Assessing the Impact of Massage Therapy as a Physical Therapy Intervention for Migraine Relief: A Randomized Controlled Trial

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Abstract:

Migraine, a prevalent neurological disorder characterized by debilitating headaches and diverse somatosensory and transient motor disturbances, occurs in episodic or chronic forms, with or without aura. Investigations into the potential mechanisms underlying migraine have been carried out, with consensus pointing to the involvement of trigeminovascular system activation, often triggered by circulating pro-inflammatory substances and oxidative conditions. As a multidimensional and intricate disorder, migraine is influenced by a combination of genetic and environmental factors

Methodology:

Fifty participants, aged between 18 and 60 years, diagnosed with migraine based on the International Classification of Headache Disorders criteria, were recruited from Physical therapy department of tertiary care hospital.

Results:

At baseline, participants in both the massage and control groups reported similar levels of pain intensity, with mean scores of 7.2 ± 1.5 and 7.1 ± 1.3, respectively. Following the intervention, the massage group exhibited a substantial reduction in pain intensity, with a mean score dropping to 3.5 ± 1.0. In contrast, the control group showed a more modest reduction in pain from baseline to post-intervention (6.8 ± 1.2), with a marginal increase during the follow-up assessment (6.9 ± 1.3)

Conclusion:

In conclusion, the presented research provides valuable insights into the multifaceted aspects of migraine management, emphasizing the need for comprehensive and personalized approaches. The initial section of the study highlighted the intricate nature of migraines, influenced by genetic and environmental factors, with currently available treatments offering only partial relief.

Keywords: Migraine, Massage and Pain

Introduction

Migraine, a prevalent neurological disorder characterized by debilitating headaches and diverse somatosensory and transient motor disturbances [1], occurs in episodic or chronic forms, with or without aura [2]. Investigations into the potential mechanisms underlying migraine have been carried out [3], with consensus pointing to the involvement of trigeminovascular system activation, often triggered by circulating pro-inflammatory substances and oxidative conditions [4]. As a multidimensional and intricate disorder [5], migraine is influenced by a combination of genetic and environmental factors [4, 6]. Despite ongoing efforts to identify effective and safe preventive and treatment strategies [7], currently available medications [8] and non-drug approaches [9] provide only partial relief, presenting a persistent challenge in migraine management.

Researchers have delved into lifestyle modifications as potential strategies for preventing and treating headaches [10], recognizing the significance of dietary triggers [11]. This has led to a growing emphasis on dietary interventions for headache management, including migraines [12,13]. Precision nutrition, an evolving field dedicated to personalized nutritional solutions for various disorders like metabolic syndrome [14, 15], has also acknowledged migraine as a condition potentially linked to metabolism [16] or considered a metabolic endocrine disorder [17]. Recognizing the role of dietary compounds in headache pathogenesis, an elimination diet strategy has been introduced [12, 18, and 19].

In addressing the comprehensive approach to migraine management, the importance of physical therapy intervention emerges as a crucial aspect. Integrating physical therapy into migraine care not only offers potential relief from symptoms but also contributes to the overall well-being of individuals facing this challenging neurological disorder [20]. Physical therapy may provide additional avenues for personalized and effective strategies in managing and alleviating migraine symptoms. For migraine management, the potential role of massage therapy emerges as a promising avenue [21]. Massage has been increasingly recognized for its potential in alleviating migraine symptoms and improving overall well-being. Despite anecdotal evidence supporting the positive impact of massage on migraine, there is a pressing need for rigorous scientific investigation. A well-designed study exploring the effectiveness of massage therapy in managing migraine can contribute valuable insights, establishing evidence-based practices and enhancing our understanding of complementary approaches to migraine care. Such research is essential to provide a solid foundation for integrating massage therapy into the broader spectrum

of migraine management strategies, offering individuals more personalized and effective options for relief.

Methodology

Study Design:

A randomized controlled trial (RCT) was conducted to assess the impact of massage therapy as a physical therapy intervention for migraine relief. The study adhered to ethical guidelines and received approval from the Institutional Review Board.

Participants:

Fifty participants, aged between 18 and 60 years, diagnosed with migraine based on the International Classification of Headache Disorders criteria, were recruited from Physical therapy department of tertiary care hospital. Informed consent was obtained from all participants before their inclusion in the study.

Randomization:

Participants were randomly assigned to either the intervention group or the control group using computer-generated random numbers. Allocation concealment was maintained throughout the study.

Intervention:

The intervention group received a standardized massage therapy protocol tailored to migraine relief, administered by licensed physical therapists. The sessions, lasting for four weeks, were conducted 2 time per week each session last for 20 minutes. The control group received standard care without massage therapy.

Outcome Measures:

Pain Assessment: Pain intensity was evaluated using a visual analog scale (VAS) ranging from 0 to 10, with higher scores indicating greater pain severity. Participants recorded their pain levels at baseline, post-intervention, and during follow-up assessments.

Quality of Life (QoL) Assessment:

The Migraine-Specific Quality of Life Questionnaire (MSQOL) was utilized to assess the impact of migraine on participants' daily lives. The questionnaire was administered at baseline, post-intervention, and during follow-up evaluations.

Data Collection:

Baseline demographic information, medical history, and baseline pain and QoL scores were collected. Follow-up assessments were conducted after the intervention period of four week.

Statistical Analysis:

Descriptive statistics were employed to summarize baseline characteristics. Changes in pain intensity and QoL scores within and between groups were analyzed using appropriate statistical tests (e.g., paired t-tests, independent t-tests). A p-value of <0.05 was considered statistically significant.

Results

Demographic Characteristics:

The participants in the study were evenly distributed into the massage group (n=25) and the control group (n=25). The mean age of the participants in the massage group was 35.5±2.5 years, while the control group had a comparable mean age of 38.2 ± 2.2 years. Gender distribution was balanced, with 25 males and 25 females in both groups. The average duration of migraine in the massage group was 6.2 ± 1.2 months, mirroring the control group's mean duration of 6.1 ± 1.2 months. (Table 1)

Table 1: Demographic Characteristics of Participants

Characteristic	Massage Group (n=25)	Control Group (n=25)
Age (years)	35.5±2.5	38.2 ± 2.2
Gender (Male/Female)	12 Male and 13 Female	12 male and 13 female
Migraine Duration (months)		

Pain Assessment (Visual Analog Scale - VAS):

At baseline, participants in both the massage and control groups reported similar levels of pain intensity, with mean scores of 7.2 ± 1.5 and 7.1 ± 1.3, respectively. Following the intervention, the massage group exhibited a substantial reduction in pain intensity, with a mean score dropping to 3.5 ± 1.0. In contrast, the control group showed a more modest reduction in pain from baseline to post-intervention (6.8 ± 1.2), with a marginal increase during the follow-up assessment (6.9 ± 1.3). Table 2

Table 2: Pain levels in experimental and control group

Group	Baseline Pain (Mean ± SD)	Post-Intervention Pain (Mean ± SD)	Follow-Up Pain (Mean ± SD)	Level of significance
Massage	7.2 ± 1.5	3.5 ± 1.0	3.2 ± 1.2	P<0.05

Table 2: Pain levels in experimental and control group				
Group	**Baseline Pain (Mean ± SD)**	**Post-Intervention Pain (Mean ± SD)**	**Follow-Up Pain (Mean ± SD)**	**Level of significance**
Control	7.1 ± 1.3	6.8 ± 1.2	6.9 ± 1.3	

The baseline assessment of quality of life (QoL) in the massage group revealed a mean score of 35.6 ± 6.2, indicating the initial impact of migraines on participants' overall well-being. Following the intervention, there was a remarkable improvement in QoL, with the mean score increasing to 72.4± 8.5. This positive change persisted during the follow-up assessment, with the mean QoL score further rising to 74.1±7.8. The substantial improvement from baseline to post-intervention and the maintenance of this positive change at follow-up were statistically significant ($p < 0.001$).

Conversely, in the control group, participants started with a baseline QoL mean score of 36.2 ± 5.8. While there was a slight increase in QoL post-intervention 37.5 ± 5.3, indicating some improvement, this change was modest. The follow-up assessment showed a further marginal increase in QoL to 38.0± 5.7. However, these changes in the control group were not statistically significant. (Table 3)

Table 3:Quality of life Assessment				
Group	**Baseline QoL (Mean ± SD)**	**Post-Intervention QoL (Mean ± SD)**	**Follow-Up QoL (Mean ± SD)**	**Level of significance**
Massage	35.6 ± 6.2	72.4 ± 8.5	74.1 ± 7.8	P<0.05
Control	36.2 ± 5.8	37.5 ± 5.3	38.0 ± 5.7	

Discussion

The study involved 50 participants, evenly split between the massage (n=25) and control (n=25) groups. Participants in the massage group had an average age of 35.5 ± 2.5 years, and those in the control group had a comparable mean age of 38.2 ± 2.2 years. Gender distribution was even, with 25 males and 25 females across both groups. The average duration of migraine was 6.2 ± 1.2 months in the massage group and 6.1 ± 1.2 months in the control group.

In terms of pain assessment, both groups reported similar baseline pain levels (Massage: 7.2 ± 1.5, Control: 7.1 ± 1.3). Following the intervention, the massage group experienced a significant

reduction in pain intensity (3.5 ± 1.0), whereas the control group showed a more modest change (6.8 ± 1.2). This difference was maintained at follow-up (Massage: 3.2 ± 1.2, Control: 6.9 ± 1.3). Regarding quality of life (QoL) assessment, the massage group started with a baseline QoL mean score of 35.6 ± 6.2, demonstrating the initial impact of migraines. After the intervention, there was a remarkable improvement in QoL (72.4 ± 8.5), which persisted at follow-up (74.1 ± 7.8). In the control group, baseline QoL mean score was 36.2 ± 5.8, with a slight increase post-intervention (37.5 ± 5.3) and a marginal increase at follow-up (38.0 ± 5.7). However, these changes were not statistically significant.

Migraine, a leading cause of global disability, poses a significant health challenge. While effective treatments exist, there is limited understanding of the diverse strategies employed by individuals with migraines to manage pain and their perceived effectiveness [23]. This cross-sectional study conducted in a Taiwanese medical center involved 174 participants with migraines. The investigation aimed to elucidate the pain management strategies utilized by migraineurs, assess their perceived efficacy, and explore the relationship between the number of strategies employed and overall effectiveness [24]. Prescription medications (56%) and over-the-counter medications (51%) were the most frequently used, with reported good efficacy rates of 78% and 81%, respectively. Less commonly employed strategies, such as traditional Chinese medicine (17%) and folk remedies (13%), were perceived as relatively less effective [25]. Notably, almost half of the participants (47%) utilized multiple pain management strategies, and this group reported significantly higher effectiveness compared to those using a single strategy (73% vs. 27%, $p = .001$). While prescription medications demonstrated both high usage and perceived efficacy, the prevalence of multiple strategies suggests a complex approach to migraine management. This underscores the importance of further research to evaluate the effectiveness of combination treatments, potentially identifying synergistic effects [26]. Additionally, the findings support the continued use of medications for managing migraines due to their relatively high perceived efficacy rates. A study conducted to determine the effectiveness of wet cupping therapy (WCT) on migraine-related headache and disability was investigated [27]. The open-label trial involved monthly WCT sessions for migraine patients, and after three months, participants were randomly assigned to either a control group (receiving three sessions) or an intervention group (continuing treatment for 12 months). The evaluation, using the migraine disability assessment (MIDAS), was performed before treatment and at the 6th and 12th months. The results revealed that visual analog scale (VAS) and MIDAS values

significantly increased in the control group but decreased in the intervention group, showing a more substantial improvement. Importantly, the study found no adverse effects of WCT. In conclusion, WCT demonstrated a positive impact on reducing pain and disability associated with migraines, with sustained efficacy observed in the group receiving extended treatment.

Conclusion

In conclusion, the presented research provides valuable insights into the multifaceted aspects of migraine management, emphasizing the need for comprehensive and personalized approaches. The initial section of the study highlighted the intricate nature of migraines, influenced by genetic and environmental factors, with currently available treatments offering only partial relief. Lifestyle modifications, particularly dietary interventions, have gained attention, reflecting the evolving landscape of migraine care. The subsequent focus on physical therapy, specifically massage therapy, underscores its potential role in enhancing migraine symptom relief and overall well-being.

Conflict

No any conflict of interest

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