



EFFECT OF VARIOUS PHYSIOTHERAPEUTIC TECHNIQUES OF MIGRAINE TYPE OF HEADACHE –A NARRATIVE REVIEW

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DOI: <http://dx.doi.org/10.24327/ijrsr.20251602.015>

ARTICLE INFO

Article History:

Received 12th January 2025

Received in revised form 22th January 2025

Accepted 18th February 2025

Published online 28th February 2025

Key words:

Measles; Epidemiological profile; Health district; San.

ABSTRACT

Background: Migraine is a common disorder characterized by recurrent, moderate-to-severe headaches, often accompanied by nausea, photophobia, and phonophobia. Despite its prevalence, non-pharmacological treatments, such as physiotherapy, are not widely recognized or used. This study aims to review the efficacy of various physiotherapeutic techniques in managing migraine headaches. **Objective:** The primary objective is to evaluate the effectiveness of different physiotherapy interventions in reducing migraine symptoms and improving the quality of life of migraine patients. **Design:** This narrative review includes studies that focus on physiotherapy interventions for migraine, with an emphasis on Randomized Controlled Trials (RCTs) that measure pain intensity, frequency, and quality of life outcomes. **Method:** A systematic search was conducted across databases including Pub Med, EBSCO, and others. The inclusion criteria focused on RCTs using physiotherapy techniques such as Transcutaneous Electrical Nerve Stimulation (TENS), myofascial release, stretching, mobilization, and dry needling. A total of 21 studies were selected based on their relevance and quality. **Result :** The studies reviewed demonstrated that physiotherapy interventions, including manual therapy, mobilization, and dry needling, significantly reduced migraine pain intensity, frequency, and improved patients' overall quality of life. Techniques like stretching and myofascial release showed a moderate to high impact on symptom relief. **Conclusion:** Physiotherapeutic techniques provide a valuable, non-pharmacological option for managing migraine headaches. Manual therapy, manipulation, and mobilization are especially effective in reducing migraine intensity and duration, leading to improved patient outcomes and quality of life.

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INTRODUCTION

Headache is an extremely common symptom, and collectively, headache disorders are among the most common nervous system disorders, with a prevalence of 48.9% in the general population. Headaches affect people of all ages, races, and socioeconomic statuses and are more common in women. Some headaches are extremely debilitating and have a significant impact on an individual's quality of life, imposing huge costs on healthcare and indirectly on the economy in general.

Only a small proportion of headache disorders require specialist input. The vast majority can be effectively treated by a primary care physician or generalist with a correct clinical diagnosis that requires no special investigation. Primary headache disorders-migraine, tension headache, and cluster headache-constitute nearly 98% of all headaches. However, secondary headaches are important to recognize as they are serious and may be life-threatening.

Migraine is an extremely disabling, common neurological disorder characterized by a complex neurobiology, involving a series of central and peripheral nervous system areas and networks.

The treatment of headaches depends on the underlying cause and type of headache. Treatments include over-the-counter pain relievers, prescription medications, caffeine, lifestyle modification, relaxation techniques, physical therapy,

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acupuncture, and massage.

The awareness and adoption of physiotherapy as a treatment for migraine vary significantly among patients. This study aims to explore the awareness and experience of migraine patients regarding physiotherapy as a complementary treatment, aimed at improving the quality of life of migraine patients.

Non-pharmacological management such as massage, physiotherapy, and chiropractic may be an alternative treatment option. In Western cultures, they use classic massage, trigger points, myofascial release, and other passive muscle stretching techniques, which are applied to abnormal muscle tissue. Modern physiotherapy focuses on rehabilitation and exercise, while manual treatment emphasizes postural corrections, soft tissue work, stretching, active and passive mobilization, and manipulation techniques.

Significance of the Study

Despite being a highly prevalent illness, migraines still receive insufficient non-pharmacological therapy. Additionally, the general public currently lacks knowledge about the many physical therapy management options for migraines. The article also states that physical therapists should introduce such interventions to migraine patients. Thus, the significance of this study is to review the efficacy of various physical therapy interventions in the treatment of migraines. For this study, recent evidence was taken into account.

METHODOLOGY

Research methodology is the systematic plan for conducting research. The Preferred Reporting Items for Systematic-Review and Meta-Analysis protocols guidelines were followed when writing the study protocol.

- Study design: Narrative review
- Inclusion criteria:

Articles were included if they

- Used exercise either alone or in conjunction with other modalities to treat migraine.
- Used randomized controlled trials (RCT).
- Analyzed the impact of interventions on migraine as a primary outcome.

Each article was reviewed by six reviewers for inclusion agreement. Titles and abstracts for all records were reviewed by a single reviewer to ensure inclusion consistency across articles. A full-text review was completed for articles that passed the title and abstract inclusion criteria. The title and abstract inclusion approach was revisited for full-text review inclusion.

Articles excluded

Exclusion criteria

Duplicates, interventional study, editorials, commentaries, discussion papers, non-English language articles, not RCT, systematic review, cross-sectional study, and narrative review.

Population	Migraine patient
Age group	13to47years

Intervention	TENS, US, Stretching, mobilization, MFR, Dry needling,
Control group	All suitable control group, including subjects representing both the intervention and Control group.
Outcome	VAS,NPRS,CROM,ROM,MIDAS,PGIC, NDI
Study design	Randomized controlled trials
Language	English

Eligibility Criteria

For the screening and eligibility assessment of identified studies in databases and reference lists, various criteria were developed in accordance with the population, intervention, control group, outcome and study design (PICOS) scheme. Additional criteria specified by the authors were also considered like the language, publication status and date. Various physiotherapy interventions and migraine patients were included.

Information Sources and Search Strategies

The literature search was performed in December 2022. A review of literature was conducted on the Cochrane, EBSCO, PubMed, Scopus and Web of Science electronic databases. Furthermore, relevant review articles were checked to identify further sources. Manual searching of the reference list of included studies and citation tracking were conducted to ensure that all relevant studies were found. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) were used.

The keywords for the search strategies were:

- Migraine
- Physiotherapy
- Interventions
- Ultrasound
- Headaches
- Painful areas
- Effective treatment
- Stretching
- Myofascial release
- Kinesiotaping
- Mobilization

Study Selection

The studies were selected based on the inclusion and exclusion criteria. Once the duplicates were removed (n=49), the titles and abstracts were examined. Following this, the full text of all the papers was read and only studies meeting the inclusion criteria were selected. The database search yielded 59 titles; of these, 39 studies were excluded as they were irrelevant to this topic. In the end, 31 were considered suitable to be included in this narrative review. Ten studies were excluded because they did not fulfill eligibility criteria. Therefore, 21 studies were considered to be included in this narrative review. All RCTs were taken.

DISCUSSION

As the aim of this study was to determine the effectiveness of various physiotherapy techniques in patients suffering from migraine type of headache. The main pathology behind

migraine is activation of the trigeminovascular pain pathways. This is thought to mediate part of the qualities of migraine pain by release of neuropeptides, such as calcitonin gene-related peptide (CGRP) and pituitary adenylate cyclase activating polypeptide (PACAP), at the level of the Dura mater. The last few years have represented an exciting and promising time in

- Mobilization
- Strength/resistance training
- Aerobic exercise (land or water)
- Aquatic exercise
- Meditative movement therapy
- Dry Needling

Table 1 Characteristics of the included articles

Author	Study Type	Type of Intervention	Outcome Measures	Findings
Elena Muñoz-Gómez Et Al. (2021)	RCT	Manual therapy protocol (articulatory techniques, manipulation, mobilization)	MIDAS questionnaire, PGIC scale	Manual therapy protocol based on articulatory techniques reduces pain intensity, frequency of migraine, migraine disability, and medication intake, while improving QoL in migraine patients.
Clovis Varangot Reille Et al. (2022)	RCT	Strength/resistance training, aerobic exercise (land or water), aquatic exercise, meditative movement therapy (walking, jogging, Pilates, tai chi, qigong, motor control exercises, ROM & flexibility exercises, aquatic aerobics, aquatic resistance training, land aerobic exercise)	Visual analog scale, Numerical ratings scale	Aerobic training has a mild to moderate clinical effect on pain intensity, frequency of headache episodes, and medication use, but no effect on anxiety.
Tahere Rezaeian Et al. (2020)	RCT	Dry Needling (Upper trapezius, sternocleidomastoid, and suboccipital muscles)	CROM	Dry needling technique improved migraine symptoms and may be prescribed for migraine treatment.
Jim Odell Et al. (2019)	RCT	Mobilization, Manipulation	Migraine-Specific Quality of Life Questionnaire, Headache Impact Test	Mobilization and manipulation effectively reduce migraine intensity, severity, duration, and frequency of attacks.
DA Marcus Et Al. (2008)	RCT	Physical therapy with relaxation and thermal biofeedback	MPI	Physical therapy group experienced a significant reduction in mean headache severity.
Tahere Rezaeian Et al. (2021)	RCT	Myofascial release and stretching techniques (Sternocleidomastoid, upper trapezius, suboccipital muscles)	VAS, CROM, NDI	Myofascial release and stretching were effective in improving pain and frequency of headaches in migraine patients.
Sheleigh P. Lawler Et Al. (2006)	RCT	Massage Therapy (Neuromuscular and trigger-point framework for back, shoulders, neck, head: Myofascial release, deep ischemic compression, cross-fiber work on various muscle groups)	Perceived Stress Scale	Massage therapy participants exhibited greater improvements in migraine frequency and sleep quality during the intervention period and follow-up weeks.

the field of migraine, thanks to the introduction of several new medications in clinical practice, and with other therapeutic interventions.

24 studies related to physiotherapy treatment in migraine patients, the study design ranged only randomized control trials. Among 24, 9 were rated as excellent quality while 5 articles were rated as good quality and 10 articles were marked as poor quality. All interventions included:

- Relaxation
- Thermal biofeedback
- Myofascial release technique
- Stretching technique
- Massage Therapy
- Deep ischemic Compression
- Wet-cupping
- Cervical Stabilization Training
- Orofacial treatment

- Articulatory techniques
- Manipulation

The available evidence showed that various physiotherapy

interventions during pain in migraine reduced the score of MIDAS (Migraine Disability Assessment), VAS (visual analog scale) and QOL (quality of life scale) as well as showed improvement in other scales.

Two studies, one conducted by Elena Muñoz-Gómez Et Al (2021) and another conducted by Jim Odell Et al. (2019); both the studies have used manual therapy including manipulation and mobilization as a primary intervention to treat migraine pain and proven effective in reducing intensity, severity and duration of pain.

One article published by Clovis Varangot Reille Et al. (July, 2022) has shown that various aerobic activities including strength/resistance training, aerobic exercise (land or water), aquatic exercise, and meditative movement therapy have mild to moderate effects on pain intensity and frequency of headache but there is no effect on anxiety.

One study conducted under the control of Tahere Rezaeian Et al. (2020) concluded that DN of different muscles such as Upper Trapezius (UT), Sternocleidomastoid (SCM), and Suboccipital muscles has caused an improvement in symptoms of migraine patients. Thus, this technique may be prescribed for the treatment of migraine patients.

A research paper about relaxation and thermal feedback on migraine type headache published by D. A. Marcus Et al. (2008) has also concluded with generous effects on intensity of headache.

Massage therapy is one of the most effective treatments for many pain and swelling-related conditions. Hence, it has crucial effects on various symptoms of migraine, for example: frequency of headache, quality of sleep and intensity of pain. Its greater effects are elevated by giving massage therapy in various parts of the body such as the back, shoulders, neck, and head. Techniques are also important, which include Myofascial release, deep ischemic compression and cross-fiber work. This information was taken from an article published by Sheleigh P. Lawler Et al. (2006).

Débora Bevilaqua-Grossi Et al. (June, 2016) studied that manual therapy and stretching maneuvers lasting for a longer duration can promote additional effects on migraine treatment.

Another study was conducted by H. Altamis Kacar Et al. (Nov, 2023) about the effects of a specific intervention called “Cervical Stabilization Training (CST)” on migraine that concluded that CST reduces headaches and neck pain by improving the cervical musculoskeletal system in patients with headaches.

After studying each and every article, it is sure that various physical therapy interventions are moderately or fully effective in various symptoms of migraine type of headache including pain and discomfort. These interventions are not limited to medical symptoms rather, they can improve the patient’s quality of life.

Conclusion

All in all, this study has highlighted the potential of physiotherapy. Based on included articles, this study concluded that a manual therapy protocol based on articulatory techniques, mobilization and manipulation techniques effectively reduces

intensity, severity and duration of migraine and also improves quality of life in migraine patients.

Funding

As such, no funding and vouchsafes were provided for this research from any public, private or non-profit sector.

Conflict of Interest

There are no potential conflicts of interest.

Statement of Ethical Approval

There is no need for ethical approval for this narrative review since no patient data were collected.

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How to cite this article:

Prisha Bhagat et al .(2025). Effect of various physiotherapeutic techniques of migraine type of headache –a narrative review. *Int J Recent Sci Res*.16(02), pp.78-82.
