



Auriculotherapy for pain treatment through the integration of auricular points: a literature review

Auriculotherapy for the treatment of pain from the integration of auricular sutures: a literature review

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ABSTRACT:

The side effects of conventional analgesics can limit their use. Therefore, non-pharmacological pain relief techniques, such as auriculotherapy, can play an important role in pain management.

Auriculotherapy is a health modality that involves stimulating the outer surface of the ear, known as the auricle, to alleviate pathological conditions in other parts of the body. Various forms of treatment include auricular acupressure, auricular acupuncture, transcutaneous auricular stimulation, auricular stimulation, laser therapy, etc. The objective of this study was to conduct a literature review evaluating auriculotherapy for pain management. The SCIELO, LILICS, and MEDLINE databases were searched up to the year 2024.

Publications comparing auriculotherapy and measuring pain outcomes or medication use were included. The results revealed that auriculotherapy can be effective in treating various types of pain, especially postoperative pain. However, a more precise estimate of the effect will require more large, well-designed clinical trials.

Keywords: Auriculotherapy. Ear points. Pain; Traditional Chinese Medicine

ABSTRACT

The side effects of conventional painkillers may limit their use. Therefore, non-pharmacological pain relief techniques such as auriculotherapy may play an important role in pain management. Such therapy is a health modality that involves stimulating the outer surface of the ear, known as the auricle, to relieve pathological conditions in other parts of the body. Various forms of treatment include auricular acupressure, auricular acupuncture, transcutaneous auricular stimulation, auricular stimulation, laser therapy, etc. The aim of this study was to conduct a review of the literature evaluating auriculotherapy for pain management. The SCIELO, LILICS, and MEDLINE databases were searched until the year 2024. Publications that compared auriculotherapy that measured pain outcomes or medication use were included. The results revealed that auriculotherapy can be effective in the treatment of several types of pain, especially postoperative pain. However, a more accurate estimate of the effect will require more large, well-designed clinical trials.

Keywords: Auriculotherapy. Earphone points. Pain; Traditional Chinese Medicine

1. INTRODUCTION

Pain is a highly prevalent and costly health problem in the United States. Back pain, in particular, affects at least 84% of individuals at some point in their lives, and the pain recurs in up to 80% of cases within 1 year. Pain can occur at any age but is most prevalent during the third decade of life. Globally, back pain is the second most common cause of disability, the second leading cause of lost productivity in the workplace (after the common cold), and the third most common reason for visiting a healthcare provider (Maryam, 2020).

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A common treatment for pain is prescription pain medication. Of 164 million patient visits involving a pain diagnosis, about 20% were treated with an opioid and 27% with a non-opioid, such as a nonsteroidal anti-inflammatory drug or acetaminophen. It is estimated that about 2 millions of adults worldwide misuse opioid analgesics (Korelo et al., 2020).

In Brazil, approximately 1.6 million adults use complementary, alternative, or integrative medicine to treat pain. However, few studies have tested the use of auricular acupuncture using a standard protocol for chronic pain (Maciel et al., 2018).



Auriculotherapy, which includes the modalities of auricular acupressure and auricular acupuncture by Auriculotherapy, which involves stimulating specific acupuncture points on the outer ear, is an alternative non-pharmacological treatment for chronic pain. Different auricular regions are believed to correspond to specific somatotopic areas of the body. Auriculotherapy has been shown to be superior to control approaches (e.g., placebo pills, placebo, usual care, or medications) in reducing chronic pain intensity (standardized mean difference) (Korelo et al., 2020).

The objectives of this research were to analyze, based on a literature review, the effectiveness of auriculotherapy. therapy for the treatment of pain through the integration of auricular points

The methodology adopted will be based on the qualitative, descriptive approach of the bibliographic review type. The choice for qualitative research is due to the fact that it involves obtaining descriptive-analytical data from the researcher's direct contact with the studied situation and emphasizes the process more than the outcome. product and is concerned with portraying the perspective of the participants (GIL, 2002).

The research methodological procedures will be supported by exploratory readings of scientific articles, monographs, dissertations, books, and journals in the online databases of Scielo, Lilacs, and Google Scholar, among others, using the descriptors: Auriculotherapy. Ear points. Pain; Traditional Chinese Medicine. nesa.

The inclusion criteria were made available in full in Portuguese and English, meeting the objective from 2014 to 2024. The exclusion criteria were publications unrelated to the topic and in a language other than Portuguese. After reading the selection in full, the results should be categorized. according to your results.

The procedures for carrying out this review will be covered in six stages: choosing and delimiting the theme, developing the guiding question defined for the research; searching or sampling the literature (data collection); a critical analysis of the included studies; reviewing the data and preparing the files; and finalizing this article.

2 LITERATURE REVIEW

2.1 Pain treatment through Auriculotherapy

Pain, despite causing suffering, is a biological necessity. Painful sensations trigger withdrawal reflexes that are crucial for survival. Pain signals begin with the activation of microscopic neurons located in the skin, muscles, joints, blood vessels, or internal organs (Korelo et al., 2020).

These sensory receptors, called nociceptors, are activated by harmful stimuli that can cause tissue damage. Nociceptor activation is intensified by stimuli such as electric shock, extreme temperatures, or skin punctures. Therefore, the application of needles in auriculotherapy appears to stimulate skin nociceptors, allowing the body to adopt the necessary responses to relieve pain (Nunes).

et al., 2017).

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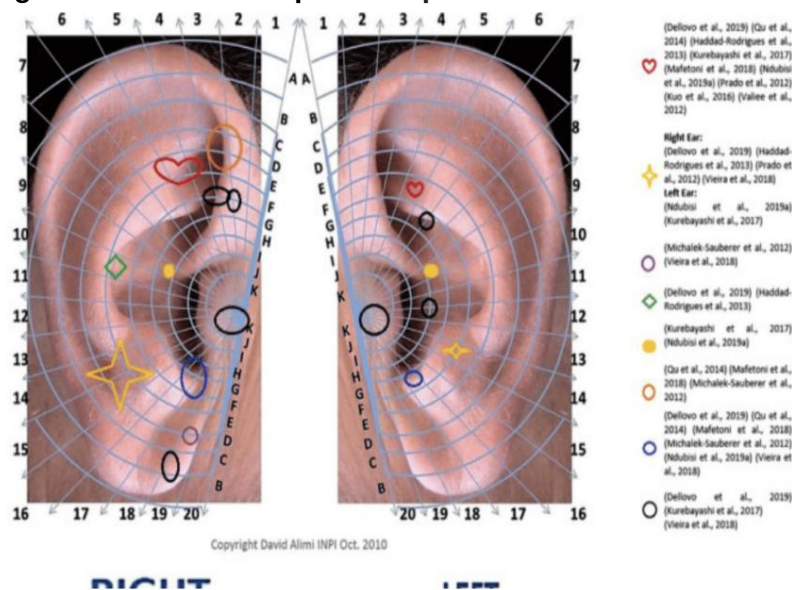
According to the International Association for the Study of Pain (IASP), pain is defined as “an unpleasant sensory and emotional experience related to actual or potential tissue damage” (Maryam, 2020). Many people report experiencing pain even in the absence of tissue damage or obvious pathophysiological causes; this is often due to psychological reasons (RAJA SN, et al., 2020). Regardless of whether this definition is accepted, pain is recognized as an intrinsically subjective experience and

personal, in addition to allowing the individual to identify physical, chemical and harmful stimuli (Morais et al., 2020).

Regarding pain treatments, pharmacological approaches involve the use of medications to provide relief, while non-pharmacological strategies focus on other forms of care, especially modulating the pain experience (Maciel et al., 2018). In this scenario, although several medications are available, all of them can have side effects that limit their use or harm the patient. Thus, Integrative and Complementary Practices (ICPs) emerge as a non-pharmacological therapeutic alternative for pain management (Moura, 2018).

Several studies demonstrate the effectiveness of auriculotherapy in pain relief. According to Nunes et al. (2017), auriculotherapy, or auricular acupuncture, is a therapeutic technique that involves stimulating specific points on the ear to relieve pain and promote healing. This approach uses the ear as a microsystem, with points corresponding to different parts of the body. Studies indicate that auriculotherapy can be effective in reducing chronic musculoskeletal pain, especially in the lumbar spine, as well as being beneficial in managing acute pain after surgery and reducing anxiety.

Figure 1- Auricular acupuncture points



Source: Nunes et al., 2017, p. 18.

Auriculotherapy is a therapeutic approach that uses the outer ear to treat a variety of symptoms and conditions. Stimulation can be applied through various methods, including fine needles (such as those used in acupuncture), semi-permanent needles, seeds, crystal spheres, stainless steel, or other materials, as well as techniques such as laser and transcutaneous electrical currents, among others.

Thus, in general, any technique aimed at stimulating the auricular microsystem with the aim of achieving therapeutic effects can be classified as auriculotherapy. However, some authors prefer to differentiate this terminology based on the type of material used (Prado et al., 2017).

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Auriculotherapy is based on the idea that the ear is a microsystem that reflects the entire body, and that stimulating certain points can influence specific areas of the body. Therapists use different stimulation methods, such as needles, seeds, balloons, magnets, or electrostimulation, to activate these points (Moura, 2018).

Among the Integrative and Complementary Practices (PICS), auriculotherapy is a therapeutic technique

Based on the principles of Traditional Chinese Medicine (TCM) and used in conjunction with body acupuncture, auricular therapy uses materials such as needles, crystals, and mustard seeds, as well as a palpator that assists in handling the materials and stimulating the points. When seeds are used, this practice is known as auricular acupressure. It is characterized by its non-invasive nature, easy application, and minimal side effects (Prado et al., 2012).

There is research demonstrating the effectiveness of auriculotherapy in the treatment of post-operative pain in knees, hips and dental areas, as well as conditions such as neuropathic pain, neck pain, low back pain, palliative care for cancer, acute pain in emergencies, migraines, sore throats, burn recovery, biliary colic, menstrual cramps, pain associated with hemorrhoids, renal colic, low back pain during pregnancy and labor pain (Rastegar et al., 2017).

Auricular points with analgesic properties highlighted in studies include: thalamus, zero point, heart, sympathetic, shen men, subcortex, kidney, analgesia, adrenal, and muscle relaxation. Auriculotherapy has few side effects, risks, and costs (Moura, 2018).

Common, though transient, adverse effects may include ear pain, fatigue, dizziness, nausea, and headache. No infections or other serious adverse events associated with auricular therapy have been reported. For pregnant women, auricular therapy is recommended from the 17th week onwards, avoiding auricular points related to the uterus, ovaries, endocrine system, genitals, and abdominal and pelvic points during pregnancy (Korelo et al., 2020).

Neuroanatomy and neurophysiology cannot fully explain the mechanism by which acupuncture and auriculotherapy work to relieve symptoms and treat diseases. However, their application is justified by the stimulation of reflex points in the outer ear, as the pinna is densely innervated by the auriculotemporal nerves, the auricular branch of the vagus nerve, the lesser occipital nerve, and the greater auricular nerve. This connection between the auricular points, the brain, and the organs makes auriculotherapy a valid approach for treating various pathologies (Morais et al., 2020; Zanelatto, 2013).

Auriculotherapy can be applied to a variety of dysfunctions, including motor, nervous, emotional, respiratory, and gastrointestinal disorders, and stands out for its effectiveness and rapid pain relief (SOUZA RD, 2022). Furthermore, its benefits are recognized in conditions associated with pain, such as reducing stress and anxiety levels, contributing to improved quality of life (Souza, 2022).

Acupuncture points are distributed throughout the human body, but there are areas that concentrate. They have microsystems of points that connect to certain internal organs, such as the ear, nose and hand, as illustrated in figure 2 below:

Figure 2 - Microsystems of points that connect to certain internal organs



Source: Serritell et al., 2020, p. 22.

As an alternative to pain treatment that does not involve the use of medication, auriculotherapy promotes analgesia by balancing energies and treating pain without the administration of drugs (Araújo, 2019). Recognizing the relevance of auriculotherapy as a tool for analgesia and healing, this study aims to carry out an integrative review on its use in pain treatment.

Regarding the auricle, there are a variety of points that correspond to organs and parts of the body, the stimulation of which can provide relief from illnesses, pain and imbalances, such as migraines and insomnia (Serritell et al, 2020).

According to Toca-Villegas et al. (2020), the acupuncturist, the selection of auricular points can be made based on the specific pathology or the affected anatomical area. "For example, to treat stomach problems, one can choose the point corresponding to the stomach."

This approach requires a thorough knowledge of Chinese medicine, which establishes a connection between an organ and various physiological manifestations. The point related to the liver, for example, can be used to treat eye or vision problems, since, according to Chinese medicine, the liver is associated with vision (Toca-Villegas et al., 2020).

Other examples include the endocrine point, used to address imbalances and irregularities in the menstrual cycle, and the sympathetic brain point, which is used to address emotional changes. After selecting the points, stimulation can be performed using seeds, metal spheres, needles, lasers, heat, infrared rays, massage, moxa sticks, or even crystals. The choice of methods varies according to the therapist's school of acupuncture, whether French or Chinese (Ushinohama et al., 2016).

Stimulating certain points on the pinna activates reflex areas rich in nerve endings and blood vessels.

This stimulus is transmitted through the spinal and cranial nerves to the central nervous system. Similar to acupuncture, auriculotherapy can intensify neuronal activity in regions linked to descending inhibitory pain pathways, as well as in the limbic system. Furthermore, it can enhance the activity of the cholinergic reflex, which is a

significant endogenous mechanism in the control of inflammation (Araújo, 2019).

Ear points can be stimulated using seeds, crystal spheres, stipers, lasers, or magnets attached with micropore. The use of organic seeds is recommended as they are more economical.



and have a reduced risk of causing inflammation and allergic reactions (Ushinohama et al., 2016).

Regardless of the material chosen, it is essential to instruct the patient to remove them if they feel unwell, discomfort, severe pain, or itching in the area. The seeds have a low risk of causing harm to the patient, eliminating the need for surgical sterilization. Furthermore, they don't usually rot, as they aren't left in the ear for long periods. However, the professional must be attentive and provide the necessary guidance during application (Toca-Villegas et al., 2020).

The provision of auriculotherapy within the Unified Health System aims to promote comprehensive care and facilitate access to this treatment. It can be used alone or in combination with other therapeutic approaches (3), and is offered during the intake process, in individual consultations (both nursing and medical), or in groups (Araújo, 2019).

Additionally, it is essential that both the application site and the instruments are properly sterilized to prevent ear infections. This is because stimulation occurs in areas very close to the ear cartilage, and infection can put the patient at risk of developing chondritis, an inflammation that is complex to treat (Valiani et al., 2018).

The findings of this integrative review suggest that most of the studies examined demonstrated positive results regarding pain relief with the use of auriculotherapy, establishing it as an interesting non-pharmacological alternative. Of a total of seventeen articles selected, all had the primary objective of evaluating the treatment's effectiveness in pain management (Serritell et al, 2020).

Auriculotherapy has emerged as an effective approach for reducing chronic musculoskeletal pain, especially when applied using electrostimulation. Furthermore, it is considered a safe practice that provides benefits to patients' health and well-being in a short period of time (Serritell et al, 2020). This is due to the understanding of Traditional Chinese Medicine, which considers chronic pain as a result of blood stagnation, causing blockages in the meridians and generating pain and impaired organ function. Thus, auriculotherapy promotes muscle relaxation and stimulates blood circulation, facilitating pain relief and organ regulation. Another article reinforced its effectiveness in

treatment of chronic low back and neck pain.

A promising use of auriculotherapy is in the relief of pain symptoms associated with cancer in patients undergoing chemotherapy, as discussed in one of the reviewed studies. Rastegar et al. (2017), through an integrative review, showed that auriculotherapy is effective in reducing symptoms such as pain, constipation, nausea, vomiting, hot flashes, dyspnea, fatigue, and insomnia during chemotherapy.

Another study, a retrospective clinical trial, evaluated the effectiveness of auriculotherapy for Neuropathy Chemotherapy-Induced Peripheral Artery Disease, with a 96% success rate among cancer patients (Serritell et al, 2020), considering that this condition is caused by chemotherapeutic agents that vary in toxicity, depending on the time of administration and the accumulated dose, limiting the use of certain antineoplastic agents (Serritell et al, 2020).

In the first study, the authors compiled evidence on auriculotherapy for symptom relief in cancer patients by stimulating different auricular points. They concluded that, due to its easy acceptance and applicability, many of the reported symptoms were related to treatment side effects, as pharmacological interventions often do not adequately serve this population and can cause harm through drug interactions. The second study demonstrated that the combination of auriculotherapy with cryotherapy resulted in symptom reduction, especially at the beginning of chemotherapy, due to good patient acceptance and the comfort provided amidst side effects (Prado et al., 2017).

Regarding the analysis of auriculotherapy for analgesia in conjunction with other pharmacological methods, In studies of techniques and techniques, Nunes et al. (2017) demonstrated the indirect relationship between therapy and magnetotherapy, low-level laser therapy, lidocaine cream, and mefenamic acid. When evaluating the treatment of knee osteoarthritis, the first study used magnetotherapy along with auriculotherapy in elderly patients, revealing that the combination resulted in improved pain compared to the techniques alone.

This occurred because magnetotherapy is associated with the release of endorphins, providing a calming effect on the patient during the procedure, combined with the muscle relaxation promoted by auriculotherapy. The use of analgesics is one of the most common strategies for pain management, but it is associated with a variety of adverse side effects (e.g., drowsiness, constipation, dry mouth, gastrointestinal bleeding, and potential for dependence) (Valiani et al., 2018).

Pharmaceutical options are currently the first and best choice for acute pain. However, patients with chronic or recurrent pain often develop tolerance to narcotics over time and receive decreasing pain relief. The high prevalence of prolonged and chronic pain highlights the need for better pain management strategies (Nunes, 2019).

Complementary and Alternative Medicine (CAM) therapies, especially acupuncture, offer additional options for pain management. These CAM options tend to be cheaper, less invasive, and lower risk than conventional second- and third-line treatments of strong narcotics and invasive surgical procedures. Acupuncture can reduce pain severity, allowing for reduced medication doses (Valiani et al., 2018).

Auricular therapy is a form of acupuncture and a well-recognized element of traditional medicine. Chinese Medicine (TCM). Auricular therapy is based on a long tradition and was modified and updated by Dr. Paul Nogier, the "father of auriculotherapy," in the 1950s. The World Health Organization considers auricular therapy a form of microacupuncture that can affect the entire body (Maciel et al., 2018).

Auricular therapy involves the relationships between the ear, energy lines (channels and meridians), and muscle regions throughout the body, according to a theory known as somatic reflexology. This theory postulates that when a symptom or illness arises in the body, it is projected onto the ear in a regular, measurable zone (Korelo et al., 2018).

The TCM model views disease as being caused by an imbalance in a person's energy or *qi*. Stimulation of auricular acupuncture points therefore aims to regulate *qi*, activate meridians and collateral systems, and balance the yin and yang aspects of *qi*, and in doing so has been successful in treating a variety of health problems, including pain (Valiani et al., 2018).

Types of auricular therapy include auricular acupuncture (AA), electroacupuncture stimulation (EAS) and acupressure (AP). The first two approaches involve inserting needles or applying intense electrical stimulation to acupuncture points on the ear. In contrast, without needles, acupressure generally does not result in strong or painful sensations (Prado et al., 2017).

Auricular therapy also differs from traditional body acupuncture in that auricular therapy allows needles (for AA) or acupressure patches (for AP) to remain in place for up to 1 month, depending on the condition of the subject's ear and skin, potentially extending the therapeutic period without constant, direct provider supervision. Thus, auricular therapy can reduce both the need for patients to travel to the acupuncture site and the cost of visiting a practitioner (Liu et al., 2018).

2021).

Studies using auriculotherapy (including AA, EAS and AP) have shown promising effects on treatment of pain from various conditions including dysmenorrhea, post-operative pain, hip fracture, pain



lumbar and bone marrow aspiration (Prado et al., 2017).

Auriculotherapy is a method for diagnosing and treating physical and psychosomatic dysfunctions through the stimulation of specific points in the ear, both with needles and pressure, and the application of Vaccaria seeds, etc. It is defined as auricular acupuncture (AE) or ear acupuncture when only needles are used (Nunes, 2019).

Auricular stimulation involves neurological reflexes, neurotransmitters, cytokines, the immune system, and inflammation. Auriculotherapy is a well-recognized technique of Traditional Chinese Medicine (TCM) based on a long tradition, but was modified and updated by Dr. Paul Nogier in the 1950s. In TCM, the ear is connected to 12 meridians directly or indirectly, and stimulating them can restore the balance between Qi (in TCM, the circulating life force or vital energy) and blood (Maryam, 2020).

The basic pathology of pain is the obstruction of Qi and blood in the meridians due to the invasion of pathogenic wind, cold, and dampness. According to TCM theory, if the meridians are open and Qi and blood are circulating normally, there will be no pain; conversely, if they are obstructed and the flow of Qi and blood is blocked, pain will arise. When a person is invaded by external pathogens, their constitution may be normal or weak. If the person is weak and unable to expel these external pathogens, they will remain in the meridians, joints, or muscles and mix with dampness, causing pain.

Alternatively, when external pathogens remain in the meridians, joints, or muscles, they will impede the flow of Qi in the meridian and cause stagnation of the flow of xue and the formation of phlegm (Liu et al., 2021).

Stagnant phlegm and phlegm will further impede the flow of Qi and consequently make the local area malnourished, causing pain. Pain is also caused by internal pathogens; in fact, imbalanced emotions often affect the liver and heart, resulting in decreased Qi and blood circulation and the generation of internal wind (Liu et al., 2021).

The underlying biological mechanism of auriculotherapy in pain treatment remains undefined. One theoretical explanation is that pain and neuronal excitability are alleviated by normalizing pathological and hypersensitive reflex pathways (i.e., the neural immune pathway) that interconnect the ear microsystem and the somatotopic region of the brain (Maryam et al., 2020).

The neurophysiological connections between ear acupuncture points and the human CNS have been explored by fMRI. Stimulation of acupuncture points is believed to cause vasodilatory effects by releasing beta-endorphins for short-term analgesic effects or neuropeptide-induced anti-inflammatory cytokines for long-term effects (Maryam et al., 2020).

Considering the complex interplay between cytokines, neuropeptides, and neurotrophins involved in chronic pain, possible pathways for the ameliorative effect of auricular therapy on pain include: (a) downregulation of pro-inflammatory cytokines and upregulation of anti-inflammatory cytokines; (b) downregulation of pro-inflammatory neuropeptides (e.g., calcitonin gene-related peptide); and (c) downregulation of neurotrophins (e.g., nerve growth factor, NGF). These responses can be modulated by inflammatory mediators and may explain the analgesic effects of auriculotherapy (Araújo, 2019).

In Europe, auriculotherapy has been applied systematically and comprehensively since Paul Nogier introduced the inverted fetus map in 1957. The French version is based on the assumption that the human body is represented in the external ear as an inverted fetus and that there is a relationship between distinct anatomical sites and specific points in the ear. Previous studies have shown that EA is effective in reducing pain as a stand-alone treatment or as an adjunct to other treatments. Several methods currently



existing methods for ear stimulation include needles, seeds, magnetic stones, lasers, ultrasound, bloodletting, moxibustion, electrical treatment and hand pressure (Maryam et al., 2020).

Regarding the effectiveness of EA in patients suffering from musculoskeletal pain, in 2014 Korelo et al., (2020) conducted a meta-analysis of pain score reduction using auricular acupuncture for acute (7 trials) and chronic (6 trials) pain across a variety of comparator groups and settings. The researchers concluded that auricular acupuncture is useful as an adjunctive therapy for pain management. This conclusion was based on a meta-analysis of 13 randomized controlled trials (RCTs) totaling 806 patients with a mix of pain types. The researchers reported a standardized mean difference in pain reduction of 1.59, indicating a large effect size.

3 ANALYSIS AND DISCUSSIONS

The studies reviewed revealed that the use of analgesics is one of the most common strategies for pain management, but it is associated with a variety of adverse side effects (e.g., drowsiness, constipation, dry mouth, gastrointestinal bleeding, and potential for dependence) (Maryam et al., 2020; Prado et al., 2017).

Pharmaceutical options are currently the first and best choice for acute pain. However, patients with chronic or recurrent pain often develop tolerance to narcotics over time and receive decreasing pain relief. The high prevalence of prolonged and chronic pain highlights the need for better pain management strategies (Morais et al., 2020; Nunes et al., 2017).

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depending on the condition of the subject's ear and skin and potentially extending the therapeutic period without constant and direct supervision from the provider. Thus, auricular therapy can reduce both the need for patients to travel to the acupuncture site and the cost of visiting a practitioner (Zanelatto et al., 2013).

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FINAL CONSIDERATIONS

Through an evaluation of the articles selected for this review, it was found that auriculotherapy and its application in pain management is a contemporary topic, especially in Brazil, despite its roots dating back approximately 3,000 years. Auriculotherapy presents itself as a highly flexible approach to pain management, since, although most research focuses on back pain (eight studies), the practice encompasses a variety of pain types, including chronic pain, such as cancer, and acute pain, such as chest trauma.

It is important to emphasize that there is no fixed protocol for pain management through auriculotherapy, due to variables such as the type of pain, the therapist's approach, and the anatomical variations of patients, resulting in a diversity of applied protocols. Neurophysiology and reflexology elucidate the effects of auriculotherapy on pain control, demonstrating its effectiveness. This assertion is supported by the high proportion of articles analyzed that conclude the effectiveness of auriculotherapy, achieving positive results.

The therapy is not only efficient, but also considered easily accessible, given its low cost of materials, which facilitates the inclusion of more people in this form of treatment. Furthermore, one of the advantages is that the patient does not need to lie down or remove clothing, as is required in traditional acupuncture. Another important aspect is the speed of training. However, both lack of knowledge and resistance to the use of this therapeutic approach stand out as obstacles to its wider adoption and availability in healthcare services.

The importance of this approach was highlighted as a therapeutic alternative for individuals who cannot use medication. Furthermore, it represents a possibility for those who choose to treat pain without medication, such as during childbirth, or for those looking for a more comfortable way to deal with it with pain, since auriculotherapy has reduced side effects.

In conclusion, auriculotherapy presents itself as an effective, efficient, and easily accessible approach. However, it is essential that research with more rigorous methods be conducted to strengthen the evidence observed in most investigations.



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