



## EFFECTS OF LASER THERAPY AND ISCHEMIC COMPRESSIONS IN PATIENT WITH TENSION TYPE HEADACHE IN MOBILE OPERATORS

DR. J ANANDH RAJ <sup>1</sup> | MS R AMOOLYA <sup>2</sup> | DR. S VAHEEDHA <sup>3</sup>

<sup>1</sup> ASSISTANT PROFESSOR, APOLLO COLLEGE OF PHYSIOTHERAPY, APOLLO MEDICAL COLLEGE, CHITTOOR, INDIA.

<sup>2</sup> BPT, APOLLO COLLEGE OF PHYSIOTHERAPY, APOLLO MEDICAL COLLEGE, CHITTOOR, INDIA.

<sup>3</sup> ASSISTANT PROFESSOR, APOLLO COLLEGE OF PHYSIOTHERAPY, CHITTOOR, AP.

### ABSTRACT:

**BACKGROUND:** Tension type headache is common disorder in different population. Tension headache is related to myofascial tenderness and myofascial trigger points. TTH is defined as pain that is typically pressing or tightening in quality, of mild to moderate intensity, bilateral in location and does not worsen in routine physical activity. Thus, the study intends to analyze the effectiveness of laser therapy and ischemic compressions on reducing peri cranial tenderness and improving sleep quality.

**AIM:** The aim is to measure the improvement in rate of sleeping and reduction of peri cranial tenderness before and after the treatment.

**METHOD:** The study is from total sample size of twenty patients who are suffered with tension type headache. LLLT group consisting of ten patients will treat with of 808nm wavelength with intensity of 5j will be given up to four weeks for about three times a week from 100 sec duration and other group consisting ten patients will treat with ischemic compression up to four weeks for about three times a week which means applying pressure to myofascial trigger points up to tolerable level, ninety seconds holding the pressure produces best result. The preintervention measures and post-intervention outcomes were measured using peri cranial tenderness scoring and Pittsburgh sleep quality index (PSQI)

**RESULT:** The two groups showed significant differences in peri cranial tenderness and quality of sleep after the intervention. The statistical significance showed that group B subjects (IC) those of age 16-25 years with tension type headache showed more improvement in quality of sleep and reduction of peri cranial tenderness when compared to group A (LLLTT)

**CONCLUSION:** Understand the pathophysiology and improve the management of TTH by using laser therapy and ischemic compression over myofascial trigger points. The main outcome measure difference in number of days with headache between five before the treatment and 7-10weeks after the treatment as recorded by participants in headache diaries. The pain is measured by PT scale, rate of sleeping by PSQI. IC is efficacious to increase QOS and to reduce the PT in subjects with tension type headache.

### KEYWORDS:

TENSION TYPE HEADACHE-LOW LEVEL LASER THERAPY AND ISCHEMIC COMPRESSION OVER MYOFASCIAL TRIGGER POINTS.

### INTRODUCTION

TENSION TYPE HEADACHE is the most common primary headache disorder stated by

WHO. According to world health organization tension type headache is characterized as pain is typically pressing or tightening in quality, of mild to moderate intensity, and bilateral in location and does not worsen with the routine physical activity. However, the term tension type headache is chosen by international classification headache diagnosis (ICHD) in 1998 and been retained by ICHD (1). This headache was previously known by terms such as psychogenic headache, Stress headache, psychomyogenic headache, muscle contraction headache etc....According to world health organization prevalence of tension type headache vary over a wide range from 1.3% to 65% and 2.7

%to 86% in women. It is very common more than 10 million per india. Womens are more affected than males (5:4 ratio STH). Average age of onset (25 to30 years) delayed. The peak prevalence occurs between 30-39 decreases slightly with age (10 and 12). Or children it is estimated 9.8 to 24.7% Sufferer from stress type headache. Incidence of STH is difficult to measure. The annual incidence for STH was 14.2 per 1000 person years for frequent decreasing STH, decreasing with age. Risk factors for developing STH were poor self - rated health inability to relax after work and sleeping few hours per night. (9)

Multiple factors can bring on stress type headache including stress, inadequate sleeping and poor posture. Eye strain such as staring from computer screen for long

time. Pain in other parts of head and neck caused by problems such as temporomandibular disorders, TTH also occurs as a result neurotransmitters imbalance.(22) problems sleeping such as insomnia, stress related family, work, life challenges like starting or losing a job. Some health care providers believe tightened muscles in back of head or neck may trigger tension headache. metabolic disorders like tumors and thyroid, primary headache disorders like chronic migraine will leads to occurrence of stress type headache(11) An international headache society classification (ICHD), tension type headache has been divided into two forms episodic (ETTH)and chronic (CTTH). The episodic tension type headache has been divided into two groups, namely infrequent and frequent. All the three types of tension type headache share some clinical features except for frequency. It is also suggested that clinical examination, the clinicians should look for pericranial tenderness in patients with tension type headache and sub classify them as those associated or not associated with pericranial tenderness (1).

Frequency Characteristics of tension type headache include Infrequent ETTH has less than 12 days/year where as frequent ETTH has more than 12days and less than 180 days per year. At least 10 episodes occurring more than one day and less than 15 days/month for at least 3 months. The chronic tension type headache (CTTH) has more than 180 days/year. More than 15 days/ month for at least 3 months. (1-table:1)

The pathogenesis indicates Stress is a multidimensional phenomenon which involves both nervous and endocrine system. A distillate of Present available data does suggest that pericranial myofascial mechanism have importance in episodic TTH, where as sensitization of pain pathways in central nervous system resulting from prolonged nociceptive stimuli from pericranial myofascial tissues seems to be responsible for conversion of episodic to chronic TTH(4). Psychological stress and week mechanism initiate the psychological pain via activation of secondary messengers in downstream involved in pain. Peripheral mechanics are predominant in episodic tension type headache whereas central mechanics are involved in chronic tension type headache. The conversion of ETTH to CTTH is most relevant. Pericranial tenderness is found to be most prominent clinical finding in tension type headache. The mechanism responsible for pericranial tenderness could be peripheral activation or sensitization of myofascial receptors.(17)

Brain chemicals (neurotransmitters) Gamma - aminobutyric acid, Dopamine, Nor- Epinephrine, Serotonin, Melatonin, Glutamate. Pericranial muscles are divided into two groups i.e cephalic muscle group(frontal, temporal, lateral pterigoid and masseter muscles)and neck muscle group(insertion at mastoid process, sternocleidomastoid and trapezius muscle and neck muscle insertion).(17)Tension-type headache indicate that the nociceptive input to the Central nervous system may be increased as a result of activation or sensitization of peripheral sensory afferents.(20)Pericranial muscle

tenderness score system was used to determine the pericranial tenderness. (18,19)Nociception is a process that different stimuli (thermal, mechanical, and chemical) are by the peripheral nerve fibers called nociceptor, through which the noxious stimuli are transduced into action potentials and conducted to the spinal cord and brain.(21)Researches indicated the patients who are suffering tension type headache may have abnormalities in central nervous system this includes nerves in brain spine, which their increases sensitivity to pain.

The first step in stress response is the perception of the threat (stressor). Whenever there is some stressor – real or imagined, it acts at the level of brain. In the brain, it is the hypothalamus which perceives the stressor. When the hypothalamus encounters a threat it performs some specific functions: Activates autonomic nervous system (ANS), Stimulates Hypothalamic Pituitary Adrenal(HPA) axis by ,releasing Corticotrophin Releasing Hormone (CRH) and, Secretes arginine vasopressin (Antidiuretic Hormone ADH).. . In response to a stressor catecholamine: epinephrine (adrenaline) and norepinephrine (nor adrenaline) are released at various neuralsynapses.

The release of these catecholamine causes several changes like Increase in the heart rate and force of myocardial contraction vasodilatation of arteries throughout working muscles and vasoconstriction of arteries to nonworking muscles; dilation of pupil and bronchi and reduction of digestive activities in the body.

All these changes are required to prepare the body for fight-or-flight response. The effects of these hormones – epinephrine and nor epinephrine last for few seconds. The functions of parasympathetic nervous system are opposite to that of sympathetic nervous system and help in energy conservation and relaxation.

ACTH stimulates adrenal cortex to release corticoids (glucocorticoids and mineralocorticoids). The major function of glucocorticoids is to release energy, which is required to cope with the ill effects of stressor. In addition to this corticoid have several other functions such as: increased urea production, appetite suppression, suppression of immune system, exacerbation of gastric irritation, associated feeling of depression and loss of control. These are the symptoms generally seen in a person under stress.

Stress type headache is characterized as feeling like someone squeezing both sides of their head together or band around their head or bearing heavy burden on head. pain is constant but not throbbing, mild to moderate pain is present in both sides of head. Nausea, vomiting is usually absent but photophobia or phonophobia may be present

Physical activity does not show any impact on TTH intensity in majority of patients. The difference between tension type headache and migraine is that physical activity (walking, climbing stairs)does not any impact on TTH but migraine show impact.(13-15)90% patients may suffer with TTH bilaterally. Soreness in neck and shoulders is common. The

muscles in frontal and temporal region are: masseter lateral pterigoid, splenius and trapezius muscles are tight. Risk factors of tension type headache are Stressful life, Work pressure, Sleeplessness, eyestrain. Complications of tension type headache include Heart related problems, Angry, Irritation, Feeling low in psychologically

Patients may suffer from nausea, vomiting. 20% of patients complain mild to moderate loss of appetite. (14) Either photophobia or phonophobia may present but both symptoms are not present. stress, lack of sleep, not eating on time are similar symptoms complain by patients in both TTH and migraine. (15,16) Occasionally some patients report alcohol and menstruation as headache precipitants with ETTH. Stress type headache is most commonly treated non pharmacologically.

Non-steroidal anti-inflammatory drugs are used as medications for stress type headache. Relaxation exercises, massage, Postural exercises, cranio-cervical techniques, thermotherapy, vertebral mobilizations and stretching are effective in reducing STH symptoms such as pain intensity and frequency. IN studies that have applied joint mobilizations, cervical range of motion has improved. Other activities such as quality of life, pain disability, psychological aspects have improved with MT. other treatments like behavioural therapy-focused on modifying harmful behavior associated with psychological distress. Chiropractic treatment techniques-adjusting spine and massage back muscles to relieve pain. Acupuncture-insertion of needles into specific points to relieve pain and treat other conditions.

#### **EFFECTIVENESS OF LOWER LASER THERAPY IN STRESS TYPE HEADACHE:**

Lower level laser therapy for stress is extremely effective. Lower level laser therapy provides a relief from mental and emotional effects of stress, creating a sense of calm and wellbeing, relieving the patient from other issues that compound the ability to relax and take things easy. (24)

That LLLT regulates blood flow in temporal artery after irradiation and might control serotonin levels in patients suffering with tension type headache and contributing to pain relief. (23) The light energy in laser therapy penetrates the skin to cause therapeutic changes on cellular level. Laser light energy stimulates the production of ATP in the mitochondria OR power centre of muscle cells. Increasing the energy production helps to strengthen the muscle tissue, making the muscles stronger in neck and upper back which will support the head and therefore less susceptible to the tension that causes headache.

#### **EFFECTIVENESS ISCHEMIC COMPRESSION IN STRESS TYPE HEADACHE:**

Myofascial trigger point is most common problem in computer users. Ischemic compressions is the technique used to relieve the myofascial trigger points. Releasing the trigger points may decrease the pain, strength immunity, improve nerve function, increase blood circulation this will increase movement potential, reduce restriction, release

spasm and ease pain. (29)

Ischemic compression is the application of progressively strong, painful pressure on trigger points to eliminate trigger points. Ischemic compression is followed by lengthening of muscle. (30)

#### **WHY ONLY IN MOBILE OPERATOR MEMBERS?**

MOBILE OPERATORS are more exposed to light which leads eye strain, poor sleep, Slouching keeps misalignment of spine, neck strain is occurred if mobile is not yet eye level, crossing legs and ankle leads to hip misalignment, work pressure, heightened emotions, pain in head and neck caused by temporomandibular disorders. These are the trigger point for stress type headaches MOBILE operators are more prone to stress type headache.

#### **NEED OF THE STUDY**

Tension type headache is most common disorder affecting more than 10 millions per India with an average onset of 25-30 years. Tension type headache is associated with the quality of life. Hence need of the study was to compare the effectiveness of laser therapy and ischemic compression on reducing the pericranial tenderness and to improve the Sleep quality.

#### **AIM OF THE STUDY**

The aim of the study was to find the effectiveness of laser therapy and ischemic compressions on reducing the pericranial tenderness and improving the sleep quality in subjects with tension type headache.

#### **OBJECTIVE OF THE STUDY**

To assess the effect of laser therapy in reducing the pericranial tenderness and improving sleep quality in subjects with tension type headache.

To assess the effect of ischemic compressions in reducing the pericranial tenderness and improving sleep quality in subjects with tension type headache.

To determine the effectiveness of laser therapy when compared to ischemic compression in reducing pericranial tenderness and improving sleep quality in subjects with tension type headache.

#### **MATERIALS AND METHODOLOGY**

##### **METHODOLOGY**

This study was proposed to determine the effectiveness of laser therapy and ischemic compressions in subjects with tension type headache. The study is conducted in physio OPD, in the government district headquarters hospital, Chittoor. In this Experimental study. A total number of 30 subjects both men and women within age group between 16 to 25 years are recruited from the department of physiotherapy and willing to participate in the study and falls under inclusion criteria between 16 to 35 years. patient diagnosed with eth or cth. patient suffering longer than 3 months of tth. should complain more than one headache day per month. complains pain from 30 min to 7 days. characteristics that include in this study were bilateral location pain, nonpulsative pain pressure, pain mild to

moderate headache does not increase with physical activity. Headache associated with peri cranial tenderness.

The exclusion criteria are Patients with infrequent ETT, probable frequent and infrequent forms of TTH Or other Patients complain Pain aggravated by the movement of the head. Metabolic musculoskeletal problems with similar headache symptoms. Patient with previous trauma to cervical pain. Patient with vertigo, dizziness and uncompensated tension, joint stiffness, athelosclerosis, Emotional stress. Patient with heart diseases. Patient suffer from photophobia, phonophobia, nausea and vomiting. Patient with joint instability, neurological disorder, laxity of cervical soft tissues. Any radiographical abnormalities. Generalized hypermobility and hyperlaxity. Pregnant women. at government district headquarters hospital, Chittoor. Sampling through convenient sampling method, Treatment duration: Four weeks, twice a week Study period: Four weeks

**OUTCOME MEASURES:**

Peri cranial muscle tenderness: To measure tenderness in muscle Sleep quality: To measure the quality of sleep

**INTERVENTION:**

Total 30 subjects with tension type headache who fulfilled the inclusion criteria were taken by simple random sampling technique. Mode of assesment and about the condition will explained to all subjects and return informed concern were obtained from them. Before starting the program pre-test will done and subjects were divided into groups. Group A laser therapy group and group B ischemic compression group. All the subjects were scheduled to attend the clinic twice a week with a duration of 30-60 sec of laser therapy and ischemic compressions for about 20 min. During the program all subjects are allowed to take medications. And patients were counceled about there personal habits, and conventional physiotherapy will given normally.

**GROUP-A (LASER THERAPY):**

Subjects under group -A will receive laser therapy with power range of (200MW)of galium-arsinide type. Light with a wave length in red to near infrared region of spectrum (808nm),with intensity of 5j will be given for four weeks ,twice a week for about 30-60 seconds. During the treatment patient should wear glasses and remaining area is covered with towel.

**GROUP-B (ISCHEMIC COMPRESSIONS):**

Subjects under group-B was receive ischemic compressions 4weeks for about thrice a week, which means applying pressure to myofascial trigger points up to maximum tolerable level, ninety seconds holding the pressure produces best result but thirty seconds is enough to produce change.

**STATISTICAL ANALYSIS:**

Statistical values was performed using MS EXCEL 2007 GRAPHPAD software version 20.0.Experimental statistical data has performed in the form of mean standard

deviation and mean difference percentage were calculated and presented.

**BETWEEN THE GROUPS:** Independent student ‘t test’ was performed to assess the statistical significant different in mean values between the groups for pericranial tenderness scoring and pittsburgh sleep quality index.

**WITHIN THE GROUPS:** paired student's 'test' was performed to assess the statistical difference within the groups for pericranial tenderness scoring and pittsburgh sleep quality index from pre and post test values.

Table-1: Mean score of pre and post values of tenderness within LLLT group

Pericranial tenderness	Pre mean	Post mean	T-value	P-value	Interference
Frontalis Rt	2.4	1.4	4.74	<0.01	Significant
Frontalis Lt	2.1	1.3	4.00		
Trapezius Rt	1.7	1	3.27		
Trapezius Lt	2.1	1.2	5.01		

Table-2: Mean values of pre and post values of Pittis burgh sleep quality index within LLLT group

PSQI	N	Pre test	Post test	T -value	P -value	Interference
Mean	10	13.6	6.4	7.56	0.000034	Significant
Standard deviation	10	3.134	0.699			

Table-3: Mean score of pre and post values of pericranial tenderness within IC group

Pericranial tenderness	pretest	posttest	T-value	P-value	interference
Frontalis Rt	2.1	1.2	9.00	0.00028	Significant
Frontalis Lt	2.3	1.1			
Trapezius Rt	2.4	0.9	6.00		
Trapezius Lt	2.1	0.9	5.58		
			6.00		

Table-4: Mean score of pre and post values of Pittis burgh sleep quality index within IC group

PSQI	N	Pretest	Posttest	T-value	P-value	Interference
Mean	10	15.5	4.9	12.73	0.0000004	Significant
Standard deviation	10	3.027	0.994			

**RESULT:**

The result of this study was analyzed which was based on tenderness and sleep quality measured by pericranial tenderness scale and Pittis burgh sleep quality index. Comparison was done both within each group as well as between the two groups. So as to evaluate the intra group and inter group effectiveness of low-level laser therapy and ischemic compressions which are under consideration in the present study. There was significant

difference in peri cranial tenderness scale in tenderness and Pittis burgh sleep quality index (PSQI) in quality of sleep of all groups. Mean values of post intervention values of peri cranial tenderness scoring (PTS) for frontalis right and left, trapezius right and left of group A and B are (1.4,1.3,1,1.2) and (1.2,1.1,0.9,0.9) and the P value is 0.01627 which is extremely significant. The post intervention mean values of Pittis burgh sleep quality index (PSQI) of group A and B are 6.4,4.9 respectively and the P value is 0.00910. i.e., significant.

#### DISCUSSION:

Generally, pericranial tenderness is a result of neurotransmitter imbalance and tightening of muscles in back of head and neck in patients with tension type headache. Additionally, in these patients, reduced quality of sleep which is accompanied by the stress and primary headache disorders like chronic migraine. It has been reported that tension type headache is not increased due to activity. Due to this pericranial tenderness and reduced quality of sleep it is difficult for tension type headache patients to perform activities actively and to maintain healthy communication with others which urged me to conduct this study on tension type headache subjects, whose recovery can be prudent for their family and their social life.

However, reducing pericranial tenderness and improving quality of sleep will reduce the pharmacological treatment for tension type headache and disorder among the patients with tension type headache.

For patients with tension type headache was treat with low laser therapy and ischemic compressions was reduce the pericranial tenderness and improve the quality of sleep. Ischemic compressions on pericranial muscles were experience some pain and is general which helps to relieve trigger points and increase blood flow leads to reduction of tenderness for patients with tension type headache. The pre and post intervention mean values of psqi , pt of group a:in the presence study it has been reported that pre mean values for pericranial tenderness of frontalis rt, frontalis it, trapezius rt, trapezius it is 2.4,2.1,1.7,2.1 and post are 1.4,1.3,1,1.2 pre value of psqi are 13.6,3.134 and post are 6.4,0.699 The pre and post intervention mean values of psqi, pt of group b; In this present study it has been reported that pre mean values for pericranial tenderness of frontalis rt, frontalis it, trapezius rt, trapezius it is 2.1,2.3,2.1,2.4 and post are 1.2,1.1,0.9,0.9 pre value of PSQI are 15.5,3.02 and post are 4.9,0.99.

#### LIMITATIONS AND RECOMMENDATIONS:

##### LIMITATIONS:

- The study did not include long term follow up.
- The study sample size was relatively small to detect difference between low level laser therapy and ischemic compressions

##### RECOMMENDATIONS:

- Follow up program can be included to assess

the short term and long term effects of treatment.

- Further study can be done to check the effects of these techniques on other conditions.
- Effects of these trainings on other types of tension type headache disorder can be studied.
- Further study should include more measurement tools.

#### CONCLUSION:

In conclusion in patients with tension type headache four weeks of low level laser therapy and ischemic compressions resulted in significant improvements in quality of sleep and per cranial tenderness. The result had shown that both low level laser therapy and ischemic compressions has improved significantly on post test values within the group but when compared between the groups, ischemic compressions showed statistically significant improvement than low level laser therapy in improving quality of sleep and in reducing pericranial tenderness among chronic tension type headache disorder subjects.

#### REFERENCES

1. Dr.debasish chowdhury,Tension type headache Ann indian Acad Neurol,2012 Aug 15:s83-s88.
2. Headache classification subcommittee of international headache Society. The international classification of headache Disorders. Cephalgia (2edition) 2004;24 (suppl 1):1-160. (pubmed) (google scholarr)
3. Headache classification committee of the international headache society. Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Cephalgia.1988;8 (suppl 7):1-96.
4. Bendtsen L.central sensitization in tension type headache. possible-pathophysiology mechanisms. Cephalgia. 2000;20:486-508.
5. Jensen R.pathophysiological mechanisms of tension type headache:A review of epidemiological and experimental studies.Cephalgia.1999;19:602-21.
6. Oleson J,Bousser M-G,Diener H-C,Dodick D,First M,Goadsby J,et al.New appendix criteria open for a broader concept chronic migraine. Cephalgia. 2006;26:742-6

7. Lyngberg AC, Rasmussen BK, Jorgensen T, Jensen R. Has the prevalence of migraine and tension type headache changed over a 12 year period? A Danish population survey. *Eur J Epidemiol.* 2005;20:243-9.

8. Rasmussen Bk. *Epidemiology of headache. Cephalgia.* 1995;15:45-68.

9. Lyngberg AC, Russemen BK, Jorgensen T, Jensen R. Prognosis Of migraine and tension type headache: A population based follow up study. *Neurology.* 2005;65:580-5.

10. Andlun-sobocki P, Jonsson B, Wittchen HU, Olesen J. Cost of disorders of brain in Europe. *Eur J Neurol.* 2005;12 (suppl 1):1-27.

11. <https://my.clevelandclinic.org/health/diseases/8257-tension-type-headaches>.

12. Stvoner L, Hagen K, Jensen R, Katsarava Z, Lipton R, Scher A, et al. The global burden of headache: A documentation of headache prevalence and disability worldwide. *Cephalgia.* 2007;27:193-210. (pubmed) (google scholar)

13. Rasmussen Bk, Jensen R, Schroll M, Oles J. Interrelation Between migraine and tension type headache in general Population. *Arch Neurol.* 1992;49:914-8.

14. Rasmussen BK, Jensen R, Olesen J. A population based analysis of the diagnostic criteria of the international headache society. *Cephalgia.* 1991;11:129-34.

15. Ulrich V, Russell MB, Jensen R, Olesen J. A comparison of tension type headache in migraines' and nonmigraineurs: A population based study. *Pain.* 1996;67:50

16. Spierings EL, Ranke AH, Honkoop PC. Precipitating and aggravating factors for migraine Versus tension type headache. *Headache.* 2001;41:554

17. Kjerista Aaseth, Ragnhild Berling Grande, Christoffer Lundqvist, Michael Bjorn Russell. *The Journal of Headache and Pain* 15:article 58. 2014.

18. Langemark M, Olesen J: pericranial tenderness in tension headache: A blind controlled study. *Cephalgia* 1987;7(4):249-255. 10.1046/J.1468-2982.1987.0404249.

19. Bendtsen L, Jensen R, Jensen NK, Olesen J: Pressure-controlled palpation: a new technique which increases the reliability of manual palpation. *Cephalgia* 1995, 15(3):205-210. 10.1046/j.1468-2982.1995.015003205.

20. Lars Bendtsen: central and peripheral sensitization in tension type headache. 2003 Dec;7(6),460-5.

21. Gold MS, Gebhart GF. Nociceptor sensitization in pain pathogenesis. *Natural Medicine.* 2010;16(11):1248-1257.

22. Selye H (1956) *The stress of life.* American physiology association, New York, USA.

23. Miriam Tomaz de Magalhaes. Light therapy modulates Serotonin levels and blood flow in women with headache. 2016 Jan;241(1):40-5.

24. <https://www.lasermedicine.co.uk/laser-therapy-services/laser-therapy-for-well-being/lasertherapy-for-stress/>

25. Sanjeev Kumar Bol, Menaka Jha, Debashish Chowdhury: Advances in understanding of pathophysiology of TTH and its management: year-2021: volume-69, issue-7, Page: 116-123.

26. Laerke Terring Koldind: Muscle stiffness in tension-type headache patients with pericranial tenderness' shear wave elastography study: volume 1 1-6: Date received: 22 January 2018; accepted: 27 January 2018.

27. Mehdi Jafari: effect of ischemic compression for cervicogenic headache And elastic behaviour of active trigger point in the sternocleidomastoid muscle using ultrasound imaging: volume-21, issue-24, October-2017, pages 933-939.

28. Albert F Morison: responsiveness of myofascial trigger points to single And multiple trigger points release massages: 2017 Sep;96(9):639-645.

29. Asfaque khan: Efficacy of ischemic compression techniques and home exercise program in combination with us among computer users with upper trapezius myofascial pain:vol 10:issue 6:jun 2020.

compressions on trapezius myofascial trigger points in neck pain: accepted 4<sup>th</sup> april20

30. pragnya ravichandran: Effectiveness of ischemic