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Effects of Progressive Muscular Relaxation Exercises Vs Yoga on Tension Headache: A Comparative Study

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Abstract: ***Background: Tension headaches are more common in the global population and stress is one of the major triggering factors causing it. Yoga and relaxation techniques are considered to be helpful in reduction of tension headaches. Aim: The aim of the study is to compare the effects of Progressive Muscular Relaxation and Yoga in treating tension headaches. Methods: Thirty subjects diagnosed to have Tension Headache according to the International Headache Society Criteria II were included in this study. Group A was allowed to do Yoga for two months and Group B did Progressive Muscular Relaxation for two months. And VAS, McGill pain Questionnaire, HIT were used as outcome measures to evaluate headaches before and after the treatment. Results: There was a significant improvement in reduction of Tension Headaches after Yoga when comparing the results with Progressive Muscular Relaxation. Conclusion: The study results suggests that Yoga plays a more vital role in treatment for Tension Type headaches in comparison with PMR. And further larger studies are required to substantiate its role with other approaches.***

Keywords: Yoga, Progressive Muscular Relaxation, Tension headache

1. Introduction

Tension type headache is most common type of headache. Its prevalence in general population ranges from 35 to 78% and it has high socio-ecomonic impact and tension type headache suffers show reduced ability in performing their day to day life.[1-3]

Although tension-type headaches are common, the pathophysiology and likely mechanism remain unclear.

Current knowledge of the nociceptive (pain receptor) system suggests that the derivative pain of tension-type headaches has a muscular origin.[4-6]

Muscular or myofascial pain tends to be dull and achy, poorly localized, and radiating, whereas pain originating from cutaneous structures is sharp, localized, and non-radiating.[7]

Tension headache can cause inflammation which is related to sympathetic nervous system that governs flight and fight response. In flight or fright reaction brain releases adrenaline which creates energy in muscles and nerves, triggering other chemical reactions leading to inflammation and pain.[10]

The supposition that the pain is muscular in origin and related to increased resting muscle tension corresponds to tension type headache by sensitizing the CNS and thereby leading to pain sensitivity and also some study suggest nitric acid synthesis inhibition has anlagesisc effect.[4]

Some studies show that extra cranial myofascial nociception and cental sensitization may be one of several pathological mechanisms.[5]

Progressive Muscle Relaxation (PMR) was put forth by DR.Edmund Jacobson 1930. Muscle tension is a common finding in tension type headache. Relaxation exercises are helpful in reducing headache.

Muscle tension is a common finding in all headache disorders, including migraine and tension type headache. Relaxation exercises have been shown to be helpful in reducing headache burdens in many people. What follows is one approach to the art of relaxation, concentrating on training the muscles to relax. [11]

Yoga is a great theapy for stress. Yoga is a science that eases oneself from physical and mental stress and has healing effects, thereby it reduces headache caused by stress. Yoga breathing has been repeatedly shown to be a valuable resource for people suffering from stress-related problems.

Yoga asanas have cumulative effect on all parts of our body. It provides strength and stamina and also balances the emotional levels.[15- 17]

In this study Yoga and Progressive muscular relaxation techniques are compared in reducing tension headache .

2. Methodology

- Study Design - Comparative Study.
- Study Type – Experimental Study.
- Study Method - Convenient Sampling method.
- The duration of Study - 2 months.
- The study size – 30 participants.
- Age Group- 25 - 30 years.
- Study Setting – Homebased (Pallikaranai)

Inclusion Criteria

- The Individuals Tension type headache according to "The classification of International headache Society". (1-3)
- Frequent episodes of headache occurring at least 3 months. (minimum 10 episodes per month)
- Headaches has at least two of the following with:
  a) Bilateral location of Pain.
  b) Pressing Tightening (non pulsating) quality.
  c) Mild or moderate intensity.
  d) Not aggravated by routine physical activities.
- Either one of photophobia or phonophobia can be present.

Exclusion Criteria

- Musculoskeletal disorders with symptoms similar to headache.
- Example, tension neck syndrome.
- Previous neck trauma ,Vertigo, dizziness.
- Patients in process of pharmacological adaptation.
- Hyper mobility of Joints.
- Pregnancy.
- Malignancy.
- Nausea and vomiting.

Outcome Measures

The assesment and scorings were based on -

- Visual Analogue Scale is used to evaluate.[11]
- McGill Pain Questionnaire (MPQ) to evaluate the type and frequency of its intensity.[13]
- Headache Impact Test (HIT) to find the Impact on ADL.[14]

3. Procedure

Subjects who fulfilled the inclusion criteria of tension headache are explained about the treatment measures. Patients who gave their consent were included in the study. Detailed history was taken from the subjects. The individuals who meet Tension headache criteria were randomly allocated to Group A or Group B, using opaque envelopes.

The type and frequency of headache ache were measured, its effect on activities of daily life were analysed using Mcgill and HIT based Assessment and the headache intensity is noted with Visual Pain Analogue Scale(VAS).

Participants are thought how to do yoga or muscular relaxation in a session. Then they are asked to do their Yoga or Progressive muscular relaxation daily at home. And the feedback from the participants are documented after a month using same measures .And they are asked to report in case of any inconvenience.
Group A– Yoga, 30minutes.
Group B– Progressive Muscular Relaxation, 30minutes.

Progressive Muscle Relaxation

Step 1: Tension – Inhale and purposely tense up or tighten hard the selected muscle group (not so hard that you strain). Hold the muscle tension for 5-7 seconds.

Step 2: Relax - Exhale while quickly but gently letting go, releasing tension. Take pleasure in the sensation of tension draining out of your body. Be still 30-40 seconds before moving on to the next muscle group. Compare relaxation vs. contraction.

Tensing the Various Muscle Groups

a) Neck- Stretching the head back, as if seeing the ceiling . Then flexing head forward like reaching chin toward your chest.
b) Face- raising the eyebrow, wide smiling, closing eyelids tightly,
c) Hands & Forearms – clenching the hand and making a tight fist.
d) Upper Arms – curling the arm and flexing the bicep.
e) Shoulders - shrugging shoulders as if trying to touch the ears.

When the subject has finished Progressive Muscle Relaxation session they will be told to remain quiet with eyes closed for a few seconds and tell them to mentally scan their body for any residual tension. If a particular area remains tense, repeat the cycle again. At they will be told to take deep breath, hold it and few seconds and feel the Calmness and deep relaxation

Yoga Therapy

These Subjects who undergoes comprehensive yoga session for 30 min, will include **sukshma vyayama, yoga asana, and shavasana** for a period of 2months.

Sukshma vyayama mainly concentrates on neck movements. Each movement is performed 5 times which takes 5 min.
Asana postures include **supta matsyendrasana** and **triyaka bhujangasana**. These asana are done mainly with concentration on neck muscles and back muscles.

Sukshma Vyayama

a) Inhale and exhale deeply and rapidly .
b) The rapidity and force of the breathing clears, dries and ventilates the air passages. This clears the pharynx of phlegm.
c) Standing upright feet together the following are done.

- Tilt your head back till possible range
- Lowering chin touching the sternal notch
- Keep your chin down and rotate your head, right to left and left to right.
- Then turning head with jerk side to side.

Supta Matsyendrasana:

- Subject is allowed to lie in supine position with eyes closed.
- The hands are placed sideward's on the floor at the level of shoulders.
- Both legs are slowly folded at the knees, then bend the knees to right side and neck left side.
- The same will be repeated turning knees to left and neck to right side.

Triyaka Bhujangasana:

- Subject is allowed to lie in prone position with eyes closed.

- Legs are brought together slowly and the palms are placed on either side of the chest.
- The head and chest are slowly raised .
- While inhaling head is slowly turned towards the right side, then left side.

Shavasana

- Patient is allowed to lie down in supine position with eyes closed
- A subject is asked to breath slowly and deeply.
- By doing this any muscle tension gets relaxed.

4. Data Analysis

In Group A (YOGA) - P value and statistical significance, the two tailed P value equals 0.0001.

By conventional criteria, this difference is considered to be extremely statistically significant. Confidence intervals from mean of Group A pre Group A post minus group two equals 2.73 confidence interval of this difference is from 2.12 to 3.34.

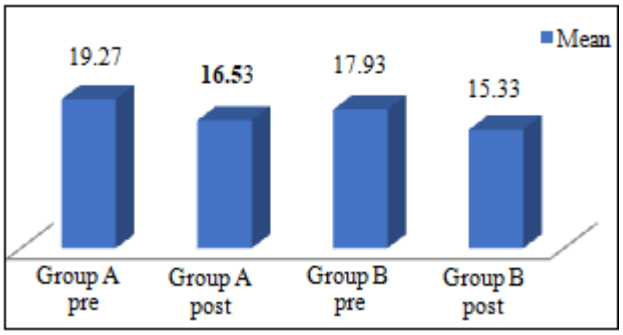
The t value equals 9.6257, df is 14 and standard error difference is equal to 0.284.

In Group B (PMR) - - P value and statistical significance, the two tailed P value equals 0.0001.

By conventional criteria, this difference is considered to be extremely statistically significant. Confidence intervals from mean of Group B pre Group B post minus group two equals 2.60 confidence interval of this difference is from 2.19 to 3.01.

The t value equals 13.6671, df is 14 and standard error difference is equal to 0.190.

	Group A pre (YOGA)	Group A post (YOGA)	Group B pre (PMR)	Group B post (PMR)
MEAN	19.27	16.53	17.93	15.33
SD	2.34	1.77	2.09	1.72
t- VALUE	9.6257		13.6671	
p- VALUE	0.0001		0.0001	
Standard error	0.284		0.19	



Group A – Yoga
Group B – Progressive Muscular Relaxation

5. Results

The Study shows that both groups show improvements in reducing Tension Type headaches.

In Group A (Yoga) the p value and statistical significance, the two tailed P value equals 0.0001.By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence intervals from mean of Group A pre Group A post minus group two equals 2.73 confidence interval of this difference is from 2.12 to 3.34.

The t value equals 9.6257, df is 14 and standard error difference is equal to 0.284.

In Group B (PMR) the p value and statistical significance, the two tailed p value equals 0.0001.By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence intervals from mean of Group B pre Group B post minus group two equals 2.60 confidence interval of this difference is from 2.19 to 3.01.

The t value equals 13.6671, df is 14 and standard error difference is equal to 0.190. The above statistical mean values shows that both groups show improvements in reducing Tension Type headaches and in comparing mean values both groups, Group A (Yoga) shows more Significant results when compared to Group B (PMR).

6. Discussion

T Stovner et.al., stated that Tension type headache contributed to be 53% in total headache burden globally.
B. K. Rasmussen et al., suggested that Incidence of TTH decreases with age. So the people with increasing age group were taken in the study.

Cesar Fernandez De Las Penas And Maria L Cuadrado (suggested that physical therapies are effective for management of headaches.

The present study shows that yoga has more significance in reducing Tension type Headaches. Yoga one of the ancient technique in relieving stress. Practice of asana shows improvement in conditions like headache insomnia and it reduces academic stress levels.

Previous studies by Bindu Menon et al suggested that yoga has a potential beneficial role in treatment for tension type headache.

Even Caroline Smith et al suggested that Yoga appears to provide a comparable improvement in stress, anxiety and health status compared to relaxation.

Sang-Dol Kim also suggested that yoga practice can effectively alleviate symptoms associated with primary headache CC Streetar et.al suggest that the decreased PNS and GABAergic activity that underlies stress-related

disorders can be corrected by yoga practices resulting in amelioration of disease symptoms. This has far-reaching implications for the integration of yoga-based practices in the treatment of a broad array of disorders exacerbated by stress.

And some Studies show the greater effects of progressive muscular relaxation on treating tension headaches than other approaches like TENS.

Gays L.Lipdnik et, al reported that a week of muscular relaxation reduces the severity and duration of headache

By relating the previous studies and present studies yoga is found to be more effective in treating headaches caused by stress. And the major drawback of study is that it had less samples and it was difficult the find subjects purely confined to only one type of headache since even migraneurs suffer from tension type of headaches.

Results could have been better if the study was for a higher durations

Regular and Long Practices of Yoga and Relaxation seems to have higher cumulative effect in treating headaches.

7. Conclusion

The study compared the effectiveness of Yoga in Group A and Yoga in Group B in People with Tension Type Headache. The study concludes that though both the Groups show significant results in reducing Tension Type Headaches but comparatively Group A(Yoga) shows more Significant results than Group B(PMR). Thus Yoga can be a good measure to relive from Tension Type Headaches.

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