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REVIEW ARTICLE

Integrative Approaches to Asthma Management: Clinical Evidence on Yoga and Naturopathy

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ABSTRACT

Asthma is a chronic inflammatory airway disease characterized by responsiveness to several stimuli and widespread episodic airway obstruction. People with asthma may find that yoga and naturopathy, two traditional Indian techniques, significantly alleviate both their mental and physical pain. This study aimed to evaluate the effect of yoga and naturopathy, and the combination of these two treatment options, on individuals with asthma. The review was conducted by searching several important databases, including the World Health Organization International Clinical Trials Registry Platform, Web of Science, MEDLINE, EMBASE, PubMed, PsycINFO, and ClinicalTrials.gov. Results such as quality of life, symptoms, control, lung function, medication use, or side effects were reported in randomized controlled trials comparing yoga with a standard treatment, no intervention, or a mock intervention in asthma patients. Data about the study's design, participants, interventions, and outcomes were extracted. Mean difference, standardized mean difference, or risk ratio with 95% confidence interval was utilized to measure the effects of the treatment. For people with asthma, yoga and naturopathy may be regarded as a routine supportive intervention. For individuals looking into complementary therapy choices, it can also be used as an additional therapy or as a substitute for conventional breathing exercises with minimal side effects.

1. INTRODUCTION

Asthma is a chronic inflammatory condition of the airways that causes episodic symptoms such as wheezing, breathlessness, chest tightness, and coughing. These symptoms result from bronchial hyperresponsiveness and airway narrowing, often triggered by allergens, infections, exercise, or stress.[1] The condition affects individuals of all ages, with a global burden exceeding 95 million cases of childhood asthma as of 2021, although prevalence rates have declined by 30.4% since 1990.[2,3]

Childhood asthma has numerous etiological causes, with both genetic and external environmental factors being important contributors.[3] One of the leading causes of frequent hospitalizations in children is acute exacerbation of asthma. The aim of treating childhood asthma is to induce a long-term disease-free state while also controlling symptoms.[4] Although pharmacological bronchodilator treatment can save lives in acute exacerbations, it does not affect the disease's normal progression. Long-term remission can be achieved with systemic/inhalational steroids, but their adverse effects typically limit the doctor's use of them.[5]

In addition to reducing physical activity, bronchial asthma produces breathing difficulties and airway obstruction, which can have emotional, psychological, and social effects such as stress, low self-esteem, and poor educational outcomes.[6] When evaluating how a disease affects different aspects of a patient's life, the quality of life (QOL) is a helpful metric. The Pediatric Asthma Quality of Life Questionnaire (PAQLQ) and its short version, the mini PAQLQ, are frequently utilized for pediatric populations.[6]

At the cellular level, asthma is characterized by chronic airway inflammation involving a cascade of immune cells. Damage to epithelial cells initiates the release of cytokines such as IL-25, interleukin (IL)-33, and thymic stromal lymphopoietin (TSLP),

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which activate dendritic cells. These, in turn, prime naive T cells into Th2 cells, leading to the release of IL-4, IL-5, and IL-13. IL-4 promotes IgE production, IL-5 recruits eosinophils, and IL-13 contributes to mucus hypersecretion and airway hyperresponsiveness.[3] Recurrent inflammation leads to airway remodeling, including subepithelial fibrosis, smooth muscle hypertrophy, and goblet cell hyperplasia. In non-allergic or severe asthma, neutrophilic involvement contributes to tissue damage through the release of proteolytic enzymes.[7,8]

For thousands of years, yoga has been a part of ancient Indian spiritual practice, with roots in Indian philosophy. Traditional yoga is a multifaceted intervention that includes meditation, breathing techniques, physical exercise, spiritual practice, and guidance for ethical living. Yoga has gained popularity for enhancing both mental and physical health, even though its ultimate aim has been defined as bringing the mind, body, and spirit together. Yoga is most commonly linked with physical postures (asanas), breathing exercises (pranayama), and meditation (dhyana) in India.[9] However, various styles of yoga have developed that place differing emphasis on both mental and physical practices. In addition, children with asthma benefit from a mindfulness-based intervention.[10] Kabat-Zinn defined mindfulness as paying attention intentionally, in a certain way, in the present moment, and without passing judgment.[11] Although mindfulness can be accomplished by a variety of recognized and informal practices, such as yoga and meditation, it involves the monitoring of one's attention and focus, which requires extensive training and practice.[12]

Benedict Lust's concept for drugless therapy kept "expanding," as Susan Cayleff noted, although it was always intended to work with the Germanic "nature cure" of the 19th century. The original concepts were attributed to Vincent Preissnitz and were based on Henry Lindlahr's 1915 book Nature Cure. According to Lindlahr, "the idea of drugless healing (which) spread over Germany and over the civilized world" developed from nature cure.[13]

The scientific use of naturally occurring resources (such as air, sun, water, mud, and food) as well as other natural techniques and modalities, such as exercise, scientific massage, manipulation, herbalism, etc., is known as naturopathy.

The natural strategy for managing and preventing bronchial asthma focuses on the normal operation of the diaphragm, ribs, and muscles between them, as well as the shoulder and clavicle bones and muscles, to ensure that the lungs expel the most toxins and that the most oxygenated air is inhaled. More efficient blood circulation to the upper lungs is required for this reason. Therefore, the breathing technique needs to be modified. The professional and artistic aspects of life have undergone significant changes as a result of naturopathy.[14] It is the application and practical realization of all the positive aspects of natural science. Rather than being compartmentalized, the treatment method is essentially holistic. Hot foot and arm baths (HFABs), massages, and back massages are all part of the nature cure treatment. It improves lung congestion, minimizes irritation of the pulmonary mucous membrane, and deepens breathing. As a result, naturopathy becomes an effective treatment method for asthma.[15,16]

Despite medical advancements, asthma remains incurable and often poorly controlled. Pharmacotherapy primarily targets symptom relief rather than addressing root causes or holistic well-being. In this context, complementary interventions such as yoga and naturopathy have gained attention for their potential to support respiratory function and reduce reliance on medication. This review aims to discuss the efficacy of yoga and naturopathy in asthmatic conditions, including the associated challenges.[14]

2. EFFICACY OF YOGA AND NATUROPATHY IN ASTHMA

2.1. Aim

This study aimed to assess the clinical evidence and therapeutic potential of yoga and naturopathy as complementary therapies to asthma care.

2.2. Objective

1. To evaluate how yoga affects lung function, QOL, and asthma symptoms
2. To assess how naturopathy-based treatments affect general health and symptom management
3. To investigate the potential psychological and physiological processes that underlie these therapies
4. To determine the gaps in the evidence and potential lines of inquiry for integrative asthma treatment.

3. MATERIALS AND METHODS

Using PubMed, Scopus, Google Scholar, and other pertinent databases, a thorough examination of the literature was carried out. Based on predetermined inclusion and exclusion criteria, studies assessing yoga and naturopathy therapies in asthma patients were found and screened. We extracted, examined, and narratively synthesized pertinent data on clinical outcomes, lung function, symptom severity, QOL, and treatment safety.

Ancient yoga offers a mind–body approach that incorporates postures (asanas), breathing exercises (pranayama), and meditation. At the same time, naturopathy applies five elements such as water, air, fire, ether, and earth. Specific yoga and naturopathy approaches targeting asthma patients are highlighted in Tables 1 and 2, respectively.

4. THERAPEUTIC IMPACT OF YOGA IN ASTHMATIC PATIENTS

In 2008, 57 adult volunteers with mild-to-severe bronchial asthma participated in a randomized controlled trial (RCT) conducted by Vempati *et al*. According to their study, they were randomly assigned to either the wait-listed control group (n = 28) or the yoga (intervention) group (n = 29). The intervention included 2-week sessions of monitored yoga-based stress management and lifestyle modification instruction, followed by 6 weeks of closely tracked practices at home. Using a generalized linear model with repeated measures and *post hoc* analysis, the outcome measures were evaluated in both groups at 0 weeks (baseline), 2, 4, and 8 weeks. According to the results of that RCT, the yoga group's pulmonary function improved steadily and gradually. The difference between the corresponding baseline values and the forced expiratory volume in one second (FEV1) at 8 weeks and the peak expiratory flow rate (PEFR) at 2, 4, and 8 weeks was statistically significant. The yoga group experienced a notable decrease in exercise-induced bronchoconstriction (EIB). The exercise challenge did not, however, result in a consistent decrease in the levels of the urinary prostaglandin D2 metabolite, 11β-prostaglandin F2α. There was also no significant change in serum eosinophilic cationic protein levels during the 8-week study period in either group.[25] There was a significant improvement in Asthma QOL scores in both groups over the 8-week study period. However, the improvement was achieved earlier and was more complete in the yoga group. However, the decrease was achieved relatively earlier and was more marked in the yoga group

than in the control group. The present RCT has demonstrated that adding the mind–body approach of yoga to the predominantly physical approach of conventional care results in measurable improvement in subjective as well as objective outcomes in bronchial asthma. The trial supports the efficacy of yoga in the management of bronchial asthma.[25,26]

Moreover, in 2014, Cramer *et al*. conducted a study to systematically assess and meta-analyze the available data on the efficacy and safety of yoga in alleviating asthma from many papers taken from different platforms such as MEDLINE/PubMed, Scopus, the Cochrane Central Register of Controlled Trials, PsycINFO, CAMQuest, CAMbase, and IndMED. An RCT was conducted for patients who were suffering from asthma to assess the effect of yoga on asthma control, symptoms, QOL, and/or pulmonary function. To analyze the outcomes, they used standardized mean differences (SMDs) or risk ratios (RRs) and 95%confidence intervals (CIs).[27] Using the Cochrane tool to assess the risk of bias, the team included 824 patients from 14 RCTs. Comparing with usual care the effects of yoga were found for asthma control with RR, 10.64; 95% CI, 1.98–57.19; P ¼ 0.006, asthma symptoms with SMD, _0.37; 95% CI, _0.55 to _0.19 it should be appeared in SMD = −0.37, 95% CI: −0.55 to −0.19; $P < 0.001$, QOL with SMD, 0.86; 95% CI, 0.39–1.33; $P < 0.001$, PEFR with SMD, 0.49; 95% CI, 0.32 –0.67; $P < 0.001$, and ratio of FEV1 to forced vital capacity (FVC) with SMD, 0.50; 95% CI, 0.24–0.75; $P < 0.001$; evidence for effects of yoga compared with psychological interventions was found for QOL with a result of SMD, 0.61; 95% CI, 0.22–0.99; P ¼ 0.002 and PEFR with SMD, 2.87; 95% CI, 0.14–5.60; P ¼ 0.04 were reported (Li *et al*. 2018). By analyzing the results, yoga can be considered an ancillary intervention or an alternative to breathing exercises for asthma patients.[27]

Approximately 13.5% of children in the United States suffer from pediatric asthma. Children with asthma could therefore benefit from an intervention that aims to reduce stress and anxiety while increasing physical activity.[28] In a randomized controlled trial including 150 children, Gupta *et al*. in 2017 compared a control group of 75 children receiving regular medical care with a 6-week intervention consisting of yoga asana and pranayama ($n = 75$). According to the study's authors, this was done for analytical purposes. Children with bronchial asthma, children with allergic rhinitis, and children with both bronchial asthma and allergic rhinitis were further separated into each group. When compared to their peers in the control group, the kids in the bronchial asthma and allergic rhinitis groups who received the yoga intervention over time showed improvements in their QOL and pulmonary function tests.[29]

Furthermore, Lack *et al*. reported that almost 15% of children are affected by asthma in the United States. Depending on the availability of treatments and educational methods, children with asthma continue to report an impaired QOL, including symptoms of anxiety and inability to participate in physical activity. As complementary health approaches are becoming more popular and show promise in the management of many chronic diseases, the purpose of the review was to examine the state of the science regarding popular complementary health approaches, yoga and mindfulness, for children and adolescents with asthma.[30] A comprehensive search of five databases for peer-reviewed articles was performed to identify experimental and non-experimental studies.[28] The search for each database was performed from the inception of each to January 2020 and limited to the English language. A total of 11 articles met the criteria for review from the years 1991 to 2019. The studies examining yoga, mindfulness, and meditation in asthma varied considerably in sample size, participant characteristics, and geographical setting. In the review by Lack *et al.* (2020), the included studies had sample sizes ranging from 3 to 1,392 participants and involved children and adolescents aged 5–18 years. In contrast, Bahçecioğlu Turan and Tan (2020) evaluated 112 adult asthma patients, while Paudyal *et al*. (2018) synthesized evidence from four randomized controlled trials involving a total of 201 participants. The studies were conducted across diverse geographical regions, including India, China, Egypt, Iran, the Netherlands, Turkey, the United States, and Africa.[28,31,32]

Interventions involving either mindfulness or yoga may be effective in reducing stress and anxiety and improving QOL and lung function in this population. Mindfulness intervention studies in the pediatric and adolescent asthma population are warranted, as are additional studies that include the use of yoga with mindfulness skills to evaluate their physiological and psychological effects.

For the purpose of evaluating the physiological effects of yoga-based therapies on children and adolescents with asthma, three non-randomized or uncontrolled trials were conducted. A parallel group design was implemented in two studies: In a prospective quasi-experimental uncontrolled trial conducted in 2014, Tahan *et al*.[39] assessed a twice-weekly hatha-style yoga intervention for 3 months in 20 children and adolescents with moderate exercise-induced asthma, ages 6–17. Ten of the subjects could handle a typical exercise challenge and spirometry at baseline, but the other ten could not. The 10 exercise-intolerant patients showed notable improvements in their maximal FEV1% decline following exercise at the end of the 3-month yoga intervention, indicating a conversion to exercise tolerance. In 2017, Azab *et al*. analyzed how children with mild-to-moderate asthma responded to pranayama yoga breathing versus the Buteyko breathing method, a therapy that combines breath control and breath-holding activities. After 12 weeks of receiving their designated intervention 3 days a week, both groups displayed comparable and noteworthy gains in lung function as determined by FEV1, FVC, and FEV1/FVC at the conclusion of the trial.[33] Last but not least, Sharifi *et al*. discovered that employing stretching and pranayama methods 3 days a week for 8 weeks considerably increased the FEV1 and peak expiratory flow of exercise-induced asthmatic male adolescents ($n = 11$).

Jasrotia and Kanchan assessed through an RCT how well 15 children with chronic asthma used asanas and pranayama, whereas the other 15 children received just normal medical care. However, compared to the control group, the children who regularly practiced yoga for 12 weeks showed a substantial increase in their vital capacity (VC), FVC, and PEFR, according to the authors.[34]

Patients with asthma may benefit physiologically from yoga, but little is known about how these practices may impact children's lung function and airway inflammation and ultimately improve their QOL. In 2021, Yadav *et al*. were assessing to find out the effect of yoga on the control of asthma in children with bronchial asthma. They randomly selected 140 newly diagnosed asthmatic children aged 10–16 years from the Department of Paediatrics at a tertiary care center in North India from November 2017 to October 2018. Divided into two groups, i.e., case and control groups, with 70 children in each group, they began supervision. One group received only pharmacological treatment, and the other group received pharmacological treatment along with yoga for 3 months. They collected data on pulmonary function tests (PFT) and pediatric QOL assessment using the PAQLQ at baseline, the 6th week, and the 12th week to assess FVC, FEV1, FEV1/FVC, and PEFR. QOL evaluation was done in 3 domains: activity limitation, symptoms, and emotional function. In the results,

they found that the asthmatic children who practiced yoga showed significant improvement in FVC, FEV1, FEV1/FVC, and PEFR, which was better than the control group. Improvement was also noted in the mean-PAQLQ score in cases, which was statistically significantly better as compared with the control group. This paper has proven that yoga appears to have a significant positive effect on the control of asthma measured by PFT and QOL. Therefore, yoga therapy can be recommended as an adjuvant in the management of asthma along with standard pharmacological management.

In the year 2022, Das *et al*. studied synchronizing and controlled breathing, following the decrease of hyperventilation through yoga and pranayama in asthma. The role of asana and pranayama is to reduce stress, strain, or anxiety; change behavior, boost immunity, and improve the strength or endurance of respiratory muscles, which are helpful in any subject with asthma. There have been a good number of studies, including clinical trials in children with asthma, which have found some beneficial effects. The physiology of yoga and pranayama, rationale for their use in children with asthma, along with a summary of various studies conducted to date, have been discussed. These are followed by recommendations regarding their incorporation in the standard of care of children with asthma.[35]

5. THERAPEUTIC IMPACT OF NATUROPATHY IN ASTHMATIC PATIENTS

Maheshkumar *et al*. conducted a case study in the year 2020 to establish scientific documentation or study of the effect of HFAB, which is used widely as a treatment modality for the management of bronchial asthma in Naturopathy. It is seen that managing the condition of corticosteroid-resistant asthmatic patients is quite challenging despite the plethora of new and modern medications. They selected a 33-year-old male patient who was admitted to the hospital with major complaints of wheezing and dyspnea for 2 weeks before admission, with a known case of asthma and occasional use of inhalers. In addition, spirometry test results showed a reversible obstructive pattern (pre-bronchodilator FEV1, 1.64 L; post-bronchodilator FEV1, 2.02 L; reversibility, 16%). HFAB was applied to the patient for 3 days in the morning, and the pulmonary function test was recorded before and immediately after HFAB. FVC, FEV1, FEV1/FVC ratio, PEF 25–75%, and PEFR are the parameters measured through the pulmonary function test, and the results showed a significant improvement. A significant improvement was seen immediately after the HFAB on days 2 and 3 when compared to day 1. The findings suggest that HFAB application has an immediate effect on improving lung function in patients with bronchial asthma and could be used as an effective adjuvant therapy for the management of bronchial asthma. This is the first case report on HFAB application for bronchial asthma, and future extensive studies with a large population would validate our findings.[36]

6. THERAPEUTIC IMPACT OF YOGA AND NATUROPATHY IN ASTHMATIC PATIENTS

The bronchodilator provides only temporary relief with significant side effects. The science and art of life have completely changed because of naturopathy. It is the application and practical realization of all the positive aspects of natural science. The method of treatment is essentially holistic as compared to compartmentalized treatment. HFABs, massages, back fomentation, etc. are all part of the naturopathy treatment. It improves lung congestion, reduces irritation of the pulmonary mucous membrane, and deepens breathing.[37]

In 2021, Sathyaprabha *et al*. reported the efficacy of yoga and naturopathy in bronchial asthma and tried to find out the effect of a non-pharmacological approach of naturopathy and yoga in bronchial asthma management. The team enrolled 37 patients at INYS, Bangalore, for a period of 3 weeks. The number of diseased volunteers was 19 men and 18 women, with average ages of 35.06 years and 40.74 years. A natural cure process with proper diet and yoga therapy was applied as part of the treatment. Along with the lung function test, the other parameters were measured once a week, including on the baseline day. A significant improvement was seen in the results of PEFR, VC, FVC, FEV1, FEV/FVC %, maximum voluntary ventilation (MVV), erythrocyte sedimentation rate, and absolute eosinophil count. The patients also reported feeling well-being, freshness, and comfortable breathing. Naturopathy and yoga help in inducing positive health, alleviating the symptoms of disease by acting at physical and mental levels.[37,38].

In the year 2014, Rao *et al*. investigated the efficacy of a 1-month inpatient naturopathy and yoga program for asthmatic patients. Retrospective data of 159 bronchial asthma patients undergoing the naturopathy and yoga program were analyzed for FVC, FEV1 at the end of 1 s, MVV, and PEFR on the pre-test, mid-test (11th day), post-test, and once every 3 months for 3 years. The paired sample *t*-test results showed a significant increase in FVC and FEV1 from the date of admission up to the 6th month, post Bonferroni correction. MVV significantly increased from admission till the date of discharge, and PEFR significantly increased from admission till the 36th month of follow-up, post Bonferroni correction. The study's findings confirmed the advantages of using yoga and naturopathy together to treat bronchial asthma. According to clinical studies, yoga considerably reduces the frequency of exacerbations and enhances pulmonary function metrics such as FEV1 and PEFR.

7. DISCUSSION

According to this review, there is some preliminary evidence that yoga and mindfulness can improve the physical and mental well-being of adults and children with asthma. By addressing the physiological, psychological, and biochemical aspects of asthma, yoga and naturopathy offer a convincing, all-natural method of managing the condition. In addition, the combined application of yoga and naturopathy treatment procedures can greatly aid in the management and mitigation of mild to moderate cases of intrinsic bronchial asthma (not extrinsic or cardiac asthma). These techniques improve lung function, reduce symptoms, and enable patients to take an active role in their recuperation when combined with traditional treatment and under expert supervision. Small sample sizes, diverse study methods, and the absence of long-term follow-up in numerous clinical studies are some of the drawbacks, despite encouraging results. Large-scale RCTs are required to evaluate cost-effectiveness, establish uniform techniques, and validate efficacy. These holistic methods greatly enhance quality of life and lower dependency on medicine, even though they are not curative.

8. CONCLUSION

Yoga and naturopathy offer promising complementary advantages in asthma care, notably in terms of symptom relief, lung function, QOL, and psychological well-being. To determine their long-term efficacy and therapeutic application, however, more extensive, carefully planned studies and clinical trials are required.

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10. AUTHORS' CONTRIBUTIONS

Satyaki Chakraborty: Data curation, visualization, investigation, and writing-original draft. Dr. Kuntal Ghosh: Conceptualization, methodology, and supervision. Maitreyee Mukherjee: Data curation and writing-original draft. Subarnarekha Maitra: Review and editing. Mainak Chakraborty: Conceptualization, methodology, supervision, manuscript review, and editing.

11. ETHICAL STATEMENT

Ethical approval was not required for this study, as it was a review article with data obtained through a literature search.

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The authors declare that no financial support was received from any organization for the submitted work. In addition, all authors declare that they have no financial relationships with organizations that might be interested in the submitted work.

13. CONFLICT OF INTERESTS

The authors declare no conflicts of interest in relation to the publication of this paper.

14. DATA AVAILABILITY STATEMENT

The data analyzed in this review were obtained from publicly available sources, including peer-reviewed articles, observational studies, and surveys accessible through databases.

15. DISCLAIMER/VIEW AND OPINIONS

The opinions expressed in this article are solely those of the authors and do not reflect the views of the International Research Journal of Ayurveda and Yoga or its editorial board.

16. AI-USE DECLARATION

The authors declare that no generative AI tools were used to create scientific content, interpret data, or draft any sections of this manuscript. AI-based tools were used solely for minor language and grammar refinements to improve clarity and readability. All scientific content, analysis, and conclusions remain the sole responsibility of the author.

17. PUBLISHERS NOTE

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Table 1: Effects of yoga in asthma management

S. No.	Yoga (asana/ breathing techniques)	Effects	References
1.	Bhujangasana	• Enhances lung capacity: It expands the lungs and stretches the chest, which improves ventilation and oxygen intake. For asthmatics, this improves VC and lung capacity. • Increases lung capacity: It increases oxygen intake and ventilation by stretching the chest and enlarging the lungs. This enhances lung and vital capacity for asthmatics. • Strengthens respiratory muscles: By movement of the diaphragm, back, and intercostal muscles (the muscles between the ribs), the position improves respiratory efficiency and reduces breathing strain. • Opening of bronchial airways: The thoracic extension and backward stretch encourage bronchial dilatation, which can facilitate breathing and lessen airway resistance.	Joshi *et al*. (1992)[17]
2.	Setu Bandhasana	• Expands the chest and lungs. • Enhances breathing and diaphragm stimulation, calms the nervous system, and reduces stress.	Nagarathna and Nagendra (1985b)[18]
3.	Matsyasana	• Chest expansion: By opening the chest cavity and stretching the intercostal muscles, matsyasana improves lung capacity and facilitates breathing. • Enhances oxygen intake: By facilitating deep breathing and lowering bronchial constriction, the posture improves the oxygen flow to the lungs. • Improves respiratory muscles: It strengthens the diaphragm and intercostal muscles, which increases breathing efficiency. • Reduces bronchial congestion: By aiding in the removal of mucus from the lungs and bronchi, the backward bend can reduce asthma symptoms. • Reduces stress: Consistent practice helps the nervous system relax, which might lessen stress and anxiety-related asthma triggers.	Nagarathna and Nagendra (1985b); Xu *et al*. (2014)[18,19]
4.	Sessional Breathing	• Enhances lung efficiency: Alveolar ventilation and oxygen exchange are enhanced by intentionally training every part of the lungs. • The diaphragm is strengthened, particularly through abdominal breathing, which lessens the need for shallow, upper-chest breathing that is typical of asthmatics. • Lowers respiratory rate: Encourages deep, calm, and regular breathing to lessen bronchial hyperresponsiveness. • Improves breath awareness and control: This is essential for asthmatics to control dyspnea and anxiety-driven episodes. • Reduces anxiety and stress: The parasympathetic nervous system is triggered by controlled breathing, which relaxes the mind and prevents asthma attacks brought on by stress.	Saoji *et al*. (2019)[20]
5.	AnulomVilom	• Increases pulmonary function: This improves PEFR and lung capacity, both of which are frequently impaired in asthmatic patients. • Reduces airway inflammation: Asthma is largely caused by oxidative stress and inflammatory indicators, which are decreased by regular practice. • Balances the nervous system: Reduces bronchial constriction brought on by stress or anxiety by activating the parasympathetic nervous system. • Enhances oxygenation and ventilation: Breathing through alternate nostrils promotes greater alveolar ventilation and oxygen-carbon dioxide exchange. • Clears bronchi and nasal passages: Encourages regular breathing and mucus drainage to maintain clear airways.	Yadav *et al*. (2012)[21]
6.	Bhramari Pranayama	• Reduces airway inflammation: It has been established that the vibration produced by humming causes the nasal passages to produce more nitric oxide, which functions as a bronchodilator to help open airways and lessen inflammation. • Promotes lung function: Enhances VC and PEFR, which are frequently decreased in asthmatic people. • Lessens stress and anxiety: By stimulating the parasympathetic nervous system, it encourages relaxation and lessens asthma episodes brought on by stress. • Improves oxygenation: Humming causes a prolonged exhale, which enhances the exchange of carbon dioxide and oxygen and promotes effective breathing. • Clears the bronchial and nasal passages: The technique facilitates improved airflow in the upper and lower respiratory systems by keeping the respiratory tract free.	Abishek *et al*. (2019); Raafat (2021)[22,23]

PEFR: Peak expiratory flow rate, VC: Vital capacity

Table 2: Effects of naturopathy in asthma management

S. No.	Naturopathic treatment	Effects	References
1.	Hot foot and arm bath	• Redirection of blood flow (peripheral vasodilation): By redirecting blood away from the chest and lungs, hot water immersion of the arms and feet dilates peripheral blood vessels, alleviating bronchial congestion and facilitating easier breathing. • Reduces bronchial spasms: During asthma attacks, breathing becomes easier due to the reflexive relaxation effect, which decreases bronchial muscle constriction. • Encourages mucus drainage: Improves lymphatic and circulatory drainage, which aids in cleansing the respiratory tract and lowering mucus accumulation. • Calms the nervous system: The warmth promotes parasympathetic dominance, which lessens emotional imbalance-related stress, anxiety, and asthma triggers.	Maheshkumar *et al*. (2020); Saoji *et al*. (2019)[14,20]
2.	Asthma bath	• Reduces bronchial spasms: By relaxing the smooth muscles in the bronchi, the warm water helps reduce bronchoconstriction, which is a primary cause of asthma attacks. • Improves pulmonary function: Deeper breathing is encouraged by the hydrostatic pressure that water immersion creates on the chest, which encourages lung expansion and oxygen intake. • Enhances blood circulation: Allows pulmonary and peripheral circulatory balance, which minimizes pulmonary congestion and aids in bronchial passage clearance. • Lessens stress and anxiety: Warm water immersion calms the nervous system, reducing emotional stress-related asthma triggers. • Aids in detoxification: Toxin removal and an overall reduction in systemic inflammation can be facilitated by mild perspiration and lymphatic system stimulation.	Maheshkumar *et al*. (2020); Fleming and Gutknecht (2010)[14,24]