REVIEW ARTICLE
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Use of acupuncture in women surviving breast cancer: an integrative review

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ABSTRACT

Breast cancer is the most common cancer among women worldwide. The human suffering associated with this disease is vast and complex, including physical, mental, and spiritual aspects, which last even after the end of cancer treatment. Acupuncture is an integrative practice with solid evidence for treating and managing symptoms related to cancer and its treatments. In this sense, this study aimed to carry out an integrative literature review on the benefits of acupuncture for the symptoms of women survivors of breast cancer. This is an integrative review carried out through the scientific databases PubMed and SciELO. The search strategy used was "survivorship" AND "breast cancer" AND "acupuncture", respecting the period between 2017 and 2022. In all, 220 articles were located. Studies that considered other types of cancer and that did not focus on acupuncture in cancer survivors were excluded from the analysis. In the end, 26 articles related to the proposed theme remained, which were read and analyzed in full. Results were discussed separately on the evidence-based use of acupuncture on symptoms and long-term side effects related to breast cancer and its treatments. The material analyzed in this review showed that acupuncture is relatively safe and effective, when used properly and by trained and certified acupuncturists, and it is essential that health services and professionals involved in cancer treatment be trained in cancer survival programs and guide patients about the benefits of acupuncture and how to use it properly.

KEYWORDS: acupuncture; integrative medicine; traditional chinese medicine; breast cancer; chemotherapy.

INTRODUCTION

Breast cancer (BC) is the most common cancer among women worldwide, and its frequency is increasing in low- and middle-income countries[1]. In Brazil, it is no different; according to the National Cancer Institute, 66,280 new cases are estimated for each year of the 2020–2022 triennium[2]. The high incidence of this disease, with the improvement of initial treatments, led to an increasing number of BC survivors[1].

Breast cancer (BC) survival is increasing; almost 90% of patients surviving for more than 5 years after diagnosis[3]. BC is becoming a chronic condition rather than a life-threatening illness[4]. Therefore, establishing a smooth post-treatment transition from a cancer patient to a BC survivor is an extremely important goal in the line of care for these patients[5].

Many BC survivors experience the physical, social, and emotional effects of the disease and its treatments, even years after the initial diagnosis[5,6]. Long-term symptoms can include fatigue, pain, neuropathy, lymphedema, insomnia, weight gain, cognitive dysfunction, sexual dysfunction, and a constant fear of recurrence. These patients often use integrative medicine (IM) to treat long-term symptoms and adverse effects, often without their physicians' knowledge[6].

The definition of IM and its use for different treatment modalities vary from country to country and between the different cultures in which it is practiced. IM promotes a person's physical, emotional, and spiritual health by incorporating various evidence-based modalities into conventional therapy[6].

Studies published around the world report an increasing use of IM by people diagnosed with cancer; it is estimated that 50–60% use some form of complementary therapy[7]. At major oncology centers in the United States, patients usually meet with the IM physician for an initial consultation, where the physician and patient develop an individualized prescription, which commonly

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covers a mind-body approach, use of natural products, and traditional medicine techniques. All this is based on robust literature and guidelines published by the most recognized associations in the field of oncology[7,8].

Gaps and deficiencies in guidance on adequate care and clinical follow-up after BC treatment were identified through a work by the National Cancer Survivorship Resource Center, published in 2013[9]. In 2015, the American Cancer Society (ACS) and the American Society of Clinical Oncology (ASCO) published a care guideline for BC survivors, addressing five main areas:

1. surveillance for BC recurrence;
2. screening for second primary cancers;
3. assessment and management of long-term physical and psychosocial effects and late effects of cancer and its treatments;
4. health promotion; and
5. coordination of care and practical implications[4].

Addressing all areas of post-treatment care described in the guidelines is of fundamental value in implementing an adequate care plan for BC survivors[4].

Acupuncture is a traditional Chinese medicine (TCM) therapeutic technique that involves needle, pressure, or electrical stimulation and the unique concept of Qi (or life energy) to utilize peripheral and central nervous system interactions with muscle fascia for physical and psychological benefits[6].

Acupuncture is sought by up to 10% of patients seeking help to mitigate cancer-related symptoms, and it is currently being investigated for the treatment of pain, lymphedema, fatigue, hot flashes, peripheral neuropathy, anxiety, depression, sleep, and related quality of life in the BC[4,6].

This study aimed to review the literature on the subject of acupuncture in women survivors of BC and its current practices, analyzing the available content and its contribution to the evolution of the process of recovery of full health and well-being after cancer treatment.

METHODS

This bibliographic review, of the integrative type, was carried out using the scientific production indexes PubMed and SciELO. As a search strategy, "*survivorship*" AND "*breast cancer*" AND "*acupuncture*" were used, respecting the period between 2017 and 2022. In all, 220 articles were found. Studies that contemplated other types of cancer and that did not discuss acupuncture in cancer survivors were excluded from the analysis. In the end, 26 articles related to the proposed theme remained. With the material already selected for analysis, the exploratory and analytical reading of the articles that, in fact, were of interest to the research began. Figure 1 shows the flowchart of selection of articles included in this review.

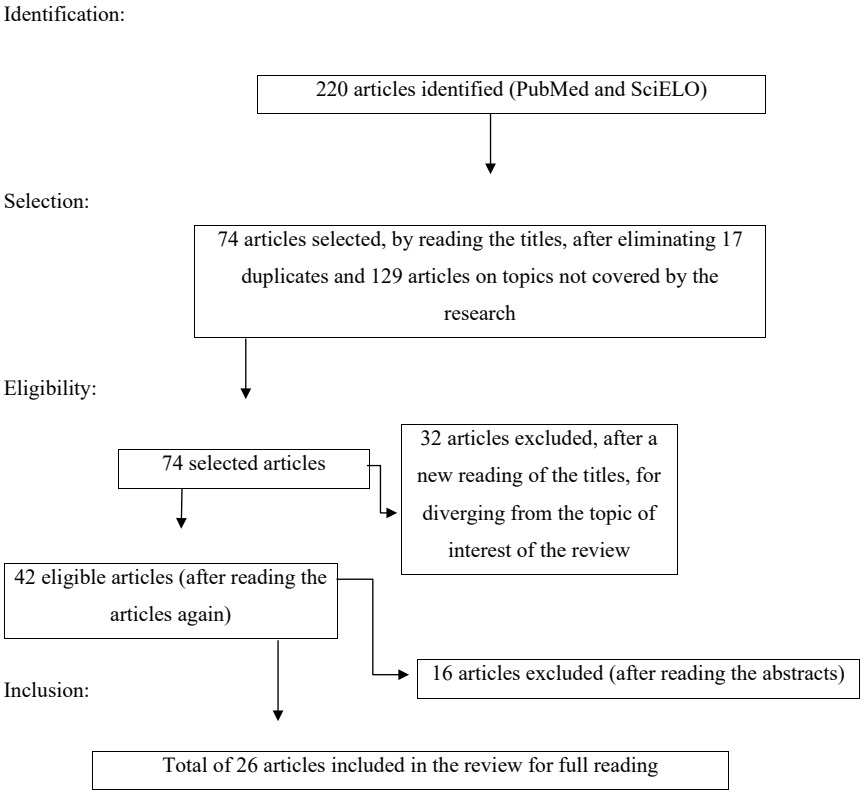

Figure 1. Flowchart of selection of articles to identify the integrative review.

RESULTS

The management of BC survivors is now recognized as a new subspecialty[3]. Most individuals far exceed a 5-year disease-free survival rate; according to the ACS, the mortality rate decreased to 6.6% in 2018[10]. However, survivors are at high risk of recurrence, even 20 years after the initial diagnosis; in addition, they are at increased risk of gaining weight and developing other comorbidities[10].

Acupuncture is now widely used as a safe and highly affordable adjunctive treatment for a variety of symptoms induced by BC treatment[11].

Based on TCM principles, acupuncture regulates energy pathways and controls energy circulation balance to alleviate various cancer symptoms as evidenced by changes in neurophysiological and neurohormonal activities[11].

Acupuncture has been shown to be useful in the treatment of various symptoms related to BC and its procedures, being recommended by the Society for Integrative Oncology (SIO) clinical practice guidelines and endorsed by ASCO for fatigue, pain, lymphedema, hot flashes, peripheral neuropathy, anxiety, depression, and quality of life[8,12].

In this setting, based on the strength of the available evidence, the evidence-based use of acupuncture on symptoms and long-term side effects related to BC and its treatments has been discussed separately.

Table 1 shows a summary of the articles included (and respective references) by recommendation of the use of acupuncture in symptoms present in female BC survivors (study population).

DISCUSSION

Ache

Pain control is a fundamental pillar in the care of women with BC. Approximately 25–60% of BC survivors suffer from chronic pain resulting from surgery, chemotherapy, radiotherapy, and antiestrogen therapy. In particular, 50% of BC survivors taking aromatase inhibitors (AI) experience painful musculoskeletal symptoms associated with AI, leading 20% of these patients to discontinue treatment[13].

Acupuncture is an IM modality with proven efficacy in the treatment of chronic pain in a variety of settings. Recent studies indicate that 69–81% of cancer patients were interested in acupuncture during cancer therapy[14].

Cancer pain is inadequately controlled in nearly 50% of patients. Although the World Health Organization recommendations provide effective approaches to alleviating cancer pain, analgesic dependence, and adverse effects of pharmacological interventions pose critical challenges to pain management[15]. As this is multidimensional, a multidisciplinary and comprehensive approach is required for its success[16].

Given these challenges in clinical pain management and the worldwide opioid crisis, acupuncture has evolved into a reasonable pain reduction option for cancer survivors per ASCO and National Comprehensive Cancer Network (NCCN) guidelines[17,18].

Through a large multi-institutional study, pain scores were shown to be significantly decreased in 58% of patients receiving real acupuncture compared to 33% of sham treatment and 31% in waitlist control arms[18].

In line with these findings, a recent meta-analysis showed significant differences after treatment with true acupuncture compared to sham acupuncture for pain control in BC survivors[19].

Patients with early-stage BC who received AI therapy experienced a significant reduction of over 30% in pain intensity in 49% of subjects in the true acupuncture group, compared to 24% in the sham acupuncture and 23% in the list group waiting[19].

The protocol used in this study consisted of two sessions a week, for 6 weeks, with the use of systemic acupuncture at points TA5, F4, GB 34, GB41, R3, and ST41, associated with local points on the affected joints and auriculotherapy at points Shenmen, kidney liver, and upper and sympathetic lung[19].

A systematic review with meta-analysis, published in the *Journal of the American Medical Association* in 2020, included 17 clinical studies, involving 1,111 cancer patients, while the meta-analysis included 14 studies with 920 patients. Evidence of a moderate level of certainty was found for the association between real acupuncture and greater reduction in pain intensity, with a significant reduction in the need for opioids[16].

Encouraged by this review, the Trusted Traditional Chinese Medicine International Recommendations Working Group developed the first evidence-based clinical practice guideline for acupuncture for cancer pain[20].

According to the guideline, there is no significant difference in cancer pain relief using acupuncture techniques – manual, electroacupuncture, and auricular acupuncture[20].

The main points suggested for systemic acupuncture were Hegu (LI4), Taichong (F3), Zusanli (St36), Sanyinjiao (SP6), and Yanglingquan (VG34), in 30-min sessions, twice a week, for 6 weeks[20].

Table 1. Recommendation for the use of acupuncture in the study population.

Recommendation	Number of articles included
Ache	8 articles[13-20]
Lymphedema	4 articles[12,13,21,22]
Fatigue	7 articles[14,18,23-27]
Peripheral neuropathy	6 articles[8,18,28-31]
Hot flashes and menopausal symptoms	6 articles[8,14,18,28,32,33]
Anxiety and depression	4 articles[12,14,18,21]
Sleep	6 articles[8,14,18,25,32,34]

The guideline recommends combined treatment with auriculotherapy, at the Shenmen points, subcortex, and sympathetic nerve, with the performance of acupressure with the index finger three to five times a day in the morning, afternoon, and evening, each time for 3–5 min[20].

Lymphedema

Lymphedema is a term used for lymphatic load that exerts the transport capacity of the lymphatic system, causing fluid to accumulate in the interstitium. Its incidence after cancer treatment ranges from 13.5–41.2% and increases with the number of lymph nodes removed[21].

This pathology is essentially incurable and, even with its incidence reduced after the dissemination of the sentinel lymph node research technique, when present, it generates substantial functional impairment, psychological morbidity, and reduced quality of life in BC survivors[21].

A systematic review published in 2019 failed to find statistically significant benefit in reducing arm circumference with acupuncture, and the effect on symptom relief is unknown due to the limited number of clinical trials in this area, inconsistent study design, and difference in the techniques employed[22].

In patients with lymphedema, Zhan et al. and Bao et al. reported a significant decrease in change in arm circumference and joint pain intensity when acupuncture was used with upper extremity physical exercises compared to the queuing group and the physical exercise-only group[12,13].

To date, the therapeutic effect of acupuncture on lymphedema needs new, more rigorous studies for a definitive conclusion on the subject[22].

Fatigue

One of the most frequent side effects of chemotherapy and radiotherapy is cancer-associated fatigue. Even after the end of treatment, some people are unable to return to their usual daily activities or engage in them, causing a significant impact on the patient's life[23].

Chronic fatigue syndrome is defined as lassitude lasting at least 6 months and accompanied by four or more of the following symptoms: unrefreshing sleep, prolonged malaise after exertion, impaired concentration or short-term memory, headache, aches and pains, musculoskeletal, and multi-joint. Knowledge about its etiology and the effectiveness of its treatment by Western medicine is still limited[24].

Fatigue induced by chemotherapy and hormone therapy in patients with BC remains a major concern, significantly affecting the quality of life of these women[25].

There is no standardized and effective medical treatment for chronic fatigue, so cancer patients are often using alternative and complementary therapies[23]. The NCCN guidelines include meditation, muscle relaxation, yoga, tai chi, cognitive behavioral therapy (CBT), and acupuncture for symptom relief[18].

The benefits presented by acupuncture and moxibustion in TCM have been currently drawing the attention of researchers, the first using needles and the second using heat generated by burning moxa[25].

A recent meta-analysis including 10 RCTs, five of which included only BC patients, reported a significant improvement in fatigue in the acupuncture group when compared to the control, sham acupuncture, or typical care arms ($p<0.00001$)[25,26].

Some other high-quality studies indicated that the quality of life of patients undergoing acupuncture improved significantly, as measured by the Functional Assessment of Cancer Therapy – General physical well-being subscale, and with a gain of more than 30% when measured by the Functional Assessment scale for Cancer Therapy – Endocrine Symptoms[14].

Systematic review and meta-analysis published in 2022, with 18 studies selected for presenting adequate quality, identified as main acupoints S36, VC6, VC4, SP6, VC12, VC8, and LI4[23].

In line with these findings, a review of the literature published in 2021 noted that most of the included reviews suggested that isolated acupuncture treatment had a good curative effect for chronic fatigue. With satisfactory data quality, however, more studies are needed to ensure whether this therapy is more effective than other integrative treatments[27].

Peripheral neuropathy

Chemotherapy-induced peripheral neuropathy (CIPN) is one of the most debilitating long-term side effects in BC survivors, frequently associated with taxanes, platinums, vinca alkaloids, and anticyclics. When present, it even remains to some degree in 47% of patients, even after 6 years of treatment[28].

Currently, several pharmacological agents are used to treat CIPN; among them, duloxetine is the strongly recommended agent. The search for integrative treatments that can show some benefit in this scenario is an area of great medical interest[28,29].

The SIO guidelines on the use of integrative therapies classifies acupuncture as a therapy with insufficient evidence in the treatment of CIPN, whereas the NCCN considers acupuncture one of the possible nonpharmacological options[8,18].

A systematic review published in 2018, evaluating treatment options for CIPN, failed to find enough studies with positive results that would lead to the recommendation of acupuncture in this clinical indication[29].

A recent pilot study with acupuncture in CIPN patients, published in 2022, demonstrated improvements in CIPN specific and general quality of life, with response rates of up to 66.7% in women with BC undergoing chemotherapy with paclitaxel[30].

New studies are needed to provide evidence on the impact of acupuncture on CIPN symptoms, quality of life, and functional measures in patients with BC[30].

Hot flashes and menopausal symptoms

Climacteric syndrome with symptoms of hot flashes affects more than 60% of female BC survivors[31].

The AcCliMaT study found a significantly lower hot flash score in the acupuncture group after 12 weeks of therapy compared to the control group[32].

The systematic review observed, in seven clinical trials, that the frequency and intensity of hot flashes were not reduced with acupuncture, but six studies showed results indicating that acupuncture significantly reduced (p=0.009) menopausal symptoms. It was concluded in this meta-analysis that acupuncture has a beneficial effect, not inferior to hormone therapy or other relaxation therapies applied to relieve menopausal symptoms, with the advantages of not being correlated with increased levels of plasma estradiol and not having the side effects of hormone therapy[31].

A Cochrane systematic review on hot flashes indicated that acupuncture led to a significant improvement in the quality of life compared with control management strategies; however, there was no statistically significant difference between the real acupuncture and sham acupuncture groups; this may be explained by the placebo effect benefit of sham acupuncture contaminating the statistical effect of the data[14,33].

At the present time, both the SIO clinical practice guidelines, endorsed by ASCO, and the NCCN recommendations place acupuncture as an appropriate nonpharmacological option for menopausal symptoms[8,18].

Anxiety and depression

Relatively few studies have explored the effects of acupuncture on anxiety and depression. Although the SIO clinical practice guidelines recommend that acupuncture may be used in these conditions, recent systematic reviews seem to support that patients with BC and anxiety only benefit from acupuncture[12].

The NCCN guidelines do not recommend acupuncture as a nonpharmacological option for treating these conditions[18].

A recent meta-analysis of two articles, published in 2021, suggested that acupuncture may improve anxiety in BC survivors compared with control management strategies (p=0.02), but with no significant difference regarding depression (p=0.36)[14].

Bao et al. and Walker et al. observed similar changes in depression and anxiety severity across study groups and concluded that acupuncture use improved both anxiety and depression using the Hospital Anxiety and Depression Scale[14].

Despite these promising results, the quality and quantity of published studies limit the widespread use of acupuncture in these clinical conditions, and clinicians must provide personalized treatment regimens[21].

Sleep

The prevalence of sleep disorders in BC survivors ranges from 18.6–56.6%, limiting their daily activities and their quality of life[31].

The use of acupuncture for sleep disorders has not been recommended in the SIO guidelines, nor is it currently included in the 2022 NCCN guidelines[8,18].

In a recent study, in which some patients received acupuncture compared to conventional treatments, the experimental group had fewer sleep disturbances compared to the control group (p<0.0001)[25].

Evidence from a randomized trial of 160 cancer survivors (most with BC) that compared CBT with acupuncture, published in 2019, concluded that CBT was superior to acupuncture in improving overall sleep quality (p=0.009), increasing its efficiency (p<0.001). The acupuncture group was more effective in increasing total sleep time (p=0.003), with both groups having similar improvements in fatigue, anxiety, depression, and quality of life (mental and physical health)[34].

In line with this scientific evidence, a recent systematic review with meta-analysis, published in 2021, analyzed recent studies, noting that acupuncture seemed to improve sleep disturbances compared to the sham acupuncture and control groups, but convincing evidence was not obtained due to the limited number of studies and rigorous criteria[14].

CONCLUSIONS

IM and TCM are medical disciplines that talk and complement each other. BC survivors continue to experience adverse effects and disease sequelae for many years after diagnosis. They use various IM-related techniques to help manage their symptoms and are very interested in learning more about this topic. After analyzing the available content on acupuncture in the context of BC and the consistent scientific data on the quality of life of BC survivors, this therapy proved to be relatively safe and effective when used properly and by trained and certified acupuncturists. Therefore, it is essential that health services and professionals involved in cancer treatment are trained in cancer survival programs and guide patients about the benefits and how to use acupuncture properly.

AUTHORS' CONTRIBUTIONS

RJVV: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. REARC: Data curation, Formal Analysis, Investigation, Writing – original draft. SMSF: Conceptualization, Data curation, Formal Analysis, Investigation, Writing – original draft, Writing – review & editing. MLY: Conceptualization, Methodology, Data curation, Formal Analysis, Investigation, Writing – original draft, Writing – review & editing.

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