ISSN 2515-8260 Volume 07, Issue 09, 2020

EFFECT OF YOGA THERAPY ON PEAK EXPIRATORY FLOW RATE AND STRESS AMONG ASTHMATIC ADULT WOMEN

[1]K.Amuthadevi, [2]R.Muthulakshmi, [3]R.Elangovan

[1]Ph.D Scholar, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research (Deemed to be University), KK Nagar, Chennai-600 078. Tamil Nadu, India. Email Id: amuthadevig@gmail.com

[2]Professor & Head, Department of Physiology, Meenakshi Medical College Hospital and Research Institute,Enathur,Kancheepuram-631552, Tamil Nadu, India. Email Id: dr.r.muthulakshmi@gmail.com

[3]Professor & Head, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research (Deemed to be University), K.K Nagar, Chennai -78. Tamil Nadu, India.

Email Id: relangovantnpesu@gmail.com

ABSTRACT:** The goal of the random group experimental research was to figure out the impact of yoga therapy on the peak expiratory flow rate (PEFR) of asthmatic adult women and stress. For the purposes of the study, 30 adult asthmatic women were randomly selected using the Chennai random group sampling method between the ages of 45 and 55 and were divided into two groups, A and B, each with 15 subjects. It was speculated that substantial discrepancies within the control group on selected physiological and psychological variables among asthmatic adult women would occur due to Yoga Therapy. The pre-test on the chosen physiological variable such as Peak Expiratory Flow Rate (PEFR) and psychological variable such as Stress before the start of the training program was conducted for both groups (A and B).Yoga Therapy was given to Group A; Group B (Control Group) received no specific treatment, but were in active rest after the trial duration of eight weeks, all groups were retested on the selected dependent variables. The dependent variables tested were measured and compared using the Study of Co-variance (ANCOVA) approach to figure out the essential variations between the classes. The importance test has been set at a confidence level of 0.05. There was a major increase in the peak expiratory flow rate (PEFR) and depression after eight weeks of yoga therapy. Group A remained significantly relevant relative to Group B at the conclusion of the intervention; it is concluded that yoga therapy had a significant impact among asthmatic adult women on physiological and psychological variables. Yoga therapy is therefore useful in increasing the Peak Expiratory Flow Rate (PEFR) and overcoming stress for asthmatic adult women.

Keywords:** Yoga therapy, Adult, Lung disease, PEFR, Asthma, Stress

ISSN 2515-8260 Volume 07, Issue 09, 2020

INTRODUCTION

Asthma is a persistent inflammatory condition of the respiratory tract characterized by unstable obstruction of airflow and a serious airway reaction. In various nations, it affects 1- 18 percent of the population. Frequent wheezing, fast breathing, chest tightness, breathlessness (expiratory difficulty) and coughing are the most frequent symptoms of asthma, which typically intensify in the presence of such causes, such as smoke, environmental factors, diseases, occupational factors, cold exposure, cigarette smoking and air pollution.

Asthma is a multifactorial disorder in which there is a role for both family and bacterial, allergic, socio-economic, psychological and environmental causes. In developing countries, environmental considerations are involved, such as susceptibility to various allergens, irritants, and industrial toxins and particulate matter. Outdoor contaminants such as benzene, particulate matter and irritant gases such as ozone (O3), sulphur dioxide (SO2), and nitrogen dioxide (NO2), increase the prevalence of respiratory disorders particularly asthma, in developing countries.

Asthma Attack

During an asthma attack, the lining of the bronchial tubes swells, causing the airways to narrow and preventing air flow into and out of the lungs. Recurrent symptoms of asthma can cause sleeplessness, fatigue during the day, decreased levels of activity, and absenteeism from school and work. Asthma has a relatively low fatality risk compared to other infectious diseases.

The Causes

There is not a clear picture of the underlying causes of asthma. The greatest risk factors for developing asthma are the combination of genetic predisposition with environmental exposure to inhaled chemicals and particles that may cause allergic reactions or irritate the airways, such as:

- Outdoor allergens (for example, house dust mites in bedding, carpets and stuffed furniture, pollution and pet dander)
- Outdoor allergens (such as pollens and moulds)
- Smoke containing nicotine
- Occupational chemical irritants
- Ozone toxicity.
- Cold weather, intense emotional stimulation such as rage or anxiety, and physical activity may have other causes.
- The following drugs will also induce asthma: aspirin and other non-steroidal anti-inflammatory medicines and beta-blockers (which are used to treat high blood pressure, heart conditions and migraine).
- A increase in asthma has been linked with urbanization. But the exact nature of this relationship remains unclear.

Data on Asthma

- According to the WHO survey, actually, 235 million people suffer from asthma. In infants, it is a prevalent illness. In 2015, 383,000 deaths due to asthma were reported in the new WHO figures, published in December 2016.
- Different studies have shown that asthma prevalence is on the rise globally, especially in developed countries. Around 1980 (6.5 million) and 1996, the number of self-reported asthma individuals in the United States has more than doubled (14.5 million).

- It is now estimated that more than 330 million people globally will suffer from asthma, and 100 million more are expected to be added to the list of people with asthma by 2025.

Asthma in India

The cumulative asthma prevalence in India is estimated at over 15 million. With an estimated 1.5-2 patients with Crore asthma, at least one in every 10 asthma patients lives in India worldwide. The economic risks associated with asthma globally outweigh those associated with TB and HIV/AIDS combined. Asthma is known to be the most prevalent chronic disease in children, and is common in all nations, whether they are industrialized or underdeveloped. In fact, according to the World Health Organization (WHO), more than 80 percent of asthma deaths occur in low- and lower-middle-income countries.

Owing to chemical allergens, 50 per cent of adult asthma is induced. It is understood that smoke and dust cause asthmatic symptoms. In India, asthma cases are likely to rise in the next 20 years with that pollution.

Yogic treatments are based on patient self-regulation, whereas pharmacotherapy encourages dependency on either a doctor or a medication. In addition, Yoga Therapy is an important aspect of the multidimensional natural and metaphysical healing paradigm. Healthy life style with Yoga practices will be a great relief as well as managing asthma for the asthmatic adult women and means to promote the positive health as it helps in relieving stress as well as brings about the required physical, emotional and mental balance.

Objectives of the Study

The goal of the research was to decide if the selected physiological and psychological variables such as Peak Expiratory Flow Rate (PEFR) and Stress due to Yoga Therapy among asthmatic adult women would vary significantly.

Declaration of the Problem

The goal of the study was to determine the effect of Yoga Therapy on peak expiratory flow rate (PEFR) and stress in asthmatic adult women.

Hypothesis

It was speculated that the selected physiological variable such as Peak Expiratory Flow Rate (PEFR) and psychological variable such as Stress among asthmatic adult women would differ significantly from the control group due to Yoga Therapy.

Delimitations

1. The research was limited to just 30 adult asthmatic females.
2. Just from 45 to 55 years did the age group of the participants shift.
3. For the research, only women with bronchial asthma with mild to severe severity were chosen.
4. The study was delimited to asthmatic women residing in Chennai city, India only.
5. Only selected yoga therapy was used during this study as independent variable.
6. The study was conducted on physiological variable Peak Expiratory Flow Rate(PEFR) and psychological variable Stress as dependent variables only

Limitations

The following factors would be the limitations of the study.

1. The socio-economic status was not taken into consideration.
2. The climate conditions were not considered.
3. The Life style was not considered.
4. The day-to-day activities were not controlled.
5. The medication taken by subjects was not considered for the study.
6. The diet habits were not controlled.

REVIEW OF RELATED LITERATURE

Akbar Nuret et.al., (2020) [10] A analysis of the effect of the combination of Pranayama Yoga and endurance conditioning exercise on peak expiratory flow was carried out in adult asthmatic patients (PEF). Pranayama Yoga can also help to increase breathing, promote healing and reduce tension. Endurance training will increase the lungs' capacity, boost fitness, and calm the body. However the combination of pranayama yoga and endurance exercises has never been performed in asthma patients. The goal of this research was to investigate the combination of exercises for Enhanced Peak Forced Expiration Flow and endurance exercises for pranayama yoga. The design of this study was Quasi Experiment with a pre-test-post-test control group design; the venue of the study was the Air Langga Hospital and Haji General Hospital in Surabaya, East Java, as the University's pulmonary clinic. Respondents were collected using purposeful sampling methods in line with inclusion requirements, with a total of 72 respondents Peak Expiratory Flow The cumulative flow reached during the first 200 msec of a forced expiratory manoeuvre after inhalation to maximum lung capacity is determined from forced vital capacity or peak expiratory flow (PEF) (TLC). By practicing pranayama yoga and cardiovascular workout for 6 weeks, 2 xs a week and 51 minutes for each training session, a hybrid exercise was offered to the intervention group. In order to combine pranayama yoga exercises and endurance exercise, teaching teachers and modules are used. FPEF and asthma management are assessed for 6 weeks per week. The findings indicated a substantial difference in the level of FPEF and asthma regulation prior to and after 6 weeks of combined pranayama yoga therapy and endurance exercise in the experimental community, suggesting that $p = 0.000$ and $p = 0.000$ asthma control values ($p < 0.05$) were observed in the intervention group ($p < 0.05$). Study results indicate that in the intervention group ($p < 0.000$), the control of pranayama yoga and asthma is $p = 0.000$. As a preventive treatment for pharmacological therapy, pranayama yoga and endurance training can be used to enhance FPEF and control asthma.

Candy Sodhi et. al., (2009) [11] An overview of the impact of yoga practice in patients with bronchial asthma on lung function has been reported. The function of breathing exercises in yoga is well recognized as an adjunct therapy for bronchial asthma. One hundred and twenty asthma patients were randomized into two groups, Group A (yoga preparation group) and Group B respectively (control group). Sixty patients were included in every given group. Both the patients underwent pulmonary function checks at baseline, after 4 weeks, and again after 8 weeks. Many subjects of the two schools had mild illnesses (34 patients in Group A and 32 in Group B). The percentage projected peak expiratory flow rate (PEFR), first-second forced expiratory volume (FEV1), first-second forced vital force (FVC), 0.25-0.75-second forced mid-expiratory flow (FEF25-75) and 4-week and 8-week FEV1/FVC percentage ratios were found to be statistically important growing patterns ($P<0.01$) in Community atopic.Therefore, in adults with bronchial

asthma, yoga breathing techniques used adjunctively with conventional pharmacological therapy greatly improve lung function.

METHODOLOGY

Sixty patients were presented, 45 were screened and 30 adult women with asthma were randomly selected for the purpose of the random group experimental sample, using a random group sampling approach from Chennai City, between the ages of 45 and 55 years and divided into two groups, A and B, with 15 participants in each group. A preliminary assessment on the two groups (A and B) on the selected dependent variables was conducted before the start of the training program. For a total of eight weeks, Group A subjects were given yoga therapy for 60 minutes, six days a week.

Cleansing Techniques

- ✓ JalaNeti
- ✓ Kabalabathi

SukshmaVyayama

Surya Namaskar

Asanas

- ✓ Tadasana, Veera badrasana, Purvatanasana
- ✓ Vajrasana, Mahamudra
- ✓ Salambasarvangasana, Halasana, Bhujangasana
- ✓ ArdhaUthanasana,Apanasana, Savasana

Breathing exercises/pranayama

- ✓ Deep breathing (deep inspiration and deep expiration)
- ✓ Bhastrika (modified)
- ✓ Anulomaviloma (Nadisudhhi)
- ✓ Bhramari, Ujjayi
- ✓ Omkara (modified)

Yoga Nidra

Without any special preparation, Group B (Control Group) was able to experience their routine and normal lifestyle during the duration of the experiment. The two groups were retested on the same chosen dependent variable again after eight weeks. The preferred physiological variable was calculated, such as the peak expiratory flow rate (PEFR) and the psychological variable, such as stress. To distinguish the main deviations between the control group and the experimental groups, co-variance analysis (ANCOVA) was used. At a degree of confidence of 0.05, the significance test was set.

RESULT AND DISCUSSIONS

In order to assess the relevant difference, the data pertaining to the variable obtained from the two groups before and after the training period were statistically evaluated using Analysis of Covariance (ANCOVA) and the hypothesis was checked at 0.05 confidence level.

The obtained results were interpreted with earlier studies and presented well along with graphical applications. The results of the effect of Yoga Therapy on Peak Expiratory Flow Rate (PEFR) among experimental group and the pre, post and adjusted post-test mean of the control group are listed in Table I.

ISSN 2515-8260 Volume 07, Issue 09, 2020

Table I: Computation of mean and study of experimental and control groups co-variance of peak expiratory flow rate (PEFR) (liter per minute)

Mean	Exp. Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	318.07	317.67	Between	1.20	1	1.20	0.00
			Within	7732.27	28	276.15	
Post Test Mean	344.53	297.20	Between	16798.13	1	16798.13	55.91*
			Within	8412.18	28	300.43	
Adjusted Mean	344.39	297.34	Between	16604.18	1	16604.18	91.86*
			Within	4880.13	27	180.75	

*Significant at 0.05 level of confidence. (The table value with df 1 and 28 is 4.21, and the table value for df 1 and 27 is 4.20.)

The F value obtained from the post-test mean of 55.91 was greater than the F-table value of 4.20 required. A statistical analysis using ANCOVA found that there was a substantial difference between the control group and the Peak Expiratory Flow Rate (PEFR) experimental group, as the F value derived from the modified mean was 91.86 at 0.05 values, higher than the required F-table value of 4.21. This indicates that there is a substantial gap between the means for the Peak Expiratory Flow Rate vector due to eight weeks of Yoga Therapy (PEFR). The obtained adjusted mean values are presented through bar diagram in Figure I.

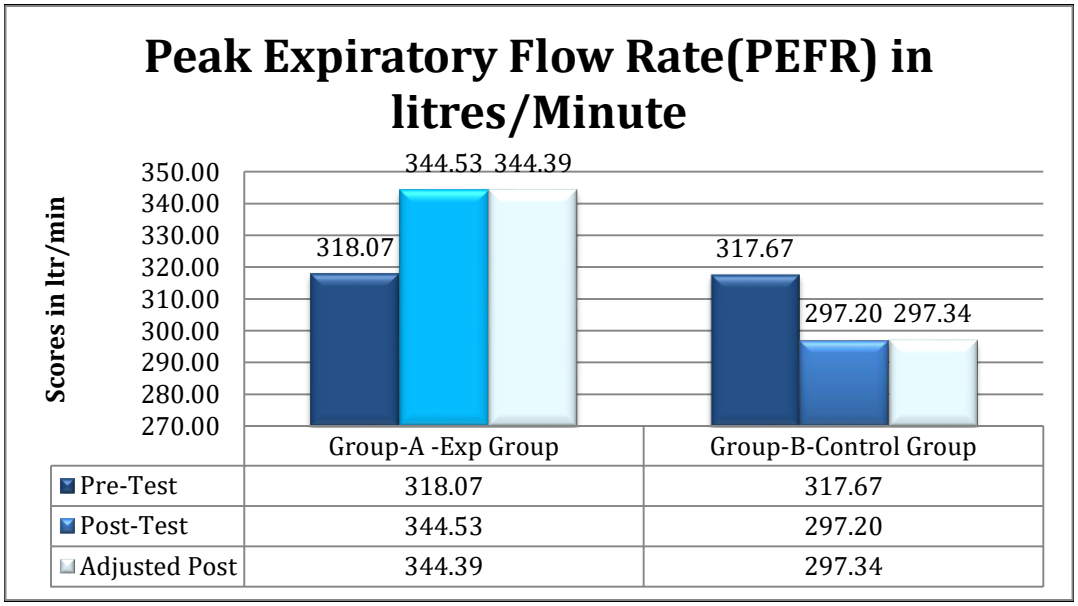

Figure I: Bar diagram illustrating the mean variations in Peak Flow Meter regulation and experimental classes

The results of the effect of Yoga Therapy on Stress among experimental group and the pre, post and adjusted post-test mean of the control group are listed in Table II.

ISSN 2515-8260 Volume 07, Issue 09, 2020

TABLE-II: Computation of analysis of co-variance on stress control

Mean	Exp. Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	25.67	25.27	Between	1.20	1	1.20	0.13
			Within	252.27	28	9.01	
Post Test Mean	15.53	25.53	Between	750.00	1	750.00	119.68*
			Within	175.47	28	6.27	
Adjusted Mean	15.45	25.62	Between	771.40	1	771.40	157.61*
			Within	132.15	27	4.89	

*Significant at 0.05 level of confidence. (The table value with df 1 and 28 is 4.21, and the table value for df 1 and 27 is 4.20.)

The corresponding post-test F value of 119.68 was greater than the required F value of 4.20. A statistical analysis using ANCOVA showed that there was a substantial differential between the control group and the stress index experimental group, as the F value derived from the adjusted mean of 157.61 at 0.05 levels was greater than the required F value of 4.21.

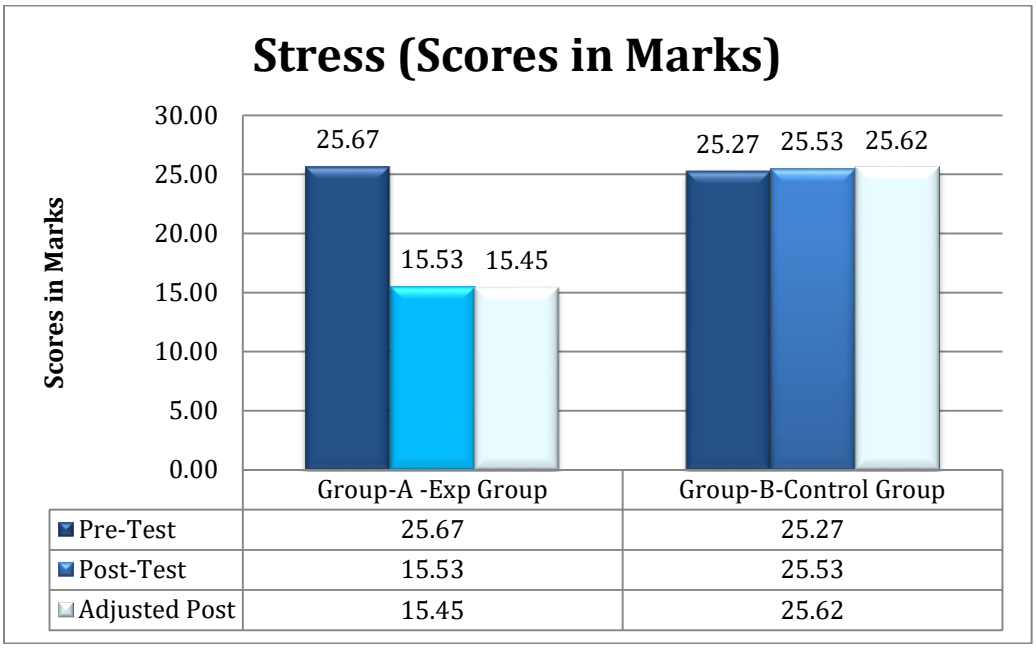

Figure II: Bar diagram showing the mean differences of the control and experimental groups on Stress

Community A has substantial variations in Peak Expiratory Flow Rate (PEFR) and Stress related to Yoga Therapy, the findings of the analysis on the selected physiological and psychological variables showed. The theory was therefore agreed at a degree of confidence of 0.05.

The above results can also be substantiated by the statements of experts such as **Akbar Nur et.al., (2020)** and **Candy Sodhi et.al., (2009).**

DISCUSSION ON HYPOTHESIS

Because of Yoga Therapy, it was hypothesized that there would be substantial discrepancies between asthmatic adult women on chosen physiological variables such as Peak Expiratory Flow Rate (PEFR) and psychological variables such as Stress than the control group.The results proved that significant differences on Peak Expiratory Flow Rate (PEFR) (Increased) and Stress (Reduced) were there due to Yoga Therapy than the control group among asthmatic adult women.

CONCLUSIONS

It was concluded that Yoga therapy increased Peak Expiratory Flow Rate (PEFR) and reduced stress level significantly (Group A) than the control (Group B) among adult asthmatic women.

REFERENCES

[1]. Dr.SwamiShankardevananda (2002) "Yogic Management of Asthma and Diabetes" Yoga Publications Trust
[2]. Sri T Krishnamacharya (1940) "Yoga Makaranda (Part II)" P.134 - 138
[3]. M.M. Gore (2017) "Anatomy and physiology of Yoga Therapy" new age books
[4]. Global Initiative for Asthma (2019) "Global Strategy for Asthma Management and Prevention"
[5]. American Lung Association (2016) "ASTHMA 101, What You Need to Know, RESOURCE BOOK"
[6]. "ASTHMA 101, What You Need to Know, RESOURCE BOOK" American Lung Association
[7]. Prevalence of asthma and other allergic conditions in adults in Khuzestan (2018), southwest Iran. BMC Public Health volume 19, Article number: 303 (2019)
[8]. 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. doi: 10.4103/0973-6131.53838.
[9]. Prevalence of asthma and other allergic conditions in adults in Khuzestan, southwest Iran, 2018. BMC Public Healthvolume 19, Article number: 303 (2019)
[10]. Nur, Akbar &Kusnanto, Kusnanto& Amin, Muhammad &Sajidin, Muhammad &Kurniawati, Ninuk Dian &Bakhtiar, Arief. (2020). The Effect of Combination Pranayama Yoga and Endurance Training Exercise on Peak Expiratory Flow (PEF) in Adult Asthmatic Patients. JurnalKeperawatanPadjadjaran. 8. 10.24198/jkp.v8i2.1350.
[11]. Sodhi C, Singh S, Dandona PK. A study of the effect of yoga training on pulmonary functions in patients with bronchial asthma. Indian J PhysiolPharmacol. 2009 Apr-Jun;53(2):169-74. PMID: 20112821.
[12]. www.ginasthma.org
[13]. www.ayurvedacollege.com