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Effect of Cleansing Techniques and Bhastrika Pranayama Combating the Asthma Symptoms: A Narrative Review

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Abstract

Yoga is considered as the complementary therapy and Shatkarma is one of the most important limbs of yoga that hatha yogis suggested to purify the energy channels or naadis. Shatkarma decimate kapha dosha as indicated in traditional Yogic texts and asthma arises due to the imbalance in vata and kapha dosha. In order to examine the physiological and therapeutic effects of few shatkriyas and bhastrika pranayama on patients with mild to moderate asthma, to find out the more effective management and identification of any possible route to reduce asthma symptoms. The literature was surveyed on PubMed and Google Scholar electronic databases for relevant articles for the term: "Bronchial asthma" OR "Kapalbhati" OR "Bhastrika pranayama" OR "bellow breathing" OR "kunjal" OR "voluntary induced vomiting" OR "jala neti" OR "nasal irrigation" OR "Shatkriya" OR "cleansing techniques." The findings suggest that Shatkriyas and Bhastrika pranayama enhances the endurance of respiratory muscles and reduce the airways resistance. These finding suggests new, easily implemented Yoga adjuvant therapy modules for chronic illnesses other than asthma. Hence, these selected Yoga practice can be added to the already existing Yoga therapy module for asthma. Further large scale clinical trials with rigorous designs to understand the mechanisms involved with Shatkriyas are warranted.

Keywords: Asthma, Bhastrika pranayama, Shatkriya, Bronchial asthma, Yoga.

Introduction

Asthma is a chronic respiratory condition that affects the airways in the lungs, causing them to become inflamed, narrow, and produce excess mucus. The Greek word aazein, means to exhale with the open mouth, is where the word "asthma" originates. Greek physician Aretaeus first gave a clinical description of asthma (100 AD). Another Greek doctor, Galen (200 AD), produced multiple works on asthma that described the symptoms and care. The idea that asthma starts in the lungs was initially put out by Belgian physician and chemist Van Helmont in the sixteenth century. An Italian physician named Bernardino Ramazzini made the connection between exercise, organic dust, and asthma in the 17th century. Asthma treatment began with bronchodilators from the start of the 19th century. However, it wasn't until the 1960s that the significance of inflammation in asthma was understood, which led to the creation and widespread usage of anti-inflammatory drugs.

Asthmatics symptoms difficulty in breathing, chest tightness, coughing, wheezing, nasal congestion and shortness of breath (*The History of Asthma: Development, Understanding, and Treatments*, n.d.). Asthma symptoms can vary in frequency and severity, and may be triggered by different personal or environmental factors, such as allergens (e.g., dust mites, pollen), irritants (e.g., smoke, air pollution), exercise, stress, respiratory infections, and certain medications (Kasper et al., 2015).

The World Health Survey conducted by the World Health Organization (WHO) reported asthma worldwide. According to the survey conducted between 2002 and 2004, over 300,000 adults were found asthmatic worldwide. According to the survey, asthma affects approximately 334 million people worldwide. The prevalence of asthma varied by region, highest prevalence found in low- and middle-income countries as compared to high-income countries. In these countries, asthma affects about 334 per 1000 individuals.

It is important to note that not everyone with asthma experiences the same symptoms, and some individuals may have no symptoms at all between flare-ups. Therefore, while considering the prevalence of asthma, it is important to work with a healthcare provider to establish an asthma management plan, which may include medication, lifestyle modifications, and regular monitoring of symptoms. Various conventional medicines have been used over time and considered as first line therapy in effective treatment of asthma. Conventional management can deal with asthma symptoms but it has the potential to result in systemic side effects, including cataracts, decreased bone mineral density, thinning and bruising of the skin, and stunted growth in children (Dahl, 2006). Therefore, therapies that heal the body naturally with minimum or no side effects should be adopted for the proper management of asthma. The complementary and alternative medicine can be the best alternative in order to deal with various illnesses.

Yogic Management of Asthma

Yoga is a complete lifestyle practice that develops the body, mind, and intellect through its various limbs like Shatkriya (purification techniques), Asanas (physical postures), Pranayama (voluntary breath regulation), Dharna (withdrawal of senses) and Dhyana (meditation). Studies have shown that practicing yoga has healing benefits, regardless of a person's weight, blood pressure, diabetes, or cancer status (Taneja, 2014). Thus, on behalf of available evidence, Yoga can be suggested as a non-pharmacological intervention for several lifestyle diseases, non-communicable diseases and others. The Ultimate goal of Yoga is the expansion of human capabilities as mentioned in Hath Yoga texts. Hath Yoga protects the practitioner and devotee of Hatha yoga from the burning heat of three tapas (1.10, Hathpradeepika). The author of Hathpradeepika (ch: 2, v. 21 and 22), Swami Swatmaram suggests that firstly one should practice cleansing techniques if there be excess of fat or phlegm in the body. These specifically work in order to balance the constituents (like three humours or tridosha) of the individual. Thus, these cleansing techniques purify energy channels and the whole body and promote the holistic health and well-being of the individuals. The goal of the present review was to compile the available research on the physiological and therapeutic effects of specific yogic cleansing techniques and Bhastrika pranayama described in traditional hath Yogic texts for Kapha elimination in the patients with bronchial asthma.

1.1.References of Yogic practices in traditional texts

Out of major texts of Hath Yoga, HathYoga Pradeepika and Gherand Samhita elaborates the practice of shatkriya with six variants including Dhauti, Basti, Neti, Trataka, Nauli and Kapalbhati whereas latest among Hath Yogic text Hatharatanavli elaborates eight limbs of cleansing techniques. Gherand Samhita also explains the sub-types of Shatkriya. Shatkriyas mentioned in the Hath Yoga Pradeepika is most popular among Yoga practitioners. Internal cleansing is highly essential with outer cleansing and that’s why cleansing process are also mentioned in the ancient healing system of

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Ayurveda and Naturopathy. Though, Yogic cleansing process is quite difficult but it can be performed easily and by the individual himself/herself once the mind-body is fully trained under the guidance of an experienced teacher.

Jala Neti: Jal Neti is a technique where lukewarm saline water is poured into one nostril and drained out through the other nostril, cleansing the nasal passages. It can help clear mucus, reduce nasal congestion, and improve breathing. Neti is the cleaner of the brain and mitigates all the diseases of the cervical and scapular regions (2.30, Hathpradeepika).

Kunjal kriya: Kunjala kriya is the detoxification technique that involves drinking a large amount of lukewarm water and then inducing vomiting to cleanse the stomach and upper digestive tract and respiratory tract adjacent to the esophagus. The purpose of kunjal is to remove accumulated toxins, mucus and impurities accumulated in visceral organs.

Kapalbhati is the most popular cleansing technique mentioned in hath yogic texts. This is a dynamic breathing technique that involves forceful exhalations through the nose while the inhalations are passive. When inhalation and exhalation are performed very quickly, like a pair of bellows of a blacksmith, it dries up all the disorders from the excess of the phlegm (2.35, Hathpradeepika).

Bhastrika pranayama also known as Bellow Breathing, is a type of yogic breathing exercise that involves rapid and forceful inhalations and exhalations through the nose, with a focus on deep breathing and abdominal movement. During the pranayama when one feels fatigue, the air should be inhaled through the right nostril and kept it confined. After the kumbhaka, it should be expelled through the left nostril. This technique mentioned in hathpradeepika balance tridosha and purifies the whole system by removing the accumulated impurities in the energy channels (2.66).

These Yoga practices should be performed on an empty stomach. As per Hath yogic texts, all these practices work to remove the diseases caused by Kapha dosha. Simply referring to respiratory problems or shortness of breath as "asthma" is Shwasa. According to Ayurveda, the Vata and Kapha Doshas are primarily responsible with Shwasa (Baheti et al., 2017).

2. Methods

A search was conducted by using the Google scholar, Pubmed databases. This review focused on the effect of particular yoga practices on asthma symptoms and quality of life. The literature search by done by using the keywords such as: “Bronchial asthma OR Kunjal OR voluntary induced vomiting OR Jala Neti OR nasal irrigation OR bhastrika pranayama OR bellow breath OR Kapalbhati OR high efficiency breathing.”

3. The scientific evidence on cleansing techniques for mucus elimination

One of the most important techniques for overcoming various physical and psychological issues is considered to be hatha yoga. Shatkarmas are a group of yogic purification practices that are believed to cleanse the internal body and improve health and well-being. While there is limited research specifically on the effects of shatkarmas on asthma symptoms and quality of life, a review paper published in the Journal of Ayurveda and Integrative Medicine looked at the potential benefits of yogic practices for people with asthma. The review paper found that yoga practices like pranayama, asanas, and shatkarmas may have benefits for people with asthma, including improved lung function, reduced symptoms, and improved quality of life (Agnihotri et al., 2017).

3.1. KUNJAL KRIYA

Kunjal kriya is a type of yogic cleaning, a procedure whereby large amount of salt water (5%) is consumed and subsequently vomited out of the body. The digestive and respiratory systems are historically cleansed or detoxified using the Kunjal Kriya. This helps to clear the digestive tract and remove toxins from the body.

3.1.1. (Manik, 2023) conducted an observational study in which 60 subjects participated and the experimental group underwent a regular yogic practice of Kunjal Kriya) early in the morning on an empty stomach for a period of 4 weeks in every alternate day. Results demonstrated that the intervention of Kunjal Kriya has significant effect in controlling breath rate (BR), Force Expiratory Volume in first second (FEV1), Peak Expiratory Flow Rate (PEFR) and Hamilton Anxiety Rating Scales (HARS) for the experimental group.

3.1.2. (Balakrishnan et al., 2018) in their Comparative Study between naïve and experienced practitioners stated that following voluntary induced vomiting (ViV), pulmonary function tests of eighteen healthy individuals were done before and after 10 minutes of rest. The current study's findings point to a significant rise in slow vital capacity, forced inspiratory volume along with a reduction in expiratory reserve volume and respiratory rate. These alterations point to a potential role for ViV in improving respiratory muscle endurance, lowering airway resistance, improving lung emptying, and vagal predominance, respectively.

Dhauti kriya was therefore shown to be helpful as a therapeutic modality in the therapy of respiratory and digestive diseases based on the scant evidence that is currently available. To prove the efficacy of dhauti as a therapeutic method, further extensive clinical trials are required.

3.2. NETI

Neti is the cleansing practice that is used to clean nasal passage. Traditional texts (Hathpreadeepika and Gherand Samhita) explain about sutra Neti. However, Jala neti and sutra neti are the most popular forms of neti. Most of the practitioners perform dugdha (milk) and ghrita (ghee) neti. In sutra neti, a thread is inserted in one nostril that comes out of the mouth. Practitioners also use sterile catheter nowadays. Jala Neti is a traditional yogic practice that involves flushing the nasal passages with saline water using a small pot called a neti pot. The saline water is poured through one nostril and drains out of the other, helping to clear the sinuses and remove mucus and other irritants. There is some research suggesting that using a jala neti pot may have benefits for people with asthma.

3.2.1. (Little et al., 2016) stated that a large-scale RCT with 871 participants found that jala neti is more effective at treating rhino-sinusitis symptoms and is more well-liked by participants than steam inhalation.

3.2.2. (Rabago et al., 2002) Patients with sinusitis were tracked for six months in a randomised control experiment with 76 participants. Patients who practiced jala neti every day for six months showed greater quality of life, less symptoms, and a decreased need for medicine, according to the researchers.

3.2.3. (“Beneficial Effect of Nasal Saline Irrigation in Children with Allergic Rhinitis and Asthma,” 2020) stated that a RCT was conducted in which 20 patients with asthma and allergic rhinitis between 6 and 18 years of age practiced isotonic saline irrigation twice per day on a daily

basis up to 12 weeks. Results showed nasal saline irrigation is beneficial for treatment of asthma and allergic rhinitis in children.

3.2.4. (Hermelingmeier et al., 2012) concluded in their study that saline nasal irrigation or SNI using isotonic solution can be recommended as complementary therapy in AR or allergic rhinitis.
3.2.5. (Lin et al., 2015), a pilot study was conducted to assess the effects of daily nasal irrigation for one month in 10 children with chronic sinonasal symptoms and results suggest that nasal saline lavage may significantly alleviate chronic sinonasal symptoms and improve disease-specific quality of life.

3.2.6. (Chauhan & Chauhan, 2022) two-group randomized, waitlist-controlled trial was conducted to determine the efficacy of a Shuddhi Kriya-based yoga programme (SKYP) in 53 patients with allergic rhinitis for around 60 minutes each day, four days a week. After eight weeks the study conclude that Yogic practices seem appropriate in reducing nasal and ocular symptoms.

Thus, Neti, one of the simplest cleansing techniques used in yoga, aids in the treatment of allergic reactions such as rhinitis and sinusitis. The findings suggest that there is empirical evidence to support the conventional explanation from the Hatha Yoga Pradeepika that neti can help to treat diseases above the throat. One study published in the American Journal of Rhinology and Allergy found that using a neti pot twice a day for four weeks improved symptoms and quality of life for people with allergic rhinitis and asthma. Another study published in the Journal of Asthma found that using a saline nasal wash (which is similar to using a neti pot) twice a day for eight weeks improved lung function in people with asthma.

A small study published in the Indian Journal of Otolaryngology and Head and Neck Surgery found that practicing jal neti for six weeks improved symptoms and lung function in people with asthma. However, it's important to note that this study had a small sample size and more research is needed to fully understand the potential benefits and risks of neti kriya for people with asthma.

3.3. KAPALBHATI AND BHASTRIKA PRANAYAMA

Kapalbhati is a high frequency breathing method that involves effortless inhalation and short, quick, and powerful exhalations (about 1 to 2 Hz). It involves forceful exhalations through the nostrils while the abdomen is rapidly contracted. Numerous studies suggests that kapalbhati mitigates a number of diseases whether it is mental or physical (aadhi or vyadi).

However, there is limited research on the effects of kapalbhati on asthma specifically. A study published in the Journal of Asthma and Allergy found that practicing pranayama for eight weeks improved lung function and reduced symptoms in people with asthma. Another study published in the International Journal of Yoga Therapy found that practicing kapalbhati for eight weeks reduced asthma symptoms and improved quality of life in people with asthma. There is some evidence to suggest that breathing exercises like pranayama (of which kapalbhati is one type) may have benefits for people with respiratory conditions.

3.3.1. (Andreasson et al., 2022) stated that breathing exercises are add on therapy and improve asthma-related quality of life with no evidence of damage regardless of asthma severity. A total of 193 participants, Usual care or UC + Breathing Exercises or BrEX (n = 94) and only UC (n = 99), underwent a randomized control trial with three individual physiotherapist-delivered sessions and home exercises. Asthma-related QoL (Mini-AQLQ) at 6 months was the primary outcome. At 12 months, lung function, the 6-minute walk test, physical activity level, the Nijmegen Questionnaire, the Hospital Anxiety and Depression Scale, and adverse events are considered secondary outcomes.

3.3.2. (Sangeethalaxmi & Hankey, 2022) reported in their systematic review of a highly efficacious new yoga breathing and relaxation protocol for patients who are young adults with mild to moderate bronchial asthma, it has a consistent, beneficial effect on quality of life, anxiety, depression, and pulmonary function.
3.3.3. (Erdoğan Yüce & Taşcı, 2020) reported that in comparison to the relaxation group ($p < 0.05$), the pranayama group scored considerably higher on the ACT score, the overall AQLQ score, and subscale score in their randomized control trial when relaxation was applied to the relaxation group and pranayama was applied to the pranayama group for 20 min once daily for 1 month.

3.3.4. (*International Journal of Sport Culture and Science" Training of Kapalbhati Pranayama on Components of Health-Related Fitness"*) stated that 28 university level girls between the age group of 21-26 years were assigned purposively into two groups: Experimental (n=14) and Control group (n=4), to determine the Effects of 4-weeks training of Kapalbhati Pranayama on components of Health-Related fitness. The results demonstrated that the significant differences in Components of Health-Related Fitness i.e., Cardiorespiratory Endurance, Flexibility, % Body Fat, Fat Weight and Lean Body Weight.

3.3.5. (Sangeethalaxmi & Hankey, 2023) found that 60 (30 male and 30 female) young adults with severe bronchial asthma practiced a particular yoga module 30 minute daily for 90 days benefitted significantly in terms of quality of life, anxiety, sadness, and pulmonary function. The Yoga module involves practicing rhythmic abdominal breathing, Kapalabhati, vaksha sthala Shakti vikasaka, bhastrika pranayama and guided relaxation. It is a useful clinical tool that doctors might recommend as an adjunct therapy to the usual care for asthma.

4. Conclusion

Yoga practices, i.e, kapalbhati, bhastrika, jala neti and kunjal kriya were considered as the part of present review. These Yoga practices were found to be helpful in the treatment of respiratory problems like bronchitis, allergic rhinitis, sinusitis and asthma. Common benefit from all these practices is that it alleviates kapha dosha as mentioned in the traditional hatha yogic texts. Kunjal Kriya or voluntary induced vomitting was found to promote the respiratory and digestive functions as well. Nasal irrigation or jala neti was found beneficial in dealing with sinusitis, allergic rhinitis and upper respiratory tract disorders. Kapalbhati was found improving the lung functions, metabolic activities, cognition and sympathetic activation in asthmatic patients. Published studies elaborates that practicing bhastrika pranayama reduced the need for medication and improved lung function in people with asthma.

5. Discussion

The beneficial role of each yogic practice is mentioned in hatha yogic texts like Gherand samhita, Hathyoga pradeepika and latest Hath ratnavali. These texts narrate few Yogic practices that aids in alleviating kapha dosha especially. Asthma or tamak shwasa is the problem that takes place due to the imbalance in vata and kapha doshas. Shatkriyas and high efficiency yoga breathing aid in balancing these doshas. With cleansing techniques, the accumulated phlegm is washed out of the body and breathing techniques helps in restoring the pulmonary function, establish the inner peace and overall well-being. These practices boost the immune system as toxins gets out of the body. However, there are very limited scientific evidences that suggest potential benefits of these practices.

The effective role of jala neti in asthmatics patients can be understood to some extent on behalf of the studies mentioned above. Kunjal was the least studies among the yoga practices included in this

review. A study was conducted on seven asthmatics patients to assess the effect of Kunjal kriya: A Nonspecific Protective Factor in Management of Bronchial Asthma. The authors found definite improvement, both subjectively and objectively, in six patients during the week Kunjal kriya was performed. In five patients, the symptoms improvement continued into the third week. Kunjal kriya is somewhat similar to the practice of jala neti that wash the nasal passages. Jala neti was found effective in the allergic rhinitis, sinusitis as it stimulates the upper respiratory symptoms. While asthma deeply affects the respiratory system and so does the kunjal. Therefore, Kunjal can be highly effective in managing asthma symptoms and improve quality of life. It's also important to note that kunjal involves inducing vomiting, which can possess adverse effects and is not recommended for everyone. People with certain medical conditions, such as gastroesophageal reflux disease (GERD), should not attempt kunjal or other similar practices without first consulting an experienced yoga instructor. Scientific evidences proved the statements to some extent mentioned in yoga literature for kapalbhati and bhastrika pranayama.

Above studies proved scientifically that all these practices eliminate mucus from sinuses and nostrils and air passes through the airways without any obstruction. This could be a yoga module of 4-5 practices targeting the patients with mild to moderate asthma that can be performed by everyone. These results also offer insights into adding more yogic techniques to balance the kapha dosha as mentioned in hatha yoga texts. More research is needed to fully understand the potential benefits and risks of other practices that can be recommended for people with asthma.

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