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Assessment Of Yogic Surya-Namaskar For The Treatment Of Migraine In Pediatric Population: A Randomized Controlled Clinical Trail

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A B S T R A C T

Aim: The main aim of the present study was to investigate the effect of Yogic Suryanamaskar in reducing the symptoms of migraine in Paediatric population.

Materials and Methods: A randomized clinical control trial was conducted by recruiting sixty pediatric patients suffering from migraine for at least three months and were randomly divided into control and experimental groups. Experimental group were provided with training on suryanamaskaras for one week after which the subjects practiced the same for three months. Control group was a waitlist and continued treatment conventional treatment from prior to the study period of 12 weeks. Assessments were made of both groups before (pre) and after 12 weeks of intervention (post).

The assessments tools included were paediatric migraine disability assessment score and visual analog scale.

Results: Paediatric migraine disability assessment score (p=0.001). Showing improvements in activity limitations due to migraine. Pain intensity was calculated by VAS (p=0.01) and the results indicated a significant reduction in the pain and symptoms of migraine in experimental group compared to control group.

Conclusions: The results of the present study indicate that practice of suryanamaskar can be an effective means of complementary and alternative medicine in the treatment of migraine in Paediatric population.

Introduction:

Migraine is a disabling, recurrent, neurovascular disorder. It is a contributing factor effecting the patient's quality of life, social activities and family life with huge monetary loss in a year due to less productivity (Liptan RB 2015, Mathew N T 2005 & Stewart WF 1996). It was observed that prevalence of migraine was 31.6% and 18.5% among females and males respectively. The prevalence of migraine in children, on the other hand, is reported to be between 3 to 10% across the world (Ishaq Abu-Arafeh et al 2010). It was also reported that about 69% of children suffering from headache have migraine (Powers et al 2013).The exact pathophysiology of migraine is still unclear (Liptan RB 2001). Though several mechanisms are proposed to explain migraine, mechanism involving vascular, neurological and neuro inflammatory pathways is widely accepted (Galletti F 2009).

Migraine is characterized by sudden bouts of throbbing headache, often unilateral (pain localized to one side of the head) which can last for a few hours to days. Other symptoms that accompany migraine include nausea, vomiting and visual disturbances (Agarwal e t al.2015). The severity and occurrence of this depends on the type of migraine and varies among the individuals.

Migraines are classified as either "with aura" or "without aura." An aura is a group of neurological symptoms, usually with vision disturbances that serve as a warning sign. Patients who get auras typically see a bright color flash or blinking lights shortly before the headache pain begins. The warning signs (auras) that can precede a migraine may also be in the form of seeing stars or zigzag lines, tunnel vision, or a temporary blind spot (Harrisons Principles of Internal Medicine 16th Edition). However, most people with migraines do not have such warning signs (Agarwal e t al.2015).

Predisposing factors:

Migraine is a multifactorial complex medical disorder that has been associated with a number of precipitating or triggering factors. Among them, stress and fatigue have been reported to be the primary triggering factors. In addition, sensory stimuli such as flickering lights, bright sunshine, noise, and strong organic odors have also reported as triggers factors. Besides these, life style changes (such as missing meals, sleep disturbances, hormonal fluctuations) have been often cited frequently in association with migraine (Martin VT 2001).

Medical management:

Most treatment modalities aim to reduce the associated pain and functional disability among the patients. Drugs such as triptans, nonsteroidal anti-inflammatory compounds, and dopamine receptor blockers like metoclopramide (Colman I 2004 & Goadsby PJ 2002) are commonly prescribed (Dodick DW 2007).

Complementary and Alternative Medicine (CAM):

In recent years, there has been an increasing trend among the patients opting for alternative or complementary medicine such as Yoga, Ayurveda, Naturopathy, Acupuncture, Acupressure, etc. for a variety of medical conditions including migraine. Epidemiological studies show that 42, 48 and 20% of people in the United States, Australia and United Kingdom have utilized complementary and alternative medicine (CAM) approach for the management of migraine (Geethanjali M C 2016).

Suryanamaskar:

Surya Namaskar means prayer of Lord 'Surya' i.e. Sun, which is the ultimate energy source in the universe. Suryanamaskar – The salutation to the God Sun, is also a part of Indian traditional

yogic practices. Each cycle of suryanamaskar is a sequence of certain 'asanas', performed along with 'pranayama' (Vishwas Mandlik 2001). The sequence of asanas performed is designed in a manner such that each asana is complimentary to the next. During Suryanamaskar, muscles of the entire body experience stretch and pressure alternately and therefore it is said to give more benefits with less expenditure of time (Datey KK, 1985). Often, suryanamaskar is performed in combination with a series of asana with an equal importance to breath control (Unkule, 2014; Mandalik, 2015). Buchha (2012) indicated that the Sun Salutation, like other yoga exercises, improves the physical, mental and spiritual aspects. It is said to be effective in alleviating stress, boosting concentration, stabilizing emotions and inducing peace of mind. Surya Namaskar benefits the body by improving blood circulation, digestion and flexibility. The joints, and ligaments are strengthened and the nervous system's functions are sharpened. The exercise is also believed to have a positive effect on the pituitary, thyroid and parathyroid glands in the endocrine system.

Yoga, an Ancient Indian therapy, consists of three different aspects such as Suryanamaskar, Asana, Pranyama and Meditation. Among these, Asanas (poses) in yoga use a combination of isometric exercise and relaxation methods to provide the body with steadiness and lightness that optimizes tissue functioning, body reconditioning, realignment of the skeleton, and improving blood and lymph flow through underlying tissues (Vallath, 2010). It is believed that Asanas open up the flow of energy through the body and helps strengthen the muscles and corrects the posture (Vallath, 2010). Studies have shown that yoga postures also decrease cortisol and cholinesterase levels, which leads to a decreased stress and anti-inflammatory response (Vallath, 2010).

In addition, suryanamaskaras along with breathing exercises are known to relieve chronic stress patterns with relaxation of mind and body and is being widely indicated in a variety of medical conditions [add few references]. The use of yoga as CAM has not been widely investigated for the treatment of migraine, especially in peadiatric population. Hence, the present study aims to systematically investigate the ability of yoga in relieving the symptoms of peadiatric patients suffering from migraine.

Methods and materials:

The study design was a randomized controlled clinical trial conducted at the Department of Peadiatrics,A total of 84 male and female peadiatric subjects aged between 8-16 years were screened, of which individuals satisfying the inclusion criteria were recruited randomly to either of the two groups.

Inclusion and Exclusion criteria:

Inclusion Criteria:

The diagnosis of migraine was classified based on ICHD-3 classification.

Pediatric patients aged between 8-16 years

Patients suffering from migraine for at least 3 months

Patients willing to visit the study site for follow-up

Exclusion Criteria:

Patients above 16years of age and below 8 years

Patients receiving other treatment.

Patients with psychiatric problems

Migraine with other co-morbid medical conditions

Subject allocation

The subjects were randomized by computer generated random number table into either of the below mentioned groups. There are equal numbers of subjects in each group (n=30) and the study duration was 90 days.

Intervention:
After the baseline parameters are assessed after the recruitment of subjects, following intervention has been prescribed for the experimental group.

Group 1 Intervention:

S.No	suryanamaskar	Duration(33min)
1	Suryanamaskar-9 steps (3 Round)	6/min
2	Shavasana	5/min
3	Suryanamaskar-9 steps (3 Round)	6/min
4	Shavasana	5/min
5	Suryanamaskar-9 steps (3 Round)	6/min
6	Shavasana	5/min

All the participants were trained to perform the above suryanamaskar by an expert for one week. Pre-assessment tests were done prior to the training and participants were advised to practice the prescribed suryanamaskar for 33 minutes once every day for entire duration of the study. Subjects were also provided with handouts explaining the method of performing suryanamaskar for ready reference. All the subjects were recalled and assessed at the end of 12 weeks of study period.

Group 2 interventions:
Subjects recruited for yoga training but on waitlist were included in the control group. At regular interval of time, they were provided with information related to migraine, its types, causes, and triggering factors. They also received a briefing about medication overuse and migraine modifications. Besides, handouts that emphasized self-care strategies such as avoiding triggering factors, life style modifications in diet and sleep were provided to the subjects.

Results:
The data were analysed for their normal distribution. The baseline data of pedMIDAS, and VAS, were not normally distributed. For normally distributed variables, within the group changes were assessed using paired t test and data between groups were assessed using independent-t test. The data that were not normally distributed, within group were assessed Wilcoxon signed rank test.

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

Variable	Group 1: Experimental		Group 2: Control	
	pre	Post	pre	post
PedMIDAS	27.20±24.02	14.17±12.07***	28.50±17.48	20.50±13.98*
VAS	6.49±2.54	3.34±1.71**	6.55±1.95	5.03±1.91*

* p≤0.01, **p≤0.05, ***p≤0.001

From the table, a statistically significant reduction in the disability was observed in the experimental group (p=0.001). Similar reduction in disability was also observed

in control group (p=0.01). Among the groups, a significant reduction in the pain was observed in the experimental group compared to control group.

Within group analysis suggest a significant reduction in pain (p=0.001) in the experimental group. There were also reductions in pain (p=0.01) in the control group. A significant reduction in pain was observed in the experimental as compared to the control group.

Discussion:

The aim of the present study was to assess the effect of Yogic suryanamaskar on Migraine and to evaluate its efficacy in reducing pain intensity and severity of symptoms of migraine thereby improving the quality of life and health status of patients. The results of the present study indicate that there is a significant reduction in the pain in experimental group practicing yogic suryanamaskar. Self-reported Visual analogue scale and Migraine Disability Assessment Score are widely used for assessing the clinical features of migraine. . In the present study, both yogic asana 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 showed significant evidence for the effectiveness of a yoga treatment compared to no treatment and other active treatments at reducing pain.

The results of the present study seem to support the findings of the earlier investigations and indicate that interventions involving yogic suryanamaskar help in reducing migraine symptoms. Similarly, results of the present study also indicate that a significant reduction in migraine headache frequency and associated clinical features, in patients treated with yoga over a period of 3 months as was reported in an earlier study (John PJ 2007). In this study the main mechanism contributing in the yogic treatment of migraine is a state of relaxed alertness, which includes increased parasymphatic activity, calming of stress response systems and involvement of neuroendocrine system by releasing of hormones also a positive coordination with thalamic generators (Desai BP 1990).

Conclusion:

Within the limitations of the present study, it is concluded that yogic suryanamaskar in migraine patients are effective in reducing the severity of migraine symptoms and can be used as complimentary therapy intervention to reduce pain, disability, impact and intensity of pain. However further studies may be required to standardize the duration and establish possible mechanisms behind these effects.

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