A Comparative Study Of Manual Myofascial Release, Lewit Mobilization And Vestibular Training In Patients With Migraine

[1]Mansi Tuli, [2]Manu Vishist, [3]Varinder Kaur

[1]Assistant Professor, [2]Assistant Professor, [3]Assistant Professor
[1]Department of Physiotherapy
[1]Khalsa College, Amritsar,India

Abstract: Migraine is a chronic neurological disorder characterized by recurrent episodes of headache associated with nausea, photophobia, phonophobia, and functional disability. In addition to neurovascular mechanisms, musculoskeletal impairments such as cervical spine dysfunction, temporomandibular joint restrictions, and myofascial trigger points significantly contribute to migraine symptoms. Vestibular disturbances such as dizziness and balance impairment are also frequently observed in migraine patients. Physiotherapy interventions targeting these dysfunctions have gained increasing attention. The present study aims to compare the effectiveness of manual myofascial release combined with Lewit mobilization and vestibular rehabilitation training in patients with migraine. Sixty diagnosed migraine patients aged 30–60 years were randomly allocated into three groups. Group A received conventional stretching and postural correction exercises, Group B received vestibular rehabilitation, and Group C received myofascial release along with Lewit mobilization. Interventions were administered three times per week for four weeks. Outcome measures included Numeric Pain Rating Scale, Myofascial Diagnostic Scale, Headache Impact Test (HIT-6), Migraine Disability Assessment Scale (MIDAS), and Activities-specific Balance Confidence Scale (ABC). Statistical analysis showed significant improvement in all outcome measures, with Group C demonstrating superior outcomes. The study concludes that manual myofascial release combined with Lewit mobilization is more effective in reducing migraine severity and disability, while vestibular rehabilitation is beneficial for balance-related symptoms.

Index Terms - Migraine, Myofascial Release, Lewit Mobilization, Vestibular Rehabilitation, Physiotherapy

I. INTRODUCTION

Migraine is a condition which is mainly characterized by onset of headache, pulsating sensation and comes under the category of primary headache. [1] Migraine is a prevalent, painful, and recurrent disorder that affects 6% of men and 18% of women with 17.6% of females and 5.7% of males having one or more migraine headaches per year. [2] The prevalence of migraine is currently estimated to be between 14 and 15% worldwide, and it is responsible for 4.9% of global ill health, measured in years of disability. [3] Migraine continues to rank second overall (across all age groups and genders), but tops the list among young women [4] Tyramine, phenylethylamine and histamine are thought to be involved in the mechanisms that produce migraine headaches, therefore biogenic amines and foods like cheese, chocolate, and red wine that contain these compounds can also be thought of as significant triggers [5] Migraine actually involves a finely coordinated interaction between inputs from both the peripheral and central neurological systems; the key participants are the cerebral cortex and the trigeminovascular system. [6]. Individuals with chronic migraine have structural and functional changes in pain-related brain areas in the cortical and sub-cortical hemispheres. [7] Prevalence of active and latent trigger points is

significantly higher in patients with migraine with most frequently identified in 26 cranial and neck muscles which are mostly localized in various muscles such as upper trapezius, sternocleidomastoid, anterior temporal, sub occipital, deltoid, posterior cervical muscles [8] A migraine headache may be felt when discomfort in the pericranial, neck and shoulder muscles is transferred to the brain. [9] Tightness and development of trigger points in masticatory muscles (masseter, temporalis, medial and lateral pterygoid muscle) causes' temporomandibular joint dysfunction which is one of the causes of the migraine pain [10] Trigeminal nerve nucleus caudalis may continuously be bombarded by afferents as a result of nociceptive inputs from TrPs in the head and neck muscles, which in turn may activate the trigeminovascular system leading to pain. [11] Migraine accompanying vestibular symptoms is very prevalent especially in women (women to men ratio is 5:1) with an annual prevalence of 0.89%. [12] Vestibular rehabilitation therapy (VRT) is an exercise-based programme for easing the main symptoms of vestibular disorders such as unsteadiness, vision issues, and dizziness. [13]

II.   RESEARCH METHODOLOGY

STUDY PARTICIPANTS:

- **Study design:** Study design chosen was True Experimental study; pre test and post test criteria was followed in which results were recorded pre test which is before giving necessary intervention. Pre test results were recorded quantitatively using different scales and questionnaires which are mentioned in the text further. Post test results were recorded quantitatively using the same scales and questionnaires after giving necessary intervention and the effects were analyzed

- **Study Setting:** Clinical Outpatient Setting

- **Study Population**: Migraine patients who fulfilled the inclusion criteria were selected from Amritsar region, Punjab, India

- **Sampling Method**: The chosen method of sampling was Convenient Sampling where in patients in the mentioned age group with gender no bar, were selected for undergoing the treatment procedure

- **Sample Size:** The study was conducted on patients having migraine between the age group of 30-60 years with the sample size of 60 participants as calculated by G power formula. The patients were randomly selected and divided in their respective groups.

- **Contraindications:** Red flags and contraindications regarding manual therapy technique and vestibular training were carefully screened and participants were dropped if there were any contraindications and risk factors such as tumor, fracture, RA, osteoporosis or coagulation disorders. Participants were excluded if they were pregnant, in the nursing period, having neurological and metabolic disorders.

INCLUSION CRITERIA:

- Patients with ages between 30-60 years were included in the treatment groups
- Patients of any gender were selected and divided randomly in different groups
- Patients with history of chronic pain (both unilateral and bilateral)
- Patients with tightness and trigger points in neck and facial area
- Patients with temporomandibular joint dysfunction
- Patients with C0-C3 spinal segments involvement
- Patients with balance dysfunction

EXCLUSION CRITERIA:

- Migraine accompanied with depression, loss of appetite and Double vision (diplopia), Retinal migraine
- Pain and paralysis in the distribution of 3rd, 4th, 6th cranial nerve
- Patients and control participants were eliminated if they claimed that they met one of the following criteria, in order to prevent biased results caused by pre-existing dysfunctions in the cervical spine or adjacent regions, or due to other diagnoses:

    o Cervical spine pathology that has been identified, such as disc disease
    o A history of head or neck trauma (such as whiplash associated condition)
    o Craniomandibular dysfunction
    o Rheumatoid arthritis
    o Other neurological, psychiatric, or musculoskeletal illness

ETHICAL CONSIDERATIONS:

- Anyone between the ages of 30-60 years who met the inclusion criteria, volunteer to participate has undergone the appropriate screening to rule out any other underlying condition.
- After being briefed about the study informed consent was taken from the participants
- Participants had the right to withdraw at any point of time without giving any reasons or any legal rights to be affected
- Mild fatigue and erthemia was present in some patients after the treatment
- For ensuring the safety and reduction in post treatment soreness, appropriate warm up session and positioning was incorporated

VARIABLES USED:

1. Dependent Variable
   - Pain level (eleven point pain scale)
   - Headache impact test Scores
   - Activities specific balance confidence scale Scores
   - Myofascial diagnostic scale Scores
   - MIDAS Scores
2. Independent Variables
   - Stretch and spray technique
   - Lewit Mobilisation
   - Vestibular Rehabilitation

MATERIAL USED:

- Informed consent form
- Information form
- Demographic data sheet and evaluation form
- Pain scale assessment sheet (11-point pain scale)
- Myofascial diagnostic scale assessment sheet
- Headache Impact Test assessment sheet
- Activities specific balance confidence scale assessment sheet
- Migraine Disability Assessment test sheet
- Weighing machine to measure weight
- Measuring tape
- Pen, pencil
- Vapocoolant, Ethyl Chloride I.P. Spray (for stretch and spray technique)

INTERVENTION:

MYOFASCIAL MUSCLE RELEASE: Spray and stretch technique followed by stretching was followed for trigger point release which is explained below in detail. In this study, manual identification of trigger points was done in the following muscles such as Sternocleidomastoid, Upper trapezius, Levator Scapulae, Masseter and Posterior Cervical Muscles

- **UPPER TRAPEZIUS**: To release trigger points using a spray-and-stretch approach, the arm on the affected side was supported on a pillow as the patient relaxed completely while sitting in an armchair. Head was slightly flexed towards the affected side and laterally tilts towards the opposite side. Then sweeps of the vapocoolant spray from the acromion to the mastoid region, behind the ear, around to the temple, and occasionally to the jaw were applied. After the spray phase, gentle manual release was given to the patient. The scapula of the affected side was abducted by putting his or her front arm on the pillow. The patient's coordination of a slow expiration with relaxation and an inhale with a light contraction of the muscle against the operator's right hand enhanced the release
- **STERNOCLEIDOMASTOID** : The patient was made to sit calmly and comfortably before employing a spray-and-stretch technique to release sternocleidomastoid trigger points (TrPs). The patient was asked to employ full, steady diaphragmatic breathing to promote relaxation. Head of the patient was rested on the practitioner. To release the **clavicular division** of the muscle, the head was moved posteriorly and away from the affected side and rotated such that

the face is turned away from the affected side. The vapocoolant spray was immediately applied in gentle parallel sweeps starting at the muscle's lower attachment on the clavicle and moving up to its upper attachment on the mastoid process and over the occiput. To cover the pain reference zones, the sweeps were repeated behind the ear and across the forehead also. To release **sternal division** of the muscle, head of the patient was rotated towards the same side and the vapocoolant spray was applied in the upward direction. The stream of vapocoolant behind the ear and after the completion of the rotation the chin was gradually tipped downward towards the acromion

- **LEVETAR SCAPULAE**: The patient was made to sit comfortably in a chair with the pelvis leveled and the arm on the affected side hanging loosely to the side. About 30% of the patient's face was rotated in the other direction, away from the affected muscle. Following the spray lines, the vapocoolant was sprayed downward in parallel sweeps. The patient stretched the neck downward with the arm on the affected side

- **MASSETER:** Patient was made to lie in supine in a comfortable position with the head supported by a pillow. The jaw, cheek and all pain reference zones, such as the temple, forehead, hairline, and behind the ear, were covered with parallel sweeps of vapocoolant. Spray and stretch technique was followed by full opening and closing of mouth to restore normal functioning

- **POSTERIOR CERVICAL MUSCLES:** To stretch and spray the longitudinal posterior cervical muscles, the patient is made to sit. Head and neck of the patient was hanged forward and relaxed. The vapocoolant was applied upward over the back of the neck and head. Next the patient was asked to slump forward and down spray pattern bilaterally to cover the long paraspinal muscles from the occiput to the lower thorax was applied. This stretch was facilitated by "hump the back" which added reciprocal inhibition and voluntary stretch.

VESTIBULAR REHABILITATION:

- **Exercises in bed** : Looking up and then down, Looking alternatively left and right, Convergence exercises, Head movements such as Bending alternately forward and backward, Turning alternately to left and then right.

- **Exercises in sitting position**: Shrugging and rotating shoulders, Bending forward and picking up objects, Turning head and trunk alternately to the left and right.

- **Gaze Stability Exercises:** A business card or a target with words on it is taped in front of the patient so that the patient can read it. The patient first moves his head horizontally and then vertically for 1 minute keeping the words in focus. Repeat the above exercise with a large pattern, such as a checkerboard.

- **Postural Stability exercises:** Patient stands with feet as close together as possible with one or both hands touching the wall to maintain balance if needed. Turn the head to the right and to the left for 1 minute without stopping. Repeat the exercise with feet closer together. In standing, shift weight from one leg to the other. Stand on a cushioned surface (sofa cushion). Walk backward. The difficulty is increased by asking the patient to count backward while walking. Walk in a large circle then walk in smaller circles and finally in figure of eight

LEWIT MOBILIZATION

- **CERVICAL SPINE TRACTION TECHNIQUE**: Patient position -Sitting or Supine during manual traction. Head of the patient was cradled and the patient was instructed to look up towards her brow while inhaling, hold her breath while doing so and then look down towards her chin while exhaling and relaxing. If the patient was **supine**, patient's head was raised above the therapist thighs while simultaneously traction was applied on the neck on side, starting at the shoulders and moving towards the occiput. In **sitting,** hands and palms were placed on patient's cheeks, thumb at mastoid and elbows on the shoulder and a traction force was applied without involving much pressure.

- **CERVICAL SPINE MOBILIZATION TECHNIQUE (SIDE BENDING)**: Patient position – Sitting or supine. Head of the patient was grabbed from behind while in sitting with radial aspect of one hand on the transverse process of the lower vertebrae of the segment being treated and the neck of the patient was bent to side using the other hand. While treating

C0 segment, patient was asked to inhale to increase the resistance where while treating C1, C2 segment, patient was asked to exhale slowly to increase the resistance.

- **CERVICAL SPINE MOBILIZATION TECHNIQUE (ROTATION)**: This was carried out with the patient seated. Lower vertebra of the treated segment was fixed between thumb and fore finger; head was rotated in the direction of mobilization until the slack was taken. Patient was then asked to look up and to breathe in slowly, to hold breath and then to look down to breathe out, obtaining automatic mobilization in the restricted direction, while fixation of the lower vertebra was maintained. This was repeated two or three times.

- **TEMPOROMANDIBULAR JOINT MOBILISATION**: The patient was seated, with the head turned to one side. Patient's head was stabilized on the chest of the therapist. The patient was told to open the mouth, i.e. to let her chin drop; by cradling the mandible from the side, between two fingers, it was moved to the opposite side. After taking up the slack the patient was asked to breathe out during the isometric phase and breathe in during relaxation. During relaxation the mandible moves in the direction of the affected joint. The procedure was repeated three to five times.

DATA AND SOURCES OF DATA

Primary data was collected from pre diagnosed Migraine patients through clinical examination, standardized outcome measures and as per inclusion criteria.

THEORETICAL FRAMEWORK

Variables of the study contains dependent and independent variable. The dependent Variable used were Pain level (eleven point pain scale), Headache impact test Scores, Activities specific balance confidence scale Scores, Myofascial diagnostic scale Scores and MIDAS Scores. The Independent Variables used were Stretch and spray technique, Lewit Mobilisation and Vestibular Rehabilitation. A total of 60 Patients were divided randomly into three different groups that is Control group, Group B (Vestibular Training), Group C (Myofascial release and lewit Mobilization).

- Control group: Self stretching techniques and appropriate sleeping postures were taught to the patients. Patients received conventional stretching exercises for cervical and shoulder muscles along with postural correction exercises.
- Group B: Vestibular and postural control training was given. Patients received vestibular exercise including gaze stabilization, balance training and habituation exercises.
- Group C: Manual release using stretch and spray, positional release technique, reciprocal inhibition, (Travel and Simons' Myofascial Pain and dysfunction), and lewit mobilization of cervical spine and TMJ was given (Manipulative therapy in Rehabilitation of the locomotor system by Karel Lewit).
- Frequency and duration of treatment : 3 sessions/week of 30 minutes each for 1 month Assessments were conducted before the intervention (pre-test) and after completion of four weeks of treatment (post-test).

Hypothesis framework included

- Alternate hypothesis(H_a) : There is reduction in symptoms of migraine after incorporating myofascial release, lewit mobilization and vestibular training
- Null hypothesis(H_O): No reduction is there in symptoms of migraine after incorporating myofascial release, lewit mobilization and vestibular training

STATISTICAL TOOLS

The data collected was entered in MICROSOFT EXCEL sheet and statistical analysis was done using SPSS (21.0) package (SPSS Inc Chicago, USA). Parametric testing was used to compare groups since the quantitative dependant variables were reasonably normally distributed. Paired t-tests were used to compare quantitative outcomes between the three groups. Also, ANOVA and POST HOC were used to compare the three groups.

III.   RESULTS AND DISCUSSION

Table 3.1: The values indicated in the above table are statistics of demographic data of all the groups in terms of their mean, standard deviation and error.

		N	Mean	Std. Deviation
Age	Control Group	20	46.000	6.8364
	Vestibular Training	20	46.400	9.6595
	Group-C	20	44.100	7.1000
	Total	60	45.500	7.8966
Height	Control Group	20	163.0450	6.66613
	Vestibular Training	20	163.0680	5.74500
	Group-C	20	163.9540	10.04195
	Total	60	163.3557	7.58916
Weight	Control Group	20	65.550	5.4722
	Vestibular Training	20	64.250	7.4965
	Group-C	20	66.700	9.6196
	Total	60	65.500	7.6524
BMI	Control Group	20	25.0475	2.90967
	Vestibular Training	20	24.1750	2.60159
	Group-C	20	25.0450	4.15875
	Total	60	24.7558	3.26301

Table 3.2 – The values indicated in the table shows the descriptive statistics of all the variables that is Pain, MDS, ASBCS and HIT in terms of their means and standard deviations for Control Group

		Mean	N	Std. Deviation
1	Pre Test-Pain Level	4.400	20	.8208
	1 mont PostTest-Pain Level	3.800	20	1.1050
2	Pre test Myofascial Diagnotic Scale	8.500	20	2.7048
	1 month PostTest-Myofascial Diagnotic Scale	8.350	20	2.5603
3	Pre test-ASBCS	77.9335	20	7.46824
	1 month Post test ASBCS	78.895	20	7.4385
4	Pre test Headache Impact Test	59.200	20	6.9176
	1 Month Posttest Headache Impact Test	58.100	20	6.8280

Table 3.3 – The values indicated in the table shows t-scores and p values for different variables of the control group (pain, MDS, ASBCS and HIT) calculated as per the data recorded on day 0 and day 30 of evaluation. The values are significant for Pain level (p=0.001), Activities specific balance confidence scale (p=0.039) and Headache Impact Test (p=0.020)

		t	df	p
1	Pre Test vs 1 month post Pain Level	**3.943**	**19**	**.001**
2	Pre Test vs 1 month post Myofascial diagnostic scale	1.831	19	.083
3	Pre Test vs 1 month post Activities specific balance confidence scale	**2.221**	**19**	**.039**
4	Pre Test vs 1 month post Headache Impact Test	**2.531**	**19**	**.020**

Table 3.4 – The values indicated in the table shows the descriptive statistics of all the variables of Vestibular Training Group that is Pain, ASBCS and HIT in terms of their means and standard deviations

		Mean	N	Std. Deviation
1	Pre Test – Activities specific balance confidence scale	71.0675	20	6.17500
	1 Month Post test – Activities specific balance confidence scale	76.240	20	6.2547
2	Pre test – Headache Impact Test	61.150	20	4.3562
	1 month Post test - Headache Impact Test	56.000	20	4.1802
3	Pre Test – Pain Level	4.650	20	.8127
	1 month post – Pain Level	3.050	20	.7592

Table 3.5 – The values indicated in the table shows t-scores and p values for different variables of Vestibular Training Group (pain, ASBCS and HIT) calculated as per the data recorded on day 0 and last day of treatment. The values are significant for Pain level (p=0.000), Activities specific balance confidence scale (p=0.000) and Headache Impact Test (p=0.000)

		t	df	p
1	Pre test Activities specific vs 1 month Post test Activities specific balance confidence scale	-10.107	19	.000
2	Pre test Headache impact test vs 1 month post headache impact test	9.380	19	.000
3	Pre test Pain level vs 1 month post pain level	11.961	19	.000

Table 3.6 – The values indicated in the table shows t-scores and p value of MFR + Lewit Mobilisation Group for Pain Level pre and post of all treatment sessions calculated for every session. The values are significant for Pain level (p=0.000) for all the sessions.

		t	df	p
1	Pre Test Session Pain_Level Post Test Session Pain Level	12.365	19	.000
2	Pre Test Session Pain_Level Post Test Session Pain Level	12.337	19	.000
3	Pre Test Session Pain_Level Post Test Session Pain Level	15.079	19	.000
4	Pre Test Session Pain_Level Post Test Session Pain Level	7.610	19	.000
5	Pre Test Session Pain_Level Post Test Session Pain Level	8.097	19	.000
6	Pre Test Session Pain_Level Post Test Session Pain Level	11.461	19	.000
7	Pre Test Session Pain_Level Post Test Session Pain Level	11.961	19	.000
8	Pre Test Session Pain_Level Post Test Session Pain Level	11.461	19	.000
9	Pre Test Session Pain_Level Post Test Session Pain Level	10.485	19	.000
10	Pre Test Session Pain_Level Post Test Session Pain Level	11.961	19	.000
11	Pre Test Session Pain_Level Post Test Session Pain Level	8.097	19	.000
12	Pre Test Session Pain_Level Post Test Session Pain Level	11.052	19	.000

Table 3.7 – The values indicated in the table shows t-scores and p value of MFR + Lewit Mobilisation Group for Myofascial diagnostic pre and post scores of all treatment sessions calculated for every session. The values are significant for Pain level (p=0.000) for 1st 10 sessions, p=0.002 for 11th session and p=0.001 for the last session.

		t	df	p
1	Pre Test Session MDS Post Test Session MDS	5.101	19	.000
2	Pre Test Session MDS Post Test Session MDS	4.254	19	.000
3	Pre Test Session MDS Post Test Session MDS	6.902	19	.000
4	Pre Test Session MDS Post Test Session MDS	4.873	19	.000
5	Pre Test Session MDS Post Test Session MDS	6.892	19	.000
6	Pre Test Session MDS Post Test Session MDS	6.902	19	.000
7	Pre Test Session MDS Post Test Session MDS	6.185	19	.000
8	Pre Test Session MDS Post Test Session MDS	5.667	19	.000
9	Pre Test Session MDS Post Test Session MDS	8.324	19	.000
10	Pre Test Session MDS Post Test Session MDS	5.480	19	.000
11	Pre Test Session MDS Post Test Session MDS	3.611	19	.002
12	Pre Test Session MDS Post Test Session MDS	3.823	19	.001

Table 3.8 MFR + Lewit Mobilisation Weekly Pain Paired T Test. The values indicated in the table shows t-scores and p values for Pain level pre and post scores weekly. The values are significant for Pain level (p=0.000) at the end of every week

		t	p
1	Pre test session 1 Pain Level – Post test session 3 Pain Level	10.510	.000
2	Pre test session 4 Pain Level – Post test session 6 Pain Level	7.955	.000
3	Pre test session 7 Pain Level – Post test session 9 Pain Level	6.492	.000
4	Pre test session 10 Pain Level – Post test session 12 Pain Level	7.906	.000
5	Pre test session 1 Pain Level – Post test session 12 Pain Level	8.542	.000

Table 3.9 MFR + Lewit Mobilisation Weekly Myofascial Diagnostic Paired T Test. The values indicated in the table shows t-scores, df for myofascial diagnostic level pre and post scores weekly. The values are significant for myofascial diagnostic level (p=0.000) at the end of every week.

.		t	p
1	Pre test session 1 MDS – post test session 3 MDS	5.840	.000
2	Pre test session 1 MDS – post test session 3 MDS	6.133	.000
3	Pre test session 1 MDS – post test session 3 MDS	4.873	.000
4	Pre test session 1 MDS – post test session 3 MDS	7.414	.000
5	Pre test session 1 MDS – post test session 3 MDS	11.987	.000

Tables 3.10 ANOVA – Pre Test Pain Level. The values indicated in the above table shows descriptive values for pre test pain levels. ANOVA table shows F values for between and within groups. The p value is p=0.176 which is not significant.

	Sum of Squares	Df	Mean Square	F	p
Between Groups	4.300	2	2.150	1.794	.176
Within Groups	68.300	57	1.198		
Total	72.600	59			

Table 4.11 POST HOC – Pre Test Pain Level Multiple Comparisons

(I) Group	(J) Group	Mean Difference (I-J)	p
Control Group	Vestibular Training	-.2500	.751
	Group-C	-.6500	.154
Vestibular Training	Control Group	.2500	.751
	Group-C	-.4000	.484
Group-C	Control Group	.6500	.154
	Vestibular Training	.4000	.484

Table 4.12 Homogenous subsets Pre Test pain level

Table 3.11 & 3.12 - The values indicates post hoc test and homogenous subsets for Pre test Pain level. It depicts that three groups are in the same subset thereby stating that there is no significant difference between the three groups with respect to pre test pain level

Group	N	Subset for alpha =0.05
		1
Control Group	20	4.400
Vestibular Training	20	4.650
Group-C	20	5.050
p		.154

Table 3.13 ANOVA – Post Test Pain Level. The values indicated in the above table shows descriptive values for post test pain levels. ANOVA table shows F values for between and within groups with f value anf p value 15.976 and 0.000 respectively.

	Sum of Squares	df	Mean Square	F	p
Between Groups	27.300	2	13.650	**15.976**	**.000**
Within Groups	48.700	57	.854		
Total	76.000	59			

Table 3.14 POST HOC – Post Test Pain Level Multiple Comparisons

(I) Group	(J) Group	Mean Difference (I-J)	p
Control Group	Vestibular Training	.7500[*]	.034
	Group-C	1.6500[*]	.000
Vestibular Training	Control Group	-.7500[*]	.034
	Group-C	.9000[*]	.009
Group-C	Control Group	-1.6500[*]	.000
	Vestibular Training	-.9000[*]	.009

**Table 3.15** Homogenous Subsets Post Test Pain Level

Table 3.22 & 3.23 - The values indicates post hoc test and homogenous subsets for Post test Pain level. It depicts that three groups are in the different subset thereby stating that there is a significant difference between the three groups with respect to post test pain level

S

Group	N	Subset for alpha = 0.05		
		1	2	3
Group-C	20	2.150		
Vestibular Training	20		3.050	
Control Group	20			3.800
SIG.		1.000	1.000	1.000

GRAPHS:
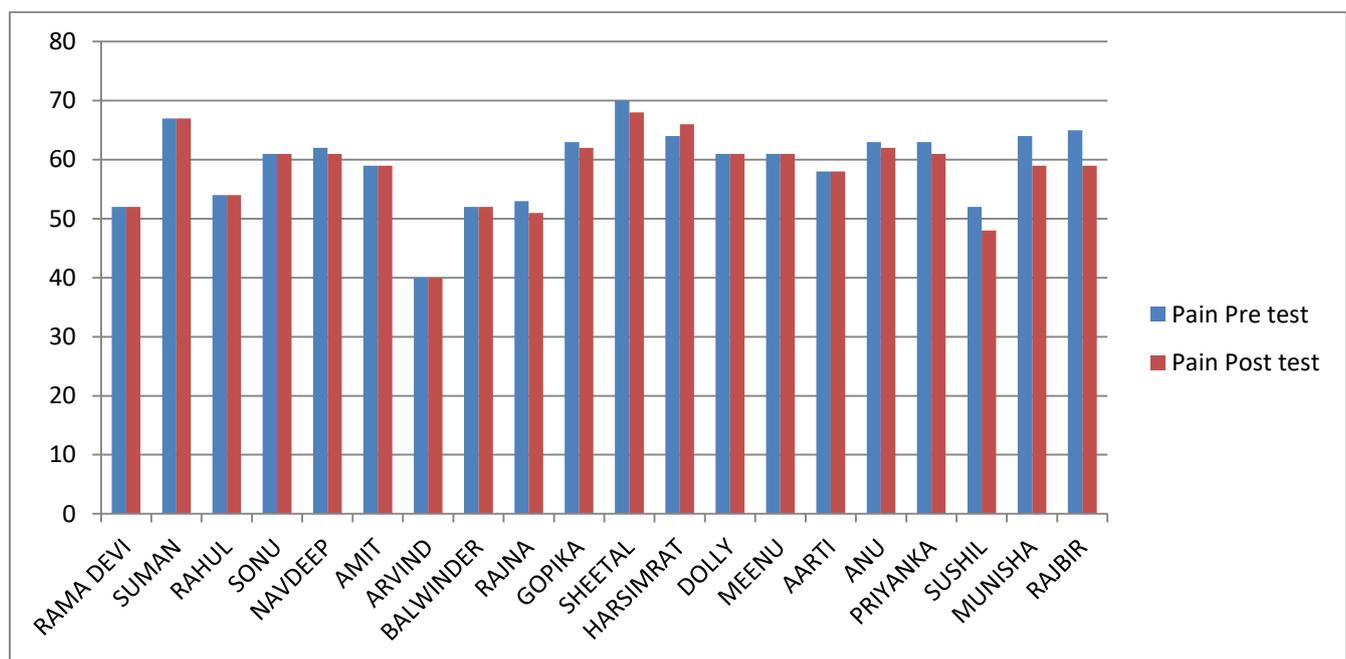
Graph 1 – Pre Post Pain Level Comparison Of Control Group
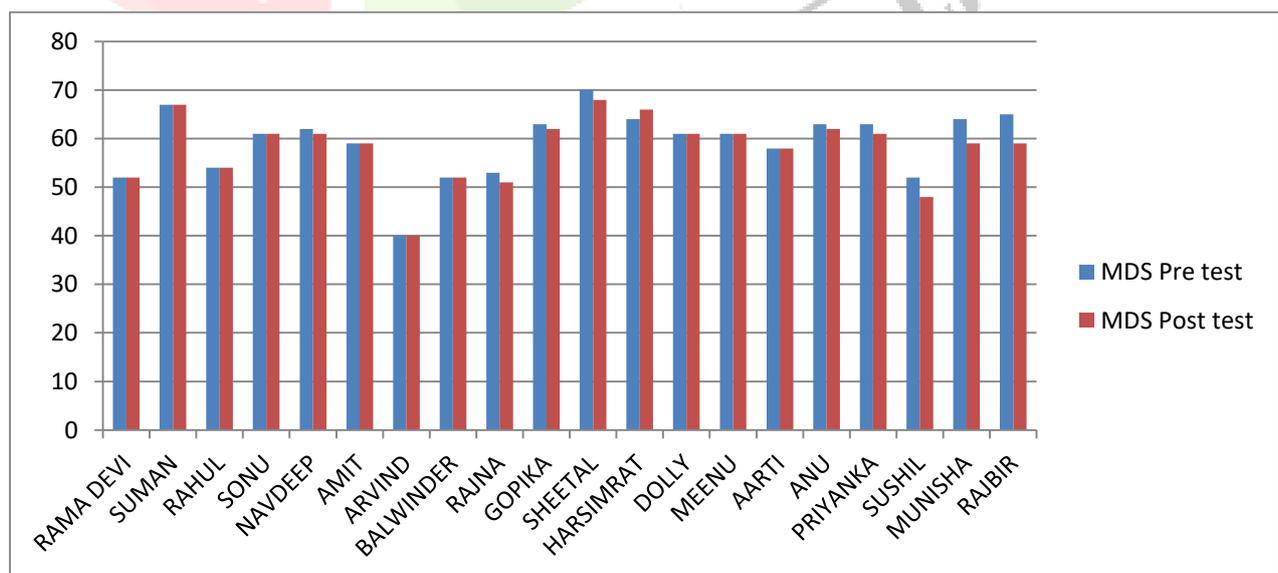
Graph 2 Pre Post Myofascial Diagnostic Scale Comparison Of Control Group
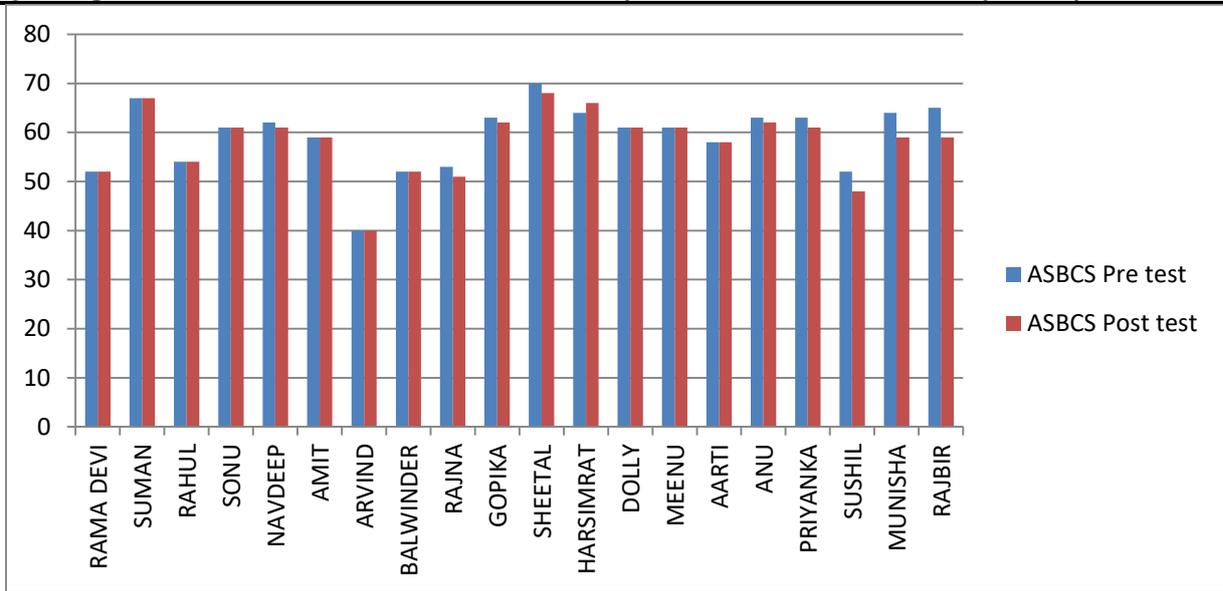
Graph 3 Pre Post Activities Specific Balance Confidence Scale Comparison Of Control Group
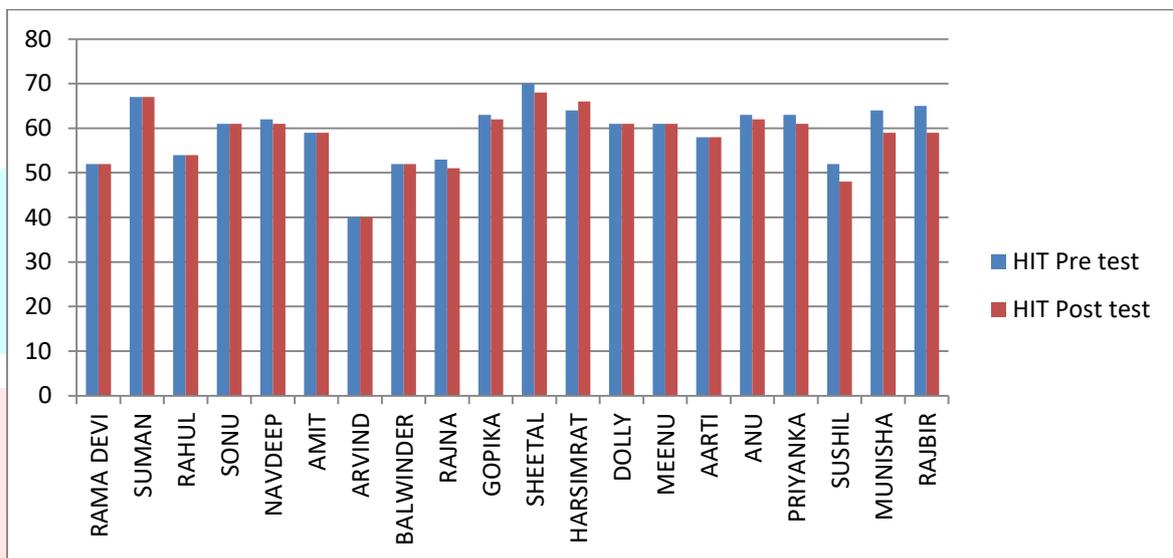
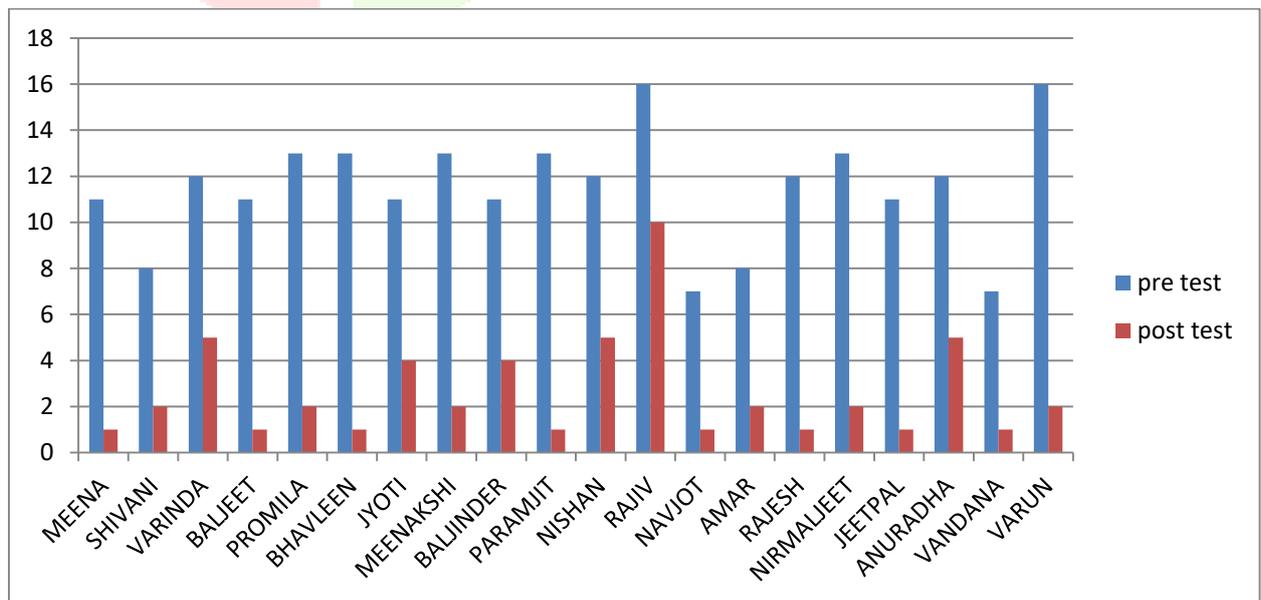Graph 4 Pre Post Headache Impact Test Comparison Of Control Group
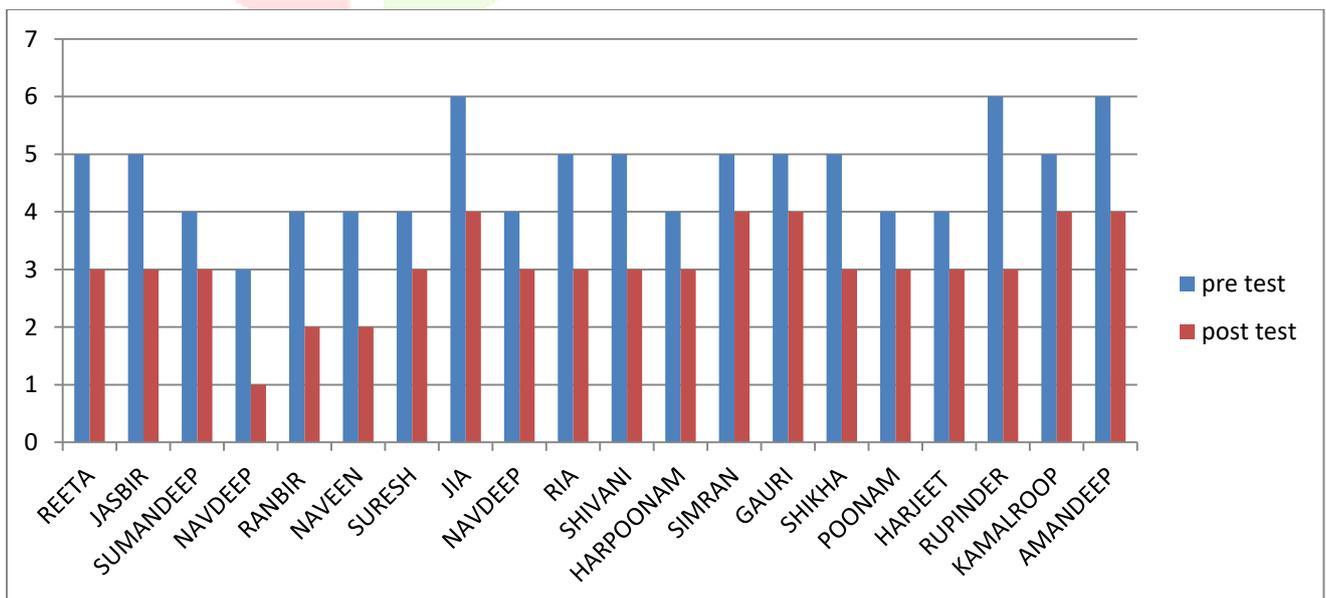
Graph 5 Pre Post Activities Specific Balance Confidence Scale Comparison Of Vestibular Training
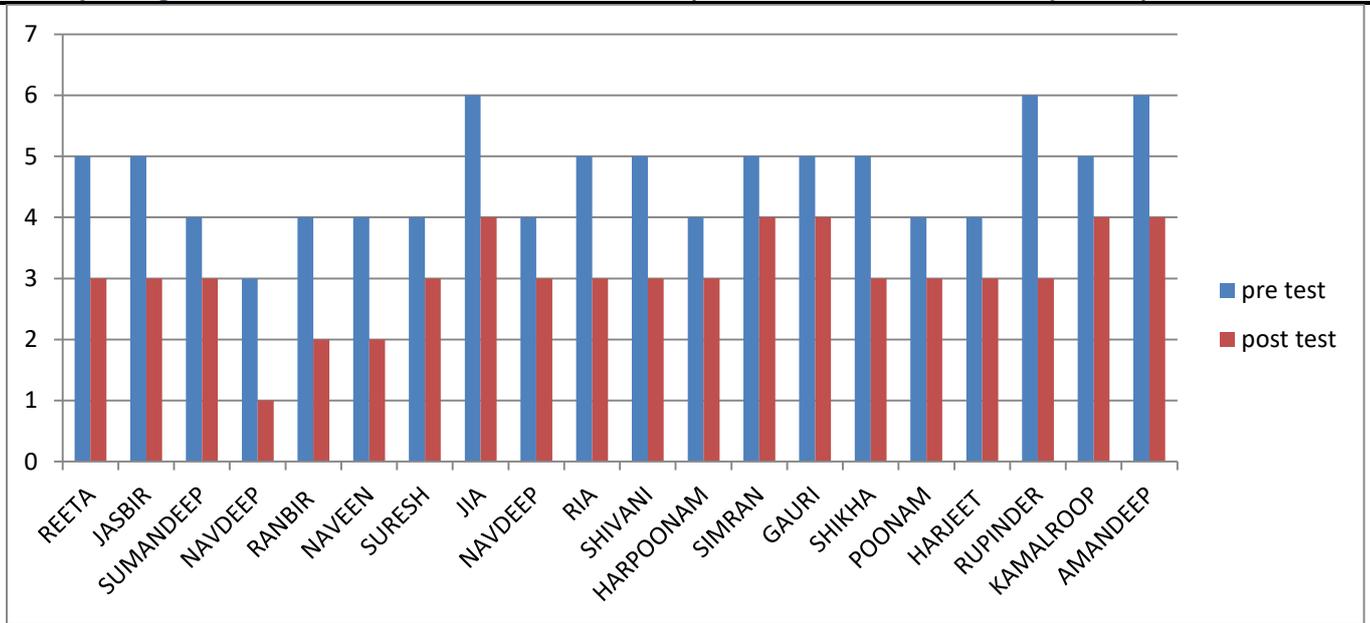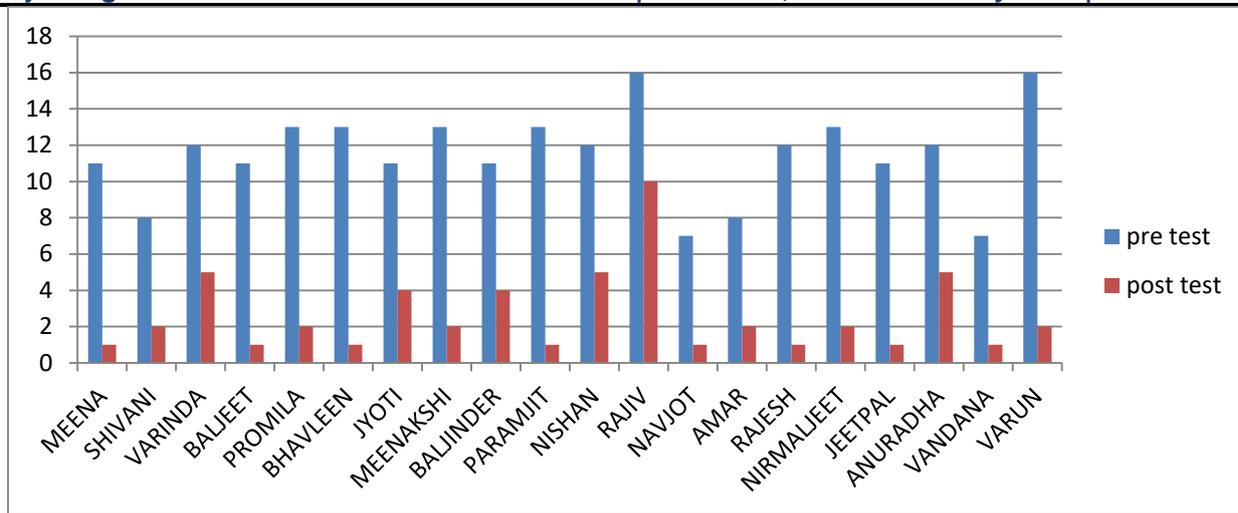
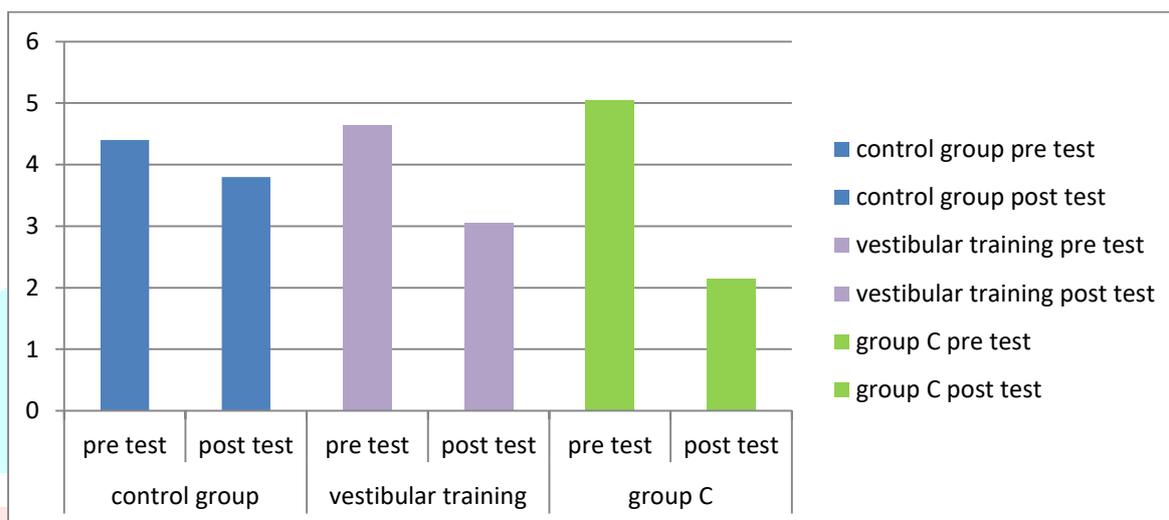Graph 6 Pre Post Headache Impact Test Comparison of Vestibular Training
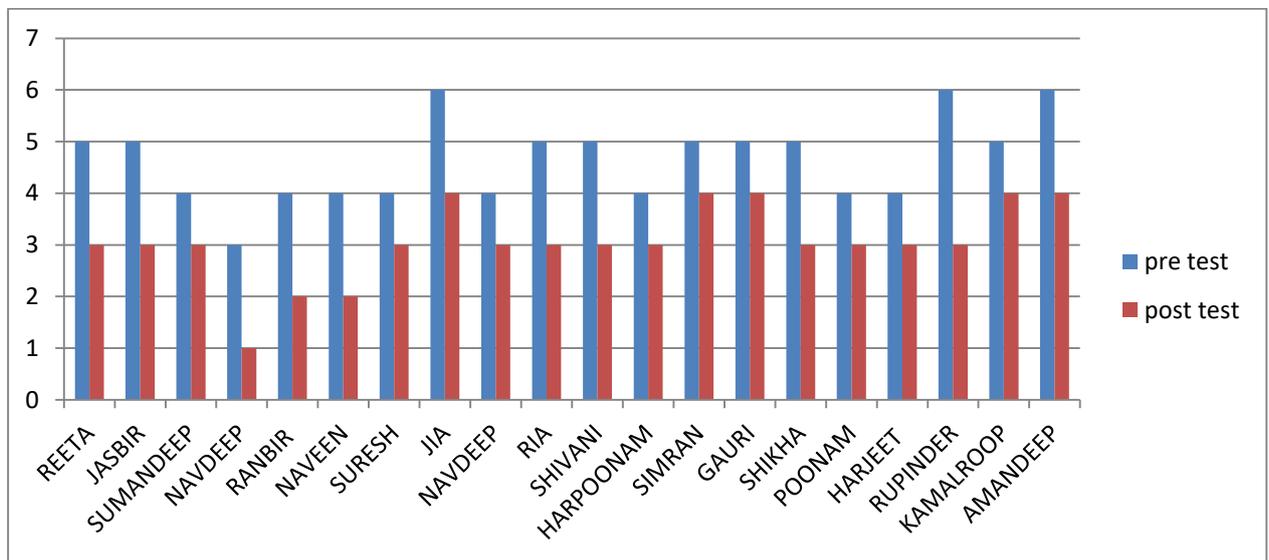
Graph 7 Pre Post Pain Level Comparison of Vestibular Training

Graph 8 Pre Post Pain Level Comparison of MFR + Lewit Mobilisation

Graph 9 Pre Post Myofascial Diagnostic Scale Comparison of MFR + Lewit Mobilisation

Graph 10 Between The Group Comparisons Of Pre Post Pain Level

IV. DISCUSSION:

Research conducted by Tahere et all 2019 proved that soft tissue manipulation techniques such as stretching were helpful in the treatment of some of the symptoms of migraine such as pain, headache impact, and balance of the patient. [14] Similarly in this present study, Patients were taught basic stretches of the major tight muscles in the migraine that is sternocleidomastoid, upper trapezius, and Levator scapulae along with the correct use of a pillow during sleeping which showed a significant improvement pre and post scores level. The application of self-stretching is known to bring the sarcomere in its normal length because of which the results were obtained even after stretching. [15] Vestibular training as a method of treatment option for migraine patients was considered in this study. The results obtained after pre and post analysis of data were in accordance with the study conducted by Li Liu et all, 2020 which proved the efficacy of using VRT for migraine patients having vestibular symptoms because of the underlying mechanism of enhancing vestibular compensation in migraine patients. [16] VRT has also shown that non-pharmacological treatment can be an effective means of treatment and can prove non-invasive by safeguarding patients from side effects caused due to long-term use of pharmacological pills and drugs which was proved by a study done by Ahmet Koc et all 2023 in which it was concluded that significant improvements in both the subjective and objective measures of balance evaluation have been seen with VRT as it is a physiological therapeutic technique that works on the vestibular system to promote CNS plasticity, aids in the restoration of bodily balance, and quickens the adaption and compensation processes by improving vestibulo-ocular and vestibulo-spinal reflex gains, desensitising the vestibular system, and developing new alternative senses to counteract imbalance brought on by position changes. [17] According to Tahere et all, 2021 myofascial release of trigger points is the most effective treatment in the management of migraine as the implementation of passive stretching with a progressive increase in range of motion seems to suppress the alpha motor neuron response and the inhibition of shortened muscle fibres under strain which leads to reverting of sarcomeres to their typical length andmyofascial release and stretching methods also have the ability to modify neck muscle tone via

influencing the trigeminoreticular pathway. [18] The results of the present study provides strong proofs of adding myofascial release (stretch and spray technique) as a choice of treatment for patients with chronic migraine. The results so obtained were in accordance with the previous studies conducted by Maciej et al, 2023 and Ali Ghanbari et al, 2015, which proved that release of myofascial trigger points can produce desired results. [19][20] According to Jafari et all 2023, mobilization can help in reducing symptoms of migraine as it is an array of movements meant for optimizing joint function and reducing muscular tension. The underlying mechanism of pain modulation in the area of the trigeminal nerve can account for the improvement in headaches in migraineurs treated with upper cervical mobilisation because of which the upper cervical segments may get fewer nociceptive impulses. This is achieved by starting a series of neurophysiological reactions from the central and peripheral nervous systems at the spinal and supraspinal level which therefore help in reducing headache symptoms. [21] Ambreen et all, 2022 proved in her randomized control trial study that cervical mobilization showed positive results in treatment of migraine patients [22] which was proved by improvement in scores of HDI. Lewit mobilization as a method of treatment which is an unexplored area was chosen for this study. This includes joint play techniques to relieve stresses on joints and improved the condition of the patients. [23] The positive and highly significant values for both myofascial release and mobilization rejected the null hypothesis thereby further leading to increase in the efficacy of these techniques to be used a treatment of choice for patients suffering with chronic migraine.

V. REFERENCES:

[1] Bahra A. (2011). Primary Headache Disorders: Focus on Migraine. *Reviews in pain*, *5*(4), 2–11. https://doi.org/10.1177/204946371100500402

[2] Stewart, W. F., Lipton, R. B., Celentano, D. D., & Reed, M. L. (1992). Prevalence of migraine headache in the United States. Relation to age, income, race, and other sociodemographic factors. *JAMA*, *267*(1), 64–69.

[3] Steiner, T.J., Stovner, L.J. Global epidemiology of migraine and its implications for public health and health policy. *Nat Rev Neurol* **19**, 109–117 (2023). https://doi.org/10.1038/s41582-022-00763-1

[4] Steiner, T.J., Stovner, L.J., Jensen, R. *et al.* Migraine remains second among the world's causes of disability, and first among young women: findings from GBD2019. *J Headache Pain* **21**, 137 (2020). https://doi.org/10.1186/s10194-020-01208-0

[5] Sanlier, N., & Bektesoglu, M. (2021). Migraine and biogenic amines. *Annals of Medical and Health Sciences Research*, *11*(4).)

[6] Khan, J., Al Asoom, L. I., Al Sunni, A., Rafique, N., Latif, R., Al Saif, S., ... & Borgio, J. F. (2021). Genetics, pathophysiology, diagnosis, treatment, management, and prevention of migraine. *Biomedicine & Pharmacotherapy*, *139*, 111557

[7] Lin, Y. K., Tsai, C. L., Lin, G. Y., Chou, C. H., & Yang, F. C. (2022). Pathophysiology of Chronic Migraine: Insights from Recent Neuroimaging Research. *Current Pain and Headache Reports*, *26*(11), 843-854

[8] Do, T. P., Heldarskard, G. F., Kolding, L. T., Hvedstrup, J., & Schytz, H. W. (2018). Myofascial trigger points in migraine and tension-type headache. *The journal of headache and pain*, *19*(1), 1-17.

[9] Tali, D., Menahem, I., Vered, E., & Kalichman, L. (2014). Upper cervical mobility, posture and myofascial trigger points in subjects with episodic migraine: case-control study. *Journal of bodywork and movement therapies*, *18*(4), 569-575.

[10] Kang, J. H. (2020). Effects on migraine, neck pain, and head and neck posture, of temporomandibular disorder treatment: Study of a retrospective cohort. *Archives of oral biology*, *114*, 104718.

[11] Fernández-de-Las-Peñas, C., Cuadrado, M. L., & Pareja, J. A. (2006). Myofascial trigger points, neck mobility and forward head posture in unilateral migraine. *Cephalalgia*, *26*(9), 1061-1070

[12] Alghadir, A. H., & Anwer, S. (2018). Effects of vestibular rehabilitation in the management of a vestibular migraine: a review. *Frontiers in neurology*, *9*, 440.

[13] Shumway-Cook, A. (2007). Vestibular rehabilitation: an effective, evidence-based treatment. *Department of Rehabilitation Medicine*.

[14] Rezaeian, T., Mosallanezhad, Z., Nourbakhsh, M. R., Ahmadi, M., &Nourozi, M. (2019). The Impact of Soft Tissue Techniques in the Management of Migraine Headache: A Randomized Controlled Trial. *Journal of chiropractic medicine*, *18*(4), 243–252. https://doi.org/10.1016/j.jcm.2019.12.001

[15] Rezaeian, Tahere1; Ahmadi, Mehdi1; Mosallanezhad, Zahra2,;Nourbakhsh, Mohammad Reza3. The impact of myofascial release and stretching techniques on the clinical outcomes of migraine headache: A randomized controlled trial. Journal of Research in Medical Sciences 26(1):p 45, | DOI: 10.4103/jrms.JRMS_745_18

[16] Liu, L., Hu, X., Zhang, Y., Pan, Q., Zhan, Q., Tan, G., Wang, K., & Zhou, J. (2020). Effect of Vestibular Rehabilitation on Spontaneous Brain Activity in Patients With Vestibular Migraine: A Resting-State Functional Magnetic Resonance Imaging Study. *Frontiers in human neuroscience*, *14*, 227. https://doi.org/10.3389/fnhum.2020.00227

[17] Koc, A., &CevizciAkkılıc, E. (2022). Effects of vestibular rehabilitation in the management of patients with and without vestibular migraine. *Brazilian journal of otorhinolaryngology*, *88 Suppl 3*(Suppl 3), S25–S33. https://doi.org/10.1016/j.bjorl.2021.07.011

[18] Rezaeian, T., Ahmadi, M., Mosallanezhad, Z., &Nourbakhsh, M. R. (2021). The impact of myofascial release and stretching techniques on the clinical outcomes of migraine headache: A randomized controlled trial. *Journal of research in medical sciences : the official journal of Isfahan University of Medical Sciences*, *26*, 45. https://doi.org/10.4103/jrms.JRMS_745_18

[19] Olesiejuk, Maciej, Marusiak, Jarosław, and Chalimoniuk, Małgorzata. 'Myofascial Trigger Points Therapy Decreases Myotonometric Tone and Stiffness of Trapezius Muscle, Benefits Headaches and Muscle Pain in Migraine'. 1 Jan. 2023 : 299 – 310

[20] Ghanbari, A., Askarzadeh, S., Petramfar, P., &Mohamadi, M. (2015). Migraine responds better to a combination of medical therapy and trigger point management than routine medical therapy alone. *NeuroRehabilitation*, *37*(1), 157–163. https://doi.org/10.3233/NRE-151248

[21] Jafari, M., Bahrpeyma, F., Togha, M., Hall, T., Vahabizad, F., & Jafari, E. (2024). Can upper cervical manual therapy affect the blink reflex in subjects with migraine and neck pain?. *The Journal of manual & manipulative therapy*, *32*(2), 190–197. https://doi.org/10.1080/10669817.2023.2250172

[22] Zahid, A., Sagheer, B., Mubeen, I., Mutasansar, A., & Amin, F. (2022). The Effect of Mobilization Combined with Soft Tissue Massage Versus Soft Tissue Massage Alone on Migraine Intensity. *Pakistan Journal of Medical & Health Sciences*, *16*(02), 260-260

[23] Karel Lewit, Manipulative Therapy for Rehabilitation of Locomotor System, Third Edition