stress management strategies and overall better physical and psychosocial function compared to nonresilient peers.[17] Our previous work shows that adolescents with CMP have lower levels of self-perceived resilience than healthy individuals and adolescents with other chronic medical conditions.[17] Higher resilience is associated with less psychological distress, functional disability, and pain intensity.[18] This suggests a benefit to using resilience coaching as part of pediatric CMP care.

Promoting Resilience in Stress Management (PRISM) is a one-on-one resilience coaching program for adolescents with chronic illness, for which efficacy was first established in adolescents with cancer.[19,20] This program consists of four required skill-building sessions, which target stress management, goal setting, cognitive reframing, and meaning-making.[21] This is complemented by an optional "coming together session," in which the participant can review skills with their caregiver. PRISM is designed to be delivered either in person or remotely by any individual with, at minimum, a bachelor's degree who has completed an eight-hour training session and practiced delivering the intervention with two peers. This design is intended to reduce the demand on licensed mental health providers. In a single-arm pilot trial of PRISM in adolescents with CMP, patients and caregivers found PRISM feasible and acceptable and favored the delivery format of video visit over in person or telephone.[22] Given the challenges patients face in accessing interdisciplinary pain programs, the relative accessibility and preliminary evidence of the clinical usefulness of PRISM make it an attractive addition to the treatment landscape for adolescent CMP. Unique aspects of PRISM as a potential virtual pediatric chronic pain psychological intervention include its 1:1 interaction with a nonclinical provider, as well as the reframing of psychological counseling as resilience coaching, which may be more approachable for adolescents who perceive a stigma with traditional mental health services.

Up to 60% of new referrals to pediatric rheumatology are patients with CMP.[23] However, to date, no work has been completed on the perceived feasibility, acceptability, and appropriateness of PRISM for adolescents with CMP from the perspective of pediatric rheumatologists. This perspective is essential to move PRISM from the adolescent pain research context into real-world implementation, as these physicians can provide important feedback on how to tailor the program to best fit their facility and patient needs and can guide implementation strategies. To address this knowledge gap, we examined perceived feasibility, acceptability, and appropriateness of PRISM, obtained recommendations for improvement, and identified facilitators and barriers to engagement in PRISM. We conducted qualitative analysis of semistructured interviews with 10 pediatric rheumatologists at various academic medical centers. The results of this study will inform future efforts to implement and adapt PRISM to best serve adolescents with CMP.

PATIENTS AND METHODS

This was a qualitative study of semistructured interviews with a convenience sample of US pediatric rheumatologists from December 2022 through February 2023. Our study team hand-selected and contacted pediatric rheumatologists across the United States with the goal of having a geographically diverse representation of providers and a mix of providers with and without expertise in pediatric pain management. Providers were eligible if they had been in practice for at least one year. Potential participants were invited via email to participate in an ~45-minute interview. Interviews were conducted by one of two team members (AC and MM). We conducted "snowball" sampling such that if a rheumatologist declined participation, they were asked to recommend two to three other pediatric rheumatologists who might be able to participate.

We set a goal sample size of 10 pediatric rheumatologists because 9 to 17 interviews has been demonstrated as adequate to achieve saturation.[24–26] Participating providers scheduled a phone call with one of two research coordinators (AC and MM) and were sent a pamphlet detailing the PRISM program (see Supplemental Figure 1), as well as the proposed addition of a social support session as a possible adaptation to the intervention. Our previous work piloting PRISM identified the addition of a peer support group session as a potential modification for youth with CMP.[22] Therefore, although there is not currently an option for a peer group session within PRISM, we proposed what a peer group session might look like to gather physicians' insights on relevance of this possible addition. We proposed that at any time between PRISM sessions two and five, participants would be invited to join a peer group session with ≥2 other teens to share what resilience means to them, ways they cope with their pain and pain-related stress, and how to explain their diagnosis to others. The pediatric rheumatologists then participated in semi-structured interviews using an interview guide (see Supplemental Figure 2) developed using the Consolidated Framework for Implementation Research[27] (CFIR) 2.0 with one of the research

coordinators. CFIR was chosen because it provides a comprehensive framework to systematically identify factors that may emerge in various, multilevel contexts to influence implementation.[28] Participants were asked whether PRISM would be feasible for their health care facility to administer, whether their patients would benefit, and what changes might be needed to better suit the needs and preferences of the patients and providers involved.

Interviews were audio recorded and transcribed by an outside, Health Insurance Portability and Accountability Act–compliant vendor. Transcriptions were read and discussed by the research team, resulting in the development of a codebook using thematic analysis with a hybrid inductive-deductive coding approach to capture emergent themes, guided by CFIR 2.0 (Table 1).[29,30] Six themes were noted: acceptability, discussion of digital app, dissemination of model, existing services, intervention setting, and sustainability of effects. Additional codes were also used to tag passages relevant to discussion of facilitators or barriers to implementation, feedback or modifications raised by the participating providers, as well as perspectives on each of the sessions in PRISM.

The codebook was initially applied by the entire group (SG, AC, MM, NB, and KSK) to test for intercoder reliability. NVivo software was used to examine interrater reliability (IRR) with Cohen's kappa. We performed double coding for 20% (n = 2) of the transcriptions to develop the codebook and assure IRR. After a Cohen's kappa of >0.6 was established for each theme in the codebook, a research team member (AC) completed coding of all 10 transcriptions and provided the team with relevant coded passages for discussion. These discussions were used to sort and categorize findings from the coding process into usable insights regarding PRISM and the participating providers' perspectives. This study received exemption from human participant research by the local institutional review board.

Table 1. Codebook for analysis of semistructured interviews*

Content or concept	Codes relating to topics of interest
Acceptability	Content/conceptual code: any discussion by the participant regarding a potential positive or negative reception by patients, their support networks, and their care teams
Needs met or intervention fit	Content/conceptual code: any discussion by the participant regarding patient population needs and the degree to which the PRISM program meets those needs (successfully or unsuccessfully)
App	Any discussion by the participant regarding the use of the app or any discussion that could inform the development of the app as part of the PRISM program
Dissemination of model	Any element pointed to by the participant that they indicate will be critical in ensuring the PRISM program is able to launch and continue running
Language needs	Any discussions regarding potential barriers or limitations related to language
Lead	Who would be potential people to take on and lead the effort to run this program
Staffing	Discussions related to how to staff the program, how to ensure sufficient salary, etc
Technology	Discussions regarding the concerns surrounding technology, access, and digital communications
Existing services	Content/conceptual code: any discussion by the participant regarding potential overlap with existing services; could be on the team, at the practice, or even a referral but part of existing network
Intervention setting	Any commentary by the participant on the potential benefits or challenges of the virtual setting or comparisons to what an in-person context would look like/how it would compare
Sustainability of effects	Comments or suggestions related to how to maintain the effects/benefits of the intervention for the participants (eg, homework, refresher courses, etc)
Session codes	In order to put all data about each session into one place
Session 1 stress management	Discussions regarding the first session
Session 2 goal setting	Discussions about the "goal setting" session
Session 3 cognitive restructuring	Discussions about the "cognitive restructuring session"
Session 4 finding the positives	Discussions about the "finding the positives" session
Session 5 coming together	Any discussion by the participant regarding the need for, the challenges from, or the benefits of including family members in the PRISM process
Session 6 peer group session	Any discussion by the participant regarding the need for, the challenges from, or the benefits of including peers in the PRISM process
Sorting or context	Apply liberally, co-coding content/conceptual nodes whenever appropriate
Barriers	Sorting/context code: an element of the participant's setting or of the program's design that creates a challenge to the implementation of the PRISM program. Hypothetical things and ideas about what might hinder the implementation of the program should be coded at the "Feedback and Modifications" session
Facilitators	Sorting/context code: an element of the participant's setting or of the program's design that will ease the effort to implement the PRISM program. Hypothetical things and ideas about what might improve the impact or help with implementation of the program should be coded at the "Feedback and Modifications" session
Feedback and modifications	Sorting/context code: any changes or adaptations the participant proposes by way of improving the PRISM program's success rate

* PRISM, Promoting Resilience in Stress Management.

RESULTS

Twenty-four pediatric rheumatologists were contacted. Eleven pediatric rheumatologists (45.8%) accepted the invitation, and 10 completed interviews. Seven providers worked in practice for more than five years (70%). Six providers worked in facilities that have their own pain programs (60%), three providers worked in facilities that refer patients to outside institutions for chronic pain (30%), and one was unreported. Five providers reported diagnosing >2 patients with CMP per week.

PRISM facilitators. All 10 providers indicated that the PRISM intervention would be well received by the patient population. In particular, the providers commented on four different facilitators related to patients' reception of PRISM: the session structure and design and scheduling, the remote delivery, addressing the need for mental health services, and serving as bridge therapy while patients await care in specialized pain clinics and programs.

Session structure and design and scheduling. Most of the providers agreed that sessions being one to two weeks apart and approximately 30 to 45 minutes is appropriate. When reflecting on length of the sessions, one participant noted "that timeframe would allow the patients to be able to ask questions as they're going through. And that way it's not so long that the patient's gonna lose attention or feel like it's too much of a chore" (ID04). One physician reflected that "to do it any more than once a week ends up, I think, being a little more challenging for patients to potentially get to sessions, just because people are busy and overscheduled" (ID02). Many of the physicians noted that the standardized structure makes this intervention relatively simple to implement. As one mentioned, "since this is more structured and relatively standardized it might be easier to deliver in lots of different settings.…that's a strong positive to this kind of very structured uniform session plan or intervention plan" (ID06). Others cited that the relative brevity of sessions and remote delivery allow for flexibility in scheduling of sessions.

Remote delivery. In addition to patients' busy schedules, many physicians pointed out that because of travel restrictions, distance, and associated costs, the remote delivery was a huge benefit because the patients would not have to "depend on parents and other people for rides, potentially" (ID08). In terms of PRISM being offered remotely through telehealth, one physician stated "that makes it more feasible.…Thinking about kids that suffer with this disease throughout the US, many of them are hours, if not several states, away from pain management programs. So, I think the fact that they can maybe have some in-person treatment and then have the ability to participate in this remotely is a big strength" (ID07). PRISM provides more flexibility for those patients who must travel long distances to access a rheumatology clinic: "Most rheumatologists are at major academic centers where not every patient is close…a virtual setting increases the access to the program, and we'd be able to reach certain patients who otherwise might not consider a program like this because of the time commitment or the frequency of having to come into the office," and instead they can participate "in the home setting, in a comfortable environment for the patient" (ID04). Therefore, the remote delivery allows participants to be in their preferred physical setting, further contributing to feasibility and acceptability of the intervention.

Addressing the need for mental health services. The need for mental health services in this patient population is significant. PRISM was described as a means of introducing cognitive behavioral therapy (CBT) concepts for patients who are currently not able or willing to engage in CBT. One physician thought, "there just are not enough services and providers out there. So, I feel like this is just like another pathway to help give some of our patients support" (ID02). Many also pointed out that PRISM covers critical skills that can benefit everyone and believe that "spreading this knowledge and these tools in this toolkit…is fantastic to help our patients" (ID05).

Serving as bridge therapy. Respondents noted that offering PRISM to patients could potentially circumvent wait and travel times for specialized pain clinics or programs and helps providers and patients by getting patients connected to a useful intervention relatively quickly. One physician noted that "if we had somewhere else to send patients that come into us like this, it would be extremely utilized" (ID08). Another physician also identified how PRISM may serve as a local resource for teens unable to access or not in need of a higher level of care delivered only at a major academic center, saying that they "see kids that are on the more mild end of the spectrum…trying to coordinate this stuff separate from the program…would be a great resource to also add this tool to our arsenal" (ID07).

PRISM barriers. *Scheduling conflicts and competing demands.* Two major barriers identified by the pediatric rheumatologists were (1) concerns surrounding scheduling conflicts and competing demands of adolescents with CMP that may impede their ability to participate in a program like PRISM and (2) concerns surrounding the financial costs of the program regarding staffing the coaches and reimbursement for services. Providers commented on potential barriers that could make this intervention less acceptable to the patient population, with three specifically mentioning patients' schedules and lack of time as concerns. One physician noted, "it's sometimes difficult to get people to commit to even monthly" (ID01), and another questioned whether PRISM would be "able to keep people engaged that they keep coming to every session" (ID02). Another physician even shared a personal experience treating a patient with a busy schedule, thinking back to a "kid in Chicago who had really bad [CMP] and she was really just like overflowing with stuff that had to be done" (ID10). Even though several physicians noted scheduling as a barrier, one also

pointed out that "it just depends on the family and what they have going on and things like that" (ID01).

Staffing and billing. Some of the rheumatologists expressed uncertainty around how clinics would bill for PRISM: "would we be able to bill for these coaches' times spent with patients if they're not licensed providers? I don't know" (ID03). Finding an employee to run PRISM would pose additional challenges, as all 10 providers were not able to identify any existing staff members at their facility with both the skillset and capacity to take on the delivery of PRISM. One physician noted, "I think this would be a popular program and I think we have plenty of patients that would benefit. And so, I think it would need probably more than one coach or someone who it's like a chunk of their job" (ID08). However, ensuring protected time for full-time employees to deliver PRISM was cited as a potential barrier to implementation (ID03, ID07, and ID08). One rheumatologist reflected, "If it's someone who's taking it on as part of their job, they'd probably need more protected time, so they don't need to fill it doing other things, and do this as like extra work. …Because the hospitals want you to bill patients, they want RVUs [relative value units] and if this is a free service to patients, that wouldn't help the system in that way" (ID08). Another physician echoed this concern, stating that "time is money, right?… if you had the resources to maybe just have…a therapist or somebody who could do this, that's great. But I think otherwise, that would be a limitation" (ID07).

Feedback on proposed group session. From our previous work, participants and their caregivers recommended the addition of a peer support group session to PRISM. We proposed this modification to the physicians interviewed in this current study, and most thought that the proposed group session would be clinically valuable. They suggested that the main emphasis should be on forming a sense of community and allowing patients to "feel like they have peers and other people that are going through something similar, that they can normalize their experience…[and] learn from each other's accomplishments" (ID03). As one physician noted, many times, patients in this population are coming into these pain clinics after seeing many other doctors from all different specialties, are taking medications that aren't working, and have tried many different recommendations but continue to have pain. They feel alone and isolated and lose hope (ID09). A group session component can show these patients "that there's a community there to, one, support them, but then two, that there are other people that are going through this… and then I think once they recognize that, they're a little bit more accepting of it and then willing to work hard to try to recover" (ID07).

The need for social connection in this population was emphasized, with some suggestions for both the peer and familial aspects of community. One physician stated, "The only thing I'd really change is providing more of that peer support component. Where you might be doing sessions one on one, but then after, say, a cohort goes through, say, session one, then you can have a peer support component where they get together and discuss stress management and what they found successful, what have they struggled with" (ID04). PRISM should also factor in the family in some way "because we know that the chronic illness experience really has impacts on the entire family" (ID04). "It's not just the kid who's in this relationship. It's the whole family unit. And so, if you don't address the whole family unit, you don't address all the other psychosocial stressors that can go along with it, you might be missing an opportunity to help improve the child's pain" (ID05).

Other suggested adaptations. The pediatric rheumatologists proposed several potential changes to maximize the effectiveness of PRISM. One such suggestion was adding additional sessions to the program, either by spreading the topics over a greater number of sessions or repeating certain sessions. Overall, these suggestions indicate the physicians' desire for patients to be able to revisit topics brought up in earlier sessions as a refresher because "…these techniques require practice and repetition and it's very challenging" (ID04).

Related to the idea of refreshers, interviewees also suggested that patients should be offered continued access to program resources after completion of PRISM. Allowing participants to have ongoing use of the PRISM app and other resources from the sessions is helpful because "maybe they have a flareup, and they need to jog their memory of oh, what were some of these tools that I was supposed to use? What are some of the stress management techniques they went over?…Because if you just do a one-time intervention, I'm sure if you measure outcomes immediately after that, compared to 12 months later, you'll probably lose some effectiveness, and therefore, I think that it—having the ability to come back to this would make it more effective in the long term" (ID07).

Although PRISM has built-in homework and opportunities to practice skills, providers recommended even more refreshers and required assignments to reinforce skills outside of PRISM sessions. For example, "each session should have some homework that relates to that lesson learned. So, if it's stress management, every night before you go to bed, I want you to take five minutes and do the leaves on the stream or whatever it is that they liked from that session so that it really helps them reinforce what they learned" (ID03). Check-ins and reminders from PRISM coaches can further enhance participation and skill-building. This can be done by offering messages between and after sessions to touch base with participants and adding postintervention check-ins. Interviewees felt it is important to provide patients with tangible goals and actions to practice the skills learned from PRISM to prevent the waning of skills over time. Although the current PRISM curriculum does include encouragement for patients to practice skills at home, and provides cheat sheets for each session, these

physicians' feedback suggests a need for more deliberate and structured homework assignments within the program.

Physicians mentioned several topics and sessions that could be beneficial to add to PRISM. For example, adding a physical activity component was suggested several times because "some of those components, like, align [with] the stress management skills that you're learning" in PRISM (ID03). Participants also recommended adding primer sessions to convey the importance of the topics covered in the coming weeks, "where you can just see a birds-eye view of where we hope you'll end up. This is what a typical person might look like at the beginning, but this is where they are at the end" (ID07).

DISCUSSION

In this qualitative study exploring facilitators and barriers to an existing resilience coaching program (PRISM), we demonstrated perceived clinical value and favorability for local implementation of PRISM by pediatric rheumatologists. All interviewees indicated that PRISM would be well received because of the program's brevity, remote delivery, and potential for an added peer group session. Finding the funding and having enough staff for such a program, as well as concerns around competing demands and building PRISM into adolescents' busy schedules, were the primary perceived barriers for implementation. Reassuringly, feedback did not reveal any necessary adaptations that would affect local implementation or require a high level of tailoring of the intervention. However, the logistical challenge of staffing and financial costs associated with PRISM remain unresolved barriers to implementation. Additional work testing potential implementation strategies is needed to address this evidence-to-practice gap.

Physicians' descriptions of the strengths of PRISM's content demonstrate the importance of incorporating this resilience coaching program into routine clinical care for CMP. Their responses indicate that clinical management for CMP populations requires support for stress management, goal setting, cognitive restructuring, and benefit finding to be taught and engrained into this population's everyday lives. For some patients, PRISM was viewed as serving as an important bridge to therapy while awaiting established care with a licensed mental health professional. For other patients, PRISM may provide adequate stress management skills such that ongoing mental health treatment or care under the guidance of an interdisciplinary pain management program may not be necessary. This would improve access to care for patients both by PRISM serving as a more accessible mode of receiving stress and condition management skills as well as reserving appointments with mental health providers or interdisciplinary pain clinics for patients for whom PRISM is not sufficient.

Promoting patients' commitment to the program despite their busy schedules and access to pain centers were perceived barriers to PRISM. However, having the option for sessions to be virtual was deemed essential for easy access and implementation. Unfortunately, one factor that a virtual setting cannot combat is the staffing barrier. Because PRISM coaches do not need to possess professional licenses, a wide array of employees could serve as coaches. However, most of the staff of the physicians interviewed already have numerous professional commitments and do not have the capacity to take on new projects. Hiring new staff is possible but would be challenging because of limited local resources. Task shifting may be possible to maximize staffing effort to meet patient needs. Additionally, a system would need to be established for billing, compensation, and protected time. A cost-benefit analysis would be helpful in delineating the necessary financial resources needed to widely implement this program and perhaps define the opportunity costs that could be leveraged to mitigate program-related expenses. It may be more readily feasible to have an economically scaled model in which one dedicated center delivers the resilience coaching program across multiple sites rather than training specific members at individual sites to serve as resilience coaches. Additionally, another option would be to have PRISM delivered to this patient population outside the health care system entirely and possibly with a fee-for-service model. Community-based programs could facilitate dissemination of the intervention, whether that be a nonprofit foundation or the local educational system.

Our study has a few limitations. One limitation of our study is the sample size, which limits generalizability. More feedback is needed from physicians working in clinics that lack funding and resources, who are in more rural areas, or who are farther away from major academic centers. This study also did not assess efficacy of the intervention. Even though it may be feasible and acceptable, further research is needed to confirm efficacy of PRISM in the population of adolescents with CMP. The current study was completed concurrently with an ongoing pilot randomized controlled trial (ClinicalTrials.gov identifier: NCT05834725) assessing the efficacy of PRISM among youth with CMP that also includes qualitative feedback from participants and their caregivers.

In summary, pediatric rheumatologists find PRISM a feasible and acceptable psychosocial support program that fosters resilience among youth with CMP. Its remote delivery, content, and potential for a peer support component are favorable aspects. Recommended adaptations include the addition of a peer support group session and more refresher sessions. Formal examination of the efficacy of PRISM is needed to further inform implementation efforts and incorporation of resilience coaching into routine clinical care across multiple settings. Additionally, future implementation efforts should include an economic evaluation, including cost-benefit analyses.

AUTHOR CONTRIBUTIONS

All authors contributed to at least one of the following manuscript preparation roles: conceptualization AND/OR methodology, software, investigation, formal analysis, data curation, visualization, and validation AND drafting or reviewing/editing the final draft. As corresponding author, Dr Gmuca confirms that all authors have provided the final approval of the version to be published, and takes responsibility for the affirmations regarding article submission (eg, not under consideration by another journal), the integrity of the data presented, and the statements regarding compliance with institutional review board/Declaration of Helsinki requirements.

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