

The use of acupuncture as a complementary treatment for endometriosis: A systematic review



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ABSTRACT

Endometriosis is a multifactorial estrogendependent and inflammatory gynecological condition characterized by the presence of fragments of endometrial tissue outside the uterine cavity. Due to the negative impact on the physical psychological appearance of women, endometriosis is considered a public health problem. The Ministry of Health presents the National Policy on Integrative and Complementary Practices (PNPIC), which aims to incorporate and implement experiences outside of Traditional Medicine, among which Acupuncture stands out, a Chinese technique that has proven to be effective for treating pain. This work aims to identify evidence-based recommendations in the literature on the use of Acupuncture and its resources for the adjuvant treatment of endometriosis and is a systematic review of the literature using a preestablished protocol for the search, selection and extraction of data. From this review study, it was possible to verify the therapeutic efficacy of acupuncture as a complementary and integrative treatment for endometriosis, as the technique excites receptors and nerve fibers leading to the release of endogenous opioids, resulting in continuous pain relief. Furthermore, studies have shown that the practice of acupuncture provided



greater relief from pelvic pain when compared to the use of drug therapy, in addition to improving the quality of life of women affected by this disease.

Keywords: Endometriosis, Acupuncture, Systematic Review.

1 INTRODUCTION

Endometriosis is a multifactorial and inflammatory gynecological condition, characterized by the presence of fragments of endometrial tissue, outside the uterine cavity, usually in the female pelvic region, although not exclusively. This disease is considered benign, but chronic, and multifactorial in nature. Although it is more common in women of reproductive age, cases of endometriosis can also be observed in patients before menstruation and after menopause (FEBRASGO, 2018).

According to the Ministry of Health (2022), it is estimated that one in 10 women suffers from the symptoms of endometriosis and is unaware of its existence. According to the Outpatient Information System (SIA) and the Hospital Information System (SIH), in the SUS, in 2019 there were 24,560 outpatient visits for patients with endometriosis and 11,989 hospitalizations were carried out in the hospital network. The study carried out by Costa (2023) pointed out that 119,467 hospitalizations for endometriosis were recorded between 2013 and 2022.

The disease can be peritoneal, ovarian, or profound. Peritoneal endometriosis is characterized by the presence of superficial endometriotic tissues in the peritoneum. Ovarian endometriosis involves superficial tissues or cysts (endometriomas) in the ovary. And in deep endometriosis, the lesion reaches the retroperitoneal space or wall of the pelvic organs, reaching a depth of 5 mm or more (Nisolle; Donnez, 1997).

The pathogenesis is not yet fully understood. Sampson (1927) proposed the theory of retrograde menstruation, in which, due to some tubal reflux, endometrial cells could implant in the peritoneum and other pelvic organs, which would initiate the development of the disease. Several factors could influence this, such as early menarche, nulliparity, increased menstrual flow, etc. Another theory is that of coelomic metaplasia, which proposes the transformation of the coelomic epithelium, mainly in the ovary and peritoneum, into endometrial tissue, suggesting that endometriosis could originate from a process of metaplastic differentiation (Vercellini et al., 2014).

The imbalance of the sensory and autonomic nerve fibers that innervate the extrauterine lesions can keep the inflammatory process active, and secondary ischemic reactions in the local tissue and local nerve lesions (painful distortion or nerve damage) have been known to be the sources of pain related to endometriosis, which can be long-lasting, intermittent or continuous (Mckinnon, 2015).

According to Patel et al. (2018), evidence indicates that hormonal and immunological factors create a pro-inflammatory microenvironment that favors the persistence of endometriosis. This is related to the two main symptoms of the disease: pain and infertility. Dysmenorrhea, chronic pelvic



pain that can worsen over time, dyspareunia, urinary changes, bowel changes that can occur or worsen during the menstrual period, are considered as the main symptoms of endometriosis.

Endometriosis impairs women's quality of life, with consequences such as depression, anxiety, guilt, impairment of interpersonal relationships, lower productivity at work, and thus ends up affecting different aspects of women's lives, requiring professional articulation to promote multidisciplinary care (Ruzsala *et al.* 2022).

Endometriosis lesions can be treated surgically, but the risk of recurrence is high. Drug therapy involves the use of oral contraceptives, progesterone and androgen derivatives, gonadotropin-releasing hormone (GnRH) agonists, and aromatase inhibitors. Because they are associated with significant adverse effects, the demand for integrative practices, such as acupuncture, for symptom relief has increased significantly (FEBRASGO, 2018).

2 OBJECTIVES

To identify evidence-based recommendations in the literature on the use of acupuncture and its resources for the adjuvant treatment of endometriosis in the context of Primary Health Care.

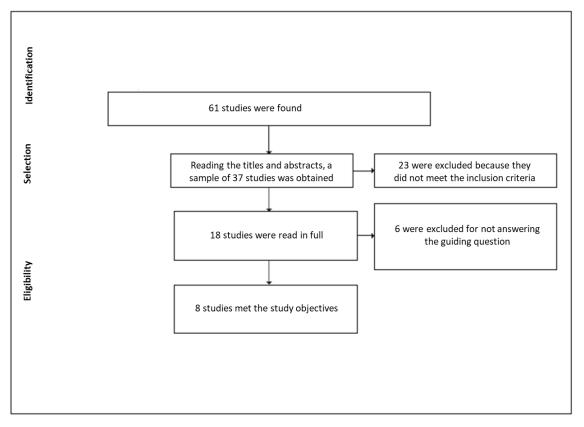
3 METHODOLOGY

A systematic review of the literature was conducted using a pre-established protocol for search, selection and data extraction. For the construction of this work, the search for articles took place in the Virtual Health Library (VHL) and in the CAPES Journal Portal, with the help of the databases Latin American and Caribbean Literature in Health Sciences (LILACS), Index Medicus of the Western Pacific (WPRO), Health Models and Traditional, Complementary and Integrative Medicines in the and Medical Literature Analysis and Retrieval System Online (MedLine). Americas (MOSAICO). In this systematic review, the methodological tool Preferred Reporting Items for Systematic Reviews (PRISMA) was used. The following steps were followed: definition of the theme and elaboration of the research question; elaboration of the inclusion and exclusion criteria for the studies; definition of descriptors, literature search, and data collection; analysis of the included studies and presentation of the summary of the review. Studies published from 1995 onwards were included due to the difficulty of finding publications with scientific evidence, in the languages Portuguese, English, and Spanish, that were available in full, collected between June and July 2023. Studies that did not correspond to the guiding question and/or the objective of the research were excluded. It was the research question "How does the literature describe the use of acupuncture in the treatment of endometriosis?". The articles were collected from June to July 2023. The descriptors used were: "Acupuncture" and "Endometriosis" and "Woman", crossed with the Boolean operator "AND", located in the list of Health Sciences Descriptors - DECs.



4 RESULTS AND DISCUSSION

A total of 61 studies were found, of which 23 were excluded because they did not meet the inclusion criteria. After reading the titles and abstracts, a sample of 37 studies was obtained. In the second stage, 18 studies were read in full, of which 6 were excluded because they did not answer the guiding question, leaving 8 studies that met the objectives of the study. Chart 1 presents the studies that made up the systematic literature review, with their respective authors and the main results.



Sources: authors

From the studies, it was possible to observe that about 18% of women with dysmenorrhea do not respond to non-steroidal anti-inflammatory drugs, which are considered the basis of treatment, and women who receive hormone replacement therapy are at higher risk of some types of cancer and cardiovascular diseases (Guo Y, 2021).

In her investigation, Ruszala (2022) highlights that endometriosis affects several aspects of women's lives, completely interfering with quality of life, such as hypochondriasis, depression, hysteria, and anxiety, which were present in the groups of women studied who had pain, in addition to a 38% reduction in work productivity attributed to pelvic pain.

In this sense, integrative practices have been increasingly studied as a complementary way to treat endometriosis, since the effects of acupuncture as a treatment for pain relief was presented in Antunes (2021) as a safe alternative therapy, with few and small side effects for the management of



endometriosis symptoms, being able to relieve pain and increase quality of life in women with pelvic pain related to endometriosis.

Acupuncture, according to Andersson (1995), excites receptors and nerve fibers in the stimulated tissue, physiologically activated by strong muscle contractions and thus produces rhythmic discharges in the nerve fibers and causes the release of endogenous opioids and oxytocin essential for the induction of functional changes in different systems and organs. In his study, he illustrated that beta-endorphin levels, important in pain control as well as in the regulation of blood pressure and body temperature, were observed in greater quantities in brain tissue after acupuncture (Andersson, 1995).

De Sousa (2016) also explains that acupuncture-induced analgesia involves differential threshold stimulation of small-diameter nerves. These nerves, located in the epidermis, send messages to the spinal cord, which activates neurons in the brainstem and hypothalamus, systematically triggering endogenous opioid secretion. This response promotes changes in plasma levels of endorphins, enkephalins, and stress hormones, such as adrenocorticotropic hormone (De Souza, 2016).

From the acupuncture method, variations have been created, each with different mechanisms of action, such as moxibustion, acupoint catgut implantation therapy, electroacupuncture, auricular acupoint treatment, and acupuncture combined with other therapies. All of these methods can effectively relieve the symptoms of dysmenorrhea caused by endometriosis. These mechanisms include relaxation of meridians and promotion of blood circulation, modulation of immunity, activation of various neurotransmitters, reduction of VEGF (provascular endothelial cell growth factor) and regulation of abnormal prostaglandins, *such* β -endorphins, dynorphin, electrolytes among others (Guo, 2021).

VEGF reduction is found because of the association of acupuncture with Chinese medicine, promoting increased vascular permeability, extracellular matrix degeneration, and vascular endothelial cell migration, proliferation, and angiogenesis (Guo, 2021).

The studies included in this systematic review (1, 4, 6, 7, 9 and 12) demonstrated that the practice of acupuncture as a form of treatment for endometriosis was effective when compared with other pain relief mechanisms. Shen and Lu (2017) evaluated the effect of acupuncture and moxibustion on patients with endometriosis in a randomized clinical trial. They used two groups, 1 of them as a control group and the other as a treatment group. The treatment group received acupuncture-moxibustion, while the control group received Mifepristone tablets (a medication used for pain relief). After 6 months of treatment, symptoms, including abdominal pain, decreased in the treatment group.

In studies 4, 6 and 7, a reduction in pain intensity was found after treatment when compared to the beginning. De Sousa et al. (2016) evaluated the effects of acupuncture on chronic pelvic pain, dyspareunia, and quality of life in women with endometriosis. The study was conducted with 42 women selected according to inclusion criteria in the study, 20 women in the experimental group and



22 in the control group, acupuncture was shown to be beneficial in reducing pelvic pain and dyspareunia and improving quality of life in women with endometriosis. The absence of side effects and maintenance of the effect were observed 2 months after treatment. The mean level of relief obtained for other types of pelvic pain (associated with dysmenorrhea, fibroids, and ovarian cysts) was reported in this study to be greater than 40%, in contrast to the drug therapy studies (<30%), as well as improvement in quality of life.

Wayne (2008) compared acupuncture and placebo (needles that penetrate only the skin tissue and were placed at points not indicated for endometriosis) for 8 weeks. The treatment resulted in a considerable reduction in pain levels in the first 4 weeks. However, there was no difference in the frequency of pain after 8 weeks of treatment or within 6 months of treatment.

Xu et al. (2017) designed a review and meta-analysis including ten studies, totaling 295 patients with endometriosis-related pain treated with acupuncture and 194 patients in a control group. Among the ten studies, six compared the variation in pain level between the acupuncture and control groups, and four studies compared the variation in serum CA125 level, seven studies compared the clinical effective rate. In all cases, they found that acupuncture treatment showed better results in the level of pain at CA125 compared to the control groups.

In the study conducted by Payne (2019), the author makes a case report presenting a 43-year-old nulliparous woman with endometriosis and fibroids, treated twice a week for a period of 6 months at a Traditional Chinese Medicine clinic in Berkley, CA. Treatment included 6 months of acupuncture at the following points: VC3, VC4 and VC5; E25 and E36; VG20; IG4; F3; R3; BA6 and BA9; and Zi Gong Xue and Ah Shi points along with 1 month of herbal treatment in the form of tea and pills. The result was a reduction in the level of pain and symptoms assessed by the patient through the Pain Quality Rating Scale. The patient's overall mood and pain level improved. In conclusion of the case, acupuncture helped with excessive uterine bleeding, it helped to warm the uterus which would relieve back pain due to the cold, so it was considered effective for this patient.

5 CONCLUSION

From this study, it was possible to verify the therapeutic efficacy of acupuncture for the treatment of endometriosis, since it excites receptors and nerve fibers leading to the release of endogenous opioids, resulting in continuous pain relief. It has been shown that in addition to pain, acupuncture has been shown to be anti-inflammatory and increase capillary permeability, reducing, at least in part, retrograde menstruation. The studies compared the use of this practice with placebo, and in all cases there was a significant reduction in pain reported for at least 6 subsequent months. When contrasted with drug therapy, the use of this integrative practice presented a higher average pain relief



than the drug of choice, and with few or no side effects, which was pointed out as one of the reasons why this practice has been increasingly used by the affected population.						

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Table 1

Title and Authorship	Type of Study	Table Country	Content
Acupuncturefrom Ra	Randomized clinical trial	Sweden	Acupuncture excites receptors or nerve fibers in the stimulated tissue that are also physiologically activated by strong muscle contractions and the effects on certain organ functions are similar to those obtained by prolonged exercise.
			Both exercise and acupuncture produce rhythmic discharges in nerve fibers and cause the release of endogenous opioids and oxytocin essential for the induction of functional changes in different organ systems. Beta-endorphin levels, important in pain control as well as in regulating blood pressure and body temperature, have been observed to increase in brain tissue in animals after acupuncture and strong exercise.
			Evidence suggests that acupuncture may affect the sympathetic system through hypothalamic and brainstem mechanisms, and that the hypothalamic betaendorphinergic system has inhibitory effects on the vasomotor center, VMC. Post-stimulatory sympathetic inhibition reaches a maximum after a few hours and can be sustained for more than 12 hours.
The effect of acupuncture on pain, dyspareunia, and quality of life in Brazilian women with endometriosis: A randomized clinical trial. (De Sousa, Tatiane Regina)	Randomized clinical trial	Brazil	These investigations demonstrated that CPD is one of the most characteristic symptoms in this patient population, defined as a non-cyclical pain lasting 6 months or more, localized to the pelvis, abdominal wall, lumbosacral region, or buttocks, and severe enough to interfere with common activities or require medical care.
			Previous studies have established that acupuncture- induced analgesia involves a differential threshold stimulation of small-diameter nerves. These nerves, located in the epidermis, send messages to the spinal cord, which activates neurons in the brainstem and hypothalamus, systematically triggering endogenous opioid secretion. This response promotes changes in plasma levels of endorphins, enkephalins, and stress hormones such as adrenocorticotropic hormone, which partially explains why PCP and dyspareunia decreased by more than 60% in EG.
			The mean level of relief obtained from acupuncture for other types of pelvic pain (associated with dysmenorrhea, fibroids, and ovarian cysts) has been reported to be greater than 40%, in contrast to drug therapy studies (<30%).
			In addition to its physical effects, acupuncture has a major impact on emotional problems. In contrast, in Western medicine, the treatment of these conditions involves prescribing more medications, the side effects of which can be undesirable or even cumulative, depending on the duration of their administration.
			The absence of side effects and the maintenance of improvements were observed 2 months after therapy in the EG.



Complementary and Alternative Medicine for Dysmenorrhea Caused by Endometriosis: A Review of Utilization and Mechanism (Guo Y.)	Review Article	China	Acupuncture has evolved from its original methods to include moxibustion, acupoint catgut implantation therapy, electroacupuncture, auricular acupoint treatment, and acupuncture combined with other therapies. All of these can effectively relieve the symptoms of dysmenorrhea caused by MS. The different acupuncture treatment mechanisms for dysmenorrhea include relaxation of meridians and promotion of blood circulation, modulation of immunity, activation of various neurotransmitters, reduction of VEGF, and regulation of abnormal prostaglandins, such β-endorphins, dynorphin, electrolytes, and substance P levels in the body Acupuncture can relieve pain in the central and peripheral regions by activating various neurotransmitters or modulators, including serotonin, norepinephrine, and adenosine. Xu et al. conducted a systematic review and meta-analysis to determine the effects of acupuncture in the treatment of MS-related pain. Patients in the intervention group were treated with acupuncture and patients in the control group were treated with sham acupuncture, TCM, or Western medicine. The results showed that the total effective rate of the intervention group reached 95%, and acupuncture had obvious advantages in relieving pain, reducing CA-125 concentration, and improving clinical symptoms Acupuncture combined with moxibustion is a common practice in TCM and can effectively stimulate the regulatory function of meridians and collaterals, thereby improving local blood stasis. Pan treated 35 MS patients with existing dysmenorrhea with moxibustion with a heating needle at the following acupuncture points: Zusanli (ST36), Siman (K114), Sanyinjiao (SP5), Qihai (RN6), Shuidao (RN9), Tianshu (ST25), and Zhongwan (RN12). After 3 months of treatment, the pain score decreased significantly compared to the Western medicine group.
Is acupuncture effective in the treatment of pain in endometriosis? (Lund I, Lundeberg T)	Randomized Clinical Trial	New Zealand	In all three studies, reduced pain intensity was found to be at lower levels after treatment than before initiation. In two of these, effects on HRQoL assessments were also reported at a higher level after treatment than before. In the two studies that aimed to test the effectiveness of the treatment by comparing the results of an acupuncture-treated group with a placebo-treated group, one showed systematic effects between the groups with an advantage for acupuncture use. The effects of acupuncture as a treatment for pain relief have been presented in several studies as a globally safe alternative treatment with very few and small (harmless) side effects and, moreover, no effect on the environment at all.
Systematic review and meta-analysis of		United States	Wayne and others compared acupuncture and placebo (needles that penetrate only skin tissue and were placed



complementary treatments for women with symptomatic endometriosis. (TAA Look,)	Systematic review and meta-analysis		at points not indicated for endometriosis) for 8 weeks. Treatment resulted in a considerable reduction in pain levels in the first 4 weeks, as measured by the visual analogue scale (P <0.004) and pelvic pain (P = 0.020). However, there was no difference in the frequency of pain after 8 weeks of treatment or within 6 months of treatment. There is an estimated high prevalence of psychological symptoms among women with endometriosis. An earlier study comparing three groups of women, one with pelvic pain without disease, one with pelvic pain and endometriosis, and a control group without endometriosis or pain, noted that hypochondriasis, depression, hysteria, and anxiety were present in both groups of women with pain. Another study described a 38% reduction in work productivity attributed to pelvic pain.
Acupuncture for Endometriosis: A Case Study. Med Acupunct	Payne Case Study	United States	Also, it helped with excessive uterine bleeding. It also helped warm the uterus which would relieve back pain due to the cold. <i>Zi Gong Xue</i> was needled bilaterally to help stop excessive bleeding and as a general point for endometriosis. The acupuncture treatment used in this case helped with both the patient's mood and pain levels.
Quality of Life in Women Suffering from Endometriosis (Moving M)	Randomized clinical trial	Switzerland	Women with confirmed endometriosis have significantly more symptoms of depression (standardized mean difference and anxiety compared to healthy women. In addition, the research also revealed that patients with severe pain had a higher incidence of multiple psychiatric disorders. Patients avoid sex, for fear of suffering. Women with endometriosis desire more sexual activity than their current level. "Approximately 42.3% of women affected by endometriosis and 30.5% of control women desired a higher frequency of sexual activity. The presence of adhesions, cysts and foci of endometriosis in the vagina and cervix and the infiltration of the surrounding tissues lead to immobilization of the reproductive organ, anatomical changes and, therefore, pain during penetration or sexual intercourse. This leads to a decrease in libido, desire, and lack of orgasm in patients. Lack of satisfaction in such an important sphere of life as sex leads to decreased mood, anxiety disorders, and even depression
Effects of acupuncture for the treatment of endometriosis-related pain: A systematic review and meta-analysis. (Xu Y)	Systematic review and meta-analysis	China	Among the 10 RCTs included, six reported variations in the level of core pain, four reported variations in CA-125 levels in peripheral blood, and seven reported the clinical effective rate of acupuncture as a treatment for endometriosis-related pain. Participants in the active acupuncture group (n = 9) experienced a mean reduction of 4.8 points (SD = 2.4 points) on an 11-point scale (62%) in pain after 4



weeks; this differed significantly from the control group's mean reduction (n = 5) of 1.4 points (SD = 2.1 points; $P = 0.004$). The reduction in pain in the acupuncture group persisted during the 6-month evaluation.
Four of the RCTs included selected Western medicine as the control intervention. Specifically, the studies used danazol, mifepristone, or goserelin acetate and showed that acupuncture was better than Western medicine at relieving pain and reducing the concentration of CA-125.
Thus, the effect of acupuncture in the treatment of endometriosis-related pain is likely mediated by endocrine and cytokine changes, as well as anti-inflammatory and analgesic effects.