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Review Article

Correlation between disease knowledge and health related quality of life in patients with chronic obstructive pulmonary disease

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ABSTRACT

Chronic obstructive pulmonary disease (COPD) is a growing global health concern, with approximately 10% of individuals over 40 affected by this debilitating condition. In India alone, an estimated 30 million people live with COPD. The disease significantly impairs health-related quality of life (HRQoL), with acute exacerbations leading to physical disability that limits daily activities and further deteriorates HRQoL. This study aims to assess the correlation between COPD knowledge and HRQoL among COPD patients, with specific objectives to evaluate the level of disease knowledge and HRQoL in this population. Patients' awareness and understanding of COPD are critical for managing the disease effectively and maintaining a better quality of life. Treatment strategies must prioritize enhancing HRQoL by reducing exacerbations, improving lung function, and promoting smoking cessation. However, lower health literacy and insufficient knowledge about COPD are strongly associated with poorer HRQoL, increased disease severity, and a higher risk of hospitalizations and emergency department visits. Educational interventions focused on improving health literacy, particularly within COPD self-management programs, have the potential to significantly enhance HRQoL, decrease healthcare utilization, and improve medication adherence. This study underscores the importance of targeted education and self-management support in improving outcomes for COPD patients.

Keywords: Health related quality of life, Knowledge, COPD

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a slowly developing illness that obstructs airflow by affecting the pulmonary parenchyma or airways, or both. According to Thakar et al, COPD is characterized as a disease that may be prevented and treated, with certain notable extra pulmonary consequences that may increase the severity in specific people.[1] According to World Health Organization (WHO), COPD is the third most common cause of death globally and one of the major causes of morbidity and mortality. According to Buist et al, the global incidence of COPD indicates that around 10% of persons over 40 have this increasingly devastating illness.[2] According to rough estimates, there are 30 million COPD patients in India. With such a large number of cases, health institutions and state economies might be overwhelmed.[3]

In COPD patients, the prevalence of concomitant conditions such as diabetes mellitus, hypertension, gastrointestinal disorders, and ischemic heart disease was found to be 12.9%, 13.7%, 5.6%, and 3%, respectively.[4] COPD is caused by persistent airway inflammation, leading to airway wall thickening, mucus production, and irreversible lung alterations. Patients often exhibit dyspnea, cough, sputum production, and wheezing. COPD also affects systems and organs outside the lungs, such as weight loss, muscle dysfunction, and cardiovascular disease. Subjects with COPD have lower physical activity, impaired lower limb muscle and handgrip strength, and lower exercise capacity. They also have worse mental status, lower quality of life, and more fatigue symptoms.[8]

The level of highly sensitive C-reactive protein (hsCRP) may be a marker for systemic inflammation. Higher value of hsCRP has been identified in chronic heart failure and

cardiovascular disease. Pulmonary hypertension (PH), a common finding in COPD, has a major impact on the quality of life and survival. Arterial PH was associated with elevated serum level of CRP, IL-6, TNF and correlation was observed between C-reactive protein and endothelin-1 levels, showing the potential role of systemic inflammation in the pathogenesis of pulmonary hypertension in COPD.[10]

The two main non-tobacco causes linked to an increased risk of COPD are genetic and environmental factors. Environmental pollution, exposure to passive smoking, chronic asthma, tuberculosis, and occupational exposure to dust and fumes (in agriculture, animal husbandry, mining, construction, and exposure to chemical products in industry) have all been mentioned as environmental risk factors linked to the development of COPD.[5]

Bronchodilators are primary COPD medication, improving airflow and reducing dyspnea. Combining LAMA and LABA can reduce exacerbation risk. Triple treatment is recommended for persistent exacerbations. Short-acting bronchodilators for acute exacerbations, systemic corticosteroids for moderate-severe COPD, and antibiotics for increased purulence.[6] The severity of COPD was assessed according to GOLD classifications as follows: stage 0 (at risk), stage 1 (mild), stage 2 (moderate), stage 3 (severe) and stage 4 (very severe).[7] COPD shows marked impairment in health-related quality of life (HRQOL). Acute exacerbation COPD (AECOPD) associated with physical disability limits daily activities thereby, negatively affecting HRQOL. Patient's awareness and knowledge about the disease are important in leading a normal life.[9] COPD patients' HRQOL is influenced by multiple factors, including comorbidities like cardiovascular diseases, diabetes, and osteoporosis, as well as risk factors like tobacco smoking, body weight, and lack of physical activity. Treatment should focus on improving HRQOL by reducing exacerbations, improving lung functions, and encouraging smoking cessation.[10]

METHODS

PubMed and Google Scholar were the major databases used for the search to provide a comprehensive coverage of relevant studies. Numerous studies regarding the relationship between knowledge and HRQoL in patients with COPD were retrieved with the help of this method. COPD, disease knowledge, and HRQoL are the keywords used for research.

To the best of our knowledge, this review is possibly the earliest to examine the correlation between disease knowledge and health related quality of life in patients with COPD. Each of the included studies assessed the relationship between a lower health-related quality of life (HRQoL) and inadequate knowledge about COPD and reduced health literacy. As a result, the studies examined disease knowledge using several questionnaires that were particular to the disease.[9,12,13,15] A few of the studies have observed the impact and correlation of disease- specific knowledge on HRQoL directly in a single research, while other studies have examined disease-specific knowledge and HRQoL as a separate entity.

Table 1: Summary of studies showing HRQOL and disease knowledge, their correlation.

S. no.	Authors	Objectives	Design	Characteristics of participants sample size	Methods	Conclusion
1	Padmak-ar et al, 20219	To assess the level of disease knowledge, medication adherence, and HRQoL among patients diagnosed with COPD	Hospital- based, single- centred, prospective observation al design. The research was conducted over six months in a government general hospital located in Andhra Pradesh, India.	80 patients diagnosed with COPD were recruited for the study. Patients were selected based on specific inclusion criteria, including a confirmed diagnosis of COPD, willingness to participate, and the ability to provide informed consent.	Disease knowledge assessed using (BCKQ), medication adherence evaluated with (MMAS), HRQoL measured using the (CAT) scores.	The study concludes that a majority of the COPD patients in this cohort lack sufficient knowledge about their condition, which is associated with poor medication adherence and a suboptimal HRQoL.

Continued.

S. no.	Authors	Objectives	Design	Characteristics of participants sample size	Methods	Conclusion
2	Labrecque et al, 2011	To evaluate the impact of a self-management program on HRQoL and morbidity in patients with stable COPD.	A randomized controlled trial comparing the effects of a four-week self-management education program against usual care in COPD outpatients.	Intervention group: 57 patients control group: 45 patients	Patients were assessed at baseline, three months, and 12 months following the educational intervention. The primary outcome was HRQoL, measured using the St George's respiratory questionnaire (SGRQ). Secondary outcome variables included the patient's knowledge of COPD measured using COPD knowledge questionnaire.	A planned education program is effective at improving the HRQoL, and in decreasing the number of ED visits and hospitalizations in COPD patients.
3	Bischof et al, 2023	To increase the self-management capabilities of patients suffering from COPD.	A cross-sectional, web-based survey to investigate the factors associated with health literacy (HL) in patients with COPD.	The study included a sample size of 203 participants	The survey was structured into five sections: general information, disease-specific questions, need for support, HRQoL, and coping with COPD. Instruments, including the EQ-5D- 5L and EQ-VAS for HRQoL, the COPD assessment test, and the HLS-EU-Q16 for health literacy (HL).	The study reveals that age and HRQoL, represented by the EQ-5D-5L, are significantly associated with HL. Approaches to improving HRQoL might be considered to strengthen HL.
4	Choi et al, 2014	To identify the level of pulmonary function, number of unplanned hospital visits, knowledge level of COPD, level of anxiety and depression, and HRQoL according to COPD action plan (AP) adherence	A cross-sectional descriptive study design was used to investigate the relationships between COPD action plan adherence and various health outcomes	126 patients with COPD, recruited from Chonnam National University Hospital in Gwangju city	COPD action plan adherence and the levels of knowledge of COPD, anxiety and depression, and HRQoL were measured using a short COPD AP developed by the Family Physician Airway Group of Canada executive members, Bristol COPD knowledge questionnaire (BCKQ), the hospital anxiety and depression scale (HADS) and the St George's respiratory questionnaire (SGRQ), respectively.	Better COPD health outcomes are probably associated with good adherence to COPD AP. To improve the health status of COPD patients, healthcare providers may need to improve the COPD AP element in various COPD self-management programs.
5.	Omachi et al, 2013	To investigate the associations between health literacy and both health outcomes and health status in patients with COPD.	A cross-sectional study utilizing structured interviews.	277 subjects with self-reported, physician-diagnosed COPD were recruited through random-digit telephone	Health literacy measured by a validated three-item battery. Multivariable linear regression, controlling for sociodemographic including income and education, determined the cross-sectional associations between	Independent of socioeconomic status, lower health literacy is associated with more severe COPD, increased feelings of helplessness, poorer respiratory- specific HRQoL, and a higher likelihood of COPD-

Continued.

S. no.	Authors	Objectives	Design	Characteristics of participants sample size	Methods	Conclusion
				dialling across the United States.	health literacy and COPD-related health status. The study evaluated COPD- related health status using the COPD severity score, COPD helplessness index, and Airways questionnaire-20R, which measures respiratory-specific HRQoL.	related hospitaliza-tions and ED visits.
6	Stellef-son et al 2019	To investigate the associations between health literacy, eHealth literacy, and COPD. Knowledge with both generic and lung- specific HRQoL in individuals with COPD.	A cross-sectional study using a web-based survey.	174 adults from the COPD foundation' s national research registry.	COPD knowledge measured by the COPD knowledge questionnaire (COPD-Q). The 3-item health literacy screening questionnaire (HLSQ) was used to measure general health literacy. eHealth literacy was assessed using an 8- item rating scale called the eHealth literacy scale (eHEALS). Generic HRQoL was measured using the EuroQol (EQ)-5D, an instrument that assesses the following 5 relevant domains of HRQoL: mobility, self-care, usual activity, pain, and anxiety/depression. Lung-specific HRQoL assessed using the COPD assessment test (CAT).	The study found that health literacy positively impacts generic HRQoL, while eHealth literacy is not. Health literacy and eHealth literacy positively affect lung-specific HRQoL, with higher COPD knowledge correlated with lower lung-specific HRQoL.

CONCLUSION

The studies collectively conclude that lower health literacy and insufficient knowledge about COPD are associated with poorer HRQoL, increased severity of COPD, and a higher likelihood of hospitalizations and emergency department visits. Educational interventions aimed at improving health literacy, particularly in the context of COPD self-management, can enhance HRQoL, reduce healthcare utilization, and improve medication adherence.

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