

Tanaffos (2008) 7(2), 28-35

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## Health-Related Quality of Life in Chronic Obstructive Pulmonary Disease: Are Disease-Specific and Generic Quality of Life Measures Correlated?

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### ABSTRACT

**Background:** Generic and disease-specific health-related quality of life (HRQoL) questionnaires are commonly used in subjects with chronic obstructive pulmonary disease (COPD). However, it is not clear whether generic and disease-specific measures should be used in parallel, as they focus on different aspects of life. This study aimed to investigate the association between two most commonly used generic and disease specific HRQoL measures: Medical Outcomes Study Short Form 36-Item (SF-36) and St George's Respiratory Questionnaire (SGRQ).

**Materials and Methods:** In a cross-sectional study, 58 subjects were selected through non-randomized systematic sampling from all COPD patients admitted to the "Respiratory Clinic of Baqiyatallah Hospital" during 2006. Each subject completed both SF-36 and SGRQ forms. Spirometry was also performed for each patient. The correlations between SGRQ total score and its subscores, including symptoms, activity and impacts, and SF-36 total score and its subscores, including physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE) and mental health (MH), were assessed.

**Results:** No significant correlation was found between the total score or subscores of SF-36 and the total score or subscales of SGRQ ( $p > 0.05$ ).

**Conclusion:** The generic SF-36 and the disease specific SGRQ questionnaires assess different aspects of HRQoL in COPD patients and each should be used separately. The optimal approach appears to be the application of generic and disease-specific measures together, at least in the research setting. Further studies are recommended with larger sample size. (Tanaffos 2008; 7(2): 28-35)

**Key words:** Chronic obstructive pulmonary disease, Quality of life, Generic measure, Disease specific measure

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Received: 6 June 2007

Accepted: 15 May 2008

## INTRODUCTION

In chronic obstructive pulmonary disease (COPD), measures of health-related quality of life (HRQoL)

are frequently used as descriptive instruments or outcome measures (1-6). Since a cure is still impossible for most COPD patients, a major goal of care is to improve HRQoL (7).

Although the importance of assessing HRQoL in COPD patients has been well established, the specific roles of disease specific or generic instruments have not been well delineated. Considering the fact that several factors have been reported to relate to different measures of HRQoL in COPD patients, studies are needed to compare the validity, reliability, and responsiveness of generic and disease-specific measures in this population (8). The aim of this study was to assess the possible correlation between the most widely used disease specific and generic HRQoL tools in COPD patients: St. George's Respiratory Questionnaire (SGRQ) and Medical Outcomes Study Short Form 36-Item (SF-36). Such analysis may shed light on the difference of these questionnaires used in assessing quality of life (QOL) in COPD patients.

## MATERIALS AND METHODS

### Design

In a cross-sectional study, COPD patients were selected. Patients were then examined by spirometric tests, and assessed by specific and generic HRQoL measures.

### Patients

Using a non-randomized sampling, every tenth patient at the Outpatient Pulmonary Clinic in Baqiyatallah Hospital (Tehran, Iran) who was diagnosed of having COPD was invited to participate in the study. The diagnosis of COPD was confirmed

by a pulmonologist according to the "Global initiative for chronic Obstructive Lung Disease" (GOLD) criteria (9). All patients were smokers or former smokers with a smoking history of  $\geq 10$  pack-years. The exclusion criteria were other disabling or severe diseases and/or coexistence of other causes of impaired pulmonary function. Patients with a history indicating asthma were excluded. None of the subjects had an acute exacerbation of COPD at the time of investigation. In total, 56 patients entered the study.

### Main Outcome Measures:

Physiological measurements of pulmonary function were assessed with a Jaeger spirometer. Patients were grouped according to spirometric findings and GOLD criteria as follows: Stage I, mild COPD: FEV1  $\geq 80\%$  predicted; Stage II, moderate COPD: FEV1 between 50% and 80% predicted; Stage III, severe COPD: FEV1 between 30% and 50% predicted; and stage IV, very severe COPD: FEV1  $< 30\%$  predicted (9).

### Health-related quality of life questionnaires

#### Disease specific

#### The St George's Respiratory Questionnaire (SGRQ)

The best known and most frequently used disease-specific HRQoL questionnaire for respiratory diseases - was used in this study (10, 11). SGRQ is a standardized, self-administered questionnaire for measuring impaired health and perceived HRQoL in airway diseases. It contains 50 items, divided into three domains: Symptoms, Activity and Impacts. A score is calculated for each domain and a total score, including all items, is calculated as well. Each item has an empirically derived weight. Low scores indicate a better state of HRQoL. Recent publications

by the developer of SGRQ (PW Jones) have confirmed that the minimal important difference (MID) relevant to the patients is 4 on a scale of 0 to 100 (12, 13). A coefficient for reliability as 0.69-0.96 has been reported for the Persian version of SGRQ, which shows a good validity and sufficient reliability of this tool (14), and has been used in research (15-18).

### Generic

**Short Form-36:** An extensively validated Iranian version (19) of SF-36 was used in this study. SF-36 is a well-known generic HRQoL questionnaire, constructed to facilitate comparisons between different health conditions over a range of important functional aspects, and consists of 36 items. The most widely used generic questionnaire, the Medical Outcomes Study Short Form 36 (SF-36), has been widely accepted in recent years as the best generic HRQoL measure. It also contains 36 items divided into eight domains: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE) and Mental Health (MH). These domains create a profile of the subject. Two summary scores can also be aggregated, the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Scores range from 0 to 100, with higher scores representing better HRQoL. Some researchers have also calculated a total score for SF36 (20, 21). SF36 has been previously translated and used in Iran (19).

### Statistical methods

Parametric (Pearson) and nonparametric (Spearman) tests were applied to study the correlations between the HRQoL measures. As no major discrepancies were found, Pearson correlation coefficients were reported throughout. For

investigating the associations between QOL subscores and demographic data or COPD stage, Mann-Whitney test was used. We also assessed a Pearson bivariate correlation for QOL subscores and spirometric measures. A p-value less than 0.05 were considered significant.

## RESULTS

From all 56 subjects, 33 (58.9%) were men and 23 (41.1%) were women. Educational level was below diploma in 45 patients (80.4%), and diploma or higher in 11 (19.6%). Family income was less than 2,000,000 Rials in 23 (41.1%) and more than 2,000,000 Rials in 33 patients (58.9%). According to the GOLD staging, 31 patients (55.4%) had stage I (mild COPD, FEV1 $\geq$ 80% predicted), 21 (37.5%) stage II (moderate COPD, FEV1 between 50% and 80% predicted) and 4 (7.1%) stage III COPD (severe COPD, FEV1 between 30% and 50% predicted). No one had stage 0 or IV COPD.

Baseline data is presented in Table 1. As shown in Table 2, there was no significant correlation between SF-36 and SGRQ subscores.

Table 1. Baseline data including anthropometric variables, symptoms, activity and disease impact.

Age (year)	60.0 $\pm$ 10.4
Weight (kg)	74 $\pm$ 17
Height (cm)	164 $\pm$ 2
Body mass index (kg/m <sup>2</sup> )	27.7 $\pm$ 7.0
SGRQ symptoms (0-100)	52.9 $\pm$ 1.60
SGRQ activity (0-100)	43.1 $\pm$ 1.8
SGRQ impact (0-100)	24.3 $\pm$ 1.42
SGRQ total (0-100)	36.2 $\pm$ 1.4
VC predicted	84 $\pm$ 13
FEV1 predicted	79 $\pm$ 15
FVC predicted	82 $\pm$ 12

Table 2. Pearson correlations between Short form-36 (SF-36) and St George's Respiratory Questionnaire (SGRQ) scores.

		Symptoms score	Activity score	Impacts score	Total score
Physical function	Correlation coefficient	-0.057	0.054	0.020	-0.009
	Sig.	0.672	0.686	0.884	0.950
Role limitations	Correlation coefficient	-0.091	-0.179	-0.214	-0.213
	Sig.	0.499	0.182	0.120	0.122
Bodily pain	Correlation coefficient	0.017	0.004	0.016	0.100
	Sig.	0.898	0.976	0.907	0.470
Social function	Correlation coefficient	0.047	0.176	0.119	0.134
	Sig.	0.727	0.191	0.393	0.334
General mental health	Correlation coefficient	-0.088	0.104	0.026	0.057
	Sig.	0.508	0.434	0.850	0.677
Role limitations due to emotional problem	Correlation coefficient	-0.150	0.005	-0.087	-0.082
	Sig.	0.266	0.971	0.532	0.558
Vitality energy or fatigue	Correlation coefficient	0.013	0.134	-0.020	0.020
	Sig.	0.921	0.308	0.880	0.883
General health perceptions component	Correlation coefficient	-0.131	-0.021	-0.170	-0.148
	Sig.	0.317	0.875	0.205	0.272
Physical health component	Correlation coefficient	-0.057	-0.006	-0.071	-0.068
	Sig.	0.675	0.965	0.612	0.630
Mental health	Correlation coefficient	-0.057	0.025	-0.069	-0.041
	Sig.	0.674	0.855	0.622	0.769
SF-36 Total	Correlation coefficient	-0.032	-0.007	-0.051	-0.038
	Sig.	0.815	0.957	0.721	0.792

## DISCUSSION

This study showed that the generic (SF-36) and disease specific (SGRQ) HRQoL measures were correlated with each other in COPD patients. This adds to our knowledge regarding questionnaires which quantify the impact of COPD on daily life and well-being of patients (22). In case of COPD, in which HRQoL is deteriorated (23), SF-36 and SGRQ are the most commonly used generic and disease specific measures (10, 24, 25).

In chronic respiratory conditions, studies using both generic and disease specific HRQoL measures have provided controversial results. In one study in COPD patients, SF-36 scores were moderately to highly correlated with SGRQ scores (coefficients

ranged from -0.41 to -0.79) (26). In another study in the same population, another specific measure namely "Airways Questionnaire 20" (AQ20) was significantly correlated with SF-12 scores (27). Scores of SGRQ and another general HRQoL measure namely "Sickness Impact Profile" (SIP) were poorly related to each other in COPD patients (28). Stahl et al. reported correlation coefficients between SGRQ and SF-36 PCS and MCS as -0.62 and -0.42, respectively (29). In a study on patients with chronic cough, scores of a disease specific tool namely "Cough-Specific Quality-of-Life questionnaire" (CQLQ), and also "Leicester Cough Questionnaire" (LCQ), were not correlated with the

SF-36 scores (30).

Similar to our findings, generic and disease specific HRQoL measures have been reported to be unrelated in some other chronic conditions, such as rhinitis (31, 32) or stress urinary incontinence (31). It may be explained by the fact that generic and disease specific HRQoL measures may cover different aspects of patients' life, or by other means, non-overlapping parts of the HRQoL (32). Therefore, some researchers recommend using both general and disease specific measures in HRQoL studies (31). Generic measures of HRQoL are being used to compare outcomes across different populations, while disease-specific measures are specific for a group of patients, and are more commonly used to measure the efficacy of interventions and treatments (8).

SF-36 is known as an acceptable, valid and reliable generic HRQoL measure in COPD patients (26, 34, 35), with Cronbach's alpha coefficients above 0.75 for most scales (26). Although according to one study increasing severity of COPD was associated with a significant decline in generic HRQoL scores (35), most studies have reported little or no correlation between generic HRQoL measures and spirometric tests (1-4, 36, 37).

In COPD, disease-specific instruments in comparison to generic tools are known to be more responsive to treatment-induced changes of clinical parameters (25, 38, 39), and are more frequently used in clinical trials (40). SGRQ scores the most widely used specific measure are highly correlated with exercise tolerance (41-43), oxygen tension in arterial blood (PaO<sub>2</sub>) (44), dyspnea (41, 43, 45), fatigue (46) and wheezing (41). SGRQ does not include a measure of "well-being" and does not provide data in this regard (42); however, there are reports regarding the link between SGRQ scores and non-respiratory measures namely anxiety (41, 43), coping strategies (42) and body composition (45). The limiting factor

of this measure is the nature of being time-consuming,, complicated and requiring special calculators (47).

According to this study and previous evidence (25), some particular areas of HRQoL of COPD patients may remain uncovered when using only SF-36 or SGRQ. Thus, it may be better to use both generic and specific measures of HRQoL in parallel, at least in a COPD research setting (25, 48, 49). We also believe that the idea of using both generic and disease-specific questionnaires may be the best approach.

## CONCLUSION

The generic SF-36 and the disease specific SGRQ may assess different aspects of HRQoL in COPD patients.

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