Journal of Iranian Medical Council, Volume 9, Issue no. 1
http://dx.doi.org/10.18502/jimc.v9i1.20484

Original Article

Check for updates

Comparative Effects of Cognitive Behavioral Therapy (CBT) And Myofascial Release (MFR) along with Conventional Therapy in Patients with Cervicogenic Headache

Gayatri Yadav, Saurabh Kumar*, Aarti Gupta and Priyanka Rishi

School of Physiotherapy, SGT University, Gurugram, Haryana, India

Abstract

Background: Cervicogenic Headaches (CGH) are a secondary headache disorder arising from musculoskeletal issues in the cervical spine. This study explores whether combining Cognitive Behavioural Therapy (CBT) with Myofascial Release (MFR) and conventional therapy can better reduce pain, headache severity, disability, and improve sleep and quality of life in CGH patients.

Methods: A sample of 30 participants aged 25-45 yr, diagnosed with cervicogenic headache, were recruited and randomly assigned to two groups: Group A (CBT with conventional therapy) and Group B (MFR with conventional therapy). Both groups received 60-min treatment sessions, 3 days per week for 4 weeks. Outcome measures included Numeric Pain Rating Scale, Neck Disability Index (NDI), Headache Disability Index (HDI), Pittsburgh Sleep Quality Index, and quality of life. A mixed-design ANOVA was conducted to analyze the main effects of group (G), time (T), and the group-by-time interaction (G×T) for all the outcome measures.

Results: Both groups showed significant improvements post-intervention, with notable time (T) and interaction (G×T) effects across all the parameters ($p<0.001$). Group A demonstrated greater reductions in pain [Numeric Pain Rating Scale (NPRS), $p<0.001$], disability (NDI, HDI, $p<0.001$), and sleep disturbances [Pittsburgh Sleep Quality Index (PSQI), $p<0.001$], along with improved quality of life [WHO Quality of Life Scale (WHOQOL), $p<0.001$] and cervical posture (CV Angle, $p=0.004$). These findings highlight the added benefits of CBT in addressing cognitive and emotional aspects of CGH.

Conclusion: Integrating CBT with conventional therapy provides a more effective approach for managing CGH than physical therapy alone. By addressing both physical and cognitive-behavioral aspects, this multimodal approach offers promising benefits in reducing headache severity and improving functional outcomes in patients with CGH. Future studies with larger sample sizes are recommended to validate these findings and explore long-term outcomes.

Keywords: Cognitive behavioural therapy, Chronic pain, Cervical vertebrae, Headache, Myofascial release therapy, Sleep quality

*** Corresponding author**

Saurabh Kumar, MPT (Neurology), PhD (Physiotherapy)
School of Physiotherapy, SGT University, Gurugram, Haryana, India
Tel: +91 90 2324 5955
Email:
saurabh04pt@gmail.com

Received: 28 Oct 2024
Accepted: 15 Mar 2025

Citation to this article
Yadav G, Kumar S, Gupta A, Rishi P. Comparative Effects of Cognitive Behavioral Therapy (CBT) And Myofascial Release (MFR) along with Conventional Therapy in Patients with Cervicogenic Headache. *J Iran Med Counc*. 2026;9(1):119-30.

Introduction

Headaches are one of the most common pain-related disorders affecting working-age individuals worldwide, often leading to significant reductions in quality of life and work productivity. In fact, headaches are the second most prevalent cause of lost work time, placing a heavy burden not only on individuals but also on the society (1). This pain disorder severely compromises a person's functional abilities, leading to frequent missed workdays and a reduced capacity to engage in daily tasks (2). While many types of headaches exist, those related to cervical spine dysfunction; particularly Cervicogenic Headaches (CGH) are of special concern due to their high prevalence and persistent symptoms following neck injuries. CGH are a significant issue for individuals who have sustained cervical acceleration-deceleration injuries, with up to 80% of such patients reporting headaches within two months of the injury. Alarmingly, nearly 25% of these patients continue to experience considerable neck pain and associated headaches two years after the injury (3). The International Headache Society (IHS) differentiates between primary headaches, which arise without any other causative factor, and secondary headaches, where the headache develops in relation to another underlying disorder (4). CGH fall under the category of secondary headaches, and they are often linked to musculoskeletal issues in the neck. The World Cervicogenic Headache Society first formally defined CGH in 1983 as referred pain felt in the head, originating from a nociceptive source in the musculoskeletal tissues innervated by the cervical nerves (5).

CGH is a clinical syndrome that not only causes significant discomfort but also severely restricts an individual's ability to function. Symptoms are typically provoked by neck movements or pressure applied to tender areas in the cervical spine, particularly in the upper cervical and occipital regions. The headache is usually described as a deep, dull ache, though the intensity of the pain can vary (6). The location of the pain tends to remain consistent, beginning in the neck and radiating toward the head, and it rarely changes sides (7-8). These characteristics can make it difficult to distinguish CGH from other types of headaches, such as migraines or tension-type headaches, which further complicates diagnosis and treatment. Although there is some variability in symptom presentation among patients, the defining characteristic of CGH is the unilateral nature of the pain, which often makes it a distinct clinical condition from other forms of headache (9,10). Physical therapies have been reported as some to be the most frequently used alternative or complementary treatments for headaches. Joint mobilization, manipulation, soft tissue mobilization and stretching, retraining certain postural muscle groups, and patient lifestyle training are all advised for cervicogenic headache treatment. While MFR is being utilized to treat a wide range of illnesses, its effectiveness has not been well-studied. Myofascial Release (MFR) is a therapeutic technique that uses gentle pressure and stretching with the intention of restoring decrease pain, optimizing length, and facilitating the release of fascial restrictions caused by injury, stress, repetitive use. It increases extensibilities of soft tissues, increase Range of Motion (ROM), improve joint biomechanics, decrease pain and muscles tone significantly (11). The length of the headache was not significantly reduced by using MFR alone. According to the study's findings, both the exercise and MFR groups' patient of the spinous and transverse processes of their upper cervical joints significantly improved after ten therapy sessions as compared to their pre-treatment scores since the myofascial dysfunction in the upper cervical area has not received much attention in research looking at manual therapy in patients with cervicogenic headache, and most of them have solely addressed joint procedures or exercise (12). After direct and indirect MFR, Ajimsha *et al* showed positive results in 63 patients with tension-type headaches (13). CBT is also effective in cervical radiculopathy and enhance physical function. This type of therapy involves attention to the connections between thoughts (cognitions), beliefs, feelings, behavior and pain. Three behavior therapy techniques have been developed for use with headache patients: Biofeedback therapy, relaxation training, and stress coping training (14,15). There have been many literatures which have proved various conventional therapy along with numerous protocols to treat cervicogenic headache. But there is only a limited amount of literature which have

found the effect of Cognitive Behavioural Therapy (CBT) on CGH. Thus, this study will explore how CBT and MFR, when combined with conventional therapy, compare in terms of reducing pain intensity, improving quality of life, and enhancing functional outcomes in patients with CGH.

Materials and Methods

This Experimental research was executed in SGT Medical College, Hospital and Research Institute, Gurugram and Baba library Banda Bahadur Marg Mukherjee Nagar Delhi and Pain Relieve clinic sector 39 Gurugram, Delhi NCR.

Participants

A total of 30 participants were included by calculating a sample size using G power software with 95 % confidence interval and a power of 10 %. A sampling method used was convenient sampling to divide the participants into 2 groups of 15 each *i.e.* Group A (Cognitive behavioral therapy Group) and Group B (Control Group).

Inclusion criteria (4,5,11,12)

This study included participants age group between 25-45 *yr* old (male & female), duration of cervicogenic headache from 4 months and fulfilling the diagnosis criteria according to international classification of the headache disorder 2nd edition.

Exclusion criteria (4,5,11,12)

This study excluded participants with mechanical injury like RTA, fall *etc*., other second headache like tension type headache, any history of head trauma or surgery, previous cervical vertebral fracture or deformity, cervical disc herniation, spondylolisthesis, spinal cord injury, Bone trauma and rheumatoid arthritis. Patient with congenital disorder like Torticollis, Muscular dystrophy, spina bifida *etc*. and neurological disorder like mental cognitive, alternation *etc*.

Outcome measures

In this study, various health outcomes were evaluated using well-established measures to assess multiple dimensions of the participants' well-being. The following instruments (Table 1) were utilized to capture specific domains:

Pain: The Numeric Pain Rating Scale (NPRS) was used to assess pain intensity, where the participants rated their pain on a scale from 0 (no pain) to 10 (worst possible pain). This scale provides a reliable and straightforward measure of pain severity, which is essential for understanding the impact of pain on daily functioning (16).

Disability: The Neck Disability Index (NDI) was employed to assess the level of disability associated with neck pain. The NDI is a self-reported questionnaire consisting of 10 items, which cover functional limitations such as personal care, lifting, and work-related activities. It has been widely validated as a tool for measuring disability in individuals with neck pain (17).

Headache: The Headache Disability Index (HDI) was used to quantify the impact of headaches on daily life. This index measures the extent to which

Table 1. Outcome measures of the study

Outcome measure	Assessment method	Reference
Pain	Numeric Pain Rating Scale (NPRS)	Singh *et al*, 2017 (16)
Disability	Neck Disability Index (NDI)	Sterling *et al*, 2005 (17)
Headache	Headache Disability Index (HDI)	Jacobson *et al*, 1994 (18)
Sleep	Pittsburgh Sleep Quality Index (PSQI)	Zhang *et al*, 2020 (19)
Quality Of Life Scale (QOL)	WHO Quality of Life Scale-Brief (WHOQOL-Brief)	Vahedi *et al*, 2010 (20)
Posture	Craniovertebral Angel (CV angle)	Sohn *et al*, 2010 (21)

headaches interfere with work, social activities, and routine tasks, providing a clear picture of how headache severity translates into functional impairment (18).

Sleep: The Pittsburgh Sleep Quality Index (PSQI) was utilized to assess the overall sleep quality. This widely used tool includes 19 items that evaluate sleep duration, latency, efficiency, disturbances, and daytime dysfunction. The PSQI provides a comprehensive overview of sleep disturbances and their impact on quality of life (19).

Quality of Life (QOL): The WHO Quality of Life Scale-Brief (WHOQOL-Brief) was used to measure the participants' quality of life across four domains: physical health, psychological health, social relationships, and environmental factors. The WHOQOL-Brief is a validated instrument, offering a reliable and holistic assessment of an individual's overall well-being (20).

Posture: The Craniovertebral Angle (CVA) was measured to assess posture, specifically the alignment of the head and neck. The CVA is a widely recognized metric for evaluating postural deformities, and it has been shown to correlate with musculoskeletal and

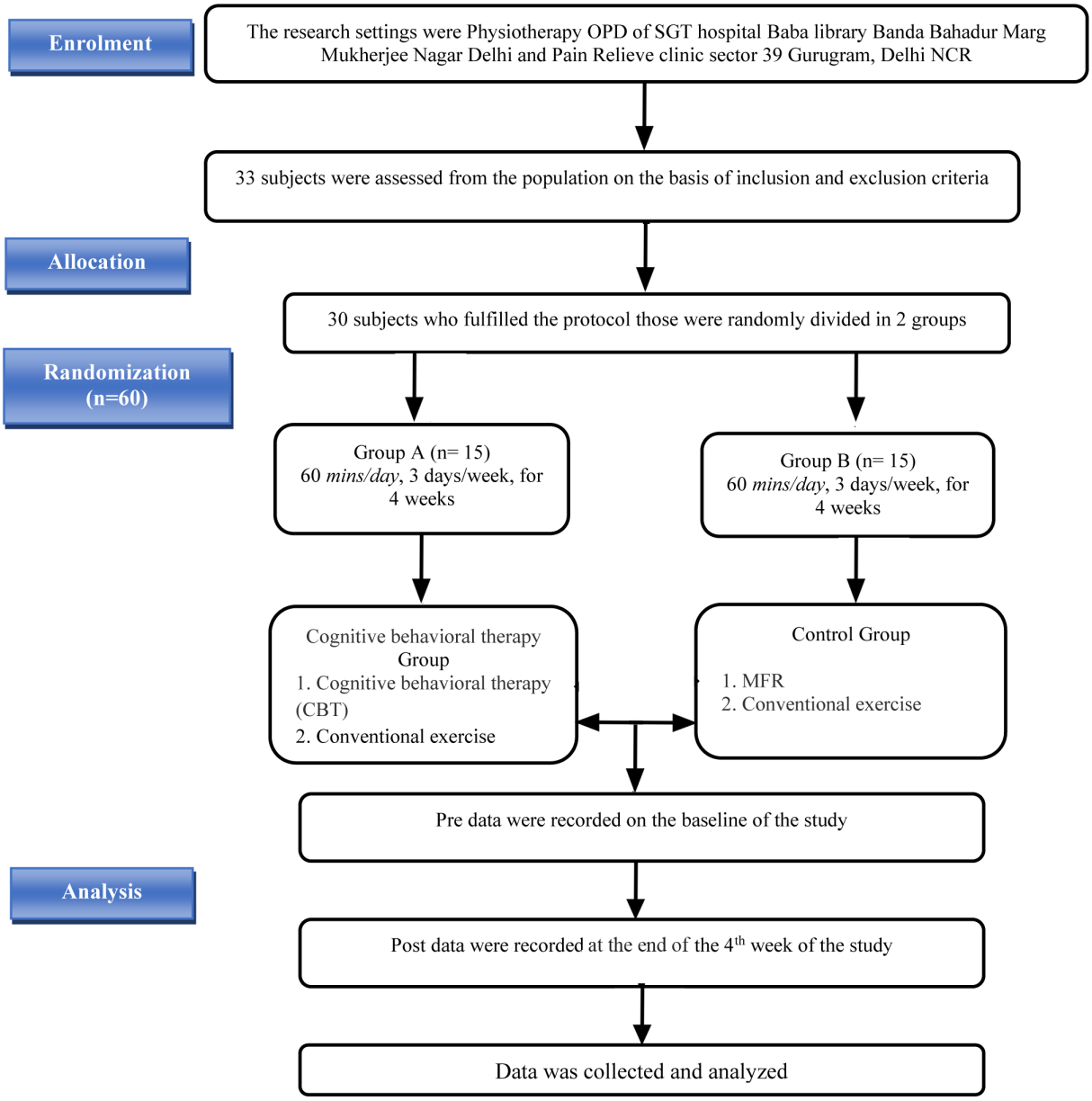


Figure 1. Flowchart of the study.

neurological health issues (21).

Procedure of the study: On the basis of inclusion and exclusion criteria, a sample of 30 subjects was drawn from the population. The subjects who fulfilled the protocol were equally divided into two groups *i.e.* Group A (Cognitive behavioral therapy Group) and Group B (Control Group) (Figure 1). Written consent was obtained prior to the treatment and the whole concept and nature of the study were explained to all the individuals participated in the study. The treatment protocol of 60 *min* per day, 3 days per week for a period of 4 weeks was given to all the groups under the supervision of researcher. Pre and post intervention readings of the outcome measures (Table 1) were recorded.

Group A

Cognitive Behavioral Therapy (CBT) with Conventional Therapy: The treatment protocol of 60 *min* in day for 3 days/week for a period of 4 weeks. In which 30 *min* of CBT and 30 *min* Conventional Therapy were given. The treatment protocols for the group A were is in table 2.

Group B

MFR technique with conventional therapy: The treatment protocol of 60 *min* in a day for 3 days/week was conducted for a period of 4 weeks in which 30 *min* of MFR and 30 *min* Conventional Therapy were given. Sub-cranial Inhibitive Distraction (SID) which is a MFR technique was used. The patient was in supine line and suboccipital muscle was released. Place the hand at the base of the occiput, be sure that the patients head will eventually drop into your hand. Rest the back of your hand on the table, use traction equal to the weight of the patient's head, hold and

Table 2. Treatment protocol for group A. (22)

Phase	Description
1st phase, 1st week (3 sessions/week)	Relaxation strategies: These sessions will focus on teaching the person about stress, the relaxation response, and how relaxation strategies can help them with their headache symptoms. It can be helpful to teach all three relaxation skills (breathing exercise, mass, and guided visual imagery) so that the person has a choice of different relaxation tools available to manage their headache disease. Of note, progressive muscle relaxation has the most evidence to support its use in headache diseases. Encourage the person to try practicing all the techniques so that they can figure out which one works best for them.
2nd phase, 2nd week (3 sessions/week)	Contributing factors & managing the headache threshold: This session will focus on taking a deeper look at the headache threshold theory that you introduced during the intake session and ways that the person can manage the most commonly reported headache contributing factors (stress, inadequate sleep, skipped meals, caffeine, alcohol, weather changes, hormonal changes in women, and comorbid pain/medical conditions). Muscle stretches during muscle stretching, the key is to gently stretch your muscles with smooth and slow motions. Never force a tight, tense muscle with sudden movements. Your muscles will let you know if you are treating them with the gentleness they like—or if you are not!
3rd phase, 3rd week (3 sessions/week)	Behavioral modification: Behavioral modification, breaking routine in the use of the Internet. Training time management with a diary of Internet use, changing ways of dealing with family, friends, social activities, physical exercises, and other aspects of life. Insert positive emotion into daily activities to develop social skills to promote less. Internet usage and more in-person interactions.
4th phase, 4th week (3 sessions/week)	Planning ahead: Reinforcement of continued recovery and relapse prevention through new beliefs and behaviors, social skills like assertiveness, problem solving, verbal communication, and empathy. Achievement card. Follow-up of scales.

weight for the release. When release occurs, you will feel the full weight of the patient head on your hands. The final stroke is performed with both hands at the same time, ending with the heel of the hands just under the curve of his skull with the fingers extended along the neck.

Conventional therapy will be given to both the groups *i.e*., Group A and Group B which includes moist pack for 10 *min*, stretching of bilateral upper trapezius muscle, levator scapulae and strengthening of deep cervical muscles (23) (Figure 2).

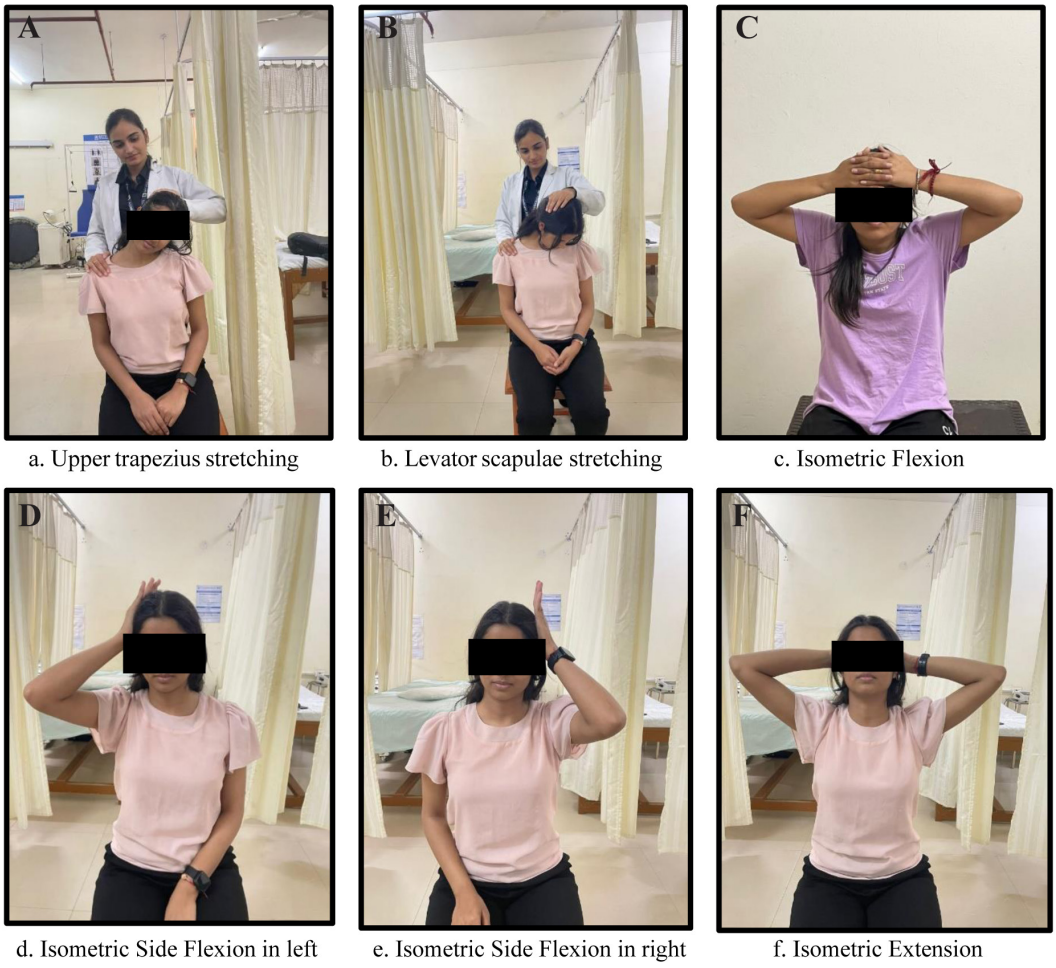
Statistical analysis

SPSS software version 26.0 was used for statistical analysis. The data for demographic characteristics and all variables have been presented as mean and standard deviation. A mixed-design ANOVA was conducted to analyze the main effects of group (G), time (T), and the group-by-time interaction (G×T) for all the outcome measures. The level of significance was set at $p<0.05$ for all tests.

Results

In this research, 30 subjects aged between 25-45 *yr* old were selected who fulfilled the selection criteria and accomplished the intervention program duration of 4-weeks. The study included a total of 20 males and 10 females who were allocated into two groups: Group A, and Group B (Figure 3). The mean age of Group A and group B was 27.7±2.81 and 30.3±4.89, respectively.

Table 3 describes the repeated measures. ANOVA analysis revealed significant findings across all the parameters assessed. For the Numeric Pain Rating Scale (NPRS), there were highly significant group (G), time (T), and group-by-time interaction (G×T) effects ($p<0.001$), indicating differences between groups, significant changes over time, and variations in how scores changed across groups. Similarly, for NDI, HDI, PSQI, WHOQOL, and Cervical



a. Upper trapezius stretching
b. Levator scapulae stretching
c. Isometric Flexion
d. Isometric Side Flexion in left
e. Isometric Side Flexion in right
f. Isometric Extension

Figure 2. Conventional therapy given to both groups.

Table 3. Comparison of mean±SD of various parameters between group A and group B pre- and post-intervention with repeated measures ANOVA

Parameter	Group A Mean±SD	Group B Mean±SD	p-value		
			Group (G) effect- value	Time (T) effect	G×T interaction
NPRS					
Pre- intervention	6.47±0.743	6.93±0.704	0.001	0.001	0.001
Post- intervention	3±0.756	4.8±0.862			
NDI					
Pre- intervention	32.87±1.642	31.73±2.251	0.277	0.001	0.001
Post- intervention	25.13±2.416	27.80±1.740			
HDI					
Pre- intervention	70.27±3.535	69.73±3.348	0.189	0.001	0.001
Post- intervention	51.87±6.988	39.73±5.994			
PSQI					
Pre- intervention	34.93±2.404	37.00±2.204	0.001	0.001	0.001
Post- intervention	28.27±2.086	31.87±2.386			
WHOQOL					
Pre- intervention	88.47±1.807	88.93±3.369	0.16	0.001	0.001
Post- intervention	79.93±3.369	84.80±3.212			
CV Angle					
Pre- intervention	37.95±2.976	37.43±3.241	0.004	0.001	0.001
Post- intervention	41.69±2.120	44.03±1.812			

#Significance within the groups: * p<0.05; ** p<0.001, *** p<0.0001; NS = non-significant.

Vertebral Angle (CV Angle), significant time (T) and interaction (G×T) effects were observed (p<0.001), highlighting the notable improvements over time and differing response patterns between the groups (Figure 4). Significant group effects (G) were also noted for NPRS (p<0.001), PSQI (p<0.001), and CV Angle (p=0.004), while others like NDI and HDI showed non-significant group effects but retained significant time and interaction effects. These findings collectively suggest that the interventions led to substantial temporal improvements, with distinct differences in the extent and nature of changes between the groups.

Discussion

As CGH, a prevalent type of secondary headache, result from musculoskeletal dysfunctions in the cervical spine. These headaches often originate from abnormalities in the upper cervical joints, muscles, or neural structures, and their clinical presentation includes unilateral head pain triggered by neck movements, sustained postures, or external pressure on the cervical muscles or occipital nerves. Given the complex nature of CGH, an integrated therapeutic approach that addresses both the physical and psychological components of the disorder is essential (24). Conventional treatments for CGH typically focus on physical rehabilitation modalities such as manual therapy, MFR, and therapeutic exercises aimed at improving cervical function and reducing pain. MFR, in particular, has been widely utilized for its effects on muscle tightness, fascia restriction, and pain reduction. The technique involves applying sustained pressure on the myofascial connective tissue to restore mobility and reduce musculoskeletal pain (25). Several studies have highlighted MFR's effectiveness in improving range of motion, alleviating pain, and enhancing the quality of life in patients with chronic

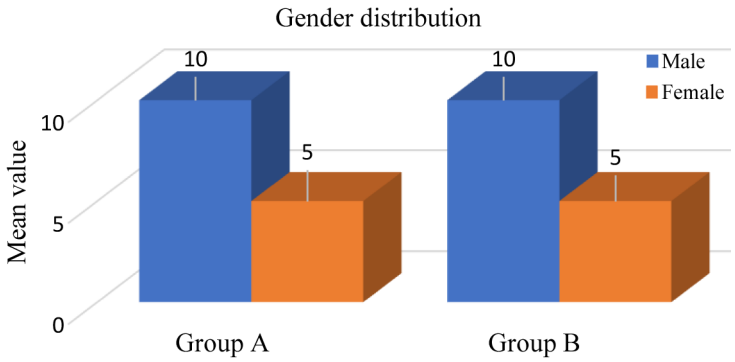


Figure 3. Gender wise distribution of the Subjects.

musculoskeletal conditions (26). However, the focus on purely biomechanical correction may not fully address the multifactorial nature of CGH. In contrast, the CBT approach emphasizes the psychological aspects of chronic pain, such as pain catastrophizing, maladaptive coping strategies, and anxiety, which are often prevalent in patients with chronic headaches (27). CBT is a structured, time-limited psychotherapy that aims to modify dysfunctional thinking patterns and behaviours related to pain perception. By targeting the cognitive processes involved in pain interpretation, CBT has been shown to reduce pain intensity, improve coping skills, and enhance overall pain management in various chronic pain populations (28). CBT is a widely recognized psychological intervention that addresses the cognitive, emotional, and behavioural aspects of chronic pain. For CGH, which is often accompanied by psychological distress such as anxiety, depression, and stress, CBT provides tools to manage pain perception and improve coping mechanisms (29). Several studies support the efficacy of CBT in managing chronic pain conditions, including CGH. For instance, a study by Glickman *et al* found that CBT significantly reduced both the frequency and severity of headaches by helping patients modify maladaptive thinking patterns, reduce stress, and adopt more effective pain management strategies (30). Contradictory findings have been reported in a study, however, where CBT alone demonstrated no significant reduction in pain intensity or frequency compared to physical interventions (31). These findings suggest that CBT might be less effective when applied in isolation for CGH, highlighting the importance of combining psychological therapy with physical treatments to achieve optimal results. The current study aligns with the latter perspective, as we observed that CBT, when combined with conventional therapy, resulted in significantly improved outcomes compared to conventional therapy alone. This finding underscores the importance of an integrated treatment approach, combining both psychological and physical components, to achieve comprehensive pain relief and functional improvement in CGH patients (31).

The repeated measures ANOVA in the present study revealed significant time and interaction effects across all the assessed parameters, indicating improvements over time with differing response patterns between groups. Significant group effects were observed for pain intensity, sleep quality, and cervical posture, while disability measures retained significant time and interaction effects. Experiment group, which received both CBT and conventional therapy, demonstrated greater reductions in pain, disability, and headache-related impact, along with improved sleep quality and overall quality of life compared to control group. These findings underscore the added value of CBT in managing CGH by addressing both its physical and psychological dimensions. The interplay between musculoskeletal dysfunction and psychological factors in CGH is particularly relevant, as patients often experience comorbidities such as sleep disturbances, anxiety, and depression. Sleep quality, frequently compromised in chronic pain conditions, plays a crucial role in pain modulation, and CBT has been shown to be effective in improving both pain and sleep disturbances. Additionally, postural dysfunction, such as Forward Head Posture (FHP), contributes to CGH by increasing cervical spine strain (4). Its application in CGH may offer a more comprehensive approach by addressing

both the physical and emotional dimensions of the condition. The relationship between musculoskeletal dysfunction and psychological factors is particularly relevant in CGH, as the disorder often presents with comorbidities such as sleep disturbances, anxiety, and depression (32). Sleep quality, for example, is frequently compromised in patients with chronic pain conditions, including CGH, due to the persistent nature of pain and discomfort, leading to a cyclical relationship between pain and sleep disruption (33). Improving sleep quality has been linked to better pain outcomes, and CBT has been shown to be an effective intervention for both pain and sleep disturbances, further supporting its use in managing CGH (34). Postural dysfunction, particularly FHP, is another common feature in CGH patients. FHP increases the load on the cervical spine and contributes to musculoskeletal imbalances, exacerbating headache symptoms (35). Interventions aimed at correcting postural deviations, including exercises and manual therapy, have demonstrated improvements in both pain and functional outcomes. Moreover, CBT's role in addressing posture is of growing interest, particularly in cases where postural correction may also benefit from the psychological aspect of body awareness and pain perception (36).

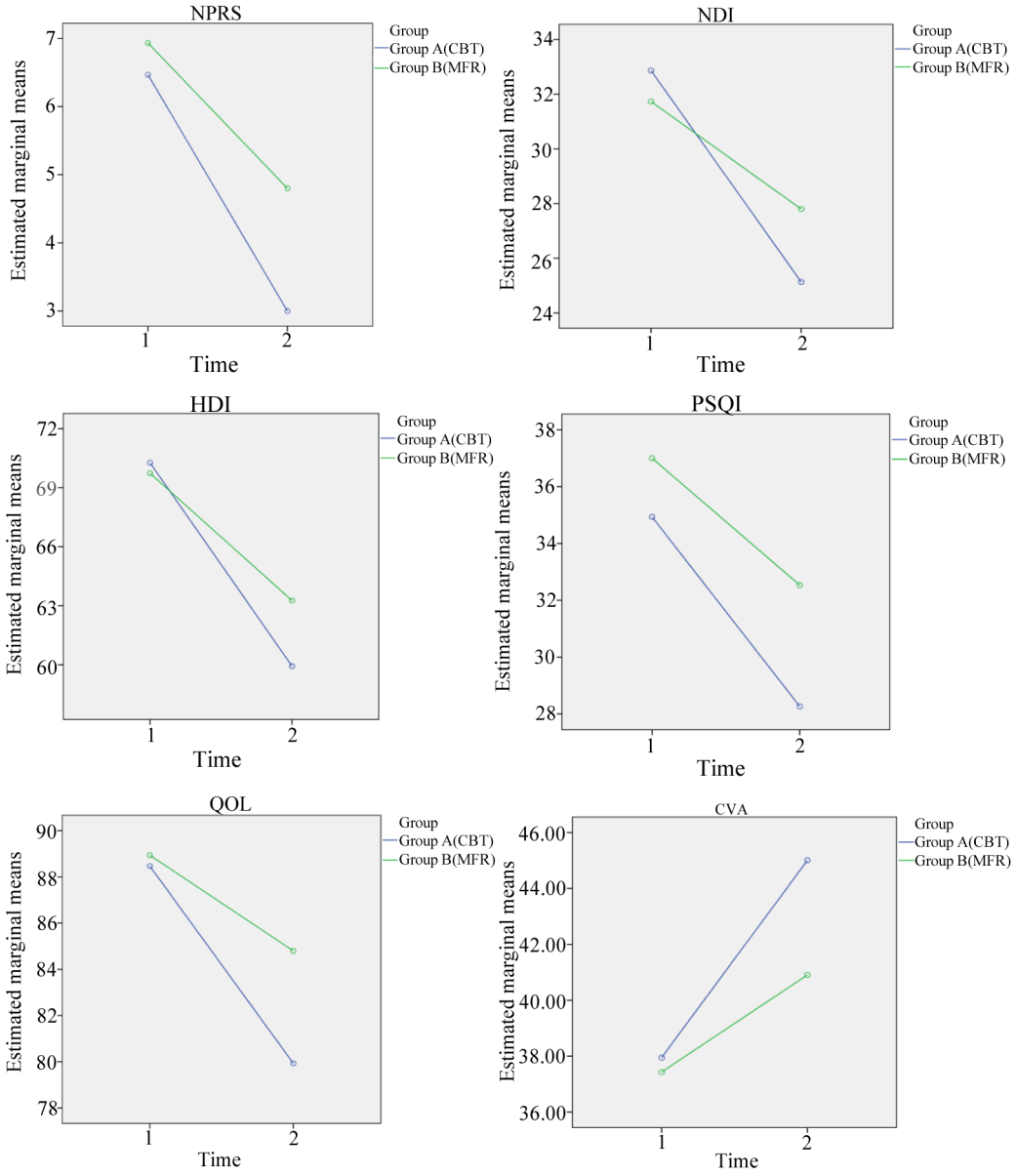


Figure 4. Repeated measures ANOVA analysis showing significant group, time, and interaction effects for NPRS, NDI, HDI, PSQI, QoL and CVA.

While both MFR and CBT are valuable therapeutic interventions, a growing body of evidence suggests that combining physical rehabilitation with psychological therapies may yield better outcomes for CGH patients. Integrating CBT with conventional therapy may help to not only reduce pain but also address the broader impact of CGH on daily functioning, emotional well-being, and quality of life. Studies exploring the efficacy of such multidisciplinary approaches have shown promising results in chronic pain management, supporting the idea that a biopsychosocial model of care may be more effective than traditional, symptom-focused interventions (37). Future research should continue to explore the optimal combinations of physical and psychological therapies in the treatment of CGH. Larger randomized controlled trials are needed to compare the long-term efficacy of different therapeutic approaches and to better understand the mechanisms by which interventions like CBT and MFR exert their effects on pain perception, functional outcomes, and quality of life. Additionally, the role of sleep quality and postural correction in the management of CGH warrants further investigation, as these factors are increasingly recognized as important contributors to the chronicity and severity of the condition. By adopting a holistic approach that includes both physical and cognitive therapies, healthcare providers may be able to offer more comprehensive and effective treatment plans for patients with CGH, ultimately improving their overall well-being and reducing the burden of chronic pain.

Conclusion

The findings of the study indicated that CBT in conjunction with conventional physiotherapy, exhibited a more pronounced reduction in headache severity and related functional limitations. These findings suggest that CBT, when integrated into routine clinical practice alongside physiotherapy, offers a more effective approach to managing CGH by addressing both the cognitive-behavioral aspects and physical dysfunctions associated with the condition. This underscores the potential for a multimodal therapeutic strategy to enhance patient outcomes in the management of CGH.

Acknowledgement

The authors sincerely thank the Institutional Ethics Committee of faculty of physiotherapy SGT University for their guidance and approval of this study under the ethical code number SGTU/FPHY/2022/414. The authors also extend their gratitude to all the participants and supporting staff for their contributions to this research. Their cooperation made this work possible.

Conflict of Interest

The authors declare that there are no conflicts of interest.

References

1. Baigi K, Stewart WF. Headache and migraine: a leading cause of absenteeism. Handb Clin Neurol 2015;131:447-63.

2. D'Amico D, Grazzi L, Usai S, Leonardi M, Raggi A. Disability and quality of life in headache: where we are now and where we are heading. Neurol Sci.

3. Haldeman S, Dagenais S. Cervicogenic headaches: a critical review. Spine J 2001;1(1):31-46.

4. Gupta A, Kumar S, Gupta A, Rishi P. Effect of aerobic exercises and therapeutic pain neuroscience education on disability, pain, head posture and QOL in migraine patients. Comparat Exercise Physiol 2023;19(2):119- 26.

5. Anthony W, Grafton K, Dekka C. Effectiveness of physiotherapy management in cervicogenic headache: a systematic review. Physiother Occup Ther 2009;3(1):66.

6. Knackstedt H, Bansevicius D, Aaseth K, Grande RB, Lundqvist C, Russell MB. Cervicogenic headache in the general population: the Akershus study of chronic headache. Cephalalgia 2010;30(12):1468-76.

7. Petersen SM. Articular and muscular impairments in cervicogenic headache: a case report. J Orthop Sports Phys Ther 2003;33(1):21-32.

8. Moore MK. Upper crossed syndrome and its relationship to cervicogenic headache. J Manipulative Physiol Ther 2004;27(6):414-20.

9. Chaibi A, Russell MB. Manual therapies for cervicogenic headache: a systematic review. J Headache Pain 2012;13(5):351-9.

10. Hall T, Briffa K, Hopper D. Clinical evaluation of cervicogenic headache: a clinical perspective. J Man Manip Ther 2008;16(2):73-80.

11. Ramezani E, Arab AM. The effect of suboccipital myofascial release technique on cervical muscle strength of patients with cervicogenic headache. Physical Treatments Specific Physic Ther J 2017;7(1):19-28.

12. Jull G, Trott P, Potter H, Zito G, Niere K, Shirley D, et al. A randomized controlled trial of exercise and manipulative therapy for cervicogenic headache. Spine 2002;27(17):1835-43.

13. Ajimsha M. Effectiveness of direct vs indirect technique myofascial release in the management of tension-type headache. J Bodyw Mov Ther 2011;15(4):431-5.

14. Ragab MM, Elsayed SEB, Abdel-Raoof NA, Elsawy EH. Effectiveness of adding cognitive behavioral approach to physical therapy for chronic cervical radiculopathy. J Med Sci 2019;19(2):75-80.

15.Abou Shady NA, Mohamed AH, El-Gohary EM. Effect of cognitive behavioral therapy on cervicogenic headache patients. Med J Cairo Univ 2016;84(1):649-55.

16. Singh AK, Kumar S, Sharma A. A Comparison between kinesiotaping and tissue specific plantar fascia stretching exercise treatment in planter fasciitis. India J Physiother Occup Ther 2017;11(4):6-10.

17. Sterling M, Rebbeck T. The neck disability index (NDI). Aust J Physiother 2005;51(4):271.

18. Jacobson GP, Ramadan NM, Aggarwal SK, Newman CW. The Henry Ford hospital headache disability inventory (HDI). Neurology 1994;44(5):837-42.

19. Zhang C, Zhang H, Zhao M, Li Z, Cook CE, Buysse DJ, et al. Reliability, validity, and factor structure of Pittsburgh sleep quality index in community-based centenarians. Front Psychiatry 2020;11:573530.

20. Vahedi S. World Health Organization Quality-of-Life Scale (WHOQOL-BREF): analyses of their item response theory properties based on the graded responses model. Iran J Psychiatry 2010;5(4):140-53.

21. Sohn JH, Choi HC, Lee SM, Jun AY. Differences in cervical musculoskeletal impairment between episodic and chronic tension-type headache. Cephalalgia 2010;30(12):1514-23.

22. Santos VA, Freire R, Zugliani M, Cirillo P, Santos HH, Nardi AE, et al. Treatment of Internet addiction with anxiety disorders: treatment protocol and preliminary before-after results involving pharmacotherapy and modified cognitive behavioral therapy. JMIR Res Protoc 2016;22;5(1):e46:1-10.

23. Kharwandikar P and Shende M. Effectiveness of sub-occipital myofascial release and cervical manipulation in patients with cervicogenic headache. Int J Healthcare Biomed Res 2019;7(4):25–32.

24. Bogduk N, Govind J. Cervicogenic headache: an assessment of the evidence on clinical diagnosis, invasive tests, and treatment. Lancet Neurol 2009;8(10):959-68.

25. Chaibi A, Russell MB. Manual therapies for cervicogenic headache: a systematic review. J Headache Pain 2012;13(5):351-9.

26. Laimi K, Makila A, Barlund E, Katajapuu N, Oksanen A, Seikkula V, et al. Effectiveness of myofascial release in treatment of chronic musculoskeletal pain: a systematic review. Clin Rehabil 2018;32(4):440-50.

27. Thorn BE, Pence LB, Ward LC, Kilgo G, Clements KL, Cross TH, et al. A randomized clinical trial of targeted cognitive behavioral treatment to reduce catastrophizing in chronic headache sufferers. J Pain 2007;8(12):938-49.

28. Lim JA, Choi SH, Lee WJ, Jang JH, Moon JY, Kim YC, et al. Cognitive-behavioral therapy for patients with chronic pain: Implications of gender differences in empathy. Medicine (Baltimore) 2018;97(23):e10867.

29. Nakao M, Shirotsuki K, Sugaya N. Cognitive-behavioral therapy for management of mental health and stress-related disorders: recent advances in techniques and technologies. Biopsychosoc Med 2021 Oct 3;15(1):16.

30. Glickman A, Weiner J, Beidas R. Transforming mental health care through implementation of evidence-based practices. LDI UPenn Educ 2020;23(5):1-5.

31. Vowles KE, Witkiewitz K, Sowden G, Ashworth J. Acceptance and commitment therapy for chronic pain: evidence of mediation and clinically significant change following an abbreviated interdisciplinary program of rehabilitation. J Pain 2014 Jan;15(1):101-13.

32. Odonkor CA, Tang T, Taftian D, Chhatre A. Bilateral intra-articular radiofrequency ablation for cervicogenic headache. Case Rep Anesthesiol 2017;2017:1483279.

33. Kim J, Cho SJ, Kim WJ, Yang KI, Yun CH, Chu MK. Insomnia in tension-type headache: a population-based study. J Headache Pain 2017 Sep 12;18(1):95.

34. Tang N, Goodchild C, Salkovskis P. Hybrid cognitive-behaviour therapy for individuals with insomnia and chronic pain: a pilot randomised controlled trial. Behav Res Ther 2012;50(12):814-21.

35. Lee CH, Lee S, Shin G. Reliability of forward head posture evaluation while sitting, standing, walking and running. Hum Mov Sci 2017 Oct:55:81-86.

36. Prakash J, Sindhu M, James TT. Effectiveness of neural mobilization and postural correction on pain and cranio-vertebral angle in cervicogenic headache. Int J Curr Res 2020;12(7):12168-71.

37. Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: scientific advances and future directions. Psychol Bull 2007;133(4):581-624.