Role of Yoga in childhood asthma

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Received, revised 7 April 2017

Significant amount of money spent in healthcare is used for treatments of lifestyle related problems. Yoga, as a branch of complementary alternative medicine, has emerged and is showing to be an effective treatment against non-communicable diseases. The objective of this study is to conduct a review regarding the problems of the childhood asthma and the benefits of the yoga. Asthma is an ongoing or chronic disease of the airways in the lungs called bronchial tubes. Bronchial tubes carry air in and out of the lungs. In people with asthma, the walls of the airways become swollen (inflamed) and oversensitive. Asthmatic airways overreact to things like viruses, smoke, dust, mould, animal hair, cockroaches, and pollen. When they react, airways get narrower. This limits the flow of air into and out of the lungs. Hence, asthma causes wheezing, coughing, tightness in the chest and trouble breathing. Asthma in most cases starts either in childhood or in middle age. Early onset asthma is slightly more common in males and ‘Late Onset’ asthma in females.

‘Early Onset Asthma’ generally occurs in atopic individuals, i.e., those who readily form IgE antibodies to commonly encountered allergens. Such individuals can be identified by skin sensitivity tests, which produce positive reactions to a wide range of common allergens. ‘Late Onset Asthma’ generally occurs in non-atopic individuals, and it would appear that external allergens play no part in the production of this form of the disease, to which the term ‘intrinsic asthma’ is sometimes applied.

Asthma is a problem worldwide with an estimated 300 million affected individuals. According to WHO report, about 3 million annual deaths attributed to this disease. It is estimated that the number of people with asthma will grow by more than 100 million by 2025. The current review shows that yoga can be useful in control of the disease if it is regularly done by the children in their childhood with standard medical treatment.

Keywords: Asthma, Chronic, Complementary, Lifestyle, Yoga

IPC Int. Cl.⁸: A01D 11/18, A01D 14/05

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Prevalence of asthma- Centers for Disease Control and Prevention, Vital Signs (May 2011) reported that the number of people with asthma continues to grow. One in 12 people (about 25 million, or 8 % of the US population) had asthma in 2009, compared with 1 in 14 (about 20 million, or 7 %) in 2001. More than half (53 %) of people with asthma had an asthma attack in 2008. More children (57 %) than adults (51 %) had an attack. 185 children and 3,262 adults died from asthma in 2007. About 1 in 10 children (10 %) had asthma and 1 in 12 adults (8 %) had asthma in 2009. Women were more...
likely than men and boys more likely than girls to have asthma.

National Academy on an Aging Society, 2000 reported that asthma is the most common chronic condition among children. It is more common among children (7 to 10 %) than adults (3 to 5 %). Nearly 5 million asthma sufferers are under age 18 yrs. It is the most common chronic childhood disease. There are more than 3,300 deaths due to asthma each year, many of which are avoidable with proper treatment and care. Since 1980 asthma death rates overall have increased more than 50 % among all genders, age groups and ethnic groups. The death rate for children under 19 yrs old has increased by nearly 80 % since 1980.

Risk factors of asthma- The strongest risk factor for developing asthma is a family history of atopic disease, this increases one's risk of asthma by 3-4 times. In children between the ages of 3-14 yrs, a positive skin test for allergies and an increase in immunoglobulin E increases the chance of having asthma. In adults, the more allergens one reacts positively to in a skin test, the higher the odds of having asthma.

The International Study of Asthma and Allergies in Childhood (ISAAC), a monumental study which involved 155 centers in 56 countries was one of the first to reliably compare the prevalence of asthma worldwide. Surveying nearly half a million children 13–14 yrs of age, this study found great disparities (as high as a 20 to 60-fold difference) in asthma prevalence across the world, with a trend toward more developed and westernized countries having higher asthma prevalence.

Pathogenesis and Pathophysiology of asthma

The fundamental problem in asthma appears to be immunological: young children in the early stages of asthma show signs of excessive inflammation in their airways. Epidemiological findings give clues as to the pathogenesis: the incidence of asthma seems to be increasing worldwide, and asthma is now very much more common in affluent countries.

Asthma is an inflammatory disorder of the airways, which involves several inflammatory cells and multiple mediators that result in characteristic pathophysiological changes. It is an airway disease that can be classified physiologically as a variable and partially reversible obstruction to air flow, and pathologically with overdeveloped mucus glands, airway thickening due to scarring and inflammation, and broncho-constriction, the narrowing of the airways in the lungs due to the tightening of surrounding smooth muscle. Bronchial inflammation also causes narrowing due to edema and swelling caused by an immune response to allergens.

Diagnosis of asthma- Diagnosis of asthma is basically based on history, signs and symptoms, history of triggers, family history of asthma, smoking and response to bronchodilators. To rule out the possibility of any associated illness Hb, TLC, DLC, AEC, chest X-Ray is done followed by spirometry as per GINA guidelines. In many cases, a physician can diagnose asthma based on typical findings in a patient's clinical history and examination. In children, the key to asthma diagnosis is the sound of wheezing or a high-pitched sound upon exhalation. Other clues are recurrent wheezing, breathing difficulty, or chest tightness, or a history of coughing that is worse at night. The doctor should also know if the child's symptoms are worse with exercise, colds, or exposure to certain irritants such as smoke, emotional stress, or changes in the weather.

Etiology of asthma - Bronchial asthma is a chronic persistent inflammatory disease of the airways. It is a complex disorder involving heterogeneous group of patients where airways hyper responsiveness occurs due to airway inflammation, leading to airway obstruction, in response to varied variety of exogenous stimuli, which are in fact responsible for precipitation of an episode. This leads to narrowing of airways, which is reversible. Factors that precipitate an asthma attack are called triggers. They cause the air passage to get clogged and constricted, making it difficult for the patients to breath. The inflamed bronchioles generate more mucous and also cause the muscles around them to tighten and get irritated, constricting the airway. This is called Bronchospasm. There are some factors, which are responsible for asthma are allergens, heredity, abnormal body chemistry, psychological factors, antioxidant status.

Yoga for childhood asthma management

Asthma is a chronic disease that cannot be cured but medicines and life style changes can help to control the symptoms of the disease. One way to relieve from asthma is to avoid things in the environment that make symptoms worse. A number of types of medicines are also used to treat asthma.
Yoga is one of the best alternative therapies to control asthma.\textsuperscript{15-16} Yoga is an ancient science that uses postures and breathing techniques to increase lung’s airflow, air capacity, and stamina and reduce stress\textsuperscript{17}. It accumulates mind, body and energy known for its beneficial effects of physiologic and psychological functions, besides it improves the quality of life of people.\textsuperscript{18, 19} One of the review articles enlightened the current status of yoga research and indicated scientific recognition of yoga as a complementary medicinal practice and its incorporation in integrative medicinal approaches\textsuperscript{20}.

Yoga is meant to reduce the overall activity of the whole organism through its calming down influence on the entire nervous system and helps all the organs of the body to function at a much lower place. Asanas and Pranayama have corrective, curative, and strengthening effects on the condition of the lungs and the bronchiole linings. Pranayama does the internal purification and a meditation provides relief and concentration to the body and minds both.

Pranayama
1. Nadi shodhan (Anulome-Vilome) - Sit in any comfortable posture: Padmasana, Siddhasana or Sukhasana, Vajrasana. Make the breathing normal. Close the right nostril with right thumb and fill in the breath through the left nostril. When the breath has been filled inside, close the left nostril with third finger and stay in this state of Antrik Kumbhaka for a few seconds. Then lift the thumb from the right nostril and exhale slowly, keeping the left nostril closed. Repeat the process by inhaling through the left nostril and exhaling through the right nostril.

Benefits - It reduces the calmness and tranquility. Purification of cells and brain take place, body gets extra oxygen. Hypertension is reduced. Body becomes mentally and physically healthy.

2. Kapalbhati - Kapalabhati is a process of continuous exhalation through the nostrils. Sit in any comfortable asana and try to throw the breath out through nose with force. Don’t make any effort to inhale. In the beginning perform it for 15-20 times then increase the number gradually according to the capacity.

Benefits - It provides rest to the mind and increases the power of concentration through removal of impurities.

Meditation - "Soham" means "He I am" or "I am He", "I am Brahman." "Sah" means "He." "Aham" means "I." This is the greatest of all Mantras.

Procedure - Sit in a comfortable cross legged position facing North and keep the eyes closed if wish to close the eyes. When feel comfortable then start breathing continuously and continue to focus on the breath or mind at the tip of the nose. Inhale slowly chanting "SO" mentally. Retain the breath for 5 seconds then exhale the breath slowly chanting "HAM" mentally. Repeat "SO" and "HAM" breathing meditation for 10 to 20 min daily in the morning and evening.

Benefits - It purifies and calms the mind. Tranquility of the mind is attained. It eliminates fatigue and stress and so improves physical fitness and relaxation. It is beneficial to psychiatric, mental illness, insomnia and hypertensive persons. It improves the lung function in healthy and asthmatic persons.

Yogasana - Regular practice of asanas Gomukhasana, paschimottanasana, bhujangasana, dhanurasana, tadasana, parvatasana is also beneficial for the children associated with asthma.

Conclusion
Yoga is one of the complementary medicines which have a great impact on the human body. The main finding of this review suggests that the practice of yoga can be helpful in childhood. Global Initiative for Asthma Management (GINA) has also considered breathing technique (Beutyko) as an adjuvant therapy for the better management of asthma. This review provides some evidence that yoga may be an effective tool in the management of asthma and can be practiced as an adjuvant therapy to standard medical therapy for better outcomes.

Conflict of interest
None

Acknowledgment
We are thankful to Indian Council of Medical Research, New Delhi, India and King George’s Medical University, UP, Lucknow, India.

References