

Effect of Yoga on Management of Migraine: A Systematic Review



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Abstract

Background: A migraine is a headache that can cause severe throbbing pain or a pulsing sensation, usually on one side of the head. It's often accompanied by nausea, vomiting, and extreme sensitivity to light and sound. Migraine attacks can last for hours to days, and the pain can be so severe that it interferes with your daily activities. In a developing country like India, neurological disorder migraine is one of the most important matter of concern in health care sector. Yoga is a mind-body practice that combines physical poses, controlled breathing, and meditation or relaxation. Yoga helps reduce stress, lower blood pressure and lower heart rate. There are few systematic reviews about this. So, the present study is designed to systematically review the effect of Yoga on management of migraine.

Content: Using PubMed, Google scholar & Indian database electronic searches were performed using keywords Yoga, Migraine and Management which occurs in 42 studies. Selections were made to include only studies between (January 2012-May 2022), written in English, published in peer reviewed journals & investigating effect of Yoga on management of migraine in this study.

Summary: Yoga appears to be effective in the management of Migraine. Who practice yoga techniques and mind-body meditation result in improvement in QOL and reduced headache frequency.

Keywords: Yoga; Migraine; Management; Yoke; Unite; Yoga Sutras; Yoga Sadhanas; Dhyana; Management of Migraine; Bandhas; Mudras; Shatkarma; Asana; Pranayama

Introduction

A migraine is a headache that can cause severe throbbing pain or a pulsing sensation, usually on one side of the head. It's often accompanied by nausea, vomiting, and extreme sensitivity to light and sound. Migraine attacks can last for hours to days, and the pain can be so severe that it interferes with your daily activities. Migraines are a common problem in a developing country like India, neurological disorder migraine is one of the most important matters of concern in health care sector. For some people, a warning symptom known as an aura occurs before or with the headache. An aura can include visual disturbances, such as flashes of light or blind spots, or other disturbances, such as tingling on one side of the face or in an arm or leg and difficulty speaking [1].

Yoga

Yoga is an Art and Science of healthy living. It is a spiritual discipline based on an extremely subtle science, which focuses on bringing harmony between mind and body. The term 'Yoga' is derived from the Sanskrit root 'YUJ', meaning 'to join' or 'to yoke' or 'to unite'. As per Yogic scriptures the practice of Yoga leads to the union of individual consciousness with that of the Universal Consciousness, indicating a perfect harmony between the mind and body, Man & Nature Philosophical system presented in the Yoga Sutras of Patanjali, with the chief aim of "uniting" the human spirit with the Divine spirit. The term kriya Yoga has a technical meaning in the Yoga Sutras (2.1), designating the "practical"

aspects of the philosophy, i.e., the “union with the supreme” through performance of duties in everyday life. However, the widely practiced *Yoga Sadhanas (Practices) are Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana (Meditation), Samadhi, Bandhas & Mudras, Shat karmas etc.*

Yama’s are restraints and Niyama’s are observances: These are considered to be prerequisites for the Yoga Sadhanas (Practices).

Asanas: Capable of bringing about stability of body and mind consists in adopting various body (psycho-physical) patterns, giving ability to maintain a body position (a stable awareness of one’s structural existence) for a considerable length and period of time as well.

Pranayama: Consists in developing awareness of one’s breathing followed by willful regulation of respiration as the functional or vital basis of one’s existence. It helps in developing awareness of one’s mind and helps to establish control over the mind. In the initial stages, this is done by developing awareness of the ‘flow of in-breath and out - breath’ through nostrils, mouth and other body openings, its internal and external pathways and destinations. Later, this phenomenon is modified, through regulated, controlled and monitored inhalation leading to the awareness of the body space is getting filled the space/ is remaining in a filled state and it’s getting emptied during regulated, controlled and monitored exhalation.

Pratyahara: Indicates dissociation of one’s consciousness (withdrawal) from the sense organs which helps one to remain connected with the external objects.

Dharana: Indicates a broad-based field of attention (inside the body and mind) which is usually understood as concentration. Dhyana (Meditation) is contemplation (focused attention inside the body and mind) and Samadhi - integration. Bandhas and Mudras are practices associated with pranayama. They are viewed as (the) higher Yogic practices mainly consisting of adopting certain body (psycho-physical) patterns along with (as well as) control over respiration. This further facilitates control over mind and paves way for higher Yogic attainment.

Shat Karmas: Are detoxification procedures, help to remove the toxins accumulated in the body and are clinical in nature [2].

Many studies have shown the effect of Yoga on management of Migraine. There is a need for systematic review of relevant literature to determine that regular Yoga practices are very much helpful in Migraine.

Significance of Yoga on Migraine (Rationale)

Yoga science is based on the root cause, i.e., stress and headache, of Migraine. Yoga is often more holistic than just the physical body level. Yoga helps profoundly accumulated stress to be released by the system, which can further strengthen Migraine symptoms.

- Gentle Yoga poses that encourage relaxation are best, along with poses that gently relax and stretch the neck, head, and shoulder area.

- Certain Yoga poses can help boost circulation and improve blood flow to your brain. This may lessen any pain or throbbing sensations that you’re having.

- Yoga improved cardiac autonomic balance, referring to the interaction between the parasympathetic and sympathetic nervous system.

Aim and Objectives

Aim: The purpose of this study has been to analyze the proof of the efficacy of Yoga for migraine management from a variety of sources.

Objectives:

- To study the effect of Yoga on headache frequency of migraine.
- To study the effect of Yoga on QOL of migraine patients.
- To understand the protocol applicable to patients of migraine.

Materials and Methods

Search articles for this systematic review were identified by accessing Pubmed, Google Scholar & Indian database. Each database was searched using keywords Yoga, Migraine and Management. 42 studies were identified for initial evaluation. Among 42 studies, 12 were excluded because of no relevance or research type (review) by viewing the title. 8 articles were excluded because of only abstract given. 3 duplicate studies were excluded and 10 were excluded because of related to other disease.

Finally, 9 trials were selected as they met criteria for final review.

Inclusion Criteria

- Research papers and articles published between year January 2012 - May 2022.
- English language and only free full text articles are considered.
- Any form of Yoga protocol is considered.
- Age group 10 - 40 yrs suffering from Migraine.
- Male and Female both are considered.
- Papers of migraine (headache), Yoga as complimentary or mindful medicine are included.

Exclusion Criteria

- Only Abstract articles are excluded.

- Paper published before January 2012.
- Languages other than English are excluded.
- Conditions or diseases other than migraine are excluded.

Material and Methods- Flow chart

(Figure 1 & Table 1,2)

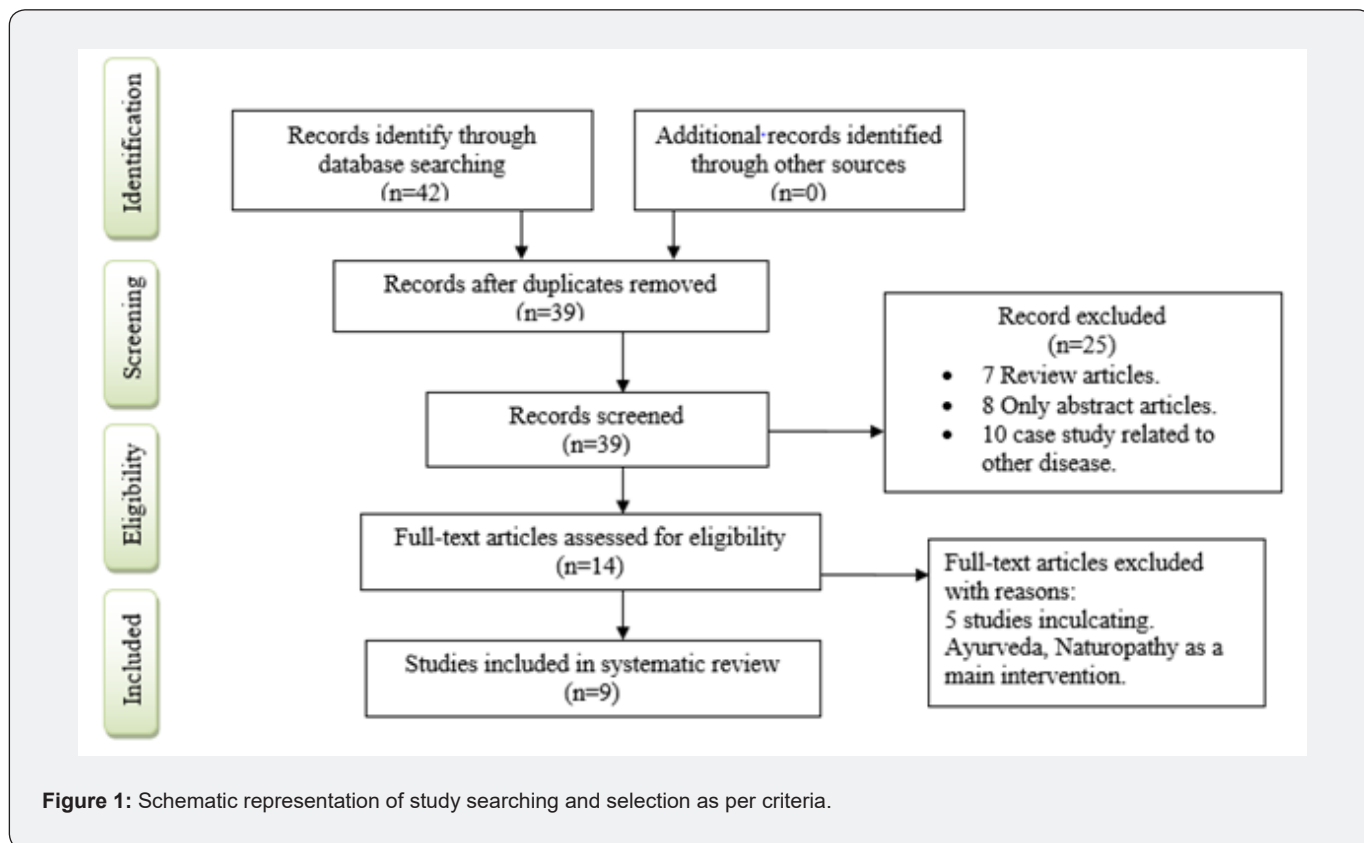


Figure 1: Schematic representation of study searching and selection as per criteria.

Table 1: Details of the selected study for this systematic review.

S.no	Author's name & year	Publication	Research study	Population	Intervention	Duration	Measurable outcome and Result
1	Naji-Esfahani, Hajar Zamani, Mahsa Marandi, Seyed Mohamad Shaygannejad, Vahid Javanmar, Shaghayegh Haghjooy 2014 [3]	International Journal of Preventive Medicine	Preventive effects of a three-month yoga intervention on endothelial function in patients with migraine	n= 42	Yoga Therapy	12 weeks	<ul style="list-style-type: none"> ➤ ↓plasma level of VCAM in yoga group. ➤ No significant difference in ICAM level between groups.
2	Wells, Rebecca Erwin O'Connell, NathanielPierce, Charles R. Estave, Paige Penzien, Donald B. Loder, Elizabeth Zeidan, Fadel Houle, Timothy T. 2021 [4]	JAMA Internal Medicine	Effectiveness of Mindfulness Meditation vs Headache Education for Adults with Migraine: A Randomized Clinical Trial	n= 89	MBSR:	8 weeks	<ul style="list-style-type: none"> ➤ Did not improve migraine frequency. ➤ Improved disability, QOL, self-efficacy, pain and depression.

3	Naragatti S Gupta R 2019 [5]	International Journal of Recent Scientific Research Vol. 10, Issue, 10(B), pp. 35282-35284, October, 2019	Case study on patient with migraine	n=01	Yoga Therapy And Naturopathy.	Not Given	<ul style="list-style-type: none"> ➤ ↓headache activity, medication score, symptoms and stress perception. ➤ Relieves stress and anxiety.
4	Thakur, Tushita Pai, Vikram 2018 [6]	Tushita et al. World Journal of Pharmaceutical Research	Homoeopathic medicine and yoga therapy for management of migraine-a case study.	n=10	Homoeopathic medicine and yoga therapy	6 months	<ul style="list-style-type: none"> ➤ Effective in patients suffering from migrain. ➤ ↓- in number of headache per day.
5	Yoga, NG Halappa - International Journal of 2019 [7]	International Journal Of Yoga	Prevention of chronic migraine attacks with acupuncture and Vamana Dhauti (yogic therapeutic self-induced emesis) interventions	n=01	Vaman Dhauti and acupuncture	3 months	<ul style="list-style-type: none"> ➤ ↓ frequency and intensity of migrain. ➤ The complete cessation of migraine attacks was observed.
6	Reddy M Sharma K 2020 [8]	International Journal of Yoga and Allied Sciences (2020) 2020(1) 9	Effect Of Yoga Postures In Children With Migraine Headache	n=60	Yoga Therapy	3month s	<ul style="list-style-type: none"> ➤ Improvement in pain in the experimental.
7	Mehta, Jigar N. Parikh, Shweta Desai, Soaham D. Solanki, Rachna C. Pathak, Ajay G. 2021 [9]	Journal of Neurosciences in Rural Practice	Study of Additive Effect of Yoga and Physical Therapies to Standard Pharmacologic Treatment in Migraine	n=61	Yoga therapy	3 months	<ul style="list-style-type: none"> ➤ ↓ headache frequency and severity. ➤ Sensory and affective pain ratings showed a significant improvement.
8	Gothwal, Sunil Jeph, Dheeraj Choudhary, Ramesh Dube, Amitabh Shyam Bairwa, Ghan 2021 [10]	IP International Journal of Medical Paediatrics and Oncology	Yoga therapy in treatment of migrainous headache: Case report	n=01	Yoga therapy	2 months	<ul style="list-style-type: none"> ➤ ↓ episodes of migraine. ➤ At 2month follow up she is free from migraine.
9	Sathyaprabha, TN Kisan, Ravikiran Adoor, Meghana Nalini, A Kutty, BinduM ChindandaMurthy, BT Sujana, MU Rao, Raghavendra Raju, TR 2014 [11]	International Journal of Yoga	Effect of Yoga on migraine: A comprehensive study using clinical profile and cardiac autonomic functions	n=30	Clinical assessment, Yoga therapy	6 Weeks	<ul style="list-style-type: none"> ➤ ↓ headache pain intensity.

Table 2: Details of the practices.

S.NO	Author's Name & Year	Intervention For Experimental Group
1	Naji-Esfahani, Hajar Zamani, Mahsa Marandi, Seyed Mohamad Shaygannejad, Vahid Javanmar , Shaghayegh Haghooy 2014 [3]	Shatkarma- neti surya namaskar. Asana- (asana related to head and neck) <ul style="list-style-type: none"> ○ Shavasana ○ Pawanmuktasana ○ Standing, sitting, lying out screw position ○ Eyes related- palming
2	Wells, Rebecca Erwin O'Connell, Nathaniel Pierce, Charles R. Estave, Paige Penzien, Donald B. Loder, Elizabeth Zeidan, Fadel Houle, Timothy T. 2021 [4]	MBSR 2hrs/week for 8 weeks

<p>3</p>	<p>Naragatti S Gupta R 2019 [5]</p>	<p>Loosening exercises: wrist loosening, elbow loosening, Shoulder loosening, neck movement, forward backward bending, twisting – 5 min. Suryanamaskar: (5 rounds followed by 3 min. Of relaxation) - 15 min.</p> <p>Kriyas: jalneti, sutraneti, kunjaj (vamana dhouti) – weekly Once</p> <p>Yogasanas: 15 minutes</p> <ol style="list-style-type: none"> 1. Urdhva hastottanasana – 30 sec. (three times rep.) 2. Ardha chakrasana – 30 sec. (three times rep.) 3. Pavanmuktasana – 30 sec. (three times rep.) 4. Vajrasana – 30 sec. (three times rep.) 5. Ushtrasana – 30 sec. (three times rep.) 6. Vakrasana – 30 sec. (three times rep.) 7. Marjarisana – 30 sec. (three times rep.) 8. Gomukhasana – 30 sec. (three times rep.) 9. Matsyasana – 30 sec. (three times rep.) 10. Bhujangasana – 30 sec. (three times rep.) 11. Shalabhasana – 30 sec. (three times rep.) 12. Makrasana – 30 sec. (three times rep.) 13. Shavasana – 1 min. <p>Pranayama: 15 minutes</p> <ol style="list-style-type: none"> 1. Nadishodhana pranayama – 3 min. 2. Chandrabhedhi pranayama – 3 min. 3. Ujjayi pranayama – 3 min. 4. Bhramari pranayama – 3 min. 5. Sitali pranayama – 3 min <p>Bandhas: jalandhara bandha – 1 min.</p> <p>Meditation: 10 minutes Omkara meditation or guided meditation</p>
<p>4</p>	<p>Thakur, Tushita Pai, Vikram 2018 [6]</p>	<ol style="list-style-type: none"> 1. Kriyas (cleansing practices) = 10 minutes 2. Sookshma kriyas (loosening exercises) = 10 minutes Griva shakti vikasak kriya, skandh shakti vikasak kriya, vaksha sthal shakti vikasak kriya, udar shakti vikasak kriya. 3. Yogasanas (postures) = 10minutes tadasana, Ardhakatchakrasana, pawanamuktasana, bhujangasana, vakrasana 4. Pranayama (breathing techniques)= 10 minutes Nadishuddi pranayama, shitali pranayama, bramari pranayama 5. Shavasana relaxation=10 minutes
<p>5</p>	<p>Yoga, NG Halappa - International Journal of 2019 [7]</p>	<p>VD practice once a week</p>
<p>6</p>	<p>Reddy M Sharma K 2020 [8]</p>	<p>Asanas</p> <ul style="list-style-type: none"> ➤ Swastikasana- 2min ➤ Vajrasana- 2min ➤ Suptavajrasana- 2min ➤ Simhasana- 2min ➤ Trikonasana- 2min ➤ Paschimottanasana- 2min ➤ Purvottanasana- 2min ➤ Makarasana- 2min ➤ Bhujangasana- 2min ➤ Shalabhasana- 2min ➤ Dhanurasana – 2min ➤ Shavasana- 3 min

7	Mehta, Jigar N. Parikh, Shweta Desai, Soaham D. Solanki, Rachna C. Pathak, Ajay G. 2021 [9]	<p>Asanas</p> <ul style="list-style-type: none"> ➤ Bhadrasana (butterfly pose), ➤ Supta matsyendrasana, ➤ Bhujangasana (cobra pose), ➤ Padhastasana (toe touching in standing), <ul style="list-style-type: none"> ➤ Trikonasana, ➤ Savasana.
8	Gothwal, Sunil Jeph, Dheeraj Choudhary, Ramesh Dube, Amitabh Shyam Bairwa, Ghan 2021 [10]	<p>The yoga sessions were 40 minutes twice daily. The yoga module included.</p> <ul style="list-style-type: none"> ➤ Omkar chanting ➤ Sookshma vyayama and kyotsarg ➤ Pranayam for 15 minutes (kapalbhati kriya, dheerag swaspreksha breathing, anulom vilom pranayam, brhamaripranayam)
9	Sathyaprabha, TN Kisan, Ravikiran Adoor, Meghana Nalini, A Kutty, BinduM ChindandaMurthy, BT Sujana, MU Rao, Raghavendra Raju, TR 2014 [11]	<p>SvV(loosening exercise) daily</p> <ul style="list-style-type: none"> ➤ Finger, wrist, elbows, shoulder rotation ➤ Neck (flexion, extension, rotation) ➤ Hand stretch breathing surya namasakar 2 rounds <p>Yogasana- daily</p> <ul style="list-style-type: none"> ➤ Padhastasana ➤ Ardha chakrasana ➤ Trikonasana ➤ Bhujangasana ➤ Vakrasana ➤ Ushtrasana <p>Yoga nidra- deep relaxation technique</p>

Result and Discussion

Search yielded a total of 42 trials, of which 9 met criteria for final review. All studies including efficiency and productivity as one of the Parameter. Most of the studies show decreased headache frequency. (Naji-Esfahani et al., 2014) It seems that yoga exercises, as a complementary treatment beside pharmacological treatments, can potentially be an effective way of improving vascular functions in migraineurs [3].

- (Wells et al., 2021) Mindfulness-based stress reduction did not improve migraine frequency more than headache education, as both groups had similar decreases; however, MBSR improved disability, quality of life, self-efficacy, pain catastrophizing, and depression out to 36 weeks, with decreased experimentally induced pain suggesting a potential shift in pain appraisal. In conclusion, MBSR may help treat total migraine burden, but a larger, more definitive study is needed to further investigate these results [4].

- (Naragatti & Gupta, 2019) There was a significant decrease in headache activity, medication score, symptoms and stress perception. Deep breathing exercises relieves stress and anxiety by balancing stress hormones, and eating whole grains and fresh fruits and vegetables helps in reducing frequency of migraine [5].

- (Thakur & Pai, 2018) Homoeopathy and Yoga could be a valid treatment option for migraine, particularly in patients who cannot tolerate standardized drug therapy or remain unresponsive to it [6].

- (Yoga & 2019, nd.) VD (self-induced emesis) may be one of the long-term control or preventive measures in patients with migraine by reducing the frequency and intensity of migraine attacks over a specified period of time. However, this needs to be inferred with robust randomized controlled trials with blinding methods [7].

- (Reddy & Sharma, n.d.) concluded that yogic postures in children with migraine are effective in reducing the severity of symptoms and can be used as complimentary therapy to reduce intensity of pain. However further studies may be required to standardize the duration and establish possible mechanisms behind these effects [8].

- (Mehta et al., 2021) Either physical or yoga therapy as an adjuvant to standard pharmacologic treatment may further improve the quality of life and reduce headache frequency in patients with migraine [9].

- (Gothwal et al., 2021) Yoga reduces the episodes and severity of migraineurs headache, hence it is useful in treatment of migraine, however further studies are needed to establish the role more evidently [10].

- (Sathyaprabha et al., 2014) Headache frequency and intensity were reduced more in Yoga with conventional care than the conventional care group alone. Yoga therapy enhanced the vagal tone and decreased the sympathetic drive. Thus, Yoga therapy can be effectively incorporated as an adjuvant therapy in migraine patients [11].

Pranayama and Shatkarma like Vaman Dhauti results showed reduction of symptoms in Migraine. Yoga practices provide promising preliminary efficacy data of this program for improving headache, and QOL (Quality of Life). Yoga and mindfulness administered together are effective to reduce migraine, providing them with more consciousness. People experienced enhanced attention and awareness which was brought about through mindfulness practice, as well as the cultivation of an increasingly open and self-compassionate attitude towards themselves. The effectiveness of yoga practices can be drawn, since almost all the measured parameters showed an improvement.

Followings are the Most Evident Outcomes

- ✓ Decrease in number of headaches per day.

- ✓ Reduction in the frequency and intensity of migraines.
- ✓ Reduction in episodes of migraine.

Conclusion

Yoga Therapy including (Shatkarma, Asana, Pranayama, Dhyana) and MBSR (Mindfulness Based Stress Reduction) techniques are beneficial practices for Migraine patients. These techniques significantly improve QOL, self-efficacy, pain catastrophizing, and reduce headache frequency. Yoga therapy enhanced the vagal tone and decreased the sympathetic drive and relieved stress and anxiety by balancing stress hormones which reduces intensity of pain (Table 3).

Table 3: Yoga practices for migraine management on the basis of review.

S.No	Yogic Practices	
1	Shatkarma	Vamana dhauti, Kunjal, Jala Neti, Sutra Neti, Kapalbhati.
2	Sukshma vyama	➤ Griva shakti vikasak kriya, Skandh shakti vikasak kriya, Vaksha sthal shakti vikasak kriya, Udar shakti vikasak kriya.
3	Asana	Standing asana- ➤ Tadasana, Urdhva hasottanasana, Katichakrasana, Trikonasana, Padahastanasana.
4		Sitting asana- ➤ Vajrasana, Vakrasana, Gomukhasana, Ushtrasana.
5		Prone lying- ➤ Bhujangasana, Shalabhasana, Makarasana.
6		Supine lying- ➤ Pawanmuktasana, Matsyasana, Shavasana.
7		Pranayama
8	Meditation	Om chanting, Yoga Nidra, MBSR.

Study Limitations

- Practices should be given in the article so that the reader can follow it. Details of practices were not given in some articles.
- Our searches were limited to a few databases only, a wide range of databases are needed in this context.
- Studies should consider a longer period of follow to check long term efficacy & long-term acceptability.
- A lot of studies are not PubMed indexed. They are to be searched from various sources. This consumes a lot of time.

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