

BMJ Open Non-pharmacological therapies for pain management in paediatric intensive care units: a protocol for a scoping review

Isabele Gouveia Muniz de Alencar ^{1,2} Joyce Karolayne dos Santos Dantas ³, Sara Cristina Matias de Araújo ³, Thatiane Evelyn de Lima Fernandes,³ Pedro Lucas Oliveira de Araújo,³ Alex Batista da Costa,⁴ Juliana A Takahashi,⁵ Jonas Sâmí Albuquerque de Oliveira³

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¹Postgraduate Programme in Nursing, Nursing Department, Rio Grande do Norte Federal University, Natal, RN, Brazil

²Brazilian Company of Hospital Services, Brasília, DF, Brazil

³Nursing Department, Rio Grande do Norte Federal University, Natal, RN, Brazil

⁴Biomedical Engineering Department, Rio Grande do Norte Federal University, Natal, RN, Brazil

⁵School of Nursing, São Paulo University, São Paulo, SP, Brazil

Correspondence to

Isabele Gouveia Muniz de Alencar;
isabele_muniz@hotmail.com

ABSTRACT

Introduction In critically ill children, pain management is complex owing to cognitive development and the nature of hospitalisation in paediatric intensive therapy units. Although there are many protocols and guidelines for pain control via pharmacological interventions, non-pharmacological practices should also be explored and disseminated for their potential benefit.

Methods and analysis A systematic literature search will be performed using the following databases: Academic Search Premier, Cumulative Index to Nursing and Allied Health Literature, Cochrane Library, Excerpta Medica Database, Virtual Health Library, Medical Literature Analysis and Retrieval System Online, ScienceDirect, Scopus, Web of Science Core Collection, Theses from *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, Dart Europe, Open Access Theses and Dissertations and grey literature from Google Scholar. The research will consider quantitative and qualitative studies, mixed-method studies, systematic reviews, text articles, opinion articles, letters to editors and editorials in any language and from any database. The following will be eligible for inclusion: (1) newborns, infants, children and adolescents; and (2) non-pharmacological therapies used for pain in paediatric intensive care.

Ethics and dissemination This study does not require ethical approval. The results of this research will be disseminated through social media channels and podcasts about pain in children.

Trial registration number This protocol has been registered with the Open Science Framework (DOI 10.17605/OSF.IO/DZHKT).

INTRODUCTION

Admission to the paediatric intensive care unit (PICU) exposes paediatric patients to various pain experiences, and approximately 45%–72% of these patients experience pain daily either due to their critical illness, procedures, therapies or surgeries.¹ As a result, critically ill children have more experience with intense pain, as they are subjected to more painful procedures than children in other hospital divisions, such as

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Promotes updates on what is known about non-pharmacological therapies.
- ⇒ Presents gaps in knowledge that still need to be addressed.
- ⇒ Enables the selection of studies in other languages.
- ⇒ A modification and downsizing occurred within the initial reviewer's team, potentially introducing bias to the evidence.

medical and surgical units.² In the PICU, pain can be caused by the underlying illness or injury, complications of the primary disease, frequent medical procedures that result in pain (eg, incisions, wound care and injections), and supporting and monitoring systems (eg, suctioning an endotracheal tube, manipulation or stripping of drains, removal of catheters or drains).^{2–3} Tissue hypoxia that develops due to low oxygen saturation, cardiac output or anaemia can also cause pain^{2–3}; prolonged immobilisation can result in pain in the joints and pressure points and from changing positions.^{2–3}

Despite recent scientific and technological developments, paediatric patients frequently lack adequate pain relief.^{2–9}

Moreover, lack of pain relief is considered one of the most commonly reported adverse events in the US PICUs.² According to the International Association for the Study of Pain, pain relief has been discussed as a human right by international institutions since 2004.¹⁰ However, treating pain in children remains challenging. One of the obstacles to the management of pain control in paediatrics is the heterogeneity of pain perception and response among different paediatric age groups.^{1–11}

Although pain diagnosis is often performed using self-reporting scales, this method has

limitations in paediatrics. For example, neonates and young children may not have yet achieved the developmental level necessary for effective verbal communication. In this group, the scales use behavioural observation and physiological measures. Moreover, parents and caregivers have more accurate observations than healthcare providers in identifying pain-related facial expressions and responses in children.¹ In *The Pain, Agitation, Neuromuscular Blockade, and Delirium in Critically Ill Paediatric Patients with Consideration of the PICU Environment and Early Mobility (PANDEM) Guidelines*, Smith *et al* discussed that the pain assessment tools could be classified as self-report or observation scales.¹² Self-report scales are considered the gold standard and have been validated in children over 3 years of age, although self-assessment from the age of 6 years was considered more reliable. The most used paediatric self-report scales are the Analogue Visual Scale, Numerical Classification Scale, Oucher Pain Scale and Wong-Baker Pain Scale. Alternatively, observation scales incorporate behavioural aspects associated with physiological variables to evaluate the pain in children who are unable to self-report the pain. Among these tools, the Face, Legs, Activity, Cry, Consolability, Comfort and Comfort-B scales are the most commonly used observation tools in critically ill children.¹²

Measuring and treating pain in critically ill children represent a significant endeavour for health professionals,¹ and the risk factors for experiencing pain vary from specific factors in paediatric patients to PICU-related factors.¹² The perception of pain may be influenced by age, anxiety, fear, comorbidities, concern about family separation, strange environments, barriers to verbal communication and racial bias. Indeed, another factor that can change the way children feel and show their pain is cultural and social differences.¹ The PICU-related factors involve mechanical ventilation, invasive procedures, invasive devices, the use of multiple medications, frequent sleep interruptions and reduced mobility.¹²

The proper administration of analgesia contributes to pain relief, improves psychomotor agitation, facilitates the maintenance of invasive devices, optimises synchronisation between the mechanical ventilator and child, and decreases oxygen consumption and stress response. The decrease in these events is related to proper pain management in PICUs.¹² Pain management in children requires pharmacological and non-pharmacological therapies,¹³ with pharmacological interventions typically involving protocols of opioids alone or with other non-opioid drugs.¹² As the use of pain medications is related to side effects and misuse of opioids, non-pharmacological interventions have been explored by professionals and researchers. Although there is a consensus that combining both approaches is more effective, the amount of information on non-pharmacological pain treatment in critically ill children is limited.¹³

Non-pharmacological interventions can be categorised as behavioural, cognitive, restorative and complementary

therapies.¹⁴ Interventions, such as oral sweet solution, non-nutritive sucking, positioning, skin-to-skin contact and modifying environmental stimuli,^{15 16} have the potential to alleviate stress generated by hospitalisation, improve quality of life and prevent changes in the physiology and behaviour of neonates.¹⁵ Non-pharmacological therapies may also help improve the effectiveness of medications or even contribute to reducing their use, thus improving the scores related to adverse events of drug use. A previous medical record analysis enabled an observational cohort study in 15 PICUs¹⁷; the most used measures were repositioning, decreasing environmental stimuli, carer presence, distraction and music therapy.^{13 17} Additionally, Yaz and Atay conducted a transverse study to describe the nurses' use of non-pharmacological methods in paediatric intensive care clinics during the COVID-19 pandemic.¹⁸ While the pandemic changed the time and training available for healthcare staff interested in this area, the alternatives to pharmacotherapy commonly used by nurses in paediatric interventions remain the same and include embracing, massage, pacifier use, therapeutic touch, toy distraction, musical therapy and speaking, providing preprocess information, heat/cold application, parent involvement, kangaroo care, giving sucrose, video distraction, postapplication rewarding, breathing exercise and dreaming.¹⁸

Other forms of non-pharmacological therapies involve integration with medication to decrease environmental stressors and facilitate relaxation, distraction and sleep.¹² A scoping review held in 2019 mapped pain management in PICUs. These interventions involved guided imagery; hypnosis; detailed inquiry, including interview technique that rescues information on thoughts and feelings related to pain; parental presence; distraction; a combination of psychological, physical and pharmacological interventions, such as positioning, guided imagery, hypnosis and parental education; acupuncture; stroking and soothing, holding and rocking; and environmental modifications, such as a quiet environment, dim lights, limiting visitors to decrease noise and music.¹⁹

Despite advancements in pain management in PICUs, various methodologies and guidelines advocate the development of further research on this topic. Ismail *et al* reported that all the articles identified from the literature search were published in English and that the studies focused only on quantitative designs.¹⁹ Recently, the PANDEM guidelines¹² suggested that research must be conducted to validate the information on the impact of acupuncture on postoperative or procedural pain. As a contribution to the knowledge of non-pharmacological therapies, this scoping review aims to add data collected from other study designs and languages to explore new evidence on pain management in critically ill children with a focus on acupuncture techniques. In addition, it addresses aspects related to the different ages of children in PICUs who are receiving non-pharmacological treatment for pain. Furthermore, paediatric intensive care professionals need access to the best and most up-to-date

scientific evidence on non-pharmacological therapies for pain management in PICUs.^{6 8 9} The development of a quality scoping review can provide data that explores the phenomenon of non-pharmacological therapies in critically ill children and helps interpret the various factors involved in paediatric critical care. Thus, this review aims to map the research that used non-pharmacological therapies for pain management in PICUs and provide information to investigate the characteristics of these techniques.

METHODS AND ANALYSIS

Scoping reviews aim to synthesise evidence for researchers, clinicians and policy-makers, gather and describe the evidence, and present an easily illustrative summary.²⁰ As non-pharmacological therapies exhibit a multiplicity of techniques with varied health impacts and use according to different patient ages, the scoping review was deemed the most appropriate review to illustrate the different nuances of this topic in the paediatric spectrum, which is also heterogeneous.

This scoping review will be conducted according to the chapter on scoping reviews in the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis²¹ and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (online supplemental appendix 1).²² This protocol is registered in the Open Science Framework (<https://doi.org/10.17605/OSF.IO/GKETX>). This review will be conducted in five phases: (1) identification of the research question; (2) identification of studies; (3) selection of studies; (4) mapping and comparison of the data; (5) collecting, summarising and reporting the results²³; (6) consultation with stakeholders about the results (optional).²⁴

Patient and public involvement

This study does not involve patients or the public.

Identifying the research question

The research question for this scoping review is ‘What non-pharmacological therapies have been used for pain management in PICUs?’ To support this query, four subquestions were developed:

1. What techniques were used among different age groups?
2. What scores on the pain scales define the use of non-pharmacological therapy?
3. How were non-pharmacological therapies used to reduce pain in the PICU?
4. What therapies impacted decreased pain, mechanical ventilation duration or reduction in length of stay in the PICU?
5. What factors assess the effectiveness of non-pharmacological interventions?

To construct the research question, we used the population, concept, context strategy recommended by the JBI²⁰ and the table proposed by Ahmad *et al* (table 1).²⁵

Table 1 The inclusion and exclusion criteria are based on the population, concept, context framework

	Inclusion criteria	Exclusion criteria
Population	Newborns Infants Children Adolescents	–
Concept	Pain management Analgesia Pain measurement Complementary therapies Alternative therapies Integrative therapies Integrative medicine Aromatherapy Oils, volatile Acupuncture Acupuncture therapy Acupuncture, ear Mind–body therapies Breathing exercises Imagery, psychotherapy Hypnosis Biofeedback, psychology Music therapy Muscle relaxation Sleep Physical therapy modalities	Pharmacological therapies
Context	Paediatric intensive care units	Home assistance services Outpatient care Inpatient ward settings
Types of evidence	Quantitative studies Qualitative studies Mixed-method studies Systematic reviews Opinion articles Grey literature Letters to the editor Editorials Others	–

This review will consider studies that explore unconventional pain management therapies. In healthcare, complementary therapies indicate the integration of an alternative approach with conventional medicine. If an unconventional health intervention is used instead of traditional medicine, we call it ‘alternative’ therapy. If an intervention occurs through the coordinated action of traditional medicine and an unconventional approach, the term ‘integrative’ therapy is used.²⁶

However, identifying what therapies constitute complementary, alternative and integrative medicine is complex.²⁷ One operational definition of ‘complementary and alternative medicine’ was proposed by Cochrane researchers in 2011. There was also a discussion on integrative health

Box 1 Medical subject headings (MeSH) terms/text words**Population**

Newborns, infants, children and adolescents

Concept

1. "pain management" [MeSH Terms] OR "pain management" [Text Word] OR "pain relief" [Text Word] OR "pain control" [Text Word] OR "pain reduction" [Text Word] OR "managing pain" [Text Word] OR "analgesia" [MeSH Terms] OR "analgesia" [Text Word]
2. "pain measurement" [MeSH Terms] OR "pain assessment" [Text Word] OR "pain measurement" [MeSH Terms] OR "pain scale" [Text Word] OR "pain tool" [Text Word] OR "pain assessment tool" [Text Word] OR "pain instrument" [Text Word] OR "pain intervention" [Text Word] OR "pain measurement" [MeSH Terms] OR "pain measurement" [Text Word]
3. 1 OR 2
4. "integrative medicine" [MeSH Terms] OR "integrative medicine" [Text Word] OR "complementary therapies" [MeSH Terms] OR "complementary medicine" [Text Word] OR "complementary therapies" [MeSH Terms] OR "alternative medicine" [Text Word] OR "integrative therapy" [Text Word] OR "integrative therapies" [Text Word] OR "complementary therapy" [Text Word] OR "complementary therapies" [MeSH Terms] OR "complementary therapies" [Text Word] OR "alternative therapy" [Text Word] OR "complementary therapies" [MeSH Terms] OR "alternative therapies" [Text Word] OR "alternative treatment" [Text Word]
5. "non-pharmacological intervention" [Text Word] OR "non-pharmacological interventions" [Text Word] OR "non-pharmacological therapy" [Text Word] OR "non-pharmacological therapies" [Text Word] OR "non-pharmacological treatment" [Text Word]
6. "aromatherapy" [MeSH Terms] OR "aromatherapy" [Text Word] OR "oils, volatile" [MeSH Terms] OR "essential oils" [Text Word] OR "aromatherapy" [MeSH Terms] OR "aroma therapy" [Text Word]
7. "acupuncture" [MeSH Terms] OR "acupuncture therapy" [MeSH Terms] OR "acupuncture" [Text Word] OR "acupuncture therapy" [MeSH Terms] OR "acupuncture therapy" [Text Word] OR "acupuncture treatment" [Text Word] OR "acupuncture, ear" [MeSH Terms] OR "acupuncture ear" [Text Word]
8. "mind-body techniques" [Text Word] OR "mind-body therapies" [MeSH Terms] OR "mind-body therapies" [Text Word]
9. "breathing techniques" [Text Word] OR "breathing exercises" [MeSH Terms] OR "breathing exercise" [Text Word]
10. "guided imagery intervention" [Text Word] OR "guided imagery interventions" [Text Word] OR "imagery, psychotherapy" [MeSH Terms] OR "guided imagery" [Text Word] OR "guided relaxation" [Text Word]
11. "hypnosis" [MeSH Terms] OR "hypnosis" [Text Word] OR "hypnototherapy" [Text Word]
12. "biofeedback, psychology" [MeSH Terms] OR "biofeedback" [Text Word] OR "biofeedback therapy" [Text Word]
13. "music therapy" [MeSH Terms] OR "music therapy" [Text Word] OR "music intervention" [Text Word] OR "musical therapy" [Text Word] OR "music-based intervention" [Text Word] OR "therapeutic music" [Text Word]
14. "progressive muscle relaxation" [Text Word] OR "muscle relaxation" [MeSH Terms] OR "muscle relaxation" [Text Word]
15. "sleep therapy" [Text Word] OR "sleep" [MeSH Terms] OR "sleep" [Text Word]

Continued

Box 1 Continued

16. "massage therapy" [Text Word] OR "massage" [Text Word] OR "massage therapies" [Text Word]
17. "physical therapy modalities" [MeSH Terms] OR "physical therapy" [Text Word] OR "physical therapy modalities" [MeSH Terms] OR "physiotherapy" [Text Word]
18. 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17
- Context**
19. "paediatric intensive care unit" [Text Word] OR "picu" [Text Word] OR "paediatric critical care unit" [Text Word] OR "paediatric critical care" [Text Word] OR "intensive care units, paediatric" [MeSH Terms]
20. 3 AND 18 AND 19

and integrative medicine that influenced the National Center for Complementary and Alternative Medicine in the USA and changed it to the National Center for Complementary and Integrative Health (NIH).^{26 28}

This review will adopt the term non-pharmacological therapies; although it is not described in the U.S. National Library of Medicine Medical Subject Headings (MeSH) terms, it incorporates complementary therapies, alternative therapies, integrative therapies and integrative medicine.

Identifying relevant studies

Our search strategy was developed in collaboration with a librarian at a leading university in Brazil and aims to locate primary published studies, reviews and text articles. First, a limited initial search will be performed on the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Medical Literature Analysis and Retrieval System Online (MEDLINE) to identify relevant terms and keywords to develop the final search strategy. For transparency and replication of the review, a chart was created based on the protocol by Ahmad *et al*.²⁵ and Luberenga *et al*,²⁹ which outlines the details of the strategy with MeSH terms and text words (box 1).

The keywords in the titles and abstracts of articles and the indexing terms used in the articles will be used to guide a complete search strategy for Academic Search Premier, CINAHL, Cochrane Library, Excerpta Medica Database (Embase), Virtual Health Library (VHL), MEDLINE, Science-Direct, Scopus and Web of Science Core Collection to be disclosed with the results of the scoping review.

The search strategy will consider the particularity of each information source, including all the identified keywords and indexing terms. The strategy will consider articles published in any language and with any database at the start or date of insertion. We use independent professional translation services for the authors' translation of articles in non-native languages.

In addition to the electronic databases, contact will be made with the study authors, when necessary, to clarify any doubts. This protocol will consider sources of unpublished

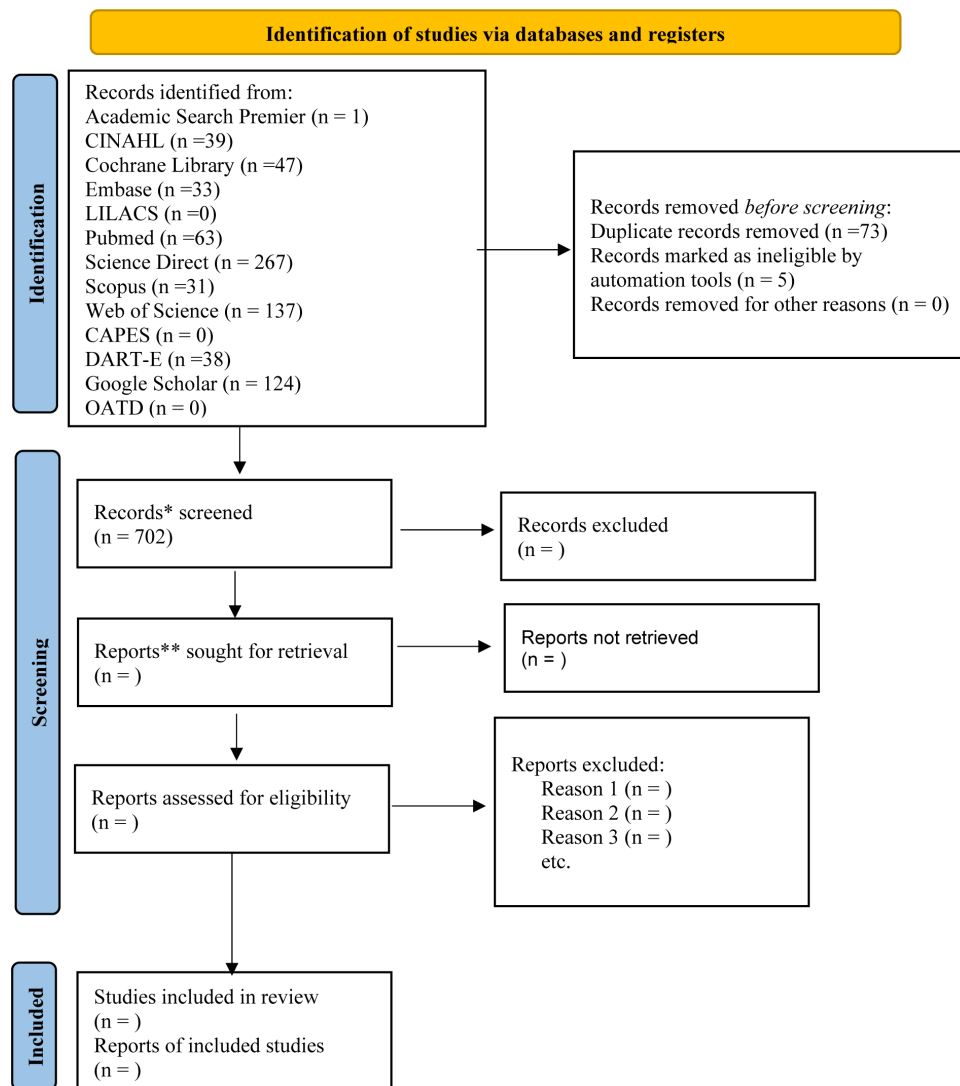


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 flow diagram for new systematic reviews which included searches of databases and registers only.³⁰ Research results until July 2023. *Report: a document (paper or electronic) supplying information about a particular study. It could be a journal article, preprint, conference abstract, study register entry, clinical study report, dissertation, unpublished manuscript, government report, or any other document providing relevant information. **Record: the title or abstract (or both) of a report indexed in a database or website (such as the title or abstract for an article indexed in MEDLINE). Records that refer to the same report (such as the same journal article) are 'duplicates'; however, records that refer to reports that are merely similar (such as a similar abstract submitted to two different conferences) should be considered unique. CAPES, Coordenação de Aperfeiçoamento de Pessoal de Nível Superior; CINAHL, Cumulative Index of Nursing and Allied Health Literature; DART-E, Dart Europe; MEDLINE, Medical Literature Analysis and Retrieval System Online; OATD, Open Access Theses and Dissertations.

studies: Theses from *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES), Dart Europe (DART-E), Open Access Theses and Dissertations (OATD) and grey literature in Google Scholar. The online supplemental appendix 2 provides a list of possible search queries.

Study selection

The search process will be carried out in two stages: (1) reading the title and abstract (first set of records); and (2) reading the full article (second set of records). Screening, which will result in the first set of records, will

Table 2 Outline of the extraction tool

Source of evidence (citation)	Year	Country	Participants		Therapies techniques	Moment and Impact on mode of use pain	Assesses their effectiveness
			Sex	Age			

be performed by two pairs of reviewers who will divide the search as follows: (1) pair A (IGMA and JKdSD) will perform the search using the following sources: Academic Search Premier, CINAHL, VHL, Embase, Science-Direct, DART-E, OATD and grey literature from Google Scholar; (2) pair B (SCMdA and JAT) will perform the search using the following sources: Cochrane Library, MEDLINE, Scopus, Web of Science and CAPES.

The first data record will be grouped and loaded in EndNote V.2.0 (Clarivate Analytics, Pennsylvania, USA), and duplicates will be removed. A pilot test will be carried out on two sources of information, CINAHL and MEDLINE, for evaluation according to the inclusion criteria for the review. The potentially relevant articles will be retrieved in full, comprising the second set of records and their citation details, and will be imported into Rayyan (Rayyan Systems, Cambridge, Massachusetts, USA).

At this stage, any necessary adjustments will be made to the search strategy to meet the inclusion criteria of the review. After completing the pilot test, two reviewers (IGMA and ABdC) will evaluate the full text of the other selected citations to check whether they meet the inclusion criteria. The reasons for excluding full-text articles that do not meet the inclusion criteria will be recorded and reported in the scoping review. A third reviewer (JAT) will resolve the disagreements at any stage of this process. The research results will be fully reported in the final scoping review and presented in a flow diagram (figure 1).³⁰

Mapping and comparison of the data

Data will be extracted using a data extraction tool developed by the authors based on a model proposed by the JBI in table 3.²⁰

This tool can then be refined further to address the research question for the scoping review, as required. The feasibility of the extraction tool will be tested on a subset of the second set of records, and this will then be modified and revised for each article included in the data extraction process. Any modifications will be detailed in the full scoping review.

Two reviewers will be involved in data extraction (IGMA and ABdC). Data extraction will occur independently, with cross-checking of the extracted evidence. A third reviewer (JAT) will resolve any disagreements between the authors regarding dissimilarities in terms of data extraction.

Collating, summarising and reporting the results

The total number of studies included will be presented in a summarised table format, using the extraction tool as a guide. Subsequently, the data will be grouped according to the Patterns, Advances, Gaps, Evidence for Practice, and Research Recommendations strategy proposed by Bradbury-Jones and Aveyard.²⁴ Each component represents a domain. The starting point is to produce the 'Chart of Patterns'. It displays the articles included

in the review on one axis and the themes on the other to report the themes expressed in the articles. After the patterns are identified, advances and gaps can be identified and reported, resulting in the last domain of the framework, which is to recommend future research. In addition, the strategy also enables the identification of topics that do not require further research; that is, the scientific community has explored them well.

Ethics and dissemination

As scoping reviews use secondary data from other primary sources, approval for the protocol and review by the Research Ethics Committee will not be necessary. The results of this research will be disseminated through social media channels and podcasts about pain in children.

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ORCID iDs

Isabele Gouveia Muniz de Alencar <http://orcid.org/0000-0001-9626-3830>

Joyce Karolayne dos Santos Dantas <http://orcid.org/0000-0002-5259-8556>

Sara Cristina Matias de Araújo <http://orcid.org/0000-0002-1564-3063>

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- 27 Ng JY, Dhawan T, Dogadova E, *et al.* Operational definition of complementary, alternative, and integrative medicine derived from a systematic search. *BMC Complement Med Ther* 2022;22:104.
- 28 Witt CM, Chiaramonte D, Berman S, *et al.* Defining health in a comprehensive context: a new definition of integrative health. *Am J Prev Med* 2017;53:134–7.
- 29 Luberenga I, Kasujja R, Vasanthan LT, *et al.* Mental health awareness programmes to promote mental well-being at the workplace among workforce in the low-income and middle-income countries: a scoping review protocol. *BMJ Open* 2023;13:e073012.
- 30 Page MJ, McKenzie JE, Bossuyt PM, *et al.* The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71.

Apenddix 1

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist²²

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3-5
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	5-6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	6
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	8-9
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	10-11
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	11-12
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	12-13
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	13
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not available
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	13



SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	Not started
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Not started
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not started
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Not started
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	Not started
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	Not started
Limitations	20	Discuss the limitations of the scoping review process.	Not started
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	Not started
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Not one

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).



Appendix 2

Draft Search Strategy

Dates of coverage and database	Query	Retrieved records
09/21/22 CINAHL	1. MH (pain management or pain relief or pain control or pain reduction or managing pain or analgesia) OR TI (pain management or pain relief or pain control or pain reduction or managing pain or analgesia) OR AB (pain management or pain relief or pain control or pain reduction or managing pain or analgesia)	84,304
	2. MH (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement) OR TI (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement) OR AB (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement)	75,339
	3. 1 OR 2	133,679
	4. MH (integrative medicine or complementary medicine or alternative medicine) OR TI (integrative medicine or complementary medicine or alternative medicine) OR AB (integrative medicine or complementary medicine or alternative medicine)	16,007
	5. MH (integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment) OR TI (integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment) OR AB (integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment)	60,250
	6. MH (non- pharmacological intervention or non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment) OR TI (non- pharmacological intervention or	3,068

	non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment) OR AB (non- pharmacological intervention or non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment)	
	7. MH (aromatherapy or essential oils or aroma therapy) OR TI (aromatherapy or essential oils or aroma therapy) OR AB (aromatherapy or essential oils or aroma therapy	7,565
	8. MH (acupuncture or acupuncture therapy or acupuncture treatment) OR TI (acupuncture or acupuncture therapy or acupuncture treatment) OR AB (acupuncture or acupuncture therapy or acupuncture treatment)	20,538
	9. MH acupuncture, ear OR TI acupuncture, ear OR AB acupuncture, ear	590
	10. MH (mind body techniques or mind-body therapies) OR TI (mind body techniques or mind-body therapies) OR AB (mind body techniques or mind-body therapies)	3,952
	11. MH (breathing techniques or breathing or breathing exercise) OR TI (breathing techniques or breathing or breathing exercise) OR AB (breathing techniques or breathing or breathing exercise)	20,189
	12. MH (guided imagery for pain management or guided image therapy or guided images therapies) OR TI (guided imagery for pain management or guided image therapy or guided images therapies) OR AB (guided imagery for pain management or guided image therapy or guided images therapies)	646
	13. MH (guided imagery or guided relaxation or visualization techniques) OR TI (guided imagery or guided relaxation or visualization techniques) OR AB (guided imagery or guided relaxation or visualization techniques)	4,120
	14. MH (hypnosis or hypnotherapy) OR TI (hypnosis or hypnotherapy) OR AB (hypnosis or hypnotherapy)	4,011

	15. MH (biofeedback or biofeedback therapy) OR TI (biofeedback or biofeedback therapy) OR AB (biofeedback or biofeedback therapy)	4,994
	16. MH (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music) OR TI (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music) OR AB (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music)	7,558
	17. MH (progressive muscle relaxation or muscle relaxation) OR TI (progressive muscle relaxation or muscle relaxation) OR AB (progressive muscle relaxation or muscle relaxation)	2,299
	18. MH (sleep therapy or sleep) OR TI (sleep therapy or sleep) OR AB (sleep therapy or sleep)	77,183
	19. MH (massage therapy or massage or massage therapies) OR TI (massage therapy or massage or massage therapies) OR AB (massage therapy or massage or massage therapies)	21,418
	20. MH (physical therapy or physiotherapy) OR TI (physical therapy or physiotherapy) OR AB (physical therapy or physiotherapy)	61,296
	21. 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20	277,529
	22. MH (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care) OR TI (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care) OR AB (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care)	9,239
	23. MH intensive care units, pediatric OR TI intensive care units, pediatric OR AB intensive care units, pediatric	8,949

	24. 22 OR 23	11,491
	25. 3 AND 21 AND 24	38

Dates of coverage and database	Query	Retrieved records
09/21/22 MEDLINE (PubMed)	1. "pain management"[MeSH Terms] OR "pain management"[Text Word] OR "pain relief"[Text Word] OR "pain control"[Text Word] OR "pain reduction"[Text Word] OR "managing pain"[Text Word] OR "analgesia"[MeSH Terms] OR "analgesia"[Text Word]	177,128
	2. "pain measurement"[MeSH Terms] OR "pain assessment"[Text Word] OR "pain measurement"[MeSH Terms] OR "pain scale"[Text Word] OR "pain tool"[Text Word] OR "pain assessment tool"[Text Word] OR "pain instrument"[Text Word] OR "pain intervention"[Text Word] OR "pain measurement"[MeSH Terms] OR "pain measurement"[Text Word]	101,025
	3. 1 OR 2	246,193
	4. "integrative medicine"[MeSH Terms] OR "integrative medicine"[Text Word] OR "complementary therapies"[MeSH Terms] OR "complementary medicine"[Text Word] OR "complementary therapies"[MeSH Terms] OR "alternative medicine"[Text Word] OR "integrative therapy"[Text Word] OR "integrative therapies"[Text Word] OR "complementary therapy"[Text Word] OR "complementary therapies"[MeSH Terms] OR "complementary therapies"[Text Word] OR "alternative therapy"[Text Word] OR "complementary therapies"[MeSH Terms] OR "alternative therapies"[Text Word] OR "alternative treatment"[Text Word]	274,042
	5. "nonpharmacological intervention"[Text Word] OR "nonpharmacological interventions"[Text Word] OR "nonpharmacological therapy"[Text Word] OR "nonpharmacological therapies"[Text Word] OR "nonpharmacological treatment"[Text Word]	5,292

6.	"aromatherapy"[MeSH Terms] OR "aromatherapy"[Text Word] OR "oils, volatile"[MeSH Terms] OR "essential oils"[Text Word] OR "aromatherapy"[MeSH Terms] OR "aroma therapy"[Text Word]	23,007
7.	"acupuncture"[MeSH Terms] OR "acupuncture therapy"[MeSH Terms] OR "acupuncture"[Text Word] OR "acupuncture therapy"[MeSH Terms] OR "acupuncture therapy"[Text Word] OR "acupuncture treatment"[Text Word] OR "acupuncture, ear"[MeSH Terms] OR "acupuncture ear"[Text Word]	35,397
8.	"mind body techniques"[Text Word] OR "mind body therapies"[MeSH Terms] OR "mind body therapies"[Text Word]	<u>46,477</u>
9.	"breathing techniques"[Text Word] OR "breathing exercises"[MeSH Terms] OR "breathing exercise"[Text Word]	<u>4,632</u>
10.	"guided imagery intervention"[Text Word] OR "guided imagery interventions"[Text Word] OR "imagery, psychotherapy"[MeSH Terms] OR "guided imagery"[Text Word] OR "guided relaxation"[Text Word]	2,746
11.	"hypnosis"[MeSH Terms] OR "hypnosis"[Text Word] OR "hypnotherapy"[Text Word]	15,942
12.	"biofeedback, psychology"[MeSH Terms] OR "biofeedback"[Text Word] OR "biofeedback therapy"[Text Word]	<u>16,054</u>
13.	"music therapy"[MeSH Terms] OR "music therapy"[Text Word] OR "music intervention"[Text Word] OR "musical therapy"[Text Word] OR "music based intervention"[Text Word] OR "therapeutic music"[Text Word]	5,367
14.	"progressive muscle relaxation"[Text Word] OR "muscle relaxation"[MeSH Terms] OR "muscle relaxation"[Text Word]	<u>35,626</u>
15.	"sleep therapy"[Text Word] OR "sleep"[MeSH Terms] OR "sleep"[Text Word]	<u>232,994</u>

	16. "massage therapy"[Text Word] OR "massage"[Text Word] OR "massage therapies"[Text Word]	16,186
	17. "physical therapy modalities"[MeSH Terms] OR "physical therapy"[Text Word] OR "physical therapy modalities"[MeSH Terms] OR "physiotherapy"[Text Word]	200,591
	18. 4 OR 5 OR 6 OR 7 OR 8OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17	746,903
	19. "pediatric intensive care unit"[Text Word] OR "picu"[Text Word] OR "pediatric critical care unit"[Text Word] OR "paediatric critical care"[Text Word] OR "intensive care units, pediatric"[MeSH Terms]	31,624
	20. 3 AND 18 AND 19	63

Dates of coverage and database	Query	Retrieved records
09/14/22 ACADEMIC SEARCH PREMIER	1. (pain management) OR (DE "PAIN management" OR DE "DRY needling" OR DE "PAIN measurement" OR DE "BRIEF Pain Inventory" OR DE "MCGILL Pain Questionnaire")	81,825
	2. DE "ALTERNATIVE medicine" OR DE "ACUPUNCTURE" OR DE "ALTERNATIVE treatment" OR DE "BOTANIC medicine" OR DE "CHIROPRACTIC" OR DE "CHRONOTHERMAL medicine" OR DE	38,185

	"DRY needling" OR DE "ENERGY medicine" OR DE "HOLISTIC medicine" OR DE "HOMEOPATHY" OR DE "MENTAL healing" OR DE "NATUROPATHY"	
	3. DE "PEDIATRIC intensive care" OR ""PEDIATRIC intensive care units" OR PICU	10,655
	4. 1 AND 2 AND 3	1

Dates of coverage and database	Query	Retrieved records
10/03/22 COCHRANE	1. ("pain"):ti,ab,kw OR ("pain assessment"):ti,ab,kw	215514
	2. ("integrative medicine"):ti,ab,kw OR ("complementary medicine"):ti,ab,kw OR ("alternative medicine"):ti,ab,kw	4013
	3. ("non-pharmacological"):ti,ab,kw AND ("therapies"):ti,ab,kw OR ("treatment"):ti,ab,kw OR ("intervention"):ti,ab,kw	1147812
	4. ("aromatherapies"):ti,ab,kw OR ("essential oil"):ti,ab,kw	2174
	5. ("acupuncture"):ti,ab,kw OR ("acupuncture analgesia"):ti,ab,kw	17333
	6. ("mind body"):ti,ab,kw OR ("mind body medicine"):ti,ab,kw OR ("mind body therapies"):ti,ab,kw	1248
	7. ("breathing"):ti,ab,kw	34728
	8. ("guided imagery"):ti,ab,kw	806

9.	("hypnotherapy"):ti,ab,kw	380
10.	("biofeedback"):ti,ab,kw OR ("biofeedback training"):ti,ab,kw	3897
11.	("music therapy"):ti,ab,kw	2613
12.	("progressive muscle relaxation"):ti,ab,kw OR ("progressive muscle relaxation training"):ti,ab,kw	820
13.	("sleep"):ti,ab,kw	46268
14.	("massage therapy"):ti,ab,kw	875
15.	("physical therapy"):ti,ab,kw OR ("physical therapy	11504
16.	("pediatric intensive care unit"):ti,ab,kw OR ("paediatric intensive care"):ti,ab,kw OR ("paediatric intensive care unit"):ti,ab,kw OR ("paediatric intensive care units"):ti,ab,kw	1095
17.	1 AND 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 AND 16	0
18.	1 AND 3 AND 16	46
19.	1 AND 7 AND 16	10
20.	1 AND 11 AND 16	2
21.	1 AND 13 AND 16	5
22.	1 AND 15 AND 16	1

	23. 1 AND 3 AND 16 OR 1 AND 7 AND 16 OR 1 AND 11 AND 16 OR 1 AND 13 AND 16 OR 1 AND 15 AND 16	47
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Dates of coverage and database	Query	Retrieved records
10/23/22 EMBASE	1. pain'/exp OR 'pain' OR 'analgesia'/exp OR 'analgesia'	2062548
	2. 'integrative medicine'/exp OR 'integrative medicine' OR 'alternative medicine'/exp OR 'alternative medicine' OR 'aromatherapy'/exp OR 'aromatherapy' OR 'essential oil'/exp OR 'essential oil' OR 'acupuncture'/exp OR 'acupuncture' OR 'auricular acupuncture'/exp OR 'auricular acupuncture' OR 'breathing exercise'/exp OR 'breathing exercise' OR 'guided imagery'/exp OR 'guided imagery' OR 'hypnosis'/exp OR 'hypnosis' OR 'biofeedback'/exp OR 'biofeedback' OR 'music therapy'/exp OR 'music therapy' OR 'muscle relaxation'/exp OR 'muscle relaxation' OR 'sleep quality'/exp OR 'sleep quality' OR 'massage'/exp OR 'massage' OR 'physiotherapy'/exp OR 'physiotherapy' OR	255690
	3. 'pediatric intensive care unit'/exp OR 'pediatric intensive care unit'	22687
	4. 1 AND 2 AND 3	33

Dates of coverage and database	Query	Retrieved records
10/23/22 LILACS	1. "DOR" or "avaliacao da DOR" or "escala analogica da DOR" or "escala analogica visual de DOR" or "intensidade da DOR" or "limiar da DOR" or "manejo da DOR" or "medicao da DOR" or "percepcao da DOR" or "unidades de alivio da DOR" or "DOR aguda" or "DOR cronica" [Descritor de assunto]	5862

	2. "TERAPIAS COMPLEMENTARES" or "TERAPIAS COMPLEMENTARES e integrativas" [Descritor de assunto]	1429
	3. "unidade de terapia intensiva pediatria" [Descritor de assunto]	767
	4. 1 and 2 and 3	0

Dates of coverage and database	Query	Retrieved records
SCIENCE DIRECT	1. Title, abstract, keyword: pain	232,587
	2. Title, abstract, keyword: complementary and alternative medicine	3342
	3. Title, abstract, keyword: integrative medicine	6951
	4. pediatric intensive care unit	3787
	1 AND 2 OR 3 AND 4	267

Dates of coverage and database	Query	Retrieved records
09/23/22 SCOPUS	1. TITLE(“Pain Management” OR “Pain Relief “OR “Pain Control” OR “Pain Reduction” OR “Managing Pain” OR Analgesia) OR ABS(“Pain Management” OR “Pain Relief” OR “Pain Control” OR “Pain Reduction” OR “Managing Pain” OR Analgesia) OR TITLE-ABS-KEY(Pain Management OR Pain Relief OR Pain Control OR “Pain Reduction” OR “Managing Pain” OR Analgesia)	(344,701)
	2. TITLE(“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”) OR ABS(“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”) OR TITLE-ABS-KEY(“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”)	(145,947)
	3. 1 OR 2	(423,690)
	4. TITLE(“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”) OR ABS(“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”) OR TITLE-ABS-KEY(“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”)	(58,538)
	5. TITLE(“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”) OR ABS(“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”) OR TITLE-ABS-KEY(“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”)	(59,454)

	6. TITLE(“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”) OR ABS(“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”) OR TITLE-ABS-KEY(“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”)	(7,752)
	7. TITLE(Aromatherapy OR “Essential Oils” OR Aroma therapy) OR ABS(Aromatherapy OR “Essential Oils” OR Aroma therapy) OR TITLE-ABS-KEY(Aromatherapy OR “Essential Oils” OR Aroma therapy)	(3.885)
	8. TITLE(“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”) OR ABS (“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”) OR TITLE-ABS-KEY(“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”)	(52,587)
	9. TITLE(“Acupuncture, Ear”) OR ABS(“Acupuncture, Ear”) OR TITLE-ABS-KEY(“Acupuncture, Ear”)	(452)
	10. TITLE(“Mind Body Techniques” OR “Mind-body Therapies”) OR ABS(“Mind Body Techniques” OR “Mind-body Therapies”) OR TITLE-ABS-KEY(“Mind Body Techniques” OR “Mind-body Therapies”)	(1.625)
	11. TITLE(“Breathing Techniques”OR Breathing OR “Breathing Exercise”) OR ABS(“Breathing Techniques”OR Breathing OR “Breathing Exercise”) OR TITLE-ABS-KEY(“Breathing Techniques”OR Breathing OR “Breathing Exercise”)	(279.806)
	12. TITLE(“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”) OR ABS(“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”) OR TITLE-ABS-KEY(“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”)	4
	13. TITLE(“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”) OR ABS(“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”) OR TITLE-ABS-KEY(“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”)	17,176

	14. TITLE(Hypnosis OR Hypnotherapy) OR ABS(Hypnosis OR Hypnotherapy) OR TITLE-ABS-KEY(Hypnosis OR Hypnotherapy)	22,266
	15. TITLE(Biofeedback OR “Biofeedback Therapy”) OR ABS(Biofeedback OR “Biofeedback Therapy”) OR TITLE-ABS-KEY(Biofeedback OR “Biofeedback Therapy”)	17,108
	16. TITLE(“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”) OR ABS(“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”) OR TITLE-ABS-KEY(“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”)	11,454
	17. TITLE(“Progressive Muscle Relaxation” OR “Muscle Relaxation”) OR ABS(“Progressive Muscle Relaxation” OR “Muscle Relaxation”) OR TITLE-ABS-KEY(“Progressive Muscle Relaxation” OR “Muscle Relaxation”)	34,970
	18. TITLE(“Sleep Therapy” OR Sleep) OR ABS(“Sleep Therapy” OR Sleep) OR TITLE-ABS-KEY(“Sleep Therapy” OR Sleep)	340,832
	19. TITLE(“Massage Therapy” OR Massage OR “Massage Therapies”) OR ABS(“Massage Therapy” OR Massage OR “Massage Therapies”) OR TITLE-ABS-KEY(“Massage Therapy” OR Massage OR “Massage Therapies”)	28,624
	20. TITLE(“Physical Therapy” OR Physiotherapy) OR ABS(“Physical Therapy” OR Physiotherapy) OR TITLE-ABS-KEY(“Physical Therapy” OR Physiotherapy)	129,632
	21. 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20	937,453
	22. TITLE(“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”) OR ABS(“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”) OR TITLE-ABS-KEY(“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”)	20,379

	23. TITLE(“Intensive Care Units, Pediatric”) OR ABS(“Intensive Care Units, Pediatric”) OR TITLE-ABS-KEY(“Intensive Care Units, Pediatric”)	8,226
	24. 22 OR 23	22,008
	25. 3 AND 21 AND 24	31

Dates of coverage and database	Query	Retrieved records
09/21/22 WEB OF SCIENCE	1. TS= (pain management or pain relief or pain control or pain reduction or managing pain or analgesia) OR TI= (pain management or pain relief or pain control or pain reduction or managing pain or analgesia) OR AB= (pain management or pain relief or pain control or pain reduction or managing pain or analgesia)	(376,576)
	2. TS= (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement) OR TI= (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement) OR AB= (pain assessment or pain scale or pain tool or pain assessment tool or pain instrument or pain intervention or pain measurement)	(241,031)
	3. 1 OR 2	(475,359)
	4. TS= (integrative medicine or complementary medicine or alternative medicine) OR TI= (integrative medicine or complementary medicine or alternative medicine) OR AB= (Integrative medicine or complementary medicine or alternative medicine)	(51,961)

	5. TS= (integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment) OR TI= (integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment) OR AB= (Integrative therapy or integrative therapies or complementary therapy or complementary therapies or alternative therapy or alternative therapies or alternative treatment)	(288,290)
	6. TS= (non- pharmacological intervention or non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment) OR TI= (non- pharmacological intervention or non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment) OR AB= (non- pharmacological intervention or non-pharmacological interventions or non-pharmacological therapy or non-pharmacological therapies or non-pharmacological treatment)	(12,420)
	7. TS= (aromatherapy or essential oils or aroma therapy) OR TI= (aromatherapy or essential oils or aroma therapy) OR AB= (aromatherapy or essential oils or aroma therapy)	(86,864)
	8. TS= (acupuncture or acupuncture therapy or acupuncture treatment) OR TI= (acupuncture or acupuncture therapy or acupuncture treatment) OR AB= (acupuncture or acupuncture therapy or acupuncture treatment)	(25,368)
	9. TS= (acupuncture, ear) OR TI= (acupuncture, ear) OR AB= (acupuncture, ear)	(547)
	10. TS= (mind body techniques or mind-body therapies) OR TI= (mind body techniques or mind-body therapies) OR AB= (mind body techniques or mind-body therapies)	(2,430)
	11. TS= (breathing techniques or breathing or breathing exercise) OR TI= (breathing techniques or breathing or breathing exercise) OR AB= (breathing techniques or breathing or breathing exercise)	(99,065)
	12. TS= (guided imagery for pain management or guided image therapy or guided images therapies) OR TI= (guided imagery for pain management or guided image therapy or guided images therapies) OR AB= (guided imagery for pain management or guided image therapy or guided images therapies)	(22,227)

	13. TS= (guided imagery or guided relaxation or visualization techniques) OR TI= (guided imagery or guided relaxation or visualization techniques) OR AB= (guided imagery or guided relaxation or visualization techniques)	(68,289)
	14. TS= (hypnosis or hypnotherapy) OR TI= (hypnosis or hypnotherapy) OR AB= (hypnosis or hypnotherapy)	(10,831)
	15. TS= (biofeedback or biofeedback therapy) OR TI= (biofeedback or biofeedback therapy) OR AB= (biofeedback or biofeedback therapy)	(12,661)
	16. TS= (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music) OR TI= (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music) OR AB= (music therapy or music intervention or musical therapy or music-based intervention or therapeutic music)	(11,018)
	17. TS= (progressive muscle relaxation or muscle relaxation) OR TI= (progressive muscle relaxation or muscle relaxation) OR AB= (progressive muscle relaxation or muscle relaxation)	(33,638)
	18. TS= (sleep therapy or sleep) OR TI= (sleep therapy or sleep) OR AB= (sleep therapy or sleep)	(293,420)
	19. TS= (massage therapy or massage or massage therapies) OR TI= (massage therapy or massage or massage therapies) OR AB= (massage therapy or massage or massage therapies)	(11,659)
	20. TS= (physical therapy or physiotherapy) OR TI= (physical therapy or physiotherapy) OR AB= (physical therapy or physiotherapy)	(121,548)
	21. 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20	(1,058,477)
	22. TS= (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care) OR TI= (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care) OR AB= (pediatric intensive care unit or picu or pediatric critical care unit or paediatric intensive care or paediatric critical care)	(21,834)

	23. TS= (intensive care units, pediatric) OR TI= (intensive care units, pediatric) OR AB= (intensive care units, pediatric)	(14,677)
	24. 22 OR 23	(21,834)
	25. 3 AND 21 AND 24	(137)

Dates of coverage and database	Query	Retrieved records
09/26/22 Catálogo de Teses e Dissertações (CAPES)	1. (“Pain Management” OR “Pain Relief“OR “Pain Control” OR “Pain Reduction” OR “Managing Pain” OR Analgesia) OR (“Pain Management” OR “Pain Relief” OR “Pain Control” OR “Pain Reduction” OR “Managing Pain” OR Analgesia) OR(Pain Management OR Pain Relief OR Pain Control OR “Pain Reduction” OR “Managing Pain” OR Analgesia)	47.919
	2. (“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”) OR (“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”) OR (“Pain Assessment” OR “Pain Scale” OR “Pain Tool” OR “Pain Assessment Tool” OR “Pain Instrument” OR “Pain Intervention” OR “Pain Measurement”)	17.688
	3. 1 OR 2	60.914
	4. (“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”) OR (“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”) OR (“Integrative Medicine” OR “Complementary Medicine” OR “Alternative Medicine”)	5.309

	5. (“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”) OR (“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”) OR (“Integrative Therapy” OR “Integrative Therapies” OR “Complementary Therapy” OR “Complementary Therapies” OR “Alternative Therapy” OR “Alternative Therapies” OR “Alternative Treatment”)	14.345
	6. (“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”) OR (“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”) OR (“Non-pharmacological Intervention” OR “Non-pharmacological Interventions” OR “Non-pharmacological Therapy” OR “Non-pharmacological Therapies” OR “Non-pharmacological Treatment”)	20.398
	7. (Aromatherapy OR “Essential Oils” OR Aroma therapy) OR (Aromatherapy OR “Essential Oils” OR Aroma therapy) OR (Aromatherapy OR “Essential Oils” OR Aroma therapy)	8.734
	8. (“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”) OR (“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”) OR (“Acupuncture” OR “Acupuncture Therapy” OR “Acupuncture Treatment”)	11.097
	9. (“Acupuncture, Ear”) OR (“Acupuncture, Ear”) OR (“Acupuncture, Ear”)	468
	10. (“Mind Body Techniques” OR “Mind-body Therapies”) OR (“Mind Body Techniques” OR “Mind-body Therapies”) OR (“Mind Body Techniques” OR “Mind-body Therapies”)	8.897
	11. (“Breathing Techniques”OR Breathing OR “Breathing Exercise”) OR (“Breathing Techniques”OR Breathing OR “Breathing Exercise”) OR (“Breathing Techniques”OR Breathing OR “Breathing Exercise”)	12.400
	12. (“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”) OR (“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”) OR (“Guided Imagery for Pain Management” OR “Guided Image Therapy” OR “Guided Images Therapies”)	63.039

	13. (“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”) OR (“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”) OR (“Guided Imagery” OR “Guided Relaxation” OR “Visualization Techniques”)	3.632
	14. (Hypnosis OR Hypnotherapy) OR (Hypnosis OR Hypnotherapy) OR (Hypnosis OR Hypnotherapy)	19
	15. (Biofeedback OR “Biofeedback Therapy”) OR (Biofeedback OR “Biofeedback Therapy”) OR (Biofeedback OR “Biofeedback Therapy”)	5.433
	16. (“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”) OR (“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”) OR (“Music Therapy” OR “Music Intervention” OR “Musical Therapy” OR “Music-based Intervention” OR “Therapeutic Music”)	25.370
	17. (“Progressive Muscle Relaxation” OR “Muscle Relaxation”) OR (“Progressive Muscle Relaxation” OR “Muscle Relaxation”) OR (“Progressive Muscle Relaxation” OR “Muscle Relaxation”)	2.847
	18. (“Sleep Therapy” OR Sleep) OR (“Sleep Therapy” OR Sleep) OR (“Sleep Therapy” OR Sleep)	13.033
	19. (“Massage Therapy” OR Massage OR “Massage Therapies”) OR (“Massage Therapy” OR Massage OR “Massage Therapies”) OR (“Massage Therapy” OR Massage OR “Massage Therapies”)	5.587
	20. (“Physical Therapy” OR Physiotherapy) OR (“Physical Therapy” OR Physiotherapy) OR (“Physical Therapy” OR Physiotherapy)	13.679
	21. 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20	120.654

	22. (“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”) OR (“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”) OR (“Pediatric Intensive Care Unit” OR PICU OR “Pediatric Critical Care Unit” OR “Paediatric Intensive Care” OR “Paediatric Critical Care”)	21.859
	23. (“Intensive Care Units, Pediatric”) OR (“Intensive Care Units, Pediatric”) OR (“Intensive Care Units, Pediatric”)	16.055
	24. 22 OR 23	22.946

Dates of coverage and database	Query	Retrieved records
11/05/22 DART-E	1. pain	547
	2. “"complementary therapies" OR "alternative medicine" OR "integrative medicine" OR nonpharmacological	168
	3. "pediatric intensive care unit" or "paediatric intensive care unit"	51
	4. 1 AND 2 AND 3	38

Dates of coverage and database	Query	Retrieved records
11/05/22 Google Scholar	1. "complementary therapies" OR "integrative medicine" OR "complementary and alternative medicine" OR "complementary and alternative therapies"	17900
	2. nonpharmacologic	77700
	3. "pediatric intensive care" OR "paediatric intensive care"	17600
	4. 1 OR 2 AND 3 AND doc OR .txt OR .rtf OR .PDF OR .html	124

Dates of coverage and database	Query	Retrieved records
11/05/22 OATD	1. pain	38650
	2. "complementary therapies" OR "alternative medicine" OR "integrative medicine" OR nonpharmacological	1819
	3. "pediatric intensive care unit" or "paediatric intensive care unit"	382

	4. 1 AND 2 AND 3	0
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