Original Article

Differences in Symptom Burden Among Patients With Moderate, Severe, or Very Severe Chronic Obstructive Pulmonary Disease

Vivi Lycke Christensen, RN, MS, Are Martin Holm, MD, PhD, Bruce Cooper, PhD, Steven M. Paul, PhD, Christine Miaskowski, RN, PhD, and Tone Rustøen, RN, PhD

Division of Emergencies and Critical Care, Department of Research and Development (V.L.C., T.R.) and Department of Respiratory Medicine (A.M.H.), Oslo University Hospital and Institute of Clinical Medicine, Faculty of Medicine (A.M.H.,V.L.C) and Institute of Health and Society Department of Nursing Science (T.R.), University of Oslo, Oslo, Norway and Department of Community Health Systems (B.C.) and Department of Physiological Nursing (S.M.P., C.M.), University of California, San Francisco, California, USA

Abstract

Context. The symptom experience of patients with chronic obstructive pulmonary disease (COPD) is extremely complex. It is characterized by multiple co-occurring symptoms. However, very few studies have described this experience in COPD patients.

Objectives. The aims of this study were to evaluate for differences in symptom occurrence rates, as well as ratings of symptom severity, frequency, and distress among patients ($n = 267$) with moderate, severe, and very severe COPD.

Methods. The Memorial Symptom Assessment Scale was used to evaluate the multiple dimensions of the patient's symptom experience. Binary and ordinal logistic regression analyses with stage of disease as an ordinal predictor variable were used to evaluate for differences in symptom occurrence rates and ratings of symptom severity, frequency, and distress.

Results. Regardless of the severity of their disease, patients reported an average of 12 co-occurring symptoms. Shortness of breath and lack of energy were the only two symptoms that differed significantly among the three disease severity groups in terms of occurrence, severity, frequency, and distress. Patients with very severe COPD reported the highest ratings for shortness of breath and lack of energy across all four symptom dimensions.

Conclusion. Regardless of stage of disease, the high symptom burden identified in this study underscores the need for COPD patients to be screened for multiple co-occurring symptoms. J Pain Symptom Manage 2016;51:849–859.

Key Words

Symptom occurrence, symptom severity, symptom distress, chronic obstructive pulmonary disease, symptom burden, shortness of breath

Introduction

Because of its high prevalence and associated morbidity and mortality, chronic obstructive pulmonary disease (COPD) is a major public health problem.[1] Today, the recommended strategy for the assessment of patients with COPD is to obtain information on symptoms, degree of airflow limitation (by spirometry), risk for exacerbations, and comorbidities.[2] The inclusion of symptoms as part of this assessment is to determine how symptoms limit patients' activities at different stages of disease severity.[3] Although the symptom experience of COPD patients appears to be extremely complex, only eight studies[4–11] have described multiple co-occurring symptoms in these patients. On average, COPD patients reported between eight[7] and 14[4] symptoms. The most common symptoms that occurred in approximately 50% of the patients were shortness of breath (SOB), fatigue, and dry mouth.[4–8] Of note, SOB was reported by >94%[4–6] of these patients. However, a major limitation of all of these studies was that most of the patients had severe or very severe COPD[4–6,9,10] or the severity of the disease was not described.[8]

Only one study compared the burden of multiple symptoms in patients with moderate ($n = 42$) versus severe ($n = 49$) airflow limitations.[7] Of note, no

Address correspondence to: Vivi Lycke Christensen, RN, MS, Division of Emergencies and Critical Care, Department of Research and Development, Oslo University Hospital, Ullevål P.O. Box 4956 Nydalen, 0424 Oslo, Norway. E-mail: v.l.christensen@medisin.uio.no

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differences were found in the total number of symptoms between patients with moderate (8.1 ± 4.4) and severe (7.7 ± 4.3) COPD. Because patients with multiple comorbidities were excluded, the generalizability of the findings is limited. Therefore, research is needed that evaluates for differences in multiple dimensions of the symptom experience in COPD patients across all stages of the disease. If differences in symptom occurrence, severity, and distress exist among patients with moderate, severe, and very severe COPD, then more individualized treatment regimens can be initiated.

Another limitation of some of the research cited previously is that only the occurrence of symptoms was reported.[8,10–12] However, to accurately assess symptom burden, multiple dimensions of the symptom experience (i.e., severity, frequency, distress) need to be assessed.[13] To date, only seven studies[4–10] have used the Memorial Symptom Assessment Scale (MSAS) to describe multiple co-occurring symptoms and to assess multiple dimensions of the symptom experience in COPD patients.

However, only four of these studies reported the severity, frequency, and distress ratings for the MSAS symptoms.[4–7] In two of these studies,[4,5] the symptom burden of COPD patients was higher than the symptom burden of cancer patients. In the third study,[6] higher levels of symptom distress were associated with poorer quality of life (QOL) scores. However, in these three studies,[4–6] only patients with advanced disease were included. In the fourth study,[7] no differences in the occurrence of symptoms were found between COPD patients with moderate and severe airflow limitations. However, these COPD patients did not have any serious comorbid conditions, and the authors highlighted the need for a larger study that evaluated patients with different stages of COPD.

Therefore, given the paucity of research on multiple dimensions of the symptom experience in patients with different stages of COPD and the limitations of the previous studies,[4–10] the purposes of this study, in a relatively large sample of COPD patients ($n = 267$), were to evaluate for differences in symptom occurrence rates, as well as for differences in ratings of symptom severity, frequency, and distress among patients with moderate, severe, and very severe COPD.

Methods

Design, Sample, and Data Collection

In this cross-sectional study, patients were included if they were aged >18 years; were diagnosed with moderate, severe, or very severe COPD, using the GOLD criteria[2]; were able to read and understand Norwegian; and had no cognitive impairments. Patients who were receiving ongoing treatment for pulmonary infections, disease exacerbations, or cancer were excluded.

Patients were recruited from three outpatient clinics and one referral hospital. At enrollment, patients were asked to complete the study questionnaires and underwent pulmonary function tests (PFTs). The Regional Committees for Medical and Health Research Ethics, the Norwegian Directorate of Health, and the privacy ombudsman at Oslo University Hospital approved this study.

A total of 363 patients were asked to participate. Sixteen patients did not meet the prespecified inclusion criteria and 55 declined participation. Of the 292 patients enrolled, eight patients withdrew from the study and 17 patients did not return the questionnaires. The total sample consisted of 267 patients (response rate 76.9%).

Instruments

Demographic and Clinical Characteristics. Patients provided information on age, gender, education, marital status, and living arrangements. Research nurses at the different clinics reviewed the patients' medical records for PFTs, body mass index, number of years smoking, and number of years since the diagnosis of COPD. The Self-Administered Comorbidity Questionnaire was used to obtain information about the total number of comorbidities.[14] The Self-Administered Comorbidity Questionnaire includes 16 common medical conditions and three optional conditions. The 19 medical conditions were summed to obtain the total number of comorbidities that could range from 0 to 19.

Lung Function Measures. At enrollment, all patients underwent PFTs. Data were collected on forced expiratory volume in one second (FEV1) and forced vital capacity (FVC) and their predicted values were calculated according to the guidelines of the European Respiratory Society.[15] FEV1 and FEV1 as a percentage of the predicted value (FEV1% predicted) were used as measures of lung function. Partial pressure of oxygen in the blood (PaO_2) and performance on the six-minute walk test (6MWT)[16] were used as supplementary measures.

Disease Severity. Disease severity was classified using the GOLD criteria[2] defined as mild (FEV1 ≥80% predicted), moderate (FEV1 50%–79% predicted), severe (FEV1 30%–49% predicted), or very severe (FEV1 <30% predicted) COPD. Only patients with moderate, severe, and very severe COPD were included in this study.

Symptom Dimensions. The MSAS, which comprises 32 physical and psychological symptoms, was used to evaluate multiple dimensions of the patient's symptom experience.[13] Patients were asked to indicate whether