

Effect of Yoga Therapy on Clinical Profile and PEFr among Women with Bronchial Asthma

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Abstract

Introduction: Asthma originates most commonly in infancy and less so in middle age. It occurs with equal frequency in both the sexes during youth. However males are more susceptible in later life than females. Nervousness is intimately connected with the disease. However asthma itself is not fatal. *Objectives:* to find out whether there would be any significant difference clinical profile and PEFr of women with bronchial asthma after Yoga Therapy. *Materials & Methods:* The pre-test and post test random group design and convenient sampling were adopted. The Study was conducted at Sri Hari Yoga Vidhyalayam, Rajapalayam, Tamilnadu. Sample size was 30 patients; 15 in intervention and 15 in control group. Data collected were collected on back ground variables, clinical profile, Peak expiratory flow rate. The data was analyzed with F ratio (ANCOVA-analysis co variance) and 0.05 level of confidence was used to test the significance. *Result:* The derived F ratio was 6.5 as against the table value of 3.1 proving that there was significant difference. *Conclusions:* After Yoga Therapy intervention there was significant improvement in chest expansion and PEFr rate. The Number attacks and usage of drugs are reduced.

Keywords: Bronchial Asthma; YOGA; Peak Expiratory Flow Rate; Forced Expiratory Volume.

Introduction

Asthma is a common inflammatory disease. The common symptoms include wheezing, coughing chest tightness and shortness of breath. Asthma is a chronic Lung disease that inflames and narrows the airways. Asthma originates most commonly in infancy and less so in middle age. It occurs with equal frequency in both the sexes during youth. Nervousness is intimately connected with the disease. However asthma itself is not fatal.

Yoga is a system for the complete development of the personality - physical, mental, intellectual, vital and spiritual - of a human being. It is a methodical, conscious effort towards self perfection by the enfoldment of the latent potentialities in an individual. In practice, it is a technique of calming down of the mind. It is the hypersensitivity and psychological conflicts leading to emotional upsurges that cause

great stresses at the subconscious level. This may percolate in to the physical frame manifesting as diseases.

Yoga in its general methodology of perfecting an individual, through removal of stresses, contains the therapeutic aspects of treating such stress induced diseases. Yogic practices for the treatment of bronchial asthma using an integral technique of physical exercises and Yoga posture (asanas), breathing practices and Pranayama, cleansing processes (Kriyas) and meditation.

Need for Study

Global Asthma Report 2014: Asthma, a disease of the airways, occurs in people of all ages, and wheeze is the most common symptom. The most recent revised global estimate of asthma suggests that as many as 334 million people have asthma, and that the burden of disability is high.

The prevalence of asthma in younger adults varies widely as it does in children. Overall, 4.3% of respondents to WHO's World Health Survey aged 18-45 in 2002-2003 reported a doctor's diagnosis of asthma, 4.5% had reported either a doctor's diagnosis or that they were taking treatment for asthma, and 8.6% reported that they had experienced attacks of

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wheezing or whistling breath (symptoms of asthma) in the preceding 12 months. The highest prevalence was observed in Australia, Northern and Western Europe and Brazil. The World Health Survey, which was conducted about the same time as ISAAC, used a different survey method which may contribute to some of the differences in the findings within a region. The prevalence of asthma was measured by questionnaire administered to 177,496 persons aged 18 to 45 years living in 70 countries.

The study was conducted in the Department of Medicine, Mittal Hospital, Ajmer, India, in collaboration with The Department of Yoga Science, MDS University, Ajmer, India (2000). Fifty cases of bronchial asthma were chosen for the study following diagnostic confirmation. The study cases had FEV1 > 70%, interest in yoga, and a minimum of six months experience in performing yogic practices. After 12 weeks, there was significant reduction in symptoms, improvement in FEV1 and PEFR in group A ($P < .001$) as compared to group B (control). Significance of symptoms was calculated by Mantel Haensel χ^2 formula.

Fifty cases of bronchial asthma (Forced Expiratory Volume in one second (FEV1) > 70%) were studied for 12 weeks. Patients in group A were treated with breathing exercises (deep breathing, *Brahmari*, and *Om kara*, etc.) for 20 minutes twice daily for a period of 12 weeks. Subjective assessment, FEV1%, and Peak Expiratory Flow Rate (PEFR) were done in each case initially and after 12 weeks. The study concluded that Breathing exercises (*pranayama*), mainly expiratory exercises, improved lung function subjectively and objectively and should be regular part of therapy. (Tarunsaxene, 2009)

A preliminary controlled clinical trial study was conducted on 24 volunteer asthmatic patients who were getting support at the missionary of charity. The yoga group showed 66.7% reduction in the use of salbutamole puff and 58.3% salbutamole tablets. There was a 10% increment in the PEFR in the yoga group while only 2% in the control group. Yoga exercise among asthmatic patients resulted in a decreased number of day and night attacks and use of drugs. It also shows significant improvement in the peak expiratory flow rate. Further large scale study is recommended. (Demeke Mekonen, 2010)

Fifty three patients with asthma underwent training for two weeks in an integrated set of yoga exercises, including breathing exercises, suryanamaskar, yogasanas (physical postures), Pranayama (breath slowing techniques), dhyana (meditation), and a devotional session, and were told to practice these exercises for 65 minutes daily. This

study shows the efficacy of yoga in the long term management of bronchial asthma, but the physiological basis for this beneficial effect needs to be examined in more detail. (R. Nagarathna, H.R. Nagendra, 2010).

Materials & Methods

The pre-test and post test random group design was adopted in this study and convenient sampling were adopted. The study was conducted Sri Hari Yoga Vidhyalayam, Rajapalayam. The final sample (n=30) 30 patients, 15 in intervention and 15 in control group. Data collected included back ground variables, clinical profile, Peak expiratory flow rate. The data was analyzed with F ratio (ANCOVA-analysis of variance) and 0.05 level of confidence was used to test the significance.

Inclusion Criteria

1. The women with bronchial asthma between 30 to 50 years of age.

Exclusion Criteria

1. The women with associated illness other than bronchial asthma.

Variables of the Study

Dependent Variable

1. Clinical profile includes chest expansion, number of attacks, use of medicines, pulse rate and respiratory rate.
2. PEFR

Independent Variable

Yoga Therapy

Description of the Intervention

The following schedule was programmed for the experimental group

Development and Description of the Tool

1. **Pulse Rate:** pulse rate was assessed in some of the blood vessels close to the skin's surface, such as in your wrist, neck, or upper arm. Counting your pulse rate is a simple way to find out how fast your heart is beating.

Experimental Group A

Yoga Therapy for Six Weeks

No	Yoga practices	Duration in minute	Holding in Secs	Rest in Secs	Repetition/ in Number	Frequency
1	Prayer	3	-	-	-	Mon to Sat
2	Loosening Exercise	8	-	-	-	--do--
3	Tadasan	1	30	30	1	--do--
4.	Bhujangasana	1	30	20	1	--do--
5.	Gomukhasana	1	30	20	1	--do--
6.	Ardha Matchendrasana	1	30	20	1	--do--
7	Dhanurasana	1	30	20	1	--do--
8.	Patchimottasana	1	30	20	1	--do--
9	Naukasana	1	30	20	1	--do--
10.	Halasana	1	30	20	1	--do--
11.	Shavasana	1	30	20	1	--do--
	Pranayama					
12.	NadiShodhana	4	-	-	1	--do--
13.	Brahmari	4	-	-	1	--do--
14.	Ujjayi	4	-	-	1	--do--
15.	Yoga Nidra	6	-	-	1	--do--
16.	Prayer	4	-	-	-	--do--
	Total	45	-	-	-	-

2. *Respiratory rate:* The respiratory rate is the number of breaths that a patient takes each minute. The rate should be taken when the patient is at rest, and it is assessed by counting the number of times the chest rises in one minute.
3. *Chest expansion:* Chest expansion was measured by using inch tape.
4. *Number of attacks:* Number of attacks was measured by open ended questionnaire.
5. *Use of Medications:* This was measured by using open ended questionnaire.
6. *PEFR:* PEFr was measured by using peak flow meter.

Part I: Demographic Variables such as Age, sex, duration of illness, number of attacks, and use of medicines

Part II: Validity and Reliability of the Tool

The reliability of data was ensured by using standard instruments such as peak flow meter and by establishing tester competency reliability of the test.

Procedure for Data Collection

Prior to the data collection, consent was obtained from the study participants. The main study will be conducted for a period of 6 weeks.

PEFR was measured by using peak flow meter. The pulse rate and respiratory rate were measured by

physical examination. Chest expansion was measured by using inch tape and number of attacks and use of medications were assessed by using questionnaire.

The pulse rate, respiratory rate the number of asthmatic attacks and usage of medications and PEFr rate were assessed in the pre-test. The yoga therapy was given for six weeks after the pre-test. The post-test was conducted after the six weeks of yoga therapy training program.

Statistical Technique

The data so collected were statistically examined for significant differences, if any, by applying analysis of covariance (ANCOVA) to find out the pre and post test significance difference among two groups and 0.05 level of confidence was used to test the significance, which was considered appropriate.

Results

1. The Analysis of Pulse Rate of Women with Bronchial Asthma

As could be seen, pre tests means of pulse rate on experimental group was 87.26 and control group was 87.40. The derived pre test F ratio was 0.08 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group was 77.66 and for the control group was 87.46. The derived

post test F ratio was 468.35 showing significant improvement. The Adjusted post test means were determined and analysis of covariance was made. The F value of 453.75 obtained was greater than the table value of 3.1. Showing significant difference hence it was accepted that there was significant difference among the treated groups. Hence alternate hypothesis was accepted at 0.05 level of confidence.

2. The Analysis of Respiratory Rate

As could be seen, pre test means of cadence on experimental group was 28.76, and control group was 28.06. The derived F ratio for pre test was 0.11 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group was 20.13 and for the control group was 28.00. The derived ratio was 159.00 as against the table value of 3.1 proving that there was significant difference.

The Adjusted post test means were determined and analysis of covariance was made the F value (162.68) obtained was greater than the table value. Hence it was accepted that there was significant difference among the treated groups.

3. The Analysis of Chest Expansion

As could be seen, pre test means of asthma on experimental group was 29.27, and control group was 26.66. The derived F ratio for pre test was 1.16 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group was 31.20 and for the control group was 25.27. The derived ratio was 5.40 as against the table value of 3.1 proving that there was significant difference.

The Adjusted post test means were determined and analysis of covariance was made The F value (5.06) obtained was greater than the table value. Hence it was accepted that there was significant difference among the treated groups.

4. The Analysis of Number of Asthmatic Attacks of Women with Bronchial Asthma

As could be seen, pre tests means of asthma on experimental group was 4.00, and control group was 2.5. The derived F ratio for pre test was 2.58 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group was 2.76 and for the control group was 4.00. The derived ratio was

16.20 as against the table value of 3.1 proving that there was significant difference.

The Adjusted post test means were determined and analysis of covariance was made The F value (16.29) obtained was greater than the table value. Hence it was accepted that there was significant difference among the treated groups.

5. The Analysis of Use of Drug among Bronchial Asthmatic Women

As could be seen, pre tests means of asthma on experimental group was 4.00, and control group was 2.5. The derived F ratio for pre test was 1.38 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group was 2.78 and for the control group was 4.00. The derived ratio was 13.80 as against the table value of 3.1 proving that there was significant difference.

The Adjusted post test means were determined and analysis of covariance was made The F value (14.93) obtained was greater than the table value. Hence it was accepted that there was significant difference among the treated groups.

6. The Analysis of PEFr

As could be seen, pre tests means of asthma on experimental group was 337.33, and control group was 335.93. The derived F ratio for pre test was 0.09 against the table value of 3.1 proving there was no significant difference among the initial scores of the subjects.

The post mean of experimental group of 337.63 and for the control group was 334.67. The derived F ratio was 6.5 as against the table value of 3.1 proving that there was significant difference. The Adjusted post test means were determined and analysis of covariance was made The F value (7.3) obtained was greater than the table value. Hence it was accepted that there was significant difference among the treated groups.

Discussion

It was hypothesized that there would be significant difference would be there after imparting yoga therapy to the subjects under experimental group. It was now proved there was significant difference among the groups because of the yogic therapy. Hence null hypothesis was rejected and alternate hypothesis was accepted.

Conclusions

Within the limitations of the present study, the following conclusions were drawn.

- There was significant improvement in the respiratory rate.
- There was significant improvement in the pulse rate
- There was significant improvement in chest expansion and Number attacks and usage of drugs are reduced and PEFR rate is increased. General in the overall improvements in the general conditions.

Recommendations

- Yoga therapy can be used as add-on therapy in the treatment of bronchial asthma.
- This may be introduced medical colleges as one of the subject so that treatment may be more effective.

References

1. Nagarathana. R, Nagendra. H.R, Seethalakshmi.R, Daily PEFR studies in bronchial asthmatics during yoga therapy; Vivekananda Kendra yoga Research Foundation, Bangalore, India.
2. Goyeche JR, Ikeniy A. The Yoga Perspective part II: Yoga therapy in treatment of asthma. *J Asthma*. 1982;19:189-201.
3. Vedanathan PK, Kesavalu LN, Murthy K, Durall K, Hall MJ, et al. Nagarathna, Clinical study of Yoga Techniques in university students with asthma: A control study. *Allergy Asthma Proc*. 1998;19:3-9.
4. Mcfadden ER. Pathogenesis of asthma. *J Allergy ClinImmunol*. 1984;73:411-22.
5. Cooper S, Osborne J, Newton S, Harrison U, Thompson Coon J, Lewis S, et al. Effect of two breathing exercises (Buteyko and pranayama in asthma a randomized control trial. *Thorax*. 2003;58:674-9. [PMC free article] [PubMed].
6. Singh V, Wisniew SK, Britton T, Tatters FA. Effect of yoga breathing exercises (pranayama) on airway reactivity in subjects with asthma. *Lancet*. 1990;335:1381-3.[PubMed].
7. WHO fact sheet No. 206.
8. Tarunsaxena. The effect of various breathing exercises (pranayama) in patients with bronchial asthma of mild to moderate severity., *Int J Yoga*. 2009 Jan-Jun;2(1):22-25.
9. Demeke Mekonen. Clinical Effects of Yoga on Asthmatic Patients: A Preliminary Clinical Trial *Ethiop J Health Sci*. 2010 Jul;20(2):107-112.
10. R. Nagarathna, H.R. Nagendra. Yoga For Bronchial Asthma: A Controlled Study. www.healthand yoga.com.