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Scientific letter

Design of a Tool to Classify Chronic Cough According to its Severity: Cough Severity Questionnaire (CSQ)

Dear Editor,

Chronic cough (CC), defined as a cough lasting more than 8 weeks, is a common reason for medical consultation due to its high prevalence (3.3%–12%).[1,2] Approximately 40% of patients continue to experience CC despite proper adherence to diagnostic and therapeutic guidelines,[3] leading to physical, psychological, and social consequences that impair quality of life.

Several questionnaires assess the impact of CC on patients, including the Leicester Cough Questionnaire (LCQ),[4] Cough-specific Quality of Life Questionnaire (CQLQ),[5] and Cough Severity Diary (CSD).[6] Devices such as the VitaloJak Cough Monitor and the Hull Automated Cough Counter (HACC) also objectively measure cough frequency.[7,8] More recently, new tools, including the Hyfe Cough Monitoring System and the Strados Remote Electronic Stethoscope Platform (RESP^{TM}), have been developed to capture cough over longer periods and incorporate complementary data, such as wheezing.[9,10] However, no tool is currently available to objectively classify CC based on severity.

In this setting, we describe the development of the Cough Severity Questionnaire (CSQ), a consensus-based tool designed to make such a classification. The study received ethical approval (IIBSP-TOS-2023-133) and was registered in ClinicalTrials.gov (NCT06669897).

The creation of the CSQ comprised two main stages: (1) development of a draft questionnaire by members of the Chronic Cough Group of the Catalan Society of Pulmonology (SOCAP) and (2) an expert consensus using the Delphi methodology (Fig. 1). A final validation phase is ongoing, which will result in a scoring system for objective classification of CC severity.

In the first stage, the SOCAP Chronic Cough Group – comprising eight specialists from seven hospitals in Catalonia – developed a 16-item draft. Twelve questions had polytomous responses (none/less than half/about half/more than half/all), and four had dichotomous responses (yes/no). During their final meeting, the draft was presented to the Respiratory Diseases Group of the Catalan Society of Family and Community Medicine, who agreed to participate in subsequent phases.

The second stage applied the Delphi method to include expert evaluations from across Spain. Two rounds were conducted using an interactive online platform.[11] A total of 48 panelists participated in round one and 47 in round two. Panelists included specialists in pulmonology (75%, $n = 36$), allergology (10.4%, $n = 5$) and family medicine (10.4%, $n = 5$), and nurses with expertise in respiratory care (4.4%, $n = 2$), from 11 autonomous communities. Most had more than 10 years of experience (83.4%, $n = 40$).

Consensus analysis followed the Rand/UCLA Appropriateness Method.[12] Each item was rated on a 9-point Likert scale (1 = strongly disagree, 9 = strongly agree).[13] Items were classified as appropriate (median 7–9), neutral (median 4–6 or any disagreement), or inappropriate (median 1–3). Consensus was defined as agreement by at least two thirds of the panel within the median category. Absence of this proportion of agreement indicated lack of consensus.

In the first round, 32 items were evaluated by a panel of 48 multidisciplinary experts from 11 regions of Spain. These items derived from an initial 16-item draft created by the Chronic Cough Working Group of the Catalan Society of Pulmonology (SOCAP), expanded to reflect both polytomous and dichotomous formats and to explore symptom domains. All 32 items were rated as appropriate; 30 of them achieved full agreement, while 2 received neutral consensus. In addition to quantitative ratings, qualitative feedback from panelists highlighted opportunities to improve wording for greater clarity and patient comprehension, especially in items referencing ambiguous concepts such as “cough attack”, “poor sleep”, or “chest or abdominal pain”. Two exploratory questions were also included to determine optimal symptom recall periods.

In the second Delphi round, the most debated items were reformulated based on qualitative input and reassessed by 47 panelists. All revised items were rated as appropriate with full agreement. The round also included five new exploratory questions that further refined the intended scope and language of the instrument. Notably, a new item addressing the emotional impact of chronic cough (anxiety or sadness) was introduced and reached full consensus. A strong majority (87.2%) agreed that the CSQ should focus exclusively on chronic cough (defined as >8 weeks duration), and preferred simplified language formats (e.g., “not able to sleep well” over “poor sleep”).

Based on this iterative consensus process, a final 9-item version of the CSQ was defined, prioritizing clinical relevance, clarity, consensus, and covering key symptom domains such as respiratory symptoms, sleep disturbance, physical complications, functional limitations, emotional impact, and severe outcomes. This structure reflects the burden of CC and facilitates clinical assessment.

This study is important because it addresses the current lack of tools to classify CC severity. The CSQ fills this gap and may facilitate earlier identification of severe cases needing timely referral to specialized care. It also has potential utility in identifying candidates for new treatments for refractory or unexplained CC. The psychometric validation phase of the CSQ is scheduled between May and December 2025. This phase will include a confirmatory factor analysis, assessment of internal consistency, construct and criterion validity, and responsiveness. ROC curve analysis will also be used to determine one or more cut-off points to support a potential classification of cough severity. These activities will be conducted as

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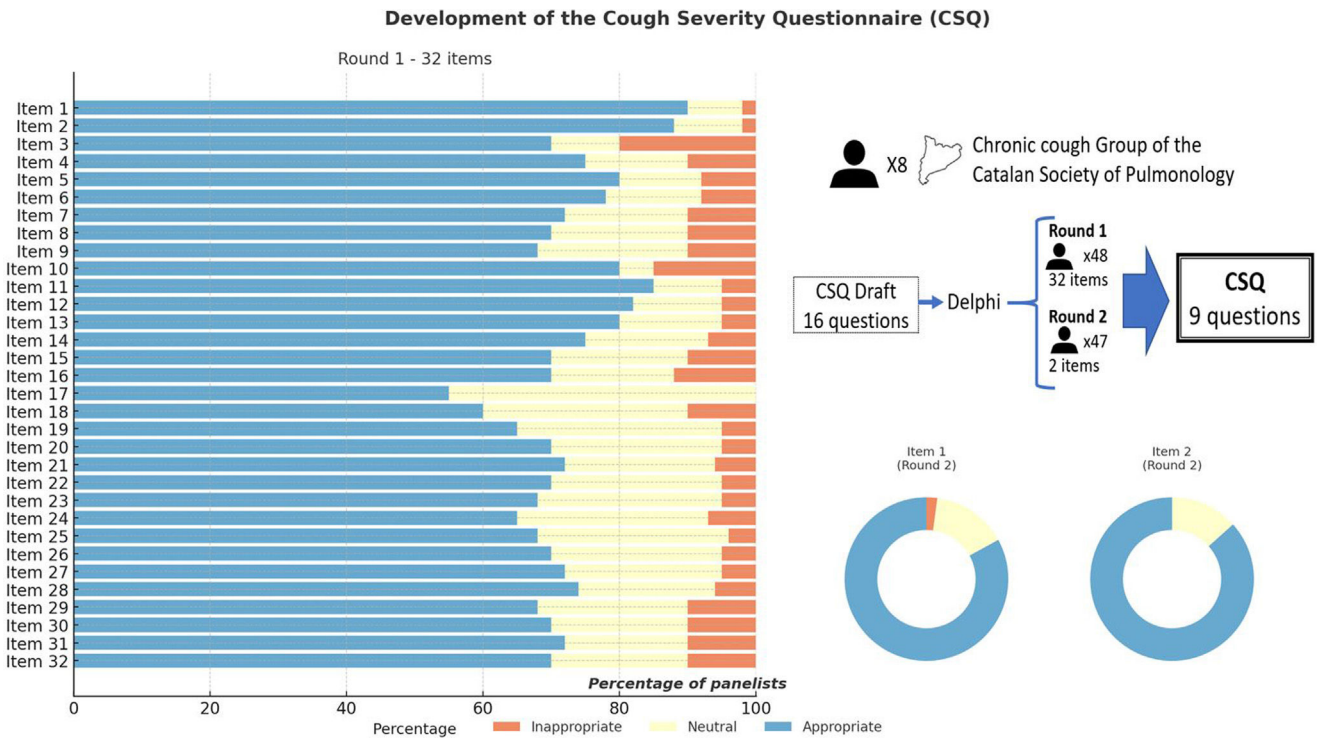

Fig. 1. Development of the Cough Severity Questionnaire (CSQ).

part of a prospective multicenter study involving patients with CC. Findings from this phase will be reported in a future publication.

In summary, we describe the development of the Cough Severity Questionnaire (CSQ), a concise and easy-to-administer tool composed of nine items. It was created through expert collaboration and a structured consensus process and is now undergoing validation. Its integration into clinical practice could significantly improve the assessment and management of chronic cough.

Declaration of generative AI and AI-assisted technologies in the writing process

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Authors' contributions

Substantial contributions to study conception and design of the study: all co-authors. Drafting the article: EP, EV, ACL. Revising the article critically for important intellectual content and final approval of the version to be submitted: all co-authors.

Conflicts of interest

EP: has received in the last 3 years conference travel and attendance expenses from GlaxoSmithKline, AstraZeneca, and Sanofi, and has received fees for talks at meetings sponsored by GlaxoSmithKline and AstraZeneca, and funds/grants for research projects from state agencies and non-profit foundations, GlaxoSmithKline and Merck Sharp and Dohme.

EA: has received fees in the last 3 years for talks at meetings sponsored by AstraZeneca, Chiesi, GlaxoSmithKline, MSD, Orion Pharma, and Sanofi-Regeneron, has received travel and attendance expenses for conferences from Gebro, GlaxoSmithKline, Sanofi-Regeneron, AstraZeneca and has received funds/grants for research projects from several state agencies, non-profit foundations, AstraZeneca, and GlaxoSmithKline, MSD.

AM: has received fees in the last 3 years for talks at meetings sponsored by AstraZeneca, Chiesi, GlaxoSmithKline and Cipla, has received travel and attendance expenses for conferences from AstraZeneca and GlaxoSmithKline, and has received funds/grants for research projects from several state agencies, non-profit foundations, AstraZeneca, and GlaxoSmithKline and Sanofi-Regeneron.

CM: has received fees in the last 3 years for talks at meetings sponsored by AstraZeneca, Chiesi, Gebro, GlaxoSmithKline and Sanophi-Regeneron, has received travel and attendance expenses from AstraZeneca, Chiesi and Sanofi, and funds/grants for research projects from AstraZeneca, GlaxoSmithKline and Gebro.

MME: has received fees in the last 3 years for talks at meetings sponsored by Aldo-Union, AstraZeneca, Chiesi, GlaxoSmithKline, Menarini, Sanofi-Regeneron; has received travel and attendance expenses for conferences from Aldo-Union, AstraZeneca, Chiesi, Faes, Gebro, GlaxoSmithKline, Menarini, Sanofi-Regeneron; and has received funds/grants for research and educational projects from several state agencies, non-profit foundations, Aldo-Union, AstraZeneca, Chiesi, Ergometrix, Gebro, GlaxoSmithKline, Menarini and Sanofi-Regeneron.

ASS: has received fees in the last 3 years for talks at meetings sponsored by ALK, AstraZeneca, Chiesi, Faes, Gebro-Pharma, GlaxoSmithKline, MSD, and Sanofi-Regeneron, has received travel and attendance expenses for conferences from ALK, AstraZeneca, GlaxoSmithKline, Sanofi-Regeneron, and has received funds/grants for research projects from several state agencies, non-profit foundations, AstraZeneca, and GlaxoSmithKline, MSD and Sanofi-Regeneron.

EV: declares that he has no conflicts of interest.

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