Efficacy of *Yoga* on requirement of rescue inhaled medication in asthma patients

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Asthma is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. The chronic inflammation causes an associated increase in airway hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing at night or in the early morning. The objective of this study is to evaluate the effect of *yoga* on rescue medication uses in asthma patients. A total of 300 subjects of mild to moderate persistent asthma (FEV₁ > 60%) aged between 12 to 60 yrs were recruited from the Department of Pulmonary Medicine, King George’s Medical University, UP, Lucknow, India. Their rescue medication use was assessed at baseline, then after 3-month and 6-month from baseline. 45 subjects were dropped out during the study period while 255 subjects completed the study successfully. Decrease in the rescue medication use was much less in the *yoga* group at 3rd month while at the end of 6th month the use of rescue medication decreased by 55.17 % in the *yoga* group as compared to control group. About 55% decrease was found in ‘the *yoga* group’ in rescue medication use which shows that *yoga* can be used as an adjuvant therapy with standard inhalation therapy and rescue medication use can be reduced.

**Keywords:** Adjuvant, Asthma, Rescue, Wheezing, Yoga

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Asthma is a chronic inflammatory respiratory disease characterized by periodic attacks of wheezing, shortness of breath, and a tight feeling in the chest. A cough producing sticky mucus is a characteristic symptom. Asthma is an ancient Greek word that means “panting”, “gasping” or inflamed “tight feeling in the chest”. It is very common in children, teens and adults. It is a condition where the air passages in the lungs become inflamed. Asthma is categorized into four categories: intermittent, mild persistent, moderate persistent and severe persistent⁵. *Yoga* has been considered as a form of Complementary and Alternative Medicines⁶. The word "*yoga*" comes from a Sanskrit root “yuj” which means union, or yoke, to join, and to direct and concentrate one’s attention⁷. Regular practice of *yoga* provides strength, endurance, flexibility and facilitates characteristics of friendliness, compassion, and greater self-control, while cultivating a sense of calmness and well-being⁸,⁹. The practice of *yoga* produces a physiological state opposite to that of the flight-or-fight stress response and with that interruption in the stress response. It provides a sense of balance and union between the mind and body⁹. *Yoga* is known for its beneficial effects on physiologic and psychological functions and improves the quality of life of the patients⁹,¹⁰. Use of rescue inhaled medication is totally concerned with asthma patients, so that the present study is based on mild to moderate persistent asthma patients to know the effect of *yoga* on requirement of rescue inhaled medication. However, the effect of *yoga* on rescue inhaled medication use in asthma patients has been studied but all of the studies were short term. The present study is based on the findings of one of the aims of the larger study on bronchial asthma.

**Objective**

To evaluate the effect of *yoga* on requirement of rescue inhaled medication in asthma patients.

**Materials and methods**

**Study design and setting**

This randomized controlled trial was conducted to know the requirement of rescue inhaled medication in asthma patients with *yoga* intervention and standard
medical treatment both in yoga group as well as in non-yoga group (without yoga intervention). Diagnosed cases of asthma were recruited for the study who attended the Out Patient Department (OPD) of the Department of Pulmonary Medicine, King George’s Medical University, UP, Lucknow, India on the basis of inclusion and exclusion criteria.

**Inclusion criteria**
1. Mild to moderate persistent bronchial asthma severity according to GINA-2011.
2. Reversible airflow limitation measured by ≥12% increase & ≥200 ml absolute increase in FEV₁ after Post Bronchodilator.
3. Patients’ aged between 12-60 yrs.

**Exclusion criteria**
1. Those who had a clinical diagnosis of asthma but did not satisfy the diagnostic criteria.
2. Patients with severe airflow limitation or more (FEV₁< 60%).
3. Pregnant/lactating women.
4. Chronic respiratory diseases and major psychiatric illnesses.

**Ethical consideration**
This study was approved by the Institutional Ethics Committee of the King George’s Medical University, UP, Lucknow. A signed informed consent was obtained from all the subjects before being enrolled for the study. They were free to withdraw from the study at any stage of the study period without assigning any reason.

**Study participants**
In this randomized controlled trial, 300 subjects who satisfied the inclusion criteria were allocated into two groups: ‘the yoga group’ and ‘the control group’. Out of 300 subjects (150 cases and 150 controls), 25 subjects from the yoga group and 20 subjects from the control group dropped out during the study period. One hundred twenty-five subjects from ‘the yoga group’ and 130 subjects from ‘the control group’ were completed the study.

**Yogic intervention**
Subjects in the yoga group received yogic intervention (asanas, pranayama & meditation) for 30 min per day, 5 days in a week for a period of 6 months at Department of Pulmonary Medicine, King George’s Medical University, UP, Lucknow (Table 1). A qualified yoga trainer was selected by the expert panel to give the proper training of the yoga to the patients. During the follow up of the study patients of ‘the yoga group’ and the ‘non-yoga group’ had taken the standard medication according to GINA guidelines (inhaled corticosteroid with LABA combination and inhaled β-2 agonist).

**Analysis of Data**
Paired t-test was used to test the mean difference score of the subjects at baseline, after 3 months and 6 months in both groups, i.e., yoga and control groups. Student's independent sample t-test was used to compare the differences in scores between yoga and non-yoga group. Differences were considered significant if p<0.05. The Statistical analysis was done by using Graph Padin Stat version 3.05 software Inc, year 2000 (Version. 3.05 Graph Padsoftware, Inc., California).

**Results**
Use of rescue medication at baseline in between group comparison is given in Table 2. Both groups are comparable in every respect and there was no significant association found in both groups. The values of outcome measures are given in Tables 3-6. Between groups comparisons are given in Tables 3&4 after 3rd month and 6th month respectively the intervention of yoga to the yoga group. There was no significant difference found in two groups at 3rd month in between group comparison (Table 3) but the ‘between group comparison’ at 6th month showed a highly significant difference in the medication use (Table 4). Comparison of pre- and post symptom

<table>
<thead>
<tr>
<th>Yogic techniques</th>
<th>Duration (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asanas</td>
<td></td>
</tr>
<tr>
<td>Gomukhasana (sitting posture)</td>
<td>2</td>
</tr>
<tr>
<td>Ardhamatsyendrasana (sitting posture)</td>
<td>2</td>
</tr>
<tr>
<td>Paschimottanasana (forward bending)</td>
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</tr>
<tr>
<td>Bhujangasana (backward bending)</td>
<td>0.5</td>
</tr>
<tr>
<td>Dhanurasana (backward bending)</td>
<td>0.5</td>
</tr>
<tr>
<td>Naukasana (boat pose asana)</td>
<td>1</td>
</tr>
<tr>
<td>Parvatasana (standing posture)</td>
<td>1</td>
</tr>
<tr>
<td>Tadasana (standing posture)</td>
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</tr>
<tr>
<td>Shavasana (relaxing/resting asana)</td>
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</tr>
<tr>
<td>Pranayama</td>
<td></td>
</tr>
<tr>
<td>Nadishodhana</td>
<td>3</td>
</tr>
<tr>
<td>Bhashrika</td>
<td>2</td>
</tr>
<tr>
<td>Bhramari</td>
<td>2</td>
</tr>
<tr>
<td>Meditation</td>
<td>10</td>
</tr>
<tr>
<td>Total Duration</td>
<td>30 min</td>
</tr>
</tbody>
</table>
score changes occurred in yoga group and control group at 3rd month and 6th month respectively after the intervention of yoga to the yoga group are given in Tables 5&6. It has been observed in pre-post comparison at 3rd month in the yoga group that medication use decreased significantly by 34.77% from 3.48±0.67 to 2.27±1.14 in the yoga group (P<0.0001) and 33.52% decrease was found in control group from 3.58±0.62 to 2.38±1.23 (P<0.0001). As seen in the Table 6, a significant difference of 55.17% found in the rescue medication use from 3.48±0.67 to 1.56±0.74 (P<0.0001) in the yoga group and it was found 38.82% from 3.58±0.62 to 2.19±1.28 (P<0.0001) in the control group.

**Discussion**

The results of this study suggest that at post-intervention, between groups differences were found highly significant with better improvement in the rescue medication use. It was observed in within group comparison that the decrease was much less in the yoga group at 3rd month while at the end of 6th month the use of rescue medication decreased by 55.17% in the yoga group in comparison to control group. About 55% decrease was found in the yoga group which showed that yoga may be used as an adjuvant therapy along with standard medical treatment and the requirement of rescue medication can be reduced. A randomized controlled trial has
shown the effect of yoga on asthmatic patients and concluded that the yoga group showed 66.7% reduction in the use of salbutamol puffs and 58.3% salbutamol tablets while control group showed only a reduction of 16.6% in the use of puffs. In a randomized controlled study the frequency of rescue medication use significantly decreased over the study period in both groups (yoga as well as control group). But the decrease was achieved relatively earlier and was more marked in the yoga group than in the control group. A study reported that the buteyko breathing technique (The Pink City Lung Exerciser) and pranayama can improve symptoms and reduce bronchodilator use. Results of some controlled trials with small number of patients support our findings but some of the randomized trials were not supported by sound evidence. A review article showed the result of 195 papers regarding yoga in 24 journals indexed in Integrative and Complementary Medicine. All the presented results indicate the scientific effects of yoga. A large number of diseases were treated with yoga therapy in which several studies reported psychological and physiological outcomes of yoga therapy.

Conclusion

The current study shows that the yogic intervention decreased the use of rescue medication. About 55% decrease was found in ‘the yoga group’ in rescue medication use which shows that yoga can be used as an adjuvant therapy with standard inhalation therapy and rescue medication use can be reduced. Overall, the study shows that yoga can be practiced as an adjuvant for better outcome of asthma.

Suggestions for future work

Due to the small number of controlled trials and due to the small number of patients studied, it is not possible to make firm judgments regarding the long-term efficacy of using yoga to control asthma attacks. It is recommended to more carefully construct randomized controlled trials using strict methodology and more rigorous trials are needed to conduct. Asthma is a serious health problem of the community but in severe condition yoga is not helpful in achieving any benefit. So, it is also recommended to conduct the randomized controlled trials on mild to moderate persistent asthmatic patients.

Acknowledgment

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References