

# Chronic obstructive pulmonary disease research paper examples

[Health & Medicine](#), [Addiction](#)



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## **Description of Disease**

Chronic obstructive pulmonary disease or COPD is a progressive illness due to which the sufferer is not able to breathe easily. In this connection, progressive means that this disease worsens with the passage of time. In COPD, the patient's coughing produces mucus in large amounts, puffiness, breath shortness, tightness of chest, and similar other symptoms (Currie, 2011).

There are two major conditions in COPD i. e. chronic bronchitis and emphysema. Emphysema refers to the condition whereby damage of the walls between several air sacs occurs. Consequently, the air sacs become flaccid due to the shape loss. Such damage also has the propensity of destroying the air sacs' walls. As a result, it leads to a smaller number and larger air sacs in place of countless tiny air sacs. In case of emphysema, the

gaseous exchange is less and the lungs do not function properly. As far as chronic bronchitis is concerned, this condition is characterized by the constant irritation and inflammation in the airways' lining. As a result, there is thickening in the lining (Currie, 2011). In addition, production of thick mucus in the airways increases. Thus, it becomes hard for the affected person to breathe properly. It is important to mention here that a majority of COPD patients suffer from chronic bronchitis and emphysema at the same time. This is the reason it is more accurate to use COPD as the general term.

## **Demographics**

Chronic obstructive pulmonary disease is one of the major life-threatening lung diseases as the ailment has a direct interference in normal breathing. According to WHO 2004 statistics, about sixty four million people worldwide had COPD. It is worth-mentioning that more or less ninety percent of COPD deaths are reported in middle or low-income countries. It is also noticeable that both men and women are equally affected by the disease as women living in developed countries use tobacco increasingly. It is also expected that the total COPD deaths would increase by thirty percent till 2020 if appropriate measures are not taken for cutting its risks. As far as the United States of America is concerned, chronic obstructive pulmonary disease is the third major cause of deaths in the country (Currie, 2011).

## **Etiology**

COPD is mainly caused by cigarette smoking. A majority of people who suffer from this disease are cigarette-smokers. People who quit smoking may also suffer from COPD due to their past smoking habit. Several other factors may

irritate lung functioning as a result of continuing exposure. These include dust, air pollution, and chemical fumes. In COPD, a number of factors contribute in less air flow inside the body. Similarly, there is less air to breathe out of the airways. This happens due to the loss of elasticity of airways and air sacs, destruction of walls between numerous air sacs, thickening and inflammation of airways' walls, and clogging of walls due to production of high mucus quantities. As mentioned, both men and women are at risk of getting COPD due to the increased tobacco use among females in high-income countries. In addition, women in low-GDP countries are exposed to indoor air pollution. It is also one of the major reasons they are at risk of developing the life-threatening COPD.

**Pathogenesis**Chronic obstructive pulmonary disease is distinguished and characterized by expiratory airflow's limitation. A number of anatomical lesions are responsible for this condition. These include lung flexible recoil and fibrosis loss and small airways' narrowing. Moreover, limitation of airflow is sometimes the result of edema, inflammation, and secretions (Kim & Criner, 2013). COPD is also caused by smoking through numerous mechanisms. Initially, smoke induces an inflammatory response in a very powerful manner. Lung damage is mostly caused due to inflammatory mediators. In addition, the repair responses of lungs are altered by smoke in a number of ways. When repair is inhibited, it leads to emphysema as a result of tissue destruction. On the other hand, peribronchiolar fibrosis occurs due to abnormality in lung repair. This condition makes the airflow in small airways limited. Likewise, genetic factors also have a major contribution in the development of COPD. In this regard, inhibitor deficiency

named as alpha-1 protease is identified as a major genetic contributor in the ailment. In addition, asthma and various other disorders of bronchitis may cause lower respiratory tract inflammation. Fixed airway obstruction may also be developed due to these factors. It is important to note that chronic obstructive pulmonary disease is not just a lung disease. It is also a disorder of systemic inflammation (Spurzem & Rennard, 2005). The consequences of this fatal disease may include “ muscular weakness, increased risk for atherosclerotic vascular disease, depression, osteoporosis, and abnormalities in fluids and electrolyte balance” (Spurzem & Rennard, 2005).

## **Clinical Manifestations**

Breathlessness due to physical efforts and chronic coughs (with/without phlegm) are the most significant symptoms of chronic obstructive pulmonary disease. In general, the dyspnea gets worse eventually. However, it is mostly absent in patients who suffer from mild or moderate conditions of COPD. There may be dryness or productivity in the cough. Wheezing, tightness of chest, weight loss, fatigue, and anorexia are also COPD symptoms. One of the most important COPD characteristic is episodic severe worsening of the respiratory indicators. Bacterial infections are the most common reasons behind such exacerbations. Similarly, COPD exacerbations are also precipitated due to increased air pollution. There is an accelerated lung-functioning decline due to exacerbations that also accelerate the decline in lung function that characterizes chronic obstructive pulmonary disease. As a consequence, there is apparent reduction in patient’s physical activity. COPD patients also lead a poor quality life and have increased death risks. Some

COPD patients also suffer from other co-morbidities including anemia, skeletal muscle dysfunction, depression and anxiety, lung cancer, ischemic heart disease, osteoporosis, diabetes, gastro-esophageal reflux, and metabolic syndrome. Such conditions have a major contribution in the general rigorousness and symptoms of the disease (Currie, 2011).

## **Diagnosis**

The diagnosis of chronic obstructive pulmonary disease is mostly done after a session with the sufferer's general physician. The doctors make use of spirometry test to check the working of lungs. In this test, the patient is required to breathe into spirometer. The machine records two measurements known as forced expiratory volume and forced vital capacity. The first measurement is taken to record the air volume that can be breathed out by the person in one second. It is also called FEV1. The second measurement is taken to record the total air amount that can be breathed out by the person. It is also known as FVC. This test may be conducted several times to obtain a consistent reading. The doctor then compares the obtained readings with normal measurements for the person's age. This comparison helps in showing whether there is obstruction in the airways or not (Dijk, 2013).

Other tests may also be conducted to disqualify other conditions that may cause related symptoms. Chest X-ray is done to demonstrate whether the person has another ailment of lungs or not. Blood test is also done for identifying whether the symptoms are caused because of anemia. An anemic patient also suffers from breathlessness. Sometimes, more tests are needed for some people. These tests are carried out for confirming the diagnosis or

COPD severity indication. The treatment is then planned on the basis of the results of all tests. Electrocardiogram or echocardiogram (ECG) is sometimes used for checking the heart's condition. Similarly, peak flow test is executed to get the confirmation that the person is suffering from COPD instead of asthma. A pulse oximeter is also used to measure blood oxygen level is also measured to find out whether extra oxygen may help the person or not. As mentioned, genetic factors also cause COPD. Therefore, blood test is also done to identify alpha-1-antitrypsin deficiency in the person. Computerized Tomography Scan or CT scan is also needed sometimes to diagnose any other disease of lungs that is not identifiable in X-ray. In some cases, phlegm sample is also taken for checking any symptom of infection.

## **Treatment**

The management of chronic obstructive pulmonary disease is done with the purpose of making improvements in the functional status of the patient. Other goals of COPD management include making improvements in the quality of life of patients with the preservation of optimal lung function. It is also done by bringing improvements in symptoms and prevent of exacerbations' recurrence. In the present times, there are no other treatments other than lung transplantation that have demonstrated any significant improvement in lung function or decline in COPD mortality rate. Therefore, it is extremely important for the doctors to educate their COPD patients about this disease once it is diagnosed. It is also important for the physicians to encourage the active participation of their patients in COPD therapy (Currie, 2011).

As far as medications are concerned, both oral and inhaling medications are employed for reducing dyspnea, improving tolerance level for exercise, and preventing complications. It is worth-mentioning that these medications are used for patients that suffer from stable chronic obstructive pulmonary disease. Bronchodilators are also used for decreasing muscle tone in lung airways to increase ventilation. These medications consist of beta-adrenergics, subcutaneous medications, anticholinergics, and methylxanthines (Montuschi, 2006). Furthermore, opioids are also used to for dyspnea relief. However, it is important to note that the dosage varies from patient to patient.

## **Prevention**

There are certain measures that can be taken to prevent chronic obstructive pulmonary disease. First, it is extremely important for smokers to stop smoking as soon as possible. The most important thing that can be done by a smoker for living a longer and better life is quit smoking. On the other hand, it is equally important for non-smokers to not start smoking as this dangerous habit is the leading cause of lung cancer, COPD, and various other life-threatening diseases. Preventing COPD also requires people to avoid secondhand smoke exposure. It is important for people to have awareness regarding their rights to live and work in a smoke-free environment. Similarly, protection against fumes, dust, and chemicals is also important for preventing COPD (Currie, 2011).



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