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Impact of Hatha Yoga with Mantra Chanting on Asthmatics Adolescent Boys

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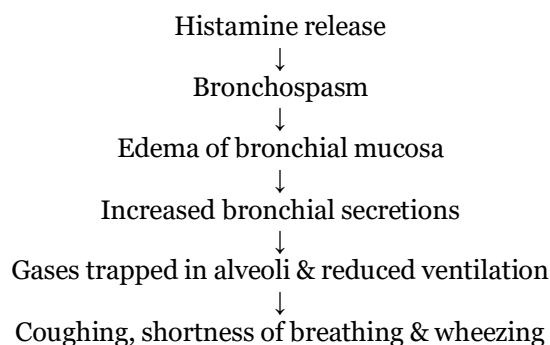
ABSTRACT

The aim of this research is to investigate the effects of hatha yoga combined with mantra chanting on asthmatic adolescent boys. Aged 13 to 19, were chosen as subjects. Prior to collecting any data, all participants will be notified about the purpose and design of the study, and their written consent will be collected. A statistical analysis yields a total sample size of 60. There were two groups of the sixty subjects: study and non-study group. There are 30 subjects in each group. The experimental group practiced Hatha yoga and chanting mantras, while the control group received no special instruction for the 16 weeks. Both pre- and post-tests were administered. Statistical analysis of data using student's paired and unpaired t test. The results showed significant increase in BHT and PAQLQ in Study group compared with non-study group.

Keywords: Hatha Yoga, Breath holding, PAQLQ, Asthma, Mantra chanting

Introduction

The chronic (recurrent) inflammatory condition and psychosomatic imbalance known as asthmatic disorder causes the airways to become more sensitive to different stimuli(Wright et al., 1998). It is characterized by recurrent episodes of coughing, dyspnea, chest tightness, and wheezing that can be partially resolved on their own or with medical intervention(GINA-2023, n.d.). It is believed that inflammation increases the bronchospasm, or responsiveness of the airways to different stimuli(Pediatric Asthma, 2023). For people without asthma who have normal airways, some of these stimuli would be insignificant or nonexistent(Wolkoff, 2013). An abundance of cells contribute to the inflammatory response(Pediatric Asthma, 2023). Bronchodilators are used to treat symptoms like wheezing, shortness of breath, chest tightness, and coughing(Pediatric Asthma, 2023) that are brought on by this narrowing of the airways(Wiggs et al., 1992). Asthma frequently flares up in fits known as asthma attacks(Creer et al., 1988). Typically, environmental changes or triggers result in an asthma attack(Gautier & Charpin, 2017). Infections, weather variations, physical activity, allergens, and environmental irritants are common triggers(Gautier & Charpin, 2017).



(Vikaspedia Domains, n.d.)

Asthma sufferers' airways are extremely sensitive to specific triggers (Brannan & Loughed, 2012). The bronchi, or major airways, constrict when exposed to these triggers, resulting in an asthma attack (Bush, 2019). Soon after, inflammation sets in, further constricting the airways and producing an excessive amount of mucus, which causes coughing and other breathing problems (Ramos et al., 2014). The estimated prevalence of asthma was 30-35% of adolescent suffer from allergy condition (Daniel et al., 2022). In the 33 studies that were chosen, with a pooled sample of 167,626 children. In urban areas, the prevalence was higher in boys (Sibi Chakravarthy et al., 2002).

The practice of hatha yoga techniques and mantra chanting and their enhancements in a pulmonary rehabilitation and quality of life were the study's objectives. The goals were to assess the effectiveness of breath holding time and Quality of life prior to and after the intervention. It is hypothesized that after practicing hatha yoga and mantra chanting, each variable would significantly improve than non-study group.

Methodology

Instead of picking subjects of both genders, the teenage boys were selected as subjects to receive extra care. The teenage boys who signed an informed consent form were grouped together for the randomized control trial study. Then, using a computer random number generator, two groups were arbitrarily allocated to either the study Group or the non-study Group. Breath Holding Time using stop watch (J. P et al., 2013) and Paediatric Asthma Quality of Life Questionnaire (Juniper, 2005) consist of 23 items by Juniper were used to assess the samples prior and post of intervention. Student's paired and unpaired t test was used to examine the data within groups to compare the parameters between study and non study group by using SPSS v.26.

Participant

Participants in the study had to be Chennai city south patients between the ages of 13 and 19. Sixty of the 98 entries had the informed consent signed.

Inclusion criteria

Adolescent Boys: 13 to 19 years; no prior yoga training; clinical evaluation of asthma rated mild to moderate using standard criteria (GINA-2023, n.d.); they should have abstained from smoking for at least six months.

Exclusion criteria

Clinical analysis of asthma in critical level; hypertension; acute infection within the previous six weeks; smoking within the previous six months; other serious systemic illness, such as hepatic, renal, cardiac, or central nervous system; major psychiatric illness.

Intervention

The yoga group received the mantra chanting and yoga techniques as an additional practice along with medication. After a week of manual instructional training and posture correction, recorded instruction was imparted in practical hall. However, the instructor was on hand to answer questions and correct posture during the practice. Similarly, the non-study Group instructed to consume prescribed medication at the whole intervention period. Total duration of intervention is 16 weeks and less than a hour of six days a week.

Table 1: Yoga Module for study Group

S.No	Name of the Practice	Duration
1.	Joint exercises	5 min

2.	Triyanga Tadasana	1 min
3.	Trikonasana	2 min
4.	Ushtrasana	1 min
5.	Bhujangasana	2 min
6.	Shalabhasana	2 min
7.	Sethu bandhasana	2 min
8.	Bhramari	2 min
9.	Bhastrika (yogic bellows breath)	5 min
10.	Vibhagiya pranayama (Sectional breathing)	6 min
11.	Nadi Shodhana pranayama	5 min
12.	Mantra chanting	10 min
13.	Relaxation	3min

Sample Size

G*power software was used to analyse yoga for asthma at a significance level of $p < 0.05$ (Vempati et al., 2009). The suggested number of subjects for each group was 47, but the final number was set at 60 to account for dropouts.

Results

The demographic information for two groups—age, education, religion, family history, and type of school—is shown in table 2. Table 3 provides specifics on the baseline study variables.

Table 2: Demographic data of two groups

Demographic variables	Yoga Group (n=30)		Control Group (n=30)		Chi-square value and p value
	No.	%	No.	%	
1. Age in Years					
a. 13 - 14	2	6.7	4	13.3	$\chi^2 = 1.333$ d.f = 3 p = 0.421 (N.S)
b. 15 - 16	8	26.7	10	33.3	
c. 17 - 18	15	50.0	12	40.0	
d. 19	5	16.7	4	13.3	
2. Education					
a. <8 Std	2	6.7	4	13.3	$\chi^2 = 4.709$ d.f = 3 p = 0.194 (N.S)
b. Secondary	8	26.7	12	40.0	
c. Hr. Sec	15	50.0	7	23.3	
d. Higher education	5	16.7	7	23.3	
3. Religion					
a. Hindu	24	80.0	24	80.0	$\chi^2 = 0.343$ d.f = 2, p = 0.842 (N.S)
b. Muslim	3	10.0	4	13.3	
c. Christian	3	10.0	2	6.7	
4. Family history					
a. Yes	4	13.3	3	10.0	$\chi^2 = 0.162$ d.f = 1 p = 0.688 (N.S)
b. No	26	86.7	27	90.0	
5. Type of school					
a. Govt School	3	10.0	4	13.3	$\chi^2 = 1.019$ d.f = 5 p = 0.961 (N.S)
b. Govt. Aided School	8	26.7	8	26.7	
c. Private Metric School	7	23.3	8	26.7	
d. CBSE School	2	6.7	1	3.3	
e. Govt. College	3	10.0	4	13.3	
f. Private College	7	23.3	5	16.7	

Note: p value are Not significant ($p > 0.05$)

Table 3: Yoga and control group Pre test values

Clinical variables	Yoga Group (n=30)		Control Group (n=30)		t test value and p value
	Mean	SD	Mean	SD	
BHT	14.33	1.58	14.37	1.09	t = 0.095 p = 0.925 (N.S)
PAQLQ	60.33	7.24	58.90	7.862	t = 0.735 p = 0.466 (N.S)

Note: p value are Not significant ($p > 0.05$)

Table 4: Yoga and control group Post test values

Clinical variables	Yoga Group (n=30)		Control Group (n=30)		t test value and p value
	Mean	SD	Mean	SD	
BHT	45.27	6.57	15.03	1.377	t = 24.574 p = 0.000***
PAQLQ	132.27	15.090	66.43	8.791	t = 20.647 p = 0.000***

Note: p value are significant ($p < 0.001$)

Table 5: Effect score of BHT and PAQLQ between the groups

Parameters	Group	Yoga Group		Control group	
		Mean (SD)	Paired t test and p value	Mean (SD)	Paired t test and p value
BHT	Pre-test – Post test	30.933 (6.023)	t = 28.132 p = 0.000 ***	0.667 (2.106)	t = 1.734 p = 0.094 (N.S)
PAQLQ	Pre-test – Post test	71.933 (12.717)	t = 30.982 p = 0.000 ***	7.533 (10.963)	t = 3.764 p = 0.001***

Note: p value are significant ***($p < 0.001$), N.S-Not Significant

Results

Yoga Group showed significant in BHT and PAQLQ than control group. It shows statistically highly significant in both the parameters test on the subjects.

Discussion

The Table 2 shows the demographic data of the subjects encountered in the study. Table 3 and 4 shows the pre test and post results of both the groups. In that post results in BHT and PAQLQ was showed statistically significant when compared to non study group.

The result in table 5 explains changes in asthmatic patients due to yoga and mantra chanting, the lungs capacity is propionate with muscle elasticity and strength(Mooventhan & Khode, 2014). By the practices of backbend asanas, thoracic muscles get elongated and chest wall allowing a better expansion.

Pranayama practices in the schedule help in psychosomatic benefits by control emotional stability and parasympathetic activation than sympathetic action(Mooventhan & Khode, 2014). During manthra chanting decreased in the activity of the brain areas such as limbic brain regions, amygdala, hippocampus, parahippocampal gyrus, insula, orbitofrontal and anterior cingulate cortices, and thalamus(Kraus et al., 2007), also chanting results autonomic changes in the body(Telles et al., 1995). It activates the brain areas related to relaxation from emotional way(Lazar et al., 2000). The study result of BHT was supported by Jiandani Mariya et.al (2013) and PAQLQ result was supported by (Yadav et al., 2021).

Conclusion

Yoga group improved pulmonary function and Quality of life than control group. Asanas and Om chanting may impact on psychological changes on subjects in study group. Yoga practices group has limited to schedule less than hour, which resulted no dropout in the study. Also study has limited in subjects selection in gender, age, study duration. And investigator was not blinded to the study group activities hence it could not be considered.

Ethical Approval

The Meenakshi Medical College and Research Institute's Institutional Ethics Committee approved the study on August 5, 2022.

Conflict of Interest

There is no conflict of interest.

Source of Funding

Nil

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