



## Comparative Analysis of the Impact of Acupuncture and Yoga on Asthma – A Narrative Review

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### Abstract:

Asthma is a chronic and life-threatening disease that results in a significant burden on healthcare systems. The aim of this review is to provide a systematic review of the benefits of yoga, acupuncture, herbal medicine, and other self-care management for the asthma patients and how to use it effectively. Yoga, a holistic lifestyle intervention, has emerged as a remarkably efficient and multifaceted approach that can be advocated to individuals suffering from asthma. It is important for the researchers, healthcare professionals, and policymakers in understanding the current state of knowledge on asthma and its available management methods. In this review, we have discussed the advantages of yoga and acupuncture in Bronchial asthma patients, and a need for standard protocol of integrated approach of both in the management of the disease. In conclusion, the integration of yoga and Acupuncture into the lives of asthma patients can be a highly effective lifestyle intervention.

**Keywords:** *Asthma, Yoga, Acupuncture, TCM, Bronchial Asthma*

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### Introduction:

Asthma is a chronic respiratory disease that affects millions of people worldwide. According to the evidence, asthma is a significant burden on healthcare systems, with high rates of emergency department visits, hospitalizations, and missed school or workdays[1,2,3]. It disproportionately affects certain populations, such as children, minorities, and those with low socioeconomic status[4,5,6,7]. There is a constant need for continued research and development of new treatments to reduce the burden of asthma on individuals and society. It

is important for the researchers, healthcare professionals, and policymakers in understanding the current state of knowledge on asthma and its available management methods.

An analysis found that many low-and middle-income countries (LMIC) do not have essential asthma medicines on their national Essential Medicines Lists (EML) or national reimbursement list (NRL). This means that patients in these countries may have poor access to these medicines. The study suggests that a mechanism for accessing affordable, quality-assured medicines is needed, as well as technical guidance and advocacy for policy change and highlights gaps in the availability of essential asthma medicines in both high-income and low- and middle-income countries[8]. Review of studies published in the year 2015 states that there are a lot of drugs evolving for the management of asthma and also different perspectives in the approach[9].

Despite the fact that there is a continuous emergence of new drugs and therapeutic options in the management of asthma, Complementary therapies are needed to treat asthma due to the multifactorial and refractory nature of the disease and the potential benefits they offer in addressing various aspects of asthma pathophysiology[10,11].

Complementary techniques for management of asthma also possess their antihistaminic activity by reversing histamine induced anaphylactic response, decreased the levels of reactive oxygen species (ROS), T helper (Th)<sub>2</sub> cytokines, the total IgE produced by B cells and OVA[12].

A systematic review provides the benefits of the complementary therapies such as yoga, acupuncture, herbal medicine and other self-care management for the asthma patients and how to use it effectively. It has also emphasized in the effective patient – physician communication in proper understanding and application of the complementary therapies[13]. Among complementary therapies, yoga and acupuncture which is a part of Traditional Chinese Medicine (TCM) is proven to have beneficiary effects without side effects[12], and cost-effective therapeutic option[14,15], which is evidenced by both animal and human trials[16,17,18,19,20]

In this review, we have discussed the benefits of Yoga and Acupuncture in Bronchial asthma patients, and a need for standard protocol of integrated approach of both in the management of the disease.

### **Yoga and Asthma:**

Most of the published research has focused on people who have never practiced yoga, despite the fact that there is a lot of evidence to support yoga's positive effects on health[21,22]. These studies support that the benefits of yoga can be attained by anyone who is suffering

from the illness regardless of his previous yoga experience or knowledge. In a RCT with 48 participants, with waitlisted group, it was found that yoga practices significantly decreased pro-inflammatory cytokine IL-1 $\beta$  and increased anti-inflammatory cytokine IL-10 in the experimental group[23].

Mindfulness-based stress reduction (MBSR) produced lasting and clinically significant improvements in asthma-related quality of life and stress in patients with persistent asthma, without improvements in lung function[24]. A comprehensive lifestyle modification programme based on yoga program was applied in a study resulted in a significant improvement in pulmonary function, exercise-induced bronchoconstriction, and Asthma Quality of Life scores. In this study, there was no significant change in serum eosinophilic cationic protein levels during the 8-week study period in either group. The number-needed-to-treat worked out to be 1.82 for the total AQOL score[20]. Many studies involved long term follow ups after yoga intervention. In one study breathing training resulted in improvements in asthma-specific health status and other patient-centred measures, but not in asthma pathophysiology. Significant between-group differences favouring breathing training were seen in HAD anxiety, HAD depression and Nijmegen scores at 6 months[25].

Sahaja yoga, a type of yoga, had a limited beneficial effect on some objective and subjective measures of the impact of asthma. In this study it was reported that improvement in airway hyperresponsiveness to methacholine was greater in the yoga intervention group than in the control group. The Asthma Quality of Life Questionnaire mood subscale and summary Profile of Mood States Questionnaire (POMS) score also improved more in the yoga group than in the control group[26].

Much recent study addressed the effect of pulmonary function in asthma patients and established that practise of kapalabhati, a yogic practise has immediate effect on improving the pulmonary functions which was not observed in the deep breathing group. In this study the sympathetic activity of the kapalabhati practise was applied over the parasympathetic dominance which is common in asthma patient[27].

Bronchoconstriction, which is the main characteristic in BA patients, in one study it was found that practice of yoga had beneficial effects on exercise induced bronchoconstriction in children[28].

TLCO (Transfer factor of the lung for carbon monoxide), FVC (forced vital capacity), FEV1 (forced expiratory volume in the first second), PEF (peak expiratory flow rate), MVV (maximum voluntary ventilation), and SVC (slow vital capacity) all showed statistically significant improvements (P 0.001) after yoga practice. The quality of living also

significantly improved. It was determined that breathing exercises and stretching postures used in pranayama and yoga are used to calm the body, relax the chest muscles, expand the lungs, and increase respiratory endurance[29].

In comparison to control group, subjects who practised yoga, displayed a statistically significant upward trend ( $P < 0.01$ ) in the forced mid-expiratory flow in 0.25-0.75 seconds (FEF25-75), forced vital capacity (FVC), forced peak expiratory flow rate (PEFR), and FEV1/FVC% ratio at 4 weeks and 8 weeks. Therefore, yoga breathing exercises combined with conventional pharmaceutical therapy significantly improve pulmonary functions in bronchial asthma patients[30].

Practise of yoga in adults have led to the lesser usage of beta-adrenergic inhalers, which have proven yoga to be as effective as the medical management of asthma[31]. In a short period of 7 days , yoga showed significant changes in sympathetic reactivity and improvement in the pulmonary ventilation by way of relaxation of voluntary inspiratory and expiratory muscles[32]. 65 minutes of yoga practise every-day for 2 weeks, produced a significant improvement in in the weekly number of attacks of asthma, scores for drug treatment, and peak flow rate[33].

### **Acupuncture and Asthma**

Acupuncture resulted in decreased eosinophils and neutrophils, increased macrophages, improved peak flow, and less coughing, wheezing, dyspnoea, and nocturnal awakening episodes. It also resulted in improved functional capacity and physical aspects[18]. Acupuncture treatment resulted in a significant improvement in peak expiratory flow variability compared to the control group. There was also a significant reduction in perceived anxiety compared to the control group[34]. In a multi centred trial, Acupoint sticking therapy significantly improved clinical symptoms and life quality of patients with bronchial asthma. Asthma Quality of Life Questionnaire (AQLQ) scores, daytime symptoms, and scores of self-effects were significantly improved in the medication acupoint sticking group compared to the placebo group[35]. 12 sessions of acupuncture treatment for 4 weeks showed a favourable effect on the quality of life in adult asthmatic patients [36].

Acupuncture therapy was found to be effective in reducing total respiratory resistance (Rrs) in asthmatic patients. A single-blind study was conducted using a placebo acupuncture, a placebo stimulation and real acupuncture therapy. 10 out of 26 acupuncture therapies resulted in a significant decrease in Rrs, while only one of 17 placebo treatments did [37]. Acupuncture and nebulized isoproterenol were both effective in reversing methacholine-induced bronchospasm, with isoproterenol producing greater improvement than real

acupuncture. Saline and simulated acupuncture did not result in any significant improvement in specific airway conductance, thoracic gas volume or forced expiratory flow rates compared with no treatment following methacholine-induced bronchospasm. Stimulation of specific acupuncture loci reduces methacholine-induced bronchospasm and hyperinflation to an extent greater than can be attributed to placebo phenomena [38].

Acupuncture had a significant broncho spasmolytic effect in 9 out of 12 patients with bronchial asthma. The lowest level for airway resistance (70.1% of control value) was reached during the first hour after acupuncture. Placebo-acupunctures did not change airway resistance significantly [39].

Acupuncture for warming yang and benefiting qi is effective for treating bronchial asthma at chronic persistent stage. Acupuncture improves immune and pulmonary functions better than Seretide medication [40]. Laser acupuncture improves pulmonary functions in asthmatic children and reduces the severity of asthma[41]. Another study found that laser acupuncture, when used in conjunction with conventional medical treatment, was more effective in controlling asthma symptoms in children and improving immunomodulatory parameters[42]. Low-intensity laser acupuncture can be safe and effective treatment in asthmatic children using traditional Chinese acupoints for bio stimulation by low-level power laser. Anti-asthma medications were reduced after Low-intensity laser acupuncture[43]. Acupuncture improves pulmonary functions of children with bronchial asthma; it decreases the serum levels of eosinophilic count and cytokines and there was also a decrease in the medications used[44]. Animal experiments showed that acupuncture could function in improving pulmonary function and adjust immune state and relieve inflammatory reactions in bronchial asthma patients, and its clinical efficacies need to be researched further according to principles of evidence-based medicine[45]. The results of a study show that after acupuncture, treated patients were able to reduce bronchodilator and taper completely corticosteroid therapy and the positive LTC<sub>4</sub> induced responses[46].

#### **Adverse events:**

During the course of the yoga intervention, it is worth noting that there were very few adverse events that were observed. It is important to mention that there have been a handful of studies that have delved into the realm of self-care, where individuals practice yoga in the comfort of their own homes. In these particular cases, it is plausible that without the guidance and oversight of a medical professional, there is a potential risk of overlooking certain symptoms that could potentially exacerbate the situation at hand. This, in turn, could have a negative aspect on the effect of yoga itself. It is crucial to recognize the significance of proper

medical supervision and guidance by qualified doctors in order to ensure the safety and well-being of individuals engaging in yoga as a form of self-care.

In acupuncture needling, it was observed that a small number of patients experienced mild bleeding, characterized by the gentle seepage of crimson droplets from the puncture site. Although this occurrence may have caused momentary concern, it was deemed inconsequential and did not necessitate any further medical intervention.

Furthermore, a few individuals exhibited the development of hematoma, a localized swelling resulting from the accumulation of blood beneath the skin. While this occurrence may have caused temporary discomfort and visual discoloration, it was determined to be a transient phenomenon that resolved spontaneously without the need for additional medical care.

In addition, a handful of patients reported experiencing mild nausea following acupuncture needling, which was transient in nature and dissipated shortly after the conclusion of the treatment session. It is important to note that no further medical intervention was required to alleviate this discomfort. Lastly, a small subset of individuals displayed a temporary increase in heart rate subsequent to acupuncture needling. This physiological response, while notable, was not deemed to be of clinical significance and resolved spontaneously without any additional medical intervention.

### **Discussion and Critics:**

It is found that frequent measurements of airways obstruction, such as peak flow readings, are valuable in assessing the severity of a patient's asthma and the effectiveness of therapy. Spot measurements made in a clinic once a month or even once a week may not provide an accurate representation of the patient's condition. Repeated measurements, along with symptoms and signs of the patient, are important in the diagnosis and management of asthma. Pulmonary function tests, such as FEV1 and peak flow rate, are better in establishing the diagnosis, determining the effects of treatment, and detecting the aetiology of asthma. It is equally important to consider psychological factors in patients with breathlessness disproportionate to objective pulmonary function tests.

In the review it was observed that the beneficial effect of yoga in different ways have been established in different regions. In many studies, there was an improvement in the clinical symptoms, but there were no physiological explanations or mechanisms explored which might have limited the study application. Both short term and long-term benefits of yoga has been evaluated and both have seen to be beneficial. In many studies it is established that yoga practise can effectively reduce the use of inhalers and also serve as effective as the medical

management. Yoga practises have also improved the relaxation, quality of life and general well being of the participants in many studies.

Acupuncture, a traditional Chinese medicine (TCM) therapy, has shown remarkable potential in providing benefits to patients of all age groups suffering from asthma. However, there is a consistent lack of proper study design in the research conducted on this subject matter. Furthermore, a significant number of these studies have failed to provide a long-term follow-up, which is crucial in determining the sustained effectiveness of acupuncture as a therapeutic intervention for asthma. One of the key observations made in these studies is the absence of an individualized approach in the therapeutic aspect of acupuncture. This is particularly concerning as individualization is a fundamental principle of TCM. By not tailoring the treatment to the specific needs and characteristics of each patient, the potential benefits of acupuncture may have been limited. It is imperative to recognize that the uniqueness of each individual's constitution and condition should be considered when administering acupuncture therapy.

When delving into the realm of yoga's impact on asthma, it becomes evident that this ancient discipline can be seamlessly integrated with other complementary therapies to further enhance its efficacy. One such therapy that has shown promising results when combined with yoga is acupuncture. By synergistically harnessing the power of these two modalities, individuals with asthma can experience a profound improvement in their overall well-being.

By this comprehensive review of the existing literature, it becomes abundantly clear that acupuncture, when utilized as a complementary therapy alongside yoga, can yield remarkable outcomes. This non-invasive technique, which involves the strategic insertion of fine needles into specific points on the body, has been found to effectively alleviate the symptoms of asthma without the need for any internal medicine. The harmonious integration of yoga and acupuncture offers a holistic approach that addresses the multifaceted nature of asthma, providing individuals with a comprehensive and well-rounded treatment plan.

### **Conclusion:**

In conclusion, the integration of yoga into the lives of asthma patients has proven to be a highly effective lifestyle intervention. By embracing this ancient practice, individuals can not only experience a significant improvement in their clinical symptoms, but also witness a remarkable enhancement in their overall quality of life. Furthermore, when combined with acupuncture, yoga becomes an even more potent therapeutic tool, offering individuals a comprehensive and holistic approach to managing their asthma.

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