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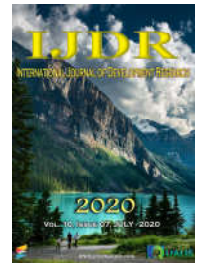
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RESEARCH ARTICLE

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## GUNGSUN POINT (BP4) EFFECT ON FIBROMYALGIA TREATMENT

Helena Landim Gonçalves Cristóvão\*<sup>1</sup>, Júlio César André<sup>2</sup>, André Bavaresco Gonçalves Cristóvão<sup>3</sup>, Neil Novo<sup>4</sup>, Paula Cristóvão<sup>5</sup>, Yara Juliano<sup>6</sup> and Ysao Yamamura<sup>7</sup>

<sup>1</sup>Department of Pediatrics, University of Santo Amaro (Unisa), São Paulo (SP), Brazil; <sup>2</sup>Center for the Study and Development of Health Education – CEDES, Medical School of Medicine of São José do Rio Preto - FAMERP, Brazil; <sup>3,5</sup>Undergraduate Student in Medicine, University of Santo Amaro (Unisa), São Paulo (SP), Brazil; <sup>4,6</sup>Postgraduate Statistics Department, University of Santo Amaro (Unisa), São Paulo (SP), Brazil; <sup>7</sup>Department of Orthopedics, Traumatology and Acupuncture, University of São Paulo (Unifesp), São Paulo (SP), Brazil

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\*Corresponding author: Helena Landim Gonçalves Cristóvão

### ABSTRACT

**Objective:** Demonstrate BP4 stimulation can treat meridian diseases related to Chong Mai, including FMS. **Methods:** Prospective, control case, randomized, with “crossing over”; 69 female, older than 21 years, with FMS, also diagnosed by researchers with curious meridian Yang Qiao Mai affection, divided into four groups: Group 1 - 3 sessions in BP4 / 3 sessions with simulation (S); Group 2 - 3 sessions with S / 3 sessions in BP4; Group 3 - 3 sessions in B62-Loc.1; Group 4 - 3 sessions in B62-Loc.2, weekly, for 3 to 6 weeks. **Results and Discussion:** When we compared the 4 groups, pain improvement was significantly higher when we used BP4, B62-Loc.2 and B62-Loc.1 acupoints than S ( $p < 0.0001$ ). The improvement was maintained in the last three sessions of S, in group 1. **Conclusions:** Acupuncture showed effectiveness in SFM pain improvement with BP4 and B62, in the studied patients.

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## INTRODUCTION

The fibromyalgia syndrome (FMS), found in up to 2% to 8% of the population, can be expressed from mild to a constellation of symptoms characterized by the pain amplification of the central nervous system, allodynia and hyperalgesia, with concomitant fatigue, represented by musculoskeletal pain and muscular sensitivity leading to incapacity, memory problems, sleep and mood disorders with decreased quality of life (QOL) and psychological distress. FMS and other “centralized” pain status are now much more well understood, and an effective treatment is possible. Several kinds of treatments are available for the management of FMS, with high quality evidence support. Those treatments include non-pharmacologic therapies (education, exercise, cognitive behavioral therapy) and pharmacologic therapy (tricyclics, serotonin and norepinephrine reuptake inhibitors and gabapentinoids) (CLAUW, 2014). The European League Against Rheumatism (EULAR) recommends, for the treatment

of FMS, a non-pharmacological therapy at first and, if there is no effect, there should be individualized therapy according to the patient's need, which may include the pharmacological therapy. The reason for this recommendation is the cost-benefit ratio, preference, safety and patient availability. The pharmacological intervention efficiency has a weak level of evidence and must be indicated in specific cases (for example, unresponsive pain or sleep disturbance) due to possible side effects and low adherence. The patients can benefit from a multimodal therapeutic approach in more severe situations (MACFARLANE et al., 2017; ATZENI et al., 2019). Regarding alternative and complementary medicine (ACM), acupuncture, a Traditional Chinese Medicine (TCM), used in the treatment of chronic pain for more than two millennia in China, is a promising choice to relieve FMS symptoms. 91% of patients presenting fibromyalgia were treated with ACM and one out of five patients sought acupuncture for treatment within two years after diagnosis. Close to one million United States of America (USA) citizens use acupuncture. Besides,

acupuncture is a relatively safe intervention and the side effects, such as lethargy and pain in the needling locations are mild and not long. Acupuncture's effect on the central nervous system is a plausible mechanism of analgesia and the consequent regulation of neurotransmitters and hormones. Acupuncture stimulates the nervous fibers, such as delta afferents, which in turn, activate transmission neurons in the dorsal laminae of the spinal cord and activate three more levels of endogenous pain modulation systems in the spinal cord, midbrain, thalamus and hypothalamus. The activation results in a cascade of pain modulators endorphins, serotonin and noradrenaline, leading to analgesia (DEARE *et al.*, 2013). Acupuncture is an old way of medical practice which has improved considerably in the last two to three thousand years. The acupuncture points and meridians concepts were empirically originated, while professionals sought to understand and explain the evoked sensations during stimulation that seemed to radiate lines along the ends and trunk of the body. The movement of those sensation was named Qi by the first Chinese practitioners and, as these sensations seemed to move along de body, was thought they would represent the energy flow. The most recent observation has been the acupuncture points and meridians location in bigger mixed bundle of nerves containing motor units and sensorial fibers which project themselves to the central nervous system regulating the pain and blood pressure, namely, the conditions that appear to be influenced by acupuncture. Thereby, the apparently more logical and consistent explanation for acupuncture action is the neural hypothesis. Therefore, the meridians and their associated acupuncture points would be considered guide helping maps to assist the professional to reach the best clinical results according to where they are stimulating. However, it is the stimulation of the underlying neural pathways that can explain the physiological effects and clinical responses to acupuncture (LONGHURST, 2010). The Curious, Extra or Wonderful Energy Channels are intended to take Qi and Xue, as well as Ancestral Qi, to the gaps between the Main Energy Channels, and to promote the various connections between the Zang Fu and the Energy Channels. Its energetic physiology differs from that of the Main Energy Channels. Except for Du Mai and Ren Mai, the Curious Energy Channels do not have points of their own in their paths. They use the common acupuncture points located in the Main Energy Channels, in order to promote their actions and functions. They do not have a Yang-yin or Exterior-Interior connection system. The Chong Mai Curious Energy Channel is a deep Energy Channel, originating from the Shen (Kidneys), which comprises three important branching areas: chest, abdomen and lower limbs. It carries the Ancestral Energy of the Shen (Kidneys) with the Yong and Wei Energies. Ancestral Energy has the function of regulating body temperature and transporting the Organic Fluids to tissues and joints. The Chong Mai Energy Channel features a main path, an internal path and secondary channels. The Yang Qiaomai Energy Channel is a channel that basically follows the Main Energy Channel of the Panguang (Bladder) and the energy of the Shen (Kidneys) circulates in it abundantly. It corresponds to the Earth's energy and its path is from Low to High, with the energetic function of bringing liquids to the eyes. The essential clinical manifestation of Yang Qiaomai Energy Channel involvement is the non-restorative sleep (insomnia, restless sleep, broken sleep, etc.), which may or may not be accompanied by secondary symptoms such as fatigue, anxiety, chronic musculoskeletal system pain (YAMAMURA, 2004), the main manifestations of FMS.

Considering that Chong Mai may be the root of Yang Qiao Mai, Yin Qiao Mai, Yin Wei Mai, Yang Wei Mai and Dai Mai Curious Channels, we could access this channel to treat diseases of the related meridians. The pharmacological and non-pharmacological management of FMS, despite all the progress, still lacks high-quality scientific evidence. Despite all the evidence accumulated to date, the effect size for many treatments is relatively modest. The expenditure of time and funding for large studies shows the need to consider alternatives, including records and observational studies that can be complemented by qualitative studies to determine patients' needs. In this direction, we come up with the present study.

## MATERIALS AND METHODS

**Study type:** Prospective, control case, randomized, with "crossing over".

**Study participants:** One hundred female adults, older than 21 years with fibromyalgia were diagnosed by rheumatologist and confirmed by the researchers. Patients with neoplasm, with profound depression and who discontinued treatment voluntarily were excluded. Our protocol was approved by the Research Committee of Escola Paulista de Medicina and all patients were informed about the study procedures and signed the informed consent form (EHIC) of the study in question. I emphasized that all participants received treatment with acupuncture, at the first 3 sessions or at the last 3. Recruitment of the volunteers was done by the researcher herself, through personal contact and, after clarification and consent, the proposed treatment was initiated. All the recruited patients were acupuncture-naive participants or had not received acupuncture in the last 12 months. The participants were not requested to interrupt any adjuvant treatment.

**Experimental procedure:** The groups were: Group 1 (G1) - acupoint BP4 (BP4) / simulation (S); Group 2 (G2) - S / BP4; Group 3 (G3) - acupoint B62 (B62) (Loc. 1); Group 4 (G4) - B62 (Loc. 2). Despite the study participants have been directed with FMS diagnosis by the rheumatologist, it was confirmed by the researchers according to the Consensus of Rheumatology of the American College, a patient with Fibromyalgia should have generalized chronic pain and at least 11 of the 18 painful points on examination (WOLFE *et al.*, 1990; MAYHEW & ERNST, 2007]. Although fibromyalgia is not a diagnosis of Chinese medicine, the types of pain and comorbidities associated with it may fit into the Chinese medicine diagnostic concept of Bi-Syndrome, documented 2500 years ago (NI, 1995). Dividing Bi-Syndrome into a number of patterns depends on the characteristics of pain, as well as the accompanying signs and symptoms, which allows syndrome pattern differentiation, leading to an individualized approach to treatment that is part of the clinical decision-making process within traditional/clinical acupuncture practice. Thus, the diagnosis was accomplished by the researchers in each recruited patient considering the presence of emotional components according to the affected area and report of non-restorative sleep, anxiety and fatigue. For emotional components/ affected area lifting, were used the following expressions: "carry a burden", and "carry the world on your back" for affected cervical area, "I have to withstand" for the backache, "I want to change and I can't change" and "I don't want to change and I have to change" for the lower limb pain, "I want to do it and I can't do it" and "I don't want to do

it and I have to do it", for the upper limb pain. In the present study, we elected the acupoint B62 (Shenmai) that has two locations described in the literature, called B62-Loc.1 (old description), located half a tsun distal to the lateral malleolus, in a bone indentation of the calcaneus, and B62-Loc.2 (current description), located vertically through the lateral malleolus and in the line where it changes the color of the skin, between the plantar and instep regions, the latter considered by these authors as a true opening point of the curious energy channel Yang Qiao Mai (BARBOSA *et al.*, 1998), and the BP4 (Gongsun) which, according to the traditional description, is located on the medial side of the foot, in a distal bone depression at the base of the first metatarsal, where the skin color changes between the plantar and dorsal regions of the foot. Manual acupuncture, on the point with stimulation to achieve Te Qi as intraditional Chinese acupuncture, bilateral needling. After insertion of the needles (0.40 x 0.25), they were manipulated for 8 seconds, until Te Qi was obtained and the manipulation effect of that point was evaluated, with 1-week interval, for 3 to 6 weeks, depending on the group. The performed procedures were acupuncture needles insertion, in the dorsum foot or ankle region, in the sessions in which the patients received the proposed treatments. No needles were inserted in the simulation sessions (control), we only leaned a tip needle blunt, in the dorsum foot or ankle region simulating an insertion (S). An overview of the distribution of interventions in each group can be seen in Table 1. The pre and post treatment evaluation was assessed considering the body places in which the patient felt pain on a scale of 0 to 10 before and after the session. If there was improvement of pain, and still on a scale of 0 to 10, considering that he arrived with pain in the scale of 10, in what number would the pain be or if it has gone completely, pain location, pain frequency in the week before intervention, the degree of pain limitation and sleep quality. To assess pain, subjects completed a Visual Analogue Scale (VAS) before and immediately after the proposed procedure (SCOTT & HUSKISSON, 1976), a psychometric measuring instrument designed to document the characteristics of disease-related symptom severity in individual patients and use this to achieve a rapid (statistically measurable and reproducible) classification of symptom severity and disease control (KLIMEK *et al.*, 2017).

**Statistical analysis:** For the statistical analysis, the following non-parametric tests were applied, taking into account the nature of the studied variables: Friedman's analysis of variance (SEAGEL, 2006) was used to compare the results of percentages of improvements in pain VAS scores observed at 6 weeks of treatment, was applied separately for groups 1 and 2 and then groups 3 and 4; Mann-Whitney test (SEAGEL, 2006), with the purpose of comparing groups 1 and 2 and then groups 3 and 4, in relation to the percentages of improvement mentioned above and the same test was applied to compare the two groups regarding the results observed in the reassessment performed after 3 months in all groups.

## RESULTS

Of the 100 participants who had their diagnosis of FMS confirmed and diagnosis of the affection of the curious meridian Yang Qiao Mai by the researchers, 69 (69%) entered in the calculation of the results for having completed the study, 17 (68%) were in group 1, 14 (56%) in group 2, 20 (80%) in group 3 and 18 (72%) in group 4. In the analysis of the results,

we observed that in group 1, where 3 applications were performed at BP4 and after 3 S (see Table 1), the improvement of pain in each session was uniform and showed no statistically significant difference (NS) ( $p = 0.0573$ ) as the improvement was maintained in the weeks following treatment while they were being treated with S. In group 2, where the 3 S were performed first and after 3 applications at the BP4, there was NS improvement of pain in the first 3 sessions, while after the applications at BP4, there was a significant improvement (SI) ( $p < 0.0001$ ). In the comparison between groups 1 and 2, in the sessions performed at BP4 versus S, pain improvement was significantly higher with BP4 ( $p < 0.0001$ ) (Table 2 and 3). In Group 3, three applications were performed at B-62 (Loc.1) and, in Group 4, 3 applications at B-62 (Loc.2). Pain improvement was uniform in each session in both groups (Table 4 and 5). The reassessment made after 3 months showed that there was no significant difference among the 4 groups (Table 6). When we compared the 4 groups, we observed that in the first session, the pain improvement was significantly higher when we used points BP4, B62-Loc.2 and B62-Loc.1 than the S ( $p < 0.0001$ ). In the second and third sessions, the pain improvement was significantly higher in the three treatment groups compared to the S ( $p < 0.0001$ ). We also observed that, in group 1, the improvement was maintained in the last three sessions of S. In this study there was no reported adverse events, although there is not a consensus on how to report adverse events in acupuncture treatment.

## DISCUSSION

FMS is generally considered to be the second most frequent rheumatic disorder after osteoarthritis, but its challenging management requires a multidisciplinary approach and even then only leads to a temporary or slight improvement in symptoms. The pathogenesis of FM is still unknown, but it has been hypothesised that local hypoxia may cause degenerative changes in muscles leading to chronic pain, a consequent reduction in ATP and an increase of the concentration of lactic acid. Even to these days, the FMS diagnosis is done with reports from patients and clinical evaluation, due to unclear points in FMS pathogenesis and trustworthy biomarkers lack (ATZENI *et al.*, 2019). Although in the last years, the relatively new molecules of interest identification such as peculiar mitochondrial RNA profile in the blood, saliva (MASOTTI *et al.*, 2017) and cerebrospinal liquid (BJERSING *et al.*, 2013), which demonstrated the FMS diagnosing and characterization capacity, increased the biomarkers research of biological fluids. Innovative techniques of proteomic or metabolomics analysis on the same biological fluids offer new potentiality in biomarker identification and among the proteins that presented an increased serum level in FMS patients, haptoglobin and fibrinogen had the highest FMS/control ratio, representing two interesting possible targets of further study on their role as biomarkers (RAMÍREZ-TEJERO *et al.*, 2018). The metabolomic analysis may be useful to identify serum metabolites that could be valuable as biomarkers and the discriminating region of the vibrational spectra was dominated by bands characteristics of pyridine ring, tyrosine residues in proteins and protein backbone, highlighting the importance of aromatic and carboxylic acid molecules as potential biomarkers, including tryptophan and its metabolites (HACKSHAW *et al.*, 2019). The role of tryptophan and its metabolite, serotonin, in FMS pathogenesis has been supported by a number of experimental observations and confirmed by

Table 1. Overview of the distribution of interventions in each group

<i>All the participants (Initial n = 100): Diagnostic</i>						
1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week	5 <sup>th</sup> Week	6 <sup>th</sup> Week	
<b>Group 1 (Initial n = 25 / Final n = 17)</b>						
Pre-treatment evaluation						
BP4	BP4	BP4	S	S	S	
Post-treatment evaluation (immediate)						
<b>Group 2 (Initial n = 25 / Final n = 14)</b>						
Pre-treatment evaluation						
S	S	S	BP4	BP4	BP4	
Post-treatment evaluation (immediate)						
<b>Group 3 (Initial n = 25 / Final n = 20)</b>						
Pre-treatment evaluation						
B62-Loc.1	B62-Loc.1	B62-Loc.1	-	-	-	
Post-treatment evaluation (immediate)						
<b>Group 4 (Initial n = 25 / Final n = 18)</b>						
Pre-treatment evaluation						
B62-Loc.2	B62-Loc.2	B62-Loc.2	-	-	-	
Post-treatment evaluation (immediate)						
<i>Participants (Final n = 69): Results</i>						
<i>Reassessment performed after 3 months in all groups.</i>						

Table 2. Patients with FMS submitted to treatment, Group 1 compared to Group 2 according to the percentage of pain improvement (VSA) observed in the weeks studied

Group	Weeks	Friedman (*)						DifferenceBetween Weeks	
		BP4	S						
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>		
1	Average	90.0	90.0	90.0	90.0	95.0	100.0	$\chi^2 = 10.71$ (p = 0.0573)	NS
	Standard Deviation	85.9	87.1	91.2	89.4	90.9	93.2		
2	Average	35.0	35.0	35.0	80.0	85.0	90.0	$\chi^2 = 53.80$ (p < 0,0001)	IS (4 <sup>th</sup> , 5 <sup>th</sup> , 6 <sup>th</sup> > 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> )
	Standard Deviation	28.9	35.0	35.6	80.7	79.3	88.2		

(\*) Result of Friedman's analysis of variance, applied to compare the weeks

Table 3. Group 1 compared to Group 2 in the Mann-Whitney test to compare the groups

<i>(BP4 x S)</i>			
1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
z = 4.97 (p < 0.0001)	z = 4.76 (p < 0.0001)	z = 4.63 (p < 0.0001)	
G1 > G2	G1 > G2	G1 > G2	

Table 4. Patients with FMS submitted to treatment, Group 3 compared to Group 4 according to the percentage of pain improvement (VSA) observed in the weeks studied

Group	Weeks	Friedman (*)			DifferenceBetween Weeks
		B62-Loc.1	B62-Loc.2		
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
3	Average	75.0	80.0	100.0	$\chi^2 = 3,60$ (p = 0.1653)
	Standard Deviation	75.0	81.5	86.2	
4	Average	80.0	82.5	90.0	$\chi^2 = 3,69$ (p = 0.1577)
	Standard Deviation	80.3	85.3	87.8	

Table 5. Group 3 compared to Group 4 in the Mann-Whitney test to compare the groups

<i>(B62-Loc.1 x B62-Loc.2)</i>			
1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
z = 0.72 (p = 0.4738)	z = 0.88 (p = 0.3805)	z = 1.28 (p = 0.2001)	
NS	NS	NS	

Table 6. Patients with FMS submitted to treatment, all groups, reassessment 3 months after the last session

RT	Groups	Friedman (*)				DifferenceBetweenGroups
		1	2	3	4	
3 months	Average	90.0	80.0	80.0	95.0	$\chi^2 = 4,70$ (p = 0.1952)
	Standard Deviation	90.0	74.6	76.5	85.7	

RT = Reassessment's time; (\*) Result of Friedman's analysis of variance, applied to compare the weeks; NS = not significant

the common use in FMS treatment of selective serotonin reuptake inhibitors (WALITT *et al.*, 2015). The investigation of neurologic abnormalities both in the peripheral and central nervous system have been a rich field of research in FMS. In the FMS, there is high prevalence (49%) of small fiber neuropathy (SFN) (GRAYSTON *et al.*, 2019), and the study of the small fiber pathology through the skin biopsy represents a promising and easily performable diagnostic test that may

allow the identification of FMS patients with an underlying neuropathy and thereafter guide the therapeutic choice through drugs that are active on the neuropathic aspects of pain. A technique recently applied to the successful identification of the small fiber pathology in FMS, corneal confocal microscopy, is basically an in vivo microscopy that may become a useful and non-invasive FMS diagnostic test (Martínez-Lavín, 2018). Using positron emission tomography

(PET) imaging and radioligands that bind to the 18-kDa translocator protein (TSPO), ALBRECHT *et al.* (2019) described an increased uptake of the radioligand in FMS patients' brain, especially in the brain regions previously implicated in FMS pathology, and although TSPO expression is normally low in healthy brain tissue there is dramatically upregulated in activated glial cells under inflammatory stimuli and the radioligand uptake in several brain regions correlated significantly with the subjective fatigue score reported by FMS patients, what suggests a possible association between neuroinflammation and FMS.

While FMS is characterized by chronic widespread pain and tenderness, its presentation among patients as a continuum of diseases rather than a single disease contributes to the challenges of diagnosis and treatment (DAVIS *et al.*, 2018). Thereby, despite all the FMS adequate diagnosis progress, studies support the concept of FMS as a condition of centralized pain, and that this pain becomes more centralized over the disease course thus potentially requiring approaches to management that reflect the degree of centralization as identified by the FMS classes (DAVIS *et al.*, 2018), and the main purpose of FMS treatment is to ameliorate the pain and improve the quality of life for those patients, which is the focus of our aim: management and pain reduction in diagnosed patients, according to the criteria used herein. A number of studies reported a significant benefit of the Chinese discipline Tai Chi over aerobic exercise in terms of mood and sleep disturbance, disability and quality of life, but physical activity does not seem to influence pain sensitivity, the management of which should require the addition of a pharmacologic intervention or other non-pharmacologic approaches (WANG *et al.*, 2018; OSTROVSKY, 2018; MERRIWETHER *et al.*, 2018). The application of muscle exercise (e.g. using the Tai Chi technique) in a warm water context, namely the aquatic Ai-Chi program, can represent a further tool to control pain and improve quality of life, as shown by the results of an experimental pilot study on 20 FMS subjects (PÉREZ DE LA CRUZ & LAMBECK, 2018). Some studies have reported that dietary changes may have a positive repercussion on muscular pain: FMS subjects often have a deficit in selenium, magnesium, zinc, vitamins B and D and proteins, and may benefit from the intake of carnitine, anti-oxidants, lactose-free and low-histamine food and aromatic amino acids once these nutrients can reduce systemic and neuronal inflammation and restore muscle strength while aromatic amino acids, like tryptophan, may normalize the level of neurotransmitters associated to sleep and mood control (BJØRKLUND *et al.*, 2018). According to another recent study, the combination of a lacto-vegetarian diet with exercise seems to represent a more powerful means of pain control and muscle strengthening (MARTÍNEZ-RODRÍGUEZ *et al.*, 2018). Last year, studies included a new concept of nociplastic pain, some metabolic and neuroendocrine alterations found in FMS patients, and investigations not only novel applications of old drugs, but also, and in particular, complementary therapies, such as hyperbaric oxygen chamber, ozone therapy and mindfulness-based interventions (BAZZICHI *et al.*, 2020). The reduction of symptoms by drugs disappear in case of discontinuation (SOMMER *et al.*, 2012). In addition, drugs may induce side effects, often similar to symptoms of FMS, but at times more serious such as substantial weight gain or liver damage. It is for this reason that the German guideline favoured non pharmacological treatment and advocated timely limited drug therapy only in moderate and severe forms of FMS (EICH *et*

*al.*, 2012; SOMMER *et al.*, 2012). Nevertheless, there is no cure for FMS and the treatment main objectives are to diminish the symptoms, including the pain, and to improve the quality of life. There are no doubts about the multidisciplinary approach benefits, with a strong recommendation for them (EVCIK *et al.*, 2019). In this context, we can resort to acupuncture. In traditional Chinese medicine (TCM) theory, stagnation of Qi activity leads to the stasis of blood which causes pain and the potential mechanism of acupoint stimulation for FMS is to regulate the Qi and blood, combined with dispelling cold and removing damp. Though acupoint stimulation was popularly employed in treating FMS, there is no systematic review that evaluates the clinical evidence of all types of acupoint stimulation. In our study, we performed acupuncture points in the treatment groups, and simulated the same points in the control group (S), and obtained a significant improvement in the patients submitted to acupuncture, compared to the S. We know that scientific work in acupuncture is difficult to perform because each person should be treated in an individualized way.

It's important to note that the conventional medications used to treat fibromyalgia are not always effective and have several side effects. We have shown that acupuncture treatment revealed significant improvement of pain through VAS scale, providing a better quality of life for patients and without adverse effects. Although our study was not double blind, it was a controlled study and corroborates with the studies described above that associate the beneficial effect of acupuncture in the treatment of FMS. All studies report abstinence, dropout or both. This study was not different and the treatment dropout rate was 31%. The most common reasons for dropping out are time restrictions, followed by worsening symptoms of fibromyalgia and scheduling conflicts (for example, appointments) which do not differ from the motivations we observed. The dropout rate on Group 2 (36%) seems to be directly related to the fact these group started with the treatment with S. Considering Chong Mai as the root of Yang Qiao Mai, Yin Qiao Mai, Yin Wei Mai, Yang Wei Mai and Dai Mai curious channels, BP4 acupoint stimulation can treat meridian related disease. Although B62- Loc 2 and Loc 1 acupoints stimulation are effective as well, it is a smaller and less lasting effect as it only addresses Yang Qiao Mai curious channel, while BP4 acupoint, for being earlier, affects all curious channels originated from Chong Mai. The Canadian guidelines cited the immediate pain relieving effects of acupuncture, but without evidence for prolonged effect (ABLIN *et al.*, 2013). Despite of the maintenance of good release of pain up to three months in our study, as any chronic pain treatment, we believe that acupuncture treatment should take longer time for a long-term benefit. In conclusion, acupuncture showed to be effective in the improvement of FMS pain, with BP4 and B62 acupoints, in the patients studied. Taking into account that the FMS, besides being characterized by generalized chronic pain, includes a variety of other symptoms and comorbidities, future studies should evaluate a wide range of approaches when examining the effect of any intervention for FMS. In addition to pain reduction, what makes patients with FMS feel better may include improvement in fatigue, physical functioning, mood, and impact on daily living.

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