

# Impact of the Psychiatric Comorbidities in Chronic Obstructive Pulmonary Disease

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**Abstract:** *Chronic obstructive pulmonary disease (COPD) is one of the main causes of death with a significant impact on the quality of life and mental health of the patients as well as on the health system. The social costs of COPD are significant, because this pathology has a negative impact on patients's professional performance and daily activity. The major risk factors for COPD are age and smoking. Extrapulmonary comorbidities are frequently associated with COPD and may have an influence on the symptoms severity, and the frequency of the exacerbations, hospitalizations and mortality. Psychiatric disorders, especially anxiety and depression, have been observed in clinical trials with an increased prevalence of COPD. The relationship between anxiety, depression and COPD is complex. Psychiatric pathology is involved in influencing the pathophysiology of COPD with a proven impact on the patient's prognosis. COPD sleep disorders can aggravate pre-existing psychiatric pathology, the relationship between the two pathologies being bidirectional. The aim of this paper is to review the latest clinical trials on the existing evidence of psychiatric comorbidities impact on the evolution and prognosis of COPD and the therapeutic alternatives for their improvement. The conclusion of the present study is that anxiety and depression should be periodically assessed by a multidisciplinary team in order to provide a complete management (pharmacological, pulmonary rehabilitation and cognitive-behavioral therapy), improving the patient's quality of life and prognosis.*

**Keywords:** *Chronic obstructive pulmonary disease, anxiety, depression, outcome, cognitive-behavioral therapy.*

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## **Introduction**

The definition of COPD, according to the Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) involves exposure to noxious agents which results in a partially irreversible limitation of the airflow, causing shortness of breath and significant systemic effects. This definition also includes the clinical diagnosis of chronic bronchitis as well as the pathological diagnosis of emphysema (Rabe et al., 2007).

In clinical practice COPD is diagnosed and staged according to the decreased airflow on spirometry. Forced expiratory volume in 1 second / forced vital capacity with a value below 0.7 after administration of bronchodilator, confirms the diagnosis of COPD. Unlike asthma, decreased airflows are virtually irreversible and worsen progressively over time (Nathell et al., 2007; Tselebis et al., 2016; Zwar et al., 2011).

COPD has a multifactorial etiology. The abnormal inflammatory response described in COPD may be triggered by repeated exposure to harmful dust, gases, or vapors. Increased genetic susceptibility, such as  $\alpha$ -1 antitrypsin deficiency or family history of COPD, has also been reported however, Most often we manage to identify only smoking in the etiology of COPD as a potential risk factor in the onset of the associated pathology such as atherosclerosis and cancer (Patel & Hurst, 2011).

The social and economic impact of COPD, is important and growing. According to the estimates of the Global Burden of Disease Study in 2030 COPD will become worldwide, as the fourth cause of death and the seventh cause of loss of years of life, adjusted for disability (Lopez et al., 2006).

## **Major comorbidities of COPD**

COPD-associated comorbidities include all diseases that coexist with COPD without a direct causal relationship, diseases that have common risk factors and pathogenesis with COPD and diseases that can be triggered, aggravated or complicated by COPD hypoxia and systemic manifestations (Hillas et al., 2015; Thomsen, 2012).

COPD is a progressive disease with predominant lung damage but also with systemic damage. Morphopathological and clinical studies have described the impairment of the central and peripheral nervous system, of the circulatory system (heart, large vessels and small vessels), of the smooth and striated muscles, of the excretory system especially the kidneys, of the digestive system especially in the liver and intestines. Comorbidities are

important factors in the therapeutic management of COPD and in the prognosis of these patients (Baroiu et al. 2021; Stefanopol et al. 2021). Particularly in the elderly, comorbidities, are more common and are definitely associated with a higher mortality (Charlson Score), a poorer adherence to therapy, and a lower quality of life. (Baroiu et al. 2018; Divo et al., 2012; Halichidis et al. 2013; Hillas, et al., 2015; Matte et al., 2016).

Mental health and addiction concerns affect a large number of people around the world and are associated with various comorbidities including infections associated with healthcare or community source infection (Baroiu et al., 2019; Pumar et al., 2014; Puteikis et al., 2021).

Clinical studies have shown that psychological pathology is significantly more common among COPD patients, 55% of patients being diagnosed with anxiety and / or depression (Laurin, et al., 2012; Yohannes et al., 2010).

Many COPD patients have temporary mood manifestations during exacerbations, which ameliorate immediately after recovery. Thus the diagnosis of anxiety or depression in these patients is quite difficult and requires a multidisciplinary approach by a team of pulmonologists and psychiatrists. (Falup-Pecurariu et al., 2017; Norwood, 2006).

## **Anxiety and COPD**

Anxiety has a prevalence of up to 19% in COPD patients, a significantly higher value than in the general population or other chronic pathologies (Pooler & Beech, 2014).

The occurrence of anxiety in COPD patients is correlated with the decreased respiratory function, with the exacerbations recurrence and with repeated hospitalization (Kim et al., 2000, Radulescu et al, 2021).

It has been observed that patients who associate COPD and anxiety are more affected by shortness of breath, have more hospitalizations and higher mortality rates (Spitzer et al., 2011).

Anxiety in COPD patients is associated with suffocation, fear of acute dyspnea attacks, and fear of death (Dudley et al., 1980; Smoller et al., 1996).

Anxiety can even cause a low-intensity dyspnea attack. This can increase with the worsening of dyspnea and the feeling of suffocation. It creates a vicious cycle in which anxiety is triggered by dyspnea and dyspnea can be aggravated by anxiety consecutive polypnea. This vicious circle prevented many patients from performing their daily activities (Bailey et al.,

2004; Cooper, et al., 1995; Dowson et al., 2004; Lupu et al., 2017; Lustig et al., 1972).

Smoking is recognized as a risk factor for the progression of COPD. Anxious patients are a higher percentage of smokers than the general population. Thus, smoking is correlated with the association of COPD anxiety and nicotine withdrawal is accompanied by exacerbation of anxiety (Breslau et al., 1992; Patton et al., 1996; Pauwels et al., 2001).

Pathophysiological correlations between dyspnea, hyperventilation and anxiety have also been described (Apostu, 2021; Ah Gang, 2020; Busu & Teodorescu, 2017; Oleshko, 2020). Physiological studies have shown that respiratory rate is raised by anxiety and that polypnea associated with shallow breathing resulting from anxiety attack aggravates dyspnea in COPD (O'Donnell, et al., 2007; Voicu et al., 2020).

## **Depression and COPD**

In COPD patients with long-term oxygen therapy, the prevalence of depression reaches up to 60% (Paz-Díaz, et al., 2007).

The degree of depression is described in clinical trials as moderate to severe in about two-thirds of COPD patients and the unknown subclinical in about a quarter of COPD patients (Kim et al., 2000; Yohannes et al., 2010).

COPD and depression are common and involve increased global economic and social costs (Matte, et al., 2016).

Depression causes decreased daily physical activity, quality of life and treatment adherence, and correlates with more frequent exacerbations of COPD and increased mortality from COPD (Gales et al., 2014; Hillas et al., 2015).

Clinical studies have found that predictors of depression in patients with CPOD are severe symptoms and decreased quality of life. Severe hypoxia, continued smoking, and severe inflammation may be associated with depression in COPD patients (Hanania et al., 2011).

In COPD patients, depression is most often expressed by the lack of appetite, feelings of pessimism and hopelessness, lethargy, poor sleep, difficulty in concentrating, social isolation, dysfunction in daily activity and functional skills, a perception of mood health at lower levels than reality (Emery et al., 2008; Graydon & Ross, 1995; Leidy, 1995; Weaver et al., 1997; Wagena et al., 2004).

## **Treatment and management**

The therapeutic approach in COPD is multidisciplinary and aims, in addition to the involvement of the pulmonologist, the involvement of all specialists who monitor and lead the comorbidities treatment. Effective control of COPD comorbidities positively impacts the dyspnea-like symptoms and the exercise capacity, the quality of life, the frequency of exacerbations, and of hospital admission, the mortality and the patient prognosis (Putchá et al., 2015).

There are few studies evaluating the combined therapy of COPD, anxiety and depression (Mikkelsen et al., 2004). As an important principle of therapy, it is important to screen the symptoms of depression in each COPD exacerbation episode and re-evaluation of the psychiatric regimen concomitantly with the pneumological regimen (Cicutto & Brooks, 2006). When completing the treatment regimen of the patient with COPD, the drug interactions and the cumulated adverse effects of the medication necessary to treat the comorbidities should be considered (Bourbeau et al., 2002).

## **Conclusions**

Chronic obstructive pulmonary disease continues to be a challenging disease, given its complexity and heterogeneity.

Psychiatric illnesses can influence the severity of symptoms, the frequency of exacerbations, the quality of life, can cause increased costs of therapy and care, higher mortality and a more severe prognosis for the patient with COPD.

Anxiety and depression are common in the list of comorbidities of the COPD patient. The most common psychiatric disorders in COPD are transient psychiatric symptoms during exacerbations. These symptoms either require treatment only during COPD exacerbation, or persist between exacerbations and require ongoing monitoring and psychiatric therapy. The most common psychiatric symptoms are feelings of lack of self-confidence, lack of efficiency in social work, poor self-care, lack of desire to actively participate in pulmonary rehabilitation therapies, decreased physical activity, poor eating habits, continued smoking and poor adherence to treatment.

The multidisciplinary approach of the patient with COPD, with a complex plan of combined therapies can open the horizon of a much better prognosis in patients with COPD.

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