

ORIGINAL RESEARCH ARTICLE

Development of Research-based Yoga Module for Bronchial Asthma

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ABSTRACT

Asthma is a common, paroxysmal, and reversible respiratory disorder affecting millions of people worldwide. It is necessary to find a healthy and feasible method/technique to manage the disorder in every age group and levels of asthma. Yoga is a holistic therapy as it is a combination of *āsanas*, *pranāyāma*, *mudra*, and *dhyāna*. It works on excellence of every aspect of life, being physical, mental, social or spiritual. It helps in creating balance between the sympathetic and parasympathetic nervous system, as research shows. A research review has been planned using a PICO search strategy to explore the effect of Yogā on asthma and to develop a research-based yoga module to help patient get rid of the disorder and manage their symptoms. The inclusion and exclusion criteria were applied for the search strategy from the year 2010 to 2022, population aged between 10 and 60 years, and yoga as the primary intervention having randomized controlled trial as the research methodology. The four-step analysis process was applied to the filtration of the researched articles. 09 articles were found eligible for review. These studies showed a positive link between yoga and asthma. The major findings imply that yoga has a significant positive impact on pulmonary functions and the quality of life of asthma patients.

1. INTRODUCTION

Asthma is a common chronic respiratory disease. Asthma attack mainly occurs due to the contraction of the breathing tubes and due to excessive production of mucus. It is a psychosomatic ailment. It is a lung illness that causes inflammation and airway narrowing over time which leads to wheezing, coughing, chest tightness, and shortness of breath.^[1] According to Ayurveda, over-functioning of the kapha aspect of the vital energy leads to asthma. The complications of asthma depend on the duration of the disease.^[2] There are multiple factors that contribute to the cause of asthma. Exercise, allergies, air pollution, emotional factors such as worry, anxiety, sadness, anger, depression, negative thoughts, and genetics are some of the many contributing factors to asthma. Asthma can also occur due to climatic change; the occurrence of attacks is higher in winter or the rainy season in the tropics.^[3] It negatively affects the physical, emotional, psychological, and social well-being of an individual.^[4] The significant asthma symptoms are chest pain, backache, dry mouth, difficulty in breathing, high pulse rate, and dry cough.^[5]

Asthma affects 334 million people across the globe and 17 million people in India. Most commonly, asthma generally develops in childhood, and less frequently in middle age.

The prevalence of asthma is higher in the age group 18–45 years. It happens along with equal frequency in both sexes^[6] still studies suggest that females have a greater chance of having it in early life than males. Asthma can emerge gradually or suddenly. Asthma attacks generally occur due to constriction of the bronchioles, which occurs due to activation of allergic receptors present in tubes of the lungs.^[7] Mast cells, eosinophil, and T lymphocytes are linked to asthma. The cells that cause allergies, such as mast cells, emit histamine-like substances. Histamine is the chemical that makes skin allergies and asthma sufferers' itchy skin and stiff nasal passages. These cells, along with other inflammatory cells, have a role in the development of airway inflammation in asthma, which adds to the symptoms of respiratory distress, airflow restriction, and hyper-responsivity of the airways. Long-term asthma leads to defects in posture, expansion of the ribcage, and hunching of the shoulder, and affects the heart and circulatory system.

Bronchial asthma is well well-known disease from ancient time, in the *Charak Samhita*, it is referred to as *Tamasa Swass*, which means trouble breathing.^[8]

Yoga is derived from Sanskrit root word the “Yuj” means “connection” or “union.” Yoga is a holistic way of living that addresses both physical and psychological problems. It is a combination of asanas, pranayamas, and meditation.^[9] Yoga affects all aspects of life, be it physical, mental,

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or spiritual. Yoga is an art form that integrates the growth of the body, mind, and spirit. Yoga is a complementary and alternative medicine, according to the National Institutes of Health in the United States. In practicality, yoga is a technique of calming down the mind. In general, yoga increases the flexibility, tone, and strengthens the muscles of the body.^[10] Yoga is the traditional system of treatment of ailments. It is a non-pharmacological method of treatment. Nowadays yoga work adjuvant with the contemporary medical sciences in the treatment of disease (Bahçecioglu Turan and Tan, 2020). It is a technique of attaining and maintaining good health and well-being

The effect of yoga on asthma was initially investigated in 1985–1986. Studies suggest that yoga helps in the improvement of symptoms, severity, duration, and number of attacks and medication use,^[11] reduce anxiety, help in releasing suppressed emotion, and develop awareness toward oneself. Regular practice of yoga keeps the body healthy and helps connect the body with the mind. Yoga helps in strengthening the respiratory muscles, increasing the lung capacity, alleviating shortness of breath and improving the gas exchange. Yoga practice helps in activating the parasympathetic nervous system by decreasing stiffness and tension. Yoga helps in regulating asthmatic attacks, improves respiration, and increase energy and vitality.

Alertness and awareness, which come from doing yoga, not only have the power to cure the symptoms but also have power to remove the sickness.

The need of the study was to cure and treat the patients suffering from one of the chronic diseases, Bronchial Asthma.

1.1. Literature Review

Yadav (2021) researched that yoga can be an effective adjuvant measure in the treatment of asthma. The researchers done the experiment on diagnosed cases (10–16 years) of asthma in the hospital of North India in the Department of Pediatrics and found that there is significant improvement in the forced vital capacity (FVC), forced expiratory volume in 1st s (FEV1), FEV1/FVC and peak expiratory flow rate (PEFR) in the asthmatic children practicing yoga. A randomized control trial study by Bahçecioglu Turan and Tan (2020) on the effect of yoga on the respiratory function, symptoms control, and quality of life of asthmatic patients. The study found that in the post-test there is a significant average increase of the score in the respiratory function of experimental group then the control group. Research carried out by Sangeethalaxmi and Hankey (2022) on the impact of yoga breathing and relaxation on the young asthmatic adult's (18–30 years) quality of life, anxiety, depression, and pulmonary function. The study concluded that subjects practicing yoga for 90 days have higher improvement in quality of life, level of anxiety, and pulmonary function. A randomized study by Pushpa and Sharma (2018) showed a significant improvement in pulmonary parameters, reduction in airway resistance, and bronchodilator effect and increase in pulmonary compliance and respiratory endurance in the participants after practicing yoga as a complementary therapy for 8 weeks. A prospective study by Mekonnen and Anudalem (2010) on 24 asthmatic patients at missionary of charity in southwest Ethiopia on the clinical effect of yoga showed 66.7% reduction in the usage of salbutamol puff and 58.3% reduction in the consumption of salbutamol tablets, significant improvement in PEFR and also there is reduction in day and night asthma attacks in yoga group. A research on 8 weeks of yoga with 120 participants revealed that there is a notable reduction in severity and number of daily attack, dosage required, and improvement in the symptoms, activity, and environmental domain of AQLQ

as compared to baseline.^[12] Ruprai *et al.* 2012, also demonstrated that there is significant improvement in respiratory variables and a beneficial effect on pulmonary ventilation in the participants taking yoga sessions for 12 weeks. Research revealed that after practicing yoga there is a notable improvement in chest expansion, respiratory rate, pulse rate, and PEFR, and reduction in number of attack and medication in the participants (Manivannan, 2017) to see the efficacy of yoga on pulmonary function test, including the transfer factor of lungs, carbon monoxide in asthma patients. 60 people participated in the study for 2 months, which concluded that yoga has a notable improvement in transfer factor of lungs carbon monoxide, maximum voluntary ventilation, FVC, FEV1, PEFR, slow vital capacity, and quality of life. A research discloses that the asthma patient aged group between 12 and 60 years has considerable improvement in the domains of the Asthma Quality of Life Questionnaire after 3 and 6 months of yoga practice.^[13]

2. METHODOLOGY

It is a survey method where, the keywords “Asthma,” “Yoga,” “Respiratory Disease,” “Pranayama,” “Bronchial” has been searched for the formulation of yoga module, the research has been conducted using the search engine (Google Scholar) and database (Medline, PubMed) between 2010 and 2022.

2.1. Inclusion Criteria

The study must be randomized controlled trial (RCT) and should be done on asthmatic patients aged between 1060 years and have yoga as the primary intervention. Review was restricted to studies published between the years 2010 and 2022.

2.2. Exclusion Criteria

Studies other than RCT study design, patients who have other associated disease and do not have yoga as primary intervention were excluded.

3. RESULTS

Based on researches done on Bronchial Asthma, a yoga module of 90 min has been created which includes 3 joint movements, some yogic jogging steps, various asanas according to different position such as 4 standing asanas, 5 sitting asanas, 4 prone lying asanas, 5 supine lying asana, 2 meditative asana, 5 pranayamas and Yoga-nidra. All these all together help to loosen up the joints, increase muscle strength and flexibility, improve body alignment, open up the channels of prana and reduce the number of attacks, hence helpful in curing the asthma.

4. DISCUSSION

Asthma is a chronic pulmonary illness that causes inflammation and constriction of airways and excess mucus production.^[14] The main factors contributing to asthma are genetics, environmental, and psychological imbalance (Mekonnen and Anudalem, 2010). Nowadays, modern medical science uses pharmacological treatments such as Bronchodilators, biological drugs like Salbutamol (Mekonnen and Anudalem, 2010), and steroids, which provide temporary relief from symptoms, due to which these treatments puts economic burden and cause side effects in the body (Yadav, 2021). According to the researches, yoga is a holistic, mind–body, healthy and a cost-effective technique (Pushpa and Sharma, 2018) that can be considered as a treatment for curing asthma. Different yogic practices such as asana, pranayama, and

meditation helps in fighting the major cause, improving the pulmonary functions such as PEFR, FVC, FEV1, reduce the frequency of attacks and doses of drugs (Mekonnen and Anudalem, 2010), improve quality of life (Agnihotri *et al.*, 2017) and PEFR, shows significant improvement in respiratory rate, pulse rate, breath holding capacity (Ruprai *et al.*, 2012), lung expansion and respiratory fitness and reduction in airways narrowing in asthma patient. There are various studies that provide evidence of yoga in the treatment of Bronchial Asthma. Yoga can be considered as the mind-body medicine in the treatment of Bronchial asthma.^[15] Yoga implies the connection of body to mind and mind to soul, which help in achieving a healthy and balanced life.

Ninety minutes yoga module has been prepared for those suffering from this disorder. The yoga module consist of various asanas, pranayamas and meditation to help the patient get rid of the bronchial asthma disease. *Sukshma Vyayama* practices which help in opening and loosening of joints (Mekonnen and Anudalem, 2010) show improvement in all pulmonary parameters, and prepare the body for further yoga practices. Yogic jogging kriyas help in the warm-up of the body. The various yogasanas given are classified into four sections on the basis of their position. These asanas strengthen respiratory muscles, improve respiratory breathing capacity, expand the chest wall, increase lung capacity, reduce airways resistance (Singh *et al.*, 2012), improve postural problem, and bring flexibility. The Pranayama practice given help in balancing the autonomic nervous system, increase breathe holding capacity, relax the voluntary muscles of the lungs (Sodhi *et al.*, 2014) increase muscle fitness, reduce psychological or stress-related disorders such as anxiety, worry and depression which are also the causes of Bronchial Asthma (Singh *et al.*, 2012). The *Yoga Nidra* is given just before ending the session, which helps in relaxing the whole body from both mental and physical stress and increases capacity of the body, creates restful alertness, and reduces respiratory rate (Ruprai *et al.*, 2012).

4.1. Yoga Module: (Make again in Excel)

Table 1: The research-based Yoga module for prevention of bronchial asthma

5. CONCLUSION

There is emerging evidence from this review that mainly randomized control trials were included to support the belief about yoga for the treatment of Bronchial Asthma. Through this review, the following points can be concluded: Bronchial Asthma has various triggering factors, but yoga as a holistic and efficient technique, helps in the management of Bronchial Asthma. Yoga is cost -effective and has no side effects making it the best treatment for asthma. Regular practice of Asana, Pranayama and Meditation improves the respiratory function and strengthens the body and improves the body posture.

According to several research studies, a valid integrated Yoga Module is designed with high-quality content. However, further research is necessary to assess its potential efficacy and advantages.

6. ACKNOWLEDGMENTS

Nil.

7. FUNDING

Nil.

8. ETHICAL APPROVALS

This study does not require ethical clearance.

9. CONFLICTS OF INTEREST

Nil.

10. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

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Table 1: The research-based Yoga module for prevention of bronchial asthma

S. No.	Particulars	Yoga module	Timing	Application/Benefits
1	Opening phase			
	(A). Prayer	Om Chanting Gayatri Mantra (Manivannan, 2017)	2 min	Increase awareness, calm the mind, and create positive vibration in the mind and body
2	Practice Phase (Asanas, Pranayama and Meditation)			
	(B). Joint Movement (yogic Shuksham Vyayam)	i. Vaksha-Sthala-Shakti-Vikasak-1, 2 (Sangeethalaxmi and Hankey, 2022, Brahmachari, 1973) ii. Udara-Shakti-Vikaska-1 (Brahmachari, 1973) iii. Kati-Shakti-Vikasaka 1, 2, 3, 4 and 5	5 min	Chest expand and become strong, good for curing asthma Increase flow of energy in the body, removes constipation Add several inches to chest, make body symmetrical and strong
	(C). Yogic Jogging	i. Hasta Shanchalana Kriya ii. Vaksha Vikasak Kriya iii. Trikonasana kriya iv. Hasttotan Kriya and Padhashtasan Kriya (Aacharya, 2016)	5 min	Activate relaxed, make muscles strong, expand thoracic region, lubricate bones and joints, and make them healthy, body become strong and flexible
	(D). Standing Asana	(i). Tadasana (ii). Tiryaka Tadasana (Nagarathna and Nagendra, 1998, Saraswati, 1969) (iii). Utthita Lolasana (Saraswati, 1969) (iv). Kati Chakrasana (Yadav, 2021; Saraswati, 1969)	5 min	Expand chest, prepares the muscles of the chest wall for rhythmic breathing, calms the mind and improves concentration Open airways , free flow of prana, strengthens the muscles of chest Opens up alveoli, removes stagnant mucus, massage visceral organ Relieve physical and mental tension, create lightness in the body
	(E). Sitting Asana	(i). Gomukhasana (Saraswati, 2012 [Reference 8]; Aacharya, 2016) (ii). Ardha Matsyendrasana (Saraswati, 2012) (iii). Ardha Ushtrasana (Saraswati, 1969) (iv). Paschimottanasana (Shankardevananda, 1977; Agnihotri <i>et al.</i> , 2017) (v). Shasankasana (Aacharya, 2016)	5 min	Strengthens the lungs, improves posture Strengthens the muscles, beneficial for sinusitis, constipation, bronchitis Alleviates constipation, improves posture, helpful for people suffering asthma Massage and tone the abdominal region, improves blood circulation to the nerves and muscles of spine Reduce stress, anger, irritability, beneficial for asthma patients
	(F). Prone Asana	(i). Bhujangasana (Agnihotri <i>et al.</i> , 2017; Saraswati, 1969) (ii). Sarpasana (Saraswati, 1969) (iii). Shalabhaasana (Nagarathna and Nagendra, 1998) (iv). Dhanurasana (Ruprai <i>et al.</i> , 2012; Saraswati, 2012)	5 min	Good for any type of respiratory disease, improves breathing capacity, alleviates constipation Improves posture, strengthen spine muscles Strengthen spinal muscles, improves posture, removes phlegm from the airways Improves functioning of digestive, excretory and respiratory system, correct hunching of the back, improves respiration

(Contd...)

Table 1: (Continued)

S. No.	Particulars	Yoga module	Timing	Application/Benefits
	(G). Supine Asana	(i). Ardha-Halasana (Saraswati, 1969)	5 min	Improves blood circulation, cure respiratory problems
		(ii). Sarvangasana (Nagarathna and Nagendra, 1998)		Clean the airway, relax the mind, improves posture
		(iii). Matsyasana (Nagarathna and Nagendra, 1998)		Expand the chest, beneficial for asthma and other respiratory disorders, remove prana blockage and open the airways
		(iv). Kandharasana (Saraswati, 1969)		Manage asthma and various bronchial condition, massage and stretches the colon and abdominal organs
		(v). Shavasana (Saraswati, 2012; Yadav, 2021)		Reduce stress, increase awareness toward body and mind, relax body and mind
	(H). Meditative Asana	(i). Sukhasana (Yadav, 2021)	5 min	Relaxing pose, create balance between body and mind
		(ii). Padmasana (Ruprai <i>et al.</i> , 2012)		Mind and body become stable and calm, heal the psychosomatic diseases
	(I). Pranayama	(i). Nadisodhan (Yadav, 2021; Saraswati, 2012)	20 min	Purify nadis, allow free flow of vital energy, do away with flaw of the lungs and the respiratory system, regulate the activity of sympathetic and parasympathetic nervous system
		(ii). Bhastrika (slow) (Ramdev, 2018 [Reference 7]; Sangeethalaxmi and Hankey, 2022)		Kapha related disease are cured, make lung strong, waste material of the body is removed
		(iii). Kapalbhata (slow) (Pushpa and Sharma, 2018; Ramdev, 2018)		Good for healing asthma, reduce fat, cure constipation
		(iv). Ujjayi (Sodhy <i>et al.</i> , 2014; Ramdev, 2018)		Beneficial for asthma, lung diseases
		(v). Bhramari (Sodhy <i>et al.</i> , 2014; Acharya, 2016)		Beneficial for management of mental problems
	(J). Dhyan	Breath Awareness (Pushpa and Sharma, 2018)		Increase strength of the lungs, relax the stressed chest muscles, eliminate the phlegm, synchronize mind and body
3	Closing phase			
		(i). Yoga Nidra (Manivannan, 2017)	30 min	Relax physical as well as mental stress, help in curing the body
		Mantra and shanti path	3 min	