

BMJ Paediatrics Open

BMJ Paediatrics Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Paediatrics Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjpaedsopen.bmj.com>).

If you have any questions on BMJ Paediatrics Open's open peer review process please email info.bmjpo@bmj.com

BMJ Paediatrics Open

Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with multidisciplinary pediatric pain providers

Journal:	<i>BMJ Paediatrics Open</i>
Manuscript ID	bmjpo-2024-003020
Article Type:	Original research
Date Submitted by the Author:	03-Sep-2024
Complete List of Authors:	Schemer, Lea; Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau - Campus Landau, Department for Clinical Psychology and Psychotherapy Harrison, Lauren; Stanford Medicine Hess, Courtney; Stanford Medicine Neville, Alexandra; Stanford University School of Medicine Jehl, Nicole; Stanford University School of Medicine Ma, Ryan; Stanford University School of Medicine Glombiewski, Julia; Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau - Campus Landau Simons, Laura E.; Stanford University School of Medicine
Keywords:	Adolescent Health, Pain, Psychology

SCHOLARONE™
Manuscripts



I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our [licence](#).

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which [Creative Commons](#) licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with multidisciplinary pediatric pain providers

Lea Schemer¹, Lauren E. Harrison², Courtney W. Hess², Alexandra Neville², Nicole M. Jehl², Ryan S. Ma², Julia A. Glombiewski¹, Laura E. Simons²

¹Department of Clinical Psychology and Psychotherapy, Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Landau;

²Department of Anesthesiology, Perioperative, and Pain Medicine, Stanford University School of Medicine, Stanford, CA;

Orcid IDs:

- Lea Schemer: <https://orcid.org/0000-0001-7830-4889>
- Lauren E. Harrison: <https://orcid.org/0000-0002-2113-6471>
- Courtney W. Hess: <https://orcid.org/0000-0001-5207-7411>
- Alexandra Neville: <https://orcid.org/0000-0002-1947-2994>
- Nicole M. Jehl: <https://orcid.org/0009-0005-6164-1420>
- Ryan S. Ma: <https://orcid.org/0009-0004-5897-2790>
- Julia A. Glombiewski: <https://orcid.org/0000-0001-8037-398X>
- Laura E. Simons: <https://orcid.org/0000-0002-3395-9483>

Correspondence to: Lea Schemer, Ph.D., Department of Clinical Psychology and Psychotherapy, Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Ostbahnstr. 10, 76829 Landau, GERMANY, Tel: +49 6341 280-35645; Email: lea.schemer@rptu.de

- **Author contributions:** All authors were involved in the study planning and conceptualization. The data was collected by LS, NJ, and RM. LS was responsible for the data analysis and drafting of the manuscript. JAG and LES supervised the study process. All authors reviewed and edited the manuscript.
- **Competing interests:** The authors declare no potential conflicts of interest with respect to the authorship or the publication of this manuscript.
- **Funding:** This work was supported by a program to initiate an international collaboration of the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) awarded to LS and by K24AR078945 awarded to LES.
- **Ethical statement:** The Delphi process was carried out in accordance with ethical principles of the Declaration of Helsinki and the study was compliant with the Institutional Review Board of Stanford University.
- **Patient and public involvement:** For this Delphi process, we involved pediatric pain providers to develop an ideal referral plan from their perspective. However, patients and/or the public were not involved, which we consider to be a major limitation and an important agenda for future research.
- **Data availability:** All the statements developed in the three expert panels including information about consensus criteria for each discipline are available in the supplementary materials.

Abstract

Background: To minimize the referral gap to pain psychology, the purpose of this study was to describe clinician-perceived patient suitability for pain psychology referral, develop a referral plan, and outline essential elements of a referral conversation via a modified Delphi approach with multidisciplinary pediatric pain providers.

Methods: We employed a three-round modified Delphi approach consulting multidisciplinary pediatric pain providers (n = 18) including physicians (MD), psychologists (PhD), physical therapists, occupational therapists, and nurse practitioners (PT, OT, NP). Based on the responses to an online survey (**Round 1**), initial statements regarding the pain psychology referral process were developed. These statements were revised in three separate panels (MD panel, PhD panel, PT, OT, NP panel; **Round 2**). A priori consensus criteria were verified for each statement within and between groups using anonymous responses to a concluding online survey (**Round 3**).

Results: Approximately one-third of the statements (34.5%) reached consensus across all panels. For example, pediatric pain providers agreed that referrals should be communicated verbally, along with written materials, and that pain should be explained early from a biopsychosocial perspective. Pediatric pain providers also suggested minimizing barriers through a flexible, stepped-care approach that adapts the delivery of pain psychology beyond traditional models. However, most statements reached consensus in only one or two panels (51.7%), indicating a lack of consensus across disciplines. The data suggest that it was comparatively easier to reach overall consensus on statements formulating an ideal referral process to pain psychology (50.0%) than on statements characterizing patient suitability (12.5%).

Conclusions: Pediatric pain providers developed an actionable plan for pain psychology referrals. This plan could bridge referral gaps and improve access to pain psychology treatment. Given low provider consensus on patient suitability, further research is warranted to understand pain psychology referral decision making, including differing perceptions of patient suitability across disciplines.

Key words: Pediatric pain, referral to pain psychology, modified Delphi approach, expert consensus

Confidential: For Review Only

Introduction

Pain psychology is considered an integral part of multimodal treatment for youth living with pain and is known to significantly reduce pain-related impairment and distress.^{1,2} According to the pain prevention model, psychological factors should be targeted at all stages of primary, secondary, and tertiary pain prevention.³ Despite its clear benefits for pain prevention and management, pain psychology is underutilized, with few patients being referred. In primary care, health education or counseling is prescribed in only 20% of medical visits for patients with chronic musculoskeletal pain (< 25 years of age).⁴ Among youth with pain presenting to neurology, only one quarter (24.2%) of patients screened as medium or high risk on a pain risk screening tool are referred for additional pain management services.⁵ As a result, youth experience substantial delays in receiving evidence-based pain care, particularly pain psychology.⁶

These data from routine clinical care also mirror the experience in our recent randomized clinical trial comparing graded exposure treatment (GET Living) to pain management-focused cognitive-behavioral therapy (CBT).^{7,8} While GET Living aimed to improve functioning by exposing patients to avoided activities, CBT treatment focused on teaching patients pain coping skills. This trial offered gold standard biopsychosocial pain care with 6-weeks of pain psychology and physical therapy to families, regardless of treatment arm. Most patients (*n* = 270, 69.4%) were screened-out by clinicians prior to referral because of concerns about treatment fit. Overall, a referral gap appears to prevent youth living with pain from receiving pain psychology as an evidence-based treatment. In the context of a research study, problems in the referral process could also potentially contribute to a sample bias.

While research on the referral gap to pain psychology is scarce, one reason may be that referring providers are uncertain about when and how best to refer patients to pain psychology. In a large-scale survey of referring providers, pain specialists and adult patients in the United States,⁹ medical providers reported that their patients were reluctant to see a psychologist (37.4%). Interestingly in the same study, patients reported being unaware of pain psychology as a treatment option (37.3%) and believing that their pain was not psychological (16.5%), suggesting both a lack of awareness of its existence and a lack

of understanding of its purpose. Similarly, pediatricians struggle to discuss psychological factors contributing to pain, despite the belief that these factors are important.¹⁰

Aligned with a team science approach,¹¹ the present study aimed to better understand how multidisciplinary pediatric pain providers describe an ideal referral process to pain psychology. In doing so, we assumed that the referral process has a quantitative dimension/goal that more patients who are likely to potentially benefit are referred to pain psychology and a qualitative dimension/goal that patients are approached in a way that makes them more receptive. We aimed to elicit clinician perceptions on both goals by having pediatric pain providers: characterize patients they consider appropriate for pain psychology in general (Aim 1a) and graded exposure treatment more specifically (Aim 1b), develop a concrete action plan for an ideal referral process (Aim 2a), and identify essential elements of a referral conversation along with sample formulations (Aim 2b).

Methods

Study design

We employed a three-round modified Delphi approach¹² consulting multidisciplinary pediatric pain providers including physicians (MD), psychologists (PhD), physical therapists, occupational therapists, and nurse practitioners (PT, OT, NP) (see Figure 1). The Delphi approach is a structured method for achieving consensus among experts on a specific topic when knowledge is incomplete or uncertain, based on the assumption that group judgments are more valid than those of individuals.¹² The details of the Delphi procedure were preregistered in the Open Science Framework (<https://osf.io/4sdfv>). The procedure was carried out in accordance with ethical principles of the Declaration of Helsinki and the study was compliant with the Institutional Review Board of Stanford University. Based on the responses to an online survey (**Round 1**), initial statements were developed including the formulation of an example referral conversation. Both were revised in three separate REFER panels (MD panel, PhD panel, PT, OT, NP panel; **Round 2**). A priori consensus criteria were verified within and between groups using anonymous responses to a concluding online survey (**Round 3**).

Setting

The Pediatric Pain Management Clinic (PPMC) at Stanford Medicine Children's Health is a tertiary pain clinic that houses multiple disciplines, including physicians (MD), nurse practitioners (NP), pain psychologists (PhD), physical therapists (PT), and occupational therapists (OT), that offer treatment to children and adolescents who experience chronic pain (i.e., persist or recurrent for > 3 months). Patients are referred to the PPMC by other treatment providers such as pediatricians, rheumatologists, neurologists, and orthopedists. Initial evaluations are conducted collaboratively by the multidisciplinary team. Following initial evaluation, an individualized biopsychosocial treatment plan is rendered. Treatment occurs at the outpatient or intensive outpatient level and typically consists of pain psychology, physical therapy, and medical intervention and medication management. Pain psychology consists of cognitive-behavioral interventions focused on (1) pain management and (2) graded exposure to avoided experiences, with a specific focus on functional goals to increase movement, self-regulation, and cognitive interventions focused on identifying and addressing negative thoughts and feelings that arise in the context of ongoing pain and related impairment. Group interventions are also offered to patients in the PPMC.

Pediatric pain providers

Based on decades of experience treating youth with chronic pain at the PPMC, with pain psychology as a cornerstone, we considered the pediatric pain providers at this site to be experts who could share their knowledge about an ideal referral process to pain psychology. We invited all pediatric pain providers in the PPMC ($N = 20$) with the aim to recruit at least half. This proposed sample size is consistent with the panel size in other Delphi studies^{13,14} and qualitative studies.¹⁵ Given the narrowly defined objective and the multi-stage Delphi process that allowed for revision and refinement, we were confident that the data would be adequately captured. With 12 participating experts in **Round 1**, 11 participating experts in **Round 2**, and 18 participating experts in **Round 3**, we met our recruitment goal. More details about the pediatric pain providers can be found in **Table 1**.

Table 1*Pediatric pain provider expert characteristics*

	n	%
Profession	18	100
Medicine	9	50
Psychology	5	28
Nursing	1	6
Physical Therapy	2	11
Occupational Therapy	1	6
License		
Licensed Professional	18	100
Area(s) of Training ^a		
Pediatrics	8	47
Anesthesiology	8	47
Integrative Medicine	4	22
Pediatric Pain Psychology	2	11
Pain Medicine	1	6
Physical Medicine & Rehabilitation	1	6
Orthopedics	1	6
Sports Medicine	1	6
Palliative Care	1	6
Number of years treating pediatric patients with pain		
0-5 years	5	28
6-10 years	5	28
11-15 years	3	17
>15 years	5	28

Number of pediatric patients with pain treated per year		
0-50	3	17
50-100	6	33
100-150	2	11
150-200	2	11
200-250	1	6
>250	4	22
Hours per week treating pediatric patients with pain		
0-10	1	6
11-20	3	17
21-30	6	33
31-40	4	22
>40	4	22

Note. ^a Pediatric pain providers could choose several areas of expertise

Round 1: Online survey

One week before the REFER panels were scheduled, pediatric pain providers received an online survey with 16 open-ended questions (see Supplementary Material S1) that guided them to reflect conceptually on pain psychology (e.g., *'How do you conceptualize pain psychology?'*, *'How do you conceptualize graded exposure treatment?'*), patient suitability for pain psychology (e.g., *'Which patients do you consider suitable for pain psychology?'*) and graded exposure treatment (e.g., *'Which patients do you consider suitable for GET Living as a specialized pain psychology treatment?'*), and the referral process (e.g., *'What is the best timing for referral?'* *'What are barriers for referral?'*). Pediatric pain providers were also asked to paraphrase how they typically present pain psychology to families (e.g., *'Briefly paraphrase how you would present pain psychology to families'*). Their responses were synthesized into initial summary statements describing a concrete action plan including provider's responses characterizing patient suitability and describing an ideal referral process to pain psychology. Based on this synthesis, essential elements of a referral conversation were identified (e.g., showing interest and expressing empathy for the unique pain experience). The initial statements and the referral conversation elements served as a starting point for the later expert panels. Twelve pediatric pain providers participated in **Round 1** ($n = 5$ MD, $n = 5$ PhD, $n = 1$ PT, and $n = 1$ OT).

Round 2: Expert panel

Pediatric pain providers were invited to join a subsequent REFER panel moderated by the first author (LS) who did not have any relation to the clinic or the staff prior to the panel. Researchers on the study team who had dual clinical and research roles within the PPMC were not involved in the REFER panels (LES, LEH). The panel discussion lasted approximately 1 hour. The REFER panels were held separately for pediatric pain providers with different professional backgrounds to elicit nuances of perspectives within each discipline. This approach also enabled us to explore possible divergences in the opinions of the disciplines. Due to fewer participants in these roles, the allied health professionals (PT, NP, OT) were combined into one group. At the beginning, the initial statements based on the first online survey were presented via print outs so that panelists could take notes or highlight important statements. The panelists were then guided to elaborate and discuss each statement. In the first part of

the panel discussion, panelists were instructed to formulate specific statements that characterize patient suitability for pain psychology. In the second part of the panel discussion, panelists were instructed to formulate an action plan to improve referrals to pain psychology. To further refine the discussion, patient vignettes were presented that varied in their degree of diagnostic uncertainty,¹⁶ medical mistrust,¹⁷ pain-related fear avoidance,¹⁸ and complexity of mental health condition,¹⁹ theorizing that these factors could potentially influence the referral decision made by each provider. The vignettes were thus intended to help panelists reflect more concretely on critical cases throughout their discussion. To produce the vignettes in the current study, a vignette used in previous research¹⁰ was adapted to the current context and manipulated to create four vignettes that differed to emphasize the four predetermined factors. The adaptation was done according to existing guidelines (see Supplementary Material S2).²⁰ During the expert panels, developed statements were written down by one investigator (NJ) who read the statements aloud to the panelists to confirm that they were consistent with the stated opinion. In this process, no absolute consensus was sought. Another investigator (RM) summarized the discussion that unfolded during the generation of statements to cross-check the accuracy of the statements. Lastly, panelists were asked for their feedback on the referral conversation elements. For example, the experts could add further elements to the referral conversation or refine the sample formulations. Eleven pediatric pain providers participated in **Round 2** (MD panel: $n = 4$; PhD panel: $n = 5$; PT, OT, NP panel: $n = 2$ with OT and PT represented).

Round 3: Consensus rating

In a concluding online survey approximately 1 month later, pediatric pain providers were asked to indicate their level of agreement to statements that were developed in the different panels on a 5-point Likert scale (1 - *strongly disagree* to 5 - *strongly agree*). They could suggest minor adjustments to the statements (e.g., regarding wording) as long as they did not change their meaning. In regard to the developed referral conversation elements, pediatric pain providers were asked to rate the importance of each element of the referral conversation a 5-point Likert scale (1 – *not at all important* to 5 – *very important*). This allowed us to extract the elements that were considered most important. In accordance with previous research,²¹ consensus criteria formulated a priori expressed by a combination of median

and percentage scores. Median scores ≥ 4 with a small interquartile range ($IQR \leq 1$) as an indicator of statistical dispersion combined with 75% responses ≥ 4 were considered an indicator for consensus.^{22,23} Data were analyzed separately for MD and PhD. Data of the PT, NP, and OT were combined into a third group. This allowed for investigation of the consensus within each discipline and also explore possible discrepancies between groups of providers. Statements that did not meet the two consensus criteria in all groups were dismissed. Eighteen pediatric pain providers participated in **Round 3** ($n = 9$ MD, $n = 5$ PhD, $n = 2$ PT, $n = 1$ OT, $n = 1$ NP).

Results

Description of the Delphi process (Rounds 1-2)

Based on the responses to the first online survey (**Round 1**), we extracted 41 statements to characterize patients who were perceived as suitable to benefit from pain psychology in general (e.g., 'Patient who suffers from distress') or graded exposure treatment more specifically (e.g., 'Patient who suffers from fear of pain'). An additional 25 statements were extracted to describe an ideal referral process (e.g., 'Patients should be referred to pain psychology at the time of the chronic pain diagnosis'). To reflect the entire range of opinions expressed, different gradations were formulated (e.g., 'Patients are suitable with mild vs. moderate vs. severe functional impairments'). Other statements contradicted one another (e.g., 'A patients should be referred to pain psychology parallel to other medical approaches' versus 'A patient should be referred to pain psychology when other medical approaches were unsuccessful'). Thereby, some statements were deliberately presented in a pointed manner, to stimulate discussion in the expert panels.

A total of 58 statements were developed in the subsequent expert panels (**Round 2**). Fifteen statements characterized patient suitability for pain psychology in general and nine statements described patient suitability to graded exposure treatment more specifically. Twenty-two statements formulated an ideal referral process to pain psychology. Twelve potential elements of a referral conversation were identified and example phrases were formulated.

Results of the consensus rating (Round 3)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Approximately one third of the statements (20/58; 34.5%) reached consensus in all groups (see Table 2) with most statements achieving consensus in only one (17/58; 29.3%) or two (13/58; 22.4%) groups. Eight statements (8/58; 13.8%) did not find consensus in any groups. The MD group agreed upon most statements (41/58; 70.7%), followed by the PT, NP, and OT group (34/58; 58.6%). The PhD group agreed with the fewest statements (28/58; 48.3%). Despite challenges in reaching consensus on statements about patient suitability (3/24; 12.5%), there did appear to be more agreement on the statements that formulated an ideal referral process (17/34; 50.0%). None of the statements describing patient suitability for graded exposure treatment were agreed upon in all groups. The entire list of statements together with indicators for both consensus criteria by each group can be found in the Supplementary Material (S3). Some examples of how the essential elements of a referral conversation (see Aim 2a with results presented in Table 2) might be implemented are shown in Figure 1. These sentences were extracted from the responses to the initial online survey and refined in the subsequent Delphi rounds. Because the experts agreed that the referring provider should respond to the patient's individual situation, this is an example of how a referral conversation might proceed, not a script.

[Figure 1 around here]

Table 2*Statements that reached consensus in all groups*

	Physicians			Psychologists			Physical practitioner, therapist, and nurse occupational therapist		
	Endorsement (%)	Median	IQR	Endorsement (%)	Median	IQR	Endorsement (%)	Median	IQR
Task 1a: Suitability to pain psychology in general									
<i>Motivation</i>									
Patients/families who are open to participate in pain psychology.	88.89%	4.00	1.00	100.00%	5.00	1.00	100.00%	4.50	1.00
Patient/families who are ready to take an active role in their recovery.	100.00%	5.00	1.00	100.00%	4.00	0.50	100.00%	4.00	0.75
Although clear expectations and low resistance are desirable, patients with unclear expectations and some resistance could still benefit from pain psychology.	88.89%	4.00	1.00	80.00%	4.00	1.00	75.00%	4.00	0.75
Task 2a: Ideal referral process									
<i>Referral situation</i>									
The referral should be explained verbally.	88.89%	4.00	1.00	100.00%	4.00	1.00	75.00%	4.00	0.75
When making the referral, referring providers should respond to the patient's individual situation, for example by taking the time to listen to the patient empathetically and encouraging them to take the next step.	100.00%	5.00	1.00	100.00%	5.00	0.00	75.00%	4.00	0.75

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

The referral should support a biopsychosocial understanding of pain.	100.00%	5.00	1.00	80.00%	5.00	2.00	100.00%	4.00	0.00
Additional materials (e.g., information materials, brochures, or patient testimonials) should be provided.	88.89%	4.00	1.00	100.00%	4.00	1.00	75.00%	4.00	0.75
An overview about different treatment options and providers should be provided.	88.89%	4.00	1.00	100.00%	4.00	0.50	75.00%	4.00	0.75
<i>Referral strategy</i>									
Patients are ideally referred according to a stepped care approach, in which the type and intensity of pain psychology treatment is matched to the patient's individual needs with the possibility to step up or down to different levels as they move along their recovery journey.	88.89%	5.00	1.00	100.00%	5.00	0.50	100.00%	4.00	0.75
Family members (e.g., parents, caregivers, siblings) should be involved during treatment.	100.00%	5.00	1.00	100.00%	5.00	1.00	100.00%	4.50	1.00
<i>Overcoming barriers</i>									
Free links to web resources should be provided for pain education.	100.00%	5.00	1.00	100.00%	5.00	0.50	100.00%	4.50	1.00
To overcome distance barriers, telehealth options could be considered.	100.00%	5.00	0.50	100.00%	5.00	0.00	100.00%	5.00	0.75
To address the shortage of treatment providers, the involvement and training of other disciplines to provide Level 1 pain psychology should be considered.	100.00%	5.00	1.00	80.00%	5.00	2.00	100.00%	5.00	0.75

Task 2b: Essential elements of a referral conversation

Part 1 - Opening

Be interested and express empathy toward the unique pain experience	100.00%	5.00	1.00	100.00%	5.00	0.50	100.00%	5.00	0.75
---	---------	------	------	---------	------	------	---------	------	------

Assess the patient's individual explanatory model for their symptoms	100.00%	4.00	1.00	100.00%	4.00	1.00	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Part 2 - Explaining pain

Describe pain from a biopsychosocial perspective	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Recommend multidisciplinary treatment approach	100.00%	5.00	0.50	100.00%	5.00	1.00	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Part 3 - Recommending pain psychology

Set realistic expectations	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	5.00	0.75
----------------------------	---------	------	------	---------	------	------	---------	------	------

Part 4 - Closing

Leave room for questions	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	5.00	0.75
--------------------------	---------	------	------	---------	------	------	---------	------	------

Leave the door open	100.00%	4.00	1.00	100.00%	4.00	1.00	100.00%	4.50	1.00
---------------------	---------	------	------	---------	------	------	---------	------	------

Note: Experts rated each statement on a 5-point Likert scale. Endorsement: Selection of response options 4 - *agree* or 5 - *strongly agree*. IQR: Interquartile range as an indicator of statistical dispersion. Two criteria for consensus were formulated: Consensus criteria 1: $\geq 75\%$ endorsement. Consensus criteria 2: Median ≥ 4 and interquartile range (IQR) ≤ 1 . Consensus was assumed when statements passed both consensus criteria. Statements are displayed that passed both consensus criteria in all expert groups (see S3 for more details).

Discussion

The present study aimed to better understand how multidisciplinary pediatric pain providers describe an ideal referral process to pain psychology. In a three-round Delphi process, pediatric pain providers were guided to characterize patients they consider suitable for pain psychology in general (Aim 1a) and graded exposure treatment more specifically (Aim 1b), to develop an ideal referral process (Aim 2a), and to identify essential elements of a referral conversation (Aim 2b). Ultimately, pediatric pain providers developed an actionable plan (see **Table 2**) together with the essential elements and concrete sample formulations of a referral conversation (see **Figure 1**) with the hope of decreasing the referral gap to pain psychology. The current Delphi study also enabled the generation of hypotheses about factors that may contribute to the referral gap, including diverging perceptions about which patients are considered suitable for pain psychology across disciplines.

Closing the referral gap to pain psychology

Drawing from the expertise of a multidisciplinary team of pediatric pain providers, the main contribution of this paper is to describe a practical referral action plan to pain psychology treatments. Pediatric pain providers agreed that the referral should be made verbally, as well as provided via written materials (e.g. information materials, brochures, or patient testimonials). They also agreed that the referring provider should understand the referral as an opportunity to explain a biopsychosocial conceptualization of pain. When describing specific phrases that could be used in a typical referral conversation, the pediatric pain providers responses were largely congruent with previously developed formulations for credible explanations for chronic non-traumatic knee pain²⁴ and the role of emotions in physical symptoms.²⁵ For example, experts have previously emphasized the importance of addressing the patient's individual needs, approaching them with empathy, and acknowledging their pain experience.^{24,25} In addition, other experts have similarly encouraged the use of open-ended questions to learn more about how the patient understands their symptoms and to allow the referring provider to meet the patient where they stand.²⁵

During the expert panels, there were repeated discussions about resource problems, including provider shortages as well as distance and financial barriers. To overcome these barriers, providers in

the REFER panel described referral to a treatment plan using a stepped care approach,²⁶ challenging traditional treatment models where the delivery of pain psychology can instead take many forms with different components and delivery modes. The stepped care approach consists of different levels or steps of an intervention ranging, e.g., from self-help resources (level 1), to single session or group interventions (level 2), to one-one-one sessions in an outpatient or inpatient setting. Tailored to symptom severity and patient needs, individuals can transition between levels as they progress in their recovery, with priority given to less resource-intensive interventions.¹⁹ The utility and implementation of a stepped care approach has also built momentum among pain researchers.^{19,27} For example, there are concrete suggestions on how different pain rehabilitation interventions could be tailored to patients' individual needs based on a risk assessment tool.¹⁹ There has been continued effort to develop and evaluate more condensed formats to deliver pain psychology, e.g., in form of one-day workshops²⁸ or single session interventions.²⁹ The COVID-19 pandemic has also led to a proliferation of asynchronous and virtual options, for which there exists empirical evidence, particularly at lower levels of stepped care with minimal health professional involvement.²⁷

Altogether, pediatric pain providers have developed creative solutions to scale up pain psychology treatments and encourage referring providers to recommend pain psychology as a fundamental element in a pain management plan despite potential resource limitations. This plan may be implemented by upstream referring providers such as pediatricians, rheumatologists, orthopedists, beyond just pain specialists. It should be noted, however, that this plan is based on clinician expert opinion only. The extent to which this plan can actually contribute to reducing the referral gap needs to be empirically verified by future research. Future research could also investigate the extent to which the plan can be adapted to adult populations, where the dissemination of pain psychology is similarly difficult.³⁰

Exploring reasons for the referral gap

Throughout the Delphi process, possible reasons for the referral gap to pain psychology treatments became evident. It seemed comparatively more difficult for pediatric pain providers to decide on specific characteristics that indicate suitability for pain psychology treatments. This is largely

consistent with the contradictory findings on treatment moderators for pain psychology treatments in adults.³¹ Empirical studies of treatment moderators in pediatric populations are scarce,³² and the few studies that exist, for example in the context of an intensive pain rehabilitation program with psychological elements, have had difficulty identifying consistent predictors of treatment response.³³ Although it has not yet been possible to empirically determine which patients benefit most from pain psychology treatments, it is important to emphasize that, on average, patients can expect small to moderate improvements in their symptoms.¹

Pediatric pain providers agreed that engagement in pain psychology requires openness on the part of the patient and family and readiness to take an active role in their recovery. This recommendation is consistent with a recently published pain management standard, which recommends a multimodal treatment approach including psychosocial elements.³⁴ To choose the most appropriate psychosocial strategies and maximize the potential benefits, shared decision-making is essential, taking into account the needs, abilities, and preferences of patients and their families.^{34,35} Similarly, previous research found readiness for change to be the most robust and modifiable baseline predictor of the response to an intensive pain rehabilitation program.³³ It should be noted critically, however, that while standardized tools exist to measure readiness for change such as the Pain Stages of Change Questionnaire (PSOCQ),³⁶ these measures are typically not included in general risk assessments that usually include physical and psychosocial risk factors.³⁷ There is therefore a risk that the evaluation of motivation depends heavily on the perspective of the referring provider. At the same time, pediatric pain providers weakened both points regarding openness and readiness by agreeing that patients with unclear expectations and some resistance could still benefit from pain psychology. Indeed, structured interventions have been developed that aim to promote patient readiness and engagement prior to participation in an intensive pain rehabilitation program with the idea to maximize the success of such programs.³⁸ Many patients and families are also unaware of how pain psychology could help them with their symptoms and an important task of the referring provider is to collaboratively build this understanding.⁹

Although other psychological or physical indicators of suitability for referral to pain psychology reached consensus within disciplines, none of these indicators was endorsed by all disciplines. It appears

that while pediatric pain providers agreed on *how* patients should ideally be referred to pain psychology, they disagreed on *who* should be referred, possibly reflecting different models around case conceptualization and treatment planning. As in previous research,³⁹ concerns and uncertainty were particularly evident with exposure-based pain psychology reflected by the fact that none of the developed statements formulating criteria for patient suitability for graded exposure treatment reached consensus in all expert groups. The disagreement and uncertainty might exacerbate the referral gap. For example, referrals may depend more on the provider's beliefs and perceptions than the patient presentation or symptoms, making referral decision-making more susceptible to bias. Contradictory messages or uncertainty on the part of treatment provider(s) could also lead to patient mistrust, inequitable pain care, and possibly impact treatment engagement.

Limitations

During this Delphi process, we consulted highly experienced and well-trained pain specialists at a reputable US pain clinic. The opinions expressed therefore represent the perceptions of a single multidisciplinary team, and it is unclear to what extent they generalize to treatment providers working in other settings and healthcare systems. For example, although resource deficits in the delivery of pain psychology were repeatedly discussed in the REFER panels, resource deficits are undoubtedly more profound in other communities and countries. In addition, the composition of the various disciplines among the REFER experts was unbalanced and could be different in other settings. In many other settings, treatment providers may also not have specialized training in pain management or may rarely collaborate with colleagues from other disciplines, which could lead to even greater discrepancies and uncertainties in their perceptions. For example, previous research identified that pediatricians often feel isolated in their decision making without the support that is characteristic of a multidisciplinary team.⁴⁰ Future research should therefore build on existing work^{9,10} and continue to examine the attitudes and practices of upstream referring providers, such as pediatricians, rheumatologists, and orthopedists who often have even less contact with pain psychology. While this study focused on the provider lens on the referral process, it is imperative that future research seeks to understand additional perspectives, such as

the patient and caregiver lens. For example, their input would be extremely valuable in further understanding how referral conversations are perceived at the recipient end.

Conclusions

Pediatric pain providers developed a concrete action plan to improve referrals to pain psychology (see **Table 2**) together with the essential elements and concrete sample phrases of a referral conversation (see **Figure 1**). Dissemination of this plan to referring providers may help close the referral gap for pain psychology treatments. Future research should continue to understand the reasons for the referral gap, including possible influences of differing perceptions of which patients are considered suitable for pain psychology across disciplines.

Acknowledgements

We would like to thank Rashmi Bhandari, Laurel Brabson, Rachel Christensen, Andrew Dinh, Genevieve D'Souza, Julie Good, Ana Goya Arce, Albert H. Kwon, Sabrina Majmundar, Jennifer A. Rabbitts, Jenny Wagner, and all the other pediatric pain providers that participated in the REFER panels.

Tables

- **Table 1.** Pediatric pain provider expert characteristics.
- **Table 2.** Statements that reached consensus in all groups.

Figure

- **Figure 1.** Sample referral conversation elements developed during the Delphi process. Experts agreed that the referring providers need to respond to the patient's individual situation (e.g., depending on how the patient answers the opening questions), thus this is an example of how a referral conversation might proceed, not a script.

References

1. Fisher E, Law E, Dudeney J, Palermo TM, Stewart G, Eccleston C. Psychological therapies for the management of chronic and recurrent pain in children and adolescents. *Cochrane Database Syst Rev*. 2018;(9):Art. No.: CD003968. doi:10.1002/14651858.CD003968.pub5
2. Eccleston C, Fisher E, Howard RF, et al. Delivering transformative action in paediatric pain: A Lancet Child & Adolescent Health Commission. *Lancet Child Adolesc Heal*. 2021;5(1):47-87. doi:10.1016/S2352-4642(20)30277-7
3. Fisher E, Eccleston C. Psychological aspects of pain prevention. *PAIN Reports*. 2021;6(1):e926. doi:10.1097/PR9.0000000000000926
4. Feldman DE, Nahin RL. National estimates of chronic musculoskeletal pain and its treatment in children, adolescents, and young adults in the United States: Data from the 2007-2015 national ambulatory medical care survey. *J Pediatr*. 2021;233:212-219.e1. doi:10.1016/j.jpeds.2021.01.055
5. Salamon KS, Carlson M, Hildenbrand AK. Who gets referred? A pilot study of risk stratification and treatment referral in pediatric headache using the pediatric pain screening tool. *J Pediatr Psychol*. 2022;47(4):403-411. doi:10.1093/jpepsy/jsab117
6. Cucchiaro G, Schwartz J, Hutchason A, Ornelas B. Chronic pain in children: A look at the referral process to a pediatric pain clinic. *Int J Pediatr*. 2017;2017:1-7. doi:10.1155/2017/8769402
7. Simons L, Harrison L, Boothroyd D, et al. A randomized controlled trial of graded exposure treatment (GET living) for adolescents with chronic pain. *Pain*. 2024;165(1):177-191. doi:10.1097/j.pain.0000000000003010
8. Simons LE, Vlaeyen JWS, Declercq L, et al. Avoid or engage? Outcomes of graded exposure in youth with chronic pain using a sequential replicated single-case randomized design. *Pain*. 2020;161(3):520-531. doi:10.1097/j.pain.0000000000001735
9. Darnall BD, Scheman J, Davin S, et al. Pain psychology: A global needs assessment and national call to action. *Pain Med*. 2016;17(2):250-263. doi:10.1093/pm/pnv095
10. Locher C, Wörner A, Carlander M, Kossowsky J, Dratva J, Koechlin H. Chronic pain concepts of pediatricians: A qualitative survey. *Pain Reports*. 2023;8(1):E1060. doi:10.1097/PR9.0000000000001060
11. Hess CW, Rosen MA, Simons LE. Looking inward to improve pediatric chronic pain outcomes: a call for team science research. *Pain*. 2023;164(4):690-697.

- doi:10.1097/j.pain.0000000000002836
12. Niederberger M, Spranger J. Delphi technique in health sciences: A map. *Front Public Heal*. 2020;8(September):1-10. doi:10.3389/fpubh.2020.00457
 13. Taylor E. We agree, don't we? The delphi method for health environments research. *Heal Environ Res Des J*. 2020;13(1):11-23. doi:10.1177/1937586719887709
 14. Leake HB, Heathcote LC, Simons LE, et al. Talking to teens about pain: A modified delphi study of adolescent pain science education. *Can J Pain*. 2019;3(1):200-208. doi:10.1080/24740527.2019.1682934
 15. Hennink M, Kaiser BN. Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523. doi:10.1016/j.socscimed.2021.114523
 16. Pincus T, Noel M, Jordan A, Serbic D. Perceived diagnostic uncertainty in pediatric chronic pain. *Pain*. 2018;159(7):1198-1201. doi:10.1097/j.pain.0000000000001180
 17. Williamson LD, Bigman CA. A systematic review of medical mistrust measures. *Patient Educ Couns*. 2018;101(10):1786-1794. doi:10.1016/j.pec.2018.05.007
 18. Simons LE, Kaczynski KJ. The fear avoidance model of chronic pain: Examination for pediatric application. *J Pain*. 2012;13(9):827-835. doi:10.1016/j.jpain.2012.05.002
 19. Harrison LE, Pate JW, Richardson PA, Ickmans K, Wicksell RK, Simons LE. Best-evidence for the rehabilitation of chronic pain part 1: Pediatric pain. *J Clin Med*. 2019;8(9):1-19. doi:10.3390/jcm8091267
 20. Evans SC, Roberts MC, Keeley JW, et al. Vignette methodologies for studying clinicians' decision-making: Validity, utility, and application in ICD-11 field studies. *Int J Clin Heal Psychol*. 2015;15(2):160-170. doi:10.1016/j.ijchp.2014.12.001
 21. Boulkedid R, Abdoul H, Loustau M, Sibony O, Alberti C. Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS One*. 2011;6(6). doi:10.1371/journal.pone.0020476
 22. Courtenay M, Deslandes R, Harries-Huntley G, Hodson K, Morris G. Classic e-Delphi survey to provide national consensus and establish priorities with regards to the factors that promote the implementation and continued development of non-medical prescribing within health services in Wales. *BMJ Open*. 2018;8(9):1-9. doi:10.1136/BMJOPEN-2018-024161
 23. Keeney S, Hasson F, McKenna H. Consulting the oracle: Ten lessons from using the Delphi technique in nursing research. *J Adv Nurs*. 2006;53(2):205-212. doi:10.1111/j.1365-

2648.2006.03716.x

24. Djurtoft C, Bruun M, Riel H, Hoegh M, Darlow B, Rathleff M. How do we explain painful chronic non-traumatic knee conditions to children and adolescents? A multiple-method study to develop credible explanations. *medRxiv*. 2022;(January 2023):2022.12.15.22283510. doi:10.1101/2022.12.15.22283510
25. Boerner KE, Dhariwal AK, Chapman A, Oberlander TF. When feelings hurt: Learning how to talk with families about the role of emotions in physical symptoms. *Paediatr Child Health*. 2023;28(1):3-7. doi:10.1093/pch/pxac052
26. Bower P, Gilbody S. Stepped care in psychological therapies: Access, effectiveness and efficiency. *Br J Psychiatry*. 2005;186(JAN.):11-17. doi:10.1192/bjp.186.1.11
27. Birnie KA, Pavlova M, Neville A, et al. Rapid evidence and gap map of virtual care solutions across a stepped care continuum for youth with chronic pain and their families in response to the COVID-19 pandemic. *Pain*. 2021;162(11):2658-2668. doi:10.1097/j.pain.0000000000002339
28. Coakley R, Wihak T, Kossowsky J, Iversen C, Donado C. The comfort ability pain management workshop: A preliminary, nonrandomized investigation of a brief, cognitive, biobehavioral, and parent training intervention for pediatric chronic pain. *J Pediatr Psychol*. 2018;43(3):252-265. doi:10.1093/jpepsy/jsx112
29. Darnall BD, Roy A, Chen AL, et al. Comparison of a single-session pain management skills intervention with a single-session health education intervention and 8 sessions of cognitive behavioral therapy in adults with chronic low back pain: a randomized clinical trial. *JAMA Netw Open*. 2021;4(8):1-16. doi:10.1001/jamanetworkopen.2021.13401
30. Darnall BD. Psychological treatment for chronic pain: Improving access and integration. *Psychol Sci Public Interes*. 2021;22(2):45-51. doi:10.1177/15291006211033612
31. Murillo C, Vo TT, Vansteelandt S, et al. How do psychologically based interventions for chronic musculoskeletal pain work? A systematic review and meta-analysis of specific moderators and mediators of treatment. *Clin Psychol Rev*. 2022;94. doi:10.1016/j.cpr.2022.102160
32. Murray CB, de la Vega R, Loren DM, Palermo TM. Moderators of internet-delivered cognitive-behavioral therapy for adolescents with chronic pain: Who benefits from treatment at long-term follow-up? *J Pain*. 2020;21(5-6):603-615. doi:10.1016/j.jpain.2019.10.001
33. Simons LE, Sieberg CB, Conroy C, et al. Children with chronic pain: Response trajectories following intensive pain rehabilitation treatment. *J Pain*. 2018;19(2):207-2018.

doi:10.1016/j.jpain.2017.10.005

34. Working group of the Health Standards Organization. Pediatric Pain Management. *Natl Stand Canada*. 2023;CAN/HSO13200:2023(E). www.healthstandards.org.

35. MacKenzie NE, Tutelman PR, Chambers CT, et al. Can sharing improve caring? A call to prioritize shared decision making in pediatric pain management. *Clin Pract Pediatr Psychol*. 2023;11(3):253–261. doi:10.1037/cpp0000488

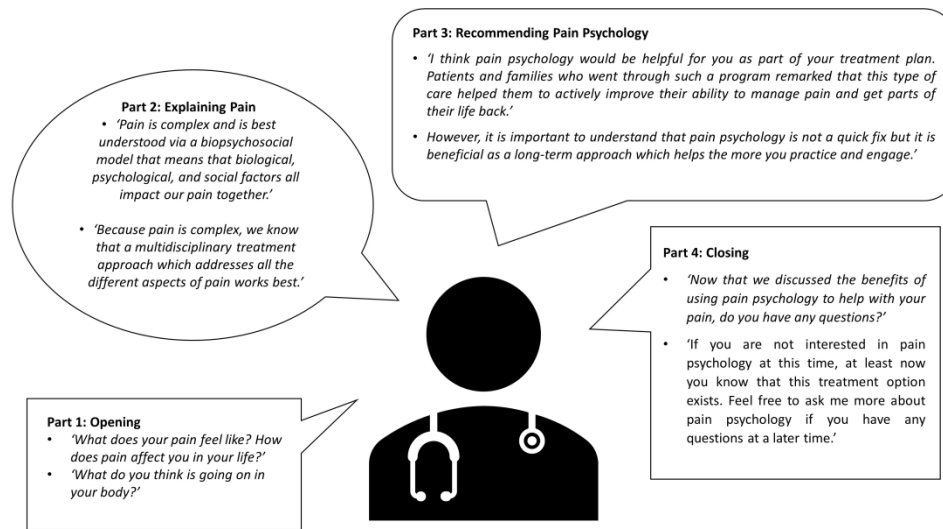
36. Guite JW, Logan DE, Simons LE, Blood EA, Kerns RD. Readiness to change in pediatric chronic pain: Initial validation of adolescent and parent versions of the Pain Stages of Change Questionnaire. *Pain*. 2011;152(10):2301-2311. doi:10.1016/j.pain.2011.06.019

37. Simons LE, Smith A, Ibagon, C. Pediatric Pain Screening Tool: rapid identification of risk in youth with pain complaints. *Pain*. 2015;156:1511–1518. doi:10.1097/j.pain.0000000000000199

38. 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(3):125-135. doi:10.1002/pne2.12063

39. Pittig A, Kotter R, Hoyer J. The struggle of behavioral therapists with exposure: Self-reported practicability, negative beliefs, and therapist distress about exposure-based interventions. *Behav Ther*. 2019;50(2):353-366. doi:10.1016/j.beth.2018.07.003

40. Neville A, Noel M, Clinch J, Pincus T, Jordan A. ‘Drawing a line in the sand’: Physician diagnostic uncertainty in paediatric chronic pain. *Eur J Pain*. 2021;25(2):430-441. doi:10.1002/ejp.1682



Sample referral conversation elements developed during the Delphi process. Experts agreed that the referring providers need to respond to the patient's individual situation (e.g., depending on how the patient answers the opening questions), thus this is an example of how a referral conversation might proceed, not a script.

338x190mm (300 x 300 DPI)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

SUPPLEMENTARY MATERIALS

- Supplementary 1 (S1).** Online survey about referral process (Delphi Round 1)
- Supplementary 2 (S2).** Patient vignettes (Delphi round 2)
- Supplementary 3 (S3).** Results of the consensus ratings (Delphi round 3)

Schemer, L, Harrison, LE, Hess, CW, Neville, A, Jehl, NM, Ma, RS, Glombiewski, JA, Simons, LE (2024).
Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with
multidisciplinary pediatric pain providers.

Supplementary 1 (S1). Online survey about referral process (Delphi Round 1)

Treatment	Open ended questions
Pain psychology	<ol style="list-style-type: none"> 1. How do you conceptualize pain psychology? 2. Which patients do you consider suitable for pain psychology? Specify the factors that influence your decision. 3. Which patients do you consider <i>not</i> suitable for pain psychology? Specify the factors that influence your decision. 4. What factors make this decision difficult? 5. Briefly paraphrase how you would present pain psychology treatment to families. 6. How do patients usually respond when they are referred? 7. What is the best timing for referral? 8. What are barriers for referral? 9. Anything else you want to add related to your experiences with the referral process?
Graded exposure treatment (GET Living)	<ol style="list-style-type: none"> 10. What is your conceptualization of graded exposure treatment? 11. Which patients do you consider suitable for GET Living? Specify the factors that influence your decision. 12. Which patients do you consider not suitable for GET Living? Specify the factors that influence your decision. 13. What factors make this decision difficult? 14. Briefly paraphrase how you would present GET Living to families. 15. In case you already referred to GET Living: How do patients usually respond when they are referred? 16. In case you never referred to GET Living: How do you expect patients to respond when they were referred?

Supplementary 2 (S2). Patient vignettes (Delphi round 2)

Background story¹

Present complaint: A 14-year-patient comes to the Pediatric Pain Management Clinic. The patient reports musculoskeletal pain in the lower and upper extremities. These occur symmetrically with movement, are distributed throughout the day with a duration of a few seconds to a few hours and improve with rest. Specific triggers of the complaints cannot be elicited. There is no morning stiffness and no nocturnal pain. Complaints had been present for 3 mo. The pain had resulted in 4 school absences of 1 and 2 d each in the previous 6 wk.

Treatment history: Approximately 7 mo ago, general health had sustained a left upper ankle distortion trauma at a school function. At that time, there was a local hematoma; a lesion of the ligamentous apparatus or a fracture had been ruled out.

Clinical findings: Good general health and nutritional status. Physical exam is unremarkable. All joints are freely mobile without redness, swelling, or hyperthermia.

Manipulated characteristics

Diagnostic uncertainty: The patient had been referred to an orthopedic surgeon and a pediatric rheumatologist, neither of whom found evidence of a cause from their specialty. However, the patient is still unsure whether there was not a medical reason for their symptoms.

Medical mistrust: The patient expresses that they have felt dismissed by previous providers and that their pain was not taken seriously. When asked about their goals, they report that they are not sure how the pain clinic can help.

Fear avoidance: Psychological screening tools indicate elevated fear avoidance and pain catastrophizing. At the clinical appointment, the patient expresses the concern about overstraining their body after the school accident.

Complex mental health condition: Psychological screening tools indicate clinically elevated depression and anxiety. The patient feels constantly irritable or grumpy and does not enjoy things they used to like. The family is also worried about the mental health of the patient.

¹ Locher C, Wörner A, Carlander M, Kossowsky J, Dratva J, Koechlin H. Chronic pain concepts of pediatricians: A qualitative survey. Pain Reports 2023;8:E1060. <https://doi.org/10.1097/PR9.0000000000001060>.

Supplementary 3 (S3). Results of the consensus ratings (Delphi round 3)

	Physicians				Psychologists				Physical therapist, nurse practitioner, and occupational therapist			
	Endorsement (%)	Median	IQR	Consensus	Endorsement (%)	Median	IQR	Consensus	Endorsement (%)	Median	IQR	Consensus
Task 1a: Suitability to pain psychology in general												
<i>Presenting problem</i>												
All patients who experience acute or persistent pain are suitable for pain psychology.	77.78%	5.00	1.50	no	60.00%	4.00	2.00	no	25.00%	3.00	2.25	no
Longer duration of pain, greater functional impairments, and higher distress increase the urgency for referral.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75	yes
Patients who are vulnerable to experiencing aggravated or persistent pain are suitable for pain psychology as a preventative treatment.	77.78%	4.00	1.50	no	40.00%	3.00	1.50	no	100.00%	4.50	1.00	yes
<i>Requirements</i>												
Patients should be verbal or at least have a language-comprehension capacity.	55.56%	4.00	2.00	no	40.00%	3.00	3.00	no	50.00%	3.50	1.75	no
There are no cognitive requirements or age restrictions to participate in pain psychology, but reduced capacity or independence requires more involvement of caregivers during treatment.	88.89%	4.00	0.50	yes	80.00%	5.00	2.50	no	50.00%	3.50	1.75	no

1													
2													
3	<i>Understanding of pain</i>												
4													
5	Patients/families who are interested to learn more about the	88.89%	4.00	0.50	yes	60.00%	4.00	2.50	no	100.00%	4.00	0.00	yes
6	complexities of pain.												
7	At the time of the referral, patients/families do not need a	77.78%	4.00	1.00	yes	80.00%	4.00	1.50	no	50.00%	3.50	1.75	no
8	biopsychosocial understanding of pain yet.												
9													
10													
11													
12	<i>Motivation</i>												
13	Patients/families who are open to participate in pain	88.89%	4.00	1.00	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
14	psychology.												
15													
16	Patients/families who are willing to make the commitment	88.89%	5.00	1.00	yes	60.00%	4.00	2.50	no	100.00%	4.00	0.75	yes
17	necessary in the respective setting.												
18													
19	Patient/families who are ready to take an active role in their	100.00%	5.00	1.00	yes	100.00%	4.00	0.50	yes	100.00%	4.00	0.75	yes
20	recovery.												
21	Although clear expectations and low resistance are desirable.	88.89%	4.00	1.00	yes	80.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
22	patients with unclear expectations and some resistance could												
23	still benefit from pain psychology.												
24													
25													
26													
27	<i>Contraindications</i>												
28	Acute medical safety concerns (e.g., malnutrition) should be	44.44%	2.00	3.00	no	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
29	addressed prior to pain psychology.												
30													
31	Acute psychiatric instability (e.g., active and poorly managed	77.78%	4.00	2.00	no	80.00%	4.00	2.00	no	100.00%	4.50	1.00	yes
32	psychosis, substance misuse, or suicidal ideation) should be												
33	addressed prior to pain psychology.												
34													
35	Reduced cognitive flexibility (e.g., in a context of a severe	44.44%	3.00	2.00	no	60.00%	4.00	3.50	no	100.00%	4.00	0.75	yes
36	depression) should be addressed prior to pain psychology.												
37	Concurrent mental illnesses should not be an exclusion criterion	88.89%	4.00	1.00	yes	40.00%	2.00	3.50	no	50.00%	3.00	2.00	no
38	for pain psychology.												
39													

40

41

42

43

44

45

46

Task 1a: Suitability to graded exposure treatment more specifically*Presenting problem*

All patients who experience acute or persistent pain are suitable for graded exposure treatment.	66.67%	4.00	1.50	no	0.00%	1.00	1.00	no	25.00%	3.00	1.50	no
Patients with persistent pain are suitable for graded exposure treatment.	66.67%	4.00	1.00	no	40.00%	3.00	3.00	no	50.00%	3.50	1.75	no
Patients with either mild functional impairments in several domains or moderate to severe functional impairments in at least one domain are suitable for graded exposure treatment.	77.78%	4.00	1.00	yes	40.00%	3.00	2.00	no	25.00%	3.00	1.50	no
Patients with at least mild functional impairment related to avoidance are suitable for graded exposure treatment.	66.67%	4.00	2.00	no	80.00%	4.00	2.50	no	50.00%	3.50	1.00	no
Patients with at least mild levels of fear are suitable for graded exposure treatment.	77.78%	4.00	1.50	no	60.00%	4.00	2.50	no	100.00%	4.00	0.00	yes
Patients with one or more of the followings symptoms are suitable for graded exposure treatment: fear of pain, avoidance of specific activities, or functional impairments.	77.78%	4.00	1.50	no	100.00%	5.00	0.50	yes	75.00%	4.00	2.25	no

Contraindications

Patients should be medically cleared before the treatment.	66.67%	4.00	2.50	no	80.00%	5.00	1.50	no	75.00%	4.50	1.75	no
Prescribed <i>current</i> movement limitations should not be part of exposure treatment.	66.67%	4.00	1.50	no	60.00%	4.00	2.50	no	75.00%	4.50	2.50	no
Activities that are not part of the prescribed movement limitation, can be targeted during exposure treatment.	66.67%	4.00	1.00	no	100.00%	4.00	1.00	yes	50.00%	3.50	2.50	no

1												
2												
3	Task 2a: Ideal referral process											
4												
5	Dissemination among referring providers											
6	Referring providers need to be aware about pain psychology.	88.89%	5.00	1.00	yes	100.00%	4.00	0.50	yes	75.00%	4.50	2.50 no
7												
8	Referring providers need to be aware of and educated on ideal											
9	pathways for pain psychology interventions triaged by level 1											
10	(e.g., pain education. group classes as universal treatment).	88.89%	4.00	1.00	yes	80.00%	4.00	1.50	no	75.00%	4.00	1.50 no
11	level 2 (e.g., individualized treatment). and level 3 (e.g.,											
12	intensive interdisciplinary care).											
13												
14	Referring providers need to understand the difference between	88.89%	5.00	1.00	yes	60.00%	5.00	2.50	no	100.00%	5.00	0.75 yes
15	pain psychology compared to general mental health services.											
16												
17												
18	Timing											
19												
20	Level 1 pain psychology (e.g., pain education) should be offered											
21	as a standard treatment whenever pain is the presenting	88.89%	5.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75 yes
22	problem.											
23	Pain psychology should be considered early on as an adjunct	88.89%	5.00	1.00	yes	60.00%	4.00	2.00	no	100.00%	4.00	0.75 yes
24	treatment option to other medical procedures.											
25												
26	Pain psychology should be considered early on as a stand-alone	55.56%	4.00	1.50	no	0.00%	3.00	1.50	no	25.00%	3.00	1.50 no
27	treatment.											
28												
29	In the case a patient refuses to participate in pain psychology.	77.78%	4.00	1.50	no	100.00%	4.00	0.50	yes	75.00%	4.00	1.50 no
30	referral should be reattempted/reconsidered at a later stage.											
31	Referral to pain psychology should be reconsidered. whenever	88.89%	5.00	1.00	yes	60.00%	4.00	3.00	no	75.00%	4.00	1.50 no
32	other treatment approaches have been proven unsuccessful.											
33												
34	Patients should be referred as early as possible without	88.89%	4.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75 yes
35	interfering with their lives more than necessary.											
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												

Referral situation

The referral should be explained verbally.	88.89%	4.00	1.00	yes	100.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
When making the referral, referring providers should respond to the patient's individual situation, for example by taking the time to listen to the patient empathetically and encouraging them to take the next step.	100.00%	5.00	1.00	yes	100.00%	5.00	0.00	yes	75.00%	4.00	0.75	yes
The referral should support a biopsychosocial understanding of pain.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	yes	100.00%	4.00	0.00	yes
Referring providers should start to set realistic expectations regarding pain psychology (e.g., explaining the active role of patients and caregivers).	88.89%	4.00	1.00	yes	80.00%	5.00	1.50	yes	75.00%	4.00	2.25	no
Additional materials (e.g., information materials, brochures, or patient testimonials) should be provided.	88.89%	4.00	1.00	yes	100.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
An overview about different treatment options and providers should be provided.	88.89%	4.00	1.00	yes	100.00%	4.00	0.50	yes	75.00%	4.00	0.75	yes

Treatment triaging

The type and intensity of pain psychology is ideally decided by the psychologist on an individual basis.	100.00%	5.00	1.00	yes	60.00%	4.00	1.50	no	100.00%	4.00	0.75	yes
Patients are ideally referred according to a stepped care approach, in which the type and intensity of pain psychology treatment is matched to the patient's individual needs with the possibility to step up or down to different levels as they move along their recovery journey.	88.89%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	4.00	0.75	yes
Family members (e.g., parents, caregivers, siblings) should be involved during treatment.	100.00%	5.00	1.00	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes

1													
2													
3	Overcoming barriers												
4													
5	Level 1 pain psychology (e.g., pain education) should be offered	66.67%	4.00	3.50	no	80.00%	5.00	1.50	no	100.00%	4.00	0.75	yes
6	free of charge.												
7	Free links to web resources should be provided for pain	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	4.50	1.00	yes
8	education.												
9													
10	To overcome distance barriers, telehealth options could be	100.00%	5.00	0.50	yes	100.00%	5.00	0.00	yes	100.00%	5.00	0.75	yes
11	considered.												
12													
13	To address the shortage of treatment providers, the												
14	involvement and training of other disciplines to provide Level 1												
15	pain psychology should be considered.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	yes	100.00%	5.00	0.75	yes
16													
17													
18	Task 2b: Key ingredients of a referral conversation												
19													
20	Part 1 - Opening												
21													
22	Be interested and express empathy toward the unique pain	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes
23	experience												
24	Assess the patient's individual explanatory model for their	100.00%	4.00	1.00	yes	100.00%	4.00	1.00	yes	100.00%	4.50	1.00	yes
25	symptoms												
26													
27													
28	Part 2 - Explaining pain												
29													
30	Describe pain from a biopsychosocial perspective	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	4.50	1.00	yes
31													
32	Mention contributing psychological factors	88.89%	5.00	1.00	yes	60.00%	4.00	1.50	no	75.00%	4.50	1.75	no
33													
34	Describe possible psychological consequences	100.00%	5.00	1.00	yes	60.00%	4.00	1.50	no	50.00%	4.00	2.00	no
35	Recommend multidisciplinary treatment approach	100.00%	5.00	0.50	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													

Part 3 - Recommending pain psychology

Recommend pain psychology as an evidence-based treatment	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	75.00%	4.00	1.50	no
Outline some treatment content and format	100.00%	5.00	0.50	yes	100.00%	5.00	1.00	yes	75.00%	4.00	1.50	no
Set realistic expectations	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes

Part 4 - Closing

Leave room for questions	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes
Allow uncertainty	88.89%	4.00	1.00	yes	80.00%	4.00	2.00	no	75.00%	4.50	2.50	no
Leave the door open	100.00%	4.00	1.00	yes	100.00%	4.00	1.00	yes	100.00%	4.50	1.00	yes

Note: Endorsement: Selection of response options 4 - *agree* or 5 - *strongly agree*. IQR: Interquartile range as a measure of statistical dispersion. Two criteria for consensus criteria were formulated: Consensus criteria 1: $\geq 75\%$ endorsement. Consensus criteria 2: Median ≥ 4 and interquartile range (IQR) ≤ 1 . Consensus was assumed when statements passed both consensus criteria.

BMJ Paediatrics Open

Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with multidisciplinary pediatric pain providers

Journal:	<i>BMJ Paediatrics Open</i>
Manuscript ID	bmjpo-2024-003020.R1
Article Type:	Original research
Date Submitted by the Author:	26-Sep-2024
Complete List of Authors:	Schemer, Lea; Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau - Campus Landau, Department for Clinical Psychology and Psychotherapy Harrison, Lauren; Stanford Medicine Hess, Courtney; Stanford Medicine Neville, Alexandra; Stanford University School of Medicine Jehl, Nicole; Stanford University School of Medicine Ma, Ryan; Stanford University School of Medicine Glombiewski, Julia; Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau - Campus Landau Simons, Laura E.; Stanford University School of Medicine
Keywords:	Adolescent Health, Pain, Psychology

SCHOLARONE™
Manuscripts



I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our [licence](#).

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which [Creative Commons](#) licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with multidisciplinary pediatric pain providers

Lea Schemer¹, Lauren E. Harrison², Courtney W. Hess², Alexandra Neville², Nicole M. Jehl², Ryan S. Ma², Julia A. Glombiewski¹, Laura E. Simons²

¹Department of Clinical Psychology and Psychotherapy, Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Landau;

²Department of Anesthesiology, Perioperative, and Pain Medicine, Stanford University School of Medicine, Stanford, CA;

Orcid IDs:

- Lea Schemer: <https://orcid.org/0000-0001-7830-4889>
- Lauren E. Harrison: <https://orcid.org/0000-0002-2113-6471>
- Courtney W. Hess: <https://orcid.org/0000-0001-5207-7411>
- Alexandra Neville: <https://orcid.org/0000-0002-1947-2994>
- Nicole M. Jehl: <https://orcid.org/0009-0005-6164-1420>
- Ryan S. Ma: <https://orcid.org/0009-0004-5897-2790>
- Julia A. Glombiewski: <https://orcid.org/0000-0001-8037-398X>
- Laura E. Simons: <https://orcid.org/0000-0002-3395-9483>

Correspondence to: Lea Schemer, Ph.D., Department of Clinical Psychology and Psychotherapy, Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Ostbahnstr. 10, 76829 Landau, GERMANY, Tel: +49 6341 280-35645; Email: lea.schemer@rptu.de

- **Author contributions:** All authors (LS, LEH, CWH, AN, NMJ, RSM, JAG, LES) were involved in the study planning and conceptualization. The data was collected by LS, NMJ, and RSM. LS was responsible for the data analysis and drafting of the manuscript. JAG and LES supervised the study process. All authors (LS, LEH, CWH, AN, NMJ, RSM, JAG, LES) reviewed and edited the manuscript. LS is responsible for the overall content as guarantor.
- **Competing interests:** The authors declare no potential conflicts of interest with respect to the authorship or the publication of this manuscript.
- **Funding:** This work was supported by a program to initiate an international collaboration of the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) awarded to LS and by K24AR078945 awarded to LES.
- **Acknowledgements:** We would like to thank Rashmi Bhandari, Laurel Brabson, Rachel Christensen, Andrew Dinh, Genevieve D'Souza, Julie Good, Ana Goya Arce, Albert H. Kwon, Sabrina Majmundar, Jennifer A. Rabbitts, Jenny Wagner, and all the other pediatric pain providers that participated as experts in the REFER panels.
- **Ethical statement:** The Delphi process was carried out in accordance with ethical principles of the Declaration of Helsinki and the study was compliant with the Institutional Review Board of Stanford University.
- **Data availability:** All the statements developed in the three expert panels including information about consensus criteria for each discipline are available in the supplementary materials.

Abstract

Background: To minimize the referral gap to pain psychology, the purpose of this study was to describe clinician-perceived patient suitability for pain psychology referral, develop a referral plan, and outline essential elements of a referral conversation via a modified Delphi approach with multidisciplinary pediatric pain providers.

Methods: We employed a three-round modified Delphi approach consulting multidisciplinary pediatric pain providers (n = 18) including physicians (MD), psychologists (PSY), physical therapists, occupational therapists, and nurse practitioners (PT, OT, NP). Based on the responses to an online survey (**Round 1**), initial statements regarding the pain psychology referral process were developed. These statements were revised in three separate panels (MD panel, PSY panel, PT, OT, NP panel; **Round 2**). A priori consensus criteria were verified for each statement within and between groups using anonymous responses to a concluding online survey (**Round 3**).

Results: Approximately one-third of the statements (34.5%) reached consensus across all panels. For example, pediatric pain providers agreed that referrals should be communicated verbally, along with written materials, and that pain should be explained early from a biopsychosocial perspective. Pediatric pain providers also suggested minimizing barriers through a flexible, stepped-care approach that adapts the delivery of pain psychology beyond traditional models. However, most statements reached consensus in only one or two panels (51.7%), indicating a lack of consensus across disciplines. The data suggest that it was comparatively easier to reach overall consensus on statements formulating an ideal referral process to pain psychology (50.0%) than on statements characterizing patient suitability (12.5%).

Conclusions: Pediatric pain providers developed an actionable plan for pain psychology referrals. This plan could bridge referral gaps and improve access to pain psychology treatment. Given low provider consensus on patient suitability, further research is warranted to understand pain psychology referral decision making, including differing perceptions of patient suitability across disciplines.

Key words: Pediatric pain, referral to pain psychology, modified Delphi approach, expert consensus

What is already known on this topic?

- Pain psychology is considered a fundamental part of a multimodal treatment approach for youth with chronic pain.
- Despite its benefits, only a small number of patients are referred to pain psychology in both clinical practice and clinical trials.
- This referral gap may prevent youth from accessing evidence-based care and may contribute to sample bias in research studies.

What this study adds?

- A three-round modified Delphi approach was conducted with highly trained, multidisciplinary pediatric pain providers to better understand, from a clinician's perspective, which patients are considered suitable for pain psychology and to describe an ideal referral process.
- Pediatric pain providers developed an actionable plan, including key elements and sample referral conversation formulations.
- However, the Delphi process also revealed potential factors that may contribute to the referral gap, including different perspectives between disciplines on which patients are considered suitable for pain psychology.

How this study might affect research, practice or policy?

- Dissemination of the action plan to referring providers could help reduce the referral gap in both clinical and research contexts.
- For example, pediatric pain providers agreed that referrals should be communicated verbally, along with written materials, and that pain should be explained early from a biopsychosocial perspective.
- To minimize the referral gap, they suggested making referrals according to a flexible, stepped-care approach that adapts the delivery of pain psychology beyond traditional models.
- Future research is warranted to further explore how different perspectives between disciplines exacerbate the referral gap.

Introduction

Pain psychology is considered an integral part of multimodal treatment for youth living with pain and is known to significantly reduce pain-related impairment and distress.^{1,2} According to the pain prevention model, psychological factors should be targeted at all stages of primary, secondary, and tertiary pain prevention.³ Despite its clear benefits for pain prevention and management, pain psychology is underutilized, with few patients being referred. In primary care, health education or counseling is prescribed in only 20% of medical visits for patients with chronic musculoskeletal pain (< 25 years of age).⁴ Among youth with pain presenting to neurology, only one quarter (24.2%) of patients screened as medium or high risk on a pain risk screening tool are referred for additional pain management services.⁵ As a result, youth experience substantial delays in receiving evidence-based pain care, particularly pain psychology.⁶

These data from routine clinical care also mirror the experience in our recent randomized clinical trial comparing graded exposure treatment (GET Living) to pain management-focused cognitive-behavioral therapy (CBT).^{7,8} While GET Living aimed to improve functioning by exposing patients to avoided activities, CBT treatment focused on teaching patients pain coping skills. This trial offered gold standard biopsychosocial pain care with 6-weeks of pain psychology and physical therapy to families, regardless of treatment arm. Most patients (*n* = 270, 69.4%) were screened-out by clinicians prior to referral because of concerns about treatment fit. Overall, a referral gap appears to prevent youth living with pain from receiving pain psychology as an evidence-based treatment. In the context of a research study, problems in the referral process could also potentially contribute to a sample bias.

While research on the referral gap to pain psychology is scarce, one reason may be that referring providers are uncertain about when and how best to refer patients to pain psychology. In a large-scale survey of referring providers, pain specialists and adult patients in the United States,⁹ medical providers reported that their patients were reluctant to see a psychologist (37.4%). Interestingly in the same study, patients reported being unaware of pain psychology as a treatment option (37.3%) and believing that their pain was not psychological (16.5%), suggesting both a lack of awareness of its existence and a lack

of understanding of its purpose. Similarly, pediatricians struggle to discuss psychological factors contributing to pain, despite the belief that these factors are important.¹⁰

Aligned with a team science approach,¹¹ the present study aimed to better understand how multidisciplinary pediatric pain providers describe an ideal referral process to pain psychology. In doing so, we assumed that the referral process has a quantitative dimension/goal that more patients who are likely to potentially benefit are referred to pain psychology and a qualitative dimension/goal that patients are approached in a way that makes them more receptive. We aimed to elicit clinician perceptions on both goals by having pediatric pain providers: characterize patients they consider appropriate for pain psychology in general (Aim 1a) and graded exposure treatment more specifically (Aim 1b), develop a concrete action plan for an ideal referral process (Aim 2a), and identify essential elements of a referral conversation along with sample formulations (Aim 2b).

Methods

Study design

We employed a three-round modified Delphi approach¹² consulting multidisciplinary pediatric pain providers including physicians (MD), psychologists (PSY), physical therapists, occupational therapists, and nurse practitioners (PT, OT, NP). The Delphi approach is a structured method for achieving consensus among experts on a specific topic when knowledge is incomplete or uncertain, based on the assumption that group judgments are more valid than those of individuals.¹² The details of the Delphi procedure were preregistered in the Open Science Framework (<https://osf.io/4sdfv>). The procedure was carried out in accordance with ethical principles of the Declaration of Helsinki and the study was compliant with the Institutional Review Board of Stanford University. Based on the responses to an online survey (**Round 1**), initial statements were developed including the formulation of an example referral conversation. Both were revised in three separate REFER panels (MD panel, PSY panel, PT, OT, NP panel; **Round 2**). A priori consensus criteria were verified within and between groups using anonymous responses to a concluding online survey (**Round 3**).

Patient and public involvement

For this Delphi process, we involved pediatric pain providers to develop an ideal referral plan from their perspective. However, patients and/or the public were not involved.

Setting

The Pediatric Pain Management Clinic (PPMC) at Stanford Medicine Children's Health is a tertiary pain clinic that houses multiple disciplines, including physicians (MD), nurse practitioners (NP), pain psychologists (PSY), physical therapists (PT), and occupational therapists (OT), that offer treatment to children and adolescents who experience chronic pain (i.e., persist or recurrent for > 3 months). Patients are referred to the PPMC by other treatment providers such as pediatricians, rheumatologists, neurologists, and orthopedists. Initial evaluations are conducted collaboratively by the multidisciplinary team. Following initial evaluation, an individualized biopsychosocial treatment plan is rendered. Treatment occurs at the outpatient or intensive outpatient level and typically consists of pain psychology, physical therapy, and medical intervention and medication management. Pain psychology consists of cognitive-behavioral interventions focused on (1) pain management and (2) graded exposure to avoided experiences, with a specific focus on functional goals to increase movement, self-regulation, and cognitive interventions focused on identifying and addressing negative thoughts and feelings that arise in the context of ongoing pain and related impairment. Group interventions are also offered to patients in the PPMC.

Pediatric pain providers

Based on decades of experience treating youth with chronic pain at the PPMC, with pain psychology as a cornerstone, we considered the pediatric pain providers at this site to be experts who could share their knowledge about an ideal referral process to pain psychology. We invited all pediatric pain providers in the PPMC ($N = 20$) with the aim to recruit at least half. This proposed sample size is consistent with the panel size in other Delphi studies^{13,14} and qualitative studies.¹⁵ Given the narrowly defined objective and the multi-stage Delphi process that allowed for revision and refinement, we were confident that the data would be adequately captured. With 12 participating experts in **Round 1**, 11

participating experts in **Round 2**, and 18 participating experts in **Round 3**, we met our recruitment goal.

More details about the pediatric pain providers can be found in **Table 1**.

Table 1

Pediatric pain provider expert characteristics

	n	%
Profession	18	100
Medicine	9	50
Psychology	5	28
Nursing	1	6
Physical Therapy	2	11
Occupational Therapy	1	6
License		
Licensed Professional	18	100
Area(s) of Training ^a		
Pediatrics	8	47
Anesthesiology	8	47
Integrative Medicine	4	22
Pediatric Pain Psychology	2	11
Pain Medicine	1	6
Physical Medicine & Rehabilitation	1	6
Orthopedics	1	6
Sports Medicine	1	6
Palliative Care	1	6
Number of years treating pediatric patients with pain		
0-5 years	5	28
6-10 years	5	28
11-15 years	3	17
>15 years	5	28

Number of pediatric patients with pain treated per year		
0-50	3	17
50-100	6	33
100-150	2	11
150-200	2	11
200-250	1	6
>250	4	22
Hours per week treating pediatric patients with pain		
0-10	1	6
11-20	3	17
21-30	6	33
31-40	4	22
>40	4	22

Note. ^a Pediatric pain providers could choose several areas of expertise

Round 1: Online survey

One week before the REFER panels were scheduled, pediatric pain providers received an online survey with 16 open-ended questions (see Supplementary Material S1) that guided them to reflect conceptually on pain psychology (e.g., *'How do you conceptualize pain psychology?'*, *'How do you conceptualize graded exposure treatment?'*), patient suitability for pain psychology (e.g., *'Which patients do you consider suitable for pain psychology?'*) and graded exposure treatment (e.g., *'Which patients do you consider suitable for GET Living as a specialized pain psychology treatment?'*), and the referral process (e.g., *'What is the best timing for referral?'* *'What are barriers for referral?'*). Pediatric pain providers were also asked to paraphrase how they typically present pain psychology to families (e.g., *'Briefly paraphrase how you would present pain psychology to families'*). Their responses were synthesized into initial summary statements describing a concrete action plan including provider's responses characterizing patient suitability and describing an ideal referral process to pain psychology. Based on this synthesis, essential elements of a referral conversation were identified (e.g., showing interest and expressing empathy for the unique pain experience). The initial statements and the referral conversation elements served as a starting point for the later expert panels. Twelve pediatric pain providers participated in **Round 1** ($n = 5$ MD, $n = 5$ PSY, $n = 1$ PT, and $n = 1$ OT).

Round 2: Expert panel

Pediatric pain providers were invited to join a subsequent REFER panel moderated by the first author (LS) who did not have any relation to the clinic or the staff prior to the panel. Researchers on the study team who had dual clinical and research roles within the PPMC were not involved in the REFER panels (LES, LEH). The panel discussion lasted approximately 1 hour. The REFER panels were held separately for pediatric pain providers with different professional backgrounds to elicit nuances of perspectives within each discipline. This approach also enabled us to explore possible divergences in the opinions of the disciplines. Due to fewer participants in these roles, the allied health professionals (PT, NP, OT) were combined into one group. At the beginning, the initial statements based on the first online survey were presented via print outs so that panelists could take notes or highlight important statements. The panelists were then guided to elaborate and discuss each statement. In the first part of

the panel discussion, panelists were instructed to formulate specific statements that characterize patient suitability for pain psychology. In the second part of the panel discussion, panelists were instructed to formulate an action plan to improve referrals to pain psychology. To further refine the discussion, patient vignettes were presented that varied in their degree of diagnostic uncertainty,¹⁶ medical mistrust,¹⁷ pain-related fear avoidance,¹⁸ and complexity of mental health condition,¹⁹ theorizing that these factors could potentially influence the referral decision made by each provider. The vignettes were thus intended to help panelists reflect more concretely on critical cases throughout their discussion. To produce the vignettes in the current study, a vignette used in previous research¹⁰ was adapted to the current context and manipulated to create four vignettes that differed to emphasize the four predetermined factors. The adaptation was done according to existing guidelines (see Supplementary Material S2).²⁰ During the expert panels, developed statements were written down by one investigator (NJ) who read the statements aloud to the panelists to confirm that they were consistent with the stated opinion. In this process, no absolute consensus was sought. Another investigator (RM) summarized the discussion that unfolded during the generation of statements to cross-check the accuracy of the statements. Lastly, panelists were asked for their feedback on the referral conversation elements. For example, the experts could add further elements to the referral conversation or refine the sample formulations. Eleven pediatric pain providers participated in **Round 2** (MD panel: $n = 4$; PSY panel: $n = 5$; PT, OT, NP panel: $n = 2$ with OT and PT represented).

Round 3: Consensus rating

In a concluding online survey approximately 1 month later, pediatric pain providers were asked to indicate their level of agreement to statements that were developed in the different panels on a 5-point Likert scale (1 - *strongly disagree* to 5 - *strongly agree*). They could suggest minor adjustments to the statements (e.g., regarding wording) as long as they did not change their meaning. In regard to the developed referral conversation elements, pediatric pain providers were asked to rate the importance of each element of the referral conversation a 5-point Likert scale (1 – *not at all important* to 5 – *very important*). This allowed us to extract the elements that were considered most important. In accordance with previous research,²¹ consensus criteria formulated a priori expressed by a combination of median

and percentage scores. Median scores ≥ 4 with a small interquartile range ($IQR \leq 1$) as an indicator of statistical dispersion combined with 75% responses ≥ 4 were considered an indicator for consensus.^{22,23} Data were analyzed separately for MD and PSY. Data of the PT, NP, and OT were combined into a third group. This allowed for investigation of the consensus within each discipline and also explore possible discrepancies between groups of providers. Statements that did not meet the two consensus criteria in all groups were dismissed. Eighteen pediatric pain providers participated in **Round 3** ($n = 9$ MD, $n = 5$ PSY, $n = 2$ PT, $n = 1$ OT, $n = 1$ NP).

Results

Description of the Delphi process (Rounds 1-2)

Based on the responses to the first online survey (**Round 1**), we extracted 41 statements to characterize patients who were perceived as suitable to benefit from pain psychology in general (e.g., 'Patient who suffers from distress') or graded exposure treatment more specifically (e.g., 'Patient who suffers from fear of pain'). An additional 25 statements were extracted to describe an ideal referral process (e.g., 'Patients should be referred to pain psychology at the time of the chronic pain diagnosis'). To reflect the entire range of opinions expressed, different gradations were formulated (e.g., 'Patients are suitable with mild vs. moderate vs. severe functional impairments'). Other statements contradicted one another (e.g., 'A patients should be referred to pain psychology parallel to other medical approaches' versus 'A patient should be referred to pain psychology when other medical approaches were unsuccessful'). Thereby, some statements were deliberately presented in a pointed manner, to stimulate discussion in the expert panels.

A total of 58 statements were developed in the subsequent expert panels (**Round 2**). Fifteen statements characterized patient suitability for pain psychology in general and nine statements described patient suitability to graded exposure treatment more specifically. Twenty-two statements formulated an ideal referral process to pain psychology. Twelve potential elements of a referral conversation were identified and example phrases were formulated.

Results of the consensus rating (Round 3)

Approximately one third of the statements (20/58; 34.5%) reached consensus in all groups (see Table 2) with most statements achieving consensus in only one (17/58; 29.3%) or two (13/58; 22.4%) groups. Eight statements (8/58; 13.8%) did not find consensus in any groups. The MD group agreed upon most statements (41/58; 70.7%), followed by the PT, NP, and OT group (34/58; 58.6%). The PSY group agreed with the fewest statements (28/58; 48.3%). Despite challenges in reaching consensus on statements about patient suitability (3/24; 12.5%), there did appear to be more agreement on the statements that formulated an ideal referral process (17/34; 50.0%). None of the statements describing patient suitability for graded exposure treatment were agreed upon in all groups. The entire list of statements together with indicators for both consensus criteria by each group can be found in the Supplementary Material (S3). Some examples of how the essential elements of a referral conversation (see Aim 2a with results presented in Table 2) might be implemented are shown in Figure 1. These sentences were extracted from the responses to the initial online survey and refined in the subsequent Delphi rounds. Because the experts agreed that the referring provider should respond to the patient's individual situation, this is an example of how a referral conversation might proceed, not a script.

[Figure 1 around here]

Table 2*Statements that reached consensus in all groups*

	Physicians			Psychologists			Physical practitioner, therapist, and nurse occupational therapist		
	Endorsement (%)	Median	IQR	Endorsement (%)	Median	IQR	Endorsement (%)	Median	IQR
Task 1a: Suitability to pain psychology in general									
<i>Motivation</i>									
Patients/families who are open to participate in pain psychology.	88.89%	4.00	1.00	100.00%	5.00	1.00	100.00%	4.50	1.00
Patient/families who are ready to take an active role in their recovery.	100.00%	5.00	1.00	100.00%	4.00	0.50	100.00%	4.00	0.75
Although clear expectations and low resistance are desirable, patients with unclear expectations and some resistance could still benefit from pain psychology.	88.89%	4.00	1.00	80.00%	4.00	1.00	75.00%	4.00	0.75
Task 2a: Ideal referral process									
<i>Referral situation</i>									
The referral should be explained verbally.	88.89%	4.00	1.00	100.00%	4.00	1.00	75.00%	4.00	0.75
When making the referral, referring providers should respond to the patient's individual situation, for example by taking the time to listen to the patient empathetically and encouraging them to take the next step.	100.00%	5.00	1.00	100.00%	5.00	0.00	75.00%	4.00	0.75

The referral should support a biopsychosocial understanding of pain.	100.00%	5.00	1.00	80.00%	5.00	2.00	100.00%	4.00	0.00
Additional materials (e.g., information materials, brochures, or patient testimonials) should be provided.	88.89%	4.00	1.00	100.00%	4.00	1.00	75.00%	4.00	0.75
An overview about different treatment options and providers should be provided.	88.89%	4.00	1.00	100.00%	4.00	0.50	75.00%	4.00	0.75
<i>Referral strategy</i>									
Patients are ideally referred according to a stepped care approach, in which the type and intensity of pain psychology treatment is matched to the patient's individual needs with the possibility to step up or down to different levels as they move along their recovery journey.	88.89%	5.00	1.00	100.00%	5.00	0.50	100.00%	4.00	0.75
Family members (e.g., parents, caregivers, siblings) should be involved during treatment.	100.00%	5.00	1.00	100.00%	5.00	1.00	100.00%	4.50	1.00
<i>Overcoming barriers</i>									
Free links to web resources should be provided for pain education.	100.00%	5.00	1.00	100.00%	5.00	0.50	100.00%	4.50	1.00
To overcome distance barriers, telehealth options could be considered.	100.00%	5.00	0.50	100.00%	5.00	0.00	100.00%	5.00	0.75
To address the shortage of treatment providers, the involvement and training of other disciplines to provide Level 1 pain psychology should be considered.	100.00%	5.00	1.00	80.00%	5.00	2.00	100.00%	5.00	0.75

Task 2b: Essential elements of a referral conversation

Part 1 - Opening

Be interested and express empathy toward the unique pain experience	100.00%	5.00	1.00	100.00%	5.00	0.50	100.00%	5.00	0.75
---	---------	------	------	---------	------	------	---------	------	------

Assess the patient's individual explanatory model for their symptoms	100.00%	4.00	1.00	100.00%	4.00	1.00	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Part 2 - Explaining pain

Describe pain from a biopsychosocial perspective	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Recommend multidisciplinary treatment approach	100.00%	5.00	0.50	100.00%	5.00	1.00	100.00%	4.50	1.00
--	---------	------	------	---------	------	------	---------	------	------

Part 3 - Recommending pain psychology

Set realistic expectations	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	5.00	0.75
----------------------------	---------	------	------	---------	------	------	---------	------	------

Part 4 - Closing

Leave room for questions	100.00%	5.00	0.50	100.00%	5.00	0.50	100.00%	5.00	0.75
--------------------------	---------	------	------	---------	------	------	---------	------	------

Leave the door open	100.00%	4.00	1.00	100.00%	4.00	1.00	100.00%	4.50	1.00
---------------------	---------	------	------	---------	------	------	---------	------	------

Note: Experts rated each statement on a 5-point Likert scale. Endorsement: Selection of response options 4 - *agree* or 5 - *strongly agree*. IQR: Interquartile range as an indicator of statistical dispersion. Two criteria for consensus were formulated: Consensus criteria 1: $\geq 75\%$ endorsement. Consensus criteria 2: Median ≥ 4 and interquartile range (IQR) ≤ 1 . Consensus was assumed when statements passed both consensus criteria. Statements are displayed that passed both consensus criteria in all expert groups (see S3 for more details).

Discussion

The present study aimed to better understand how multidisciplinary pediatric pain providers describe an ideal referral process to pain psychology. In a three-round Delphi process, pediatric pain providers were guided to characterize patients they consider suitable for pain psychology in general (Aim 1a) and graded exposure treatment more specifically (Aim 1b), to develop an ideal referral process (Aim 2a), and to identify essential elements of a referral conversation (Aim 2b). Ultimately, pediatric pain providers developed an actionable plan (see **Table 2**) together with the essential elements and concrete sample formulations of a referral conversation (see **Figure 1**) with the hope of decreasing the referral gap to pain psychology. The current Delphi study also enabled the generation of hypotheses about factors that may contribute to the referral gap, including diverging perceptions about which patients are considered suitable for pain psychology across disciplines.

Closing the referral gap to pain psychology

Drawing from the expertise of a multidisciplinary team of pediatric pain providers, the main contribution of this paper is to describe a practical referral action plan to pain psychology treatments. Pediatric pain providers agreed that the referral should be made verbally, as well as provided via written materials (e.g. information materials, brochures, or patient testimonials). They also agreed that the referring provider should understand the referral as an opportunity to explain a biopsychosocial conceptualization of pain. When describing specific phrases that could be used in a typical referral conversation, the pediatric pain providers responses were largely congruent with previously developed formulations for credible explanations for chronic non-traumatic knee pain²⁴ and the role of emotions in physical symptoms.²⁵ For example, experts have previously emphasized the importance of addressing the patient's individual needs, approaching them with empathy, and acknowledging their pain experience.^{24,25} In addition, other experts have similarly encouraged the use of open-ended questions to learn more about how the patient understands their symptoms and to allow the referring provider to meet the patient where they stand.²⁵

During the expert panels, there were repeated discussions about resource problems, including provider shortages as well as distance and financial barriers. To overcome these barriers, providers in

the REFER panel described referral to a treatment plan using a stepped care approach,²⁶ challenging traditional treatment models where the delivery of pain psychology can instead take many forms with different components and delivery modes. The stepped care approach consists of different levels or steps of an intervention ranging, e.g., from self-help resources (level 1), to single session or group interventions (level 2), to one-one-one sessions in an outpatient or inpatient setting. Tailored to symptom severity and patient needs, individuals can transition between levels as they progress in their recovery, with priority given to less resource-intensive interventions.¹⁹ The utility and implementation of a stepped care approach has also built momentum among pain researchers.^{19,27} For example, there are concrete suggestions on how different pain rehabilitation interventions could be tailored to patients' individual needs based on a risk assessment tool.¹⁹ There has been continued effort to develop and evaluate more condensed formats to deliver pain psychology, e.g., in form of one-day workshops²⁸ or single session interventions.²⁹ The COVID-19 pandemic has also led to a proliferation of asynchronous and virtual options, for which there exists empirical evidence, particularly at lower levels of stepped care with minimal health professional involvement.²⁷

Altogether, pediatric pain providers have developed creative solutions to scale up pain psychology treatments and encourage referring providers to recommend pain psychology as a fundamental element in a pain management plan despite potential resource limitations. This plan may be implemented by upstream referring providers such as pediatricians, rheumatologists, orthopedists, beyond just pain specialists. It should be noted, however, that this plan is based on clinician expert opinion only. The extent to which this plan can actually contribute to reducing the referral gap needs to be empirically verified by future research. Future research could also investigate the extent to which the plan can be adapted to adult populations, where the dissemination of pain psychology is similarly difficult.³⁰

Exploring reasons for the referral gap

Throughout the Delphi process, possible reasons for the referral gap to pain psychology treatments became evident. It seemed comparatively more difficult for pediatric pain providers to decide on specific characteristics that indicate suitability for pain psychology treatments. This is largely

consistent with the contradictory findings on treatment moderators for pain psychology treatments in adults.³¹ Empirical studies of treatment moderators in pediatric populations are scarce,³² and the few studies that exist, for example in the context of an intensive pain rehabilitation program with psychological elements, have had difficulty identifying consistent predictors of treatment response.³³ Although it has not yet been possible to empirically determine which patients benefit most from pain psychology treatments, it is important to emphasize that, on average, patients can expect small to moderate improvements in their symptoms.¹

Pediatric pain providers agreed that engagement in pain psychology requires openness on the part of the patient and family and readiness to take an active role in their recovery. This recommendation is consistent with a recently published pain management standard, which recommends a multimodal treatment approach including psychosocial elements.³⁴ To choose the most appropriate psychosocial strategies and maximize the potential benefits, shared decision-making is essential, taking into account the needs, abilities, and preferences of patients and their families.^{34,35} Similarly, previous research found readiness for change to be the most robust and modifiable baseline predictor of the response to an intensive pain rehabilitation program.³³ It should be noted critically, however, that while standardized tools exist to measure readiness for change such as the Pain Stages of Change Questionnaire (PSOCQ),³⁶ these measures are typically not included in general risk assessments that usually include physical and psychosocial risk factors.³⁷ There is therefore a risk that the evaluation of motivation depends heavily on the perspective of the referring provider. At the same time, pediatric pain providers weakened both points regarding openness and readiness by agreeing that patients with unclear expectations and some resistance could still benefit from pain psychology. Indeed, structured interventions have been developed that aim to promote patient readiness and engagement prior to participation in an intensive pain rehabilitation program with the idea to maximize the success of such programs.³⁸ Many patients and families are also unaware of how pain psychology could help them with their symptoms and an important task of the referring provider is to collaboratively build this understanding.⁹

Although other psychological or physical indicators of suitability for referral to pain psychology reached consensus within disciplines, none of these indicators was endorsed by all disciplines. It appears

that while pediatric pain providers agreed on *how* patients should ideally be referred to pain psychology, they disagreed on *who* should be referred, possibly reflecting different models around case conceptualization and treatment planning. As in previous research,³⁹ concerns and uncertainty were particularly evident with exposure-based pain psychology reflected by the fact that none of the developed statements formulating criteria for patient suitability for graded exposure treatment reached consensus in all expert groups. The disagreement and uncertainty might exacerbate the referral gap. For example, referrals may depend more on the provider's beliefs and perceptions than the patient presentation or symptoms, making referral decision-making more susceptible to bias. Contradictory messages or uncertainty on the part of treatment provider(s) could also lead to patient mistrust, inequitable pain care, and possibly impact treatment engagement.

Limitations

During this Delphi process, we consulted highly experienced and well-trained pain specialists at a reputable US pain clinic. The opinions expressed therefore represent the perceptions of a single multidisciplinary team, and it is unclear to what extent they generalize to treatment providers working in other settings and healthcare systems. For example, although resource deficits in the delivery of pain psychology were repeatedly discussed in the REFER panels, resource deficits are undoubtedly more profound in other communities and countries. In addition, the composition of the various disciplines among the REFER experts was unbalanced and could be different in other settings. In many other settings, treatment providers may also not have specialized training in pain management or may rarely collaborate with colleagues from other disciplines, which could lead to even greater discrepancies and uncertainties in their perceptions. For example, previous research identified that pediatricians often feel isolated in their decision making without the support that is characteristic of a multidisciplinary team.⁴⁰ Future research should therefore build on existing work^{9,10} and continue to examine the attitudes and practices of upstream referring providers, such as pediatricians, rheumatologists, and orthopedists who often have even less contact with pain psychology. While this study focused on the provider lens on the referral process, it is imperative that future research seeks to understand additional perspectives, such as

the patient and caregiver lens. For example, their input would be extremely valuable in further understanding how referral conversations are perceived at the recipient end.

Conclusions

Pediatric pain providers developed a concrete action plan to improve referrals to pain psychology (see **Table 2**) together with the essential elements and concrete sample phrases of a referral conversation (see **Figure 1**). Dissemination of this plan to referring providers may help close the referral gap for pain psychology treatments. Future research should continue to understand the reasons for the referral gap, including possible influences of differing perceptions of which patients are considered suitable for pain psychology across disciplines.

Tables

- **Table 1.** Pediatric pain provider expert characteristics.
- **Table 2.** Statements that reached consensus in all groups.

Figure

- **Figure 1.** Sample referral conversation elements developed during the Delphi process. Experts agreed that the referring providers need to respond to the patient's individual situation (e.g., depending on how the patient answers the opening questions), thus this is an example of how a referral conversation might proceed, not a script.

References

1. Fisher E, Law E, Dudeney J, Palermo TM, Stewart G, Eccleston C. Psychological therapies for the management of chronic and recurrent pain in children and adolescents. *Cochrane Database Syst Rev.* 2018;(9):Art. No.: CD003968. doi:10.1002/14651858.CD003968.pub5
2. Eccleston C, Fisher E, Howard RF, et al. Delivering transformative action in paediatric pain: A Lancet Child & Adolescent Health Commission. *Lancet Child Adolesc Heal.* 2021;5(1):47-87. doi:10.1016/S2352-4642(20)30277-7
3. Fisher E, Eccleston C. Psychological aspects of pain prevention. *PAIN Reports.* 2021;6(1):e926. doi:10.1097/PR9.0000000000000926
4. Feldman DE, Nahin RL. National estimates of chronic musculoskeletal pain and its treatment in children, adolescents, and young adults in the United States: Data from the 2007-2015 national ambulatory medical care survey. *J Pediatr.* 2021;233:212-219.e1. doi:10.1016/j.jpeds.2021.01.055
5. Salamon KS, Carlson M, Hildenbrand AK. Who gets referred? A pilot study of risk stratification and treatment referral in pediatric headache using the pediatric pain screening tool. *J Pediatr Psychol.* 2022;47(4):403-411. doi:10.1093/jpepsy/jsab117
6. Cucchiaro G, Schwartz J, Hutchason A, Ornelas B. Chronic pain in children: A look at the referral process to a pediatric pain clinic. *Int J Pediatr.* 2017;2017:1-7. doi:10.1155/2017/8769402
7. Simons L, Harrison L, Boothroyd D, et al. A randomized controlled trial of graded exposure treatment (GET living) for adolescents with chronic pain. *Pain.* 2024;165(1):177-191. doi:10.1097/j.pain.0000000000003010
8. Simons LE, Vlaeyen JWS, Declercq L, et al. Avoid or engage? Outcomes of graded exposure in youth with chronic pain using a sequential replicated single-case randomized design. *Pain.* 2020;161(3):520-531. doi:10.1097/j.pain.0000000000001735
9. Darnall BD, Scheman J, Davin S, et al. Pain psychology: A global needs assessment and national call to action. *Pain Med.* 2016;17(2):250-263. doi:10.1093/pm/pnv095
10. Locher C, Wörner A, Carlander M, Kossowsky J, Dratva J, Koechlin H. Chronic pain concepts of pediatricians: A qualitative survey. *Pain Reports.* 2023;8(1):E1060. doi:10.1097/PR9.0000000000001060
11. Hess CW, Rosen MA, Simons LE. Looking inward to improve pediatric chronic pain outcomes: a call for team science research. *Pain.* 2023;164(4):690-697.

- doi:10.1097/j.pain.0000000000002836
12. Niederberger M, Spranger J. Delphi technique in health sciences: A map. *Front Public Heal*. 2020;8(September):1-10. doi:10.3389/fpubh.2020.00457
 13. Taylor E. We agree, don't we? The delphi method for health environments research. *Heal Environ Res Des J*. 2020;13(1):11-23. doi:10.1177/1937586719887709
 14. Leake HB, Heathcote LC, Simons LE, et al. Talking to teens about pain: A modified delphi study of adolescent pain science education. *Can J Pain*. 2019;3(1):200-208. doi:10.1080/24740527.2019.1682934
 15. Hennink M, Kaiser BN. Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523. doi:10.1016/j.socscimed.2021.114523
 16. Pincus T, Noel M, Jordan A, Serbic D. Perceived diagnostic uncertainty in pediatric chronic pain. *Pain*. 2018;159(7):1198-1201. doi:10.1097/j.pain.0000000000001180
 17. Williamson LD, Bigman CA. A systematic review of medical mistrust measures. *Patient Educ Couns*. 2018;101(10):1786-1794. doi:10.1016/j.pec.2018.05.007
 18. Simons LE, Kaczynski KJ. The fear avoidance model of chronic pain: Examination for pediatric application. *J Pain*. 2012;13(9):827-835. doi:10.1016/j.jpain.2012.05.002
 19. Harrison LE, Pate JW, Richardson PA, Ickmans K, Wicksell RK, Simons LE. Best-evidence for the rehabilitation of chronic pain part 1: Pediatric pain. *J Clin Med*. 2019;8(9):1-19. doi:10.3390/jcm8091267
 20. Evans SC, Roberts MC, Keeley JW, et al. Vignette methodologies for studying clinicians' decision-making: Validity, utility, and application in ICD-11 field studies. *Int J Clin Heal Psychol*. 2015;15(2):160-170. doi:10.1016/j.ijchp.2014.12.001
 21. Boulkedid R, Abdoul H, Loustau M, Sibony O, Alberti C. Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS One*. 2011;6(6). doi:10.1371/journal.pone.0020476
 22. Courtenay M, Deslandes R, Harries-Huntley G, Hodson K, Morris G. Classic e-Delphi survey to provide national consensus and establish priorities with regards to the factors that promote the implementation and continued development of non-medical prescribing within health services in Wales. *BMJ Open*. 2018;8(9):1-9. doi:10.1136/BMJOPEN-2018-024161
 23. Keeney S, Hasson F, McKenna H. Consulting the oracle: Ten lessons from using the Delphi technique in nursing research. *J Adv Nurs*. 2006;53(2):205-212. doi:10.1111/j.1365-

2648.2006.03716.x

24. Djurtoft C, Bruun M, Riel H, Hoegh M, Darlow B, Rathleff M. How do we explain painful chronic non-traumatic knee conditions to children and adolescents? A multiple-method study to develop credible explanations. *medRxiv*. 2022;(January 2023):2022.12.15.22283510. doi:10.1101/2022.12.15.22283510
25. Boerner KE, Dhariwal AK, Chapman A, Oberlander TF. When feelings hurt: Learning how to talk with families about the role of emotions in physical symptoms. *Paediatr Child Health*. 2023;28(1):3-7. doi:10.1093/pch/pxac052
26. Bower P, Gilbody S. Stepped care in psychological therapies: Access, effectiveness and efficiency. *Br J Psychiatry*. 2005;186(JAN.):11-17. doi:10.1192/bjp.186.1.11
27. Birnie KA, Pavlova M, Neville A, et al. Rapid evidence and gap map of virtual care solutions across a stepped care continuum for youth with chronic pain and their families in response to the COVID-19 pandemic. *Pain*. 2021;162(11):2658-2668. doi:10.1097/j.pain.0000000000002339
28. Coakley R, Wihak T, Kossowsky J, Iversen C, Donado C. The comfort ability pain management workshop: A preliminary, nonrandomized investigation of a brief, cognitive, biobehavioral, and parent training intervention for pediatric chronic pain. *J Pediatr Psychol*. 2018;43(3):252-265. doi:10.1093/jpepsy/jsx112
29. Darnall BD, Roy A, Chen AL, et al. Comparison of a single-session pain management skills intervention with a single-session health education intervention and 8 sessions of cognitive behavioral therapy in adults with chronic low back pain: a randomized clinical trial. *JAMA Netw Open*. 2021;4(8):1-16. doi:10.1001/jamanetworkopen.2021.13401
30. Darnall BD. Psychological treatment for chronic pain: Improving access and integration. *Psychol Sci Public Interes*. 2021;22(2):45-51. doi:10.1177/15291006211033612
31. Murillo C, Vo TT, Vansteelandt S, et al. How do psychologically based interventions for chronic musculoskeletal pain work? A systematic review and meta-analysis of specific moderators and mediators of treatment. *Clin Psychol Rev*. 2022;94. doi:10.1016/j.cpr.2022.102160
32. Murray CB, de la Vega R, Loren DM, Palermo TM. Moderators of internet-delivered cognitive-behavioral therapy for adolescents with chronic pain: Who benefits from treatment at long-term follow-up? *J Pain*. 2020;21(5-6):603-615. doi:10.1016/j.jpain.2019.10.001
33. Simons LE, Sieberg CB, Conroy C, et al. Children with chronic pain: Response trajectories following intensive pain rehabilitation treatment. *J Pain*. 2018;19(2):207-2018.

doi:10.1016/j.jpain.2017.10.005

34. Working group of the Health Standards Organization. Pediatric Pain Management. *Natl Stand Canada*. 2023;CAN/HSO13200:2023(E). www.healthstandards.org.

35. MacKenzie NE, Tutelman PR, Chambers CT, et al. Can sharing improve caring? A call to prioritize shared decision making in pediatric pain management. *Clin Pract Pediatr Psychol*. 2023;11(3):253–261. doi:10.1037/cpp0000488

36. Guite JW, Logan DE, Simons LE, Blood EA, Kerns RD. Readiness to change in pediatric chronic pain: Initial validation of adolescent and parent versions of the Pain Stages of Change Questionnaire. *Pain*. 2011;152(10):2301-2311. doi:10.1016/j.pain.2011.06.019

37. Simons LE, Smith A, Ibagon, C. Pediatric Pain Screening Tool: rapid identification of risk in youth with pain complaints. *Pain*. 2015;156:1511–1518. doi:10.1097/j.pain.0000000000000199

38. 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(3):125-135. doi:10.1002/pne2.12063

39. Pittig A, Kotter R, Hoyer J. The struggle of behavioral therapists with exposure: Self-reported practicability, negative beliefs, and therapist distress about exposure-based interventions. *Behav Ther*. 2019;50(2):353-366. doi:10.1016/j.beth.2018.07.003

40. Neville A, Noel M, Clinch J, Pincus T, Jordan A. ‘Drawing a line in the sand’: Physician diagnostic uncertainty in paediatric chronic pain. *Eur J Pain*. 2021;25(2):430-441. doi:10.1002/ejp.1682

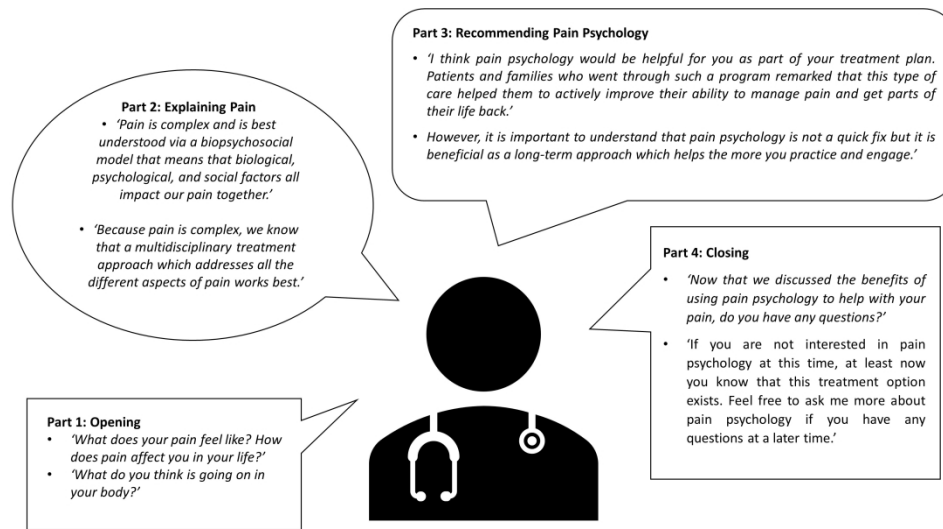


Figure 1. Sample referral conversation elements developed during the Delphi process. Experts agreed that the referring providers need to respond to the patient's individual situation (e.g., depending on how the patient answers the opening questions), thus this is an example of how a referral conversation might proceed, not a script.

338x190mm (300 x 300 DPI)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

SUPPLEMENTARY MATERIALS

- Supplementary 1 (S1).** Online survey about referral process (Delphi Round 1)
- Supplementary 2 (S2).** Patient vignettes (Delphi round 2)
- Supplementary 3 (S3).** Results of the consensus ratings (Delphi round 3)

Schemer, L, Harrison, LE, Hess, CW, Neville, A, Jehl, NM, Ma, RS, Glombiewski, JA, Simons, LE (2024).
Reaching experts for enhanced referral (REFER) to pain psychology: A modified Delphi approach with
multidisciplinary pediatric pain providers.

Supplementary 1 (S1). Online survey about referral process (Delphi Round 1)

Treatment	Open ended questions
Pain psychology	<ol style="list-style-type: none"> 1. How do you conceptualize pain psychology? 2. Which patients do you consider suitable for pain psychology? Specify the factors that influence your decision. 3. Which patients do you consider <i>not</i> suitable for pain psychology? Specify the factors that influence your decision. 4. What factors make this decision difficult? 5. Briefly paraphrase how you would present pain psychology treatment to families. 6. How do patients usually respond when they are referred? 7. What is the best timing for referral? 8. What are barriers for referral? 9. Anything else you want to add related to your experiences with the referral process?
Graded exposure treatment (GET Living)	<ol style="list-style-type: none"> 10. What is your conceptualization of graded exposure treatment? 11. Which patients do you consider suitable for GET Living? Specify the factors that influence your decision. 12. Which patients do you consider not suitable for GET Living? Specify the factors that influence your decision. 13. What factors make this decision difficult? 14. Briefly paraphrase how you would present GET Living to families. 15. In case you already referred to GET Living: How do patients usually respond when they are referred? 16. In case you never referred to GET Living: How do you expect patients to respond when they were referred?

Supplementary 2 (S2). Patient vignettes (Delphi round 2)

Background story¹

Present complaint: A 14-year-patient comes to the Pediatric Pain Management Clinic. The patient reports musculoskeletal pain in the lower and upper extremities. These occur symmetrically with movement, are distributed throughout the day with a duration of a few seconds to a few hours and improve with rest. Specific triggers of the complaints cannot be elicited. There is no morning stiffness and no nocturnal pain. Complaints had been present for 3 mo. The pain had resulted in 4 school absences of 1 and 2 d each in the previous 6 wk.

Treatment history: Approximately 7 mo ago, general health had sustained a left upper ankle distortion trauma at a school function. At that time, there was a local hematoma; a lesion of the ligamentous apparatus or a fracture had been ruled out.

Clinical findings: Good general health and nutritional status. Physical exam is unremarkable. All joints are freely mobile without redness, swelling, or hyperthermia.

Manipulated characteristics

Diagnostic uncertainty: The patient had been referred to an orthopedic surgeon and a pediatric rheumatologist, neither of whom found evidence of a cause from their specialty. However, the patient is still unsure whether there was not a medical reason for their symptoms.

Medical mistrust: The patient expresses that they have felt dismissed by previous providers and that their pain was not taken seriously. When asked about their goals, they report that they are not sure how the pain clinic can help.

Fear avoidance: Psychological screening tools indicate elevated fear avoidance and pain catastrophizing. At the clinical appointment, the patient expresses the concern about overstraining their body after the school accident.

Complex mental health condition: Psychological screening tools indicate clinically elevated depression and anxiety. The patient feels constantly irritable or grumpy and does not enjoy things they used to like. The family is also worried about the mental health of the patient.

¹ Locher C, Wörner A, Carlander M, Kossowsky J, Dratva J, Koechlin H. Chronic pain concepts of pediatricians: A qualitative survey. Pain Reports 2023;8:E1060. <https://doi.org/10.1097/PR9.0000000000001060>.

Supplementary 3 (S3). Results of the consensus ratings (Delphi round 3)

	Physicians				Psychologists				Physical therapist, nurse practitioner, and occupational therapist			
	Endorsement (%)	Median	IQR	Consensus	Endorsement (%)	Median	IQR	Consensus	Endorsement (%)	Median	IQR	Consensus
Task 1a: Suitability to pain psychology in general												
<i>Presenting problem</i>												
All patients who experience acute or persistent pain are suitable for pain psychology.	77.78%	5.00	1.50	no	60.00%	4.00	2.00	no	25.00%	3.00	2.25	no
Longer duration of pain, greater functional impairments, and higher distress increase the urgency for referral.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75	yes
Patients who are vulnerable to experiencing aggravated or persistent pain are suitable for pain psychology as a preventative treatment.	77.78%	4.00	1.50	no	40.00%	3.00	1.50	no	100.00%	4.50	1.00	yes
<i>Requirements</i>												
Patients should be verbal or at least have a language-comprehension capacity.	55.56%	4.00	2.00	no	40.00%	3.00	3.00	no	50.00%	3.50	1.75	no
There are no cognitive requirements or age restrictions to participate in pain psychology, but reduced capacity or independence requires more involvement of caregivers during treatment.	88.89%	4.00	0.50	yes	80.00%	5.00	2.50	no	50.00%	3.50	1.75	no

1													
2													
3	<i>Understanding of pain</i>												
4													
5	Patients/families who are interested to learn more about the	88.89%	4.00	0.50	yes	60.00%	4.00	2.50	no	100.00%	4.00	0.00	yes
6	complexities of pain.												
7	At the time of the referral, patients/families do not need a	77.78%	4.00	1.00	yes	80.00%	4.00	1.50	no	50.00%	3.50	1.75	no
8	biopsychosocial understanding of pain yet.												
9													
10													
11													
12	<i>Motivation</i>												
13	Patients/families who are open to participate in pain	88.89%	4.00	1.00	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
14	psychology.												
15													
16	Patients/families who are willing to make the commitment	88.89%	5.00	1.00	yes	60.00%	4.00	2.50	no	100.00%	4.00	0.75	yes
17	necessary in the respective setting.												
18													
19	Patient/families who are ready to take an active role in their	100.00%	5.00	1.00	yes	100.00%	4.00	0.50	yes	100.00%	4.00	0.75	yes
20	recovery.												
21	Although clear expectations and low resistance are desirable.	88.89%	4.00	1.00	yes	80.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
22	patients with unclear expectations and some resistance could												
23	still benefit from pain psychology.												
24													
25													
26													
27	<i>Contraindications</i>												
28	Acute medical safety concerns (e.g., malnutrition) should be	44.44%	2.00	3.00	no	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
29	addressed prior to pain psychology.												
30													
31	Acute psychiatric instability (e.g., active and poorly managed	77.78%	4.00	2.00	no	80.00%	4.00	2.00	no	100.00%	4.50	1.00	yes
32	psychosis, substance misuse, or suicidal ideation) should be												
33	addressed prior to pain psychology.												
34													
35	Reduced cognitive flexibility (e.g., in a context of a severe	44.44%	3.00	2.00	no	60.00%	4.00	3.50	no	100.00%	4.00	0.75	yes
36	depression) should be addressed prior to pain psychology.												
37	Concurrent mental illnesses should not be an exclusion criterion	88.89%	4.00	1.00	yes	40.00%	2.00	3.50	no	50.00%	3.00	2.00	no
38	for pain psychology.												
39													
40													
41													
42													
43													
44													
45													
46													

Task 1a: Suitability to graded exposure treatment more specifically

Presenting problem

All patients who experience acute or persistent pain are suitable for graded exposure treatment.	66.67%	4.00	1.50	no	0.00%	1.00	1.00	no	25.00%	3.00	1.50	no
Patients with persistent pain are suitable for graded exposure treatment.	66.67%	4.00	1.00	no	40.00%	3.00	3.00	no	50.00%	3.50	1.75	no
Patients with either mild functional impairments in several domains or moderate to severe functional impairments in at least one domain are suitable for graded exposure treatment.	77.78%	4.00	1.00	yes	40.00%	3.00	2.00	no	25.00%	3.00	1.50	no
Patients with at least mild functional impairment related to avoidance are suitable for graded exposure treatment.	66.67%	4.00	2.00	no	80.00%	4.00	2.50	no	50.00%	3.50	1.00	no
Patients with at least mild levels of fear are suitable for graded exposure treatment.	77.78%	4.00	1.50	no	60.00%	4.00	2.50	no	100.00%	4.00	0.00	yes
Patients with one or more of the followings symptoms are suitable for graded exposure treatment: fear of pain, avoidance of specific activities, or functional impairments.	77.78%	4.00	1.50	no	100.00%	5.00	0.50	yes	75.00%	4.00	2.25	no
Contraindications												
Patients should be medically cleared before the treatment.	66.67%	4.00	2.50	no	80.00%	5.00	1.50	no	75.00%	4.50	1.75	no
Prescribed <i>current</i> movement limitations should not be part of exposure treatment.	66.67%	4.00	1.50	no	60.00%	4.00	2.50	no	75.00%	4.50	2.50	no
Activities that are not part of the prescribed movement limitation, can be targeted during exposure treatment.	66.67%	4.00	1.00	no	100.00%	4.00	1.00	yes	50.00%	3.50	2.50	no

1												
2												
3	Task 2a: Ideal referral process											
4												
5	Dissemination among referring providers											
6	Referring providers need to be aware about pain psychology.	88.89%	5.00	1.00	yes	100.00%	4.00	0.50	yes	75.00%	4.50	2.50 no
7												
8	Referring providers need to be aware of and educated on ideal											
9	pathways for pain psychology interventions triaged by level 1											
10	(e.g., pain education. group classes as universal treatment).	88.89%	4.00	1.00	yes	80.00%	4.00	1.50	no	75.00%	4.00	1.50 no
11	level 2 (e.g., individualized treatment). and level 3 (e.g.,											
12	intensive interdisciplinary care).											
13												
14	Referring providers need to understand the difference between	88.89%	5.00	1.00	yes	60.00%	5.00	2.50	no	100.00%	5.00	0.75 yes
15	pain psychology compared to general mental health services.											
16												
17												
18	Timing											
19												
20	Level 1 pain psychology (e.g., pain education) should be offered											
21	as a standard treatment whenever pain is the presenting	88.89%	5.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75 yes
22	problem.											
23	Pain psychology should be considered early on as an adjunct	88.89%	5.00	1.00	yes	60.00%	4.00	2.00	no	100.00%	4.00	0.75 yes
24	treatment option to other medical procedures.											
25												
26	Pain psychology should be considered early on as a stand-alone	55.56%	4.00	1.50	no	0.00%	3.00	1.50	no	25.00%	3.00	1.50 no
27	treatment.											
28												
29	In the case a patient refuses to participate in pain psychology.	77.78%	4.00	1.50	no	100.00%	4.00	0.50	yes	75.00%	4.00	1.50 no
30	referral should be reattempted/reconsidered at a later stage.											
31	Referral to pain psychology should be reconsidered. whenever	88.89%	5.00	1.00	yes	60.00%	4.00	3.00	no	75.00%	4.00	1.50 no
32	other treatment approaches have been proven unsuccessful.											
33												
34	Patients should be referred as early as possible without	88.89%	4.00	1.00	yes	80.00%	5.00	2.00	no	100.00%	4.00	0.75 yes
35	interfering with their lives more than necessary.											
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												

Referral situation

The referral should be explained verbally.	88.89%	4.00	1.00	yes	100.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
When making the referral, referring providers should respond to the patient's individual situation, for example by taking the time to listen to the patient empathetically and encouraging them to take the next step.	100.00%	5.00	1.00	yes	100.00%	5.00	0.00	yes	75.00%	4.00	0.75	yes
The referral should support a biopsychosocial understanding of pain.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	yes	100.00%	4.00	0.00	yes
Referring providers should start to set realistic expectations regarding pain psychology (e.g., explaining the active role of patients and caregivers).	88.89%	4.00	1.00	yes	80.00%	5.00	1.50	yes	75.00%	4.00	2.25	no
Additional materials (e.g., information materials, brochures, or patient testimonials) should be provided.	88.89%	4.00	1.00	yes	100.00%	4.00	1.00	yes	75.00%	4.00	0.75	yes
An overview about different treatment options and providers should be provided.	88.89%	4.00	1.00	yes	100.00%	4.00	0.50	yes	75.00%	4.00	0.75	yes

Treatment triaging

The type and intensity of pain psychology is ideally decided by the psychologist on an individual basis.	100.00%	5.00	1.00	yes	60.00%	4.00	1.50	no	100.00%	4.00	0.75	yes
Patients are ideally referred according to a stepped care approach, in which the type and intensity of pain psychology treatment is matched to the patient's individual needs with the possibility to step up or down to different levels as they move along their recovery journey.	88.89%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	4.00	0.75	yes
Family members (e.g., parents, caregivers, siblings) should be involved during treatment.	100.00%	5.00	1.00	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes

1													
2													
3	Overcoming barriers												
4													
5	Level 1 pain psychology (e.g., pain education) should be offered	66.67%	4.00	3.50	no	80.00%	5.00	1.50	no	100.00%	4.00	0.75	yes
6	free of charge.												
7	Free links to web resources should be provided for pain	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	4.50	1.00	yes
8	education.												
9													
10	To overcome distance barriers, telehealth options could be	100.00%	5.00	0.50	yes	100.00%	5.00	0.00	yes	100.00%	5.00	0.75	yes
11	considered.												
12													
13	To address the shortage of treatment providers, the												
14	involvement and training of other disciplines to provide Level 1												
15	pain psychology should be considered.	100.00%	5.00	1.00	yes	80.00%	5.00	2.00	yes	100.00%	5.00	0.75	yes
16													
17													
18	Task 2b: Key ingredients of a referral conversation												
19													
20	Part 1 - Opening												
21													
22	Be interested and express empathy toward the unique pain	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes
23	experience												
24	Assess the patient's individual explanatory model for their	100.00%	4.00	1.00	yes	100.00%	4.00	1.00	yes	100.00%	4.50	1.00	yes
25	symptoms												
26													
27													
28	Part 2 - Explaining pain												
29													
30	Describe pain from a biopsychosocial perspective	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	4.50	1.00	yes
31													
32	Mention contributing psychological factors	88.89%	5.00	1.00	yes	60.00%	4.00	1.50	no	75.00%	4.50	1.75	no
33													
34	Describe possible psychological consequences	100.00%	5.00	1.00	yes	60.00%	4.00	1.50	no	50.00%	4.00	2.00	no
35	Recommend multidisciplinary treatment approach	100.00%	5.00	0.50	yes	100.00%	5.00	1.00	yes	100.00%	4.50	1.00	yes
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													

Part 3 - Recommending pain psychology

Recommend pain psychology as an evidence-based treatment	100.00%	5.00	1.00	yes	100.00%	5.00	0.50	yes	75.00%	4.00	1.50	no
Outline some treatment content and format	100.00%	5.00	0.50	yes	100.00%	5.00	1.00	yes	75.00%	4.00	1.50	no
Set realistic expectations	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes
Part 4 - Closing												
Leave room for questions	100.00%	5.00	0.50	yes	100.00%	5.00	0.50	yes	100.00%	5.00	0.75	yes
Allow uncertainty	88.89%	4.00	1.00	yes	80.00%	4.00	2.00	no	75.00%	4.50	2.50	no
Leave the door open	100.00%	4.00	1.00	yes	100.00%	4.00	1.00	yes	100.00%	4.50	1.00	yes

Note: Endorsement: Selection of response options 4 - *agree* or 5 - *strongly agree*. IQR: Interquartile range as a measure of statistical dispersion. Two criteria for consensus criteria were formulated: Consensus criteria 1: $\geq 75\%$ endorsement. Consensus criteria 2: Median ≥ 4 and interquartile range (IQR) ≤ 1 . Consensus was assumed when statements passed both consensus criteria.