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Impact of Fatigue and Mental Health on Quality of Life in Patients with Chronic Obstructive Pulmonary Disease - A Brief Review

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ABSTRACT

Background: COPD, or chronic obstructive pulmonary disease, is a major cause of morbidity and death worldwide. Although the main symptom of COPD is airflow restriction, extrapulmonary symptoms like depression, anxiety, and exhaustion are frequently present as well. These under-recognized comorbidities significantly impair health-related quality of life and can lead to a rise in hospitalizations, death, and exacerbations.

Objectives: This review consolidates evidence on the impact of fatigue, mental health, and HRQoL in COPD patients.

Study Selection: The brief review is conducted on databases such as PubMed, Google Scholar, and ResearchGate. Included research comprised observational, cross-sectional, and population-based studies that evaluated fatigue, mental health, and HRQoL using validated assessment tools.

Conclusion: Fatigue and mental health are highly prevalent among COPD patients and contribute independently to a decline in HRQoL. These symptoms often occur irrespective of pulmonary function severity and are particularly common in early-onset and severe cases. Acceptance of illness is positively associated with better quality of life.

Keywords: COPD, fatigue, mental health, HRQoL

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a globally widespread respiratory disorder that imposes a substantial health burden on affected individuals[1]. It is defined by sustained airflow limitation and associated respiratory symptoms, primarily due to the destruction of pulmonary parenchyma and structural remodeling of the small airways[2]

Lung structural changes are associated with chronic inflammation caused by prolonged exposure to toxic particles or gases, most commonly cigarette smoke. Chronic inflammation causes airways to constrict and lung recoil to decrease. Sputum output, coughing, and dyspnea are common symptoms of the condition. Symptoms might vary greatly, ranging from respiratory failure to no symptoms at all. With 3.5 million fatalities from chronic obstructive pulmonary disease (COPD) in 2021—roughly 5% of all deaths globally—COPD

is the fourth most common cause of mortality worldwide. Almost 90% of deaths from COPD in those under 70 years old happen in low- and middle-income (LMIC) nations[1].

Comorbidities like depression, anxiety, and fatigue are frequently present and can further lower a patient's quality of life. Research indicates that a significant proportion of people with COPD suffer from these mental health issues. Specifically, 10.79% of COPD patients have anxiety, 13.65% have depression, and 7.08% have both at the same time. Improving patient care and treatment results requires an understanding of the connection between COPD and various comorbidities[3].

There is a correlation between quality of life and the intensity of a COPD exacerbation.

Patients who had a recent severe exacerbation of their COPD reported worse health-related quality of life and increased activity impairment in comparison to those who had a recent mild exacerbation[4].

On the other hand, a lower likelihood of exacerbations of COPD has been linked to a higher health-related quality of life. When patients experienced even a minor exacerbation of their COPD, their exercise capacity and muscle strength decreased, and lower levels of physical activity were linked to a higher risk of subsequent exacerbations and death. The high prevalence of falls that patient with COPD exacerbations experience after being admitted to the hospital may also be related to balance problems caused by diminished muscle strength and increased dyspnea[4].

The relationship between COPD and mental health has recently attracted a lot of scientific attention due to its impact on quality of life. There are major negative effects on mental health for those with COPD. Compared to the general population, COPD patients experience anxiety and depression more frequently. According to Atlantis et al., persons with COPD have a 1.69 relative chance of developing depression compared to those without the condition. Compared to patients with other chronic concurrent illnesses, patients with COPD may even experience higher rates of anxiety and sadness. Furthermore, there is a direct connection between anxiety disorders and dyspnea. Unknown causes of dyspnea and exacerbation of underlying COPD symptoms are common in anxious patients with panic disorder and agoraphobia[5].

Fatigue is an important yet sometimes ignored symptom of chronic obstructive pulmonary disease (COPD). Fatigue is often misdiagnosed and neglected, despite its great incidence and detrimental effects on day-to-day functioning. If fatigue is not treated, it may worsen over time, regardless of how much airflow is restricted. In order to develop efficient interventions aimed at stabilizing or reducing fatigue, it is essential to comprehend the mechanisms that contribute to reduce prolong fatigue in individuals with COPD. According to a recent qualitative study, patients believed that one of the main reasons their quality of life was declining was the effect that exhaustion had on their day-to-day activities[6].

This review aims to synthesize current evidence on the prevalence, mechanisms, and consequences of fatigue, anxiety, depression, and health-related quality of life in COPD. By highlighting current research and identifying gaps in assessment and intervention, this review seeks to inform more effective and holistic strategies for managing COPD.

MATERIALS & METHODS

Studies were searched from the following engine PubMed, Google Scholar, ResearchGate to review the literature. Studies include COPD, Fatigue, mental health, health-related quality of life.

SN	AUTHORS, JOURNAL, YEAR	OBJECTIVE	STUDY DESIGN	SAMPLE SIZE	MATERIALS & METHODS	OUTCOME MEASURES	RESULTS	LIMITATION
1	Gestoso S M et al, BMC Pulmonary Medicine (2022)[7]	To assess the prevalence of depression and anxiety in AECOPD patients and their impact on COPD prognosis.	Prospective observational study	288 patients (mean age 73.7 years, 84.7% male)	Anxiety and depression assessed using the HADS scale, conducted in three hospitals in Galicia, Spain (Oct 2016 - Oct 2018).	Depression and anxiety prevalence; effects on 18-month mortality and readmission risk.	67.7% with probable depression, 41.7% with established depression. - 68.2% probable anxiety, 35.4% established anxiety. - Depression linked to higher readmission risk (OR 2.06) and lower mortality risk (OR 0.57)	High prevalence but potential underdiagnosis. - Observational design limits causality conclusions.
2	Hometowska H et al Journal of Clinical Medicine. (2022)[3]	Assess fatigue, anxiety, and depression in asthma, COPD, and ACO patients, and their correlations.	Cross-sectional study	325 patients (159 women, 166 men, mean age 63)	MFIS for fatigue, HADS for anxiety and depression	Fatigue (MFIS) - Anxiety and depression (HADS) - Correlations between MFIS and HADS scores	MFIS mean score: 33.03 - Higher depression in COPD/ACO vs asthma - No significant anxiety differences across groups	Cross-sectional design, no detailed comorbidity impact analysis
3	Beijers R J H C G et al Clinical Nutrition (2022)[2]	Assess physical and mental health in early-onset severe COPD patients	Cross-sectional study	78 early-onset severe COPD (FEV1 <50%, age <55), matched 54 early-onset mild-to-moderate, 158 older severe, 103 older mild-to-moderate COPD patients.	Propensity score matching for age, FEV1%, gender. Evaluated pulmonary, physical performance, and mental health.	FEV1, 6-minute walking test, peak work rate, body composition, muscle strength, depression prevalence.	In severe COPD with early onset, depression was higher (51.9% vs. 32.7%, $p = 0.029$). - Reduced exercise performance in early-onset severe COPD (71.1 m 6-min walk, 25.9% peak work rate, $p < 0.001$). -	Cross-sectional; limited to rehabilitation referrals, no causal conclusions.
4	Chabowska A S et al Science Progress (2022)[8]	To assess the relationship between fatigue and quality of life in patients with nonmalignant pulmonary diseases.	Cross-sectional observational study	200 patients (mean age: 57.7 years) with diagnoses including COPD (26%), asthma (36%), OSA (19%), pneumonia/bronchitis (8.5%), others (10.5%)	Fatigue measured using the Modified Fatigue Impact Scale (MFIS) - Quality of life assessed via St. George's Respiratory	MFIS total score - SGRQ subscale scores (Symptoms, Activity, Impact) - Correlation coefficients	Mean MFIS score: 28.64 ± 15.8 - Mean SGRQ score: 44.62 ± 24.94 - Strong positive correlations: Symptoms ($r = 0.622$), Activity ($r = 0.632$), Impact ($r = 0.692$), *all* $p < 0.001$	Cross-sectional design limits causal inference - Self-reporting may introduce bias -Heterogeneous patient diagnosis

					Questionnaire (SGRQ) - Spearman's correlation used for analysis	between fatigue and QoL subscales		
5	Yang Y et al The Clinical Respiratory Journal (2021)[6]	(a) Evaluate fatigue in COPD inpatients in China. (b) Assess the relationship between fatigue and HRQoL	Cross-sectional study	210 COPD inpatients	COPD Assessment Test (CAT) for disease severity. - FACIT-F for fatigue. - SF-12v2 for HRQoL.	CAT score for disease severity. - FACIT-F score for fatigue. - SF-12v2 score for HRQoL.	48.5% had moderate to severe fatigue. - FACIT-F correlated with CAT (r = −0.74) and SF-12v2 (r = −0.77). - Worse fatigue linked to poorer HRQoL.	Cross-sectional design limits causal inference.
6	Szymańska-Chabowska A et al, Sci prog. (2021)[8]	To assess the relationship between fatigue and quality of life in patients with nonmalignant pulmonary diseases	Cross-sectional	200 patients	MFIS for fatigue; SGRQ for quality of life; Shapiro-Wilk for normality; Spearman's correlation for associations	MFIS score, SGRQ score, correlation values	Significant correlations between fatigue and lower QoL (SGRQ symptoms r=0.622, activity r=0.632, impact r=0.692; p<0.001); mean MFIS: 28.64; mean SGRQ: 44.62	No control group
7	Gertz Y M J et al Therapeutic Advances in Respiratory Disease (2019)[9]	Compare fatigue levels in COPD and non-COPD patients and explore related factors.	Cross-sectional study	1290 COPD patients (mean age 65 ± 9, 61% male) and 199 non-COPD (mean age 63 ± 9, 51% male)	Fatigue assessed via CIS-Fatigue; clinical features and disease severity (FEV1 %) recorded.	Fatigue score (CIS-Fatigue), airflow limitation (FEV1 % predicted).	COPD patients are more tired (35 ± 12 vs. 21 ± 11and p < 0.001) - 49% of COPD patients had severe fatigue vs. 10% in non-COPD. - Fatigue weakly correlated with FEV1 (r = -0.08, p = 0.006). - 30% of fatigue variance explained by predictors.	Fatigue poorly correlated with airflow limitation; further research needed on contributing factors.
8	Mi E et al International Journal of Chronic Obstructive	1. Assess prevalence of anxiety and depression in advanced COPD	Prospective cross-sectional study.	119 COPD patients and 119 informal carers.	HADS (cutoff ≥8) used to assess symptoms	Prevalence of anxiety/depression (per HADS). - Patient–carer	Anxiety: 46.4% patients, 46% carers - Depression: 42.9% patients, 23% carers - Significant symptom	Cross-sectional; no causality. - Self-reported symptoms; not clinical

	Pulmonary Disease (2017)[10]	patients and carers. 2. Examine patient–carer symptom associations. 3. Identify correlates of anxiety/depression in individuals and dyads				symptom concordance. - Risk factors linked to symptoms.	concordance ($p < 0.05$). - Patient symptoms linked to: ≥comorbidities, ≥exacerbations, dyspnea, fatigue, poor mastery, younger age (depression). - Carer symptoms linked to: female gender, separation/divorce/widowhood, younger age, higher education, ≥comorbidities, unmet needs, high burden, poor patient mastery. - Dyad symptoms associated with greater patient fatigue ($p < 0.05$).	diagnoses. - Limited generalizability (advanced COPD only). - Potential participation bias.
9	Polańska B J et al International Journal of Chronic Obstructive Pulmonary Disease (2016)[11]	To determine the correlation between the acceptance of disease and quality of life in patients with chronic obstructive pulmonary disease (COPD)	Cross-sectional study	105 patients (29 women)	Acceptance of Illness Scale (AIS) - World Health Organization Quality of Life-BREF (WHOQOL-Bref) - Analysis of medical records	Quality of life assessed in 4 domains: physical health, psychological, social relationships, and environment. - AIS score to measure acceptance of the disease.	- Higher acceptance of illness (AIS > 29) correlated with better quality of life in all domains ($p < 0.001$). - Highest quality of life in social relationships domain (46.7 ± 19.6) and lowest in physical health domain (68.8 ± 18.4).	Limited sample size (105 patients), potentially not representative of the broader COPD patient population. - Cross-sectional design does not allow for causal inference.
10	Stridsman C et al Journal of Chronic Obstructive Pulmonary Disease (2014)[12]	Evaluate the relationship between health status, fatigue, and mortality in COPD patients.	Population-based study (OLIN COPD study, 2007)	434 COPD patients, 655 non-COPD subjects	Lung function tests, structured interviews - Fatigue (FACIT-F) - Health status (SF-36 PCS, MCS)	Fatigue (FACIT-F), Health status (SF-36: PCS, MCS), Mortality (until February 2012)	COPD with fatigue had lower PCS scores than non-COPD - Fatigue and health status predicted mortality in COPD (OR 1.06 for fatigue, 1.04 for PCS, 1.06 for MCS)	Correlation does not imply causation - Population-based data without intervention testing

RESULT

FATIGUE AND MENTAL HEALTH IN COPD PATIENTS

Fatigue is the primary extrapulmonary symptom of chronic obstructive pulmonary disease (COPD), an inflammatory lung condition primarily associated with smoking. This condition may also be partly caused by the fact that respiratory symptoms are currently the main focus of this disease's treatment, with less attention paid to "general" symptoms like weariness[13].

It has also been demonstrated that a worse health status and more fatigue are linked to concurrent cardiac disease in COPD. In research involving outpatients, primarily males with COPD, mortality was predicted by dyspnea and a decline in health status[12].

Nearly half of patients who had undergone exacerbation episodes in the past year had moderate-to-severe depression, over two-thirds had moderate-to-severe anxiety, and one-third exhibited signs of post-traumatic stress disorder. Compared to patients who experienced ≤1 COPD exacerbation in the previous year, those who experienced frequent exacerbations (≥2) were more likely to express symptoms of anxiety, depression, and post-traumatic stress disorder. Physicians may underestimate the psychological impact of exacerbations on patients, according to a study that compared the findings of patient interviews with physician assessments. This underscores the significance of increasing physician knowledge of these concomitant mental health conditions. Depression and anxiety are also associated with increased respiratory symptoms, the risk of hospitalization, death, and further exacerbations, as well as a decrease in physical activity and a decline in health-related quality of life. Patients' mental health is also affected by COPD; around one-third of caregivers for COPD patients reported having depressive symptoms, and approximately two-thirds reported having anxiety symptoms. Anxiety and sadness feelings in caregivers were found to be predicted with perceived caregiver burden and patient activity limits[4].

DISCUSSION

To the best of our knowledge studies concluded till date conclude the significant impact of fatigue, depression, and anxiety on health-related quality of life (HRQoL) in COPD patients. Chronic Obstructive Pulmonary Disease (COPD) significantly reduces health-related quality of life (HRQOL) through a combination of physical symptoms, fatigue, and psychological comorbidities like anxiety and depression[14]. Nearly half of COPD patients experience moderate to severe fatigue, which correlates poorly with lung function but strongly with reduced physical and mental health. Depression and anxiety are prevalent and often underdiagnosed, contributing to worse outcomes, including higher hospital readmission rates and increased mortality[13]. Factors such as disease severity, smoking, older age, and lower socioeconomic status further worsen HRQOL. Early-onset severe COPD patients, though younger, experience similar physical impairments as older patients but have higher depression rates. Additionally, higher illness acceptance is associated with improved HRQOL[15]. Despite these insights, no study has comprehensively evaluated the combined impact of fatigue, mental health, and HRQOL in COPD patients in India. Thus, further research is needed to examine these associations and inform a multidisciplinary approach to COPD care, emphasizing the management of fatigue and psychological symptoms to improve both clinical outcomes and patient well-being.

CONCLUSION

Fatigue is prevalent and poorly correlated with pulmonary function, contributing to worse physical health and higher mortality. Psychological distress worsens COPD symptoms, increasing exacerbations, readmissions, and mortality risk. Higher disease acceptance is linked to better QoL, suggesting potential benefits of

psychological interventions. Most studies used cross-sectional designs, limiting causal conclusions. Future research should focus on longitudinal studies, objective fatigue measures, and interventions targeting both physical and psychological aspects of COPD to improve patient outcomes and management.

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