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ORIGINAL RESEARCH

Assessment of the Short-Term Efficacy of a Wet-Cupping Therapy Session in Alleviating Symptoms of Fibromyalgia Syndrome: A Single-Arm Clinical Trial

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Abstract

Objective: This study aims to evaluate the short-term effectiveness of wet cupping therapy in alleviating symptoms of fibromyalgia syndrome (FMS).

Materials and Methods: A prospective, single-arm intervention design was employed. Participants were assessed before and after treatment using various tools, including the Socio-Demographic Questionnaire, Visual Analog Scale (VAS) for Pain, Fatigue Severity Scale (FSS), Beck Depression Inventory (BDI), and Fibromyalgia Impact Questionnaire (FIQ).

Results: A total of 20 eligible participants were enrolled. Significant reductions in pain were observed both before treatment and by the end of the first week. Additionally, notable improvements were seen in FSS and BDI scores during the first week of therapy. FIQ scores also showed marked improvement after treatment compared to baseline. Overall, wet cupping therapy had a substantial positive impact on all assessed clinical indicators of FMS.

Conclusion: Wet cupping therapy effectively reduces pain, alleviates fatigue, improves mood, and enhances the overall well-being of individuals with FMS. It presents a promising therapeutic option for managing this condition.

Keywords: Wet-cupping Therapy, Fibromyalgia, Fibromyalgia Impact Questionnaire Pain

INTRODUCTION

Fibromyalgia Syndrome (FMS). is a common chronic pain disorder that presents diagnostic challenges for clinicians. It is characterized by widespread pain and tenderness, fatigue, sleep disturbances, and cognitive difficulties.[1-3] The prevalence of FMS varies depending on the population studied, but it is estimated to affect approximately 2-8% of the general population.[4] Due to its high prevalence and the complexities involved in its diagnosis and management, is of significant concern in both primary care and physical therapy settings.

There are several risk factors associated with fibromyalgia. These include female gender, genetic predisposition, physical or emotional trauma, and certain comorbid conditions such as rheumatoid arthritis and systemic lupus erythematosus.[3] The pathophysiology of FMS is not fully understood, but it is believed to involve a complex interplay of genetic, neurobiological, and environmental factors. Abnormalities in the central nervous system, including altered pain processing and increased sensitivity to stimuli, have been observed in individuals with FMS.[4]

The diagnosis of FMS has evolved over time. The American College of Rheumatology initially required tender points for diagnosing FMS. However, recent research shows this is unnecessary, leading to a new case definition that no longer includes tender point examination. This definition includes the widespread pain index (WPI) and a symptom severity (SS) scale, which assesses the severity of characteristic symptoms.[1,4]

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Excellence offers general principles recommended for the clinical management of FMS.[5] Treatment options for FMS aim to alleviate symptoms and improve quality of life. Non-pharmacological interventions such as exercise, cognitive-behavioural therapy, and patient education have been shown to be effective in managing FMS symptoms.[3-6] Pharmacological treatments include medications such as antidepressants, anticonvulsants, and analgesics.[3-5] A framework comprising four key foundations is suggested for the recovery of individuals with fibromyalgia: 1) patient education; 2) psychological therapy; 3) medication-based treatment; and 4) physical activity. Additionally, it has been proposed to integrate Traditional and Complementary Medicine (T&CM) into the management of FMS.[7] These treatments aim to support the alleviation of FMS symptoms and improve the overall well-being of individuals with the condition.[8,9] Some of the T&CM treatment options for FMS include Acupuncture[8,10], Herbal medicine, Manual therapies, Low-level laser therapy[11], Mind-body interventions[12], and Cupping therapy.[13]

Cupping therapy is one of the Traditional & Complementary Medicine (T&CM) methods that has been practiced for thousands of years across different cultures.[13-16] In contemporary Western clinical practice, cupping has gained popularity as an intervention utilized by manual and physical therapists.[17] It involves creating a vacuum inside cups placed on the skin, which draws the skin and underlying tissue into the cup.[16] Cupping therapy is believed to promote blood flow, relieve pain, and improve overall well-being.[16] Diverse types of cupping therapy exist, predominantly, dry cupping, which involves suctioning the skin into the cup without breaking the skin's surface, and wet cupping, which involves making superficial incisions on the skin to allow blood to be drawn into the cup.[14,15]

This study aims to assess the short-term efficacy of a wet-cupping therapy session in alleviating symptoms of FMS.

MATERIALS AND METHODS

Study design

This study employed a prospective, single-arm intervention design to explore the effects of cupping therapy on individuals diagnosed with FMS. The research aimed to assess changes in pain perception, fatigue levels, mood, and disease impact following cupping therapy intervention.

Sample selection

The study population comprised individuals diagnosed with FMS who sought treatment at the Physical Therapy Clinic of Esenler Hospital, Istanbul Medipol University. All participants received a clear explanation of the study's objectives, and their participation was voluntary.

Participant inclusion and exclusion criteria

Inclusion criteria for this study involved patients aged 18 to 65, clinically diagnosed with FMS. Participants who possessed contraindications to cupping therapy, had concurrent rheumatological or neurological disorders, or were pregnant were regrettably excluded.

Participant recruitment

Following careful assessment, a total of 20 eligible individuals who met the defined criteria and demonstrated a willingness to participate were enrolled in the study.

Intervention protocol

During a cupping therapy session, the licensed therapist applied five cups to the patient's upper back. The 15-minute session started with dry cupping to relax the muscles, followed by wet cupping, where the therapist made small, superficial incisions at the treatment sites. The cups were then reapplied to draw a small amount of blood.[14,15]

Assessment measures

Baseline assessments were conducted before the initiation of cupping therapy. Post-treatment assessments were conducted within the first week following the completion of the cupping therapy sessions. Baseline and post-treatment evaluations encompassed a comprehensive battery of assessment tools:

Socio-Demographic Data Form: This form captured essential demographic information, including age, gender, educational background and anthropometric data.

Visual Analog Scale (VAS) for Pain: It was employed to measure pain perception. Participants indicated their pain intensity on a graduated scale, allowing for accurate pain assessment (1 to 10).

Fatigue Severity Scale (FSS): Utilized to gauge the extent of fatigue, the FSS required participants to rate a series of items on a seven-point scale. The cumulative score was indicative of the overall fatigue level, with higher scores signifying more pronounced fatigue.[18]

Beck Depression Scale (BDS): With 21 questions, it quantified the presence and severity of depression.

Participants assigned scores ranging from 0 to 3 to each question, contributing to a composite score indicative of their depression level.[19]

Fibromyalgia Impact Questionnaire (FIQ): A comprehensive tool that meticulously examined the impact of FMS on various aspects of life. From physical function to psychological well-being, participants provided responses that collectively represented their disease status.[20]

Statistical Analysis

Quantitative variables were summarized using measures of central tendency and variance, expressed as Mean ± Standard Deviation. A Paired Sample T-Test was administered to explore statistically significant differences between pre- and post-treatment measurements. The level of statistical significance was set at $p<0.001$ level. Data analysis was carried out utilizing IBM SPSS Statistics Version 21.0.

Ethical Considerations

The study adhered to the ethical principles outlined in the Declaration of Helsinki. Ethical clearance was obtained from the Traditional and Complementary Medicine Ethics Board of Istanbul Medipol University (Approval number:20, Date: 3 December 2020). Prior to the commencement of this study, a comprehensive informed consent process was diligently undertaken with all participants. The participants were provided with detailed explanations regarding the study's objectives, procedures, potential risks, and benefits. This ensured that participants had a clear understanding of what their involvement would entail.

RESULTS

A total of 20 participants were enrolled in the study, including 18 females and 2 males. The educational distribution of participants was as follows: 25% (n=5) had received primary education, 20% (n=4) had completed high school, and 55% (n=11) held a university degree. The mean age of participants was 37.9 ± 8.43 years. The average pain duration was 42.85 ± 44.47 months (Table 1).

Table 1. Sociodemographic and anthropometric data.

Parametre	**Groups**	**n (%)**
Education	Primary school	5 (25.0%)
	High school	4 (20.0%)
	University	11 (55.0%)
Gender	Female	18 (90.0%)
	Male	2 (10.0%)
	Mean ± SD	Median (Min-Max)
Height	164.4 ± 6.94	163 (153 - 182)
Weight	68.75 ± 11.73	67.5 (48 - 98)
Duration	42.85 ± 44.47	30 (3 - 120)
Age	37.9 ± 8.43	39 (20 - 49)

Significant alterations in pain perception, as measured by the VAS, were evident both prior to treatment and at the end of the first week of treatment ($p<0.001$). Additionally, statistically significant favorable effects of the treatment were observed on fatigue levels and mood during the initial week of therapy ($p<0.001$). Moreover, a marked improvement was identified in FIQ scores after treatment compared to baseline ($p<0.001$).

Across all evaluated clinical indicators, cupping therapy exhibited a statistically significant positive influence on FMS (Table 2). Figure 1 visually represents the changes in clinical indicators (VAS, FSS, Beck, FIQ) before and after treatment, illustrating the average values. No immediate adverse reactions were observed.

Table 2. Comparison of clinical indicators before and after treatment.

Assessment	**Avg. Before**	**Avg. After**	**Avg. Difference**	**p values**
VAS	7.0 ± 2.0	3.7 ± 1.63	-3.3 ± 1.69	**<0.001**
	7 (5 - 10)	3.5 (2 - 7)	-3 (-6 - 0)	
FSS	5.81 ± 0.99	4.62 ± 0.98	-1.19 ± 1.11	**<0.001**
	6.1 (3.5 - 7)	4.65 (3.2 - 6.7)	-1.2 (-3.5 - 0.9)	
Beck	14.5 ± 8.35	10.3 ± 7.11	-4.2 ± 5.75	**<0.001**
	12.5 (3 - 34)	8 (2 - 30)	-4 (-17 - 5)	
FIQ	63.21 ± 16.78	38.32 ± 19.8	-24.89 ± 16.11	**<0.001**
	62.45 (33 - 95.1)	35.45 (8.1-73.8)	-24.9 (-55.4 - 7)	

Stats: Mean ± SD/Median (Min–Max), Paired Sample T-Test

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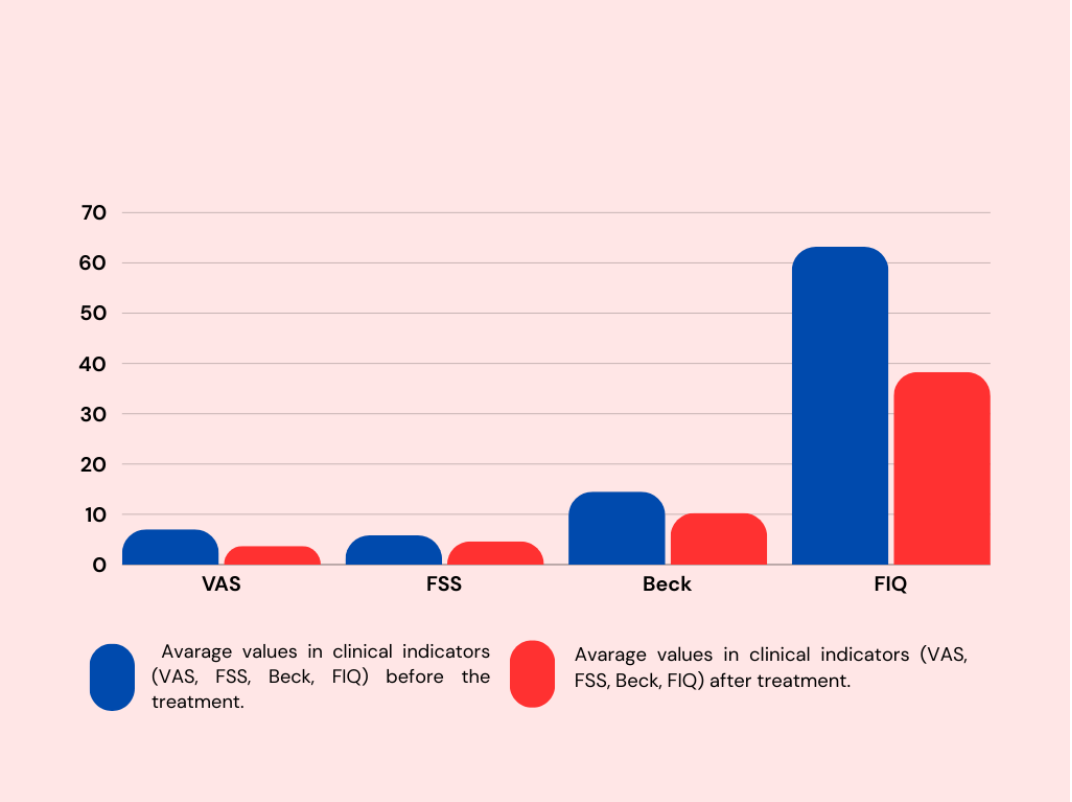

Figure 1. Changes in clinical indicators before and after treatment

DISCUSSION

The provided data showed that wet cupping therapy exerts significant positive effects on individuals suffering from FMS. This assertion is supported by the analysis of various clinical parameters, including pain perception measured via the VAS, levels of fatigue, mood states, and scores derived from the FIQ. The study demonstrates that both before the initiation of treatment and at the end of the first week of therapy, notable alterations in pain perception were apparent. Furthermore, during the initial week of treatment, significant beneficial impacts of cupping therapy on fatigue levels and mood states were observed. Additionally, a considerable amelioration in FIQ scores after cupping therapy was identified when compared to the baseline measurement, and this improvement exhibited statistical significance. In totality, across all evaluated clinical parameters, cupping therapy exhibited significant and positive effects on the manifestation of FMS.

A study conducted by Salazar-Méndez et al. (2023) examined the effectiveness of cupping therapy in managing pain, enhancing quality of life, addressing sleep disturbances, and mitigating the impact of FMS in individuals with this condition. This analysis encompassed two research investigations, involving a total of 155 participants. Significant improvements were observed in terms of pain severity, with substantial effects, while moderate effects were identified concerning the enhancement of overall quality of life. In contrast, the amelioration of FMS symptoms and sleep disturbances showed more modest improvements. However, it is important to note that the degree of confidence in the results is relatively limited for most aspects, except for the outcomes related to sleep disorders.[21] The effectiveness of cupping therapy on muscle pain has been investigated in several studies. A systematic review by Kim et al. (2011) aimed to assess the evidence for the effectiveness of cupping therapy for pain.[22] The review encompassed randomized clinical trials (RCTs) that investigated the effectiveness of cupping therapy in patients experiencing pain of diverse origins. This study incorporated seven RCTs that met the predefined inclusion criteria. Among these trials, two RCTs yielded evidence indicating a significant reduction in pain associated with cupping therapy, particularly in cases of low back pain when compared to standard care and analgesic treatments.

Additionally, two other RCTs reported positive outcomes for cupping therapy in the management of cancer-related pain and trigeminal neuralgia, demonstrating its efficacy compared to anticancer medications and analgesics, respectively. However, it is noteworthy that one RCT did not establish the superior efficacy of cupping therapy over antiviral medication in alleviating pain related to herpes zoster.[22]

Moreover, a systematic review conducted by Cao et al. in 2012 identified a total of 135 RCTs investigating the utilization of cupping therapy. These studies were generally characterized by a low level of methodological quality. Cupping therapy was frequently employed in the treatment of conditions such as herpes zoster, facial paralysis, cough and dyspnea, acne, lumbar disc herniation, and cervical spondylosis. The findings of this review suggested that cupping therapy may hold promise as an effective intervention for addressing herpes zoster and specific other medical conditions. Nevertheless, it underscored the imperative need for further meticulously designed trials to comprehensively evaluate the therapeutic potential of cupping therapy for various other medical conditions.[16] Qureshi et al. (2019) mentions that patients with myofascial pain syndrome (MPS), which shares some similarities with fibromyalgia, respond well to a variety of interventions including cupping therapy. It states that cupping therapy, along with other manual therapies, injection techniques, acupuncture, and other holistic treatments, may be beneficial in managing MPS.[23]

Li et al. (2016) employed near-infrared spectroscopy to appraise the therapeutic impact of dry cupping therapy on muscle discomfort.[10] The findings demonstrated a notable and enduring rise in blood oxygen levels resulting from the application of cupping therapy. The research centred on the use of dry cupping treatment and assessed its influence on the infraspinatus muscle, which is frequently utilized for addressing shoulder discomfort.[10]

In a research endeavour designed to evaluate the effectiveness of cupping therapy in ameliorating symptoms and enhancing the quality of life for individuals diagnosed with FMS, study participants were randomly allocated to receive one of three interventions: actual cupping therapy, a sham procedure, or conventional care.[24] The cupping therapy was administered on five occasions, with a frequency of twice per week, targeting the upper and lower back regions. Patients expressed moderate satisfaction with both cupping and sham cupping treatments, and minimal adverse effects were noted. Although cupping therapy exhibited better effectiveness in enhancing pain intensity and quality of life compared to standard care, the observed effects were modest and similar to those of a sham treatment. Consequently, given the present circumstances, it is not advisable to recommend cupping as a viable option for managing fibromyalgia. In the context of patients diagnosed with FMS, five sessions of cupping therapy demonstrated greater effectiveness compared to standard care in terms of enhancing pain intensity and quality of life. However, considering the relatively modest impact observed and the absence of clear superiority over sham cupping treatments, it is not possible to recommend cupping as a definitive treatment for FMS at present.[24]

It is important in primary healthcare and physical treatment because advances in the understanding of FMS pathophysiology and clinical presentation have improved its recognition and diagnosis in clinical practice [3]. The hallmark symptoms used to identify FMS include chronic widespread pain, fatigue, and sleep disturbances.[3] Therefore, family medicine practitioners need to be aware of these symptoms and common mimics of FMS to increase confidence in establishing a diagnosis.[3]

In the realm of FMS treatment, the primary objectives involve the mitigation of pain, enhancement of sleep quality, and improvement of physical functionality.[25] It is imperative to not only recognize but also address any potential pain origins that might coexist with fibromyalgia, including peripheral inflammatory or neuropathic pain sources, as well as visceral pain.[25] This holistic treatment strategy serves as a pivotal element in the effective clinical handling of FMS.[25] In addition to pharmacological treatments, nonpharmacological interventions are also recommended for the management of fibromyalgia. Exercise has been shown to improve functional status, key symptoms, and self-efficacy in women with FMS.[26] Psychoeducation, recommendations for a healthy lifestyle, and nonpharmacological interventions have been recommended for FMS patients.[27]

Increasing knowledge and awareness of patients and their families about FMS can contribute to improved functionality and better treatment outcomes.[27] Improved recognition and diagnosis of fibromyalgia, along with a comprehensive approach to treatment that includes pharmacological and nonpharmacological interventions, can lead to better management of the condition and improved patient

outcomes. Patient education and awareness are also crucial in the management of fibromyalgia.

Healthcare practitioners may find advantages in adopting a patient-centred strategy for treatment, emphasizing efficient pain control and consistent assessment of functional advancement.[28] Proficiency in integrative healthcare equips healthcare providers to dispense informed counsel and suggestions that are customized to the distinct preferences of each patient. Complementary therapies are accepted and used differently across medical specialties; therefore, both primary healthcare practitioners and professionals specializing in physical therapy and rehabilitation should cultivate a comprehensive understanding of these treatments in managing FMS.[29, 30]

Limitations: While the study offers promising insights into the potential benefits of cupping therapy for FMS, there are several limitations. The small participant group raises questions about generalizability, and the short treatment period of one week might not capture long-term effects. The absence of a control group or placebo makes attributing improvements solely to cupping therapy complex. Reliance on self-reported measures introduces potential biases, and the lack of blinding adds another layer of intricacy. Considering the variation in FMS symptoms and the short-term focus, a comprehensive understanding of cupping therapy's impact requires further research with larger groups and stronger controls.

CONCLUSION

This research offers a hopeful direction by demonstrating that cupping therapy can lead to positive results concerning the perception of pain, reduction in fatigue, improvement in mood, and the overall impact of FMS. Therefore, it presents a potential pathway for therapeutic intervention in individuals affected by this condition. Nevertheless, it's important to recognize that while T&CM may provide some relief for FMS symptoms, these treatments should be used alongside evidence-based therapies and under the guidance of a healthcare professional. The effectiveness of T&CM can vary from person to person, so consulting with a healthcare provider before starting any such therapies is essential.

Furthermore, it's worth highlighting that cupping therapy should only be administered by properly trained professionals to ensure safety and minimize the risk of adverse effects. Individuals with FMS who are contemplating cupping therapy should engage in a discussion with their healthcare provider to thoroughly explore potential benefits and risks.

Awareness of complementary therapies empowers professionals in primary care and physical treatment and rehabilitation to offer well-informed advice and recommendations tailored to individual patient preferences.

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REFERENCES

1. Berwick R, Barker C, Goebel A, et al. The diagnosis of fibromyalgia syndrome. Clin Med (Lond). 2022; 22(6):570-574.
2. Nicholas M, Vlaeyen JWS, Rief W, et al. The IASP classification of chronic pain for ICD-11: chronic primary pain. Pain. 2019;160(1):28–37.
3. Arnold LM, Bennett RM, Crofford LJ, et al. AAPT Diagnostic Criteria for Fibromyalgia. J Pain. 2019;20(6):611–628.
4. Wolfe F, Clauw DJ, Fitzcharles MA, et al. The American College of Rheumatology Preliminary Diagnostic Criteria for Fibromyalgia and Measurement of Symptom Severity. Arthritis Care Res (Hoboken). 2010;62(5):600–610.
5. Chronic pain (primary and secondary) in over 16s: assessment of all chronic pain and management of chronic primary pain. NICE guideline NG193. 2021.
6. Adams N, McVeigh JG, Cuesta-Vargas A, Abokdeer S. Evidence-based approaches for the management of fibromyalgia syndrome: a scoping review. Phys Ther Rev. 2023;28(1):1–17.
7. Sarzi-Puttini P, Giorgi V, Marotto D, Atzeni F. Fibromyalgia: an update on clinical characteristics, aetiopathogenesis and treatment. Nat Rev Rheumatol. 2020;16(11):645–660.

8. Ablin J, Fitzcharles MA, Buskila D, Shir Y, Sommer C, Häuser W. Treatment of Fibromyalgia Syndrome: Recommendations of Recent Evidence-Based Interdisciplinary Guidelines with Special Emphasis on Complementary and Alternative Therapies. Evid Based Complement Alternat Med. 2013;1–7.
9. Koçak FA, Kurt EE. Nonpharmacologic Treatment for Fibromyalgia. In: Wilke WS, ed. Discussions of Unusual Topics in Fibromyalgia. InTech. 2018; 36-55.
10. Li P, Zheng H, Chen Y, Liu Z, He J. Knowledge Mapping of Acupuncture for Fibromyalgia from 1990 to 2022: A Bibliometric Analysis. J Pain Res. 2022;15:2405–2431.
11. De Souza R, de Sousa E, Scudine K, Meira U, de Oliveira e Silva E, Gomes A, et al. Low-level laser therapy and anesthetic infiltration for orofacial pain in patients with fibromyalgia: a randomized clinical trial. Med Oral Patol Oral Cir Bucal. 2018;23(1): 65-71.
12. Balevi Batur E, Atan T. Neural therapy for fibromyalgia: Myth or improving quality of life? Int J Clin Pract. 2021;75(4):13719. 1-6.
13. Sheldon A, Karas S. Adverse events associated with manual therapy of peripheral joints: A scoping review. J Bodyw Mov Ther. 2022;31:159-163.
14. Aboushanab T, Ravalia M. Genetic Theory: An Illustration of a Theoretical Mechanism of Acton of Cupping Therapy. Med Theory Hypothesis. 2023;6(1):06.
15. Al Bedah AMN, Khalil MKM, Posadzki P, Sohaibani I, Aboushanab TS, AlQaed M, et al. Evaluation of Wet Cupping Therapy: Systematic Review of Randomized Clinical Trials. J Altern Complement Med. 2016;22(10):768–777.
16. Cao H, Li X, Liu J. An Updated Review of the Efficacy of Cupping Therapy. PLoS One. 2012; 7(2):31793
17. Rozenfeld E, Kalichman L. New is the well-forgotten old: The use of dry cupping in musculoskeletal medicine. J Bodyw Mov Ther. 2016;20(1):173–181.
18. Armutlu K, Cetisli Korkmaz N, Keser I, Sumbuloglu V, Irem Akbiyik D, Guney Z, et al. The validity and reliability of the Fatigue Severity Scale in Turkish multiple sclerosis patients. Int J Rehabil Res. 2007 ;30(1):81–86.
19. Beck AT. An Inventory for Measuring Depression. Arch Gen Psychiatry. 1961;4(6):561.
20. Sarmer S, Ergin S, Yavuzer G. The validity and reliability of the Turkish version of the Fibromyalgia Impact Questionnaire. Rheumatol Int. 2000;20(1):9–12.
21. Salazar-Méndez J, Cancino-Valderrama V, Aguilar-Román G, Guzmán-Muñoz E. Efficacy of cupping therapy in individuals with fibromyalgia. A systematic review of randomized clinical trials. J Bodyw Mov Ther. 2023;36:256–262.
22. Kim JI, Kim TH, Lee MS, Kang JW, Kim KH, Choi JY, et al. Evaluation of wet-cupping therapy for persistent non-specific low back pain: a randomised, waiting-list controlled, open-label, parallel-group pilot trial. Trials. 2011;12(1):146: 1-7.
23. Qureshi AG, Jha SK, Iskander J, Avanthika C, Jhaveri S, Patel VH, et al. Diagnostic Challenges and Management of Fibromyalgia. Cureus. 2021;13(10):18692: 1-16.
24. Lauche R, Spitzer J, Schwahn B, Ostermann T, Bernardy K, Cramer H, et al. Efficacy of cupping therapy in patients with the fibromyalgia syndrome-a randomised placebo controlled trial. Sci Rep. 2016 ;6(1):37316: 1-10.
25. Bellato E, Marini E, Castoldi F, Barbasetti N, Mattei L, Bonasia DE, et al. Fibromyalgia Syndrome: Etiology, Pathogenesis, Diagnosis, and Treatment. Pain Res Treat. 2012:426130: 1-17.
26. Rooks DS, Gautam S, Romeling M, Cross ML, Stratigakis D, Evans B, et al. Group exercise, education, and combination self-management in women with fibromyalgia: a randomized trial. Arch Intern Med. 2007;167(20):2192-2200.
27. Peñacoba C, Ecija C, Gutiérrez L, Catalá P. Does Pain Acceptance Contribute to Improved Functionality through Walking in Women with Fibromyalgia? Looking at Depressive Comorbidity. Int J Environ Res Public Health. 2023;20(6):5005: 1-12.
28. Alzakri AA, Alsultan OA, Alhuqbani MN, Aldosari ZA, Alghadir OM, Aldosari OA, et al. Barriers and facilitators to physiotherapy among adult orthopedic patients at King Khalid Univ Hosp, Riyadh, Kingdom of Saudi Arabia. Saudi Med J. 2023;44(7):679–686.
29. Atayoglu AT, Tokaç M, Doğan S, Güner A, Kocayiğit E, Güner M. Traditional and complementary medicine perspectives of family physicians in Istanbul. Fam Pract Palliat Care. 2023;8(1):16-23.
30. Phutrakool P, Pongpirul K Acceptance and use of complementary and alternative medicine among medical specialists: a 15-year systematic review and data synthesis. Syst Rev. 2022; 11, 10: 1-14.