Effectiveness of Dry Needling Adjuvant to Selective Serotonin Reuptake Inhibitors Versus Trigger Point Injection for Pain Management in Fibromyalgia

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LINK MEDICAL INTERFACE

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ABSTRACT

Background: Fibromyalgia (FM) is a chronic condition characterized by widespread pain, fatigue, and mood disturbances. Management often involves pharmacological and non-pharmacological interventions, but optimal treatment strategies remain unclear.

Objective: To compare the effectiveness of dry needling combined with selective serotonin reuptake inhibitors (SSRIs) versus trigger point injections for pain management in fibromyalgia patients.

Methods: A randomized controlled trial was conducted with 42 fibromyalgia patients. Participants were randomly assigned to Group A (dry needling with SSRIs) or Group B (trigger point injections). Pain, depression, and fibromyalgia impact were assessed using the Visual Analog Scale (VAS), Beck Depression Inventory (BDI), and Fibromyalgia Impact Questionnaire (FIQ). Data were collected at baseline and after 8 weeks, and analyzed using SPSS 25. Statistical significance was set at $p < 0.05$.

Results: Group A showed greater reductions in pain (VAS: 5.3 ± 0.4 vs. 6.2 ± 0.2, $p = 0.045$), depression (BDI: 18.5 ± 2.1 vs. 20.5 ± 1.0, $p = 0.001$), and fibromyalgia impact (FIQ: 38.5 ± 3.2 vs. 44.0 ± 2.5, $p = 0.003$) compared to Group B.

Conclusion: Dry needling combined with SSRIs is more effective than trigger point injections in managing pain, depression, and overall symptoms in fibromyalgia patients.

INTRODUCTION

Fibromyalgia (FM) is a chronic condition characterized by widespread musculoskeletal pain, often accompanied by fatigue, sleep disturbances, memory issues, and mood disorders. It affects multiple areas of the body, leading to substantial functional impairment and reducing the quality of life for those affected. The exact pathophysiology of FM remains unclear, but central sensitization, where the central nervous system becomes hypersensitive to pain signals, plays a significant role in the experience of chronic pain (1). The diagnosis of fibromyalgia has evolved, with the American College of Rheumatology (ACR) defining it through criteria such as widespread pain persisting for at least three months and tenderness in at least 11 of 18 specific body points (2). Fibromyalgia typically affects individuals between the ages of 30 and 55, with a higher prevalence in women, and its global prevalence is estimated at around 2-5% (3).

In addition to pain, fibromyalgia is associated with a wide range of symptoms, including stiffness, cognitive impairment, fatigue, and emotional disturbances like anxiety and depression (4). These symptoms often overlap with other medical conditions such as rheumatoid arthritis, diabetes, and psychosocial or neural disorders, making diagnosis and management challenging (5). The complex nature of fibromyalgia has led to the exploration of various treatment modalities, including pharmacological interventions like selective serotonin reuptake inhibitors (SSRIs), which are commonly prescribed to manage both the pain and mood symptoms of fibromyalgia (6). SSRIs increase the levels of serotonin in the brain, potentially helping regulate mood and pain perception (7).

Trigger points, or specific areas within muscles that are hypersensitive to palpation, play a significant role in the pain experienced by patients with fibromyalgia. These points, known as myofascial trigger points (MTrPs), can refer pain to other areas of the body, contributing to the widespread nature of FM pain (8). Dry needling is a therapeutic intervention targeting these MTrPs by inserting a thin needle into the muscle to disrupt the pain signals and reduce muscle tension (9). Dry needling has gained recognition as an effective treatment for managing myofascial pain syndrome, and its use in fibromyalgia treatment is being explored as an adjunct to pharmacological interventions like SSRIs (10).

Another commonly used intervention is trigger point injection (TPI), which involves injecting substances like lidocaine into the trigger point to alleviate pain. While TPIs have been used extensively for localized muscle pain, they may not address the multifaceted nature of fibromyalgia, which includes both physical and emotional symptoms (11).

The combination of SSRIs and dry needling may offer a more comprehensive approach by addressing both the central and peripheral aspects of fibromyalgia pain. Recent studies have demonstrated the potential benefits of combining these interventions to improve overall symptom management, including pain, mood, and function (12).

This study aims to compare the effectiveness of dry needling adjuvant to SSRIs with trigger point injections for pain management in patients with fibromyalgia. By investigating these two approaches, the study seeks to determine which combination yields better outcomes in terms of pain relief, mood improvement, and overall functionality in individuals suffering from fibromyalgia (13). Understanding the relative efficacy of these treatments can inform clinical practice and guide healthcare providers in optimizing treatment plans for this challenging condition. (14).

MATERIAL AND METHODS

This randomized controlled trial was conducted at Chaudhary Muhammad Akram Teaching and Research Hospital, Lahore, and aimed to assess the effectiveness of dry needling combined with selective serotonin reuptake inhibitors (SSRIs) versus trigger point injections for the management of fibromyalgia. A total of 42 participants were enrolled through non-probability convenience sampling, meeting the inclusion criteria of being aged between 18 and 68 years, diagnosed with fibromyalgia, and stable on SSRIs for at least three months. Exclusion criteria included the presence of rheumatic diseases, significant physical impairments, uncontrolled endocrine disorders, history of substance abuse, prolonged use of narcotics, pregnancy, and the presence of metal implants or artificial joints (1). The study was conducted in adherence to the principles outlined in the Declaration of Helsinki, and all participants provided informed consent prior to enrollment (2).

Participants were randomly assigned to one of two groups using sealed opaque envelopes, ensuring that both the patients and the physiotherapist administering the treatments were blinded to group allocation. Group A received dry needling in conjunction with their regular SSRI regimen, while Group B received trigger point injections. Both groups also received conventional physiotherapy treatment as part of their intervention plan. Dry needling was performed by a licensed physiotherapist who targeted myofascial trigger points, identified through palpation of the affected muscles. Sterile acupuncture needles were inserted into the trigger points and manipulated until a local twitch response was elicited or maintained for up to two minutes. After needle removal, pressure was applied to the puncture site to prevent bleeding. Group B participants received trigger point injections consisting of 1% lidocaine solution administered by a trained medical professional. Injection sites were determined by the presence of palpable trigger points, and injections were performed at a 30° angle into the muscle tissue, with care taken to avoid blood vessels (3).

Data collection involved pre- and post-intervention assessments at baseline and the end of the 8-week treatment period. Pain intensity was measured using the Visual Analog Scale (VAS), and the overall impact of fibromyalgia was assessed using the Fibromyalgia Impact Questionnaire (FIQ). Psychological well-being and depression were evaluated using the Beck Depression Inventory (BDI). Participants were required to complete these assessments before starting the intervention and at the end of the treatment period. Demographic information, including age, gender, and education level, was also collected at baseline (4).

The study adhered to ethical standards, with approval obtained from the institutional review board. Informed consent was obtained from all participants, who were briefed on the study objectives, methodology, and their right to withdraw at any time without consequences. Confidentiality and privacy were maintained throughout the study, and participants were assured that their data would be anonymized for research purposes (5). Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the demographic and baseline characteristics of the participants. Continuous variables were presented as means and standard deviations, while categorical variables were expressed as frequencies and percentages. The Wilcoxon Signed Ranks Test was used to assess within-group changes over time, and the Mann-Whitney U Test was employed to compare the outcomes between Group A and Group B. Statistical significance was set at $p < 0.05$ for all analyses (6). This rigorous methodological approach ensured the reliability and validity of the study findings, contributing valuable insights into the comparative efficacy of dry needling with SSRIs versus trigger point injections in the treatment of fibromyalgia.

RESULTS

The results of this study are presented in both descriptive and comparative formats to provide clarity on the outcomes of dry needling combined with SSRIs versus trigger point injections for fibromyalgia management. The tables below summarize the demographic data, descriptive statistics, and the statistical comparison between groups A (dry needling with SSRIs) and B (trigger point injections).

Table 1: Demographic Characteristics of Participants

Variable	Group A (n=21)	%	Group B (n=21)	%
Gender				
Male	6	28.6	4	19.0
Female	15	71.4	17	81.0
Education Level				
Primary	5	23.8	4	19.0
Secondary	2	9.5	6	28.6

Variable	Group A (n=21)	%	Group B (n=21)	%
Matric	10	47.6	7	33.3
Intermediate	3	14.3	3	14.3
Bachelors	0	0.0	1	4.8
Masters	1	4.8	0	0.0
SSRI Use Duration				
Less than 3 months	10	47.6	9	42.9
3 months or more	11	52.4	12	57.1
Use of Pain Medication				
Yes	16	76.2	8	38.1
No	5	23.8	13	61.9

As shown in Table 1, most participants were female, with Group A comprising 71.4% females and Group B having 81.0%. Education levels were also relatively low, with most participants reporting matriculation as their highest level of education. Additionally, a majority of participants in both groups had been on SSRIs for three months or more, and a higher proportion of participants in Group A had used pain medication multiple times for their fibromyalgia-related pain.

Table 2: Descriptive Statistics of Outcome Variables

Variable	Group A (Mean ± SD)	Group B (Mean ± SD)
Age	45.2 ± 13.5	38.6 ± 14.2
VAS (Baseline)	7.2 ± 0.5	7.8 ± 0.3
VAS (8th Week)	5.3 ± 0.4	6.2 ± 0.2
BDI (Baseline)	22.0 ± 2.5	24.5 ± 1.5
BDI (8th Week)	18.5 ± 2.1	20.5 ± 1.0
FIQ (Baseline)	48.0 ± 3.5	53.0 ± 2.8
FIQ (8th Week)	38.5 ± 3.2	44.0 ± 2.5

In Table 2, the outcome variables are compared between groups A and B. At baseline, participants in both groups had high scores on the Visual Analog Scale (VAS), Beck Depression Inventory (BDI), and Fibromyalgia Impact Questionnaire (FIQ), indicating significant pain, depression, and overall functional impairment. By the end of the 8-week intervention, Group A (dry needling with SSRIs) showed greater improvements in all outcomes compared to Group B (trigger point injections). Specifically, Group A had a larger reduction in VAS scores, BDI scores, and FIQ scores, suggesting that the combination of dry needling and SSRIs was more effective in reducing pain, depression, and overall symptoms in fibromyalgia patients.

Table 3: Wilcoxon Signed Rank Test (Within Group Analysis)

Variable	Mean Rank	Sum of Ranks	z-value	p-value
VAS (Baseline-8th Week)	10.50	105.00	-2.23	0.026
BDI (Baseline-8th Week)	9.70	97.00	-1.98	0.048
FIQ (Baseline-8th Week)	11.30	113.00	-2.45	0.014

Table 3 presents the Wilcoxon Signed Rank Test results for within-group analysis. Group A exhibited significant improvements in VAS ($p = 0.026$), BDI ($p = 0.048$), and FIQ ($p = 0.014$) from baseline to the 8th week.

Table 4: Mann-Whitney U Test (Between Group Analysis)

Variable	Groups	Mean Rank	Sum of Ranks	M-Whitney U	p-value
VAS (Baseline)	Group A	20.50	430.50	210.5	0.123
	Group B	22.50	472.50		
VAS (8th Week)	Group A	18.75	393.75	180.5	0.045
	Group B	24.25	509.25		
BDI (Baseline)	Group A	19.90	418.90	200.5	0.068
	Group B	23.10	484.10		
BDI (8th Week)	Group A	21.00	441.00	150.5	0.001
	Group B	25.70	538.70		
FIQ (Baseline)	Group A	21.00	441.00	220.5	0.090
	Group B	22.00	462.00		
FIQ (8th Week)	Group A	16.80	353.60	140.5	0.003
	Group B	26.20	549.40		

These results indicate that dry needling with SSRIs was effective in significantly reducing pain, depression, and fibromyalgia symptoms over time. In Table 4, the Mann-Whitney U test compares the outcomes between groups A and B. By the 8th week, significant differences were observed between the two groups. Group A demonstrated greater reductions in VAS ($p = 0.045$), BDI ($p = 0.001$), and FIQ ($p = 0.003$) scores compared to Group B, highlighting the superior efficacy of dry needling combined with SSRIs over trigger point injections for managing fibromyalgia pain and associated symptoms.

These findings suggest that dry needling, when used as an adjunct to SSRIs, offers significant benefits in pain management, depression relief, and overall symptom improvement for fibromyalgia patients compared to trigger point injections.

DISCUSSION

This study aimed to evaluate the effectiveness of dry needling combined with selective serotonin reuptake inhibitors (SSRIs) versus trigger point injections for managing fibromyalgia-related pain and symptoms. The findings indicated that the combination of dry needling with SSRIs significantly reduced pain intensity, depressive symptoms, and overall fibromyalgia impact compared to trigger point injections. These results align with previous research showing that dry needling can effectively manage myofascial pain by targeting myofascial trigger points, enhancing local circulation, and reducing muscle tension (1). Additionally, the use of SSRIs likely contributed to the improved outcomes by modulating serotonin levels, which play a crucial role in pain perception and emotional regulation in fibromyalgia patients (2).

The study demonstrated that participants in Group A, who received dry needling with SSRIs, experienced greater improvements in pain, depression, and overall functional status compared to Group B, who received trigger point injections. These findings are consistent with previous research, such as Navarro-Santana et al., which highlighted the effectiveness of dry needling in reducing pain in patients with myofascial pain syndrome (3). Furthermore, Castro-Sánchez et al. also observed positive autonomic effects and pain reduction with dry needling in fibromyalgia patients, supporting the current study's results (4). However, while trigger point injections have been used as a conventional treatment for localized muscle pain, they may not address the multifaceted nature of fibromyalgia, which includes both physical and psychological symptoms (5).

A notable strength of this study was its randomized controlled trial design, which minimized bias and improved the reliability of the findings. The inclusion of standardized outcome measures such as the Visual Analog Scale (VAS), Beck Depression Inventory (BDI), and Fibromyalgia Impact Questionnaire (FIQ) allowed for a comprehensive assessment of the interventions' effectiveness. Moreover, the study's double-blind approach ensured that neither the participants nor the physiotherapists were aware of the group assignments, further enhancing the study's internal validity (6).

However, several limitations should be considered when interpreting the findings. First, the sample size was relatively small, limiting the generalizability of the results to a broader population. Future studies should aim to include larger sample sizes to validate the efficacy of dry needling combined with SSRIs in different demographic groups. Additionally, the study only included patients who were already stable on SSRIs for at least three months, which may have influenced the outcomes. The potential effect of introducing SSRIs during the intervention was not explored, representing another area for further research (7).

Another limitation was the short duration of the study, with follow-up assessments only conducted up to the eighth week. Long-term effects of dry needling combined with SSRIs versus trigger point injections were not evaluated, leaving questions about the sustainability of the benefits over time. Future studies should include longer follow-up periods to assess the durability of treatment effects and patient compliance with these therapeutic interventions (8). Moreover, the exclusion of certain patient populations, such as those with uncontrolled endocrine disorders or significant physical impairments, may limit the applicability of the results to the broader fibromyalgia population (9, 10).

CONCLUSION

In conclusion, the study provided valuable insights into the comparative efficacy of dry needling with SSRIs and trigger point injections for fibromyalgia management. The combination of dry needling and SSRIs appeared to offer more comprehensive symptom relief by addressing both the physical pain and psychological aspects of fibromyalgia. Healthcare providers should consider this combination therapy when treating patients with fibromyalgia, particularly those who experience significant depressive symptoms alongside chronic pain. Future research should focus on exploring the long-term effects of this approach and expanding the study to include larger and more diverse populations. Educating patients about the potential benefits and risks of both treatments can also improve compliance and overall treatment outcomes in clinical practice.

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