

EFFECTS OF ACUPUNCTURE ON CANCER PATIENTS: LITERARY CLINICAL REVIEW IN THE VIEW OF THE PHYSIOTHERAPY ACADEMIC

Daniela Santos do Nascimento, Bruno Borges Gonçalves, Eva Coelho da Silva, Agrinazio Geraldo Nascimento Neto, Amanda Aguiar Barros, Gabriel Victor de Moraes, Douglas Castanheira Barros de Sa, Randra Karoline Rodrigues Inacio, Magno De Oliveira, Maryanna de Paula Bastos Fonseca dos Santos, Taynara Dantas Batista, Warly Neves de Araújo

Abstract—Acupuncture is a set of techniques and knowledge of Traditional Chinese Medicine (TCM) that was born about 5,000 years ago. This age-old TCM technique aims to provide good functioning of the body and its functions being used for various treatments such as stress, emotional imbalances, depression, anxiety, with a wide range of applications to soothe and cure pain. Therefore, the present study aims to present, through scientific evidence available in the literature, about the effects of acupuncture on cancer patients. The methods used for this work was based on the methodology of the article Experimental Planning Factorial: Abrief Review de, published in the *International Journal of Advanced Engineering Research and Science (IJAERS)*. As a result of the studies carried out, it was made clear that proving the effects of acupuncture in patients with malignant neoplasm has become a challenge due to the diversity of existing cancer patterns and their particularities, in addition to few studies on the subject. Therefore, it is corroborated that despite studies that discuss the effects of acupuncture on cancer patients, more discoveries related to the subject are needed.

Index Terms—Acupuncture, Neoplasms, Oncology, Cancer patients

• Daniela Santos do Nascimento, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil, Corresponding author E-mail: dani.dossantos.008@gmail.com

• Bruno Borges Gonçalves, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Eva Coelho da Silva, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil, E-mail: evafisio23@gmail.com

• Agrinazio Geraldo Nascimento Neto, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil, E-mail: agrinaziogeraldo@gmail.com

• Amanda Aguiar Barros, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Gabriel Victor de Moraes, Graduate student in Bachelor of

Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Douglas Castanheira Barros de Sa, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Randra Karoline Rodrigues Inacio, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Magno De Oliveira, Master in Biotechnology, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Maryanna de Paula Bastos Fonseca dos Santos, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Taynara Dantas Batista, Graduate student in Bachelor of Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N ° 1585 - Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

• Warly Neves de Araújo, Graduated in Physiotherapy, Physiotherapy Department, University of Gurupi-UNIRG, Avenue. Rio de Janeiro. N° 1585- Sector. Central., Gurupi, 77403-090, Tocantins, Brazil

1 INTRODUCTION

Acupuncture is a set of techniques and knowledge of Traditional Chinese Medicine (TCM) that was born about 5,000 years ago [1]. This age-old TCM method aims to provide good functioning of the body and its functions being used for various treatments such as stress, emotional imbalances, depression, anxiety, with a wide range of applications to reduce and cure pain [2].

Oncology is an area of medicine that deals with the study, diagnosis, prevention and treatment of cancer, with cancer is a disease of a generally slow and prolonged clinical course that triggers a series of physical and psychological imbalances that requires a team highly specialized multidisciplinary team composed of numerous professionals, such as nurses, psychologists, physiotherapists, pathologist and many others [3, 4].

In patients with malignant neoplasms, acupuncture is used in order to provide an improvement in the quality of life and mental health, which is an adjuvant technique, that is, a complement to conventional treatment for pain control, be it postoperative or postoperative chemotherapy or post-radiotherapy, and also in the treatment of this variety of symptoms and conditions associated with cancer and adverse effects of treatment [1]. Both cancer and its treatment can cause symptoms that worsen patients' quality of life, such as pain, nausea, vomiting, fatigue, shortness of breath, constipation and many others [5]. Therefore, studies on the mechanisms of action and effects of acupuncture are increasingly diverse and promising, proving that it is a valid, safe and reliable treatment, efficiently controlling symptoms and improving the quality of life of individuals [6].

According to Dr. Daniel Hideo Yoshizumi, from AME (Ambulatory Medical Specialties) Dr. Geraldo Bourroul, in an interview given to the Government Portal (2018), acupuncture involves the patient in a global way allowing improvement in disposition, feeling of well-being and quality, thus becoming a technique that not only treats symptoms but the patient as a whole [7] ("SUS São Paulo has performed about 3 million acupuncture applications in the last 9 years", 2018).

Therefore, the present study aims to present, through scientific evidence available in the literature, about the effects of acupuncture on cancer patients.

2 MATERIALS AND METHODS

The methods used for this work was based on the methodology of the article Experimental Planning Factorial: Abrief Review de [8], published in the *International Journal of Advanced Engineering Research and Science (IJAERS)*. To identify the articles on the subject, a search was performed in PubMed, Sciello, Google Scholar and Virtual Health Library (VHL) databases. Oncology is the area of medicine that deals with the study, diagnosis, prevention and treatment of cancer (neoplasms and tumors, whether benign or malignant), with cancer being a severe disease that affects the patient's life in emotional and organic areas. In cancer patients, acupuncture provides effects such as improved pain, increased well-being and decreased adverse effects from treatment such as nausea and vomiting. The search strategy on the subject consisted of using the keywords in English: 1. *Acupuncture*, 2. *Neoplasms*, 3. *Oncology* and 4. *Cancer patients*. The following filters were added to the search on ScienceDirect: only journals; title, abstract; key-words.

After consulting the databases and applying the search strategy, repeated studies were identified between the different searches. The inclusion criteria for the articles were: original and research articles

that conceptualize the analysis related to acupuncture in cancer patients, emphasizing the effects of this technique when applied, in different types of research fields, covering completed research in Portuguese and English.

The excluded articles were grouped in order: repeated, irrelevant, review, other publication formats (editorial, short communications, perspectives, letters), and other languages. In addition, manual

searches were made on bibliographic references of the review articles found with the predetermined keywords.

2.1 RESULTS

After removing repeated articles between the different searches, the exclusion criteria were applied, as shown in Figure 1. Of the 35 articles selected from the manual search, 19 were related to the effects of acupuncture on cancer patients.

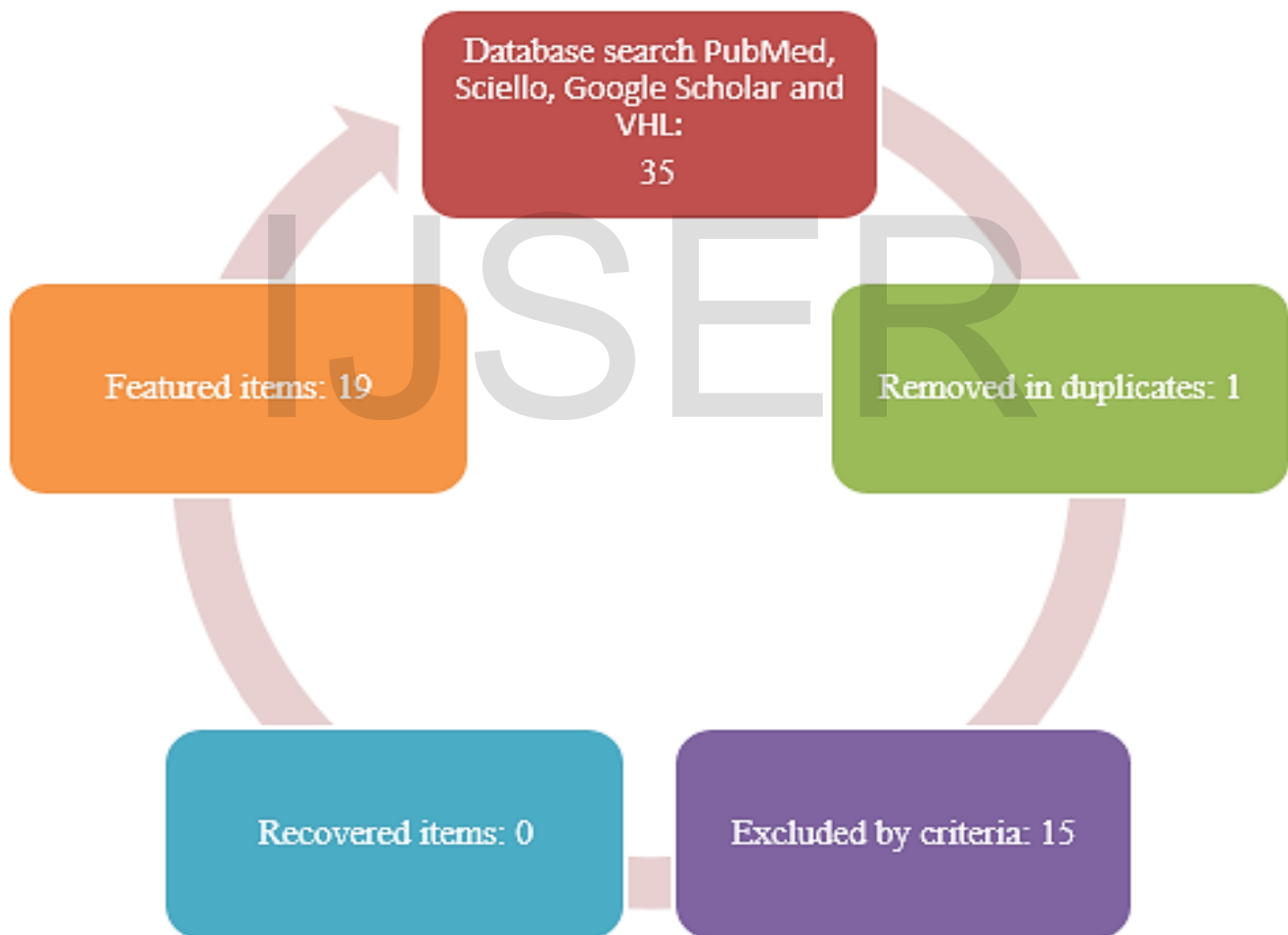


Fig. 1. Flowchart for the identification and selection of articles. Source: (Prepared by the authors, 2020).

The articles used in this review, after the exclusion criteria, were related and correlated in a homologous way with the study of acupuncture in

cancer, considering its application in a multiplicity of apparently different diseases and the rationale for the effects of acupuncture on cancer.

3 RESULTS AND DISCUSSION

As a result of the studies carried out, it was made clear that proving the effects of acupuncture in patients with malignant neoplasm has become a challenge due to the diversity of existing cancer patterns and their particularities, in addition to few studies on the subject.

However, in order to impact the quality life of patients, acupuncture offers possibilities of action on various symptoms and conditions associated

with cancer, as well as the side effects of its treatment such as fatigue, pain, dry mouth (dry mouth), lymphedema, anorexia, nausea/vomiting, insomnia, hiccups, hot flashes, anxiety and depression.

Next, it was used as a basis for studies and research on digital platforms, such as online magazines and scientific journals, shown in Chart 1 authors who denote the effects of acupuncture on cancer patients.

TABLE 1: Effects of acupuncture on cancer patients. Source: (Prepared by the authors, 2020).

Authors	Title	Results / Conclusion
[9](RUELA et al., 2018)	Effectiveness of auricular acupuncture in the treatment of cancer pain: randomized clinical trial.	31 cancer patients participated in the study. After the eight auricular acupuncture sessions, there was a significant difference between the groups regarding the reduction of pain intensity ($p < 0.001$) and of the use of medications ($p < 0.05$). Auricular acupuncture was effective in reducing the pain of patients receiving chemotherapy.
[10](MENG; FENG, 2018)	A pilot study of acupuncture at pain acupoints for cervical cancer pain.	A total of 64 cases were analyzed. The results of this study showed that acupuncture at pain acupoints might be efficacious in patients with cervical cancer pain (CCP) after 14-day treatment.
[11](MOLASSIO TIS et al., 2019)	A Randomized Assessor-Blinded Wait-List-Controlled Trial to Assess the Effectiveness of Acupuncture in the Management of Chemotherapy-Induced Peripheral Neuropathy.	Eighty-seven patients were randomized to the experimental arm ($n = 44$) and to the standard care wait-list control arm ($n = 43$). Significant changes at 8 weeks were detected in relation to the primary outcome (pain), the clinical neurological assessment, quality of life domains, and symptom distress (all $P < .05$). Improvements in pain interference, neurotoxicity-related symptoms, and functional aspects of quality of life were sustained in the 14-week assessment ($P < .05$), as were

		physical and functional well-being at the 20-week assessment ($P < .05$).
[12](GIRON et al., 2016)	Effectiveness of acupuncture in rehabilitation of physical and functional disorders of women undergoing breast cancer surgery.	Forty-eight patients completed the treatment, 24 in each group. Regarding the pain, the two groups had statistically significant improvement in all evaluated moments. In the analysis of depression, it improved significantly only in G1 in the comparison between the first and the tenth session. The upper limb function had improvement in G1 only in the comparison between the first and the tenth session and in G2, in the three evaluation moments. The range of motion (ROM) showed improvement in all evaluated movements.
[13](WANG et al., 2019b)	Effect of acupuncture in different time on nausea and vomiting induced by chemotherapy of lung cancer.	Acupuncture combined with the slow intravenous injection with tropisetron hydrochloride achieve the satisfactory effect of prevention and treatment for vomiting induced by chemotherapy of lung cancer. The acupuncture intervention before chemotherapy greatly improves the effect on nausea and vomiting induced by chemotherapy of lung cancer.
[14](BEN-HORIN et al., 2017)	Acupuncture and Reflexology for Chemotherapy-Induced Peripheral Neuropathy in Breast Cancer.	The results of this study demonstrated that a joint protocol of acupuncture and reflexology has a potential to improve symptoms of chemotherapy-induced peripheral neuropathy (CIPN) in breast cancer patients.
[15](HERSHMAN et al., 2018)	Effect of Acupuncture vs Sham Acupuncture or Waitlist Control on Joint Pain Related to Aromatase Inhibitors Among Women With Early-Stage Breast Cancer: A Randomized Clinical Trial.	mong postmenopausal women with early-stage breast cancer and aromatase inhibitor-related arthralgias, true acupuncture compared with sham acupuncture or with waitlist control resulted in a statistically significant reduction in joint pain at 6 weeks.
[16](BAO et al., 2018)	A phase IIA trial of acupuncture to reduce chemotherapy-induced peripheral neuropathy severity during neoadjuvant or adjuvant	Acupuncture was safe and showed preliminary evidence of effectiveness in reducing the incidence of high-grade Chemotherapy-induced peripheral neuropathy (CIPN) during chemotherapy.

	weekly paclitaxel chemotherapy in breast cancer patients.	
[17](ZHANG et al., 2018)	Effects of acupuncture on cancer-related fatigue: a meta-analysis	Acupuncture is effective for CRF management and should be recommended as a beneficial alternative therapy for CRF patients, particularly for breast cancer patients and those currently undergoing anti-cancer treatment.
[18](LEE et al., 2017)	A cross-sectional survey of pain catastrophising and acupuncture use among breast cancer survivors.	High levels of pain catastrophising, and specifically the processes of rumination and magnification, were associated with greater acupuncture use. We believe this could have important implications for understanding which population is more likely to seek acupuncture treatment and how this alternative therapy could be better targeted to these patients.
[19](GARCIA et al., 2018)	Inpatient Acupuncture at a Major Cancer Center.	A total of 172 inpatients were treated with acupuncture in their hospital beds (257 visits). Patients who received inpatient acupuncture at a major cancer center experienced significant improvement after treatment for pain, sleep disturbance, anxiety, drowsiness, nausea, and fatigue.
[20](MINCHOM et al., 2016)	A randomised study comparing the effectiveness of acupuncture or morphine versus the combination for the relief of dyspnoea in patients with advanced non-small cell lung cancer and mesothelioma.	acupuncture alone (A), morphine alone (M) and or both (AM) were effective in relieving dyspnoea. Acupuncture relieved anxiety and was morphine sparing, providing an alternative to morphine.
[21](ROMEIO et al., 2015)	Acupuncture to Treat the Symptoms of Patients in a Palliative Care Setting.	Acupuncture was found to be effective for the reduction and relief of symptoms that commonly affect patient quality of life (QOL). Acupuncture effectively reduced symptoms of pain, tiredness, nausea, depression, anxiety, and shortness of breath, and enhanced feelings of well-being.

[22](TAS et al., 2014)	Acupuncture as a complementary treatment for cancer patients receiving chemotherapy.	Our study showed that acupuncture has positive effects on cancer treatment patients who experience nausea, vomiting, pain, poor sleep quality and anxiety as side effects of chemotherapy. Chemotherapy-related side effects in cancer patients could be decreased by the concurrent use of acupuncture.
[23](WANG et al., 2019a)	Effect of acupressure on constipation in patients with advanced cancer.	Findings from this study indicated that short-term acupressure was effective in alleviating symptoms of constipation among patients with advanced cancer.
[24](MAO et al., 2014)	Electroacupuncture for fatigue, sleep, and psychological distress in breast cancer patients with aromatase inhibitor-related arthralgia: a randomized trial.	Compared with usual care, electroacupuncture (EA) produced significant improvements in fatigue, anxiety, and depression; whereas sham acupuncture (SA) improved only depression in women experiencing aromatase inhibitor-related arthralgia.
[25](ZHI et al., 2018)	Acupuncture for Bortezomib-Induced Peripheral Neuropathy: Not Just for Pain.	Acupuncture can improve multiple symptoms associated with BIPN, particularly numbness and tingling in hands and feet, cold sensitivity, and an unpleasant feeling.
[26](YEH et al., 2016)	Pilot Randomized Controlled Trial of Auricular Point Acupressure to Manage Symptom Clusters of Pain, Fatigue, and Disturbed Sleep in Breast Cancer Patients.	For the 4-week of auricular point acupressure (APA) treatment, the retention rate was 88% for the active APA group and 73% for the control APA group. After 4 weeks of APA, participants in the active APA treatment had reported a reduction of 71% in pain, 44% in fatigue, 31% in sleep disturbance, and 61% in interference with daily activities. The control APA group experienced some moderate reduction in these symptoms.
[27](CHENG et al., 2017)	Acupuncture for cancer-related fatigue in lung cancer patients: a randomized, double blind, placebo-controlled pilot trial.	Fatigue is a common symptom experienced by lung cancer patients. Acupuncture may be a safe and feasible optional method for adjunctive treatment in cancer palliative care

According to the references, acupuncture had positive effects in improving pain, nausea/vomiting, pain, poor quality of sleep and anxiety as side effects of chemotherapy, in addition to improving quality of life,

fatigue and activities of daily living (ADLs).

Furthermore, it would not be in any way rash to say that there are great possibilities that in the future acupuncture will be further explored and explored as a

complement to cancer treatment.

4 CONCLUSION

Acupuncture is one of the techniques of TCM, in which metallic needles are used as tools that are applied to patients' skin at strategic points, with the aim of improving the function of organs, viscera and glands, reducing or eliminating pain and bringing balance in emotions.

REFERENCES

- [1] DANTAS, J. Os **Efeitos da Acupuntura como Tratamento Coadjuvante em Pacientes com Câncer de Mama**. 2017.
- [2] NATANY, P. C. T. ACUPUNTURA NO TRATAMENTO DOS TRANSTORNOS DA ANSIEDADE. 2017.
- [3] MARQUES, C. **Oncologia: uma abordagem multidisciplinar**. [s.l.] Carpe Diem, 2016.
- [4] THEOBALD, M. R. et al. Percepções do paciente oncológico sobre o cuidado. **Physis: Revista de Saúde Coletiva**, v. 26, p. 1249–1269, dez. 2016.
- [5] PAULA, J. M. DE; SAWADA, N. O. Qualidade de vida relacionada à saúde de pacientes com câncer em tratamento radioterápico. 2015.
- [6] ARAÚJO, DE., Warly Neves et al. Effectiveness of acupuncture and myofascial release in analgesia of women with tensional neck pain: Systematic review. **International Journal of Advanced Engineering Research and Science**, v. 6, n. 12, 2019.
- [7] **SUS São Paulo has performed about 3 million acupuncture applications in the last 9 years**. Disponível em: <<http://www.saopaulo.sp.gov.br/spnoticias/sus-paulista-realizou-cerca-de-3-milhoes-de-aplicacoes-de-acupuntura-nos-ultimos-9-anos/>>. Acesso em: 6 Feb. 2020.
- [8] OLIVEIRA, M. DE et al. Experimental Planning Factorial: A Brief Review. **International Journal of Advanced Engineering Research and Science (IJAERS)**, v. 6, n. 6, p. 166–177, 2018.
- [9] RUELA, L. DE O. et al. Effectiveness of auricular acupuncture in the treatment of cancer pain: randomized clinical trial. **Revista Da Escola De Enfermagem Da U S P**, v. 52, p. e03402, 13 Dec. 2018.
- [10] MENG, F.-F.; FENG, Y.-H. A pilot study of acupuncture at pain acupoints for cervical cancer pain. **Medicine**, v. 97, n. 52, p. e13736, Dec. 2018.
- [11] MOLASSIOTIS, A. et al. A Randomized Assessor-Blinded Wait-List-Controlled Trial to Assess the Effectiveness of Acupuncture in the Management of Chemotherapy-Induced Peripheral Neuropathy. **Integrative Cancer Therapies**, v. 18, p. 1534735419836501, Dec. 2019.
- [12] GIRON, P. S. et al. Effectiveness of acupuncture in

- rehabilitation of physical and functional disorders of women undergoing breast cancer surgery. **Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer**, v. 24, n. 6, p. 2491–2496, Jun. 2016.
- [13] WANG, Y.-L. et al. [Effect of acupuncture in different time on nausea and vomiting induced by chemotherapy of lung cancer]. **Zhongguo Zhen Jiu = Chinese Acupuncture & Moxibustion**, v. 39, n. 12, p. 1269–1273, 12 Dec. 2019b.
- [14] BEN-HORIN, I. et al. Acupuncture and Reflexology for Chemotherapy-Induced Peripheral Neuropathy in Breast Cancer. **Integrative Cancer Therapies**, v. 16, n. 3, p. 258–262, 2017.
- [15] HERSHMAN, D. L. et al. Effect of Acupuncture vs Sham Acupuncture or Waitlist Control on Joint Pain Related to Aromatase Inhibitors Among Women With Early-Stage Breast Cancer: A Randomized Clinical Trial. **JAMA**, v. 320, n. 2, p. 167–176, 10 2018.
- [16] BAO, T. et al. A phase IIA trial of acupuncture to reduce chemotherapy-induced peripheral neuropathy severity during neoadjuvant or adjuvant weekly paclitaxel chemotherapy in breast cancer patients. **European Journal of Cancer (Oxford, England: 1990)**, v. 101, p. 12–19, 2018.
- [17] ZHANG, Y. et al. Effects of acupuncture on cancer-related fatigue: a meta-analysis. **Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer**, v. 26, n. 2, p. 415–425, 2018.
- [18] LEE, I. et al. A cross-sectional survey of pain catastrophising and acupuncture use among breast cancer survivors. **Acupuncture in Medicine: Journal of the British Medical Acupuncture Society**, v. 35, n. 1, p. 38–43, Mar. 2017.
- [19] GARCIA, M. K. et al. Inpatient Acupuncture at a Major Cancer Center. **Integrative Cancer Therapies**, v. 17, n. 1, p. 148–152, 2018.
- [20] MINCHOM, A. et al. A randomised study comparing the effectiveness of acupuncture or morphine versus the combination for the relief of dyspnoea in patients with advanced non-small cell lung cancer and mesothelioma. **European Journal of Cancer (Oxford, England: 1990)**, v. 61, p. 102–110, 2016.
- [21] ROMEO, M. J. et al. Acupuncture to Treat the Symptoms of Patients in a Palliative Care Setting. **Explore (New York, N.Y.)**, v. 11, n. 5, p. 357–362, out. 2015.
- [22] TAS, D. et al. Acupuncture as a complementary treatment for cancer patients receiving chemotherapy. **Asian Pacific journal of cancer prevention: APJCP**, v. 15, n. 7, p. 3139–3144, 2014.
- [23] WANG, P.-M. et al. Effect of acupressure on constipation in patients with advanced cancer. **Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer**, v. 27, n. 9, p. 3473–3478, set. 2019a.
- [24] MAO, J. J. et al. Electroacupuncture for fatigue, sleep, and psychological distress in breast cancer patients with aromatase inhibitor-related arthralgia: a randomized trial. **Cancer**, v. 120, n. 23, p. 3744–3751, 1 Dec. 2014.

- [25] ZHI, W. I. et al. Acupuncture for Bortezomib-Induced Peripheral Neuropathy: Not Just for Pain. **Integrative Cancer Therapies**, v. 17, n. 4, p. 1079–1086, 2018.
- [26] ZHI, W. I. et al. Acupuncture for Bortezomib-Induced Peripheral Neuropathy: Not Just for Pain. **Integrative Cancer Therapies**, v. 17, n. 4, p. 1079–1086, 2018.
- [27] CHENG, C.-S. et al. Acupuncture for cancer-related fatigue in lung cancer patients: a randomized, double blind, placebo-controlled pilot trial. **Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer**, v. 25, n. 12, p. 3807–3814, 2017.

IJSER

IJSER