ARCHIVOS DE Bronconeumología

Original Article

Translation and Validation of the Multidimensional Dyspnea-12 Questionnaire☆

Carlos Antonio Amado Diago,[a,b,*] Luis Puente Maestu,[c,d] Beatriz Abascal Bolado,[a,b] Juan Agüero Calvo,[a] Mercedes Hernando Hernando,[a] Irene Puente Bats,[e] Ramón Agüero Balbín[a,f]

[a] *Servicio de Neumología, Hospital Universitario Marqués de Valdecilla, Santander, Spain*
[b] *Grupo Emergente de EPOC SEPAR, Madrid, Spain*
[c] *Servicio de Neumología, Hospital Universitario Gregorio Marañón, Madrid, Spain*
[d] *Departamento de Medicina, Universidad Complutense de Madrid, Madrid, Spain*
[e] *Departamento de Traducción e Interpretación, Universidad Europea del Atlántico, Santander, Spain*
[f] *Universidad de Cantabria, Santander, Spain*

A B S T R A C T

Introduction: Dyspnea is a multidimensional symptom, but this multidimensionality is not considered in most dyspnea questionnaires. The Dyspnea-12 takes a multidimensional approach to the assessment of dyspnea, specifically the sensory and the affective response. The objective of this study was to translate into Spanish and validate the Dyspnea-12 questionnaire.
Methods: The original English version of the Dyspnea-12 questionnaire was translated into Spanish and backtranslated to analyze its equivalence. Comprehension of the text was verified by analyzing the responses of 10 patients. Reliability and validation of the questionnaire were studied in an independent group of COPD patients attending the pulmonology clinics of Hospital Universitario Marqués de Valdecilla, diagnosed and categorized according to GOLD guidelines.
Results: The mean age of the group (n=51) was 65 years and mean FEV1 was 50%. All patients understood all questions of the translated version of Dyspnea-12. Internal consistency of the questionnaire was α=0.937 and intraclass correlation coefficient was =0.969; P<.001. Statistically significant correlations were found with HADS (anxiety r=0.608 and depression r=0.615), mMRC dyspnea (r=0.592), 6MWT (r=−0.445), FEV1 (r=−0.312), all dimensions of CRQ-SAS (dyspnea r=−0.626; fatigue r=−0.718; emotional function r=−0.663; mastery r=−0.740), CAT (r=0.669), and baseline dyspnea index (r=−0.615). Dyspnea-12 scores were 10.32 points higher in symptomatic GOLD groups (B and D) (P<.001).
Conclusion: The Spanish version of Dyspnea-12 is a valid and reliable instrument to study the multidimensional nature of dyspnea.

Traducción y validación del cuestionario multidimensional Disnea-12

R E S U M E N

Introducción: La disnea es un síntoma con un componente multidimensional, aunque las herramientas que se utilizan habitualmente para evaluarla no tienen en cuenta esta faceta. El cuestionario Disnea-12 valora la multidimensionalidad de la disnea, específicamente las dimensiones afectiva y sensorial. El objetivo de este estudio es validar el cuestionario Disnea-12 al español.
Métodos: Se realizó una traducción del original en inglés al español y del español al inglés para verificar la equivalencia del texto. Posteriormente se verificó la comprensión del texto tras pasárselo a 10 pacientes. La fiabilidad y la validez del cuestionario se estudiaron en un grupo independiente de EPOC diagnosticados y clasificados por las guías GOLD de las consultas externas de neumología del Hospital Universitario Marqués de Valdecilla.

Resultados: El grupo (n = 51) tenía una media de edad de 65 años y un FEV1 medio del 50%. Todos los pacientes entendieron las preguntas del cuestionario. El instrumento presentó consistencia interna de α = 0,937 y un coeficiente de correlación intraclase: 0,969; p < 0,001. Se encontraron correlaciones estadísticamente significativas con las puntuaciones del HAD (HADansiedad r = 0,608 y HADdepresión r = 0,615), disnea de la mMRC (r = 0,592), T6MM (r = −0,445), FEV1 (r = −0,312), las 4 dimensiones de CRQ-SAS (disnea r = −0,626; fatiga r = −0,718; función emocional r = −0,663; control de enfermedad r = −0,740), el CAT (r = 0,669) y el índice de disnea basal (r = −0,615). Los grupos GOLD más sintomáticos (B y D) presentaron una puntuación 10,32 puntos mayor en en el Disnea-12 (p < 0,001).
Conclusión: El cuestionario Disnea-12 es un instrumento válido y fiable para evaluar la disnea de forma multidimensional.

Introduction

Dyspnea is defined as a subjective experience consisting of different qualitative sensations that can vary in intensity.[1] It is a key symptom in patients with COPD, and is used to assess the severity and prognosis of the disease.[2] However, dyspnea is typically a complex, subjective symptom in which environmental, physiological and psychological factors play a part.[1] Characteristic features of dyspnea include a sensory component (central chest pain, air hunger, fatigue, difficulty in achieving a full inspiration),[3] and an affective component (such as a sensation of distress, sadness or fear presented by some dyspnea patients).[4] Some diseases are more often associated with either a specific sensory or affective component: for example, patients with bronchospasm tend to describe their dyspnea as chest tightness,[5] while patients with dynamic lung hyperinflation[6] often seen in emphysema patients[7] more often report sensations such as increased work of breathing.

Dyspnea is routinely measured in clinical practice on two different types of scale. Scales such as the Borg dyspnea scale,[8] which aim to quantify perceptions, are generally used to assess dyspnea at rest or in response to certain stimuli, such as physical exercise. The Borg scale describes the intensity of the dyspnea without taking into account the qualitative aspects of how the symptom is experienced. In contrast, tools such as the Medical Research Council (MRC) scale and the modified version of the MRC (mMRC),[9] indirectly assess dyspnea according to the patient's ability to perform certain activities, without taking into account the sensory experience or the affective component of the symptom.

The Dyspnea-12 (Fig. 1), originally developed in the UK, is a short questionnaire, initially validated in COPD and heart failure,[10] and later in several cardiopulmonary diseases (interstitial lung disease,[11] asthma,[12] pulmonary hypertension,[13] cancer,[14] tuberculosis, and bronchiectasis[15]). Dyspnea-12 takes into account both sensory and affective factors that might play a role in dyspnea, and which could help clinicians to understand the various aspects of the disease. Each item in the questionnaire is scored from 0, if the symptom is mild, to 3, if it is severe, and the overall score is the sum total of all score of all items. Six of the questions refer to sensory aspects and 6 to the affective aspects of dyspnea. The total score ranges from 0 to 36, with 36 being the highest severity possible and 0 the lowest.

Our aim was to produce a Spanish version of the Dyspnea-12 and to determine the reliability and validity of the translation, in order to provide a tool that could be used to measure the degree of dyspnea in our own COPD patients, while taking into account the different components of this symptom.

Methods

Internationally accepted techniques,[16,17] similar to those used for the translation of this questionnaire into other languages, were used for the translation and validation of the questionnaire.[18] The study protocol was evaluated and approved by the Clinical Research Ethics Committee of Cantabria.

Patients

Spanish-speaking adult patients previously diagnosed with COPD, according to the Global Initiative for Chronic Obstructive Lung (GOLD) criteria,[19] seen consecutively between October and December 2016 in the Hospital Universitario Marqués de Valdecilla, were selected for this study. Patients with cognitive impairment or sensory disorders that might prevent them from understanding of the questions were excluded. All patients signed informed consent before completing the questionnaire.

Translation

Initially, the questionnaire was translated twice, by two independent qualified translators. Two bilingual pulmonologists and two Spanish-speaking nurses, experts in respiratory tract diseases, subsequently evaluated the relevance and comprehensibility of the translated items.

After this process, a single version of the questionnaire was created that was then back-translated into English by a qualified translator, who verified that the translation was equivalent to the original. Any discrepancies were resolved by consensus. Finally, the translated questionnaire was read to 10 COPD patients who had signed informed consent; 8 of these 10 patients had completed primary education only. Each translated item of the Dyspnea-12 questionnaire was read to them, and they were asked to explain the meaning in their own words, to verify that they clearly understood the questions. All patients included in the study correctly understood the translation of the questionnaire. Patients were also asked if they thought the questionnaire should be modified in any way, but none of them requested any changes.

Statistical Analysis

The sample size was estimated on the basis of the number of patients involved in the initial validation.[10] The statistical analysis was performed using the SPSS package, version 20.0 (IBM). The statistical techniques used to estimate the reliability and validity of the questionnaire are described below.

Questionnaire Reliability

The internal consistency of the questionnaire was measured using Cronbach's alpha. The concordance between the results was evaluated using the intraclass correlation coefficient, evaluating the total score of the Dyspnea-12 questionnaires obtained in the initial assessment and 30 min later. Concordance was reassessed 15 days later using the same method employed in the 30-minute re-evaluation.