

## Postprint of a Scoping Review of Disease-Specific Quality of Life Measurement Instruments for Patients with Chronic Obstructive Pulmonary Disease

**Authors:** WANG Jingning, Feng Junchao, LI Shunping, Yang Ting, Zhang Chunyu, Jiang Yuanyuan, Qu Mushuwei, Luo Nan, Wang Xueliang, Li Shunping

**Date:** 2025-07-09T10:45:24+00:00

### Abstract

**Background** Chronic obstructive pulmonary disease (hereinafter referred to as COPD) is characterized by progressive and irreversible pathology, with a prolonged disease course and recurrent exacerbations. Patients often manifest psychological issues such as anxiety/depression, which severely compromise their quality of life. Quality of life instruments represent the most commonly employed approach for measuring treatment efficacy and quality of life in COPD patients. Numerous COPD-specific quality of life instruments have been developed both domestically and internationally; however, substantial variations exist among different instruments in terms of dimensions, items, and scaling levels, necessitating comparative analysis during application.

**Objective** To conduct a scoping review of disease-specific quality of life measurement instruments for COPD patients.

**Methods** Search terms including “chronic obstructive pulmonary disease,” “quality of life,” “psychometric properties,” “chronic obstructive pulmonary disease,” “quality of life,” and “measurement properties” were utilized to systematically search seven databases: Web of Science, PubMed, Embase, CNKI, Wanfang Data Knowledge Service Platform, VIP, and SinoMed. The search timeframe spanned from database inception to December 31, 2023. Fundamental characteristics of the original development publications of the instruments were extracted, and the overall coverage of dimensions and measurement property indicators were systematically organized and summarized.

**Results** A total of 25 COPD-specific quality of life measurement instruments were included, comprising 7 scales developed based on Chinese populations and

18 foreign scales. Among the foreign scales, 7 had undergone extensive validation within Chinese populations. Across all dimensions, respiratory symptoms (including dyspnea, cough, sputum production, chest tightness, and wheezing), social interaction, and impact on daily life were the most frequently assessed, present in 23 instruments (92.0%). For reliability evaluation, Cronbach's  $\alpha$  coefficient was predominantly employed to assess internal consistency. For validity evaluation, domestically developed and validated scales primarily emphasized content validity and construct validity, whereas foreign scales validated domestically demonstrated higher utilization frequency of criterion validity. The application of responsiveness/sensitivity and minimal clinically important difference (MCID) remained relatively infrequent.

**Conclusion** Although numerous studies have developed or validated COPD-specific quality of life measurement instruments, they lack guidance from modern measurement theory. Chinese scholars have demonstrated increasing attention to COPD-specific quality of life measurement instruments in recent years. Future endeavors should adopt modern measurement methodologies such as item response theory for scale development or validation, and employ international COSMIN guidelines for systematic evaluation of scale measurement properties.

## Full Text

### Disease-Specific Quality of Life Measurement Tools for Chronic Obstructive Pulmonary Disease: A Scoping Review

\*\*WANG Jingning<sup>1,2,3,4</sup>, FENG Junhao<sup>1,2,3,4</sup>, LI Shunping<sup>1,2,3,4\*</sup>, YANG Ting<sup>5,6</sup>, ZHANG Chunyu<sup>5,6</sup>, JIANG Yuanyuan<sup>7</sup>, QUMU Shiwei<sup>5,6</sup>, LUO Nan<sup>8</sup>, WANG Xueliang<sup>9\*\*</sup>

<sup>1</sup>Department of Social Medicine and Health Management, School of Public Health, Cheeloo College of Medicine, Shandong University, Jinan 250012, China

<sup>2</sup>NHC Key Lab of Health Economics and Policy Research/Shandong University, Jinan 250012, China

<sup>3</sup>Center for Health Management and Policy Research, Shandong University/Shandong Provincial Key New Think Tank, Jinan 250012, China

<sup>4</sup>Center for Health Preference Research, Shandong University, Jinan 250012, China

<sup>5</sup>Department of Pulmonary and Critical Care Medicine, Center of Respiratory Medicine, China-Japan Friendship Hospital, Beijing 100029, China

<sup>6</sup>National Center for Respiratory Medicine/Institute of Respiratory Medicine, Chinese Academy of Medical Sciences/National Clinical Research Center for Respiratory Disease, Beijing 100029, China

<sup>7</sup>Department of Respiratory and Critical Care Medicine, Qilu Hospital, Shandong University, Jinan 250000, China

<sup>8</sup>Saw Swee Hock School of Public Health, National University of Singapore, Singapore 117549, Singapore

<sup>9</sup>Department of Respiratory Medicine, the Fifth People' s Hospital of Jinan, Shandong Second Medical University, Jinan 261042, China

*Corresponding author: LI Shunping, Professor/Doctoral supervisor; E-mail: lishunping@sdu.edu.cn*

---

## Abstract

**Background:** Chronic Obstructive Pulmonary Disease (COPD) is characterized by its progressive and irreversible nature, prolonged disease course, and frequent exacerbations. Patients often manifest psychological issues such as anxiety and depression, which significantly impair their quality of life. Quality of life scales represent the most prevalent method for assessing treatment outcomes and quality of life in COPD patients. Numerous COPD-specific quality of life scales have been developed both domestically and internationally. However, considerable variations exist across different scales in terms of their dimensions, items, and measurement levels. Consequently, comparative analysis among these diverse scales is essential for their appropriate application.

**Objective:** To conduct a scoping review of disease-specific quality of life measurement tools for patients with chronic obstructive pulmonary disease.

**Methods:** We systematically searched seven databases, including Web of Science, PubMed, Embase, CNKI, Wanfang Database, VIP Database, and China Biomedical Literature Database, using keywords related to “chronic obstructive pulmonary disease,” “quality of life,” and “measurement properties.” The search timeline spanned from the inception of these databases to December 31, 2023. We extracted information on the characteristics of each tool from the original development literature, and organized the dimensions addressed by these tools along with a comprehensive overview of their measurement properties.

**Results:** Our review encompassed 25 COPD-specific quality of life measurement tools, with 7 developed with a focus on the Chinese population and 18 originating from abroad. Notably, 7 of the foreign-developed scales have received extensive validation within Chinese populations. Respiratory symptoms (including shortness of breath, coughing, expectoration, chest tightness, and wheezing), social interaction, and the impact on daily life were found to be the most frequently measured dimensions across these scales, with an occurrence in 92.0% of the scales. The majority of the scales utilized Cronbach' s  $\alpha$  to assess internal consistency. In terms of scale validity assessment, Chinese-developed scales predominantly emphasized content and construct validity, while foreign-developed scales validated domestically were used more frequently for criterion validity. Responsiveness/sensitivity and the minimum clinically important difference (MCID) were relatively infrequently determined.

**Conclusion:** Despite a multitude of studies on the development and validation of COPD-specific quality of life measurement tools, there is a discernible absence of guidance from modern measurement theories. The interest of Chinese researchers in these COPD-specific quality of life measurement tools has increased in recent years. Going forward, it is recommended to employ contemporary measurement methodologies, such as item response theory, for the development and validation of such scales. Additionally, the utilization of the COSMIN guidelines is advocated for a systematic assessment of the measurement properties of these scales.

**Keywords:** Pulmonary disease, chronic obstructive; Quality of life; Disease-specific measurement tool; Questionnaire; Review

---

## Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable, and treatable chronic airway disease characterized by persistent airflow limitation and corresponding respiratory symptoms [1,2]. The main symptoms of COPD include cough, sputum production, dyspnea, wheezing, and chest tightness [1]. Patients frequently experience psychological problems such as anxiety and depression, which severely affect their quality of life [3]. COPD is progressive and irreversible, with a long disease course and recurrent exacerbations [4], making it difficult to evaluate treatment efficacy using single clinical indicators. Therefore, assessing the quality of life of COPD patients—evaluating their comprehensive physical, psychological, and social functioning—has become particularly important for understanding disease experience and clinical treatment outcomes.

Quality of life scales represent the most commonly used method for measuring patient experience, treatment efficacy, and quality of life in COPD [5]. Research has confirmed that disease-specific scales for COPD are more sensitive than generic scales in capturing symptom changes and disease severity [6]. Multiple COPD-specific quality of life scales have been developed domestically and internationally, but substantial differences exist among them in terms of dimensions, items, and measurement levels, necessitating comparative analysis for appropriate application. While some scholars have systematically reviewed measurement properties and applications of outcome assessment tools for COPD patients during acute exacerbations, these studies were limited to the acute phase [7]. Other reviews of commonly used COPD quality of life measurement tools have either provided incomplete coverage of scales or become outdated, failing to reflect the latest research developments in this field [8-10].

Based on this context, the present study adopts the scoping review methodology framework developed by Arksey et al. [11] and follows the PRISMA-ScR (2018) reporting guidelines [12] (checklist attached) to comprehensively and systematically summarize COPD-specific quality of life measurement tools developed

both domestically and internationally. This review aims to provide a reference for the scientific selection and application of appropriate measurement tools for assessing quality of life in Chinese COPD patients.

## Methods

**1.1 Research Question Formulation** This study formulated research questions based on the PCC principle [13]. The population comprised COPD patients; quality of life was defined as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns” [14]; and the context referred to any environment in which patients find themselves. Following preliminary literature review and expert consultation, the following questions were established: (1) What disease-specific tools exist for measuring quality of life in COPD patients both domestically and internationally? (2) What dimensions do these different measurement tools cover? (3) Which tools have been developed based on Chinese populations or validated in China, and which tools are applicable and reliable for quality of life measurement in Chinese COPD patients?

**1.2 Inclusion and Exclusion Criteria** **1.2.1 Inclusion Criteria:** (1) Studies whose research population included or focused on COPD patients; (2) Studies involving the development, revision, or localization of COPD-specific quality of life measurement tools; (3) Studies evaluating the psychometric properties of included tools (\$ \$1 property); (4) No restriction on study type, such as cross-sectional or follow-up studies; (5) Publications in Chinese or English languages.

**1.2.2 Exclusion Criteria:** (1) Studies that only used scales to assess quality of life in COPD patients without evaluating measurement properties; (2) Studies on non-quality-of-life tools for COPD (e.g., screening tools, single-dimension symptom tools); (3) Reviews, systematic reviews, and other secondary studies; (4) Duplicate publications; (5) Studies where full text was unavailable.

**1.3 Search Strategy** Using search terms including “chronic obstructive pulmonary disease,” “COPD,” “quality of life,” “psychometric properties,” and “measurement properties,” we comprehensively searched seven databases: Web of Science, PubMed, Embase, CNKI, Wanfang Database, VIP Database, and China Biomedical Literature Database, from inception to December 31, 2023. We also manually traced references from included studies as supplementary sources. For English databases, we combined subject headings with free-text terms. Using PubMed as an example, the search strategy was: ( “Pulmonary Disease, Chronic Obstructive” [Mesh] OR COPD OR Chronic Obstructive Pulmonary Disease) AND (Quality of Life OR Life Quality OR quality of life OR QOL OR Health-Related Quality Of Life) AND (measurement properties OR “psychometrics” [MeSH] OR psychometr\* OR reliability OR validity OR valid\* OR responsiveness OR responsive\*). Using CNKI as an example, the Chinese

search strategy was: (慢性阻塞性肺疾病 OR 慢阻肺 OR 慢性气道阻塞性疾病) AND (生命质量 OR 生活质量 OR 生存质量 OR 健康相关生命质量 OR 量表 OR 症状) AND (心理测量学特性 OR 信度 OR 信效度 OR 效度 OR 反应性 OR 敏感性).

**1.4 Literature Screening and Data Extraction** All retrieved literature was imported into EndNote X9 software for deduplication using both automatic and manual methods. Based on inclusion and exclusion criteria, two trained graduate students independently screened titles and abstracts, then reviewed full texts for final inclusion. Data were extracted from included studies using a self-designed form, with cross-checking between reviewers and discussion with other researchers to resolve discrepancies. Extracted information included publication year, country/region, scale name, dimensions, number of items and response format, completion time, measurement property indicators, and whether validation was conducted in Chinese populations. When classifying dimensions, each item of each scale was individually reviewed to ensure precise coverage of the measurement scope.

## Results

**2.1 Literature Search Results** The initial search yielded 10,600 articles, with 17 additional articles identified through manual reference tracing. After deduplication, 6,027 articles remained. Based on title and abstract screening, 5,210 articles were excluded (1,776 did not include COPD patients; 1,648 were not quality-of-life measurement tool studies; 1,786 did not evaluate measurement properties). After full-text review of 817 articles, 649 were excluded (322 were non-quality-of-life tool studies; 257 were reviews, case reports, abstracts, editorials, guidelines, or dissertations; 35 were unavailable; 6 were not in Chinese or English; 29 were qualitative studies). Ultimately, 168 articles were included [Figure 1: see original paper].

**2.2 Basic Characteristics of Measurement Tools** This review included 25 COPD-specific quality of life measurement tools, with 7 developed for Chinese populations [15-21] and 18 developed abroad [22-39]. Among the foreign scales, 7 have been extensively validated in Chinese populations: the Chronic Respiratory Disease Questionnaire (CRQ), St. George's Respiratory Questionnaire (SGRQ), Airways Questionnaire (AQ20), Seattle Obstructive Lung Disease Questionnaire (SOLQ), Severe Respiratory Insufficiency Questionnaire (SRI), Clinical COPD Questionnaire (CCQ), and COPD Assessment Test (CAT). The development timeline spanned 1987-2018. The number of items varied substantially, ranging from 8 to 76. The predominant response format was five-level Likert scaling (13 scales, 52.0%). Completion time ranged from 1 to 30 minutes. The CRQ and COPD-QOL could be administered through interviewer assessment or self-report, the Visual Simplified Respiratory Questionnaire (VSRQ) allowed only physician reporting, while the remaining 22 tools recommended patient self-report. Additionally, several scales have been optimized and revised over time:

shortened versions were later developed for the CRQ [40] and Breathing Problems Questionnaire (BPQ) [41]; the SGRQ was modified to create the more concise SGRQ-C specifically for COPD patients [42]; and the Airways Questionnaire 20-Revised (AQ20-R) was developed by adding response options for inability to perform certain activities [43].

**2.3 Dimensions Covered by Measurement Tools** All included COPD-specific quality of life measurement tools were multidimensional, evaluating quality of life across various dimensions including dyspnea, cough, sputum, wheezing, activity capacity, energy/fatigue, social interaction, anxiety/depression, sleep, appetite, sexual life, and impact on daily living. The three most frequently measured dimensions were respiratory symptoms (including dyspnea, cough, sputum, chest tightness, and wheezing), social interaction, and impact on daily life, each appearing in 23 scales (92.0%). Treatment efficacy, sexual life, and excretion dimensions appeared least frequently, each covered by only 6 scales (24.0%). Excretion and appetite dimensions appeared more frequently in Chinese-developed scales, accounting for 83.3% and 66.7% respectively .

**2.4 Measurement Properties of Included Tools** We conducted statistical analysis of measurement property indicators for scales developed or validated in mainland Chinese populations. Measurement properties were categorized into three main types: reliability, validity, and responsiveness/sensitivity. Additionally, we extracted minimal clinically important difference (MCID) values from included studies. Except for the AQ20, all scales underwent reliability and validity testing. For reliability assessment, all scales primarily used Cronbach' s  $\alpha$  to evaluate internal consistency. For validity assessment, Chinese-developed and validated scales focused mainly on content and construct validity, while foreign scales validated domestically more frequently employed criterion validity. Responsiveness/sensitivity and MCID were relatively underutilized, primarily applied to Chinese-developed and validated scales .

## Discussion

This study systematically reviewed COPD-specific quality of life scales developed globally, extracted characteristics of each measurement tool, and conducted item-by-item analysis of covered dimensions. Additionally, we summarized the psychometric properties of scales developed in China and those validated in Chinese populations. A total of 25 measurement tools have been developed worldwide, with 14 developed or validated based on Chinese populations. All scales have undergone reliability and/or validity testing, providing multiple options for quality of life assessment in Chinese COPD patients.

The findings reveal that since the late 1980s, the international community has increasingly recognized the importance of measuring and evaluating quality of life in COPD patients, leading to the development of classic tools such as the CRQ, SGRQ, SOLQ, SRI, CCQ, and CAT. These scales have been extensively

validated and applied in multiple countries, including China, establishing themselves as cornerstone instruments in COPD quality of life assessment. Over the past decade, numerous scales developed and validated by Chinese scholars for local populations have emerged. In 2001, the first quality of life scale specifically for Chinese COPD patients, COPD-QOL, was introduced [15]. Chinese researchers have also innovatively combined generic and disease-specific modules to develop the Quality of Life Instruments for Chronic Diseases (QLICD V1.0) [16]. However, due to suboptimal scale structure, inherent limitations of classical test theory, and lack of MCID exploration, the research team applied modern measurement theory combined with classical test theory to develop QLICD V2.0 in 2018 [67], which has gained widespread application in academic research and clinical settings. The team plans to develop a shortened version and corresponding application software [72]. Additionally, tools based on traditional Chinese medicine theory have been developed and applied [17], and given the frequent comorbidity of COPD with cardiovascular disease, measurement tools specifically for COPD patients with cor pulmonale have also been created [20].

Respiratory symptoms, activity capacity, impact on daily life, emotional functioning, and social domains were the most frequently occurring dimensions across COPD-specific quality of life measurement tools both domestically and internationally. COPD patients primarily experience respiratory symptoms (cough, sputum, and wheezing) that severely impact activity capacity, subsequently affecting social functioning and psychological health [73-74], leading to reduced quality of life [75-77]. The impact of COPD creates a vicious cycle through the mechanism of “physical functioning → psychological and social functioning → quality of life.” A well-designed and comprehensive COPD-specific quality of life questionnaire should ideally include items covering these dimensions. Chinese-developed tools encompass dimensions more aligned with local cultural characteristics, adding items valued in traditional Chinese culture such as family relationships, appetite, and sleep, while also addressing sexual life and excretion dimensions. The sCOPD-PRO scale was the only traditional Chinese medicine scale included in this review, with its framework based on the holistic body-mind concept of traditional Chinese medicine, dividing domains into lung, spleen, and kidney deficiency symptoms, functional activities, and emotional impact. Furthermore, no included tools addressed subjective well-being, indicating insufficient attention to this dimension in the COPD field. Given the prominent psychological issues among COPD patients and the bidirectional relationship between disease and negative emotions, incorporating subjective well-being as an important indicator for evaluating mental health and quality of life holds significant practical value and importance [78].

Regarding methodological applications, except for a few studies using item response theory and generalizability theory [50,67], most included literature employed classical test theory for evaluation, with scale development and validation processes lacking guidance from modern measurement theories. Modern measurement theories can overcome many inherent limitations of classical test

theory [79], and researchers are recommended to apply modern measurement theory or combine modern and classical theories to guide scale item construction and measurement property evaluation.

Statistical analysis of measurement property indicators for scales developed or validated in mainland Chinese populations revealed generally high internal consistency. Criterion validity performed well in sCOPD-PRO, COPD-PRO, PROISCD-COPD, SGRQ, CAT, and SRI scales. Responsiveness [80]—the ability to detect change in quality of life over time—often requires longitudinal study support and represents an important measurement property for intervention studies or longitudinal observations using COPD-specific quality of life scales. MCID [81] is used to interpret the clinical significance of score changes in quality of life scales and clinical efficacy questionnaires. This review only extracted MCID values from included studies and did not incorporate all domestic MCID research related to COPD-specific quality of life measurement tools. However, the results indicate that application of these indicators remains limited. Both responsiveness and MCID are crucial for evaluating clinical outcomes and quality of life improvements, yet current studies lack practical application of these metrics. Researchers should strengthen exploration of these indicators and follow standardized development procedures or COSMIN guidelines for scale development and measurement property evaluation to more precisely and objectively assess the psychometric performance of COPD-specific quality of life measurement tools.

In summary, researchers can select appropriate tools based on research objectives and resources. Priority should be given to tools developed based on mainland Chinese populations with validated measurement properties. Foreign classic scales with good measurement performance after validation in Chinese populations are also recommended, particularly SGRQ, SOLQ, SRI, CCQ, and CAT. Using classic scales extensively validated in cross-cultural research allows direct comparison of Chinese results with other cultural groups when measurement equivalence reaches strong invariance, facilitating understanding of quality of life status among Chinese patients. Given the numerous COPD-specific quality of life measurement tools and the complexity of scale development, researchers are advised to improve, revise, and validate existing scales rather than developing new ones. For tools not developed for or validated in Chinese populations, measurement property validation should be conducted first.

**Limitations:** First, although two researchers independently reviewed and verified dimension classification, subjective classification criteria may still introduce bias. Second, this review only included studies on development of COPD-specific quality of life scales and validation studies in Chinese populations; foreign validation studies of foreign-developed scales and generic quality of life scales were not included. Future measurement property evaluations should incorporate these to provide more comprehensive results. Finally, this study only descriptively analyzed measurement property indicators; future research should systematically evaluate scale measurement properties using COSMIN guidelines and the mod-

ified GRADE system to generate evidence-based recommendations for COPD-specific quality of life scales.

**Author Contributions:** WANG Jingning was responsible for data retrieval and organization, statistical analysis, and initial manuscript drafting. FENG Junchao verified extracted content, designed the article framework, and revised the manuscript. LI Shunping designed the article framework, reviewed and guided the manuscript, and provided funding support. YANG Ting, ZHANG Chunyu, JIANG Yuanyuan, QUMU Shiwei, LUO Nan, WANG Xueliang, and DOU Lei provided guidance, suggestions, and manuscript revision and polishing.

**Conflict of Interest:** The authors declare no conflict of interest.

**ORCID IDs:**

WANG Jingning: <https://orcid.org/0009-0009-4079-2501>

LI Shunping: <https://orcid.org/0000-0001-8144-6220>

QUMU Shiwei: <https://orcid.org/0000-0003-3477-4429>

LUO Nan: <https://orcid.org/0000-0001-7980-6979>

---

**References**

- [1] Global Initiative for Chronic Obstructive Lung Disease - Global Initiative for Chronic Obstructive Lung Disease - GOLD [EB/OL]. [2024-06-26]. <https://goldcopd.org/>.
- [2] CHEN D, LONG HY, LI SR, et al. Interpretation of key updates in the 2024 GOLD global strategy for the diagnosis, treatment, management, and prevention of chronic obstructive pulmonary disease [J]. *Chinese General Practice*, 2024, 27(13): 1533-1543, 1567.
- [3] LI XY, SUN WQ, YIN MJ, et al. Sleep quality, anxiety and depression in patients with chronic obstructive pulmonary disease and their influencing factors: a multicenter cross-sectional study [J]. *Chinese General Practice*, 2024, 27(20): 2437-2444.
- [4] Chinese Thoracic Society COPD Group, Chinese Association of Chest Physicians COPD Working Committee, CHEN RC, et al. Guidelines for the diagnosis and treatment of chronic obstructive pulmonary disease (2021 revised edition) [J]. *Chinese Journal of Tuberculosis and Respiratory Diseases*, 2021, 44(3): 170-205. DOI: 10.3760/cma.j.cn112147-20210109-00031.
- [5] HIGGINSON IJ, CARR AJ. Measuring quality of life: Using quality of life measures in the clinical setting [J]. *BMJ*, 2001, 322(7297): 1297-1300. DOI: 10.1136/bmj.322.7297.1297.
- [6] MEHDIPOUR A, BEAUCHAMP MK, WALD J, et al. Measurement properties of preference-based measures for economic evaluation in COPD: a system-

atic review [J]. *Qual Life Res*, 2020, 29(11): 2875-2885. DOI: 10.1007/s11136-020-02569-4.

[7] LI CY, WANG JJ, WEI MY, et al. Research status of patient-reported outcome measures for acute exacerbation of chronic obstructive pulmonary disease [J]. *Chinese General Practice*, 2024, 27(31): 3896-3904.

[8] LIU M, AN ZH, CHI QQ, et al. Clinical application and characteristics of quality of life scales in chronic obstructive pulmonary disease [J]. *China Practical Medicine*, 2023, 18(22): 158-161. DOI: 10.14163/j.cnki.11-5547/r.2023.22.040.

[9] JIA XF, WANG JQ, YANG Y, et al. Research progress on quality of life assessment tools for patients with chronic obstructive pulmonary disease [J]. *Chinese Nursing Research*, 2014, 28(14): 1665-1667. DOI: 10.3969/j.issn.1009-6493.2014.14.001.

[10] WEN DL, WANG ZW, MA XD, et al. Research progress on health-related quality of life scales for chronic obstructive pulmonary disease at home and abroad [J]. *Journal of China Medical University*, 2013, 42(3): 281-285. DOI: 10.3969/j.issn.0258-4646.2013.03.025.

[11] ARKSEY H, O' MALLEY L. Scoping studies: towards a methodological framework [J]. *International Journal of Social Research Methodology*, Taylor and Francis Group Ltd, 2005.

[12] TRICCO AC, LILLIE E, ZARIN W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation [J]. *Ann Intern Med*, 2018, 169(7): 467-473. DOI: 10.7326/M18-0850.

[13] PETERS MDJ, MARNIE C, TRICCO AC, et al. Updated methodological guidance for the conduct of scoping reviews [J]. *JBI Evid Synth*, 2020, 18(10): 2119-2126. DOI: 10.11124/jbies-20-00167.

[14] LI YN, LI YC, ZHANG M, et al. Research progress on health-related quality of life [J]. *Chinese Journal of Epidemiology*, 2016, 37(9): 1311-1317. DOI: 10.3760/cma.j.issn.0254-6450.2016.09.024.

[15] FANG ZJ, CAI YY, WANG LH, et al. Development and application of a quality of life assessment scale for patients with chronic obstructive pulmonary disease [J]. *Modern Rehabilitation*, 2001, 5(7): 7-8, 13.

[16] YANG Z, LI XM, WAN CH, et al. Development and evaluation of a quality of life scale for patients with chronic obstructive pulmonary disease [J]. *Chinese General Practice*, 2007, 10(13): 1080-1083. DOI: 10.3969/j.issn.1007-9572.2007.13.015.

[17] ZHU YB, LI YL, WANG W, et al. Development and clinical applicability of a patient-reported outcome scale for stable chronic obstructive pulmonary disease [J]. *Journal of Chinese Integrative Medicine*, 2011, 9(8): 857-865.

[18] LI JS, WANG MH, YU XQ, et al. Development and validation of a patient reported outcome instrument for chronic obstructive pulmonary diseases [J].

Chin J Integr Med, 2015, 21(9): 667-675. DOI: 10.1007/s11655-014-1982-4.

[19] LI MJ, LÜ HM, LUO YH, et al. Item selection for the chronic obstructive pulmonary disease patient-reported clinical outcome scale [J]. Chinese Journal of Respiratory and Critical Care Medicine, 2016, 15(2): 105-108. DOI: 10.7507/1671-6205.2016027.

[20] ZHOU HP. Development and evaluation of a patient-reported clinical outcome scale for COPD patients with cor pulmonale [D]. Kunming: Kunming Medical University, 2016.

[21] RUAN JH. Development of a chronic obstructive pulmonary disease patient-reported outcome scale and establishment of its minimal clinically important difference [D]. Zhanjiang: Guangdong Medical University, 2018.

[22] WINDISCH W, FREIDEL K, SCHUCHER B, et al. The severe respiratory insufficiency (SRI) questionnaire: a specific measure of health-related quality of life in patients receiving home mechanical ventilation [J]. J Clin Epidemiol, 2003, 56(8): 752-759. DOI: 10.1016/s0895-4356(03)00088-x.

[23] VIDOTTO G, BERTOLOTTI G, CARONE M, et al. A new questionnaire specifically designed for patients affected by chronic obstructive pulmonary disease; The Italian Health Status Questionnaire [J]. Respir Med, 2006, 100(5): 862-870. DOI: 10.1016/j.rmed.2005.08.024.

[24] VAN DER MOLEN T, WILLEMSE BWM, SCHOKKER S, et al. Development, validity and responsiveness of the clinical COPD questionnaire [J]. Health Qual Life Outcomes, 2003, 1: 13. DOI: 10.1186/1477-7525-1-13.

[25] TU SP, MCDONELL MB, SPERTUS JA, et al. A new self-administered questionnaire to monitor health-related quality of life in patients with COPD. Ambulatory Care Quality Improvement Project (ACQUIP) Investigators [J]. Chest, 1997, 112(3): 614-622. DOI: 10.1378/chest.112.3.614.

[26] STAVEM K, ERIKSEN J, BOE J. Performance of a short lung-specific health status measure in outpatients with chronic obstructive pulmonary disease [J]. Respir Med, 1999, 93(7): 467-475. DOI: 10.1016/s0954-6111(99)90089-6.

[27] POMMER AM, PRINS L, VAN RANST D, et al. Development and validity of the patient-centred COPD questionnaire (PCQ) [J]. J Psychosom Res, 2013, 75(6): 563-571. DOI: 10.1016/j.jpsychores.2013.10.001.

[28] PEREZ T, ARNOULD B, GROSBOIS JM, et al. Validity, reliability, and responsiveness of a new short Visual Simplified Respiratory Questionnaire (VSRQ) for health-related quality of life assessment in chronic obstructive pulmonary disease [J]. Int J Chron Obstruct Pulmon Dis, 2009, 4: 9-18.

[29] PAKHALE S, WOOD-DAUPHINEE S, SPAHIJA J, et al. Combining both generic and disease-specific properties: development of the McGill COPD quality of life questionnaire [J]. COPD, 2011, 8(4): 255-263. DOI: 10.3109/15412555.2011.578600.

[30] NINOT G, SOYEZ F, PRÉFAUT C. A short questionnaire for the assessment of quality of life in patients with chronic obstructive pulmonary disease: psychometric properties of VQ11 [J]. *Health Qual Life Outcomes*, 2013, 11: 179. DOI: 10.1186/1477-7525-11-179.

[31] MCKENNA SP, MEADS DM, DOWARD LC, et al. Development and validation of the living with chronic obstructive pulmonary disease questionnaire [J]. *Qual Life Res*, 2011, 20(7): 1043-1052. DOI: 10.1007/s11136-011-9850-6.

[32] MAILLÉ AR, KONING CJ, ZWINDERMAN AH, et al. The development of the 'quality-of-life for respiratory illness questionnaire (QOL-RIQ)' : a disease-specific quality-of-life questionnaire for patients with mild to moderate chronic non-specific lung disease [J]. *Respir Med*, 1997, 91(5): 297-309. DOI: 10.1016/s0954-6111(97)90034-2.

[33] JONES PW, QUIRK FH, BAVEYSTOCK CM. The st George's respiratory questionnaire [J]. *Respir Med*, 1991, 85(Suppl B): 25-31; discussion 33-37. DOI: 10.1016/s0954-6111(06)80166-8.

[34] JONES PW, HARDING G, BERRY P, et al. Development and first validation of the COPD assessment test [J]. *Eur Respir J*, 2009, 34(3): 648-654. DOI: 10.1183/09031936.00102509.

[35] HYLAND ME, BOTT J, SINGH S, et al. Domains, constructs and the development of the breathing problems questionnaire [J]. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, 1994, 3(4): 245-256. DOI: 10.1007/BF00451724.

[36] HIRATSUKA T, KIDA K. Quality of life measurements using a linear analog scale for elderly patients with chronic lung disease [J]. *Intern Med*, 1993, 32(11): 832-836. DOI: 10.2169/internalmedicine.32.832.

[37] GUYATT GH, BERMAN LB, TOWNSEND M, et al. A measure of quality of life for clinical trials in chronic lung disease [J]. *Thorax*, 1987, 42(10): 773-778. DOI: 10.1136/thx.42.10.773.

[38] CARONE M, BERTOLOTTI G, ANCHISI F, et al. Analysis of factors that characterize health impairment in patients with chronic respiratory failure. Quality of Life in Chronic Respiratory Failure Group [J]. *Eur Respir J*, 1999, 13(6): 1293-1300. DOI: 10.1183/09031936.99.13613019.

[39] AMERICAN THORACIC SOCIETY QUALITY OF LIFE RESOURCE. Airways Questionnaire [EB/OL]. [2024-07-31]. <https://qol.thoracic.org/sections/instruments/ae/pages/airques>

[40] TSAI CL, HODDER RV, PAGE JH, et al. The short-form chronic respiratory disease questionnaire was a valid, reliable, and responsive quality-of-life instrument in acute exacerbations of chronic obstructive pulmonary disease [J]. *J Clin Epidemiol*, 2008, 61(5): 489-497. DOI: 10.1016/j.jclinepi.2007.07.003.

[41] HYLAND ME, SINGH SJ, SODERGREN SC, et al. Development of a shortened version of the Breathing Problems Questionnaire suitable for use in

- a pulmonary rehabilitation clinic: a purpose-specific, disease-specific questionnaire [J]. *Qual Life Res*, 1998, 7(3): 227-233. DOI: 10.1023/a:1008848428734.
- [42] MEGURO M, BARLEY EA, SPENCER S, et al. Development and validation of an improved, COPD-specific version of the St. George respiratory questionnaire [J]. *Chest*, 2007, 132(2): 456-463. DOI: 10.1378/chest.06-0702.
- [43] CHEN H, EISNER MD, KATZ PP, et al. Measuring disease-specific quality of life in obstructive airway disease: validation of a modified version of the airways questionnaire 20 [J]. *Chest*, 2006, 129(6): 1644-1652. DOI: 10.1378/chest.129.6.1644.
- [44] CHAN LLC, TAM K, CHAN E, et al. Reliability and Validity of the Chinese Version of the Chronic Respiratory Questionnaire (CCRQ) in Patients with COPD [J]. *Hong Kong Journal of Occupational Therapy*, 2006, 16(1): 9-15. DOI: 10.1016/S1569-1861(09)70034-8.
- [45] MENG NH, CHEN FN, LO SF, et al. Reliability and validity of the Taiwan (Mandarin Chinese) version of the chronic respiratory questionnaire [J]. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, 2011, 20(10): 1745-1751. DOI: 10.1007/s11136-011-9906-7.
- [46] FANG ZJ, CAI YY, JIANG HM, et al. Evaluation of quality of life in patients with chronic obstructive pulmonary disease using the SGRQ questionnaire [J]. *Chinese Journal of Behavioral Medical Science*, 1996, 5(1): 16-17, 56.
- [47] YU DTW, SCUDDS RJ, SCUDDS RA. Reliability and Validity of a Hong Kong Chinese Version of the St George's Respiratory Questionnaire in Patients with COPD [J]. *Hong Kong Physiotherapy Journal*, 2004, 22(1): 33-39. DOI: 10.1016/S1013-7025(09)70048-X.
- [48] LIANG WM, CHEN JJ, CHANG CH, et al. An empirical comparison of the WHOQOL-BREF and the SGRQ among patients with COPD [J]. *Qual Life Res*, 2008, 17(5): 793-800. DOI: 10.1007/s11136-008-9326-5.
- [49] ZHAO YF, JIANG YP, CHENG GC, et al. Comparison of the St. George's Respiratory Questionnaire and the COPD Assessment Test in evaluating health-related quality of life in stable COPD patients [J]. *Shanghai Medical Journal*, 2013, 36(1): 47-51.
- [50] LO C, LIANG WM, HANG LW, et al. A psychometric assessment of the St. George's respiratory questionnaire in patients with COPD using Rasch model analysis [J]. *Health Qual Life Outcomes*, 2015, 13: 131. DOI: 10.1186/s12955-015-0320-7.
- [51] REN JP, YAN ZM, ZHANG YR, et al. Application of AQ20 questionnaire in community intervention evaluation for COPD [J]. *Soft Science of Health*, 2002, 16(3): 19-20. DOI: 10.3969/j.issn.1003-2800.2002.03.007.

- [52] JIA XF, WANG JQ, YANG Y, et al. Study on the value of SOLQ in assessing quality of life in community COPD patients [J]. Chinese Nursing Research, 2015, 29(29): 3613-3616.
- [53] XU J, MA CM, YANG JH. Impact of treatment compliance on quality of life in patients with chronic obstructive pulmonary disease [J]. Journal of Cardiovascular Rehabilitation Medicine, 2008, 17(5): 434-436, 440. DOI: 10.3969/j.issn.1008-0074.2008.05.004.
- [54] CHEN RC, GUAN LL, WU WL, et al. The Chinese version of the Severe Respiratory Insufficiency questionnaire for patients with chronic hypercapnic chronic obstructive pulmonary disease receiving non-invasive positive pressure ventilation [J]. BMJ Open, 2017, 7(8): e017712. DOI: 10.1136/bmjopen-2017-017712.
- [55] GUAN LL, XU JW, WU WL, et al. Chinese version of the severe respiratory insufficiency questionnaire for patients with COPD receiving long-term oxygen therapy [J]. Int J Chron Obstruct Pulmon Dis, 2018, 13: 1537-1543. DOI: 10.2147/COPD.S156135.
- [56] LIU SF, TSENG CW, TU ML, et al. The clinical COPD questionnaire correlated with BODE index—a cross-sectional study [J]. Sci World J, 2012, 2012: 361535. DOI: 10.1100/2012/361535.
- [57] LIN WC, HUANG TY, LIU CY, et al. Validation of the Clinical COPD Questionnaire in Taiwan [J]. COPD, 2016, 13(3): 360-366. DOI: 10.3109/15412555.2015.1094456.
- [58] CAI R, HOU G, WANG QY, et al. Study on the evaluation value of COPD assessment test on quality of life [J]. Chinese Journal of Practical Internal Medicine, 2011, 31(11): 847-849, 901.
- [59] CHAI JJ, LIU T, CAI BQ. Evaluation of the clinical application significance of the Chinese version of the COPD assessment test [J]. Chinese Journal of Tuberculosis and Respiratory Diseases, 2011, 34(4): 256-258. DOI: 10.3760/cma.j.issn.1001-0939.2011.04.009.
- [60] JIANG YP. Clinical assessment and risk prediction of combined CAT scale and serum copeptin in AECOPD patients [D]. Nanjing: Southeast University, 2012.
- [61] YOU XH, ZOU YD. Evaluation and significance of CAT in assessing quality of life in pneumoconiosis patients with COPD [J]. Practical Clinical Medicine, 2012, 13(12): 37-39. DOI: 10.3969/j.issn.1009-8194.2012.12.013.
- [62] ZHAO YF, JIANG YP, CHENG GC, et al. Comparison of the St. George's Respiratory Questionnaire and the COPD Assessment Test in evaluating health-related quality of life in stable COPD patients [J]. Shanghai Medical Journal, 2013, 36(1): 47-51.

- [63] ZHANG X, GAO P, GONG YJ, et al. Study on the evaluation and significance of CAT in assessing quality of life in pneumoconiosis patients with COPD [J]. *China Practical Medical*, 2020, 15(22): 163-165. DOI: 10.14163/j.cnki.11-5547/r.2020.22.073.
- [64] ZHOU QT, MEI JJ, HE B, et al. Chronic obstructive pulmonary disease assessment test score correlated with dyspnea score in a large sample of Chinese patients [J]. *Chin Med J (Engl)*, 2013, 126(1): 11-15.
- [65] KWON N, AMIN M, HUI DS, et al. Validity of the COPD assessment test translated into local languages for Asian patients [J]. *Chest*, 2013, 143(3): 703-710. DOI: 10.1378/chest.12-0535.
- [66] WANG MH, LI JS, YU XQ, et al. Reliability and validity evaluation of the adult COPD-QOL scale in stable chronic obstructive pulmonary disease [J]. *Liaoning Journal of Traditional Chinese Medicine*, 2010, 37(12): 2320-2323. DOI: 10.13192/j.ljtc.2010.12.53.wangmh.079.
- [67] WAN CH, YANG Z, ZHAO ZH, et al. Development and preliminary validation of the chronic obstructive pulmonary disease scale quality of life instruments for chronic diseases-chronic obstructive pulmonary disease based on classical test theory and generalizability theory [J]. *Chron Respir Dis*, 2022, 19: 14799731221104099. DOI: 10.1177/14799731221104099.
- [68] LIU WQ. Study on the minimal clinically important difference of the stable COPD patient-reported outcome scale (sCOPD-PRO) [D]. Beijing: Beijing University of Chinese Medicine, 2022.
- [69] LI JS, WANG MH, YU XQ, et al. Development and preliminary evaluation of a patient-reported outcome scale for stable chronic obstructive pulmonary disease [J]. *Journal of Chinese Medicine*, 2011, 26(3): 270-274. DOI: 10.16368/j.issn.1674-8999.2011.03.004.
- [70] WANG JJ. Revision and evaluation of the COPD-PRO scale based on disease-syndrome combination theory [D]. Beijing: Beijing University of Chinese Medicine, 2019. DOI: 10.26973/d.cnki.gbjzu.2019.000176.
- [71] LI MJ, LÜ HM, LUO YH, et al. Reliability and validity evaluation of the chronic obstructive pulmonary disease patient-reported clinical outcome scale [J]. *Chinese Remedies & Clinics*, 2016, 16(1): 4-8. DOI: 10.11655/zgy-wylc2016.01.002.
- [72] WAN CH, WU XY, LIU YX, et al. Research and application status of the second version of quality of life instruments for chronic diseases (QLICD V2.0) [J]. *Journal of Guangdong Medical University*, 2022, 40(3): 243-249.
- [73] XU XP. Analysis of related factors of anxiety and depression in patients with chronic obstructive pulmonary disease [D]. Nanchang: Nanchang University, 2022.

- [74] SIRAJ RA, MCKEEVER TM, GIBSON JE, et al. Incidence of depression and antidepressant prescription in patients with COPD: a large UK population-based cohort study [J]. *Respir Med*, 2022, 196: 106804. DOI: 10.1016/j.rmed.2022.106804.
- [75] ZHANG BY. Current status and influencing factors of social participation in elderly patients with chronic obstructive pulmonary disease [D]. Jinan: Shandong University, 2022. DOI: 10.27272/d.cnki.gshdu.2022.003142.
- [76] ZHANG BY, ZHAO M, LI M, et al. Study on the current status and influencing factors of acute exacerbation readmission in elderly patients with chronic obstructive pulmonary disease [J]. *Nursing Journal of Chinese People's Liberation Army*, 2021, 38(12): 26-29.
- [77] National Collaborating Centre for Chronic Conditions. Chronic obstructive pulmonary disease. National clinical guideline on management of chronic obstructive pulmonary disease in adults in primary and secondary care [J]. *Thorax*, 2004, 59(Suppl 1): 1-232.
- [78] ZHANG XF. Current status and influencing factors of subjective well-being in patients with chronic obstructive pulmonary disease and its pathway of action [D]. Lanzhou: Gansu University of Chinese Medicine, 2023.
- [79] DIMA AL. Scale validation in applied health research: tutorial for a 6-step R-based psychometrics protocol [J]. *Health Psychol Behav Med*, 2018, 6(1): 136-161. DOI: 10.1080/21642850.2018.1472602.
- [80] PRINSEN CAC, MOKKINK LB, BOUTER LM, et al. COSMIN guideline for systematic reviews of patient-reported outcome measures [J]. *Qual Life Res*, 2018, 27(5): 1147-1157. DOI: 10.1007/s11136-018-1798-3.
- [81] GUYATT G, WALTER S, NORMAN G. Measuring change over time: assessing the usefulness of evaluative instruments [J]. *J Chronic Dis*, 1987, 40(2): 171-178. DOI: 10.1016/0021-9681(87)90069-5.

(Received: December 15, 2024; Revised: June 16, 2025)

---

## Tables

**TABLE:1** Characteristics of disease-specific quality of life measurement tools for chronic obstructive pulmonary disease

**TABLE:2** Dimensions covered by the specific quality of life measurement tools for chronic obstructive pulmonary disease

**TABLE:3** Overall performance of the scale measurement property indicators

*Note: Figure translations are in progress. See original paper for figures.*

*Source: ChinaXiv – Machine translation. Verify with original.*