

Systematic Review Manuscript
Sample work

**A systematic review of depression/anxiety
screening and its impact on COPD exacerbations
severity**

Abstract

Background

The effect of screening for depression and anxiety on the prevalence and severity of COPD exacerbations has not been studied. A comprehensive examination of potential relationships will be carried out to inform recommendations and practice.

Purpose and methods

A search of electronic databases was conducted for items published before March 2017. Longitudinal and retrospective studies and [systematic reviews](#) were eligible if they reported a link between depression and anxiety and COPD or their influence on exacerbation severity or prevalence.

Results of Systematic Review

Nine studies demonstrated a link between depression and anxiety and COPD exacerbation and severity. In the 3,426 patients who were followed for 1-3 years, depression or anxiety has consistently increased the risk of COPD exacerbation. Depression and anxiety were also linked to the incidence of exacerbations among depressed COPD patients. When an exacerbation necessitated hospitalization, anxiety was related to a longer stay. COPD also elevates depression.

Conclusions and Implications

Depression and anxiety poorly impact COPD prognosis, increasing the likelihood of exacerbation and frequency.

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is defined by the Global Initiative for Chronic Obstructive Lung Disease (GOLD) as "the persistent airflow limitation that is usually progressive and associated with an enhanced inflammatory response in the airways and the lung to noxious particles and gases" (GOLD, 2017, p. 2). COPD is the third largest cause of mortality in the United States (Kochanek, Xu, & Tejada-Vera, 2017), and the World Health Organization (WHO) predicts that it will be the world's third major cause of death by 2030 (WHO, 2017). COPD frequently causes symptom worsening or exacerbations that necessitate therapy with antibiotics or corticosteroids (Burge & Wedzicha, 2003). Exacerbations of COPD account for high healthcare resource usage, mortality, impaired functional capacity, and poor quality of life (Mittmann).

According to A. M. Yohannes, Willgoss, Baldwin, and Connolly (2010), anxiety and depression might affect up to 40% of COPD patients. Anxiety and depression, both prevalent COPD comorbidities, have been linked to increased frequency and length of COPD hospitalizations (Dahlén & Janson, 2002). Despite growing recognition of the influence of depression and anxiety on COPD, depression and anxiety are frequently untreated and undiagnosed (Maurer et al., 2008). Anxiety and depression have been linked to COPD exacerbations for some time, although evidence to support this claim has been limited (Catherine Laurin, Moullec, Bacon, & Lavoie, 2012). Several promising investigations, including Xu et al. (2008), have shown considerable evidence of a link between anxiety and depression and COPD.

Nursing is a profession that provides comprehensive patient care. What affects the mind, body, or spirit impacts all three; thus, examining all three is critical to giving effective treatment. Chronic progressive diseases, such as COPD, influence the patient's quality of life, restricting their capacity to do everyday tasks and inhibiting contact with others owing to activity constraints, further decreasing social support. Nurses play an important role in analyzing each patient's diverse requirements when caring for patients in both inpatient and outpatient settings. Awareness of the positive relationship between depression and anxiety and COPD exacerbations will raise awareness of the need to use depression and anxiety screening tools with COPD patients. This systematic review's motivating question "What effect do anxiety and depression screening programs have on the frequency and severity of COPD exacerbations in community-dwelling persons with COPD?" This systematic review aimed to examine the effect of depression and anxiety screening on the severity and prevalence of COPD exacerbations.

Methods

Between February 1, 2017, and March 28, 2017, the following databases were used to conduct a [literature search](#): Academic Search Complete, CINAHL with Full Text, Health Source: Nursing/Academic Edition, PsycARTICLES, and PsycINFO are some of the databases available—the original search covered papers published between 1985 and 2017. Boolean operators or symbols were utilized as keywords: depression or anxiety, COPD or Congestive Pulmonary Obstructive Disease, and screening programs. The first search results returned 1317 results. Search parameters included: Outpatient, English language, and [peer-reviewed](#). The remaining 52 abstracts were evaluated using the following inclusion criteria: adult (18 years or older), outpatient, COPD, depression, and anxiety. The following exclusion criteria were also applied to the articles: inpatient, asthma, malignancy, congestive heart failure, or panic. After reviewing all the abstracts and the full text, 48 articles were eliminated based on inclusion and exclusion criteria.

Due to the modest number of papers found on the issue of interest, an additional search was conducted using the keywords: depression and anxiety screening and COPD exacerbations. The first search produced 157 items. The same criteria for inclusion and exclusion were used. A further six articles addressing the issue were found after a study of the abstracts and full texts of these papers. The systematic review also examined the original research referenced in these other papers. This research contributed significantly to the corpus of knowledge on the subject. All articles in this review may be found online at the West Virginia Library.

Results

Nine studies investigate the relationship and prevalence of depression and anxiety with COPD. The research was conducted in China, Canada, England, the United States, and Spain and was geographically separated. The quantitative literature covered ranged in design, with five prospective studies, one retrospective research, and two [meta-analyses](#) included.

Participants were recruited using convenience sampling in various settings, including outpatient clinics, healthcare facilities, a COPD study, an emphysema treatment trial, and a hospital network. The sample sizes for these investigations ranged from 116 to 1134. For any of the trials, no power analysis was undertaken. Some trials required participants to be between 30 and 40, while others had no upper age limit. Most trials needed a previous physician diagnosis of COPD, validated by spirometry upon enrollment. Many studies used FEV/FVC data to give a baseline assessment of lung function and to assess disease severity. Participants in all experiments had to be fever-free. Several investigations demanded that patients be free of exacerbation for a month before beginning the study. One study wanted participants to have a smoking history of 10 pack years (C. Laurin et al., 2009).

The research employed various ways to operationalize sadness, anxiety, and COPD exacerbation. In the remaining investigations, depression and anxiety indicators were identified using psychiatric interviews (C. Laurin et al. 2009) or psychometric tools such as the HADS, BDI, or other comparable instruments. COPD was diagnosed using a variety of approaches, including one that involved a pulmonologist (Jennings, DiGiovine, Obeid, & Frank, 2009). Three investigations (Montserrat-Capdevila et al., 2017; Quint, Baghai-Ravary, Donaldson, & Wedzicha, 2008; Xu et al., 2008) used spirometry testing with FEV/FVC ratios less than 0.7. Another research employed spirometry to create a baseline value for FEV and FVC (C. Laurin et al., 2009). One research used the GOLD categories to assess the degree of COPD development (Montserrat-Capdevila et al., 2017). Five studies followed patients for up to two years, using monthly phone calls and diary cards to aid in memory of exacerbation symptoms and drugs used during the exacerbation (C. Laurin et al., 2009; Quint et al., 2008; Xu et al., 2008). Some studies classified the severity of the exacerbations depending on whether the episode necessitated hospitalization.

Exacerbation length was defined as the time from when exacerbation medicine was started and when it was stopped. Each study's results were statistically analyzed to establish the relevance of the findings and the impact of probable comorbidities and other variables.

Depression and anxiety were observed to be related to an increased risk of exacerbation in six of the investigations (Atlantis, Fahey, Cochrane, & Smith, 2013; Jennings et al., 2009; C. Laurin et al., 2009; Montserrat-Capdevila et al., 2017; Quint et al., 2008; Xu et al., 2008). C. Laurin et al. (2009) discovered that anxiety/depression patients had a higher yearly risk of exacerbation (3.81 vs. 2.73; $p=0.009$). Montserrat-Capdevila et al. (2017), Xu et al. (2008), and C. Laurin et al. (2009) discovered a link between depression and anxiety and higher exacerbation frequency. Montserrat-Capdevila et al. (2017) discovered that patients with anxiety/depression (HAD) had a greater frequency of exacerbation (73.5%) than patients without depression/anxiety (50.9%) ($p<0.001$). Xu et al. (2008) discovered that COPD patients with depression had a higher incidence of frequent exacerbations than those without depression (25 vs. 20%; $p=0.003$); evidence also showed that COPD patients with anxiety had a higher frequency of exacerbations than those without anxiety (27.2% vs. 20.2%; $p=0.35$). Anxiety/depression, according to Montserrat-Capdevila et al. (2017), increased the likelihood of exacerbation frequency (OR 2.28; CI 1.17-4.42). Using the CES-D instrument, Quint et al. (2008) discovered that greater depressed symptoms were related to frequent exacerbations, with baseline depression 12.5 (5.0-19.0) and exacerbation depression 19.5 (12.0-28.0). Female COPD patients showed greater sadness and anxiety, according to Jennings et al. (2009), Catherine Laurin et al. (2007), and Fan, Ramsey, Giardino, et al. (2007).

Depressed individuals had a higher death rate, according to Xu et al. (2008), Atlantis et al. (2013), Jennings et al. (2009), Fan, Ramsey, Giardino, and et al. (2007). According to Xu et al. (2008), anxiety is related to greater event-based exacerbations and longer hospital admissions. Furthermore, patients with likely anxiety stayed in the hospital 1.92 times longer than patients who did not have anxiety (Xu et al., 2008).

The studies conducted thorough background information on participants' health history to reduce confounders and minimize bias. Xu et al. (2008) collected socioeconomic data, evaluated exercise capacity and self-efficacy, and assessed comorbidities associated with COPD exacerbations. However, these studies were mostly convenience samples, making random sampling impossible. Some participants died during the study due to COPD-related complications, affecting the results. Loss of follow-up with 40 severe COPD participants and significant depression also affected the study's results.

Additionally, some studies used monthly phone calls to discuss exacerbations, posing recall bias. The generalizability of the study results was affected by the presence of 69% and 75% male participants in the studies.

Discussion

Anxiety and depression have a bidirectional link with COPD, with COPD patients being more likely to develop depression. Those with COPD who also have depression are at a higher risk of exacerbation, and those with COPD who also have depression and anxiety are at a higher risk of exacerbation. Anxiety and depression screening should be a regular part of the continuous evaluation of COPD patients, commencing when depression is identified, when antidepressant medication is started, and when the dose or type of antidepressant is changed.

The nursing profession strives to offer holistic care for the full patient's health, including mind, body, and soul. Nurses utilize assessment instruments such as the PHQ-9 to treat undetected depression in patients admitted to acute care hospitals. Bedside nurses can also use this evaluation tool to alert primary care physicians about patient state changes to amend prescription regimens. Nurses often give continuous education regarding their patients' illnesses, such as warning them about the possibility of developing depression. They can educate patients on managing their respiratory health at home, recognize indicators of worsening respiratory status, and call their doctor as soon as possible to avoid further issues. They can also teach patients about depression symptoms, psychological wellness, and warning signals for increasing depression.

The present literature on [COPD](#) and depression and anxiety contains drawbacks, such as largely male participant groups, incomplete power analyses, and a convenience sampling strategy. Qualities or other elements prevalent in the given population may restrict the results' generalizability. Further research should focus on the effect of the physical home environment on participants since it is critical to understand the influence of the environment on respiratory disease.

Conclusions and Implications

According to studies, depression and anxiety substantially influence COPD exacerbations, with fewer than half of patients being identified due to a lack of screening. This lack of study might be attributed to logistical issues, staffing requirements, financial constraints, and insufficient technology. This information, however, is critical for understanding the link between increasing depressive symptoms and COPD exacerbation.

Future studies on this topic will very certainly include nursing and technology. Patients might use health apps to participate in at-home research, such as filling out daily or weekly questions about their COPD and depression. This information might be used to detect changes in depression and COPD symptoms. Nurse [researchers](#) and home health organizations might undertake monthly in-home assessments of individuals suffering from depression and COPD to follow the progression of depression symptoms. Health app research might be undertaken in rural and urban areas, with the latter being less expensive.

Advanced practice nurses (APRNs) should develop procedures and order sets for screening patients for depression and referring patients to psychiatry for treatment of newly diagnosed or untreated depression and anxiety.

For further details, please see our website blog and Systematic review manuscript services.

[How to conduct a systematic review for prospective studies?](#)

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