

Special Edition
"Recent Advances in Pulmonary
Rehabilitation"

Mini Review

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Special Edition 2

Article Ref. #: 1000PRRMOJSE2104

Article History

Received: May 31st, 2017

Accepted: June 12th, 2017

Published: June 12th, 2017

Citation

Goto Y. Measurement of activities of daily living in patients with chronic obstructive pulmonary disease. *Pulm Res Respir Med Open J.* 2017; SE(2): S23-S25. doi: [10.17140/PRRMOJ-SE-2-104](https://doi.org/10.17140/PRRMOJ-SE-2-104)

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Measurement of Activities of Daily Living in Patients with Chronic Obstructive Pulmonary Disease

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Chronic obstructive pulmonary disease (COPD) is a heterogeneous inflammatory lung disease characterized by progressive airway obstruction, which results in exertional dyspnea and physical disability. It is the third leading cause of death worldwide.¹ COPD is a progressive, debilitating and incurable disease with symptoms such as shortness of breath, coughing and fatigue.² Its symptoms often interfere with many aspects of daily living. In the advanced stage, patients suffer from dyspnea in association with minor exertion or even at rest, resulting in a gradual impairment of their physical ability. Such disability causes severe anxiety and depression,³⁻⁵ which can subsequently cause a reduction in their activities of daily living (ADL) and affect their health-related quality of life (HRQOL).⁶⁻⁸

Pulmonary rehabilitation (PR) improves dyspnea, exercise capacity, ADL, and HRQOL, each of which is recognized predictors of mortality. PR is an important part in the clinical management of COPD, and it includes education, exercise training, and psychological support.⁹ There are demonstrable improvements in exercise tolerance, muscle strength, dyspnea, and HRQOL in patients with COPD after PR, cemented in a Cochrane review.¹⁰ and the British Thoracic Society (BTS) guidelines.¹¹

ADL includes activities and tasks that people routinely perform in their daily life inside/outside their homes.¹² Vriendt et al¹³ divided ADL into 3 domains namely basic activities of daily living (BADL) including self-care behaviors, such as dressing and bathing, instrumental activities of daily living (IADL), such as cooking, house chores, and shopping and advanced activities of daily living (AADL), including voluntary behaviors influenced by cultural and motivational factors, which indicate satisfying activities beyond personal independence. The combination of all three domains of ADL includes all the activities that a person performs in daily life.

Approximately, 40% of patients with COPD report a degree of disability and 68% lose at least one relevant function in daily life.¹⁴ The study indicates that 78% of patients with COPD have dyspnea even when walking at home, and are faced with difficulties in ADL.¹⁵ Insufficient physical activity is the main cause of disability, severe loss of pulmonary function, anxiety and depression in the elderly with COPD.⁵ Velloso et al¹⁶ reported that during the ADL such as sweeping, lifting pots, and replacing lamps, metabolic and ventilator parameters in COPD were increased, representing as much as 55% of the estimated maximal oxygen consumption and 63% of the maximal voluntary ventilation. These values are very high and explain the tiredness, and at times exhaustion, when these patients perform simple daily activities with their upper limbs. Performing these activities increased the demand for oxygen and lead to the use of a large part of the ventilatory reserve of these patients and to increased perception. ADL is an important predictor of mortality in patients with COPD. Increasing ADL is important in patients with COPD and assessment of ADL is one of the best ways to evaluate the status of COPD patients.

In the research of papers published from 1980 to 2014 regarding ADL in patients with COPD,¹⁷ 13 pen and paper instruments were identified for examining ADL in patients

with COPD; of which, four instruments (CDLM,¹⁸ MRADL,¹⁹ FPI,¹⁹ FPI-SF,²⁰) dealt directly with ADL, while nine instruments (LCADL,²¹ CARS,²² ADL-D,²³ PFSS,²⁴ PFSDQ,²⁵ PFSDQ-M,²⁶ PFSS-11,²⁷ DIRECT,²⁸ SOBDA,²⁹) designed to measure dyspnea as an indicator of ADL. Especially, PFSDQ-M and CDLM were designed to measure only BADL. The majority of instruments only dealt with two main dimensions of ADL (BADL and IADL), and did not consider AADL, which is influenced by cultural and motivational factors.

In patients with COPD, ADL depends on a number of variables like symptoms of the disease, fitness, level of independence and level of need for mobility aids or other people's help. One of the problems is the inability to measure changes in ADL resulting from treatment or rehabilitation and interventions to improve physical activity in patients with COPD, if the instrument cannot accurately measure the concept of daily activity. For patients with COPD, inability to perform ADL is different from other diseases and conditions. This difference originates from the fact that due to dyspnea COPD patients are sometimes unable to carry out the task, despite having the physical capacity to do it. Relief from dyspnea during ADL represents the major goal of respiratory rehabilitation and its quantification through specific instruments (scales) is essential to define disability level and postrehabilitation improvement. It needs the specific instrument to measure ADL accurately in patients with COPD, and it will contribute to improving the comprehensive pulmonary rehabilitation.

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