

Effect of Yogic Kriyas in Patients with Migraine: A Randomized Controlled Trial

Geethanjali M C¹ Shetty Prashanth² Shetty Shivaprasad K³ Selvakumar Ganesan⁴ Lakshmeesh DR⁵

1. Sri Laxmi Nilaya, Perla road, Prahaladnagar, Ujire, Belthangady, D K District, Karnataka, India.
2. Principal, Sri Dharmasthala Manjunatheshwara College of Naturopathy & Yogic Sciences, Ujire, Belthangady, D K District, Karnataka.
3. Dean & Professor, Deptt. of Yoga, Sri Dharmasthala Manjunatheshwara College of Naturopathy & Yogic Sciences, Ujire, Belthangady, D K District, Karnataka.
4. Asstt. Prof., Department of Natural therapeutics, Sri Dharmasthala Manjunatheshwara College of Naturopathy & Yogic Sciences, Ujire, Belthangady, D K District, Karnataka.
5. Department of Research, Sri Dharmasthala Manjunatheshwara College of Naturopathy & Yogic Sciences, Ujire, Belthangady, D K District, Karnataka.

Email: gthanjali258@gmail.com

Abstract

Background & Objectives: Migraine is a common disabling primary headache disorder in which Recurrent attack affect the patient's quality of life. There are medications available to treat migraine but have side effects. Integrated Yoga therapy has shown to be effective in treating patients with migraine without any adverse effect on the body. Hence present study was aimed to evaluate the effect of Yogic Kriyas (Jalaneti and Vamana)in alleviating symptoms and quality of life in patients with migraine.

Materials and Methods: Sixty subjects aged between 18-40 years were randomly recruited from the population using a computer generated random number table into 2 groups.30 subjects (group 1) received yogic kriyas- Jalaneti 5 days in a week and Vamanakriya for 2 days in a week followed by kaphalabhatikriya for 15min and rest for 30 days. 30 subjects (Group II) were a wait list control group undergoing their regular treatments as prior to the study period of 1 month. Assessments were made to both groups before (pre) and after 30 days of intervention (post). The assessment tools included were visual analog scale (VAS), headache impact test (HIT), Migraine Disability assessment score (MIDAS) and WHO Quality of Life-BREF (WHOQOL-BREF).

Results:Headache-related disability was calculated using Migraine Disability Assessment Score ($p<0.0001$) showing improvement in activity limitations due to migraine. The impact of headaches was improved with ($p< 0.0001$). Pain intensity was calculated by VAS ($p<.008$) and WHOQOL- BREF physical ($p<0.07$), psychological ($p<0.0001$), social ($p<0.0001$) and environmental ($p<0.0001$) compared with control group.

Interpretation & Conclusion:Yogic Kriyas is a non pharmacological intervention which helps in patients suffering from Migraine without aura to reduce pain, disability, impact and intensity of pain.

Key Words: Migraine, Yogic kriyas, Jalaneti, Vamana kriya

Introduction:

Migraine is a common disabling primary headache disorder,(1)which affects the patient's quality of life, social activities and family life. (2) Migraine affects about 30% of women and 17% of men aged 21 to 34

years. (3-4)Migraines have been estimated to affect 8.7 million women and 2.6 million men in the United States, (5) to account for 2.0% years of life lost due to a disability in women of all ages. In both sexes of all ages, migraine is responsible for 1.4% of total

years of life lost due to a disability. (6) Migraine is highly prevalent in India, and associated with substantial disability, especially among women and rural populations with the Prevalence of 25.2% with age range of 35-45 years in both genders. The overall mean total was 3.7 ± 6.1 days/3 months, representing a loss of 6.1% of productive days, of which 2.1 ± 4.0 days/3 months were lost at home and 1.4 ± 4.1 Days/months were lost in the work place. (7) In conventional medicine B-Blockers are used as first line of medicines to reduce the frequency of migraine attacks. (8) produces several side effects, Epidemiological studies show that 42% of general population in the United States, 48% in Australia, and 20% in the United Kingdom had used CAM. Massage (42%); exercise (30%); acupuncture (19%); chiropractic (15%); and herbs (15%) are the most used CAM therapies for headache. (9) Survey conducted on 481 migraine patients reported that 89.3% migraineurs' recourse to CAM was specifically for their headache. (9) Yoga is an ancient Indian, mind-body approach that has components comprising of meditation, mindfulness, breathing, and activity or postures. (10) Stress management through breathing and relaxation techniques increasing our flexibility and bringing greater balance into the body and the systems of the body, primarily in calming the nervous system. (9). The integrated approach of yoga therapy like yogic Asana, Pranayama, Kriyas and relaxation technique has a significant role in the reduction of migraine headache frequency and associated clinical features. Yoga is been used to reduce the physical symptoms of chronic pain; meditation and yoga also helps individuals to deal with the emotional aspects of chronic pain, reducing anxiety and depression. (9) Yogic Kriyas had a stimulating and tonifying the nerves, glands, and organs of the entire nasal and

cranial area including the eyes, sinuses, ears, and cranium. (9)

Even though there are medications available to prevent the frequency of Migraine attacks they have side effects on the human body. The Integrated Yoga therapy has shown too effective in patients with migraine; however efficacy of only yogic kriyas in patients with migraine without aura has not been explored. Hence the present study was aimed to evaluate the effect of yogic kriyas on migraine headaches.

Methods and materials:

Subjects: Study population was selected from out Patient Department of Sri Dharmasthala Manjunatheshwara college of Naturopathy and Yogic Sciences, Ujire, India, students of Sri Dharmasthala Manjunatheshwara residential hostels, Ujire and also recruited from the general population based on Inclusion and Exclusion criteria.

Description of subjects including the selection of sample from the population:

A total of 84 male and female probable subjects aged between 18 – 40 years from the population were screened, of which sixty individuals satisfying the inclusion criteria for migraine without aura were recruited randomly to either of the two groups.

The average age of the experimental group was 25.5 ± 5.3 and control group was 25.04 ± 6.00 and duration of illness of the study population across groups 6 months to 2 years with average of experimental group was 11.3 ± 3.3 and control group was 12.0 ± 3.8 .

Inclusion and Exclusion criteria:

Inclusion Criteria:

- The following inclusion criteria would be the basis for selecting subjects

- Age: 18 to 40 years
- Gender: Both male and female
- Diagnosed subjects of migraine without aura by International Headache Society classification
- Migraine without Aura.

Exclusion Criteria:

- Participants will be excluded if they have:
- Migraine with other co-morbid medical conditions.
- Migraine associated with any systemic complications.
- Subjects who cannot co-operate.
- Patients who are pregnant or lactating.
- Patients who are Hypertensive.
- Migraine with aura.

Design:

Randomized Controlled Trial.

The subjects were randomized by Computer generated random number table into either of the below mentioned 2 groups. There are equal numbers of subjects (30 each) in group 1 (Experimental) and group 2 (control). They were assessed at the baseline and after 30 days.

Intervention:

The participants selected for the study were randomly assigned in to Group1 and Group2.

Group 1 Intervention:

All the participants were taught yogic kriyas- Jalaneti for 5 days in a week and Vamanakriya for 2 days in a week followed by kaplabhathikriya.

A. Jalaneti. (11)

Equipment: A neti pot will be used to introduce salt water into the nostrils. It can be made of brass or any other suitable material which does not contaminate water, but the important thing to remember is that the nozzle on the end of the spout should be

suitably sized so that the end fits comfortably into your nostril.

Salt water: The water used in the practice should be pure and lukewarm; body temperature is the ideal temperature for pouring the water into your nose. The water should then be mixed with clean salt in the proportion of one teaspoonful per half liter of water. Make sure the salt is fully dissolved in the water. Saltwater has a much higher osmotic pressure than ordinary water, which means that salt water is not easily absorbed into the delicate blood vessels and membranes in the nose, whereas ordinary water is. Salt water is ideal for jalaneti, because while it thoroughly cleans the nostrils of impurities it is not absorbed into the delicate nasal membranes. As such no discomfort will be felt when the water flows through the nose.

Posture: Individual assume a standing position bending the shoulders and head forwards. This position is most suitable for doing neti into a wash basin.

Technique: Fill the neti pot with the prepared salt water. Hold the bottom of the pot with one hand; gently insert the end of the nozzle into the end of the left nostril firmly against the side of the one nostril so that no water leakage occurs. Progressively tilt your head to the right side while simultaneously raising the neti pot in such a way that water runs into the left nostril and keep your mouth wide open so that you can breathe. Allow the water to flow through the nostrils for 10 to 20 seconds. Then remove the neti pot and remove the water and impurities from your nose by closing the left nostril and breathing quickly and forcibly through the other nostril. Now close the right nostril and blow forcibly through the left nostril and repeat the same process on the other side.

VamanaKriya: Quickly drink one glass of water. Then take another glass and drink it as rapidly as possible. Continue drinking glasses of water until you think you cannot possibly take another drop. 6 medium sized glasses of water are about the average number required to fill the stomach. Then from a standing position lean forward over a wash basin, make sure the trunk is as horizontal as possible. Then open your mouth as wide as possible and place 2 or 3 finger on top of the tongue. Slowly and gently slide the fingers along the surface of the tongue towards the back of the throat, while simultaneously pressing the root of the tongue. This should induce the water to suddenly and effortlessly gush out from the stomach. Though your first reaction is to tense the body and resist the urge to expel the water you should try to relax and allow for a free flow of water from the stomach; this is difficult at first but becomes easy with practice. During expulsion of water the fingers should be removed from the mouth. When the flow of water ceases, again place the fingers in the mouth and repeat the process. Continue in this way until there is no more water in the stomach. This is indicated when tickling the back of the throat does not bring up any more water.

Kaplabhathi: Sit in any comfortable asana with the back erect. The best asanas are padmasana, siddhasana, and vajrasana. Active Inhalation and Passive exhalation will be done quickly like a blacksmith's bellows. (12)

Group 2 interventions:

Participants were kept as wait listed control group during the intervention and were contacted for 10 days in 1 month study for an educational session on migraine, its types, causes, and triggering factors. They also received a briefing about medication overuse and migraine modifications. Participants also received handouts that emphasized self-care strategies such as avoiding triggering factors. The handout also provided information on lifestyle modifications in diet and sleep.

Results:

The data were analyzed for their normal distribution. HIT represented normal distribution. The baseline data of MDAS, VAS, and WHOQOL-BREF were not normally distributed. For normally distributed variables, within group changes were assessed using paired t test and between group changes were assessed using independent 't' test. For not normally distributed data, within group changes were assessed Wilcoxon signed rank test.

Table 1: Represents mean score of Group 1 and Group 2 on migraine disability Assessment score (MDAS). Values is mean± Standard Deviation.

Variable	Group 1: Experimental		Group 2: Control	
	Pre	Post	Pre	Post
MDAS	27.20±24.02	14.17±12.07***	28.50±17.48	20.50±13.98*

* p≤0.01, **p≤0.05, ***p≤0.001

Within group analysis suggest a significant reduction in disability (p=0.001) in the experimental group. There were also reductions in disability (0.01) in the control

group. Between group analyses indicate that there was a significant improvement in pain in the experimental as compared to the control group.

Table 2: Table comparing the mean score of Experimental and Control groups for headache Impact Test. Values is mentioned as Mean±Standard Deviation.

Variable	Group 1: Experimental		Group 2: Control	
	Pre	Post	Pre	Post
HIT	58.53±9.64	41.77±5.49***	60.73±7.72	48.67±8.54*

Within group analysis suggest a significant reduction in intensity of pain (p=0.001) in the experimental group. There were also reductions in intensity (0.01) in the control

group. Between group analyses indicate that there was a better improvement in pain in the experimental as compared to the control group.

Table 3: Represents mean score of Group 1 and Group 2 on Visual Analog Scale. Values are Mean±Standard Deviation.

Variable	Group 1: Experimental		Group 2: Control	
	Pre	Post	Pre	Post
VAS	6.49±2.54	3.34±1.71**	6.55±1.95	5.03±1.91*

Within group analysis suggest a significant reduction in pain (p=0.001) in the experimental group. There were also reductions in pain (0.01) in the control

group. Between group analyses indicate that there was a significant improvement in pain in the experimental as compared to the control group.

Table 4: Represents mean score of Group 1 and Group 2 on WHOQOL. Values are mean±standard Deviation.

Variables	Group 1: Experimental		Group 2: Control	
	Pre	post	pre	Post
Physical	37.33±11.5	73.23±12.62**	42.57±13.27	69.57±12.10*
Psychological	69.00±1.58	80.00±2.27***	69.00±1.6	80.00±2.27***
Social	63.00±8.40	72.90±7.20***	68.00±7.4	74.60±3.12***
Environmental	71.60±3.91	76.40±3.41***	73.80±2.27	76.60±2.3***

Within group analysis suggest a significant improvement in Quality of life (p=0.001) in the experimental group. Quality of life (0.01) was also shown to be improved in the control group. Between group analyses indicate that there was a significant improvement in quality of life in the experimental as compared to the control group.

severity, disability and pain as compared to the control group.

Discussion:

The present study was conducted to assess the effect of Yogic Kriyas in Migraine without aura to reduce pain intensity and severity of symptoms, improve the quality of life and health status in patients. Self-reported Visual analogue scale, Migraine Disability Assessment Score, Headache Impact Test and WHOQOL-BREF with sample size of 60 was used. the assessment of the Migraine without aura with age mean of experimental group (25.5±5.3) and

The results suggest that there is a significant reduction in headache intensity, disability and pain in both Experimental and Control group. However, the experimental group showed a better outcome in terms of

control group (25.04±6.00) and duration of migraine from 6 months to 2 years experimental (11.3±3.3) and control (12.0±3.8). All the 30 subjects were asked to attend each intervention without any absence and no dropouts were reported. In the present study, both yogic kriyas group and wait listed control self care group showed a significant improvement with respect to pain severity, migraine disability, overall impact of the migraine and quality of life. A systematic review on the effectiveness of physical and rehabilitation interventions for migraine without aura showed significant evidence for the effectiveness of a yoga treatment compared to no treatment and other active treatments at reducing pain. This study is in line with the findings of our study which evaluated the effectiveness of yogic kriyas with regard to reducing pain and improving overall disability, impact and quality of life and showed significant results. The results of our study are in line with a previous study (9) which investigated the effectiveness of yoga therapy in the treatment of Migraine without Aura and concluded that a significant reduction in migraine headache frequency and associated clinical features, in patients treated with yoga over a period of 3 months. In this study the Effect of Yogic Kriyas followed by kapalbhati goes further in stimulating the nerves, glands, and organs of the entire nasal and cranial area including the eyes, sinuses, ears and cranium. (9) The main mechanism contributing in the yogic treatment of migraine is a state of relaxed alertness, which includes increased parasympathic activity, calming of stress response systems and involvement of neuroendocrine system by releasing of hormones also a positive coordination with thalamic generators. (13) Yoga potentially an effective way of improving vascular functions in migraineurs where the underlying pathophysiology of migraine is

altered vascular structure and function. Pranayama also has been understood to be an efficient method for balancing the autonomic nervous system and also has a powerful influence on stress reduction as significant risk factors of vascular dysfunctions. (14) Yoga increase tissues oxygenation and release of enkephalin or endorphins and also includes decreases in sympathetic nervous system activity or reductions in inflammatory markers. (15) Autonomic nervous system (ANS) imbalance explains many of the clinical manifestations of the migraine disorder. Autonomic symptoms (such as nausea, vomiting, or diarrhoea, cutaneous vasoconstriction [pallor], vasodilatation [flushing], piloerection and diaphoresis) are common during acute migraine headaches. Yoga practice reduces the sympathetic tone, without much alteration in the vagal tone; increasing vagal tone improves health of the migraine individuals. Autonomic Nervous System is involved in control of homeostasis as the body's response to this stress and same stress can be a trigger for migraine. (16) The findings from the study indicate a significant improvement in pain, disability, impact and intensity of pain and quality of life following Yogic kriya as compared to the control groups and compared to the baseline values of the experimental group. The findings of the study suggest possible application of Yogic kriyas in effective management of pain, intensity and disability in migraine patients without aura.

Conclusion:

Yogic Kriyas in patients suffering from Migraine without aura is a simple & feasible Non-pharmacological intervention to reduce pain, disability, impact and intensity of pain. However further studies may be required to standardize the dosage & establish possible mechanisms behind these effects.

References:

1. Lipton RB, Episodic and chronic migraine headache: breaking down barriers to optimal treatment and prevention. *Headache*. 2015 Mar;55 Suppl 2:103-22
2. Mathew N T. Migraine In: Evans R W, *Handbook of Headache*. Second Edition. Lippincott Williams & Wilkins. (2005) pp. 28-55.
3. Lipton RB, Bigal ME, Diamond M, Freitag F, Reed ML, Stewart WF. AMPP Advisory Group. Migraine prevalence, disease burden and the need for preventative therapy. *Neurology* 2007; 68:343.
4. R. Allan purdy; Migraine with and without aura share the same pathogenic mechanisms; *neurosci* (2008); 29:S44-S46.
5. Chad Osterhaus JT& Townsend RJ, The quality of life of migraineurs, *Cephalgia*. 1991; 11(suppl 11): 103-104
6. Headache Classification Committee of the International Headache Society. The international Classification of Headache Disorders (second edition). *Cephalgia* 24, (2004) 1-160.
7. G Kulkarni et al G Rao, EHMTI-0333; the prevalence and burden of migraine in india: results of a population-based study in Karnataka state; *The Journal of Headache and Pain* 2014, 15(Suppl 1):B18: 18-21 September 2014.
8. DikranParsekyan, Migraine prophylaxis in adult patients. *West J Med*. 2000; 173(5): 341–345.
9. John PJ, Neha Sharma, Chandra M. Sharma, ArvindKankane. AEffectiveness of Yoga Therapy in the Treatment of Migraine without Aura: A Randomized Controlled Trial. *Journal compilation, American Headache Society Published by Blackwell Publishing* 2007; 47:654-66.
10. Nagarathna R, Nagendra HR. Yoga for bronchial asthma: a controlled study. *BMJ (Clin Res Ed)* 1985;291:1077–1079
11. Swami SatyanandaSaraswati, a Systematic Course in the Ancient Tantric Techniques of Yoga and Kriya, Yoga Publications Trust, Munger, Bihar, India 15,284.
12. Sri Swami Sivananda. *The science of pranayama,kaplabhati-* published by the divine life society - sixteenth ed: 1997; 35.
13. Desai BP, Gharote ML. Effect of Kapalabhati on blood urea, creatinine and tyrosine. *Act Nerv Super (Praha)* 1990; 32:95–8. [PubMed]
14. HajarNaji-Esfahani, MahsaZamani, and ShaghayeghHaghjooyJavanmard. Preventive Effects of a Three-month Yoga Intervention on Endothelial Function in Patients with Migraine.
15. Slade SC, Keating JL. Unloaded movement facilitation exercise compared to no exercise or alternative therapy on outcomes for people with nonspecific chronic low back pain: A systematic review. *J Manipulative Physiol Ther.*2007; 30:301–11. [PubMed]
16. Mosek A, Novak V, Opfer-Gehrking TL, Swanson JW, Low PA. Autonomic dysfunction in migraineurs. *Headache*.1999; 39:108–17.