



Review Article

**ROLE OF PATHYA-APATHYA AND YOGIC PROCEDURES IN THE MANAGEMENT OF COPD**

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**ABSTRACT**

Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease that is often preventable and treatable. In Ayurvedic texts *Shwasa Roga* has been described having symptomatology close to COPD. COPD damages the airways in lungs and leads to shortness of breath, impacting patient's work, exercise, sleep and other everyday activities. More than 11 million people in the U.S. suffer from COPD and its prevalence has been increasing steadily over the past 20 years. It causes serious long-term disability and early death. COPD includes both chronic bronchitis and emphysema. Risk factor includes exposure to air pollution, second-hand smoke and occupational dusts and chemicals, smoking, cold weather etc. which are also mentioned in Ayurvedic classics. Identification, reduction and control of risk factors to prevent the onset of COPD are important steps towards developing strategies for prevention of COPD. The aims and objectives of Ayurveda are to maintain the health of a healthy person and to cure the diseases of the patients. It signifies that "prevention is better than cure." To maintain the health, Ayurveda laid many basic principles like *Ritucharya* (seasonal regime), *Dincharya* (diurnal regime) etc. The *Yogic* procedures and the concept of *Pathya* (wholesome) and *Apathya* (unwholesome) is the peculiarity of Ayurveda for the management of COPD and the treatment module includes- *Panchakarma* (*Vamana*, *Virechana*, *Dhumapana* and *Nasya*), external therapies (*Lepas*, *Dhara*, *Sthanika Abhayanga* and *Swedana*) and internal medications are very effective in COPD.

**KEYWORDS:** COPD, *Ritucharya*, *Dincharya*, *Panchakarma*, *Pathya*, *Apathya*.

**INTRODUCTION**

Chronic Obstructive Pulmonary Disease (COPD), represent an important public health challenge and is a major cause of chronic morbidity and mortality throughout the world.<sup>[1]</sup> COPD is defined as a disease state characterized by airflow limitation that is not fully reversible. COPD includes emphysema, an anatomically defined condition characterized by destruction and enlargement of the lung alveoli; chronic bronchitis, a clinically defined condition with chronic cough and phlegm; and small airways disease, a condition in which small bronchioles are narrowed. The most common respiratory symptoms include dyspnea, cough and/or sputum production.<sup>[1,2]</sup>

COPD is currently the fourth leading cause of death in the world but is projected to be the 3<sup>rd</sup> leading cause of death by 2020. More than 3 million people died of COPD in 2012 accounting for 6% of all deaths globally. Globally, the COPD burden is projected to increase in coming decades because of continued exposure to COPD risk factors and aging of the population.<sup>[1]</sup>

In Ayurveda respiratory diseases occur due to involvement of *Pranavaha Srotas* where cough,

breathing difficulties, disturbed respiratory pattern occurs. Though it is impossible to correlate COPD with any single condition of *Pranavaha Sroto Dushti*, but advanced condition of *Doshika Kasa* and *Tamaka Shvasa* may result into COPD.<sup>[17]</sup>

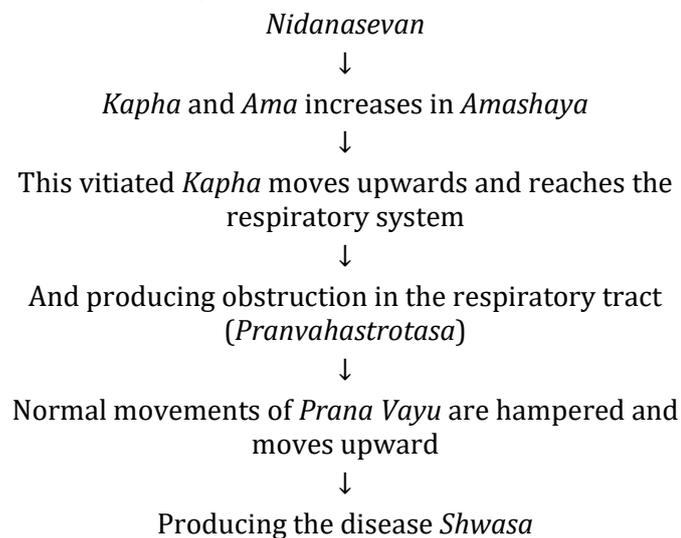
**Aetiopathogenesis**

The main risk factors for COPD are tobacco smoking but other environmental exposures such as biomass fuel exposure and air pollution may contribute. Besides exposures, host factors predispose individuals to develop COPD. These include genetic abnormalities, abnormal lung development and accelerated aging. Smoking has traditionally been known to be the most important cause for COPD amounting to almost 85% of the COPD cases, the rest being classified as non-smoking COPD (in developed countries). In the developing countries, the most important risk factor for COPD could be indoor-air pollution arising from the use of biomass fuel, such as wood, cow dung and crop-residues leads to release of air pollutants like SO<sub>2</sub>, CO, NO<sub>2</sub>, formaldehyde and particulate matters smaller than 10 micron in size in the ambient indoor air. Chronic exposure to these pollutants has been shown

to lead COPD. Another important risk factor for non-smoking COPD is the prolonged exposure to occupational smoke/dust like automobile-drivers, vehicular mechanics, fertilizer manufacturing, chlorinated organic compounds dyes, explosives, rubber products, metal etching, plastics, ammonia exposure in refrigeration and petroleum refining, grain dust and fungi in farmers, textile mill manufacturing, leather manufacturing and sales, beauty care workers and welders in automotive industries. Exposure to crystalline silica: cement industry, brick manufacturing, pottery and ceramic work, silica and granite and diatomaceous earth industries, gold mining and iron and steel founding. Tuberculosis is increasingly getting recognized as a risk factor for COPD. Recurrent respiratory infections in childhood have also been shown to be associated with development of COPD in adult age. Even poorly treated asthma is considered to be a risk factor for development of irreversible airway obstruction, characteristic of COPD. Poverty is an important surrogate of COPD. Physiological lung function decline induced by ageing can also predispose to COPD.<sup>[1,4,23,24]</sup>

### Pathogenesis

In COPD, inhalation of toxic substances-particularly inhalation of tobacco smoke etc. causes inflammation of lung tissue. The inflammation results into tissue damage; if the normal protective and/ or repair mechanisms are overwhelmed or defective. The results of the lung tissue damage are mucus hyper secretion, airway narrowing and fibrosis, destruction of the parenchyma and vascular changes. These pathological changes lead to airflow limitation and the other physiological abnormalities resulting into clinical features of COPD<sup>[3,4,17]</sup>. In classics also pathogenesis of *Pranavaha Srotodusti* described in regards of *Kasa* and *Shvasa* resembles the above mention description and can be summarized as<sup>[7, 17]</sup>



**Diagnosis:** COPD should be considered in any patient who has dyspnea, chronic cough or sputum production, and /or a history of exposure to risk factors for the disease. Spirometry is required to make the diagnosis; the presence of a post-bronchodilator FEV<sub>1</sub>/FVC <0.70 confirms the presence of persistent airflow limitation. The degree of airflow obstruction is an important prognosis factor in COPD and is the basis for the Global Initiative for Lung Disease (GOLD) severity classification.<sup>[1]</sup>

Gold Severity Stage	Spirometry
I Mild	FEV <sub>1</sub> /FVC<0.7 and FEV <sub>1</sub> ≥80% predicted
II Moderate	FEV <sub>1</sub> / FVC <0.7 and FEV <sub>1</sub> ≥50% but <80% predicted
III Severe	FEV <sub>1</sub> /FVC <0.7 and FEV <sub>1</sub> ≥30% but <50% predicted
IV Very Severe	FEV <sub>1</sub> /FVC<0.7andFEV <sub>1</sub> >30% predicted

In 2011, the GOLD added an additional classification system incorporating symptoms and exacerbation history.

**Pharmacotherapy:** for COPD is used to reduce symptoms, reduce the frequency and severity of exacerbations, and improve exercise tolerance and health status. The classes of medications commonly used to treat COPD are Bronchodilators, Anti-muscarinic drugs, Methylxanthines, Combination bronchodilator therapy, Anti-inflammatory agents, Inhaled corticosteroids, Oral glucocorticoids, PDE4 inhibitors, Antibiotics, Mucolytics/antioxidants etc. Other treatments are Pulmonary rehabilitation, Oxygen therapy, Ventilatory support, Lung volume reduction surgery, Bullectomy, Lung transplantation, Bronchoscopic interventions<sup>[5, 8]</sup>.

### Pathya-Apathya and Yogic procedures:

Medications alone won't be enough, however, to completely control COPD symptoms. Effective COPD treatment is required to take several lung healthy steps. Most importantly you must stop smoking if you currently smoke, because smoking is the single greatest cause of COPD and other respiratory problems. Life style changes can help people with COPD reduce their risk of getting infections. This is very important because infections are the most common cause of acute exacerbations, which are also called COPD flare-ups. Flare-ups happen when COPD symptoms suddenly get much worse, and cannot be relieved with the patient's regular medications or other therapies. During a pulmonary rehabilitation program, patients learn

about several kinds of lifestyle changes that can help them to avoid infections and flare-ups. Some of these changes include quitting smoking, avoiding allergens and irritants, vaccinations, practicing good hygiene.<sup>[1]</sup>

Allergens and irritants are tiny particles in the air, and breathing them in can make COPD symptoms worse and increase the risk of flare-ups. Common allergens include pollen, dust and dust mites, pet dander, and mold etc. Not every COPD patient will be sensitive to allergens or to every type of allergen. But for those who are sensitive to certain allergens, being exposed to them can worsen COPD symptoms. Common irritants like dirty or wet rugs/carpets can gather dust, dirt and mold, tobacco smoke, pesticides, chemicals in strong cleaning products, paint fumes, Air pollution outdoors, Burning fuel indoors (such as coal, wood, oil, gas or kerosene), asbestos, radon and carbon monoxide, Strongly scented soaps or fragrances. There are many steps that COPD patients can take to reduce the amount of allergens and irritants that they breathe in the home, the workplace and outdoors. This can help them control their symptoms and improve their quality of life. For people with COPD, respiratory infections such as the flu and pneumonia can be dangerous. These kinds of infections can cause severe COPD flare-ups and may even be life-threatening. For this reason patients with COPD should get vaccinations for the flu and pneumonia. Vaccines are a safe and effective way for COPD patients to strongly reduce their risk of getting these illnesses. Practicing good hygiene is a simple but effective way for COPD patients to reduce their risk of getting infections. During a pulmonary rehabilitation program, patients learn about good hygiene practices.<sup>[13]</sup>

The management strategy for COPD should be predominantly based on the individualized assessment of symptoms and future risk of exacerbations. All individuals who smoke should be strongly encouraged and supported to quit. The main treatment goals are reduction of symptoms and future risk of exacerbations. Management strategies are not limited to pharmacological treatments, and should be complemented by appropriate non-pharmacological interventions.

#### **Yoga procedures in the management of COPD**

[11, 14, 18, 20]

*Yoga* is an excellent form of exercise for anyone with COPD. *Yoga* practice is made up of two essential parts, physical postures, known as *Asanas*, and breathing techniques, known as *Pranayamas*. Meditation and relaxation are also key parts of regular *Yoga* practice.

**Breathing techniques:** *Pranayama* breathing techniques can help to manage symptoms of

breathlessness by strengthening the respiratory muscles.

**Relaxation techniques:** *Yoga* encourages deep relaxation through breathing and meditation techniques. This helps to relieve stress and tension.

**Yoga Asanas for COPD:** (1) standing mountain pose: This straightforward pose requires standing tall to open up the chest. (2) Standing back bend: This pose also helps to open up the muscles of chest. (3) Seated forward bends: These poses help strengthen the respiratory system. (4) Standing side bends: These bends will help strengthen the diaphragm while also improving the flexibility of rib cage. There are many more *Asanas* that can be modified to help build strength and flexibility, specifically to help in COPD.

The *Yoga* Breathing like Pursed-lip breathing and Diaphragm breathing are two techniques that have roots in *Yoga*. They are often taught to people with COPD as part of their pulmonary rehabilitation program. *Yoga* is generally safe, but be sure to take precautions as to avoid certain poses, keep inhalers nearby, stop if have short of breath.

**Pathya** (beneficial and wholesome things) in *Shwasa*<sup>[7,17]</sup>

- *Vaman* - Therapeutic emesis
- *Virechana* - Therapeutic purgation
- *Swedanakarma*- Sudation, fomentation, sweating/steaming treatment
- *Dhumpana* - Herbal smoking
- *Diwaswapna* - Sleeping during the day time
- *Puratanashali* - Old rice
- *Kulattha* - Horse gram
- *Godhuma* - Wheat
- *Yava* - Barley
- *Mamsa* - Flesh/meat of rabbit, peacock, cock, parrot etc.
- *Dwijaoeandajamamsa* - Meat of birds
- *Puranaghrta* - Ghee derived from goat's milk
- *Sura* - Fermented alcoholic herbal drink
- *Madhu* - Honey
- *Patola* - Pointed gourd
- *Vaartaaka* - Brinjal
- *Lashuna* - Garlic
- *Bimbi* - Ivy gourd
- *Jambeera* - Citron fruit
- *Tanduleeya* - *Amaranthus spinosus*
- *Vaastuka* - *Chenopodium album*
- *Draksha* - Raisins
- *Ela* - Cardamom

**Apathya** (non-beneficial and unwholesome things) in *Shwasa*.<sup>[7,17]</sup>

- *Raktamokshana* – bloodletting
- *Purvavata* – wind or breeze blowing from the east
- *Purvabhojana* – taking food facing east
- *Purvapana* – taking liquids facing east
- Meshadugdha – sheep milk
- *Dushtajala* – contaminated water
- *Matsya* – fish
- *Kanda* – tubers
- *Sarshapa* – mustard
- *Rukshaannapana*– dry foods
- *Sheeta* – cold things, foods and comforts
- *Guru* – foods which are heavy to digest

## DISCUSSION

COPD may be punctuated by periods of acute worsening of respiratory symptoms, called exacerbations. In most patients, COPD is associated with significant concomitant chronic diseases, which increase its morbidity. Worldwide, the most commonly encountered risk factor for COPD is tobacco smoking. COPD is the result of a complex interplay of long-term cumulative exposure to noxious gases and particles. Faulty diet and life style patterns form the basis of any disease, so identification, reduction and control of etiological factors of COPD mentioned in classical and modern literature include diet articles, food habits and life style errors, can play a major role in the prevention or progression of COPD.

As per Ayurveda for the prevention or management of any disease, there are three broad steps described as *Nidanaparivarjana* which includes life style modifications and diet pattern, *Shamana* (pacification treatment) and *Shodhana* (bio-purifactory methods). Considering this the management of COPD can be summarized as-

1. Avoidance of etiological factors: which means best way to stay healthy is to follow all such regimen which is suitable to one and avoid to factors which disturbs homeostasis.
2. Modification of life style which helps to reduce symptoms and improve quality of life like exercising regularly, taking fresh warm diet which is low in saturated fat but rich in fruits, vegetables and whole grain foods and maintaining a normal weight, to be in well ventilated hygienic environment. Waking up early in the at regular time and taking glass of warm water early morning empty stomach and avoiding Irregular and untimely eating of food may help to prevent from COPD.
3. Similarly due to importance diet articles may be done: Use of *Katu*, *Lavana*, *Ushna*, *Snigdha*, *Laghuahara*, vegetables including gourd, bottle

gourd, Spinach, *Methi*, garlic, ginger, *Karvelaka*, *Patola*, *Shigru* etc. however, excessive use of tomato, cauliflower, potatoes, preparation of rice flour, sweets, curd, whole milk, black gram, coconut oil, fermented and sour food articles and cold drinks, refrigerated food articles etc. Shall be avoided in the daily diet.

4. *Yogasana* and *Pranayama*: Ayurveda understands the role of *Pranayama* regards to *Prana*, *Tejas*, and *Ojas* and their corresponding effects on the mind, relaxation along with conscious breathing of almost any type improves the functioning of the respiratory system. Yogic practices rehabilitate varies vital organs and make them functionally more competent. *Bhujangasana*, *Savasana*, *Shalabhasana*, *Paschimotasana* is useful *Asana* for *Pranava Srotasaas* it accelerates the blood circulation of the lungs and thus increase the vital capacity of lung.

## CONCLUSION

Healthy life style has great role in prevention of diseases and Lifestyle modification (*Pathya-Apathya*) has been proved to be successful treatment in various diseases.

COPD being a chronic progressive disease with irreversible changes needs early diagnosis and proper management. An extra care of diet, diet pattern modification and life style modification (*Patha-Apathya*) with Yogic procedures play major role in the prevention and progression of COPD. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines emphasize that smoking cessation is, "the single most effective and cost-effective way to reduce exposure to COPD risk factors."

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