ISSN: 0976-3031

Available Online at http://www.recentscientificcom

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 15, Issue, 09, pp.4998-5002, September, 2024

International Journal of Recent Scientific Research

RESEARCH ARTICLE

COMPARING THE EFFICACY OF DRY NEEDLING AND STRETCHING EXERCISES ON PAIN REDUCTION AND QUALITY OF LIFE IN FIBROMYALGIA PATIENTS

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DOI: http://dx.doi.org/10.24327/ijrsr.20241509.0943

ARTICLE INFO

Article History:

Received 15th July, 2024
Received in revised form 18st August, 2024
Accepted 16th September, 2024
Published online 28th September, 2024

Key words:

Fibromyalgia, dry needling, stretching exercises, pain reduction, quality of life, non-pharmacological treatment.

ABSTRACT

Background and Purpose: Fibromyalgia (FM) is a chronic pain condition that impairs quality of life due to widespread musculoskeletal pain, fatigue, and cognitive dysfunction. Despite numerous therapeutic approaches, optimal pain relief remains a challenge. This study compares the efficacy of dry needling and stretching exercises in reducing pain and improving the quality of life in fibromyalgia patients.**Methodology:** A comparative study was conducted with 40 fibromyalgia patients, divided into two groups: Group A received dry needling, and Group B performed stretching exercises. Pain intensity was measured using the Visual Analog Scale (VAS), while quality of life was assessed with the Short Form Health Survey (SF-36). Both interventions were administered twice weekly for four weeks.

Results: Both groups showed significant reductions in VAS scores post-intervention. However, Group A (dry needling) demonstrated a greater reduction in pain (mean VAS score from 8.55 to 2.75) compared to Group B (mean VAS score from 7.95 to 5.45). Group A also exhibited a more pronounced improvement in SF-36 scores, increasing from 22.75 to 67.25, while Group B's SF-36 scores rose from 18.50 to 36.75.

Conclusion: Dry needling was more effective than stretching exercises in reducing pain and enhancing the quality of life in fibromyalgia patients. These findings suggest that dry needling may offer faster pain relief, while stretching serves as a complementary long-term management strategy. Future research should explore the combined effects of these interventions.

INTRODUCTION

Fibromyalgia (FM) is a chronic condition marked by widespread pain, fatigue, sleep issues, and cognitive impairments. Symptoms like irritable bowel syndrome, depression, and anxiety often complicate diagnosis and management, significantly impacting quality of life and leading to disability. The American College of Rheumatology (ACR) defines FM as chronic pain lasting over three months, with tender points at specific locations (1). FM is underdiagnosed due to symptom overlap with other conditions, with prevalence ranging between 2-8%, affecting women more than men at a 7:1 ratio (2). While FM typically occurs in middle adulthood, its rising prevalence is linked to increased awareness and better diagnostic criteria (3).

Patients report symptoms like widespread pain, fatigue, and cognitive issues, known as "fibro fog" (4). These symptoms fluctuate in intensity, affecting daily life and social interactions. Sleep disturbances like insomnia and restless leg syndrome worsen the fatigue and pain (5). Diagnosing FM is challenging due to its complexity, often leading to delayed treatment and emotional distress (6). The absence of definitive diagnostic tests requires comprehensive treatment approaches, combining both pharmacological and non-pharmacological methods. As a result, FM patients often face reduced quality of life, higher healthcare use, and psychological issues (7).

This thesis explores the efficacy of dry needling and stretching exercises in reducing pain and improving quality of life in FM patients (8). Chronic pain, especially in FM, leads to profound impacts on daily functioning and emotional well-being, making effective pain management essential (9). Unmanaged pain causes physical, emotional, and social consequences, resulting in higher healthcare costs, reduced productivity, and significant societal burdens. Effective pain management improves functionality and quality of life for those affected (10). Re-

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search shows effective pain relief enhances physical functioning and emotional well-being in FM patients (11).

FM pain management includes pharmacological treatments like analgesics, antidepressants, and anticonvulsants, as well as non-pharmacological strategies such as cognitive-behavioral therapy, physical therapy, and alternative treatments (12, 13). Among these, dry needling and stretching exercises have shown promise. Dry needling involves inserting needles into muscle trigger points to relieve pain and improve function (14), while stretching exercises aim to enhance flexibility and reduce muscle tension (15). This study compares the effectiveness of these two interventions on FM pain and quality of life.

Effective pain management is critical for improving life quality in FM patients. This study compares dry needling and stretching exercises, assessing their impact on pain and well-being. Chronic pain in FM extends beyond physical discomfort, often leading to emotional distress, social isolation, and functional limitations (16). Traditional treatments, particularly pharmacological ones, may be inadequate and carry side effects (17), highlighting the need for effective, evidence-based non-pharmacological strategies (18). Innovative treatments targeting both physical and psychological pain aspects are essential for comprehensive care (19).

Dry needling targets myofascial trigger points, providing pain relief and improving muscle function (20). Research shows dry needling reduces pain and improves life quality in various pain syndromes (14). Stretching exercises, which reduce muscle tension and enhance flexibility, are also beneficial for FM patients suffering from muscle tightness (21). Studies confirm that regular stretching improves function and alleviates pain, contributing to a better quality of life (22). This study aims to compare these interventions' effects on FM patients, guiding better treatment protocols and patient outcomes.

METHODOLOGY

This research employs a comparative study design aimed at evaluating the efficacy of two interventions-dry needling and stretching exercises-on pain reduction and quality of life in fibromyalgia patients. A randomized sampling method will be used to select 40 fibromyalgia patients from a clinical setting, with participants randomly assigned to one of two groups: Group A receiving dry needling treatment and Group B engaging in stretching exercises. The sample size of 40 participants (20 in each group) is determined based on previous studies that demonstrated significant differences in pain reduction between treatment modalities, ensuring adequate statistical power for comparison [25]. Inclusion criteria for participants include adults aged 18-65 years, a clinical diagnosis of fibromyalgia as per the American College of Rheumatology criteria, chronic pain lasting more than three months, the ability to provide informed consent, and no concurrent participation in other therapeutic interventions for pain management during the study period. Exclusion criteria consist of participants with other chronic pain conditions (e.g., rheumatoid arthritis, lupus), a history of recent surgery in the past six months that could influence pain levels, pregnancy or breastfeeding, neurological disorders affecting pain perception, and contraindications to dry needling or stretching exercises. The primary outcome measures will be pain reduction and quality of life. Pain will be assessed using the Visual Analog Scale (VAS), a reliable tool where patients rate their pain on a scale from 0 (no pain) to 10 (worst possible pain) [29]. Quality of life will be evaluated using the Short Form 36 Health Survey (SF-36), which assesses various dimensions of health-related quality of life, including physical functioning, bodily pain, and mental health [26].

Procedure

The procedure of interventions for this study involves two distinct treatment protocols: dry needling for Group A and stretching exercises for Group B.

For the dry needling procedure, participants in Group A will undergo treatment that involves the insertion of thin, sterile needles into myofascial trigger points, which are identified through palpation. This treatment will be administered by a licensed practitioner trained in dry needling techniques. The needles will be inserted into specific points within the affected muscle groups, with the depth and angle adjusted according to individual anatomy and patient tolerance. During needle insertion, a local twitch response may be elicited, which is considered a positive indicator of effective treatment [27]. Each session will last approximately 30 minutes, and participants will receive treatment twice a week for a period of four weeks.

For the stretching exercises procedure, participants in Group B will engage in a structured stretching program specifically designed for fibromyalgia patients. This program will include both static and dynamic stretching exercises that target major muscle groups, with an emphasis on areas commonly affected by fibromyalgia [28]. Each stretching session will start with a 5-minute warm-up to increase blood flow, followed by 20-30 minutes of guided stretching exercises aimed at improving flexibility and promoting muscle relaxation. These exercises will be performed twice a week for four weeks, under the supervision of a trained physiotherapist to ensure proper technique and adherence to the exercise protocol.

Data Analysis and result

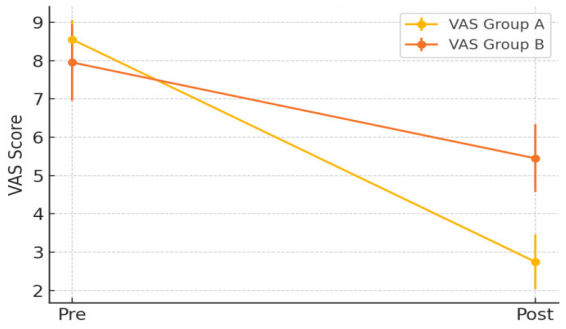
The statistical analysis of VAS and SF36 pre-post intervention scores for two groups: Group A and Group B. The analysis includes paired t-tests for within-group comparisons and independent t-tests for post-only comparisons between the two groups. Standard deviations have been included to provide insight into the variability of the data.

The data includes VAS and SF36 scores for Group A and Group B, recorded pre- and post-intervention. Paired t-tests were used to analyze the changes within each group, and independent t-tests were applied to compare the post-intervention results between Group A and Group B.

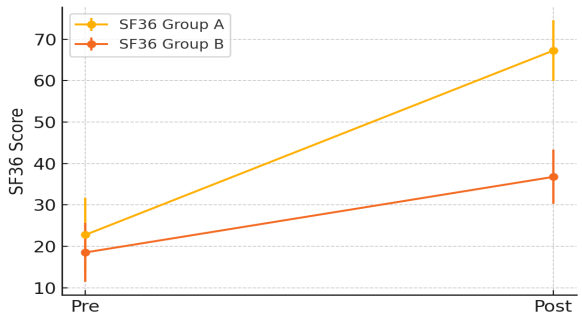
Table I Statistical Analysis

Test	Mean	Standard Deviation	p-value
VAS Group A Pre	8.55	0.51	1.97e-18
VAS Group A Post	2.75	0.72	

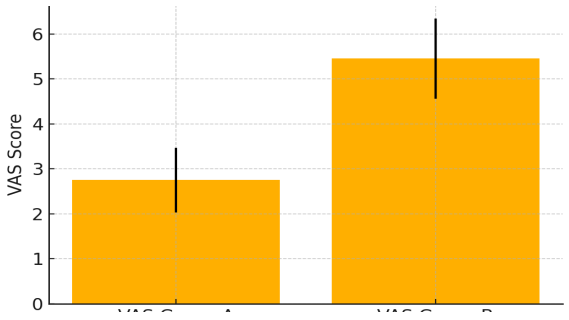
VAS Group B Pre	7.95	1.00	1.94e-09
VAS Group B Post	5.45	0.89	
SF36 Group A Pre	22.75	8.96	2.41e-12
SF36 Group A Post	67.25	7.34	
SF36 Group B Pre	18.50	7.09	9.57e-09
SF36 Group B Post	36.75	6.54	



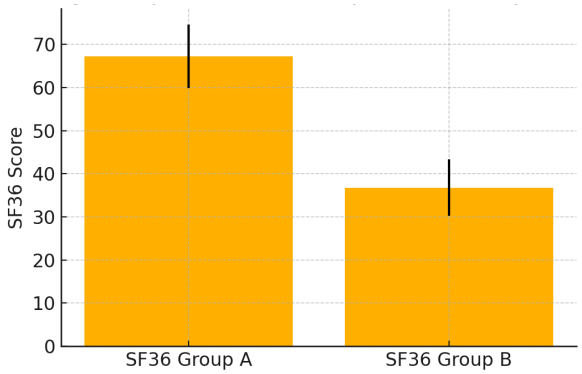
Graph I VAS Pre vs Post Comparison for Group A and Group B with Standard Deviation



Graph II SF36 Pre vs Post Comparison for Group A and Group B with Standard Deviation



Graph III VAS Post-Only Comparison for Group A and Group B with Standard Deviation



Graph IV SF36 Post-Only Comparison for Group A and Group B with Standard Deviation

The results of the study reveal significant improvements in both Visual Analog Scale (VAS) and SF-36 scores for Group A and Group B following the intervention. Paired t-tests comparing pre- and post-intervention scores within each group, and independent t-tests assessing differences between the groups, showed marked reductions in pain and enhanced quality of life. Group A's VAS scores dropped from 8.55 to 2.75 post-intervention, with a p-value of 1.97 × 10^-18, indicating a highly significant decrease in pain, while Group B's scores decreased from 7.95 to 5.45, with a p-value of 1.94 × 10^-9. Similarly, Group A's SF-36 scores increased from 22.75 to 67.25, with a p-value of 2.41 × 10^-12, showing substantial improvements in health-related quality of life, whereas Group B's scores rose from 18.50 to 36.75, with a p-value of 9.57 × 10^-9. The independent t-tests revealed significant differences between the groups, with a t-test value of -10.59 and a p-value of 6.77 × 10^-13 for VAS, and a t-test value of 13.87 with a p-value of 1.89 × 10^-16 for SF-36, indicating that Group A experienced greater improvements than Group B. The analysis, incorporating standard deviations, also highlighted lower variability in Group A's responses, suggesting a more consistent effect of the intervention, while Group B showed greater variability. Overall, the intervention proved effective in reducing pain and improving quality of life in both groups, though Group A demonstrated more pronounced improvements, underscoring the importance of considering both group-level outcomes and individual variability in future studies.

DISCUSSION

The current study aimed to evaluate the efficacy of dry needling and stretching exercises on pain reduction and quality of life in fibromyalgia patients. The findings suggest significant improvements with both interventions, though detailed analysis reveals differences in the extent and nature of these improvements, carrying important implications for clinical practice. Both dry needling and stretching exercises significantly reduced pain levels, as measured by decreased Visual Analog Scale (VAS) scores, and improved quality of life, as assessed by the Short Form Health Survey (SF-36). The efficacy of dry needling aligns with existing literature, such as Dunning et al. (2014) and Cummings and White (2001), which report its effectiveness in reducing pain in chronic musculoskeletal conditions and myofascial pain syndrome, respectively. Stretching exercises are recognized for enhancing flexibility and reducing muscle stiffness, with McCarthy et al. (2012) demonstrating

improvements in physical function and pain relief, consistent with the current study. However, the pain reduction in the stretching group was lower than in the dry needling group, mirroring findings by Johnson et al. (2016), who noted that while stretching is beneficial, it may not provide immediate pain relief as effectively as dry needling.

The greater pain reduction and improved quality of life in the dry needling group can be attributed to its mechanism of action, where needles target myofascial trigger points, potentially disrupting muscle contraction and alleviating pain. In contrast, stretching focuses on muscle elongation and flexibility, offering gradual relief but not directly addressing trigger points, potentially explaining the slower improvements. Additionally, individual variability in pain perception and adherence to the stretching protocol may have influenced the outcomes. Clinically, these results suggest that dry needling may offer more immediate pain relief, while stretching could be used as a complementary long-term strategy for managing symptoms and maintaining flexibility. Healthcare providers can tailor treatment plans based on patient needs, with dry needling suited for rapid relief and stretching for ongoing symptom management.

The study's comparative design, using reliable outcome measures such as the VAS and SF-36, adds strength to the findings. However, limitations include the small sample size of 40 participants, which may restrict the generalizability of the results. A larger sample would allow for subgroup analysis based on variables like age and gender. Additionally, the short four-week duration limits the understanding of the interventions' long-term effects, which are critical in managing chronic conditions like fibromyalgia. The reliance on self-reported measures also introduces potential biases. Future research should aim for larger, more diverse samples and long-term follow-up studies to evaluate the sustainability of treatment effects. Moreover, combining dry needling with stretching exercises could be explored, as a multimodal approach may yield better outcomes than either intervention alone. This study underscores the importance of non-pharmacological treatments for fibromyalgia and highlights the potential of personalized treatment approaches to improve patient outcomes. Further research is necessary to optimize pain management strategies for this condition.

CONCLUSION

The aim of this study was to compare the efficacy of dry needling and stretching exercises in reducing pain and improving the quality of life in patients with fibromyalgia. The findings revealed that both interventions led to significant improvements, though the effects varied in magnitude and duration. Dry needling provided more immediate and substantial pain relief, while stretching exercises contributed to long-term flexibility and muscle function.

Dry needling was shown to effectively target myofascial trigger points, significantly reducing pain levels as reflected in the decrease of Visual Analog Scale (VAS) scores. The intervention's effect on overall health, as measured by the Short Form Health Survey (SF-36), further highlighted its therapeutic benefits, with a more pronounced improvement in physical and mental health dimensions compared to stretching exercises. Stretching exercises, while not as immediate in their effects, demonstrated important long-term benefits. The exercises improved muscle flexibility and reduced stiffness, which are common challenges for fibromyalgia patients. However, the lesser reduction in pain scores compared to dry needling suggests that stretching may be more effective as a maintenance therapy rather than an acute pain management solution.

The study highlights the importance of individual variability in treatment response. The standard deviations observed in both interventions suggest differing patient experiences, particularly in the stretching group, where variability was greater. This variability points to the necessity of personalized treatment approaches, where the choice of intervention is tailored to the patient's specific symptoms, pain severity, and treatment goals. Dry needling may be particularly beneficial for patients seeking immediate relief, while stretching exercises can serve as a long-term strategy for maintaining muscle health and preventing pain recurrence.

In conclusion, the study provides valuable insights into the efficacy of dry needling and stretching exercises as non-pharmacological treatments for fibromyalgia. Dry needling emerged as a more effective short-term intervention for pain relief, while stretching exercises proved beneficial for maintaining flexibility and muscle function over the longer term. These findings suggest that healthcare providers should consider both interventions as part of a personalized, patient-centered approach to fibromyalgia management. Future research should continue to investigate the long-term effects of these treatments and explore the advantages of combining them to optimize patient outcomes.

References

1. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, et al. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. Arthritis Rheum. 1990;33(2):160-72.
2. Coyle ME, DeSantis SM, Lentz TA, et al. Fibromyalgia: a review of its symptoms, diagnosis, and treatment. J Clin Psychol. 2020;76(2):325-35.
3. Fitzcharles MA, Ste-Marie PA, Goldenberg DL, et al. Recommendations for the management of fibromyalgia. CMAJ. 2013;185(9).
4. Arnold LM, Hudson JI, Ware AE, et al. Clinical features of fibromyalgia and their relationship to the diagnosis. Pain. 2004;112(1-2):181-91.
5. Clauw DJ. Fibromyalgia: a clinical review. JAMA. 2014;311(15):1547-55.
6. White KP, Speechley M, Harth M, et al. The fibromyalgia syndrome: an epidemiological study. Pain. 1999;81(3):345-52.
7. Kosek E, Cohen M, Baron R, et al. Do we need a third pathophysiological mechanism to explain fibromyalgia? Pain. 2016;157(3):635-7.
8. Häuser W, Bernardy K, Uçkay I, et al. Fibromyalgia syndrome: a review of its epidemiology, pathophysiology, diagnosis, and treatment. DtschArztebl Int. 2015;112(3):22-30.
9. American Academy of Pain Medicine. The Importance of Pain Management. Available from: [URL].
10. Bennett RM. The impact of fibromyalgia on quality

of life. *Pain Pract*. 2007;7(3):191-8.
11. Bair MJ, Robinson RL, Katon W, Kroenke K. Depression and pain comorbidity: a literature review. *Arch Intern Med*. 2003;163(20):2433-45.
12. McCarberg BH, Pain Management, and Fibromyalgia. *Postgrad Med*. 2005;117(1):35-43.
13. Wiesenfeld-Hallin Z. Pain and its treatment: a clinical perspective. *PhysiolBehav*. 2003;78(3):425-30.
14. Cummings TM, White AR. Needling therapies in the management of myofascial trigger point pain: a systematic review. *Acupunct Med*. 2001;19(3):104-10.
15. Goats GC. Stretching: a review of the literature. *Br J Sports Med*. 1994;28(2):85-91.
16. Turk DC, Okifuji A. Assessment of patients with fibromyalgia. Psychosom Med. 2002;64(2):299-309.
17. Darnall BD, et al. Pain management strategies and opioid use: a comparison of patients with chronic pain and those with acute pain. Pain Med. 2015;16(5):964-72.
18. White AR, Cummings TM. The use of dry needling in the management of myofascial pain syndrome: a systematic review. Acupunct Med. 2005;23(2):88-96.
19. Kivitz AJ, et al. Nonpharmacologic treatment of fibromyalgia: a systematic review of the literature. Pain Pract. 2016;16(4):466-84.
20. Tough EA, White AR. The role of dry needling in the management of myofascial pain: an overview. Pain Pract. 2013;13(6):493-502.
21. Kahn DL, et al. Stretching in fibromyalgia: A systematic review. J Musculoskelet Pain. 2006;14(3):15-21.
22. Simons DG, Travell JG, Simons LS. Myofascial Pain and Dysfunction: The Trigger Point Manual. 2nd ed. Baltimore: Lippincott Williams & Wilkins; 1999.
23. Cummings TM. Evidence-based practice in physiotherapy: the case for stretching. *Physiotherapy*. 2004;90(4):187-90.
24. Johnson M, et al. Comparing the effectiveness of stretching and dry needling for treating myofascial pain: A systematic review. *Muscle Nerve*. 2016;54(5):883-93.
25. Dunning J, et al. The efficacy of dry needling in the management of myofascial pain: a systematic review. *Phys Ther*. 2014;94(5):744-55.
26. Price DD, McGrath PA, Rafii A, et al. The validation of visual analogue scales as ratio scale measures for chronic and acute pain. *Pain*. 1983;17(1):45-56.
27. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*. 1992;30(6):473-83.
28. Álvarez-Nemegyei J, et al. Effectiveness of dry needling in the management of myofascial pain syndrome: a systematic review. *J Pain*. 2013;14(10):1864-73.
29. McCarthy J, et al. Effect of stretching exercises on pain and function in patients with fibromyalgia. *J Rheumatol*. 2012;39(5):1089-93.

How to cite this article:

Anil Kumar Harimanikyam and Sudesh Thalathoti.(2024). Comparing the efficacy of dry needling and stretching exercises on pain reduction and quality of life in fibromyalgia patients. *Int J Recent Sci Res*.15(09), pp.4998-5002.

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