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Immediate effect of Jacobson's progressive muscle relaxation technique on facial pain and heaviness in female with menstrual migraine- an interventional study

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ABSTRACT

Migraine is considered as the most significant risk factor among all menstrual symptoms. Approximately one of every three to five women migraines has probable menstrual migraine without aura. migraine attacks occurring at the time of menstruation are more severe and disabling, it last longer and are less responsive to symptomatic medication. The symptoms of migraine lead to significant deterioration in normal daily function and health. Jacobson's progressive muscle relaxation can be used as non- pharmacological treatment for migraine so, the objective of study is to find out the effect of progressive muscle relaxation technique on facial pain in female with menstrual migraine.

Method & materials-female with the age of 18 to 25 years were included for study. Pillow, Couch, Stop watch, Pen & Paper was used in materials. To perform intervention VAS was taken before the treatment. After that Jacobson's progressive muscle relaxation technique was performed by each female .it was performed under supervision of therapist on the 1st day of menstruation for 25min. Commands were given by the therapist and VAS was recorded after the intervention. Pre and Post VAS values were compared within group to analyze the effectiveness of treatment

Result-data was analyzed by SPSS statistics 20.00 software pre-treatment and post treatment comparison of VAS was done by paired t-test. The result showed significant improvement in VAS score ($t=3.30$ and $p<0.050$) in patient with menstrual migraine.

Conclusion-based on above result present study concludes that the application of Jacobson's progressive muscle relaxation technique in female with menstrual migraine helps to reduce immediate pain.

Keywords: Menstrual migraine, VAS, Female, Jacobson's progressive muscle relaxation technique.

INTRODUCTION

Headache is the most prevalent neurological symptom and is experienced by over 90% of the general population at some point in life. The International Classification of Headache Disorders

(ICHD). The ICHD divides headaches into primary and secondary forms. The two most common presentations of primary headaches are tension-type headache and migraine worldwide one-year prevalence 42% and 11%, respectively [1, 2]. Menstrual cycle is defined as cyclic events sudden

withdrawal of progesterone and estrogens occurs it leads to menstrual bleeding and other unpleasant symptoms like discomfort, abdominal pain, occasional nausea & vomiting, irritability, depression and migraine [3]. Menstrual Migraine is defined as migraine without aura occurring exclusively 2 days before to 3 days after the onset of menstruation in at least two of three menstrual cycles and at no other times of the menstrual cycle. The peak time for migraine attacks is between 2 Days premenstrual and the first 2 days of the cycle [4]. Criteria to diagnose menstrual migraine is headache attack lasting 4-72 hours, unilateral location, pulsating quality, nausea Or vomiting, moderate to severe pain intensity, aggravation by routine activity. Attacks occurs on day -2 days -2 or +3 days in menstruation in at least 2 out of 3 menstrual cycles [5, 6] findings support evidence that menstrual migraine Occurs due to the largest fluctuation in estrogen level, which may alter plasma prostaglandin level, and that increased concentration of prostaglandins are found during menstrual migraine attack [5]. Prostaglandins increase neurogenic inflammation and sensitize nociceptors< lowering their threshold. This inflammation may be a causative factor for headache [7] migraine without aura (MO), is characterized by recurrent attacks of unilateral throbbing headache of moderate to severe intensity, and associated with nausea, vomiting, photo-, and/or photophobia [1]. The 3rd edition of the ICHD and in the guidelines for clinical trials VAS

can be recommended for pain measurement [8]. Various relaxation techniques have been used and their effects upon pain and stress have been described in the literature [9]. Progressive muscle relaxation (PMR) is one of systematic technique that could be utilized to obtain a deep state of relaxation among the relaxation methods, progressive muscle relaxation is the easiest one to be learnt and administered. Relaxation must be attempted in order to reduce pain or pain perception, reduce tension create a pleasant affective condition [10], pharmacological treatment for menstrual migraine produces flushing light headedness, asthenia and chest pain [11], so treatment option such as cognitive behavioral therapy(CBT),relaxation and biofeedback are to develop preventive and acute management strategies. There is no effective physiotherapy intervention to treat the symptoms of menstrual migraine

MATERIALS AND METHOD

Participants

Thirty subjects volunteered to participate in the study. It was conducted in the OPD center of Shri K.K.Sheth physiotherapy college Rajkot. Data was collected from hostels and colleges in and around Rajkot. Simple convenient sampling was done for data collection.

Menstrual migraine diary

| ID number | Date: | / | / | / | / | / | / |
|--|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| When did the headache start? | Indicate nearest hour: | | | | | | |
| Before headache started, was there any disturbance of: | vision: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | numbness/tingling in your skin: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | other disturbances: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the headache | right sided: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | left sided: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | on both sides: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the headache | Pulsating/throbbing: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | tightening/pressuring: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| How intense is the headache on a scale from 0-10 (0=no pain, 10=worst imaginable pain) | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Does the headache change by routine physical activity? | aggravation: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | unchanged: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | improved: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you suffer from nausea during headache? | no: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | mild: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | moderate: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | severe: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are you bothered by light during headache? | no: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | mild: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | moderate: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | severe: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are you bothered by sounds during headache? | no: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | mild: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | moderate: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | severe: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| When did the headache end? | Indicate nearest hour: | | | | | | |
| Menstruation (s) | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Spotting (s) | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sick leave | yes: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | no: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Did you take any medication? Please record name, dose and time taken | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Translated from the Norwegian original version

Menstrual migraine diary

Female subjects between Age group of 18-25years who were fulfilling Criteria of menstrual migraine and complained of migraine during menstruation and who were able to understand the commands given by therapist were included. In study those female subjects who were diagnosed with neurological problems other than menstrual migraine. Female using birth control pills for 6 months and having migraine unrelated to menstrual cycle or taking medications for migraine pain were excluded. Ethical clearance was obtained from ethical committee members. Menstrual diary was given before 3 month to all participates all the subjects were advised to fulfill diary information for 3 consecutive months and they were screened for fulfillment of inclusion, exclusion criteria and menstrual migraine criteria. Informed consent was obtained from the participants. Prior to start treatment for migraine pain was taken with the help of visual analogues scale from all subjects. It was done under the supervision of therapist for one day

that is on the 1st day of menstruation for 25-30minutes. After completing session visual analogues scale was taken again to record post interventional pain intensity. Both the pre and post value for pain was compared and pain was evaluated.

INTERVENTION

Jacobson's progressive muscular relaxation technique [34, 35]

A convenient place was arranged for conduction of Jacobson's progressive muscular relaxation technique the place selected for producers was quiet and was free from disturbances. Participants were in relaxed supine position during intervention instruction regarding relaxation was given to participants throughout session. Instructions were given by therapist as below.



Figure: 1.1 Gently breathe in – hold – and let go



Figure: 1.2 Foreheads – frown a little – hold – now let go

Subjects were asked to push their head forward slightly – hold briefly – and then let it go back to a balanced position. Feel the difference.

- Eyes – screw them up a little – hold – and let go
- Press lips together – let go.

- Grit your teeth together – hold briefly –let your jaw sag slightly feels difference.
- Spend a few moments enjoying the feeling of release, releasing a little more with each

Whole relaxation technique was performed under the supervision of therapist; commands were

given in soothing voice by therapist at the end of intervention all participants Were asked to lie down for few minutes to feel relaxation and tension release

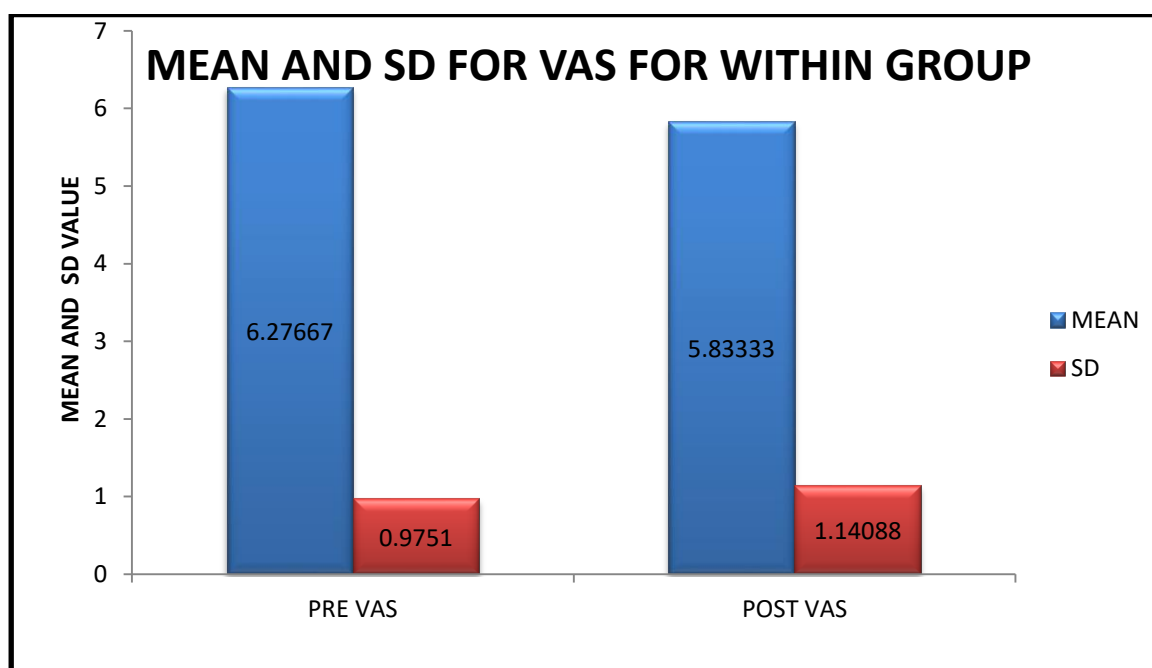
RESULT

All statistical analysis was done by SPSS statistics version 20.0. Mean and Median were

calculated as a measure of central tendency for pain on VAS, and Standard Deviation (SD) was calculated as a measure of dispersion. Pre-treatment and post treatment data of visual analogue scale was analyzed by Paired t-test, comparison within group was done by using paired t-test. Level of significance (p value) was set to 0.05.

Table 1: Mean and SD of pre and post of VAS for both the groups

| | | MEAN | SD | p-VALUE | t- VALUE | RESULT |
|-----|------|----------|-----------|---------|----------|-------------|
| VAS | Pre | 6.2767 | .97510 | 0.003 | 3.301 | Significant |
| | Post | 5.833333 | 1.140881. | | | |



Graph-1: Graph for Mean and SD of pre and post of VAS for both the groups

Result shows significant difference for pre and post VAS ($t=3.301$, $p<0.05$) for within group. Findings suggest that there is statistically significant difference for within group comparisons of VAS. Hence, experimental hypothesis was accepted and null hypothesis was rejected.

DISCUSSION

The result of this present study supports the experimental hypothesis, which stated that there is a significant difference in Visual Analogue Scale (VAS) score within the groups. It was observed from the present study that the subjects who received Jacobson's progressive muscle relaxation technique (JPMR) experienced less heaviness after the intervention which they used to feel much

heavy before the treatment procedure. The possible mechanism for its relationship of muscle tension relaxation and autonomic nervous system that reduction in skeletal muscle tone leads to loss of ergo tropic tone of hypothalamus discharge which leads to dominance of parasympathetic activation [10, 14] and Ghafari et al. (2009) supported that relaxation reduces pain or pain perception and tension. It creates a pleasant mental state, and reduces anticipatory anxiety as response to the stress and increases a parasympathetic activity which promotes rest and repair [14]. Another mechanism states that effect of JPMR on cortical level a mediating factor may be the neurotransmitter serotonin deregulation which was showed to be reduced in migraine. Jacobson's progressive muscle relaxation training (JPMR) may

exhibit cortical effect by Balancing the serotonin [25]. This study's result were supported by [15] who suggested that relaxation technique are part of integrative medicine movement repeatedly studies shows the benefits of the relaxation technique in reduction of pain [15]. S. Kobayashi, K. Koitabashi et al. (2016) conducted study on Effects of progressive muscle relaxation on cerebral activity: An fMRI investigation and concluded That PMR lead to few areas showing changed activity suggests that the technique may suppress brain activity. Even novices may be able to induce such a focused mental state [16]. The study was supported by above researches thus we can conclude that JPMR is non-invasive technique and it is easy to administer. Jacobson's progressive muscle relaxation reduces the pain in female suffering from menstrual migraine and it can be one of the therapeutic approaches for female suffering from menstrual Migraine Study can be done with large sample size. Treatment can be given for longer duration with follow up. Study can be done in other conditions like tension type headache, migraine& Cervicogenic headache.

CONCLUSION

Jacobson's progressive muscle relaxation technique showed improvement in pain and quality of life during menstrual migraine episode. Post visual analogues scale showed batter improvement from the present study so, it can be suggested that administration of Jacobson's progressive muscle

relaxation in a menstrual migraine condition can help to reduce pain thus; the present study concludes that Jacobson's progressive muscle relaxation technique can be used as physiotherapy intervention to reduce pain. Administrating and practicing this therapeutic technique will help female population to overcome personal and social problems.

Clinical implication

The Jacobson's progressive muscle relaxation techniques is proved to be effective in reducing menstrual induced migraine pain and in improving disability so, this technique can be used as physiotherapy approach for such condition and female population who does not want to take daily medication or to prevent drug related complication relaxation technique can be used for management of pain.

Conflict of interest: No potential conflict of interest with respect to the research, authorship, and/or publication of this article

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Ethical clearance

This study was approved by shri Kantilal keshavlal sheth physiotherapy college Rajkot, India.

BIBLIOGRAPHY

- [1]. The International Classification of Headache Disorders, (beta version) Headache Classification Committee of the International Headache Society (IHS), 3, 2013.
- [2]. Kjersti G Vetvik, E Anne MacGregor, Christopher Lindquist, Prevalence of menstrual migraine: A population-based study International Headache Society Cephalalgia, 2013, 1-9.
- [3]. Essentials of medical physiology premasembulingam, K Sembulingam, 6, 482- 490.
- [4]. Simone Horwitz, PT, An Exploratory Study to Determine the Relationship between Cervical Dysfunction and Premenstrual Migraines (MSc Physiotherapy); Aimee Stewart, physiotherapy Canada, 67(1), 2015, 30-38.
- [5]. Andrea Negro, Flavia napoletano, expert review Treatment of menstrual migraine; utility of control of related mood disturbance neuronov, 14(5), 2014.
- [6]. Mac gregor A.E, menstrual migraine; clinical review J fam plan report health care, 33(1), 2003.
- [7]. Vincent T, martinMD, new theories in the pathogenesis of menstrual migraine current pain & headache reports, 2008, 453-462.
- [8]. B Aicher, H Peil, Pain measurement: Visual Analogue Scale (VAS) and Verbal Rating Scale (VRS) in clinical trials with OTC analgesics in headache, International Headache Society, Cephalalgia, 32(3), 2011, 185-197.

- [9]. Adriana aparecidadelloiacono de Paula, Emilia, the use of the “progressive muscle relaxation “technique for pain relief in gynecology &obstetrics setembro-outubro rev latino-am enfermagem, 2002.
- [10]. TejalC. Nalawade, Dr. NitinS. Nikhade, effectiveness of Jacobson progressive muscle relaxation technique on depressive symptoms and quality of life enjoyment and satisfaction in community dwelling older adults, Indian journal of basic and applied research, 4, 2016, 448-452.
- [11]. Hester Witteveen, Peter van den Berg, Treatment of menstrual migraine; multidisciplinary or mono-disciplinary approach The Journal of Headache and Pain, 2017. DOI 10.1186/s10194-017-0752.
- [12]. Guy’s and St Thomas’ Jacobson’s progressive relaxation technique © NHS Foundation Trust, 2016.
- [13]. Whole health changes the conversation; progressive muscular relaxation clinical tool.
- [14]. Rosemary E. Anderson, BSc.PT, DO (MP); Caryn Seniscal, RMT, A Comparison of Selected Osteopathic Treatment and Relaxation for Tension-Type Headaches, American Headache Society, 2006, 1273-80, ISSN 0017-8748.
- [15]. Pimcuijpers, Maritsijbrandij, Sanderkoole, psychological treatment of generalized anxiety disorder; ameta-analysis. Clinical Psychology Review, 34, 2014, 130 -40.
- [16]. S. khobayansi, K. khoytabasi, effect of progressive muscular relaxation on cerebral activity; an Fmri investigation Complementary Therapies in Medicine, 26, 2016, 33–39.
- [17]. Sanjiv Kumar, effect of progressive muscular relaxation exercises versus transcutaneous electrical nerve stimulation on tension type headache 1-comparative study hon kong physiotherapy journal, 32, 2014, 86-91.
- [18]. M. Ramakrishna, effect of progressive muscular relaxation exercises among geriatric patient with psychiatric illness, international journal of science research, 7(4).
- [19]. Emma Varkey, sa Cider, Jane Carlsson, and Mattias Linde, Exercise as migraine prophylaxis: A randomized study using relaxation and topiramate as controls International Headache Society Cephalalgia, 31(14), 2011, 1428–1438.
- [20]. Brenda Pinker man and Kenneth Holroyd, Menstrual and no menstrual migraines differ in women with menstrual-related migraine International Headache Society, 30(10), 2010, 1187–1194
- [21]. DA Marc non-pharmacological treatment for migraine; incremental utility of physical therapy with relaxation and thermal biofeedback cephalalgia, 1998.
- [22]. Donna-Marie C, the Effects of Aerobic Exercise on Migraine, 32, 1992, 50-54.
- [23]. Maureen A. Lascelles, BA, S. June Cunningham, Teaching Coping Strategies to Adolescents with Migraine Journal of Pain and Symptom Management, 4, 1989, 135-45.
- [24]. Emma Dunford BSc, Relaxation and Mindfulness in Pain: A Review, reviews in pain, 4(1), 2010.
- [25]. Bianca meyer1, Armin Keller, Hans-Georg Wohlbier, Claudia Helerne, Progressive muscle relaxation reduces migraine frequency and normalizes amplitudes of contingent negative variation (CNV) The Journal of Headache and Pain (2016) page no 1-9.

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