**EDITORIAL**

# Questionnaires and risk scores: how to transform research projects into practical tools

Frederico Leon Arrabal Fernandes[1]

COPD is a heterogeneous, progressive disease that is potentially serious. Given the complexity of COPD and its impact on the quality of life of patients, multidisciplinary approaches and effective management strategies are needed. Questionnaires and risk scores assessing various dimensions of COPD have been translated into Portuguese and validated for use in Brazil.

The variety of questionnaires reflects the complexity of COPD and the need to understand the many different facets of the disease. Currently available COPD questionnaires include symptom questionnaires such as the modified Medical Research Council scale[1] and the COPD Assessment Test,[2] both of which have been incorporated into the GOLD classification of COPD severity,[3] as well as questionnaires assessing activities of daily living,[4,5] the impact of COPD and patient health status,[6,7] and quality of life.[8,9] Risk scores assessing COPD are varied and include screening questionnaires,[10] scores for predicting the risk of developing COPD,[11] and scores for predicting the risk of mortality or complications from acute exacerbations of COPD (AECOPD). There is a wide variety of currently available tools for COPD assessment, and a quick literature search shows that much of the research into COPD focuses on developing, translating, and adapting questionnaires.

This is no coincidence. Studies aimed at developing and validating questionnaires have proven to be a valuable opportunity to teach research methods to graduate students and enrich their training. Questionnaire development requires knowledge not only of the disease itself but also of statistics and psychometrics, contributing to the advancement of research and enriching the academic and scientific training of future researchers.[12]

COPD is a multifaceted disease, and clinical evaluation should include a history of respiratory symptoms, comorbidities, treatment adherence, and correct inhaler use. Because many of the currently available questionnaires are lengthy and complex, it can be difficult to use them in clinical practice. It is impractical to use several different questionnaires (or a single long questionnaire) in the evaluation of patients with AECOPD.

When developing a questionnaire or risk score for COPD, researchers must keep in mind the applicability of the questionnaire or score in a clinical setting. Such tools should be designed to provide relevant information to support medical decision making regarding hospitalization,

the need for noninvasive ventilation, and intensive care monitoring.

Questionnaire data should aid in monitoring disease progression and evaluating treatment efficacy. More importantly, questionnaires should be objective, easy to understand, and easy to use, and the results should be easily accessible and interpretable.[12]

In this issue of the *Jornal Brasileiro de Pneumologia*, Gomes et al. report the results of a study evaluating the performance of four different risk scores in predicting outcomes during and after hospitalization for AECOPD.[13] The study was a retrospective study involving 119 patients admitted with AECOPD and evaluating various outcomes. The National Early Warning Score 2 (NEWS2) and $NEWS_{88-92\%}$ were found to be useful for outcomes such as prolonged hospitalization and use of noninvasive ventilation, although they were not as effective as the Dyspnea, Eosinopenia, Consolidation, Acidemia, and atrial Fibrillation (DECAF) and modified DECAF scores in predicting mortality. The $NEWS2_{88-92\%}$ was associated with an 8.9% reduction in the number of individuals classified as requiring close, continuous observation in comparison with the NEWS2. Although the study was a single-center study and the sample size was too small for definitive conclusions, the results suggest that the $NEWS_{88-92\%}$ is superior to the NEWS2 in this context.[13]

Not surprisingly, however, the study showed that each questionnaire performed better in assessing the specific outcome for which it was designed. The NEWS2 scores are used in order to assess the risk of clinical deterioration during hospitalization. The DECAF scores are used in order to assess the risk of mortality in patients with AECOPD. This finding is consistent with existing knowledge in the literature and underscores the importance of using appropriate tools for specific purposes.

In summary, questionnaires and risk scores play a crucial role in COPD research and clinical management. However, a balance should be struck between a comprehensive approach to COPD and the ease of use of COPD questionnaires and scores so that such tools can be effectively used in everyday life. When developing COPD questionnaires and scores, researchers and health professionals should focus on contributing significantly to advances in the treatment and quality of life of patients with COPD rather than simply using such tools as projects for the academic training of future researchers.

## REFERENCES

1. Kovelis D, Segretti NO, Probst VS, Lareau SC, Brunetto AF, Pitta F. Validation of the Modified Pulmonary Functional Status and Dyspnea Questionnaire and the Medical Research Council scale for use in Brazilian patients with chronic obstructive pulmonary disease. J Bras

1. Divisão de Pneumologia, Instituto do Coração – InCor – Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo, São Paulo (SP) Brasil.

Pneumol. 2008;34(12):1008-1018. https://doi.org/10.1590/S1806-37132008001200005

2. Flores MP, Arcuri JF, Carvalho da Silva MM, Pires Di Lorenzo VA. Validity of the Brazilian version of the COPD assessment test in patients with chronic obstructive pulmonary disease. Clin Respir J. 2021;15(3):358-364. https://doi.org/10.1111/crj.13308

3. Agustí A, Celli BR, Criner GJ, Halpin D, Anzueto A, Barnes P, et al. Global Initiative for Chronic Obstructive Lung Disease 2023 Report: GOLD Executive Summary. Eur Respir J. 2023;61(4):2300239. https://doi.org/10.1183/13993003.00239-2023

4. Tavares Ldos A, Barreto Neto J, Jardim JR, Souza GM, Hlatky MA, Nascimento OA. Cross-cultural adaptation and assessment of reproducibility of the Duke Activity Status Index for COPD patients in Brazil. J Bras Pneumol. 2012;38(6):684-691. https://doi.org/10.1590/s1806-37132012000600002

5. Carpes MF, Mayer AF, Simon KM, Jardim JR, Garrod R. The Brazilian Portuguese version of the London Chest Activity of Daily Living scale for use in patients with chronic obstructive pulmonary disease. J Bras Pneumol. 2008;34(3):143-151. https://doi.org/10.1590/s1806-37132008000300004

6. Zhou Z, Zhou A, Zhao Y, Chen P. Evaluating the Clinical COPD Questionnaire: A systematic review. Respirology. 2017;22(2):251-262. https://doi.org/10.1111/resp.12970

7. Silva PN, Jardim JR, Costa e Souza GM, Hyland ME, Nascimento OA. Cultural adaptation and reproducibility of the Breathing Problems Questionnaire for use in patients with COPD in Brazil [published correction appears in J Bras Pneumol. 2012 Jul-Aug;38(4):538]. J Bras Pneumol. 2012;38(3):339-345. https://doi.org/10.1590/s1806-37132012000300009

8. Moreira GL, Pitta F, Ramos D, Nascimento CS, Barzon D, Kovelis D, et al. Portuguese-language version of the Chronic Respiratory Questionnaire: a validity and reproducibility study. J Bras Pneumol. 2009;35(8):737-744. https://doi.org/10.1590/s1806-37132009000800004

9. Camelier A, Rosa FW, Salim C, Nascimento OA, Cardoso F, Jardim JR. Using the Saint George's Respiratory Questionnaire to evaluate quality of life in patients with chronic obstructive pulmonary disease: validating a new version for use in Brazil. J Bras Pneumol. 2006;32(2):114-122. https://doi.org/10.1590/s1806-37132006000200006

10. Calverley PM, Nordyke RJ, Halbert RJ, Isonaka S, Nonikov D. Development of a population-based screening questionnaire for COPD. COPD. 2005;2(2):225-232. https://doi.org/10.1081/COPD-57594

11. Haroon S, Adab P, Riley RD, Marshall T, Lancashire R, Jordan RE. Predicting risk of COPD in primary care: development and validation of a clinical risk score. BMJ Open Respir Res. 2015;2(1):e000060. https://doi.org/10.1136/bmjresp-2014-000060

12. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Ann R Coll Surg Engl. 2013;95(1):5-7. https://doi.org/10.1308/003588413X13511609956372

13. Gomes L, Pereira S, Sousa-Pinto B, Rodrigues C. Performance of risk scores in patients with acute exacerbations of COPD. J Bras Pneumol. 2023;49(5):e20230032. https://doi.org/10.36416/1806-3756/e20230032