Evaluation of health-related quality of life in pulmonary diseases

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The concept of health-related quality of life has been classified into the three main following categories: individual, community, and scientific literature levels (Centers for Disease Control and Prevention [CDC], 2016). At the individual level, health-related quality of life includes physical and mental perceptions; at the community level, it includes those conditions influencing health perception and functional status; and at the scientific level, it includes perceived mental or physical health among individuals or groups (CDC, 2016).

Health-related quality of life can be measured using 14 core questions (CDC HRQoL-14 Healthy Days Measure) investigating different aspects of the individual perception of pain, physical or mental limitations, and general health (CDC, 2017).

The St George’s Respiratory Questionnaire

Health-related quality of life can be measured using a single questionnaire applicable to different pulmonary diseases; nevertheless, different outcome measures can be correlated to it according to these diseases. The St George’s Respiratory Questionnaire (SGRQ) has been primarily used in literature to capture health-related quality of life in several cohorts of pulmonary patients. In fact, the SGRQ has been found suitable for patients with asthma, chronic obstructive pulmonary diseases bronchiectasis, sarcoidosis, idiopathic pulmonary fibrosis, pulmonary tuberculosis, cystic fibrosis (Jones and Forde, 2009). There are three versions available of self-administered SGRQ:

- The SGRQ-C is a shorter version dedicated to COPD patients containing 40 items
- The SGRQ-I is specifically for idiopathic pulmonary fibrosis patients, containing 34 items (St George’s University of London, 2018)
- Overall, the use of SGRQ is without charge, but permission for its use must be obtained from the site retaining copyright (St George’s University of London, 2018). The SGRQ is used worldwide in clinical practice since several validated translations are available.

A Cochrane review recently found that pulmonary rehabilitation after an exacerbation in COPD patients results in improvements in health-related quality of life (Puhan et al, 2016). In that review, 846 participants in eight studies reported a significant improvement on SGRQ total score following treatment.

Moreover, the SGRQ has been used to test change in HRQoL in a study whose objective was primarily to evaluate the effectiveness of an interactive video game system in addition to a supervised pulmonary rehabilitation programme in a mixed group of patients with chronic pulmonary diseases (COPD, interstitial lung disease, bronchiectasis, and asthma) (Mazzoleni et al, 2014). Since authors detected significant improvements in SGRQ in both patient groups, they concluded that this tool is sensitive to measure psychological status, communicative function, and social impact of disability in different populations of respiratory patients.

More recently, the SGRQ has also been used to measure the health-related quality of life in a cohort of patients with different interstitial lung diseases (including idiopathic pulmonary fibrosis) who were referred to a pulmonary rehabilitation programme (Tonelli et al, 2017): the total SGRQ score improved significantly after treatment even in these patients.

The largest applicability of SGRQ to assess the health-related quality of life and its change related to rehabilitation is recognised in the population of COPD as reported by the Global Initiative for Chronic Obstructive Lung Diseases.
(GOLD) document (Vogelmeier et al, 2017). Precisely, together with the Chronic Respiratory Questionnaire (CRQ), the SGRQ is considered the most comprehensive COPD-specific health status questionnaire. The effectiveness of pulmonary rehabilitation to improve health-related quality of life, as assessed by SGRQ in different phenotypes of COPD patients, has also been reported in another recent study by Ambrosino et al (2015). Notwithstanding, SGRQ has been so far described as too complicated to be used in the clinical practice when compared with others, namely the COPD Assessment Test (CAT), which contains eight questions (Jones et al, 2009).

Strictly speaking, the CAT has been designed with the purpose to measure the impact of COPD on a person’s life and related changes: this concept is slightly different from measuring health-related quality of life. Thus, a comparison between the SGRQ and the CAT are tricky. In addition, the SGRQ is not an intended assessment tool for evaluating patients with respiratory insufficiency: for this population the rather more specific Maugeri Foundation Respiratory Failure Questionnaire (MRF-28) (Carone et al, 2001) should be used. The MRF-28 is a disease-specific questionnaire including 28 questions designed to evaluate patients with chronic respiratory failure.

**Trends and indications**

Looking at the literature, the SGRQ is the most widely used tool to measure health-related quality of life in patients with pulmonary diseases; this confirms the increasing attention of researchers towards health-related quality of life in clinical studies. In fact, pulmonary patients are typically prone to fall into frequent exacerbations and high hospital readmission rates during their disease, and are at risk of failing rehabilitation due to the impact of symptoms, such as fatigue and dyspnea, in everyday life. Improving symptoms is a fundamental objective of medical treatment. Therefore, validated questionnaires to assess health-related quality of life and sensitive to changes are useful tools to evaluate the effects of both pharmacological or non-pharmacological interventions properly. Since health-related quality of life is a measure strictly related to the effectiveness of a pulmonary rehabilitation course, SGRQ seems to be a suitable tool to report it. Other simplest questionnaires, namely the CAT (Jones et al, 2009), could be used more easily in the clinical practice, specifically to detect changes in patients with COPD. **IJTR**


