CHEST

Original Research

COPD

Measurement of Activities of Daily Living in Patients With COPD

A Systematic Review

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Background: **The objectives of this systematic review were to synthesize the literature on measures of activities of daily living (ADLs) that have been used in individuals with COPD and to provide an overview of the psychometric properties of the identified measures and describe the relationship of the disease-specific instruments with other relevant outcome measures for individuals with COPD and health-care use.**

Methods: **Studies that included a measure of ADLs in individuals with COPD were identified using electronic and hand searches. Two investigators performed the literature search. One investigator reviewed the study title, abstract, and full text of the articles to determine study eligibility and performed the data extraction and tabulation. In cases of uncertainty, a second reviewer was consulted.**

Results: **A total of 679 articles were identified. Of those, 116 met the inclusion criteria. Twenty-seven ADLs instruments were identified, of which 11 instruments were respiratory disease-specific, whereas 16 were generic. Most instruments combined instrumental ADLs (IADLs) with basic ADLs (BADLs). The majority of the instruments were self-reported; only three instruments were performance based. Twenty-one studies assessed psychometric properties of 16 ADLs instruments in patients with COPD.**

Conclusions: **Although several ADLs instruments were identified, psychometric properties have only been reported in a few. Selection of the most appropriate measure should focus on the target construct (BADLs or IADLs or both), type of test (disease-specific vs generic and self-reported vs performance-based), depth of information obtained, and psychometric properties of the instruments. Given the relevance of ADLs to the lives of patients with COPD, its assessment should be more frequently incorporated as a clinical outcome in their management.**

CHEST 2014; 145(2):253–271

Abbreviations: ADLs = activities of daily living; BADLs = basic activities of daily living; CARS = COPD Activity Rating Scale; CDLM = Capacity of Daily Living in the Morning; FPI = Functional Performance Inventory; FPI-SF = Functional Performance Inventory-Short Form; HRQL = health-related quality of life; IADLs = instrumental activities of daily living; MFTE = Monitored Functional Task Evaluation; MRADL = Manchester Respiratory Activities of Daily Living Questionnaire; PFSDQ = Pulmonary Functional Status and Dyspnea Questionnaire; PFSDQ-M = Modified Pulmonary Functional Status and Dyspnea Questionnaire; PFSS = Pulmonary Functional Status Scale; PFSS-11 = Pulmonary Functional Status Scale—Short Version

Patients with COPD experience progressive dyspnea and exercise intolerance, which limits their ability to carry out activities of daily living (ADLs).[1,2] The difficulty of performing these activities is present during both basic ADLs (BADLs) and instrumental ADLs (IADLs). BADLs are simple activities that are essential for an independent life, such as self-care (showering, dressing, grooming) and basic mobility. IADLs are more complex activities and require higher functioning, such as preparing meals, handling finances, home maintenance, shopping, and traveling alone. Secondary impairments, such as skeletal muscle dysfunction, may also contribute to the difficulty in performing ADLs.[3] As a result, people with COPD often avoid such activities or compensate by receiving

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assistance from another person or by using assistive devices. This in turn contributes to reduced independence and health-related quality of life (HRQL).[4,5]

Limitations during ADLs have been shown to be associated with physiologic impairments in individuals with COPD.[6-8] Velloso et al[8] reported that during ADLs such as sweeping, lifting pots, and replacing lamps, metabolic and ventilatory parameters in COPD were increased, representing as much as 55% of the estimated maximal oxygen consumption and 63% of the maximum voluntary ventilation. Lahaije et al[7] noted that in people with COPD, increased oxygen consumption, ventilatory demand, and dyspnea were experienced during vacuum cleaning, carrying weights, and putting on footwear, compared with healthy control subjects. Accompanying reductions in ventilatory reserve and inspiratory reserve volume highlighted the contribution of the ventilatory constraints to the functional limitation.

Measurement of ADLs is considered a fundamental outcome in all aspects of care for various populations.[9] In the elderly, limitations in ADLs have been found to be a significant predictor of admission to a nursing home, use of hospital and home-care services, as well as mortality.[10] In COPD, limitations during ADLs (measured by the Manchester Respiratory Activities of Daily Living Questionnaire [MRADL]) have also been found to be a predictor of mortality.[11,12] Despite its importance, current international professional guidelines in COPD do not include measurement of ADLs as a recommended outcome or provide any information on how best to measure ADLs in a clinical or research setting.[1,2] Moreover, a 2005 survey of pulmonary rehabilitation programs in Canada[13] noted that a measure of independence during ADLs was included in only a small percentage of programs. In the United Kingdom, a similar survey revealed that only 6% of the pulmonary rehabilitation programs assess ability to perform ADLs.[14] This lack of attention to measurement of ADLs may be due to at least two factors: (1) lack of time for clinicians to perform tests beyond lung function, oxygenation, and exercise capacity and (2) lack of knowledge about the most appropriate ADLs measure to choose. The overall goal of this review is to draw attention to measures that assess patients' ability to perform ADLs as reflected by practical, everyday activities. To the authors' knowledge, there is no systematic review of measures of ADLs in COPD in the literature. The primary objective of this systematic review is to synthesize the literature on measures of ADLs that have been used in individuals with COPD. Our secondary objective is to provide an overview of the psychometric properties of the identified measures that have been evaluated in COPD. A third objective is to describe the relationship of the disease-specific instruments with other relevant outcome measures for individuals with COPD and health-care use.

Materials and Methods

Search Strategy and Data Sources

Two investigators (T. J.-F., M. K. B.) performed electronic literature searches of MEDLINE, PubMed, EMBASE, CINAHL, PEDro, and Cochrane from inception until October 2012. Search terms included COPD, ADLs, daily activities, day to day activities, daily life activities, instrument, measure, test, questionnaire, scale, assessment, and outcome (Table 1). We also conducted hand searches of the reference lists of all studies that met the inclusion criteria. Ethics approval was not necessary as this is a systematic review.

Criteria for Including Studies in the Review

We selected all studies that included a measure of ADLs in individuals with COPD. Any type of study design was considered. Specifically, we included self-report or performance-based instruments that measured (1) BADLs—self-care and independent living, such as dressing, eating, bathing, transferring, and mobility or (2) IADLs, such as shopping, doing housework, handling personal finances, and so on. We included performance-based ADLs tests if the test included more than three types of ADLs. We excluded instruments in which the primary measurement was a construct

Table 1—*Electronic Search Strategy Used in PubMed*

Search #	Keywords and Number of Records Identified
Search #9	#7 AND #8 Field: Title/Abstract = 360
Search #8	instrument OR measure OR instrument OR test OR questionnaire OR scale OR assessment OR outcome Field: Title/Abstract = 2,279,621
Search #7	#1 and (#2 or #3 or #4 or #5 or #6) Field: Title/Abstract = 606
Search #6	"daily activities" Field: Title/Abstract = 6,352
Search #5	"daily life activities" Field: Title/Abstract = 498
Search #4	"day to day activities" Field: Title/Abstract = 205
Search #3	"activities of daily living Field: Title/Abstract = 13,352
Search #2	"Activities of Daily Living"[Mesh] = 42,615
Search #1	"Pulmonary Disease, Chronic Obstructive"[Mesh] OR COPD[Text Word] = 24,370

Manuscript received January 3, 2013; revision accepted April 22, 2013.
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Funding/Support: This study was supported by the Ontario Respiratory Care Society and the Canadian Respiratory Health Professionals.
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DOI: 10.1378/chest.13-0016