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"Mechanics of Heartfulness meditation in improving outcomes of Bronchial asthma"

Medicine

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ABSTRACT

Bronchial asthma is characterized by chronic airway inflammation with variable and reversible airflow limitation commonly presenting with recurrent episodes of chest tightness, wheezing, breathlessness and cough. Asthma affects people of all ages, beginning with- children, adolescents, young, middle aged and elderly with varying degrees of severity depending on the psychosocial, environmental factors and intercurrent infections. Based on the available data, current asthma prevalence in adults varies between 1.2-6.3 % in most countries. According to WHO, currently India has 15-20 million asthmatics with a prevalence of 10-15% in children. According to Asthma and Allergy Foundation of America, currently, 1 in 13 Americans have asthma causing 2 million emergency room visits each year. Asthma is the third leading cause of hospital stays in American children. Optimal adherences to the treatment protocols, controlling the psychosocial and environmental factors are major contributors to prevent exacerbations. Regular meditation controls anxiety, promotes positive thinking and mental wellbeing, thus leading to a better adherence to treatment, better control of the emotional environment thereby improves symptoms decreases frequency of exacerbations and enhances quality of life.

Introduction:

'An association exists between breath and the mind. Whenever there is turmoil within the mind, respiration becomes intense. To know the exquisiteness of one's inner self by diving deep into the heart through meditation relieves the encumbrance on the mind and relaxes breathing'~ Anonymous

In the current lifestyles of our so called, advanced society, emotional stress has become a rising problem as people deal with their constantly changing mental environment. It has been found that most of this stress is self generated [1]. Any kind of emotional stress activates sympathetic nervous system and increases demand on the cardiopulmonary system by causing rise in heart rate, blood pressure, respiratory rate and overall metabolic rate [2]. The broncho dilator response of the sympathetic activity cannot circumvent the burden on the respiratory system caused by the emotional stress especially in patients with compromised cardio pulmonary status. Meditation produces relaxation response, which reduces the demand on the cardio pulmonary system, by lowering heart rate, blood pressure, respiratory rate and overall metabolic rate [3].

Fundamentals of Meditation:

Meditation has been known to influence mental and physical health positively. It is best described as "inner observation in silence". Raja yoga meditation has been known to produce calmness and peace, improve emotional stability, heal chronic illnesses and enhance quality of life. Patanjali's Ashtanga yoga, which consists Rajayoga as an important component, has eight steps, namely, Yama (self-restraint), Niyama (observance), Asana (postures), Pranayama (control of respiration), Pratyahara (abstraction), Dharana (concentration), Dhyana (meditation) and Samadhi (super conscious state/ living dead state) [4-6]. Many simplified modifications of these systems have been made available to suit the contemporary lifestyles.eg Heartfulness Meditation, Transcendental meditation, Kundalini yoga, Sudarshan kriya yoga etc.

Most of these methods of meditation have four elements in common: a quiet vicinity with as few distractions as viable(Ashrams/ Meditation centers); a selected, relaxed posture (mostly sitting); a focal point of attention (a word or set of words, an item, breath or the heart); and an open attitude (letting distractions come and move certainly without judging them).

In modern years, there is growing interest on the effectiveness of Heartfulness method of Raja yoga meditation on enhancing intellectual and physical health.

The following definitions of 'Heartfulness' are provided by the Oxford Dictionary- The fact or quality of being heartful; sincerity or warmth of feeling or expression[7]. According to Hindu tradition and Sanskrit scriptures this concept can be defined as: "the realization of the inner self of its eternal connection with the higher self inside one's own heart and seeking its guidance from within- so as to be free from the burden of the results of one's own thoughts and actions." This produces a state of "Dependence on the guidance from within" - in all the aspects of day to day living resulting in a well-balanced thinking and approach to life[8]. It is the unregulated mind, which is the main culprit of all the mental stress and its associated ill effects on the person[9].

Respiratory dynamics- Emotional stress vs Meditation:

Bronchial asthma is a distressing disease that may be triggered by environmental conditions which include cigarette smoke, pollution, cold weather, pet hypersensitive reactions and emotional situations. Inflammation and constriction of the bronchial passages are frequently made worse with anxiety or panic attacks. Stress and anxiety can be a contributing element in worsening of bronchial asthma. Clinical remedies for bronchial asthma are effective; however, carry with them a host of very unpleasant long-term side effects [10]. Meditation has been used effectively to reduce the severity of bronchial asthma attacks and can play a considerable role

in the prevention of future attacks [11]. Many researches shown decreased airway resistance, reduced severity of symptoms and decreased need for medications when meditation is used as a complementary remedy for bronchial asthma [12].

The role of balancing emotions is crucial in the remedy of bronchial asthma. People frequently panic once they have an attack - the inability to breathe results in fear of death- triggering sympathetic overdrive - making the respiration rapid and shallow and abdominal muscles become tight- as are other muscles of the body- that increases workload on the respiratory system [13]. Meditation can assist alleviating this panic. By sitting relaxed and meditating- the body progressively relaxes, the bronchial passages open and respiration becomes easy. The most effective physical treatment is to relax as much as possible and as quick as possible. Meditation has a role in prevention as well. Deep meditative breath opens air passages and improves airflow. With practice, one could discover ways to intentionally relax the body and breathe deeply even at the onset of a bronchial asthma attack; at the same time, focusing voluntarily and breathing deeply will calm the mind and prevent anxiety or panic to take control [14]. The elevated flow of oxygen and time spent in relaxation can assist mind and body get better more quickly from the episode. Regular practice of meditation broadens the capability to control breathing and balance thoughts, feelings and emotions-making bronchial asthma attacks much less frightening and much less intense [15].

Asthma and anxiety:

Anxiety and agoraphobia are more prevalent in patients of bronchial asthma compared to general population [16]. Association between bronchial asthma and panic attacks is crucial as the latter is often associated with rapid breathing resulting in air trapping in patients with preexisting broncho constriction [17]. Misinterpretation of somatic sensations as the manifestations of bronchial asthma exacerbation is the one of the main causes of panic attacks. Symptoms and signs of bronchial asthma are much more intense when associated with panic attacks [18]. For a successful management of bronchial asthma, it is very important for the clinician to identify the contribution of panic attacks in the patient with worsened symptomatology. Anxiety issues resulting in worsening of symptoms in bronchial asthma is a well known fact in youngsters [19]. Meditation reduces anxiety and thus helps controlling bronchial asthma [20].

Asthma and Depression

Depression has an underlying pathogenic role in bronchial asthma. In depression, high levels of inflammatory mediators (particularly IL-4, IL-6 and TNF-α) [21] are produced along with significant neuroendocrine changes (i.e. deregulation of the hypothalamic-pituitary-adrenocortical axis and autonomic nervous system) which worsens bronchial asthma directly [22]. In general, depressed individuals have a tendency to become overweight and smoke more which in turn worsens bronchial asthma [23–25]. Decreased antioxidant functions and increased oxidative stress in depression also worsens bronchial asthma [26, 27].

Bronchial asthma exacerbations result in increased utility of healthcare resources [28] and loss of productivity [29] which contributes to psychological distress [30]. Coexisting psychological distress when present along with bronchial asthma - increases financial burden and productivity loss that are much more pronounced than with bronchial asthma alone [31–33]. Similar outcomes were observed in bronchial asthma patients who have coexisting cardio-vascular diseases [34, 35] and diabetes [36, 37]. Uncontrolled bronchial asthma is a risk factor for developing psychological distress [38] and psychological distress is a risk factor for uncontrolled bronchial asthma [39].

Meditation has got proven beneficial effects in treating depression by controlling negative thinking and rumination and promoting attention [40]. Meditation has been successfully used in conjunction with medical and psychological therapies in treating resistant depression [41].

Asthma in Children and adolescents:

Bronchial asthma stays one of the most widespread chronic health issues dealing with adolescents today. An anticipated 14 % of youngsters and children under the age of 18 are recognized with bronchial asthma sooner or later in their lives [42]. The ensuing costs were in terms of increased health care use including physician and emergency room visits in addition to hospitalizations as well as the psychological impairment, poor academic performance and neglected school days in these children [43–46]. Poverty, familial stress and communal violence make a significant contribution to the disease severity in this population [47–50]. Association between the severity of bronchial asthma and exposure of children to various maltreatment types is understudied [51, 52].

Exposure to environmental tobacco smoke, to indoor air pollutants and to various types of allergens negatively influences pediatric bronchial asthma outcomes [53-58]. Adherence to bronchial asthma management in children and adolescents is observed to be poor compared with that of adults [59]. Age of the child, emotional behaviour and psychosocial factors are the predominant elements influencing the adherence to the treatment [60, 61]. Outcomes of bronchial asthma were poor in young smokers compared with nonsmokers [62, 63].

Meditation and relaxation considerably reverses physiological and psychological elements that result in substance abuse. As compared to control situations, meditation drastically decreased the anxiety, psychological distress, panic attacks and substance addiction, and also improved emotional behaviour and adherence to treatment in bronchial asthma. [64].

Asthma in women:

Prevalence of bronchial asthma is more in women than in men (9.1 to 9.7 % in adult women Vs 5.1 to 5.5 % in men) [65, 66]. The physiological changes that occur during the natural life course of women inherently predispose them to the worsening of a stable asthmatic state. Asthma is more common and extreme in women during puberty and this incidence is higher in women with early menarche [67]. Perimenstrual asthma is defined as cyclical deterioration of bronchial asthma in the course of the luteal phase and/or during the primary days of menstruation [68, 69], that is found to be occurring in 19 – 40 % of stable asthmatic women in different studies [70]. Symptoms of asthma commonly worsen during the periovulatory period due to the hormonal changes. Ovulation related fluctuations in sex hormone levels possibly trigger asthmatic crisis in susceptible women [71–73]. Bronchial asthma can become worse during the perimenstrual period, a phenomenon referred to as perimenstrual asthma that's generally a lot more intense and difficult than the periovulatory worsening [74]. The clinical course of bronchial asthma in the course of pregnancy is variable: it could get worse in approximately one third of pregnant women and might improve in one-quarter. It seems that mild bronchial asthma is probably to improve, while more intense forms of the disease often get worse [75–78]. Psychological and hormonal changes are the main contributors to the worsening of symptoms in asthmatic women during menopause [79].

Women are much more likely to have strong emotions prompted through hormones at instances which include puberty, ovulation, menstruation, pregnancy and menopause. These emotions include anxiety, apprehension, fear, exhilaration or anger that is further influenced by psychosocial factors. Feelings and emotions when become intense result in rapid shallow respirations, sympathetic overdrive, panic and increased burden on the cardio pulmonary system which eventually worsen a stable bronchial asthma. Regular practice of meditation typically controls feelings and balances emotions [80, 81] - thus prevents worsening of bronchial asthma during these phases.

Asthma in elderly:

In general, age related structural and physiological changes in the lung and the airways result in reduced capacity and functionality of the respiratory system, reduced response to treatment and delayed recovery from an exacerbation. Anxiety and depression are more common in elderly population compared with general population [82, 83]. Hence geriatric population are likely to have a worsened asthmatic state compared to baseline, easily prone to exacerbations, have a severe destabilization during exacerbations, have a delayed response to treatment, need prolonged time to recover and have challenges during rehabilitation and in adhering to the long term treatment protocols. Apart from the physical limitations and comorbids, emotional stress resulting from anxiety, depression, loneliness, despair, and fear of death and the lack of psychosocial support from the family are the most important factors contributing to the morbidity of bronchial asthma in elderly that are potentially reversible to a large extent by practice of meditation [84, 85].

Comorbidities:

Hypertension, diabetes, coronary artery disease, hyperlipidaemia, Gastro Esophageal Reflux Disease (GERD), anxiety and depression have been the most common comorbidities to bronchial asthma [86-89]. Emotional stress and its associated pathophysiological changes in the body along with a perpetuated chronic inflammation are some of the predominant contributors to the development of these comorbids [90, 91]. Successful management of bronchial asthma also depends on successful treatment of its comorbids. Regular practice of meditation relieves emotional stress [92], controls chronic inflammation [93], prevents anxiety [94], improves depression [95], controls hypertension [96], prevents atherosclerosis and coronary artery disease [97] and controls diabetes [98] and GERD [99]. Thus apart from directly improving the symptoms of bronchial asthma, meditation also has a beneficial influence on the outcomes of its common comorbids.

Summary:

Research on different populations show positive outcomes with meditation in patients with bronchial asthma by controlling anxiety, depression and emotional stress, regulating autonomic nervous system, by suppressing chronic inflammation and by improving its common comorbids. The positive effects of meditation are noted to be more pronounced in women as they have more obvious psychological factors contributing to the worsening of their symptoms. There is a compelling evidence to recommend meditation as a complementary adjunct to medical therapy in bronchial asthma. Meditation improves symptomatology prevents exacerbations promotes early recovery enhances optimal rehabilitation and improves adherence to the long term treatment protocols in asthma. This positive effect is seen across all age groups, in both sexes and in all the geographical locations from where the studies have been done so far. Limitations in most of the conducted studies were- small number of participants, high attrition rate and short duration of the study period. There is a need for a well design study in this regard. As such the traditional methods of meditation are not very easy to follow with all the needed meticulousness, especially by the patients of bronchial asthma- explaining the high attrition rate. Simplified methods of meditation matching the contemporary lifestyles like the Heartfulness meditation are simple and effective to obtain maximum benefits.

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