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Mapping Clinician Perspectives on Pediatric Chronic Pain Needs in Spain

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Abstract

Chronic pain is a significant public health issue, particularly prominent in pediatric populations due to limited access to validated treatments. The World Health Organization emphasizes the necessity of identifying the needs of children as a foundational step in developing effective treatments. This study aims to identify the healthcare needs of children with chronic pain, including perceived needs, barriers, and facilitators identified by clinicians. Two online focus groups were conducted with nine healthcare professionals from six pediatric hospitals across all Spain. The Public and Patient Engagement Evaluation Tool (PPEET) was used to evaluate participants' experiences. Data were analyzed qualitatively using a framework analysis based on the Consolidated Framework for Implementation Research (CFIR), with the integration of the biopsychosocial model of pain and the Capability, Opportunity and Motivation Model of Behavior Change (COM-B). Clinicians identified key unmet needs in access to multidisciplinary treatment, school support, and family guidance. Barriers included fragmented services, lack of coordination across levels of care, and insufficient training. Facilitators included clinician motivation, informal professional networks, and openness to digital health tools. Findings highlight critical gaps in pediatric chronic pain care in Spain and point to strategies for service development, training, and policy initiatives. Integrating implementation science with clinical and behavioral frameworks offers a pathway to improve access and quality of care.

Plain Language Summary

Defining the Needs of Adolescents with Chronic Pain from the Point of View of Their Clinicians

Chronic pain affects many children, but finding the best ways to treat it can be challenging. To understand how to improve care, this study spoke with healthcare professionals across Spain about what children with chronic pain need. The discussions revealed several important issues: doctors and nurses often do not have enough time or resources, communication between different specialists can be poor, and high workloads make it difficult to give children the attention they need. At the same time, these experts agreed that involving families in care and staying motivated to help children are crucial parts of successful treatment. By listening to these insights, researchers can develop better, more coordinated treatment options, making sure that doctors, psychologists, and families all work together to support children with chronic pain. This work will help create more effective and complete treatment plans that can ease pain and improve the quality of life for these children.

Keywords
chronic pain, pediatric pain, needs assessment, focus group, healthcare professionals

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Data Availability Statement included at the end of the article.

Introduction

The definition of pain by the International Association for the Study of Pain (IASP) follows the biopsychosocial model (Gatchel et al., 2007; M. K. Nicholas, 2022), describing pain as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage" (Raja et al., 2020) and recognizes that pain encompasses emotional, cognitive, and social components. Similarly, chronic pain is included in the ICD-11 as both a medical and psychological condition (M. Nicholas et al., 2019).

Children and adolescents are a vulnerable group, with a global prevalence of chronic pain of 21% (Chambers et al., 2024). In Spain this number is increasing, as recent estimates show a prevalence of 37.3% (Miró et al., 2023). Youth with chronic pain face adverse outcomes including psychological distress, physical limitations, social isolation, and academic challenges (Murray et al., 2020b; Wrona et al., 2021). This condition often leads to fatigue and emotional problems (Yoon et al., 2019), poor sleep quality (Andreucci et al., 2021) and developmental delays, particularly in academic performance and social outcomes in early adulthood (Murray et al., 2020b). Socially, these children engage less in activities and face exclusion (Joslin et al., 2021; Shaygan & Karami, 2020). Pain also impacts the family, leading to poorer functioning and financial strain (Miró et al., 2022). Parents of children with chronic pain often experience high levels of distress (MacKenzie et al., 2022; Neville et al., 2020).

Regarding treatment, the World Health Organization (WHO) guidelines on the management of chronic pain in children (World Health Organization, 2020) recommend a multidisciplinary patient-centered approach. However, in Spain, there are inadequate resources (Fundación Grünenthal, 2022), as most existing Pain Units (PUs) are not specialized in pediatric pain and follow a biomedical approach (Miró et al., 2023). Therefore, understanding the specific needs of a population without access to optimal treatment is crucial to improve care.

Assessing children and adolescents' pain needs requires considering all stakeholders: the adolescent, their families and the healthcare professionals treating them. Clinicians' perspectives are crucial to address patient needs effectively (Roberts et al., 2023), as they can identify nuanced needs and tailor care (Simms et al., 2011; Song et al., 2021). This is critical, as clinicians' treatment choices may be constrained by the societal conditions (*outer setting*), hospital policies (*inner setting*) and their own challenges and needs when administering treatment (*individual domain*; Kwame and Petrucka, 2021). These factor are well described in the updated Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2022).

This study was explicitly grounded in three complementary frameworks. First, the aforementioned Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2022) was used to structure data collection and analysis across the *outer setting*, *inner setting*, and *individual* domains. Second, the biopsychosocial model of pain (Gatchel et al., 2007; M. K. Nicholas, 2022) provided a clinical lens to understand the biological, psychological, and social factors influencing chronic pain in children and adolescents. Third, the Capability, Opportunity, and Motivation Model of Behavior (COM-B) (Michie et al., 2011) informed the exploration of clinicians' behavioral drivers and barriers in providing optimal care. Integrating these frameworks allowed us to situate clinicians' perceptions within both system-level and individual-level contexts, linking organizational factors with clinical practice and family dynamics. This multi-level approach enhanced the explanatory power of the findings and informed the identification of potential strategies for improving pediatric pain care in Spain. See Figure 1 for an illustration of the integration of the models.

In this study, we sought to explore clinicians perspective on the treatment needs of children and adolescents with chronic pain, and to understand their barriers and facilitators for offering optimal treatment (Berg et al., 2024). Given the suboptimal situation in Spain (Fundación Grünenthal, 2022), we expected to identify important barriers and unmet needs at both settings of the CFIR, as well as at the *individual level*, at all three domains of the biopsychosocial model (Gatchel et al., 2007) and the three dimensions of the COM-B model (Michie et al., 2011) (i.e., Capability, Opportunity and Motivation). Guided by these frameworks, this study sought to answer the following research question: How do clinicians in Spain perceive the treatment needs of children and adolescents with chronic pain, and what barriers and facilitators do they identify in providing optimal care?

Methods

The consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007) have been used as a guide to describe the methods and results of this study, in order to ensure quality and transparency (de Jong et al., 2021).

This study is part of Phase 1 of a research project (anonymized for review) focused on understanding the needs of children with chronic pain, their parents, and healthcare professionals (which is the focus of this article) in order to develop a self-management digital treatment at a later Phase. Participants were not involved in

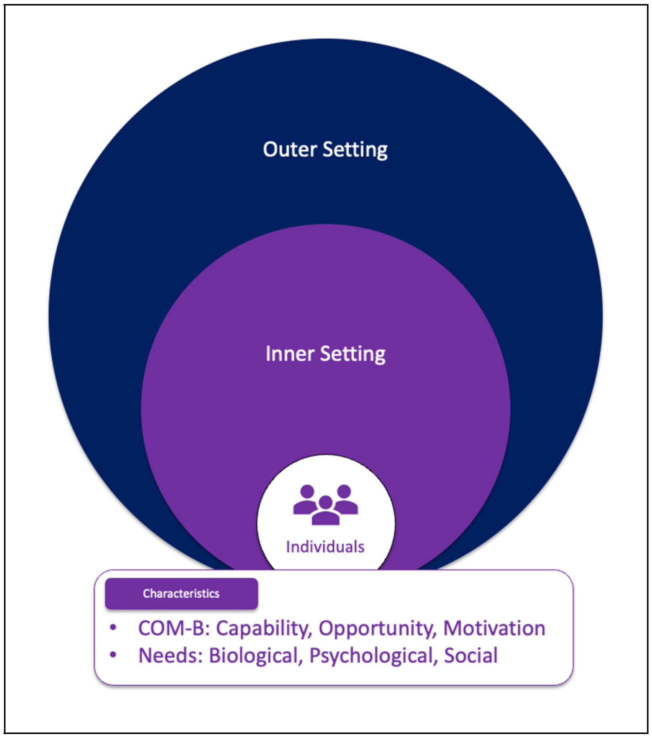

Figure 1. Conceptual integration of CFIR, COM-B, and the biopsychosocial model in this study.
The Consolidated Framework for Implementation Research (CFIR) provides the overarching structure, including *outer setting*, *inner setting*, and *individuals*. Within the *Individuals* domain, clinicians' needs were expanded and categorized using the biopsychosocial model (biological, psychological, and social). Capability, Opportunity, and Motivation (COM-B) were conceptualized as individual-level determinants of behavior. This integrated framework structured data collection and analysis to identify barriers and facilitators to pediatric pain care in Spain.

the design of this Phase of the study, although the clinicians, patients and caregivers' perspectives collected in this Phase will be used to co-develop the intervention in a future Phase.

Participants

Following recommendations for qualitative focus group research (Fugard & Potts, 2015; Jayasekara, 2012), small groups of four to five participants were deemed sufficient to retrieve multiple instances of relevant themes and allow all participants to share their perspectives. Recruitment was planned until theoretical sufficiency was achieved, which occurred after the second focus group (Braun & Clarke, 2019).

Participants were recruited from six pediatric hospitals located in different regions across Spain, with the aim of being able to capture perspectives from different healthcare regions: Andalusia, Catalonia, Madrid and Murcia. Inclusion criteria for healthcare professionals were: working with children with chronic pain and being fluent in Spanish. There were no exclusion criteria. Both geographical location of the hospital and inclusion criteria were kept broad to enhance external validity.

Instruments

Focus Groups. Focus groups are the core of Phase 1 of the study, used to understand the needs, opinions, and appraisals of all participants. A focus group is a qualitative descriptive technique proven effective in studies aimed at obtaining information from people with chronic pain or their clinicians (Dunham et al., 2022; Kim et al., 2021). Focus groups involve a semi-structured interview among interested parties on a specific topic, guided by a moderator who poses questions to elicit appropriate responses (Tenny et al., 2022). The focus group format was chosen given their advantages over individual interviews, such as facilitating the identification and clarification of perspectives by the participants and their ability to promote positive groups processes (Tausch & Menold, 2016).

The questions asked to healthcare professionals in these groups were: (a) What type of pain treatment do you currently offer?; (b) What resources do you feel you lack in pain care?; (c) If you had unlimited time and financial resources, would you do anything differently?; (d) What do you consider the greatest challenge in working with children and adolescents with chronic pain?; (e) Do you think there is a difference between what you consider a good pain treatment and what you can currently offer?; (f) How is the transition from pediatric to adult care for these children?; (g) What aspects do you think could be improved? Prompts and follow-up questions were used, when needed.

Sociodemographic Questionnaire. This questionnaire, designed *ad hoc*, gathered specific sociodemographic information about the participants, such as: gender, age, nationality, profession or specialty, years of experience, workplace, and the frequency with which they treat children with chronic pain in their practice.

Public and Patient Engagement Evaluation Tool (PPEET). The Public and Patient Engagement Evaluation Tool (PPEET) (Abelson, 2018) was administered after the focus group took place to evaluate participants' experiences with the group (Abelson et al., 2019). This tool evaluates the quality of the collected information and consider any difficulties encountered during the focus groups. The PPEET consists of three surveys targeting different evaluation groups. In this study, the 19-item participant survey was used. Several subscales are included: communication and support in participation, sharing views and perspectives, impact and influence of the study on participation, and final reflections. Thirteen of the items are Likert-type on a scale from 1 to 5, where 1 indicates "*Strongly Disagree*" and 5 "*Strongly Agree*." The remaining six items are open-ended questions. The PPEET has demonstrated suitability and feasibility for evaluating participant perspectives (Abelson et al., 2019). Cronbach's alpha in this sample was .92.

Procedure

This study received ethical approval from the Ethics Committee of the Province of Málaga (Spain), and the approval or ratification from the six participating hospitals. Grand Rounds were given in the hospitals and information about the study and a QR code and link to express interest in participation were shared. To facilitate collaboration and participation in the focus groups, contact persons were appointed in each collaborating hospital, who were informed via email about the research study and the possibility of participating in the focus groups, either themselves or other interested colleagues, following a snowball sampling strategy (Naderifar et al., 2017).

Healthcare professionals interested in participating completed an online sociodemographic questionnaire using the REDCap platform (Harris et al., 2009) and signed an informed consent through the REDCap's electronic consent framework (Lawrence et al., 2020). Four participants per group were estimated sufficient to retrieve at least two instances of the relevant themes, supposing they were experienced by 70% of them, following the model proposed by Fugard & Potts (Fugard & Potts, 2015). Additionally, in order to allow all participants to share their unique perspective and maintain a reasonable duration of the group, small groups are recommended (Jayasekara, 2012). Recruitment per each group stopped after recruiting five participants, to account for potential last-minute dropouts.

The groups were moderated by a doctoral level female researcher from the team (ERS), who had training in health psychology and previous experience with these methodologies. To improve the quality of subsequent transcriptions for response analysis, a Master's level male team member took notes on any incidents or notable moments during the groups' development beyond verbal information. Neither the moderator nor the note-taker knew the participants beforehand, in order to avoid potential biases. Before the focus groups were conducted, participants were only informed that the study aimed to detect the needs of children with chronic pain, their families, and healthcare professionals.

Two focus groups were conducted online via a videoconference using Microsoft Teams with secure access from the University of Málaga, to ensure data confidentiality, obtain a video recording of the session, as well as offering an automatic transcription. The focus groups lasted approximately 70 min each. Participants were informed at the beginning of the session that they could leave at any time and did not have to answer any questions they did not wish to, and were asked to verbally confirm their consent for recording the session.

Finally, after the focus groups concluded, all participating healthcare professionals received a link via email to complete the PPEET (Abelson, 2018) participant survey anonymously in REDCap. All the information was password-protected and stored on the secure servers and databases of the University of Málaga, ensuring that only research team members had access, thereby securing personal and sensitive information.

Data Analysis

To describe the sociodemographic characteristics and the responses to the PPEET questions from the focus group sample analyzed in this work, descriptive statistics (means, percentages) were computed using IBM SPSS Statistics 23 for Windows (IBM Corp, 2021).

Before qualitatively analyzing the information obtained from the focus groups, the automatic transcription produced by Microsoft Teams was reviewed by the note-taker and the moderator and any necessary corrections were done following Jefferson's style (Jefferson, 1984). A code was assigned to each participant to ensure anonymity (e.g., C1, was the first clinician to speak, C2, was the second one, etc.). No data or information was lost during the transcription process, so it was not deemed necessary to send the document to the participants for review or to conduct repeat interviews.

The transcription followed fixed rules to facilitate the comparison of data with future transcriptions of other groups more easily. Among these rules, parentheses were used when interpreting a word that was not clearly heard, double parentheses marked an inaudible word, and square brackets included information added by the researchers to the original phrase for context and to aid reader comprehension (Jefferson, 1984).

Subsequently, the transcription analysis began using qualitative methodology (Braun & Clarke, 2006); specifically, a framework analysis was conducted (Thompson et al., 2022). This method is used in applied research to manage data qualitatively to identify potential results and conclusions with transparency and in relation to the obtained information. Framework analysis is useful in needs assessment and treatment development. It is reliable, structured, and rigorous, providing information on both the topic and the research process. This analysis has five interconnected stages: (a) familiarizing with the data, (b) identifying a theoretical framework, (c) indexing, (d) charting, and (e) mapping and interpretation (Thompson et al., 2022).

In this study, the updated CFIR (Damschroder et al., 2022) was the theoretical framework used to organize the data. As recommended by the CFIR authors, some subdomains were expanded with relevant theoretical models. In particular, the biopsychosocial model of pain (M. K. Nicholas, 2022) was used to classify the CFIR's "individual needs" domain, to gain better insight and understanding of the participants' needs. Finally, the Capability, Opportunity and Motivation Model of Behavior Change (COM-B) (Michie et al., 2011), which is integrated in the CFIR was used to classify challenges and operationalize the potential ways to overcome the existing barriers.

We used a structured spreadsheet to organize verbatim quotes and map them onto CFIR constructs. This approach was chosen instead of NVivo or similar software to facilitate transparency and allow direct integration of theoretical indexing across the frameworks. This manual yet systematic strategy supported collaborative coding and iterative refinement of themes. It included verbatim quotes from the participants extracted from the transcription, with themes integrated within the constructs of the various CFIR subdomains. Two trained coders, both Master's level psychologists with prior qualitative research training, independently coded the transcriptions and created new codes when needed. Neither coder was affiliated with the participating hospitals, which reduced potential bias. Disagreements were resolved by consensus in discussion with the first author (RV) and ERS.

Results

Two online focus groups ($N = 5$ and $N = 4$) were conducted. After analyzing the second group, theoretical sufficiency (Braun & Clarke, 2019) was reached and data collection was concluded, as planned in the study protocol (de la Vega et al., 2023). Theoretical sufficiency refers to the point at which there is enough information to adequately understand and explain the phenomena under study which, in this case, is clinicians' perceptions about all the domains of interest. Braun and Clarke recommend using this criterion to stop data collection, instead of the more traditional criteria of data saturation (Braun & Clarke, 2019).

Participants

From the clinicians who were interested in participating and available at the chosen date and time, one was unable to participate due to last minute schedule conflicts (woman, pediatric anesthesiologist). The final sample included nine healthcare professionals (four women, five men), aged 28 to 55 (mean = 42, SD = 8.23), all born in Spain. They had an average of 16 years of experience treating pediatric chronic pain (range 4–30, SD = 8.1). Specialties included: pediatrics (palliative care, emergency room, intensive care, neurology and gastroenterology services), pediatric clinical psychology (consultation-liaison) and pediatric physical therapy. Clinicians worked at six different healthcare centers located in five cities. The frequency in which clinicians attended patients with chronic pain was evenly distributed (33.3%) between: "every day," "several times a week" and "several times a month."

Detected Needs, Barriers and Facilitators for Optimal Pain Treatment

The results of the qualitative framework analyses are organized by CFIR domain and construct, highlighting the themes that emerged and providing supporting quotations from the clinicians (i.e., only the domains, constructs and themes that were mentioned by the participants are included below). A summary of the relevant Domains, Constructs and Themes can be found in Table 1 and Supplemental Figure 1.

Domain 1: Outer Setting. This domain refers to the external context within which an organization operates. It encompasses macro-level factors that originate outside the organization (hospital or clinic, in this case) and can influence the delivery of optimal pain treatment (Damschroder et al., 2022).

Critical Incidents. The COVID-19 pandemic significantly disrupted pediatric pain management. A clinician noted the challenge of treating neuropathic pain due to restrictive measures, leading to delayed care and lack of resources:

> I worked in a primary center and it was just after COVID, where we still had many restrictive measures. The girl had neuropathic pain in her upper limb due to trauma that couldn't be treated for two years because of the pandemic. They saw her a couple of times in the emergency room, several professionals did, but in the end, they dismissed her due to lack of resources. (C8 Physiotherapist, Focus Group 2).

Local Conditions. Clinicians highlighted the insufficient resources within the healthcare system for managing pediatric chronic pain (CP). A clinician emphasized that

Table 1. Domains, Constructs and Themes Extracted from the Focus Groups.

Domain	Construct	Theme
1. Outer Setting	Critical Incidents	Lack of resources to address pediatric pain post-pandemic.
	Local Conditions	Insufficient resources in the healthcare system for youths with chronic pain (CP).
	Partnerships & Connections	Difficulties in referrals to child and adolescent mental health services.
		Challenges in transitioning to adult services.
		Referral difficulties to physiotherapy for those under 14 unless they receive specialized care.
		Referrals from Medicine to other healthcare professionals due to the inefficacy of medications.
		Lack of communication between some healthcare specialties.
		Families' difficulty in accessing the appropriate professional.
	Policies & Laws	Differences in experience and training in child and adolescent mental health services across districts.
		Lack of pain management training.
		Non-adherence to clinical guidelines on multidisciplinary CP management.
		Clinical guidelines recommend a multidisciplinary approach and family inclusion.
2. Inner Setting	Structural Characteristics	
	Physical Infrastructure	Insufficient distraction devices in emergency rooms.
		ICU configurations create fear in hospitalized youths.
		Sharing waiting rooms with adults causes discomfort for youths.
		Availability of updated analgesic therapies in the ICU.
	Information Technology Infrastructure	Lack of telehealth resources.
	Work Infrastructure	
	Reorganization of tasks and responsibilities due to the lack of a PU	Emergency Room pediatricians take on PU roles.
		Need for a clinical pain management lead.
		Palliative care units take on PU roles.
		Child and adolescent mental health services do not attend to youths with CP.
		Lack of coordination among different therapeutic efforts.
	Workload management	Nursing staff overload.
		Need for time to address CP.
		High delays in pediatric and psychological care.
		The high volume of patients leads to worsening conditions when transitioning to adult services.
		More time available for patient care in the private sector than in the public sector.
		High demands on clinicians for quick patient improvement in the private sector.
		Need for more frequency and number of visits to attend the youths.
	Work protocols	Current amputation protocols reduce postoperative pain.
		ICU pain management protocols prolong hospitalization.
		Multidisciplinary protocols exist for some complex chronic conditions.
		Transition protocols from pediatrics to adult services exist for some complex chronic conditions.
	Relational Connections	Networked work among clinicians to integrate patient care.
		Lack of follow-up on analgesic medication for patients discharged from the ICU.
		Need for a specialized pediatric pain team.
		Need for interdisciplinary approach to treat pain.
	Communications	Use of informal communication to agree on therapeutic goals among clinical specialties.
		Formation of informal multidisciplinary networks due to lack of formal communication networks.
	Culture	
	Recipient-Centeredness	Pediatric ICU prioritizes pain management, unlike adult services.
	Tension for Change	There is a gap between current and ideal pain treatment.
	Compatibility	Difficulty organizing interdisciplinary PUs.
	Available Resources	
	Funding	High costs hinder multidisciplinary work.

(continued)

Table 1. (continued)

Domain	Construct	Theme
3. Individuals Domain	Need	Differences in perceived needs by each stakeholder. Families and youths need tools for independent pain management.
	Biological	Need for escalating medication doses in patients.
	Psychological	Set realistic expectations with families about CP treatment. Psychoeducate families on pain neurophysiology. Include the family in psychological intervention. Validate youths. Educate families on non-pharmacological treatment options. Involve youths in medical decisions.
	Social	Address families' social issues.
	Capability	Clinicians' difficulties managing neuropathic pain. Pediatric ICU difficulties in managing high-intensity pain in youths. Clinicians' challenges in managing primary CP. Pain management difficulties due to lack of training. Clinicians' difficulties using non-pharmacological approaches due to less experience. Communication difficulties among clinicians due to terminology differences. Challenges in managing families. Families' difficulty in knowing how to act in response to pain. Ability to help patients increases when communicating with other clinicians. Youths have a greater capacity for improvement than adults.
	Opportunity	Families' difficulty in attending consultations due to lack of financial resources. Availability of time is key for psychologists. Preference for in-person intervention over online. Families' difficulty in attending consultations due to lack of conciliation.
	Motivation	
	Motivation of clinicians	Personal motivation determines treatment quality. Decreased motivation to address CP treatment over time.
	Motivation of families	Family motivation determines treatment success. Family motivation determines success in psychological intervention.
	Motivation of adolescents	Younger patients are more motivated to engage in treatment than older ones. Difficulties in treatment adherence.

Note. Text in *italics* means that new sub-constructs were integrated into the original CFIR. The CFIR domains that were not mentioned by participants have been removed from the table for clarity. CP = Chronic Pain; PU = Pain Unit; ICU = Intensive Care Unit.

less severe health conditions are often neglected, impacting the quality of care:

> When it's something less severe and compromises fewer organs and systems or life, it's worse organized for us. This group of pathologies is a bit neglected because it seems the healthcare system is less urgent about them. (C7 Neuropediatrician, Focus Group 2).

Partnerships & Connections

Referral Difficulties. Clinicians reported difficulties in referring patients to child and adolescent mental health services, exacerbated by inconsistent policies across regions:

> We have what is called USMIJ [Child and Adolescent Mental Health Unit], but I can't refer a child to the USMIJ. This happens all over Spain, not just in [clinician's city]. The local mental health team decides if they take the case or refer it to the USMIJ. (C7 Neuropediatrician, Focus Group 2).

The transition to adult services also poses significant challenges, as pediatric services lack equivalent adult counterparts, complicating patient transfers and referrals:

> We don't have a similar service for adults. We face many problems in terms of which service to transfer them to. This is a major area of improvement needed in all units in Spain. (C5 Pediatric Palliative Care, Focus Group 1).

Referral difficulties extend to physiotherapy for children under 14, unless they are receiving specialized care:

> Access to physiotherapy for children in [a region of Spain] is not covered. From age 14, you can refer a child to

> physiotherapy, but below 14 you can't, unless they have a specific pathology and are in specialized care. (C8 Physiotherapist, Focus Group 2).

Additionally, the inefficacy of medications often requires referrals to other healthcare professionals:

> (…) I would leave it to other professionals once I see medications are not the solution. (C7 Neuropediatrician, Focus Group 2).

Communication Difficulties. The lack of communication between healthcare specialties emerged as a critical barrier, with professionals noting minimal interaction and coordination:

> We have many children wandering from one place to another: one day in the pain unit, the next in emergencies, and the next in primary care. This is a very important problem. (C8 Physiotherapist, Focus Group 2).

Policies & Laws

Lack of National Training and Practice Standards. Disparities in experience and training among child and adolescent mental health services further impact care quality:

> In the mental health team, some have more experience in treating children with CP, while others have less. This disparity affects the quality of care. (C7 Neuropediatrician, Focus Group 2).

The general lack of pain management training among professionals was a recurrent theme, highlighting the need for improved education and resources:

> There is a general lack of knowledge among professionals about what CP is and how it should be treated. This is not only a problem in Spain but common in many European countries. (C8 Physiotherapist, Focus Group 2).

Non-adherence to clinical guidelines on multidisciplinary CP management was also noted, with many professionals working in isolation:

> We work in a uni-professional way, which makes no sense for CP because the recommended approach is multidisciplinary. (C8 Physiotherapist, Focus Group 2),

and clinical guidelines advocating for interdisciplinary teams and family inclusion being often overlooked:

> Many guidelines recommend interdisciplinary teams to set treatments and objectives jointly, including the patient and family. (C8 Physiotherapist, Focus Group 2).

Domain 2: Inner Setting. This domain refers to the internal context within which the pain treatment is delivered, such as the hospital or clinic. It can encompass multiple levels within an organization, like units, teams, or departments (Damschroder et al., 2022).

Structural Characteristics

Physical Infrastructure. The physical infrastructure of healthcare settings is often insufficient for providing adequate resources for pediatric pain management. For instance, emergency rooms lack sufficient distraction devices:

> We have limited monitors with some TV programs, we have placed them in the treatment room. (C3 Pediatric Emergency, Focus Group 1)

and current ICU configurations can induce fear and anxiety in young patients:

> Children with many monitors and cables in the ICU experience fear and anxiety, worsening their pain. (C2 Pediatric ICU, Focus Group 1).

Additionally, having to share waiting rooms with adults causes discomfort for adolescents transitioning to adult services, which in Spain happens at age 14:

> Adolescents transitioning to adult services feel uncomfortable in waiting rooms shared with much older patients. (C4 Psychologist, Focus Group 1).

On the positive side, the availability of updated analgesic therapies in pediatric ICUs was seen as a helpful development:

> With new analgesic therapies in pediatrics, we have made significant advances in recent years, especially in emergency care. (C2 Pediatric ICU, Focus Group 1).

Work Infrastructure. The organization of tasks and responsibilities for pain management was a significant issue. In the absence of dedicated pain units, pediatricians in Emergency Rooms often assume roles typically filled by pain specialists:

> We [the pediatricians in Emergency] supplement the roles of the Pain Unit. (C3 Pediatric Emergency, Focus Group 1),

and palliative care units frequently assume pain management responsibilities:

> Many times, without being a Pain Unit as such, we have become the go-to person within the hospital for pain management. (C1 Pediatric Palliative Care, Focus Group 1).

Along the same lines, there is a need for clinical leads in pain management:

> We need someone who can offer alternative therapeutic options for pain, such as epidural catheters or bolus pumps. (C2 Pediatric ICU, Focus Group 1).

Finally, coordination among different therapeutic efforts is often lacking, with professionals not working toward common goals:

> We may know what each other is doing, but we don't have a common work scheme, and often, we are not all rowing in the same direction. (C6 Physiotherapist, Focus Group 2).

Workload Management was another central topic. Nursing staff is frequently overwhelmed by high patient loads and nurse-to-patient ratios:

> The disease burden in the ward is very high, with many patients and high nurse-to-patient ratios. (C2 Pediatric ICU, Focus Group 1).

It was also noted that properly addressing chronic pain required substantially more time than allotted, impacting the quality of care:

> The biggest challenge when working with children with chronic pain is time. (…). But yes, the time is needed to assess everything surrounding the pain. Especially the impact on the patient. And for us, we have relatively short consultations. I mean, I can probably dedicate maybe 15 minutes, 20 minutes at most. But we can't dedicate more time, and there are many things that slip through the cracks. (C9, Pediatric Gastroenterologist, Focus Group 2).

Additionally, due to the high workloads, delays in pediatric and psychological care are common:

> There are long delays in care, both in family pediatrics and the psychology unit. (C3 Pediatric Emergency, Focus Group 1),

Finally, continuous follow-up, that clinicians were unable to offer, are considered necessary to provide effective patient management:

> Patients need continuous follow-up, not just one-off consultations, to truly help them. (C3 Pediatric Emergency, Focus Group 1).
>
> But, they are really children whom we feel we are often just patching up and who need continuous follow-up. (C1, Pediatric Palliative Care, Focus Group 1).

Work Protocols received mixed assessments, as pre-surgical treatment protocols for planned amputations are effective in reducing postoperative pain:

> Pre-surgical treatment for planned amputations has greatly improved postoperative pain management. (C2 Pediatric ICU, Focus Group 1),

but, ICU pain management protocols often prolong hospitalization:

> Often, the escalation of analgesic drugs perpetuates the ICU stay, delaying rehabilitation. (C2 Pediatric ICU, Focus Group 1).

As a notable exception, multidisciplinary protocols and well-organized transition protocols from pediatric to adult services existed for some conditions and were helpful:

> For complex chronic conditions, we have multidisciplinary or interdisciplinary teams in place, which greatly help. (C9 Pediatric Gastroenterologist, Focus Group 2)
>
> We have a well-organized transition protocol for epilepsy, where both pediatric and adult neurologists attend the transition consultation. (C7 Neuropediatrician, Focus Group 2).

Relational Connections. Networked work among clinicians is crucial for integrating patient care:

> We work in a network, coordinating between psychologists and pediatricians to unify the consultation process. (C5 Pediatric Palliative Care, Focus Group 1).

However, there was a lack of follow-up on analgesic medication for patients discharged from the ICU:

> There is no follow-up for titrating analgesic doses for patients discharged from the ICU, which is a significant gap. (C2 Pediatric ICU, Focus Group 1).

The need for a specialized pediatric pain team and an interdisciplinary approach to pain treatment was strongly emphasized:

> I miss having interdisciplinary units for treating chronic pediatric pain, where all professionals set shared objectives. (C5 Pediatric Palliative Care, Focus Group 1).
>
> So of course, social work, we definitely need to get involved, yes, social work without a doubt. And for us, well, if we had a psychologist in the unit that would also be [ideal]. (C9, Pediatric Gastroenterologist, Focus Group 2)

Communications. The use of informal communication is common for agreeing on therapeutic goals among clinical specialties:

> We agree on therapeutic goals through network, phone, and email. (C5 Pediatric Palliative Care, Focus Group 1).

The formation of informal multidisciplinary networks was often due to the lack of formal communication networks:

> We don't have support from others; all you can do is just call a colleague on the phone. (C8 Physiotherapist, Focus Group 2).

Culture. Pediatric services prioritize pain management as part of their culture, unlike adult services:

> In pediatrics, we are much less tolerant of pain than in adult services. We have better quality in treating pediatric pain. (C2 Pediatric ICU, Focus Group 1).

Tension for Change. There is a significant gap between current and ideal pain treatment, highlighting the need for change:

> Yes, there is a significant gap between what should be an effective pain treatment and what is currently offered. (C9 Pediatric Gastroenterologist, Focus Group 2).

Compatibility. Organizing coordinated interdisciplinary pain units would be difficult due to the healthcare system's design, which does not support arranging consultations for multiple specialists simultaneously:

> Organizing interdisciplinary teams is very difficult… Let's say we all get together [the specialists] and see that child in one morning. It's a nightmare because it requires closing consultations for several specialists at once, which the healthcare system is not designed to support. (C7 Neuropediatrician, Focus Group 2).

Available Resources – Funding. High costs for the hospital or clinic often hinder multidisciplinary work:

> Working in a multidisciplinary manner would be very expensive in terms of human and material resources. (C9 Pediatric Gastroenterologist, Focus Group 2).

Domain 3: Individuals Domain. This last domain focuses on the roles and characteristics of the individuals involved in the delivery and receipt of pain treatment. In this case, the involved individuals are: clinicians, children and their families (Damschroder et al., 2022).

Needs. This construct addresses the deficits related to well-being, or personal fulfillment of the children and their families that can be addressed by the delivery of the pain treatment (Damschroder et al., 2022).

Biological. Clinicians noted the need for escalating medication doses in patients, often leading to over-medicalization:

> In the end, you have to keep escalating medication doses because patients need higher doses over time. (C2 Pediatric ICU, Focus Group 1)
>
> Maybe we are over-medicalizing…. (C7 Neuropediatrician, Focus Group 2).

Psychological. Setting realistic expectations with families about CP treatment is crucial to successful management of chronic pain:

> We provide psychological support to ensure families have realistic expectations about the extent of what we can achieve with chronic pain treatment. (C1 Pediatric Palliative Care, Focus Group 1)
>
> One problem is that families sometimes expect quick fixes due to the money they are spending, but change is gradual. (C6 Physiotherapist, Focus Group 2).

Psychoeducation for families on pain neurophysiology facilitates understanding and managing the condition:

> Convincing families that there is no physical injury causing the pain is crucial. It's about educating them on the neurophysiology of pain. (C5 Pediatric Palliative Care, Focus Group 1)
>
> Ruling out organic causes gives families peace of mind and helps them understand the neurophysiology of pain. (C3 Pediatric Emergency, Focus Group 1).

Educating families on non-pharmacological treatment options provides additional tools for pain management:

> We need to show families that medication is not the only solution and that evaluating pain from different perspectives within the family will greatly help the child. (C3 Pediatric Emergency, Focus Group 1).

Including families in psychological interventions is essential for effective pain management:

> Understanding pain requires treating not just the child but also the family. (C1 Pediatric Palliative Care, Focus Group 1)
>
> Working with the family is essential in pediatric pain management. (C4 Psychologist, Focus Group 1).

Involving children and adolescents in medical decisions ensures they are engaged and proactive in their treatment:

> Adolescents should be involved in medical decisions, especially regarding future surgery related to their pain. Such dynamics generate many secondary emotional reactions. (C4 Psychologist, Focus Group 1).

Validating adolescents is important for their treatment adherence:

> Adolescents need validation, which is very important for them. (C4 Psychologist, Focus Group 1).

Social. Addressing social issues within families is necessary, as these often contribute to the child's pain:

> Many times, social issues cause pain; how could a child not have headaches or stomach pain with the problems they face at home? There are true tragedies, that are more the competence of the social services and social workers than ours. (C7 Neuropediatrician, Focus Group 2).

Capability. This construct refers to the interpersonal competence, knowledge, and skills of the individuals necessary to fulfill their roles. In this case, providing pain treatment or adhering to it (Michie et al., 2011).

Pain Management. Clinicians found it challenging to manage neuropathic pain in the ICU due to difficulties in titrating analgesia:

> Managing neuropathic pain in the ICU is very challenging because it's hard to titrate analgesia in these patients. (C2 Pediatric ICU, Focus Group 1).

similarly, managing primary chronic pain was extremely challenging in the palliative care setting:

> Managing primary chronic pain is extremely difficult, especially in specialized consultations. (C5 Pediatric Palliative Care, Focus Group 1).

Lack of Training. A lack of training in pain management was a common issue, with family pediatricians needing more education to manage chronic pain effectively:

> Family pediatricians could manage children with chronic pain if they had adequate training, but training is lacking. (C3 Pediatric Emergency, Focus Group 1).

Non-Pharmacological Approaches. Clinicians are more comfortable with pharmacological approaches, but as they become more experienced in treating pain, they increase the use of non-pharmacological treatments:

> Pediatricians feel more comfortable with pharmacological approaches, but as we gain more experience, we also use non-pharmacological treatments more. (C1 Pediatric Palliative Care, Focus Group 1).

Communication Difficulties. Communication difficulties among clinicians, often due to differences in terminology, hinder effective pain management:

> Sometimes the terminology used by psychologists or doctors is a barrier because I don't understand it. I want to understand, but I can't. (C6 Physiotherapist, Focus Group 2).

Interacting with Families. Managing families is often a significant challenge, especially in pediatric and adolescent pain management:

> The biggest challenge in working with children and adolescents is managing their parents. (C4 Psychologist, Focus Group 1).

Perceived Difficulties in Families. Families frequently don't have the knowledge on how to proceed in order to seek help for their child's pain:

> Families often don't know where or how to act or where to go for help. (C8 Physiotherapist, Focus Group 2).

Perceived ability of Children to Improve.
Children were seen to have a greater capacity for improvement compared to adults:

> Children are very receptive to interventions. They improve much more than adults, who do not have the same potential. (C4 Psychologist, Focus Group 1).

Opportunity. This construct focuses on the availability, scope, and power the individuals have to provide or adhere to pain treatment, including considerations of the environment and context (Michie et al., 2011).

Perceived Financial Barriers in the Families.
Families face difficulties in attending consultations due to financial constraints:

> Some patients which come from [an island], they come very infrequently due to the economic cost. (C4 Psychologist, Focus Group 1).

Time Availability. Time is a crucial factor for psychologists in effectively managing pediatric pain:

> Psychologists' main tool is time. (C4 Psychologist, Focus Group 1).

Perceived Conciliation Issues in the Families. Families face challenges in attending consultations due to work-life balance and personal conciliation issues:

> Minor patients can't come to the hospital alone, so we need to consider family logistics, work-life balance, and personal conciliation. (C4 Psychologist, Focus Group 1).

Motivation. This construct examines the commitment of the individuals to provide or adhere to pain treatment. It includes intrinsic and extrinsic motivators (Michie et al., 2011).

Clinicians' Motivation. The quality of the provided pain treatment is significantly dependent on the clinician's interest and motivation:

> The quality of chronic pain treatment is complex and depends on the clinician's interest in the topic. (C3 Pediatric Emergency, Focus Group 1).

and, over time, motivation to address chronic pain treatment tend to decrease:

> When you start working, you have a lot of enthusiasm, but over the years, you might lose motivation and start saying 'it can't be done'. (C9 Pediatric Gastroenterologist, Focus Group 2).

Perceived Family Motivation. The success of treatment, especially psychological interventions, is highly dependent on the family's motivation and commitment:

> Patients often need parents as co-therapists. If parents are not firmly committed, the treatment won't be successful. (C4 Psychologist, Focus Group 1).
>
> [Talking about a success story] The result was very good because the family was proactive and very committed. (C8 Physiotherapist, Focus Group 2).

Perceived Child Motivation. Younger patients are more motivated to engage in treatment than older patients:

> Possibly, an 8-10 year-old child is much more likely to engage in their treatment than a 14-16 year-old because of the many changes they are experiencing. (C8 Physiotherapist, Focus Group 2).

Finally, the child's adherence to treatment is seen as a common barrier:

> One of the significant barriers we've found is poor adherence to treatment. (C8 Physiotherapist, Focus Group 2).

Satisfaction with the participation in the Focus Groups

Regarding the responses to the PPEET (Abelson, 2018), it is noteworthy that all participants in both groups were "*in agreement*" or "*strongly in agreement*" (4 and 5 in the Likert Scale) with the questions indicating that they understood the objective of the focus group, had everything they needed to participate, had the necessary information to contribute significantly with their responses, felt sufficient freedom to express their viewpoints, felt heard, and felt the focus group fulfilled its purpose and felt satisfied with participating in it.

On the other hand, two participants in Focus Group 1 "*disagreed*" or were "*neutral*" (2 and 3 in the Likert Scale) about having enough perspectives being included in the group. In the final open-ended questions, three of the participants in that group agreed that having a broader diversity of healthcare specialties would have further improved the development of the focus group. This, along with theoretical sufficiency not being reached, supported the idea of conducting the second focus group.

Taken together, these responses demonstrate that participants evaluated the focus groups as clear, respectful, and purposeful, which supports the credibility and trustworthiness of the data collected.

Discussion and Conclusions

The purpose of this study was to understand the healthcare needs of children and adolescents with chronic pain and their families, from the perspective of healthcare professionals working in an *outer setting* with suboptimal resources (Spain), as well as the barriers and facilitators for offering effective pain treatment. Two online focus groups were conducted, and the data were analyzed qualitatively. Consistent with our initial assumptions, several unmet needs at the biological, psychological, and social levels and across all setting domains were identified.

Outer Setting

Clinicians highlighted the insufficiency of available resources within the healthcare system for managing pediatric chronic pain. Both focus groups expressed concern that non-life-threatening conditions often received less attention and organizational support compared to more severe case. This imbalance in resource allocation emphasizes the need for a more comprehensive approach to chronic pain management, ensuring that all conditions receive adequate attention and resources. The COVID-19 pandemic further exacerbated these issues, leading to delayed care and lack of resources (Dunham et al., 2022).

Referral difficulties were another significant challenge reported by both groups. Clinicians highlighted the bureaucratic obstacles and lack of clear referral pathways to youth mental health services, intensified by inconsistent access across regions. These difficulties emphasize the need for standardized referral processes and better integration of mental health services into pediatric care (Raja et al., 2020; Roberts et al., 2023). This is critically important given the high comorbidities between chronic pain and mental health problems in children and adolescents (Vinall et al., 2016).

Inner Setting

Communication between healthcare specialties emerged as a critical issue, with clinicians perceiving poor coordination and communication barriers that obstructed effective patient management. Despite recognizing the importance of interdisciplinary approaches, actual practice was often not integrated due to these communication challenges, given the lack of both formal and informal networks. Enhancing communication and coordination among healthcare providers is crucial for optimizing care and improving patient outcomes (Kwame & Petrucka, 2021).

Workload and time management were also significant concerns. Nursing staff overload and the need for substantial time and attention to address chronic pain, often not available in the *inner setting*, were emphasized. Delays in pediatric and psychological care, exacerbated by high patient volumes, frequently led to worsening conditions during or after the transition to adult services. Addressing these workload and time management issues is essential for providing comprehensive and effective care (Deslauriers et al., 2020; Palermo et al., 2019).

On a more positive note, some established protocols were a notable exception of suitable work organization. For instance, the importance of effective pre-surgical treatment protocols for planned amputations and improved ICU pain management protocols were highlighted. Clinicians also recognized the benefits of multidisciplinary protocols for complex chronic conditions (such as Crohn disease), noting that in their experience these protocols were not uniformly implemented across all cases. Establishing standardized multidisciplinary protocols could improve the consistency and quality of care for pediatric patients with chronic pain (Cohen et al., 2021).

Individuals Domain—Biopsychosocial needs

Amongst the *biological needs*, pharmacological treatments were deemed to be insufficient. The need for escalating drug doses in patients aligns with various studies demonstrating the insufficiency and side effects of opioids and their excessive prescription, and highlighting the need for interdisciplinary treatment approaches that consider the biopsychosocial aspects of pain (Cohen et al., 2021; Fisher et al., 2022).

At the *psychological level*, this study identified themes such as establishing realistic expectations with families about chronic pain treatment, psychoeducating families about the neurophysiology of pain, and involving families in the psychological intervention. The emphasis on family dynamics and pain education aligns with previous research indicating the benefits of psychological interventions for parents and children (Eccleston et al., 2019; Fisher et al., 2018; Law et al., 2014). Similar findings have also been reported in European studies of cognitive-behavioral and acceptance-based interventions (Eccleston, 2003; Wicksell et al., 2009), highlighting the global relevance of family-based approaches. The family context of the youth affects how they relate to pain or its treatment, with parental attitudes and beliefs significantly influencing the child's pain experience (Caes et al., 2012).

Finally, at the *social level*, consistent with the literature showing a higher likelihood of developing chronic pain after experiencing Adverse Childhood Experiences (Groenewald et al., 2020), clinicians expressed their concerns about the social situation of some families, and the need to involve the social services for their adequate care.

Individuals Domain—Capability, Opportunity and Motivation (COM) to provide, or adhere to, pain treatment (B)

Capability to manage pediatric chronic pain involves both the knowledge and skills of the providers and the families. Clinicians stressed the need for enhanced training in pain management techniques that go beyond pharmacological interventions. This aligns with the broader literature suggesting that education on pain neurophysiology and non-pharmacological treatment options can significantly improve outcomes (M. K. Nicholas, 2022). Moreover, the capability of families to support their children effectively can be enhanced through psychoeducation, which can help them understand pain mechanisms and cope with their child's condition (Eccleston et al. 2019), and problem-solving training, which can help empower them to self-manage pain (Palermo et al., 2016).

Opportunity for effective pain management is influenced by the availability of resources and systemic support structures. Financial barriers and logistical issues were seen as significant obstacles for some families seeking pain management care. Clinicians noted that some families faced difficulties in attending consultations due to financial constraints and the challenges of balancing personal, work, and logistical aspects, which is consistent with the literature from other parts of the world (Murray et al. 2020b). Standardized referral processes and improved coordination among different healthcare providers are necessary to create these opportunities (Raja et al., 2020). Digital health solutions, such as Apps for pain self-management could help bridge this care gap(Fisher et al., 2019; Societal Impact of Pain [SIP], 2022).

Finally, regarding *motivation*, the quality of chronic pain treatment was found to depend significantly on the clinician's interest and motivation, as there were no regulated or mandatory pain training (Miró et al., 2022). The commitment of families to treatment also played a crucial role in determining its success, particularly in psychological interventions (Scheidegger et al., 2024). Consistent with the literature (Murray et al., 2020a), younger patients were generally more motivated to engage in treatment than older ones, and adherence to treatment remained a common barrier.

Implications for Research and Clinical Practice

Novel contributions of this study include clinicians' identification of critical gaps in transition care and reliance on informal professional networks to compensate for fragmented services. These findings extend prior literature by highlighting system-level gaps specific to the Spanish context. Notably, this is the first time in Spain that focus groups with healthcare professionals have been conducted to understand their perspectives on the needs of children with chronic pain, their parents, and the clinicians themselves. As anticipated in our study framing, it was confirmed that several needs are not covered in clinical practice.

The findings emphasize the need for integrated, multidisciplinary approaches, improved training, better communication, and enhanced resource allocation to support clinicians and families in managing pediatric chronic pain. Improvements in patient motivation, psychoeducation, and mental health outcomes could be addressed integrating health psychologists (Jensen & Turk, 2014) into the Pain Units, as requested by the clinicians in the study. Addressing these issues can lead to more effective and comprehensive care for pediatric patients, ultimately improving their quality of life and health outcomes.

This study was also a practical demonstration of using a qualitative framework analysis (Thompson et al., 2022), applying theoretical frameworks, such as the updated CFIR (Damschroder et al., 2022), in real-world research. This may help systematize the reporting of qualitative findings in the future, and serve as a blueprint for future research.

Building on these points, implications can be further specified across domains. For clinical practice, findings underscore the need for structured multidisciplinary teams and clear referral pathways to reduce service fragmentation. For education and training, systematic inclusion of pediatric pain management in medical, nursing, and psychology curricula, as well as continuing education, is warranted. At the policy level, actions could include the national standardization of pediatric referral protocols and the integration of digital self-management tools to support access to care. Together, these strategies provide a roadmap for strengthening pediatric pain services in Spain.

Several limitations should be considered with interpreting the findings. First, some types of healthcare professionals such as occupational therapists or nurses did not participate, due to the lack of availability. This reflects the situation in Spain, where pediatric occupational therapists focus on children with developmental delays or learning deficits, but not on populations with chronic pain, or where pediatric nurses often rotate between different units (e.g., PICU, oncology) without a specialization, making it more rare to find nurses focused on pediatric pain management. Nevertheless, even rare in their profession, important perspectives might have been missed. Additionally, one of the primary themes identified refers to how the needs of children often do not align with what their parents believe they need, nor with the needs of the professionals themselves, as evidenced in other studies (Eccleston et al. 2019; Fisher et al., 2017). Focus groups with children and adolescents with chronic pain and their parents should be conducted in order to have a first-person perspective of their pain care needs, as the results of this study portray only one piece of a bigger puzzle. Future research should continue to explore the themes found in this study, involving diverse groups of stakeholders to validate and expand upon the findings (MacKenzie et al., 2022). As part of the overarching project, a study with children and adolescents with chronic pain and their parents is planned, in order to triangulate and integrate all perspectives. Finally, because focus groups were conducted online, non-verbal cues and spontaneous group dynamics may have been reduced, although this format facilitated participation of clinicians across diverse geographical regions.

In conclusion, this study provides valuable insights into the needs and challenges faced by healthcare professionals in managing pediatric chronic pain in a setting with suboptimal conditions (Spain). The findings highlight the importance of addressing biological, psychological, and social needs through integrated, multidisciplinary approaches. Improved training, better communication, and enhanced resource allocation are essential for supporting clinicians, families and youth in managing pediatric chronic pain effectively. Beyond its relevance for Spanish healthcare reform, this study also contributes to the international discussion on how to strengthen pediatric pain care through implementation and behaviorally-informed strategies.

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Ethical Considerations

This study received ethical approval from the Ethics Committee of the University of Málaga (CEUMA 71-2022-H), the Provincial Ethics Committee of Málaga, and the approval or ratification from the six participating hospitals: Hospital Universitario de La Paz (Madrid), Hospital Materno Infantil (Málaga), Hospital San Joan de Déu (Barcelona), Hospital Torrecárdenas (Almería), Hospital Virgen de las Nieves (Granada), and Hospital Santa Lucía (Cartagena).

Consent to Participate

Healthcare professionals interested in participating signed an informed consent through the REDCap's electronic consent framework.

Author Contributions

RV: conceptualization, funding acquisition, data collection, data analyses, writing – original draft. AF: data collection, data analyses, writing – review and editing. ERS: data collection, data analyses, writing – review and editing.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

For ethical reasons, data will not be publicly shared. Data is available upon reasonable request from the corresponding author.

Supplemental Material

Supplemental material for this article is available online.

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