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Application of Integrative and Complementary Practices in children by physical therapists: a scoping review

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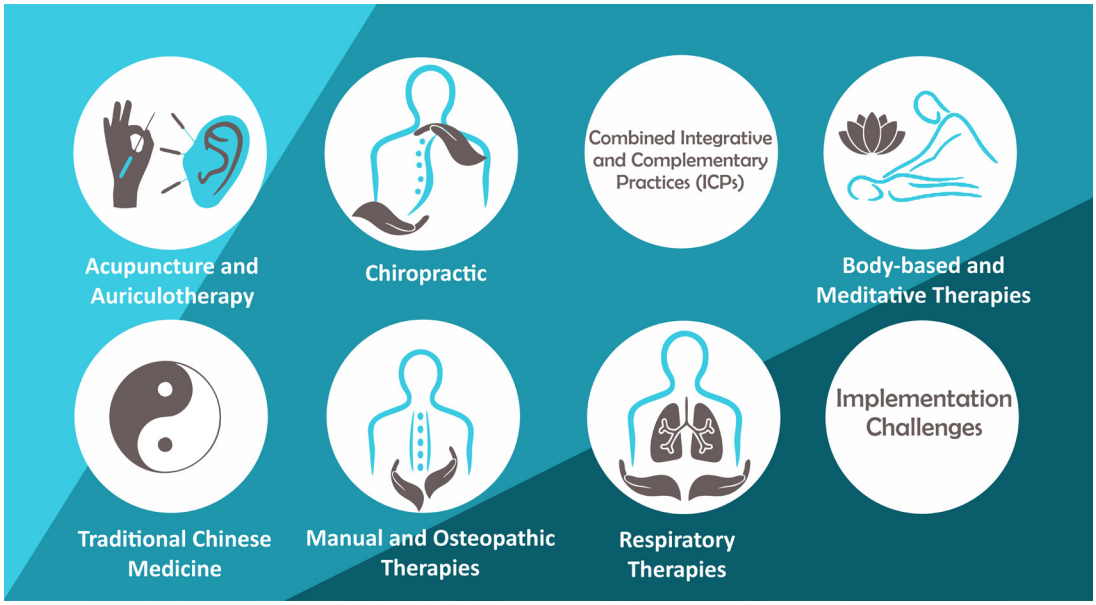
Highlights

- *Synthesis of scientific knowledge on integrative and complementary practices applied in pediatric physical therapy.*
- *Predominance of manual therapies with positive outcomes in specific pediatric conditions.*
- *Identification of the most frequently used Integrative and Complementary Practices (ICPs) in pediatric physical therapy, such as dance therapy, craniosacral therapy, acupuncture, and osteopathy.*
- *Evidence of good acceptance and effectiveness of integrative practices across different pediatric clinical settings.*

Graphical Abstract



Abstract

This study aimed to identify, synthesize, and analyze the available scientific knowledge on the use of integrative and complementary practices in pediatric physical therapy. A scoping review was conducted, with searches performed in the National Library of Medicine, SciVerse Scopus, Embase, Web of Science, and the Regional Portal of the BVS MTCI Americas, using specific descriptors defined based on the guiding question: "How have Integrative and Complementary Practices regulated by the Federal Council of Physical Therapy and Occupational Therapy been used in children within physical therapy?". A total of 3,026 studies were identified, of which 43 comprised the final sample. The results indicated that most studies addressed manual therapies applied to specific pediatric conditions, with evidence of effectiveness and good acceptance. The most frequently used practices included body-based, manual, and meditative interventions, such as dance therapy, craniosacral therapy, and manual therapy, as well as approaches from Traditional Chinese Medicine, such as acupuncture and auriculotherapy, chiropractic, and osteopathy. It is concluded that Integrative and Complementary Practices have been widely incorporated into pediatric physical therapy treatment, demonstrating proven effectiveness and positive acceptance across different clinical settings.

Keywords: Child. Integrative Practices. Complementary Practices. Physical Therapy.

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INTRODUCTION

Integrative and Complementary Practices (ICPs) have gained increasing recognition and acceptance in Brazil and globally over recent decades. In Brazil, the National Policy on Integrative and Complementary Practices (PNPIC), established by the Ministry of Health in 2006, regulates the incorporation of these practices into the Unified Health System (SUS). This policy encompasses non-conventional health practices that promote a holistic approach to health care[1]. The World Health Organization (WHO) also supports the integration of ICPs into health systems worldwide and recognizes their potential to complement conventional treatments and improve patients' quality of life[2].

In this context, the WHO Global Report on Traditional and Complementary Medicine (2019) identified the lack of research data as the main challenge for integrating these practices into health systems. Member States emphasized the need to expand and strengthen the knowledge base, considered a priority within the WHO Traditional Medicine Strategy. The perception of insufficient evidence arises from barriers such as limited access to information sources, lack of standardization of indexing terms, difficulties in interpreting results, and, above all, the lack of systematization of existing knowledge[3].

Over the past 20 years, the production of scientific evidence on Traditional Medicine and other Integrative and Complementary Practices has grown significantly. North America, East Asia, and Europe lead this field, while Latin America contributes less than 10% of the research output[4]. In the United States, the establishment of the National Center of Complementary and Integrative Health (NCCIH) at the National Institutes of Health (NIH) in 1998 fostered scientific investigation of non-conventional practices and contributed to addressing the opioid crisis. In 2003, the International Society of Complementary Medicine Research was founded and, in 2019, renamed the International Society of Traditional, Complementary and Integrative Medicine Research, in line with WHO trends. In Europe, countries such as Germany, France, and the United Kingdom have developed well-established programs that incorporate Integrative and Complementary Practices into public health services[5].

In Brazil, the Federal Council of Physical Therapy and Occupational Therapy (COFFITO) was among the pioneers in regulating integrative and complementary practices for its professionals, establishing guidelines for professional education and practice, particularly in physical therapy, through certification for the practice of Acupuncture and, subsequently, through the broader regulation of professional practice in ICPs[6]. The application of ICPs by physical therapists is supported by extension and specialization programs at several Brazilian universities that offer specific training. Regulatory frameworks and specialized courses aim to ensure safety and effectiveness in the application of these practices, as well as their integration into the routine clinical practice of physical therapists[7].

It is noteworthy that Integrative and Complementary Health Practices (ICPs) may be used across different stages of life, including childhood, provided that developmental specificities, individual characteristics, and age-related limitations are considered. In pediatric physical therapy, several resources are used in an integrated manner, including manual and osteopathic therapies, body-based and expressive practices such as therapeutic dance, and techniques from Traditional Chinese Medicine. These approaches are applied in conditions such as cerebral palsy, neuromotor developmental disorders, asthma, chronic pain, and postural alterations. Such resources are employed both to improve mobility, motor control, and respiratory function and to promote well-being, emotional self-regulation, and treatment adherence. In this regard, a playful and relational approach constitutes a central element in establishing the therapeutic bond between the physical therapist and the child[8].

A body of evidence on the use of integrative therapies in physical therapy indicates that children are among the populations that benefit most from these modalities, particularly in the treatment of chronic conditions such as cerebral palsy, motor disorders, and respiratory diseases. These studies suggest that the application of non-conventional therapies in pediatrics can contribute to the promotion of children's overall well-being, with proven effectiveness in pain management, stress reduction, and the rehabilitation of motor dysfunctions[9,10,11,12,13,14].

Despite this, most studies primarily focus on outcome analyses centered on the therapies themselves, with limited exploration of causal outcomes related to the use of ICPs by physical therapists, as well as of the contexts in which these practices are applied, particularly in pediatrics[12]. Moreover, systematized evidence on the topic remains scarce, which hinders the understanding and interpretation of findings regarding physical therapists' knowledge of the effectiveness and safe-

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ty of ICPs in pediatric care, as well as the barriers to their implementation[7].

Identifying an evidence base on the application of ICPs in pediatric physical therapy can guide more comprehensive clinical practice and contribute to the development of evidence-based treatments and interventions through the systematic use of ICPs[13]. In this way, it becomes possible to develop a broad perspective on the therapeutic effectiveness of ICPs, such as improvements in mobility, pain relief, and overall well-being, as well as to identify challenges faced in their implementation, particularly in pediatric settings.

In this sense, the present study aims to identify, synthesize, and analyze the scientific knowledge produced on integrative and complementary practices used in pediatric physical therapy and their contexts of use.

METHODS

This study is a scoping review conducted in accordance with the Joanna Briggs Institute (JBI) methodology[15] and registered under DOI: 10.17605/OSF.IO/V6UYW on October 23, 2023.

The review was structured according to the following stages: (1) development of the guiding research question and definition of the review objective; (2) development of the search strategy; (3) database searching; (4) selection of articles based on title and abstract screening; (5) selection of scientific articles through full-text reading; (6) summarization of results; and (7) presentation and discussion of the findings.

The Population, Concept, and Context (PCC) framework was used to formulate the guiding research question and search strategy. Accordingly, the following elements were defined: P – child; C – integrative and complementary health practices; C – physical therapy. Based on this framework, the guiding question was formulated as follows: "How have Integrative and Complementary Practices regulated by the Federal Council of Physical Therapy and Occupational Therapy (COFFITO) — including Traditional Chinese Medicine (TCM)/Acupuncture and Auriculotherapy, Osteopathy, Chiropractic, Phytotherapy, Body-based/Manual and Meditative Practices, Floral Therapy, Magnetotherapy, Anthroposophic Physical Therapy, Thermalism/Crenotherapy/Balneotherapy, and Hypnosis — been used with children in physical therapy?"

Inclusion criteria comprised articles that addressed all three PCC elements, answered the research question, and were published in any time period. Articles addressing practices not regulated by COFFITO were excluded, as well as publications such as expert opinions, pamphlets, narrative reviews, and studies whose full texts were not available online.

The literature search was conducted between October 10 and 23, 2023, with the support of a librarian from the University of São Paulo (USP), Bauru campus, across the following databases: National Library of Medicine (PubMed/MEDLINE), SciVerse Scopus, Embase, Web of Science, and the Regional Portal of the BVS MTCI Americas (Traditional, Complementary, and Integrative Medicines).

Health descriptors (DeCS/MeSH), keywords, and related alternative terms were used in the search strategy, as presented in Annex 1. Boolean operators "OR" and "AND" were applied to combine the search terms.

The Supplementary Material presents the descriptors and keywords used for each element of the mnemonic framework.

Of the 3,026 articles identified, 204 were excluded as duplicates using the Mendeley software. After careful screening of titles and abstracts of the remaining 2,822 articles, 162 were selected for full-text reading.

Of these, 43 articles met the established inclusion criteria and were included in the study. No articles from the grey literature were included.

The selection process was conducted by an independent reviewer and is presented in Figure 1.

For analytical purposes, the articles were numbered from 01 to 43 and referred to as "studies." The results were presented in the form of tables and a narrative report. To ensure methodological rigor, the PRISMA tool adapted for Scoping Reviews was applied[16].

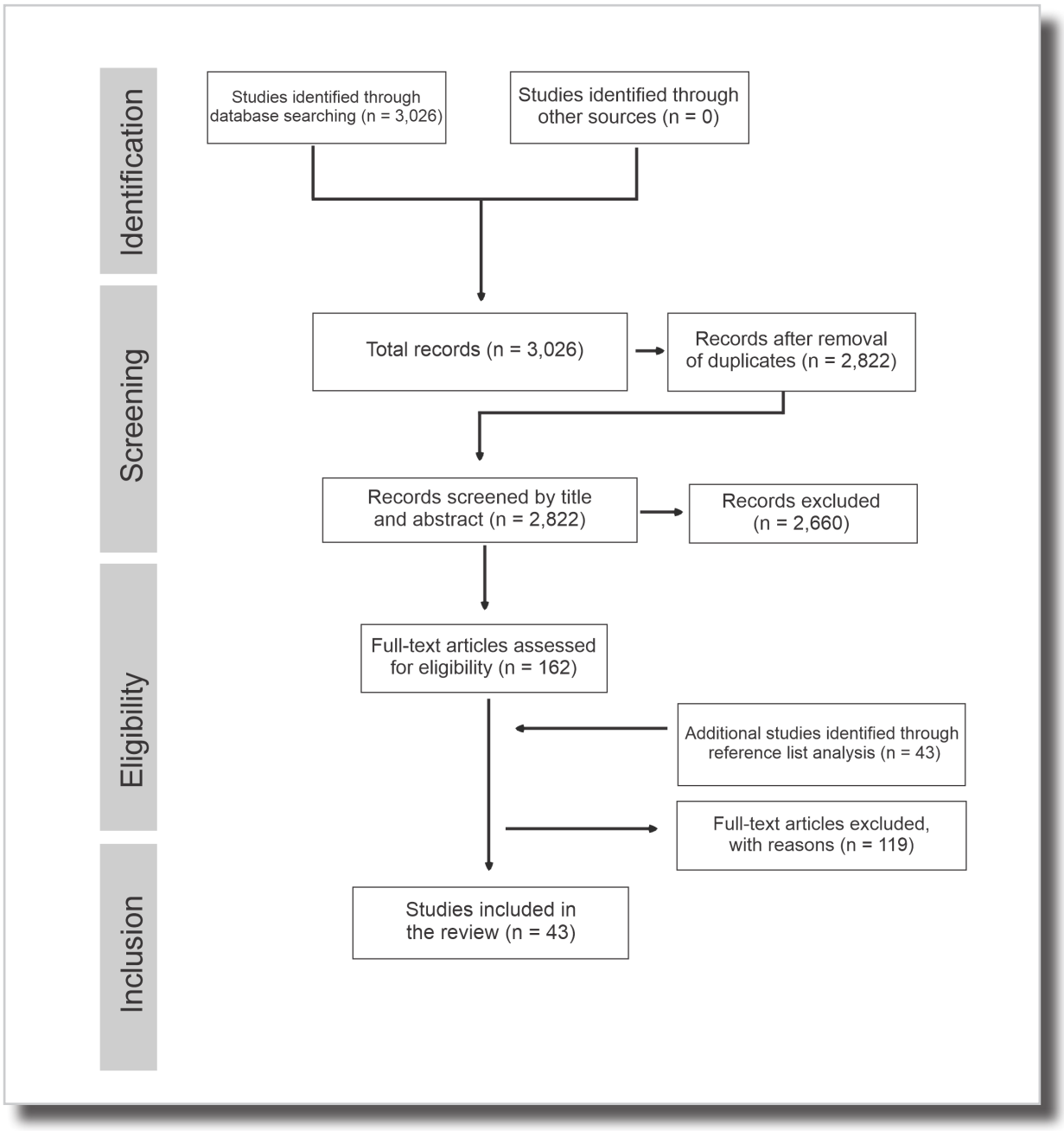

Figure 1 - Flowchart of the study selection process. Bauru, 2025.

RESULTS

Among the 43 studies included in this review, most were published within the last 15 years, with a predominance of research conducted in the American, European, and Asian continents, particularly in the United States of America. These studies addressed the application of Integrative and Complementary Practices (ICPs) in different contexts of pediatric physical therapy, including neuromotor rehabilitation, pain management, anxiety reduction, and support for the treatment of chronic conditions.

A total of 43 studies were included in this review, with a strong representation of publications from the United States, Germany, and China. The studies covered a period ranging from 1987 to 2023, with 16 publications (37.2%) published within the last five years, showing a notable increase in recent publications (2022 and 2023). Regarding study design, the majority were Randomized Experimental Studies (55%). The characteristics of the studies are described in Table 1.

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Table 1 - Characterization of the included studies according to country, objectves, study design, population, and medical diagnosis. Bauru, 2025.

Study title	Country of first author	Objectives	Study design	Population	Medical diagnosis	Diagnóstico médico
E1[17]	Complementary and supplementary procedures in the treatment of headache	Germany	To present the procedures currently used for the treatment of primary headache in childhood, the methodological approaches, and the existing scientific evidence.	Systematic review	Not applicable	Primary headache
E2[18]	Effectiveness and Evidence Level of Dance on Functioning of Children and Adolescents with Neuromotor Impairments: A Systematic Review.	Brazil	To investigate the effects of dance therapy in children with neuromotor impairments, organizing outcomes according to the International Classification of Functioning, Disability and Health domains, and to assess whether there is evidence to recommend dance as therapy.	Systematic review	Not applicable	Neuromotor impairments
E3[19]	Effect of auricular acupressure combined with acupuncture for juvenile pseudomyopia	China	To investigate the effects of auricular acupressure (AAP) combined with acupuncture, as well as AAP alone, in juvenile pseudomyopia (JPM).	Retrospective observational study	Children; age not reported	Juvenile pseudomyopia
E4[20]	Safety and Acceptance of Acupuncture and Acupressure in Children, Adolescents, and Young Adults Undergoing Hematopoietic Stem Cell Transplant	USA	To determine the safety and acceptance of acupuncture and acupressure in children undergoing hematopoietic stem cell transplantation in a large tertiary pediatric hospital.	Retrospective observational study	Children; age not reported	Cancer
E5[21]	Effectiveness of osteopathic manipulative treatment for pediatric conditions: A systematic review.	Germany	To determine the effectiveness of osteopathic manipulative treatment (OMT) for pediatric conditions.	Systematic review	Not applicable	Not determined
E6[22]	Dance Improves Motor, Cognitive, and Social Skills in Children With Developmental Cerebellar Anomalies.	France	To evaluate the effects of dance on sensorimotor synchronization, motor, and cognitive functions in children with developmental cerebellar anomalies.	Randomized experimental study	Children (7–11 years)	Developmental cerebellar anomalies
E7[23]	Integrative Approaches to Pediatric Chronic Pain in an Urban Safety-Net Hospital: Cost Savings, Clinical Benefits, and Safety.	USA	To compare health indicators, quality of life, and healthcare costs for children referred to an interdisciplinary pain clinic.	Randomized experimental study	Children and adolescents (4–22 years)	Chronic pain
E8[24]	Investigating the safety and feasibility of osteopathic medicine in the pediatric oncology outpatient setting	USA	To investigate the safety and feasibility of osteopathic manipulative treatment in pediatric oncology outpatient clinics.	Randomized experimental study	Children and adolescents (≥2–21 years)	Cancer
E9[25]	ObiH – Osteopathie bei infantiler Haltungs asymmetrie und Plagiozephalie (Teil 1)	Germany	To investigate how osteopathic treatment and the Vojta concept affect passive upper cervical rotation and postural asymmetry in children.	Randomized experimental study	Children; age not reported	Postural asymmetry and positional plagiocephaly
E10[26]	Postoperative Osteopathic Manipulative Treatment in Children with Esophageal Atresia: Potential Benefits on the Anthropometric Parameters	Italy	To evaluate the effects of osteopathic manipulative treatment on upper limb range of motion recovery and auxological parameters.	Descriptive observational study	Children; age not reported	Scoliosis
E11[27]	Effect of osteopathic manipulative treatment on pulmonary function testing in children with asthma	USA	To evaluate changes in pulmonary function tests in pediatric patients receiving osteopathic manipulative treatment.	Randomized experimental study	Children and adolescents (7–18 years)	Asthma

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Study title	Country of first author	Objectives	Study design	Population	Medical diagnosis	Diagnóstico médico
E12[28]	Impact of dance therapy on children with specific learning disability: A two-arm cluster randomized control study on an Italian sample	Italy	To examine the effects of dance therapy in children with specific learning disability.	Randomized experimental study	Children; age not reported	Specific learning disability
E13[29]	The use and benefits of Craniosacral Therapy in primary health care: A prospective cohort study	Germany	To examine the use, benefits, and safety of craniosacral therapy based on questionnaires completed by parents/caregivers.	Descriptive observational study	Parents or caregivers	Not applicable
E14[30]	Acupuncture treatment on the motor area of the scalp for motor dysfunction in children with cerebral palsy: Study protocol for a multicenter randomized controlled trial	China	To investigate whether scalp acupuncture improves motor function in children with cerebral palsy.	Randomized experimental study	Children; age not reported	Cerebral palsy
E15[31]	Potential treatment effect modifiers for manipulative therapy for children complaining of spinal pain.Secondary analyses of a randomised controlled trial	Denmark	To analyze the effects of manipulative therapy on spinal pain in children.	Randomized experimental study	Children and adolescents (9–15 years)	Spinal pain
E16[32]	Complementary and alternative medicine use in two French pediatric oncology centers: A common practice	France	To investigate the prevalence and modalities of complementary and alternative medicine use in pediatric oncology patients.	Randomized experimental study	Children and young people; age not reported	Cancer
E17[33]	The use of CranioSacral therapy for Autism Spectrum Disorders: Benefits from the viewpoints of parents, clients, and therapists	USA	To explore the use of craniosacral therapy in children with autism spectrum disorder, including demographic data and perceived changes.	Retrospective observational study	Parents and therapists	Autism spectrum disorder
E18[34]	Acupuncture based on nourishing spleen and kidney and dredging the governor vessel for motor function and ADL in children with spastic cerebral palsy	China	To compare acupuncture combined with rehabilitation versus rehabilitation alone in children with spastic cerebral palsy.	Randomized experimental study	Children; age not reported	Cerebral palsy
E19[35]	Manual therapy in the treatment of idiopathic scoliosis. Analysis of current knowledge	Poland	To evaluate the effectiveness of manual therapy, chiropractic, and osteopathy in children and adolescents with scoliosis.	Systematic review	Not applicable	Scoliosis
E20[36]	Effects of manual therapy on treatment duration and motor development in infants with severe nonsynostotic plagiocephaly: a randomised controlled pilot study	Spain	To assess the effects of manual therapy as an adjunctive approach on treatment duration and motor development in infants.	Randomized experimental study	Infants; age not reported	Severe nonsynostotic plagiocephaly
E21[37]	Complementary and alternative medicine use among children with pain in the United States: patterns, predictors, and perceived benefits	USA	To assess patterns, predictors, and perceived benefits of ICPS among children with pain.	Randomized experimental study	Children and adolescents (4–17 years)	Not determined
E22[38]	The effectiveness of manual therapy for the management of musculoskeletal disorders of the upper and lower extremities: A systematic review	Canada	To investigate the effectiveness of manual therapy in adults and children with musculoskeletal injuries.	Systematic review	Not applicable	Musculoskeletal injury
E23[39]	Effect of osteopathic manipulative therapy in the attentive performance of children with attention-deficit/hyperactivity disorder	Italy	To evaluate the effectiveness of osteopathic manipulative treatment in children with attention-deficit/hyperactivity disorder.	Randomized experimental study	Children and adolescents (5–15 years)	ADHD

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Study title	Country of first author	Objectives	Study design	Population	Medical diagnosis	Diagnóstico médico
E24[40]	Effect of osteopathic manipulative treatment on middle ear effusion following acute otitis media in young children: A pilot study	USA	To evaluate the effectiveness of an osteopathic manipulative treatment protocol in resolving middle ear effusion after acute otitis media.	Randomized experimental study	Infants and children; age not reported	Otitis media
E25[41]	Manual therapy for childhood respiratory disease: A systematic review	Brazil	To investigate scientific evidence on the effects of manipulative techniques in children with respiratory diseases.	Systematic review	Not applicable	Respiratory diseases
E26[42]	Osteopathic manipulative treatment for pediatric conditions: a systematic review.	South Korea	To critically evaluate the effectiveness of osteopathic manipulative treatment for pediatric conditions.	Systematic review	Not applicable	Not determined
E27[43]	Physical therapy and chiropractic use among childhood cancer survivors with chronic disease: impact on health-related quality of life.	USA	To evaluate the use of physical therapy and chiropractic care among childhood cancer survivors and its association with health-related quality of life.	Randomized experimental study	Children; age not reported	Cancer
E28[44]	Cranial osteopathy for children with cerebral palsy: a randomised controlled trial.	United Kingdom	To estimate the effect of cranial osteopathy on general health, well-being, and physical functioning in children with cerebral palsy.	Randomized experimental study	Children (5–12 years)	Cerebral palsy
E29[45]	Therapeutic effects of cranial osteopathic manipulative medicine: A systematic review	United Kingdom	To identify and critically evaluate the literature on the clinical efficacy of cranial osteopathic manipulative treatment.	Systematic review	Not applicable	Not determined
E30[46]	Complementary therapies for children undergoing stem cell transplantation: Report of a multisite trial	USA	To evaluate the effectiveness of complementary therapies in reducing distress associated with pediatric stem cell transplantation.	Randomized experimental study	Children; age not reported	Cancer
E31[47]	Traditional Chinese medicine for treatment of cerebral palsy in children: A systematic review of randomized clinical trials	China	To systematically evaluate the effects of Traditional Chinese Medicine therapies for the treatment of children with cerebral palsy.	Systematic review	Not applicable	Cerebral palsy
E32[48]	The Effects of Osteopathic Treatment on Constipation in Children With Cerebral Palsy: A Pilot Study	Turkey	To investigate the effectiveness of osteopathic treatment in children with cerebral palsy and chronic constipation.	Randomized experimental study	Children; age not reported	Cerebral palsy and chronic constipation
E33[49]	Long-Term Effects of Infant Colic: A Survey Comparison of Chiropractic Treatment and Nontreatment Groups	United Kingdom	To document behavioral or sleep disorders in children previously treated with chiropractic care for infant colic compared with untreated children.	Prospective observational study	Parents or caregivers	Infant colic
E34[50]	Osteopathic manipulative treatment (OMT) effects on mandibular kinetics: kinesiographic study.	Italy	To evaluate the effects of osteopathic manipulative treatment on mandibular kinematics in pediatric patients with temporomandibular disorders.	Randomized experimental study	Children; age not reported	Temporomandibular disorder
E35[51]	Effects of acupuncture on quality of life in children with spastic cerebral palsy	China	To investigate the effects of acupuncture on quality of life in children with spastic cerebral palsy.	Randomized experimental study	Children (2–7 years)	Cerebral palsy
E36[52]	Confirmatory factor analysis in osteopathic medicine: Fascial and spinal motion restrictions as correlates of muscle spasticity in children with cerebral palsy	USA	To investigate the effects of osteopathic manipulative treatment versus acupuncture in children with cerebral palsy.	Randomized experimental study	Children; age not reported	Cerebral palsy
E37[53]	Osteopathic evaluation and manipulative treatment in reducing the morbidity of otitis media: A pilot study	USA	To study the effects of osteopathic manipulative treatment in routine pediatric care for children with recurrent acute otitis media.	Cohort observational study	Infants and children (7–35 months)	Acute otitis media

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Study title	Country of first author	Objectives	Study design	Population	Medical diagnosis	Diagnóstico médico
E38[54]	Use of alternative and complementary therapies in children with cancer	Canada	To establish prevalence, profile, and factors associated with the use of complementary and alternative medicine in children with cancer.	Cross-sectional observational study	Parents or caregivers	Cancer
E39[55]	Effects of osteopathic manipulative treatment on pediatric patients with asthma: A randomized controlled trial	USA	To demonstrate the therapeutic relevance of osteopathic manipulative treatment in pediatric patients with asthma.	Randomized experimental study	Children; age not reported	Asthma
E40[56]	Manual therapy for asthma	USA	To evaluate evidence on the effects of manual therapies in the treatment of bronchial asthma.	Systematic review	Not applicable	Asthma
E41[57]	Children with asthma have improved pulmonary functions after massage therapy	USA	To evaluate the therapeutic benefits of manual therapy in children with asthma.	Randomized experimental study	Children and adolescents (4–14 years)	Asthma
E42[58]	Safety in chiropractic practice. Part II: Treatment to the upper neck and the rate of cerebrovascular incidents	Denmark	To estimate the occurrence of cerebrovascular incidents after chiropractic cervical spine treatment.	Retrospective observational study	Chiropractic professionals	Spinal pain
E43[59]	A prospective study of 2,000 patients attending a chiropractic college teaching clinic.	USA	To analyze patient characteristics and the effectiveness of chiropractic care in a teaching clinic.	Randomized experimental study	Adolescents; age not reported	Not determined

The objectives of the studies ranged from evaluating the effectiveness of specific practices, such as osteopathy, acupuncture, music therapy, and mind–body techniques, to investigating their safety, acceptability, and clinical applicability across different pediatric age groups. A variety of study designs was observed, with a predominance of experimental studies (n = 24; 55.8%) and systematic reviews (n = 10; 23.2%), suggesting an effort toward validation and critical appraisal of the available evidence.

The results presented in Table 2 illustrate the diversity in the application of Integrative and Complementary Practices in pediatric physical therapy, encompassing different clinical conditions and contexts of use. Accordingly, ICPs were applied for various therapeutic purposes in pediatric physical therapy, including improvements in mobility, postural control, and motor function — particularly in children with cerebral palsy — as well as reductions in pain, anxiety, and stress in both hospital and outpatient settings. Some studies also reported positive effects on treatment adherence and overall child well-being, based on clinical assessments and caregiver reports. The safety and acceptance of these practices, especially among vulnerable pediatric populations such as children with cancer or chronic diseases, were also highlighted. However, challenges related to the implementation of ICPs within health systems, including regulatory barriers and limitations in professional training, indicate the need for greater investment in capacity building and the development of consistent guidelines. In addition, gaps in the methodological quality of some studies and in protocol standardization reinforce the importance of more robust research to consolidate the scientific evidence supporting these practices.

Table 2 - Results grouped according to the issues discussed. Bauru, 2025.

Analytical theme	Related studies
1. Diversity of ICP applications across different pediatric conditions	E2, E3, E6, E10, E14, E18, E20, E24, E35, E41
2. Safety and acceptance of ICPs in clinical settings	E4, E7, E8, E13, E16, E21, E25, E33
3. Functional and rehabilitative benefits of ICPs	E2, E6, E10, E18, E20, E24, E32, E35, E41
4. Psychological and cognitive benefits associated with ICPs	E6, E12, E23, E41
5. Challenges in the implementation of ICPs within health systems	E16, E19, E26, E38
6. Impact of ICPs on the management of chronic conditions	E3, E8, E14, E25, E27, E31, E36
7. Emphasis on manual and osteopathic therapies	E5, E8, E9, E11, E19, E24, E32, E34, E37
8. Gaps in training and application of ICPs	E4, E15, E26, E29, E42

Among the 43 studies included in the sample, approximately 51% reported some degree of clinical effectiveness of integrative and complementary practices when associated with pediatric physical therapy, particularly in outcomes related to motor function, pain relief, and reduction of emotional symptoms. The remaining studies did not identify significant clinical benefits or highlighted the insufficiency of robust evidence, often associated with small sample sizes, methodological heterogeneity, or the lack of standardization of therapeutic protocols.

The studies, types of practices used, medical diagnoses addressed, and age groups are presented in Table 3, as follows:

Table 3 - Survey of therapies used according to medical diagnosis and age group. Bauru, 2025.

Therapy category	Medical diagnosis	Age group	Studies
Manual and osteopathic therapies	Scoliosis, plagiocephaly, asthma	Infants and children (0–12 years), adolescents (13–18 years)	E9, E10, E20, E24, E32, E34
Body-based and meditative therapies	Motor impairments, autism, anxiety	Children (7–12 years), adolescents (13–18 years)	E2, E6, E12, E17
Acupuncture and auriculotherapy	Cerebral palsy, pseudomyopia	Children (2–7 years), age not specified	E3, E14, E18, E35
Traditional Chinese Medicine (TCM)	Cerebral palsy, chronic pain	Children and adolescents (4–17 years)	E31, E36
Combined ICPs	Cancer, chronic pain, headache	Children and adolescents (4–22 years)	E7, E8, E16, E38
Chiropractic	Scoliosis, infant colic	Children and adolescents (10–18 years)	E19, E33
Respiratory therapies	Asthma, respiratory diseases	Children and adolescents (7–18 years)	E11, E25, E41
Implementation challenges	Multiple diagnoses	All ages	E4, E26, E29, E42

Among the 43 studies included in this sample, most were published within the last 15 years. Of the 43 studies analyzed, 37% investigated interventions based on osteopathy, which were most frequently applied in children with neuromotor disorders, while 18% focused on children with cerebral palsy, primarily evaluating effects on motor function, mobility, and quality of life (Figure 2).

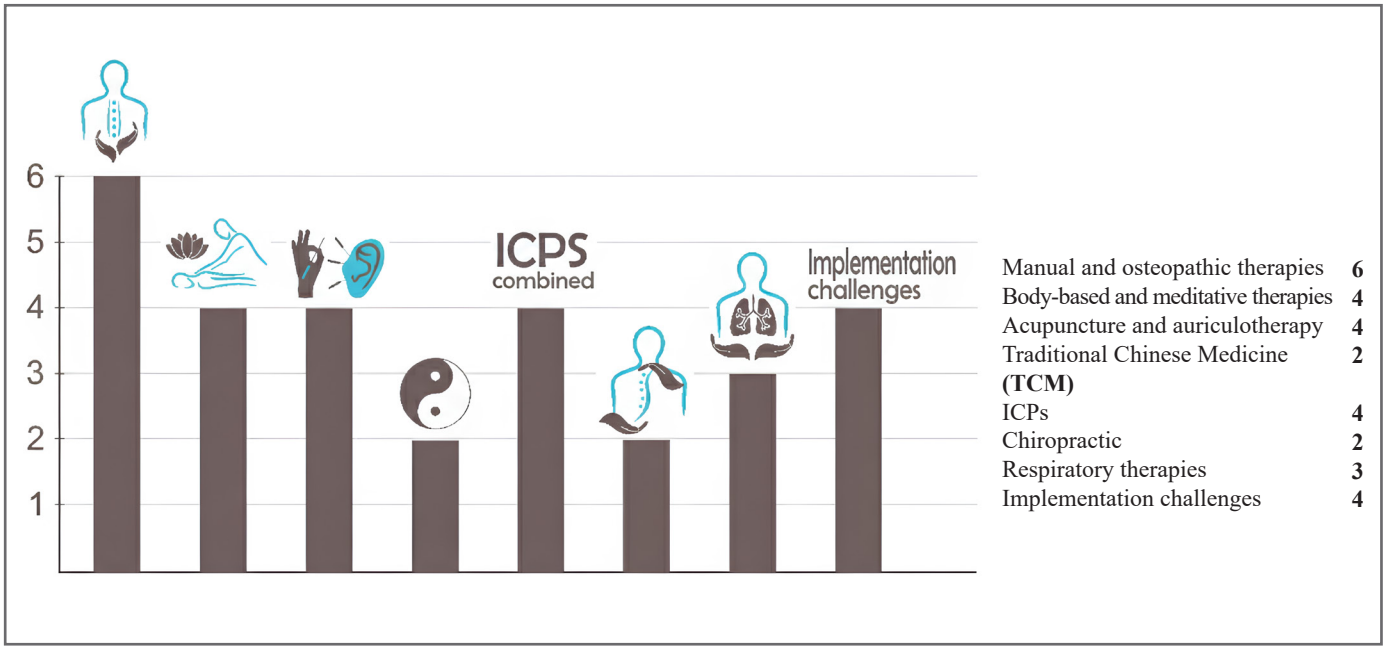

Figure 2 - Number of studies by practice described. Bauru, 2025.

DISCUSSION

The present scoping review aimed to identify, synthesize, and critically analyze the scientific knowledge produced on the use of Integrative and Complementary Practices (ICPs) in pediatric physical therapy, considering different contexts of use, age groups, and clinical diagnoses. By mapping 43 studies published between 1987 and 2023, this review demonstrates the progressive expansion of ICPs in pediatric physical therapy care, particularly over the last 15 years, a period that accounted for more than one-third of the analyzed publications.

In Brazil, the National Policy on Integrative and Complementary Practices (PNPIC) regulates 29 practices within the Unified Health System (SUS). Currently, 8,239 primary health care facilities provide individual and group ICP services in 54% of Brazilian municipalities, covering all 27 states, the Federal District, and all state capitals. These services are distributed across Primary Health Care (78%), Medium-Complexity services (18%), and High-Complexity services (4%). According to the Ministry of Health, approximately two million ICP-related consultations are delivered annually in Basic Health Units, with acupuncture being the most frequently used practice (707,000 consultations), followed by Traditional Chinese Medicine (TCM), with 151,000 recorded sessions[60]. The regulation of these practices by the Federal Council of Physical Therapy and Occupational Therapy (COFFITO), combined with their inclusion in the SUS, has facilitated their adoption in public health services. However, greater systematization and the development of evidence-based protocols are still required to ensure quality and safety of care.

The analysis of the studies included in this review revealed that ICPs are widely used in pediatric conditions, ranging from the management of chronic diseases—such as cerebral palsy and asthma—to the promotion of well-being in healthy children. Nevertheless, this quantitative expansion has not been proportionally accompanied by consistent advances in the methodological quality of the available evidence. The results indicate that 51% of the included studies demonstrated effectiveness of ICPs used in pediatric physical therapy, whereas the remaining studies reported no clear clinical benefits, inconclusive findings, or highlighted the lack of robust evidence. These findings suggest that the growing incorporation of ICPs into pediatric clinical practice occurs within a scientific landscape that is still under consolidation, characterized by methodological heterogeneity, variability in intervention protocols, and differing levels of rigor in study designs. This reinforces the need for more standardized and methodologically robust investigations to strengthen the existing evidence base.

Manual and osteopathic therapies constituted the most frequently investigated group of practices, accounting for approximately 37% of the included studies. In Brazil, osteopathy was recognized as an occupation by the Ministry of Labor in 2013, became a physical therapy specialty in 2011, and was incorporated into the Unified Health System as an Integrative and Complementary Practice in 2017, which has facilitated its progressive integration into primary health care[61]. Although some randomized controlled trials included in this review reported specific benefits of osteopathy for pediatric conditions such as asthma, cerebral palsy, plagiocephaly, scoliosis, and otitis media, the literature presents heterogeneous results. A recent meta-analysis[42], which included 13 randomized controlled trials involving 1,393 children, found no significant effect of osteopathic manipulative treatment on reducing the length of hospital stay among preterm newborns (SMD -0.03; 95% CI -0.44 to 0.39), with the certainty of evidence classified as very low according to GRADE criteria. Furthermore, risk-of-bias assessment indicated that only 7.7% of the studies were rated as having low risk, while a substantial proportion were classified as high risk, suggesting that available results should be interpreted with caution and highlighting the need for future studies with greater methodological rigor.

In contrast, acupuncture and Traditional Chinese Medicine (TCM), particularly when combined with rehabilitation programs, demonstrated more consistent quantitative evidence, especially in the management of cerebral palsy[51,52,30,34]. Acupuncture consists of procedures that allow precise stimulation of defined anatomical sites through the insertion of thin metallic needles. This practice is recommended by the World Health Organization (WHO) and has been offered as an integrative therapy within the Unified Health System (SUS) since 2006. It is considered a health intervention technology that addresses the health–disease process in a comprehensive and dynamic manner and may be used either alone or in combination with other therapeutic resources[62].

A meta-analysis[63] involving 21 randomized controlled trials and 1,718 children demonstrated that acupuncture combined with rehabilitation significantly improved gross motor function (SMD 0.64; 95% CI 0.52–0.76; $p < 0.00001$), with a small-to-moderate effect size. Improvements were

also observed in fine motor function (SMD 3.48; 95% CI 2.62–4.34), reduction in spasticity measured by the Modified Ashworth Scale (SMD -0.31; 95% CI -0.52 to -0.11), and gains in activities of daily living (SMD 1.45; 95% CI 1.20–1.71). Similar findings were reported in systematic reviews analyzing TCM-based interventions combined with conventional physical therapy[47]. In a set of 22 studies involving 2,211 participants, clinically relevant improvements were observed in GMFM-66 (WMD 9.33; 95% CI 0.14–18.52) and GMFM-88 (WMD 8.24; 95% CI 3.25–13.24), as well as gains in balance (Berg Balance Scale: WMD 4.42; 95% CI 1.21–7.63) and activities of daily living (WMD 3.78; 95% CI 2.12–5.43). Nonetheless, these findings should be interpreted with caution due to high statistical heterogeneity (I^2 > 90% for several outcomes)[19,63].

Body-based, manual, and meditative practices, such as therapeutic dance and massage, also demonstrated measurable positive effects in specific contexts. A randomized controlled trial[22] included in this review showed that therapeutic dance in children with developmental cerebellar anomalies resulted in significant improvements in motor coordination, sensorimotor synchronization, and associated cognitive functions. These findings are biologically plausible given the integrated activation of cerebellar, cortical, and subcortical circuits involved in motor and cognitive control. However, the limited number of studies and small sample sizes restrict the strength of these conclusions[64].

Manual therapy, which involves the mobilization or manipulation of soft tissues and joint structures to assess and treat pathological conditions, is one of the oldest resources used in rehabilitation[65]. Some authors[31,35,38,65] reported that children with long-standing spinal pain or concomitant musculoskeletal pain benefit from manipulative therapy. Therapeutic massage in children with asthma presents more consistent quantitative evidence. A meta-analysis[64] including 14 studies and 1,299 patients demonstrated significant improvements in pulmonary function, with increases in FEV_1 (SMD 0.68; 95% CI 0.25–1.11; p = 0.002) and peak expiratory flow (SMD 0.83; 95% CI 0.58–1.08; p = 0.001), as well as a higher overall effectiveness rate (RR 1.19; 95% CI 1.13–1.24). Despite these favorable results, the authors emphasized the need for more rigorous randomized controlled trials.

Another relevant aspect highlighted in this review concerns the safety and acceptance of ICPs among vulnerable pediatric populations. Observational studies and clinical trials involving children undergoing hematopoietic stem cell transplantation or cancer treatment demonstrated high acceptance of acupuncture and acupressure, low rates of adverse events, and perceived improvements in quality of life[18,20,22]. These findings are consistent with international studies reporting significantly lower adverse event rates for complementary therapies compared with conventional approaches, particularly in pediatric hospital settings[11,66].

Despite this scenario, the present review identified significant gaps in the scientific production related to several ICPs regulated by COFFITO, such as phytotherapy, floral therapy, magnetotherapy, anthroposophic physical therapy, thermalism/crenotherapy, and hypnosis. The absence or scarcity of studies in these areas may be related both to limited availability of these practices in health services and to their restricted inclusion in physical therapy training curricula, hindering their systematic incorporation and scientific evaluation.

The integration of ICPs into health systems faces significant barriers, including inconsistent regulations and limited resources. In addition, the lack of specific guidelines for the use of ICPs in pediatric physical therapy hinders their widespread and safe clinical application. To strengthen the inclusion of ICPs in health services, it is essential for the SUS to expand its infrastructure and invest in professional training. Specialized training programs may increase adherence to less widespread practices and improve quality of care. Furthermore, clear normative guidelines should be developed to standardize ICP use, ensuring safety and efficiency. Although ICP inclusion in the SUS already reaches 54% of Brazilian municipalities — primarily through acupuncture and TCM[60] — there remains substantial potential to expand access and strengthen the provision of these practices in both primary and specialized care.

As limitations of this review, a scarcity of studies specifically targeting the pediatric population within the context of physical therapy was observed, as well as limited descriptions of the systematic application of Integrative and Complementary Practices in routine care and physical therapy education. These limitations reflect not only methodological constraints of the present review but also gaps in the scientific production of the field, reinforcing the need for new primary and synthesis studies with greater methodological rigor and a specific focus on pediatric physical therapy to strengthen the evidence base regarding ICP use in this domain.

CONCLUSION

This scoping review enabled the mapping and critical analysis of the scientific literature on the use of Integrative and Complementary Practices in pediatric physical therapy, highlighting their growing incorporation across different care contexts, particularly within public health systems. The findings indicate that although certain practices show greater scientific and institutional consolidation, the integration of ICPs into pediatric physical therapy remains heterogeneous, with significant asymmetries in service availability, professional training, and evidence production.

From an institutional perspective, a major challenge lies in aligning the expansion of ICPs with requirements for quality, safety, and effectiveness through evidence-based clinical protocols and guidelines specific to pediatric physical therapy practice. This review also underscores the need to strengthen integration among public policies, professional training, and applied research in order to improve clinical decision-making and health service management.

Thus, the results of this review provide support for health managers, policymakers, and healthcare professionals by identifying priority areas for investment in research, training, and regulation, contributing to the consolidation of ICPs as safe, effective complementary strategies aligned with the principles of comprehensive child-centered care.

CRediT author statement

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the workreported in this paper.

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SUPPLEMENTARY MATERIAL

DESCRITORES		
Minemônica	**Descritores/Palavras-chave**	**Desc/Mesh**
População	Criança *Children* *Child* *Childs* *Child s* *Children* *Childrens* *Children s* *Child AND preschool* *Preschool child* *Preschool children* *Preschooler* *Preschoolers* *Preschool* *Preschooler s* *Preschools* *Pre school child* *Pre school children* *Pre schooler* *Pre schoolers* *Pediatric* *Paediatric* *Peadiatric* *Pediatrics* *Paediatrics* *Peadiatrics*	Criança *Child* *Niño* Pré-Escolar *Child, Preschool* *Preescolar* Pediatria *Pediatrics*
Conceito	Medicina Integrativa *Integrative Medicine* *Integrative Community Therapy Integrative Community Therapies* Saúde integrativa *Integrative health* Medicina alternativa *Alternative medicine* Práticas integrativas *Integrative practices* Práticas Complementares *Complementary Practices* *Complementary Therapy* Integralidade em Saúde *Integrality in Health* *Integralidad en Salud* *Manipulative Medicine* *Manipulative Therapy* *Manipulative Therapies*	Saúde Holística *Holistic Health* *Salud Holística* Terapias Complementares *Complementary Therapies* *Terapias Complementarias* Medicina Integrativa *Integrative Medicine* *Alternative Medicine* Acupuntura *Acupuncture* *Acupuncture therapy* *Electroacupuncture* Osteopatia *Manipulation, Osteopathic* *Osteophatic* Quiropraxia *Manipulation, Chiropractic* *Chiropractic*
Contexto	Fisioterapia Physiotherapy Physiotherapies Physiotherapist Physiotherapists Physical therapy Physical therapies	Fisioterapia *Physiotherapy* *Physiotherapies* *Physiotherapist* *Physiotherapists* *Physical therapy* *Physical therapies*