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A review

A REVIEW OF PSYCHIATRIC DISORDERS ASSOCIATED WITH COPD

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ABSTRACT

COPD patients often experience depression and anxiety, which are complex disorders linked to the disease. These conditions, characterized by bronchial blockage, recurrent coughing, and dyspnea, are a significant global contributor to mortality and morbidity. Treatment options include medication, psychotherapy, and exercise, but there is limited evidence that treating psychiatric disorders leads to better COPD outcomes. Depression and anxiety are significant psychological disorders that can significantly impact COPD patients' experience and management. Cognitive behavioral therapy (CBT) is the first line of psychotherapy for elderly COPD patients, while selective serotonin reuptake inhibitors (SSRIs) are recommended for depression or anxiety. Clinicians must be familiar with screening techniques for these diseases to improve healthcare outcomes. It also examines neuropsychiatric disease assessment and therapy, and it offers suggestions for better diagnostic procedures and care. The conclusions imply that medical professionals treating patients with COPD should become proficient in recognizing these co-occurring disorders and prospective future interventions may have an effect on these individuals and so enhance the course of COPD.

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INTRODUCTION

With an increasing incidence, COPD, also known as chronic obstructive pulmonary disease is an important worldwide contributor to mortality as well as morbidity¹. A gradually implemented and essentially permanent obstruction of airflow is a hallmark of COPD. A clinical sign of COPD is dyspnea, or shortness of breath, associated with airflow restriction². A collection of lung disorders known as chronic obstructive pulmonary disease (COPD), which also includes chronic bronchitis and emphysema, is distinguished by bronchial blockage, recurrent productive coughing and dyspnea, reduced ventilator performance, and easy fatigability³. In 2011, the fifth-leading reason for mortality nationwide was chronic obstructive pulmonary disease (COPD), and by 2015, it was anticipated to be the third-leading cause⁴. Individuals with COPD are considerably more inclined to suffer from anxiousness and depressed symptoms⁵. Affective-cognitive disorders like depression are signified by a decline in social interaction, sadness, and a lack of motivation, delight, and productivity⁶. Depression and anxiety symptoms frequently embody those of COPD, which makes it hard to differentiate between the two and treat them⁷. According to forecasts, COPD will over time become the third greatest cause of mortality worldwide as a result of rising population, urbanization, as well as other circumstances. COPD is currently the fourth highest cause of mortality in the United States by 2030 enhanced exposure to hazards⁸. The consequences of COPD on the

physiology, mind, and civilization are linked to the emergence of depression and anxiety⁹. As depression can both cause and result from COPD at the same moment, the two parameters certainly have such a bidirectional relationship. Yet the precise mechanism is still not established whether COPD and anxiety or depression are interconnected¹⁰.

As depressive mood worsens, the concomitant depressive disorder makes life quality exceptionally tough, and the motivation needed for dealing with the chronic illness and its immobilizing consequences may be harder to manage by depression. Misbranding of COPD sideeffects that also include depressive symptoms could lead to a reduction in detection and depression treatment¹¹. Patients with COPD are more likely than individuals with other chronic illnesses such as cancer, hypertension, diabetes, or musculoskeletal conditions to experience anxiety and depression. Which most likely results from diminished physical, respiratory, and functional capacity, substance abuse, and recurrent hospitalizations^{12,13}.

Psychological illnesses are highly prevalent in this demographic, according to a study. For instance, people with COPD have been observed to have higher rates of psychological disorders and depressive symptoms¹⁴. It's also likely that other psychological factors, such as personality traits, might have a psychological effect on how the illness is put together and how well therapy and recovery go. Health professionals appear to have a general perception that working

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with COPD patients is difficult¹⁵. Additionally typically failing to comply with therapeutic regimens¹⁶ as depressive mood worsens, concomitant depressive disorder impacts life quality especially challenging. The desire is necessary for coping with the chronic illness and its immobilizing consequences may be challenged further by depression. Misbranding of COPD side effects that include depressed feelings could result in decreased detection and depression treatment¹⁷. Although some psychological co-morbidities have an incidence on the severity attributed to COPD, these are rarely acknowledged¹⁸. Yet, the numerous interconnections between nutrients or foods render it impractical to establish an association between diet and mental well-being in respiratory disease¹⁹.

In COPD patients, co-occurring psychiatric illnesses such as depression and anxiety exacerbate morbidity and decrease the standard of living. Medication concordance and pulmonary reconstruction²⁰. The World Health Organisation (WHO) estimates that by 2030 COPD could compete with heart disease as the third biggest cause of mortality around the world due to the steadily increasing number of patients with this condition²¹. According to estimates, one in four COPD sufferers also struggle with anxiety and depressive symptoms. It has been demonstrated that the likelihood of depressive symptoms increases with the disease's stage²².

Etiopathogenesis of COPD

The causes and mechanisms of COPD exacerbations have drawn a lot of attention since these exacerbations are a significant contributor to the high morbidity and death rates reported in COPD patients²³. Exacerbations of COPD become more common as the disease becomes more severe, and some patients are more prone to it. These exacerbations are a major reason for hospital admission and readmission, and they can significantly affect daily activities and quality of life²⁴. Additionally, significant physiologic deterioration and a rise in inflammatory alterations in the airways are linked to COPD exacerbations²⁵ that are brought on by a variety of things, including viruses, bacteria, and maybe ordinary contaminants. Wintertime COPD exacerbations are more frequent, and there may be significant interactions between the cold weather and exacerbations brought on by viruses or pollution²⁶.

Viral infection

Upper respiratory tract infections are a common cause of COPD exacerbations, which are commonly brought on by viral infections. Wintertime respiratory virus infections are more prevalent in the population, making these infections more frequent. Additionally, patients may be more susceptible to exacerbations in the winter since COPD patients' lung function has been linked to minor but substantial drops with a decrease in outside temperature throughout the winter²⁷. In many of these exacerbations, viruses, particularly rhinovirus (the source of the common cold), may be identified by polymerase chain reaction, according to studies on childhood asthma. Rhinovirus has not previously been thought to play a significant role in COPD flare-ups. 44 individuals with chronic bronchitis participated in a 2-year trial by Scott and colleagues²⁸. Although coronavirus was only linked to a tiny percentage of asthmatic exacerbations and is unlikely to have a significant impact on COPD, other viruses may cause COPD exacerbations^{29,30}.

Bacterial colonization

About 30% of COPD patients have airway bacterial colonization, which has been that contributed to the severity of obstruction of ventilation and current nicotine consumption status³¹. Although bacteria like *Streptococcus pneumoniae* and *Haemophilus influenzae* have been linked to COPD exacerbations, certain research^{32,33} some studies—but not all—have revealed rising bacterial counts during exacerbations. Soler and associates³⁴ Exacerbations with purulent sputum production had a higher likelihood of yielding positive bacterial cultures than exacerbations with mucoid sputum production³⁵. Sethi and colleagues³⁶ have demonstrated that in comparison to pathogen-negative exacerbations, exacerbations linked to *H influenzae* and *Moraxella catarrhalis* are associated with considerably greater levels of airway inflammatory markers and neutrophil elastase.

Further long-term investigations are necessary to determine if bacterial colonization predisposes individuals to the loss of lung function that is characteristic of COPD. As a result, bacterial colonization in patients with COPD may be a significant predictor of airway inflammation. However, it's also plausible that during COPD exacerbations there might be interactions between viral and bacterial infections. Exacerbation of COPD may also be caused by other organisms, such as *Chlamydia pneumoniae*, which has been linked to asthmatic exacerbation. Additional investigation is necessary.

Pollution

There has been a great deal of interest in how air pollution affects COPD flare-ups, particularly how common contaminants affect hospital admissions. Hospital admissions for COPD patients are on the rise, indicating an increase in worsening symptoms when environmental pollution is on the rise. The COPD death rate increased along with an increase in hospital admissions among older COPD patients during the UK pollution incident in December 1991³⁷. The relative risks for COPD hospital admissions due to increases of 50 g/m³ in the daily mean level of pollutants (with lags from 1 to 3 days) were 1.02 for SO₂, NO₂, and total suspendable particles, and 1.04 for ozone, according to data from a study of air pollution in six European cities (Air Pollution and Health, a European Approach project)³⁸. An examination of data collected from Birmingham, AL³⁹ furthermore demonstrated a relative risk of 1.27 for COPD hospital admissions associated with particle inhalation. The amount of particle pollution has often shown the strongest correlation with hospital admission for COPD. Additionally, research has linked NO₂ exposure to an increase in hospital admissions for COPD of 4.6%, according to an Australian study⁴⁰. The idea that pollutants may make people more susceptible to viral infections has been put out because of the tight relationship between COPD exacerbations and respiratory infections⁴¹.

Occurrence of psychiatric disorders in COPD

Patients with COPD are vulnerable to mental health conditions like depression and anxiety. The prevalence of psychiatric problems in individuals with COPD and the clinical results in those patients who also have psychiatric disorders are both articulated. Patients with COPD have been found to have high rates of both clinical and subclinical depression and anxiety⁴¹. 6%–80% of people have symptoms of both anxiety and depression, and up to 55% have anxiety and mood disorders⁴². Due to a variety of variables, it may be difficult to identify

severe psychological discomfort and diagnose mental illnesses in individuals with COPD. The failure of patients and healthcare professionals to recognize signs of the presence of COPD as psychological anguish rather than signs of worry or sadness, the belief that despair and anxiety are symptoms of inadequate psychosocial adjustment rather than "normal" reactions to having an incurable chronic condition. Due to the increasing avoidance and social isolation that frequently accompany COPD, there are fewer opportunities to identify suffering. The absence of regular care's comprehensive assessment for psychological discomfort^{43,44}. According to reports, primary care doctors misdiagnose depression in more than half of depressed patients, highlighting the urgent need to enhance the identification and management of mental health problems in patients with chronic obstructive pulmonary disease⁴⁵. People with COPD may have varying degrees of impairment and may have much less independence from society, especially as the disease progresses. They therefore depend on caretakers (usually spouses and family members), who may also be afflicted by the COPD disease load. This phenomenon has been examined in most chronic illnesses that considerably reduce the patient's ability to perform everyday duties on their own, therefore it is not unique to COPD. In Greek research of 230 patients hospitalized for a COPD exacerbation and their spouses, a significant correlation between depression measured by the BDI scale in the patients' partners and COPD severity, frequency of exacerbations, and depression in the patients themselves was discovered⁴⁶. An evaluation was conducted a year following the first hospitalization.

Recently, two more cross-sectional investigations on this subject were released. One of these factors was measured using the HADS-A and HADS-D scales and related to mental health difficulties in carers (n = 203)⁴⁷ Older people and caretakers of patients with more activity limits as well as female carers were more likely than male carers to develop mental health concerns. A related study⁴⁸ employing the same rating measures, it was discovered that sadness or anxiety in patients was substantially connected with the same results in carers in 119 patient-carer pairings. Another interesting finding was that although both carers and patients had significant levels of anxiety, those suffering from COPD had a nearly twice as high incidence of depression.

Risk factors

Although the exact causes of anxiety and depression in COPD patients are unknown, they are most likely the result of a complex interplay of physiological, behavioral, and psychological variables^{49,50}. In affluent nations, cigarette smoking has long been acknowledged as the main cause of COPD⁵¹. Those with psychological comorbidities are twice as likely to smoke cigarettes compared to people who do not suffer from psychiatric comorbidities⁵², indicating that the onset of COPD may be preceded by psychological illness. Poor psychosocial adaptation to having COPD is another risk factor for the development of sadness and anxiety. Examples include worry, helplessness, and low mood brought on by the chronic and progressive nature of COPD, which is characterized by recurrent bouts of acute exacerbations that frequently result in hospital hospitalizations. Lu et al. used a population-based sample of individuals with and without COPD (n=476)⁵³. revealed that patients with COPD had worse quality of life and more depressive symptoms than age-matched controls due to

stress related to decreased energy, anxiety, and fear/panic in reaction to breathing difficulties. For certain people, excessive dyspnea that occurs both at rest and/or during physical activity and is not treated by medicine can be traumatic, leading to anxiousness and somatic hypervigilance⁵⁴. Last but not least, the fact that COPD is often discovered later in life when patients are more likely to suffer age-related losses (retirement, loved ones' deaths, diminishing social networks), may heighten feelings of loneliness and perhaps even cause symptoms of anxiety and depression⁵⁵.

MANAGEMENT

Patients with COPD who experience anxiety or depression have a variety of treatment options available to them, including medication, psychotherapy, and exercise as part of an all-encompassing PR program. However, there is little evidence that treating psychiatric disorders in patients with COPD leads to better COPD outcomes, similar to patients with COPD and cognitive disorders, and prospective longitudinal studies evaluating such associations in sizable, diverse populations of COPD patients are lacking. Depending on availability and patient request, cognitive behavioral therapy (CBT) is recognized as the first line of psychotherapy for elderly people with mild to severe depression⁵⁶. It emphasizes recognizing and re-framing harmful, dysfunctional ideas while engaging in enjoyable and social activities. Hynninen and Co⁵⁷. performed a randomized, controlled study in COPD patients with concomitant depression that compared 8 weeks of CBT (n = 25) to improved standard treatment (n = 26). When compared to the enhanced standard care group, CBT led to significant improvements in anxiety and depressive symptomatology that persisted beyond 8 months. Farver-Vestergaard along with others⁵⁸ According to 5 studies, CBT was more effective than conventional therapy in enhancing patients with COPD's psychological health (depression) (P,0.04). Comparable research, however, found a non-significant trend favoring CBT over standard therapy for lowering anxiety and sadness in COPD patients⁵⁹. Due to their superior safety profile compared to tricyclic antidepressants (TCAs), it recommends using selective serotonin reuptake inhibitors (SSRIs) as a first-line therapy for depression or anxiety. However, a recent systematic review that looked at the effectiveness of both SSRIs and TCAs in people with COPD discovered conflicting data in clinical trials⁶⁰. Therefore, to determine if SSRIs are effective in treating depression and anxiety in COPD patients, well-controlled clinical studies are needed.

Finally, when compared to standard care, exercise therapy as a component of an all-encompassing PR program (individual exercise and education) has also shown decreases in levels of depression and anxiety symptoms among COPD patients^{61,62}.

Pharmacological management

Few research has been done on the use of medications to treat COPD patients' anxiety and depression.

Antidepressants

Several studies on depression in COPD patients have examined the tricyclic antidepressants^{63,64}. and the outcomes are inconsistent. There are some theories that amitriptyline and imipramine help this patient population's pulmonary function while also reducing the symptoms of depression.

Due to the limited number of adverse effects, the most recent generations of antidepressants provide an option to benzodiazepines for the treatment of anxiety in COPD patients.

However, there is no scientific support for such a therapy approach. One method that SSRIs can reduce panic symptoms is by having a serotonergic effect, which is thought to happen when clomipramine is used on patients with panic disorder⁶⁵.

Benzodiazepines

In COPD patients, benzodiazepines provide anti-anxiety consequences⁶⁶, but could lead to breathing depression. As a result, the medications should only be used if other calming medicines are ineffective and if the patients are not experiencing clinically substantial respiratory depression as a result of pulmonary illness.

Other drugs

The partial 5HT_{1A}-receptor agonist buspirone has been studied on COPD patients as an alternative to benzodiazepines. One research demonstrated the impact on patients' anxiety and dyspnea⁶⁷, a finding that was inconclusive in the Sing et al. study⁶⁸. In our clinical experience, several centers reported good results in the treatment of anxiety in these patients by using low-potency antipsychotics in very tiny dosages. Antipsychotics, on the other hand, have no known anti-panic effects, and their potential for neurological and cardiovascular adverse effects in people with serious medical ailments makes them generally contraindicated. Beta-blockers are contraindicated in this patient population despite their anxiolytic effects because of the possibility of bronchoconstriction.

Non-pharmacological treatment

Generally, patients with moderate depression are the only ones eligible for non-pharmacological treatment of depression in COPD, where multimodal rehabilitation and cognitive/behavioral therapy (CBT) seem to be helpful⁶⁹. CBT is used with this population of patients to help them become more conscious of their bodies through breathing and relaxation techniques. The treatment's cognitive component aims to detect automatic ideas and encourage a more adaptable cognitive style. Then, to lessen panic reactions and diminish worries of symptoms, graduated exposure and desensitization are tried⁷⁰. Eiser discovered that in individuals with severe COPD and anxiety, six sessions of CBT led to a stable improvement in exercise tolerance. In a recent randomized clinical study⁷¹, a single 2-hour group CBT session and once-a-week phone calls for six weeks improved anxiety and depressive symptoms. In comparison to the control group (2 hours of instruction and weekly contacts), the effect was noticeably better. Physical performance did not increase in either group.

Programs for pulmonary rehabilitation have also been described for COPD patients who also suffer from concomitant anxiety. Patients improved their exercise tolerance, experienced less dyspnea, and had greater quality of life with progressive exercise, respiratory function training, and psycho-education⁷². In conclusion, depression and anxiety are common among COPD patients and are linked to poorer outcomes, such as higher exacerbation rates, more severe functional limits, and higher death. Poorer self-management, cognitive processes, or psychophysiological systems might be to blame for this. Smoking is a frequent symptom of mental problems as well as COPD, and it may also be a frequent risk factor. Exercise in the context of PR, CBT, and antidepressants are a few treatments

that have shown potential in treating depression and anxiety in COPD patients.

CONCLUSION

Some significant COPD exacerbation features have been discussed in this article. Some COPD patients are more likely to experience frequent exacerbations, which play a significant role in determining health status. The findings of this research tend to indicate that psychological traits, such as cognitive deficiencies, anxiety, and depression, frequently even more so than objective measurements of physical issues, have a significant impact on how persons with COPD experience and manage their condition. Therefore, it is strongly advised that psychological factors be considered while treating COPD patients. Patients with COPD experience a variety of comorbidities, which many scientists now consider to be essential components of the illness. The most prevalent of them are cognitive and mental illnesses, both of which have a significant impact on how well these patients get medical treatment. Although conclusive data are not yet available, preliminary research indicates that various pharmacological and nonpharmacological therapies may be able to improve the bad healthcare outcomes linked to cognitive and/or mental illnesses. The techniques used to screen for these related diseases must be familiar to the clinicians who treat these patients. The discovery that particular anxiety disorders, such as phobias, which have received less attention in the literature on COPD, are relatively frequent, maybe even more significant. There are currently no tools available that have been created particularly to test for clinical anxiety in COPD patients.

The inability of current equipment to detect anxiety in persons with somatic sickness may be a limitation. A decrease in COPD exacerbations would significantly affect the high morbidity and death rates connected to the disease. Consequently, psychological traits are significant factors that interact with physical symptoms. To correctly and dependably explain the involvement of psychological factors in COPD, further research with strict methodological methods is required. It is also clear that more thorough future research investigations are still required to examine the distinct and separate effects of anxiety and depression on COPD exacerbations. More research is also needed to determine how cognitive, behavioral, and physiological processes affect the likelihood of COPD exacerbations. To be able to provide patients with the best treatment choices, including pulmonary rehabilitation, treatment with cognitive behavioral therapy, and medications, doctors should frequently assess patients for anxiety and depression. Depression and anxiety can start a vicious cycle that results in decreased physical activity, social isolation, treatment non-adherence, and skipping doctor visits. This cycle can make COPD more severe and progress more quickly, which may then lead to further mental health decline. A first step towards assuring acceptable quality of mental health care in this group would be the establishment of consensus evidence-based recommendations on their detection and treatment, given the high frequency of anxiety and depression comorbidity in COPD.

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