

Systematic review analysis on the use of acupuncture for pain in youth and adults

Abstract

Oriental traditions in Brazil have been around since the 1960s. Traditional Chinese Medicine (TCM), based on the Taoist cosmology and the theories of *Yin and Yang*, Five Movements or Elements of Nature, represents a modality of knowledge and therapeutic practice that is more than 3000 thousand years old. One of the techniques that make up TCM is acupuncture. Using specific points on the energetic meridians, the insertion and manipulation of needles promote the circulation of *Qi* (vital energy) and is one of the most prominent ways to treat or relieve pain. In this study, we aimed to identify what the scientific literature in the last 5 years has pointed out as contributions of acupuncture in relation to pain, especially in young people and adults. We conducted a literature search that analyzed systematic reviews from the PUBMED database. A total of 15 studies were analyzed. After the exclusion process, 12 review articles were analyzed. In the interpretative summaries, we identified that most articles suggest that acupuncture can be a safe and effective form of treatment for pain, in various conditions and pain syndromes. At the same time, the studies point to the need for further research with more elaborate methodologies to increase the quality of the evidence.

Keywords: traditional chinese medicine, acupuncture, pain, young and adults

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Introduction

Acupuncture is seen as one of the oldest practices in the world.¹ Eastern traditions entered Brazil after the 1960s. Traditional Chinese Medicine (TCM) was one of the movements, in the period in question, considered alternative, to enter the country and that would be directly related to health.²

TCM is understood through a cosmology and rationalities that are different from Western biomedicine.² It includes a series of techniques based on *Qi* and how this energy organizes our body. The rationality of TCM, as well as its therapeutic practice, has philosophical bases supported on theories such as the Yin-Yang, the Five Movements, the Five Elements of nature, such as wood, fire, earth, metal and water.³

TCM is thousands of years old and is a way of perceiving the laws of nature, while “valuing the harmonic inter-relationship between the parts aiming at wholeness” (3, p. 13). This means that it seeks the balance between the phenomena that occur in nature and in the body. To this end, TCM resources are the technologies of acupuncture, medicinal plants, diet therapy, and body and mind practices, such as Lian Gong, Chi Gong, Tuina, Tai-Chi-Chuan, among others.

In 1988, acupuncture was introduced in Brazil. Its registration is in the Resolution nº 5/88, from the Interministerial Commission for Planning and Coordination (CIPLAN). Through this same resolution, acupuncture was established in the Brazilian health services in a public way.³

In 1996, through the 10th National Health Conference, the incorporation of Acupuncture/Traditional Chinese Medicine was approved, being understood as an alternative and popular practice.³ In 2000, through the 11th National Health Conference, Acupuncture was recommended for Primary Health Care in the Family Health Program (PSF) and the National Program of Community Health Workers (PACS).

In the PNPIC, acupuncture means: “a set of procedures that allow the precise stimulation of defined anatomical sites through the insertion of metal filiform needles for health promotion, maintenance, and recovery, as well as for the prevention of diseases” (3, p. 14). Being a technique created more than 3000 years ago, it was assimilated into Western medicine from the second half of the 20th century, through scientific studies that investigated its therapeutic effects. Among them, it was identified that acupuncture can promote: “the release, in the central nervous system, of neurotransmitters and other substances responsible for responses promoting analgesia, restoration of organic functions and immune modulation” (3, p. 14).

For Sousa and Tesser,⁴ acupuncture was one of the practices that became more expressively legitimized in the Unified Health System (SUS), in Brazil, from the National Policy of Integrative and Complementary Practices (PNPIC). In this same study, we identified that the profile of the population referred to receive acupuncture care in Primary Health Care was those who suffered from pain. In the interpretation of Hegyi, Henrik, and Zoltán,¹ pain is a signal detected by the nervous system sensors and have different locations, durations, types of sensation and can be interpreted as signs of some process of illness and that may require due attention immediately.

Acupuncture shows its relevance to the Brazilian health system, due to the decrease in hospitalizations, prescription of medications (drugs), referrals to physical therapy or rheumatology in the primary care service when the acupuncture technique is introduced.⁴

According to Hegyi, Henrik, Zoltán,¹ in worldwide contexts, more than 25% of the population has experienced some type of pain that lasts for more than a day. Taking into consideration the intervention with acupuncture, among the causes that people seek an acupuncturist therapist are mainly pain or complaints of musculoskeletal order.¹ The most common complaints are back pain, joint pain, neck pain, chronic headache or migraine, and recurrent pain.¹ Pain is the second leading

cause of absences for workers in Brazil. About 80% of the Brazilian population suffers from pain, either due to muscle contractures or postural problems.⁵

In the understanding of the International Association for the Studies of Pain,⁶ pain is “An unpleasant sensory and emotional experience associated with, or similar to that associated with actual or potential tissue damage.” For the Brazilian Society of Orthopedics and Traumatology,⁷ pain promotes physical and functional disability in more than one-third of the population. When acute, it is considered a form of response to stimuli. Physiologically, our body interacts and responds to these stimuli, and one of its protective expressions is pain. When chronic, pain impacts people’s quality of life, inhibiting them from performing their leisure practices and other social interactions.

In our study, acupuncture as a therapeutic possibility, and having a direct relationship with the treatment of pain, our research aims to identify what the scientific literature, in the last 5 years, has indicated as contributions of acupuncture in relation to pain, especially in young people and adults.

This article was divided into the following topics: Methodological Procedures; Acupuncture and Pain in Systematic Reviews; and finally, Synthesis, a topic in which we present our findings.

Material and methods

Our study uses the bibliographic research method.⁸ It investigates studies already conducted on a given theme and/or context (8). Our research aimed to analyze the contributions of systematic reviews from the last 5 years that addressed Acupuncture and associated pain.

A systematic review is an “option not only to accumulate information, but to follow the scientific course of a specific period, reaching its apex in the discovery of gaps and feasible directions for the elucidation of relevant themes” (9, p. 397).

According to Gomes and Caminha,⁹ systematic reviews that are well structured favor the aspects of updates, construction of guidelines, professional performance and production of new studies. In the authors’ interpretation: “The systematic literature review method consists of a movement based on predetermined criteria and consistent scientific evidence, with the purpose of collaborating with the choice of studies and/or tools for the development of articles with original information”.⁹

In our analysis, we focused on systematic reviews whose central themes describe how Acupuncture can be used in relation to pain, especially in young people and adults.

As inclusion criteria, the article should:

- a. Be found in the PUBMED database;
- b. Be found in the database by combining the keywords Acupuncture and Pain in the title and/or abstracts of the articles;
- c. Be of full access and free of charge;
- d. Be a systematic review;
- e. Have been published in the last 5 years (2016-2021);
- f. Be written in English or Portuguese
- g. The research must relate to human beings, young people and adults.

As exclusion criteria, the article should not:

- a. Cite acupuncture without a description of its function and/or use;
- b. Cite acupuncture alone, without making the proper relationship with the theme of pain;
- c. Cite pain, alone, without making a relation to the acupuncture technique.

In the PUBMED database, 16 systematic reviews were identified, with one of these appearing in replicated form. Meeting the inclusion criteria of our search, we analyzed 12 articles. 4 were excluded.

Acupuncture and pain in systematic reviews

In the Brazilian context, despite its extensive organized and widespread knowledge in several countries, according to Cintra and Pereira,² TCM assumes a place as a therapeutic auxiliary in relation to Western medicine. One of the hypotheses for this to occur is due to the period it took to start scientific investigations about TCM and its therapeutic effects, and another hypothesis is that it only received an expressive force in SUS after the creation of PNPIC, around the 2000s.

Besides the difficulty of instrumentalization of professionals working in primary care, acupuncture appears in a scenario where people suffer chronically with several unsuccessful therapies and seek TCM as a last therapeutic possibility before abandoning the treatment offered by Western medicine.²

In the study by Cintra and Pereira,² TCM has philosophical roots in Taoism, and appropriates concepts such as Unity and Mutation, Integration and Interaction. These concepts are expressed in the movements of *Qi* (energy or life force) present in nature, including in our maintenance of health and what occurs to us in a moment of experiencing illness.

Qi energy is composed of Yang and Yin. These forms of the same energy make up a unit that, depending on their movements, reveal the body’s health and disease. According to Cintra and Pereira,² “Yang, which represents the energy that produces heat, expansion, ascension, increased activities; and the Yin aspect that represents the energy that produces cold, withdrawal, descent, rest, darkness, and decreased activities.”

These energies are considered, in our rationality, as opposite but complementary energies. The theory of *Yin and Yang*, added to the other two, the Five Elements, or Five Movements, and the Meridians (Energy Channels), constitute the Taoist and cosmological basis of TCM.² Considered as a Vitalist approach to the body, health and disease, its characteristics are precisely the integration with the environment in which we live and the force of nature, the balance.

The disease is understood through internal imbalance, not just external pathogenic factors that attack our body. According to Cintra and Pereira,² besides the sociocultural conditions that are important for a diagnosis of a person’s health, are also taken into consideration:

The diagnosis is made by inspecting the tongue, nails, and hair; by palpating the pulse; by investigating the state of appetite, taste, feces, and urine, among others, in addition to the patient’s emotional and health history. The diagnostic inspection takes place through contact between the patient’s body and the therapist’s body, by whatever sense: touch, smell, sight, or hearing. Some Chinese doctors even taste the taste of bodily secretions.

With the diagnosis performed in TCM, we can identify the symptoms and signs that refer us to the energy syndromes in the “organs, viscera, tendons, muscles, circulatory system, lymphatic system, etc.”,² and that will describe the person’s current situation at the time the assessment is performed.

In turn, the diagnosis in acupuncture is important for the selection of practices that will accompany the therapy. Among the possibilities are cupping therapy, which is the use of glass cups that perform suction on the skin or negative force (vacuum) or moxibustion, a technique done with the medicinal plant called *Artemisia*, or even phytotherapy, which is the use of medicinal plants that can be used in various forms, teas, tinctures, essential oils, among others.

Acupuncture as a treatment for pain can alleviate the suffering that the person may be experiencing. In the study by Cintra and Pereira,² the expression suffering is understood as follows: “at the abstract level, suffering can be understood by the meanings that go beyond the limits of the experience of physical illness. It is noted that suffering, in some cases, can mean at the same time the localized illness, the experience, and the emotion it implies. As a way of demonstrating the suffering caused by experiencing pain, Cintra and Pereira cite:²

For example, a girl who has had back pain for years when she is emotionally and mentally unbalanced, or an old man who, also due to emotional and mental difficulties, stopped his tongue when he got out of bed in the morning; the psychic suffering that a backache caused to one of the patients, or even the case of a girl who said she was seeking to transform the way she related to others in order to suffer less.

In our research, we conducted a survey of systematic reviews that have been developed on the topics of acupuncture and its relationship to pain in youth and adults.

The study by Moura et al.¹⁰ is a review of randomized clinical trials that make use of auricular acupuncture in the treatment of adults with chronic back pain in adults. Auricular therapy has been used since the Han Dynasty in China and underwent, for modernization effects, in 1950, consisting of a diagnostic and treatment method, through the auricular pavilion, for physical and psychosomatic conditions. The technique of acupuncture, in its approach to the auricular microsystem, is explained through the lens of neurophysiology and reflexology

The research by Moura et al.¹⁰ also took into consideration the results that evaluate this condition, the protocols, the intervention, and the effectiveness of this type of technique in relation to pain intensity. In total, 472 studies were investigated, and in 80% of them, auricular acupuncture was shown to be positive and efficient. Although there is no fixed protocol for the case of back pain, the investigated studies have shown it to be a promising technique that helps with pain intensity and quality, medication consumption, physical impairments, and quality of life.

In the study by Wang et al.,¹¹ the acupoint injection (*Zusanli*) approach for Peripheral Diabetic Neuropathy (PDN) was investigated. Randomized controlled trials were evaluated in six databases, with the primary outcomes being directed at the themes of pain, global symptom improvement, and quality of life. In total, 14 studies were analyzed, involving 1071 participants.

According to Wang et al.,¹¹ TCM is identified as therapeutics that include Chinese herbal medicine and acupuncture. NDP is characterized in TCM as a *Bi* syndrome and *Wei* syndrome which respectively mean debilitating diseases or even arthralgias and diseases that promote atrophy and flaccidity. Acupuncture would be

a technique that significantly reduces blood viscosity and increases blood circulation in the nerve tissues, which ensures an improvement in the speed of nerve communication for patients with PND and, in addition, favors pain relief due to increased plasma levels of morphine. The *Zusanli* acupoint injection technique is composed of Chinese herbal extracts or even conventional medications. In research, it has been shown to be a safe technique with a potential effect in terms of reducing pain and improving nerve conduction velocity, when compared to the intramuscular injection technique.

Jang et al.¹² investigated the use of acupuncture as an adjunctive therapy in the treatment of breast cancer-related symptoms. From 835 randomized controlled trials, identified by searching eight different databases, the authors concluded that acupuncture can relieve breast cancer symptoms, one of which is pain. In the study, the use of TCM-based acupuncture is understood as a way to regulate the meridians, or energy pathways, and also the flow of energy. Based on neurophysiology and neurohormonal activities, evidence is identified of the changes that acupuncture can promote in cancer symptoms.

Yang Wang et al.¹³ investigated the use of acupuncture for post-herpetic neuralgia. This condition has several definitions. In several countries, it refers to persistent pain where skin lesions have occurred and usually lasts for more than 3 or 4 months after tissue healing, or after Zoster Herpes in the case of China. In this study, seven randomized controlled trials were analyzed, originating from different databases that compared acupuncture exclusively against other types of therapies associated or not with acupuncture. In this case, acupuncture may promote pain relief from this type of neuralgia safely with no adverse effects, however, the authors state the need for further studies.

Thomas et al.¹⁴ conducted an investigation about urinary incontinence in adults who have suffered stroke. The authors present studies that identify acupuncture with a complementary intervention therapy, being considered a form of treatment to promote pain relief through the insertion of needles and stimulation at certain points on the skin that will act on the body through the autonomic and somatic nervous systems. The study was conducted in the Cochrane Incontinence and Cochrane Stroke Specialised Registers database, which indexes other databases, and analyzed about 20 trials with 1338 participants.

Choi et al.¹⁵ investigated the relationship between acupuncture and interventions for the treatment of symptoms related to carpal tunnel syndrome. In this study, the goal was to identify the benefits and harms that acupuncture and acupuncture-related interventions can promote in maintaining pain in adults with Carpal Tunnel Syndrome, defined by disorders in the wrist. Among the symptoms experienced in this syndrome are numbness, tingling, hand pain, and loss of muscle mass and weakness.

As Choi et al.¹⁵ sees it, acupuncture is an effective therapy for the management of pain, cancer symptoms, and other chronic conditions. For the authors, acupuncture works with the energy (*Qi*) that circulates through the body via the meridians. The therapy session lasts about 30 to 60 minutes, and the therapist manipulates the energy by inserting a needle, causing a sensation of pain, numbness, and heaviness. In this study, the authors highlight the need for more clinical studies and point out that, with the studies reviewed, the effect of acupuncture on carpal tunnel syndrome in the short term and in comparison to other methods has not been identified. For example, information indicating the effectiveness of acupuncture compared to the use of corticosteroids for nerve blocks is uncertain.

Franco et al.¹⁶ conducted an investigation about non-pharmacological interventions for the treatment of chronic prostatitis and chronic pelvic pain syndrome. In their research, three studies were identified, with 204 participants. According to the authors, acupuncture is understood as an alternative medicine that uses the insertion of needles into the skin at certain points of the body, which represent the internal organs. About its therapeutic effect, the authors showed a reduction of prostatitis symptoms in a considerable number of participants, without adverse effects. In addition, when they compared acupuncture with standard medical therapies, they found that acupuncture probably reduces the pain people experience with the syndrome.

Ju et al.¹⁷ investigated acupuncture for neuropathic pain in adults. In that study, neuropathic pain comes from nerve damage that is followed by changes in the central nervous system and is defined as a type of injury or even disease in the body's neurosensory system. Nine different databases were used, from which the authors analyzed randomized controlled trials comparing acupuncture with other types of therapies for neuropathic pain. In the research, the authors identify studies that demonstrate the demand for acupuncture for the treatment of pain in several countries. The technique is described by inserting needles and stimulating them at points for therapeutic purposes. The acupoint composition is done in a three-dimensional way, i.e., dermal, muscular and neural. In this sense, it works with connective tissues and chemical reactions in the body. The location of the traditional points is described in TCM theory, which is based on the energy meridians.

In conducting their research, Ju et al.¹⁷ analyzed six studies involving 462 participants suffering with chronic peripheral neuropathy pain. The authors state that the efficacy of acupuncture cannot be measured due to the studies analyzed lacking better conduction quality, which weakens the degree of evidence quality of the study.

Lopes-Júnior et al.¹⁸ investigated the effectiveness of complementary therapies in the management of cancer pain in palliative care. Four different databases were searched and six randomized controlled trials that studied the case of adult patients aged 19 years or older were analyzed after the exclusion process. Cancer pain is characterized in a multifactorial way, that is, it is possible to identify acute and chronic pain and different intensities. This type of pain is described in an uncertain way, "hurting, frightening or as an unbearable sensation, with episodes of intense sensations, accompanied by difficulty sleeping, irritability, depression, suffering, isolation, hopelessness and helplessness" (LOPES-JÚNIOR et al, 2020, p. 2). The pain can come from the very advancement of cancer cells in the body, the type of treatment used (chemotherapy).

Acupuncture, in this study, is considered "one of the most popular forms of traditional medicine and its use is mainly linked to the improvement of psychological symptoms through sympathomimetic pathways".¹⁸ Based on TCM, Lopes-Júnior et al.¹⁸ assure that it is used in a complementary way to conventional models of pathology treatment, with self-healing as its main objective. Self-healing is achieved, in this perspective, by rearranging the body's energies, which slows down symptoms. The authors also emphasize the need for new studies on the efficacy of acupuncture, since they found difficulties in the methodological question of the researches, because it was not clear or they did not have the same type of acupuncture, the description of the application technique and points that were evaluated.

Thiagarajah¹⁹ investigated the effectiveness of acupuncture in reducing pain due to plantar fasciitis. In this research, four studies

related to the application of acupuncture therapy were analyzed. Two of them, address electroacupuncture, the insertion of needles concomitant with electrostimulation, and the other two used the dry needling technique dry needling, needle insertion without any other manipulation. Plantar fasciitis is a condition that generates calcaneal enthesitis and arises due to biomechanical overuse, such as in running and prolonged time in the erect (standing) position. It is a condition associated with pain, especially in the heel, and can appear even during times of rest or sleep. The authors indicate that there is a diversity of treatments, but in the study, acupuncture was investigated.

Based on TCM, acupuncture is not yet considered standard for a treatment of plantar fasciitis. However, the studies reviewed by Thiagarajah (19) point out that acupuncture is a technique that significantly reduces pain in plantar fasciitis, particularly in the short term (4 to 8 weeks), while further studies are needed to evidence the effectiveness of this technique as a therapy with long-term positive effects. The author also highlights that it is necessary to strengthen the quality of evidence so that health professionals can adhere to the use of acupuncture.

Woo et al.,²⁰ researched about the effectiveness and safety of acupuncture in women with primary dysmenorrhea. About 109 randomized controlled trials, 60 systematic reviews, and 49 meta-analyses were analyzed. In this study, primary dysmenorrhea is the definition of pain from menstrual cramps without necessarily having an identifiable pelvic pathology, and which may accompany women in the years of their life when menstruation occurs.

According to Woo et al.,²⁰ acupuncture is a therapeutic modality derived from China and its use is based on the insertion of needles, the theory of *Yin and Yang* and *Qi*.

The functioning of acupuncture in the body is described as follows: "primarily by stimulation of the nervous system, by local effects due to local antidromic axon reflexes, and by the release of opioid peptides and serotonin" (20, p. 2). The authors point out that acupuncture is part of the medicine we have nowadays in the West, no longer being considered an "alternative medicine" (20, p. 2) and that it is used comprehensively as a technique for pain relief, which should include pain from menstrual cycles.

As contributions, Woo et al.,²⁰ suggest that acupuncture as a safe and effective treatment that should reduce menstrual pain and other symptoms associated with this condition, even promotes benefits in the short period after menstruation. The authors also suggest that acupuncture has more significant effects than anti-inflammatory steroids, despite the limitations that the studies reviewed presented regarding restrictions and low methodological quality.

Verghese et al.²¹ investigated complementary therapies for bladder pain syndrome. For the research, 5 different databases and the Gray Zone were used, adding a total of 1454 citations, in 11 studies, being four randomized controlled trials and seven prospective studies.

The painful bladder syndrome is something difficult to treat and manifests itself with pain in the pelvic region, with a feeling of pressure or discomfort and urinary symptoms. This painful syndrome can last for at least 6 months.²¹ Acupuncture was one of the therapies analyzed to promote the treatment of this condition.

According to Verghese et al.²¹ acupuncture "inhibits the pain transmission system and normalizes sensory processing with the peripheral and central nervous system." As a complementary and alternative practice, acupuncture is defined as a treatment and health care modality that are not regularly studied in medical courses, or even

practiced in hospitals.²¹ In the research findings, the authors assure that acupuncture, physical therapy, and diet maintenance are the therapies that showed the greatest benefits for bladder pain syndrome.

Overviews and conclusion

In our research, we noticed that scientific studies have been interested in acupuncture and Chinese Medicine. However, it is important to point out that the bases that constitute their rationalities are different. Science was built from quantitative and mathematical models; in turn, Traditional Chinese Medicine has the Taoist philosophy, among other theories created in empirical practices, besides cultural signs and symbols that are unique to China.

In our analysis, the difficulties found refer to the production of scientific knowledge related to the acupuncture technique. This occurs because this technique has a unique therapeutic approach for each individual. By assessing lifestyle, diet, the internal functioning of the body, social relations, and emotions, we can see an approximation with aspects of neurophysiology, since we can see the intervention with acupuncture in the peripheral and central nervous system. However, when we take into consideration the relationship with concepts such as *Qi*, *Yin and Yang*, the movements of nature, among other aspects of philosophical content of the Chinese sociocultural context, this scientific relationship will suffer with some limitations.

By identifying the contributions of acupuncture in relation to pain in young people and adults, we think we have reached our goal. Acupuncture has been shown to be effective in several of the disease situations or comorbidities reviewed. Most of the studies investigated here suggest that acupuncture can help in pain situations related to peripheral diabetic neuropathy, chronic back pain, primary dysmenorrhea or menstrual cramps, bladder pain syndrome, cancer - especially breast cancer, - post-herpetic neuralgia, pain from urinary incontinence, carpal tunnel, chronic prostatitis, chronic pelvic pain syndromes, neuropathy, and plantar fasciitis.

Regarding the damage that acupuncture can cause, we identified in our research that it is a safe technique, which can cause sensations of numbness, pain, and heaviness. However, without adverse effects or even harm to the person. The studies that did not suggest that acupuncture can bring benefits, point out that, in the investigations performed, they did not find sources of evidence of sufficient quality to support or even refute, pointing out some kind of harm that acupuncture can promote. To us, this goes back to a scenario between differences in rationality and cultural traditions where one may not support the other.

Most of the studies also suggest that clinical studies be conducted targeting certain health conditions and, in our interpretation, suggest the creation of intervention protocols with acupuncture. However, we can assume that the movement of researchers who adopt a model of science that treats human beings in a homogeneous way is an existing counterpoint to the therapeutic proposal that TCM promotes. We recognize here the effort of science to explain phenomena and seek to understand them. In the same way, we recognize that therapeutic practices prior to science already existed and continue to exist, demonstrating efficiency that, sometimes, scientific models don't support. This premise may, to some extent, answer the criticisms that some of the authors analyzed raise in their research by suggesting new studies, determination of better methodologies elaborated to reach higher degrees of quality of scientific evidence, and creation of intervention protocols.

Would it be, perhaps, necessary to broaden our paradigmatic horizons of science to fit a heterogeneous therapy, as demonstrated

by Traditional Chinese Medicine? In our understanding, dialogue and openness to new ways of researching, of doing science, is necessary. Research that includes quantitative and qualitative aspects in a hybrid way, in a lively and dynamic way, and that is able to perform the measurements that are possible.

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