Comparative study of two quality of life questionnaires in patients with COPD*

Estudo comparativo entre dois questionários de qualidade de vida em pacientes com DPOC

Andréa Sória Buss, Luciano Müller Correa da Silva

Abstract

Objective: To compare two quality of life questionnaires—the Saint George's Respiratory Questionnaire (SGRQ) and the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36)—in patients with COPD, focusing on the discriminative properties of the questionnaires and correlating their domains with the following variables: Modified Medical Research Council Dyspnea Scale score; Beck Depression Inventory score; visual analog scale general health perception; Mini-Mental State Examination score; and a COPD clinical score developed specifically for the study. **Methods:** We interviewed 30 COPD patients between May and September of 2006. For the SF-36 and SGRQ, scores (total and domain) were compared and correlated. **Results:** With the exception of the pain domain, all of the SF-36 domains correlated significantly with the SGRQ total score ($r = -0.5$ to -0.69; $p < 0.01$). Of the SGQR domains, only the symptoms domain correlated significantly with all of the variables studied ($p < 0.05$). **Conclusions:** The majority of the expected correlations between the SGRQ and the SF-36 were observed, as were those expected between the two questionnaires and the other variables studied. The SGRQ, notably the symptoms domain, presented better discriminative properties than did the generic SF-36 questionnaire. The SF-36 is not an appropriate instrument for determining the affective state of COPD patients.

Keywords: Pulmonary disease, chronic obstructive; Quality of life; Data collection.

Resumo

Objetivo: Comparar dois questionários de avaliação de qualidade de vida—*Saint George's Respiratory Questionnaire* (SGRQ) e *Medical Outcomes Study 36-item Short-Form Health Survey* (SF-36)—em pacientes com DPOC quanto às suas propriedades discriminativas e correlacionar seus respectivos domínios com as seguintes variáveis: escore da escala modificada do *Medical Research Council*; escore do Inventário de Depressão de Beck; escore da escala visual analógica para percepção do estado geral da saúde; escore de *Mini-Mental State Examination*; e um escore clínico de DPOC criado especialmente para o estudo. **Métodos:** Foram entrevistados 30 pacientes com DPOC entre os meses de maio e setembro de 2006. Foram comparados e correlacionados os escores totais e os respectivos domínios dos questionários SF-36 e SGRQ. **Resultados:** Todos os domínios do SF-36 apresentaram correlação estatisticamente significativa com o escore total do SGRQ ($r = -0,5$ a $-0,69$; $p < 0,01$), exceto o domínio dor. O domínio sintomas do SGQR foi o único que apresentou correlações significativas com todas as variáveis ($p < 0,05$). **Conclusões:** A maioria das correlações que seriam esperadas entre o SGRQ e o SF-36 com as demais variáveis foi observada. O SGRQ apresenta melhores propriedades discriminativas em relação ao questionário genérico SF-36, notadamente o domínio sintomas. O SF-36 não é um instrumento adequado para medir o estado afetivo de pacientes com DPOC.

Descritores: Doença pulmonar obstrutiva crônica; Qualidade de vida; Coleta de dados.

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Introduction

The respiratory disease COPD is characterized by airflow obstruction that is not fully reversible after bronchodilator use. The airflow limitation is frequently progressive and is accompanied by an abnormal inflammatory response to noxious particles or gases in the lungs.[1] The most common symptoms are cough, sputum production and dyspnea.[2-4]

The consequences of COPD faced by the patient include symptoms, weight loss, exercise intolerance, exacerbation, decreased health-related quality of life (HRQoL), financial expenses and death.[5]

In COPD, HRQoL measurements are frequently performed using instruments to assess the impact of the disease, since cure is impossible, and improving HRQoL is an important objective of the treatment.[6]

In isolation, no measurement can describe the impact and severity of COPD.[5] However, assessing HRQoL is a more comprehensive and objective way to determine the impact of the disease on the physical and mental domains of the patients. Currently, there are few validated markers to evaluate COPD and the efficacy of treatment. The generic quality of life (QoL) questionnaires have been developed to quantify health disturbances as perceived by patients. Although these questionnaires represent the best attempt to cover the entire spectrum of the disease, they inevitably reduce the number of items that refer to specific clinical conditions.[7] The generic QoL questionnaire most widely studied and used is the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36).[8] The SF-36 has been translated and validated for use in Brazil.[9] In COPD, the specific questionnaire most widely used to assess HRQoL is the Saint George's Respiratory Questionnaire (SGRQ).[10,11] This questionnaire was validated for use in Brazil in 2000.[7] The SGRQ was recently modified in order to adapt it better to our population.[12]

Few studies have compared generic QoL questionnaires and specific disease questionnaires in terms of their discriminative and longitudinal properties in COPD. In one study, the SF-36 and its domain scores were correlated with pulmonary function and intensity of dyspnea. It was concluded that dyspnea correlated better with the SF-36 score than did the functional parameters. This demonstrates that the assessment of QoL, even with the use a generic questionnaire, allows the measurement of subjective disease-related aspects of perception.[13] Regarding the correlation with the severity of COPD, the SF-36 and the SGRQ are equally discriminative, using criteria established by the Global Initiative for Chronic Obstructive Lung Disease and by the British Thoracic Society; this correlation is more frequently seen between stages I and IV of the disease.[3] Some studies have compared the SF-36 and the SGRQ, and, although both seemed to be discriminative in COPD patients, there were differences in certain domains, such as the emotional problems domain.[14] Other studies have demonstrated that the SF-36 and the SGRQ correlate well with overall mortality in COPD patients. For the Brazilian population, there have been no studies, not even preliminary ones, comparing the SF-36 and the SGRQ in terms of their discriminative and longitudinal properties in COPD patients.[15]

The objective of the present study was to compare two QoL questionnaires, namely the SGRQ (modified Brazilian version) and the SF-36 (Brazilian version), in outpatients diagnosed with COPD, focusing on the discriminative properties of the questionnaires and correlating their domains with variables of interest in COPD, such as degree of dyspnea, cognitive capacity and depression.

Methods

The present study was carried out at the Pereira Filho Ward of the Santa Casa Hospital Complex in Porto Alegre between May and September of 2006. The study design was cross-sectional, and the inclusion criteria were as follows: physician-diagnosed COPD; a smoking history of at least 15 pack-years; being over 45 years of age; and absence of exacerbations of the disease during the 30 days preceding the interview. The exclusion criteria were a history of asthma, presence of another concomitant respiratory disease, previous surgery or thoracic radiotherapy, a history of neoplasm, presence of severe comorbidity and illiteracy.

All patients gave written informed consent using a form that had been approved by the Research Ethics Committee of the institution. Thirty patients were included in the study, and all of the assessment instruments were administered by a single interviewer following a standardized

order. The sample size was determined based on convenience. None of the patients were excluded from the study. We used the Brazilian version of the SF-36 and the modified Brazilian version of the SGRQ. The SF-36 is self-administered, consists of 36 questions and is subdivided into eight domains: functional capacity; body pain; vitality; general health; social function; physical function; emotional function; and mental health. These domains can be merged into two large groups: the physical component summary (PCS) and the mental component summary (MCS). The score ranges from 0 to 100, higher values representing better HRQoL.[3,4] The SGRQ is self-administered, consists of 50 items and is divided into three domains: symptoms (8 items); activities (16 items); and impact (26 items). Each item has a derived weight, and lower values indicate better HRQoL.[3] The order in which these two questionnaires were completed was randomized. Two other variables were evaluated in the study: degree of dyspnea, as determined by the score of the Modified Medical Research Council Dyspnea Scale (MMRC), which classifies dyspnea into 5 categories (0-5); and affective state, as assessed by the score of the Beck Depression Inventory (BDI), which comprises 21 questions with a score ranging from 0 to 63 points. In addition, health perception was assessed. We used a visual analog scale (VAS, in which a score of 0 corresponds to death and a score of 10 corresponds to the best health status possible). In addition, we used as a COPD clinical scale (developed specially for the study by two pulmonologists, based on a questionnaire comprising 19 questions about symptoms, exacerbations, hospitalizations, emergency room visits and use of relief medication), in which the score ranges from 10 (worst health status) to 20 (best health status). The Mini-Mental State Examination (MMSE) questionnaire was used in order to assess the mental state—level of cognition—and stratify patients into two groups: those with a score < 25 and those with a score ≥ 25. The objective of using this instrument was to evaluate possible differences between these two groups in terms of the scores on the other questionnaires. Means, medians and standard deviations were used in the data analysis. The level of statistical significance was set at 0.01. For the SF-36 and SGRQ, scores (total and domain) were compared and correlated using Spearman's correlation coefficients. Each variable compared (MMRC, VAS, BDI and clinical score) was divided into two groups, the cut-off point being the 50th percentile of the values of each variable. The groups were compared in terms of the SF-36 scores (PCS and MCS) and the SGRQ scores (total and domain scores) using the nonparametric Mann-Whitney test. The program used was the Statistical Package for the Social Sciences, version 11.0.1 (SPSS Inc., Chicago, IL, USA).

Results

The patients in the present study had moderate to severe COPD, according to the intensity of dyspnea and pulmonary function. At the time of the interview, none of the patients had any signs of exacerbation. In general, the patients had moderate dyspnea (3.36 ± 1.45) and mild depression (15.87 ± 9.80). The mean general health perception score was 6 ± 2. The SGRQ activities domain was the one with the worst mean score (67.32 ± 17.84), and the one with best mean score was the SGRQ impact domain (46.45 ± 17.81). On the SF-36, the mean

Table 1 - Study variables.

Variable	Value[a]
Age, years	63.2 ± 9.6 (47-80)
Male gender	23/30 (77)
Pack-years	61.6 ± 26.5 (17.5-125)
Body mass index, kg/m^2	23.2 ± 4.25 (16-33.1)
Mini-Mental State Examination	24.4 ± 3.1 (18-30)
MMRC; dyspnea index	3.3 ± 1.4 (1-5)
COPD clinical score	16.7 ± 2.9 (11-20)
Visual analog scale	6 ± 2 (3-10)
Beck Depression Inventory	15.9 ± 9.8 (2-36)
SGRQ symptoms domain	51.1 ± 17 (18.2-83.8)
SGRQ activities domain	67.3 ± 17.8(35.2-92.5)
SGRQ impact domain	46.4 ± 17.8 (14.1-76.1)
SGRQ total score	53.8 ± 14.8 (26.6-76.6)
SF-36 physical component summary	37 ± 6.8 (28.1-52.3)
SF-36 mental component summary	41 ± 12.2 (20.8-60.7)

MMRC: Modified Medical Research Center Dyspnea Scale; SGRQ: Saint George's Respiratory Questionnaire; and SF-36: Medical Outcomes Study 36-item Short-Form Health Survey. [a]Values expressed as mean ± SD (range), except for male gender: n/N (%).

PCS and the MCS scores—37.03 ± 6.84 and 41.00 ± 12.28, respectively—were lower than those considered normal (at least 50; Table 1).

The correlations between the respective questionnaires are shown in Table 2. With the exception of the pain domain, all of the SF-36 domains correlated with the SGRQ total score ($-0.5 \leq r \leq -0.7$; $p < 0.01$). The strongest correlations between the SF-36 and the SGRQ domains, respectively, were as follows: functional capacity and activities ($r = -0.7$; $p < 0.01$); physical aspects and activities ($r = -0.6$; $p < 0.01$); and emotional aspects and impact ($r = -0.6$; $p < 0.01$).

In terms of how the SGRQ and the SF-36 correlated with the other variables studied, the strongest correlation was between the SGRQ symptoms domain and the clinical score ($r = -0.6$; $p < 0.01$), followed by the correlation between the activities domain and the MMRC score ($r = 0.6$; $p < 0.01$). For the SF-36, the strongest correlations were between the MCS and the VAS ($r = 0.5$; $p < 0.01$) and between the PCS and the dyspnea score ($r = -0.5$; $p < 0.01$). The BDI score correlated only with the SGRQ impact domain ($r = 0.5$; $p < 0.01$; Table 3).

The comparison between the subgroups of the variables studied and the SGRQ, as well as the SF-36, is presented in Table 4. Considering the 50th percentile, the variables studied were divided into the following subgroups: clinical score (Group 1: score 10-17; Group 2: score 18-20); VAS (Group 1: score 0-5; Group 2: score 6-10); dyspnea as assessed by the MMRC score (Group 1: 0-3; Group 2: 4-5); and BDI score (Group 1: 0-14; Group 2: 15-36). The SGRQ symptoms domain was the only one that presented statistically significant differences in comparison with all of the subgroups of the following variables: clinical score; dyspnea score; VAS; and BDI. In the activities domain, the only significant difference concerned the variable dyspnea score (20.3 points). In the impact domain, there were significant differences in comparison with the variables clinical score (18.1 points) and BDI (16.8 points). In the SF-36, the MCS score showed a statistically significant difference in comparison with the subgroups of the variable VAS (difference of 8.8 points). In the SGRQ total score, the VAS was the only variable in which there was no difference between the subgroups (Table 4).

Discussion

To our knowledge, this is the first study conducted in Brazil comparing the SGRQ and the SF-36 in COPD patients using different clinical variables. Even in the international literature, we found no English-language studies whose primary objective was clearly this comparison. However, we must ask the question "What is the objective of comparing these questionnaires?" First, the objective of using the SGRQ is to assess QoL specifically in COPD patients. Therefore, it would be expected that all the correlations with clinical and functional variables, as well as with those involving patient health perception, would

Table 2 - Correlation matrix between the scores of the Saint George's Respiratory Questionnaire and the scores of the Medical Outcomes Study 36-item Short-Form Health Survey.

SF-36 and SGRQ domains	SGRQ domains			SGRQ total score
	Symptoms	Activities	Impact	
SF-36 - Functional capacity(0-100)	−0.4*	−0.7**	−0.4*	−0.6**
SF-36 - Physical aspects (0-100)	−0.1	−0.6**	−0.5**	−0.6**
SF-36 - Pain (0-100)	−0.2	0.05	−0.2	−0.2
SF-36 - General health status (0-100)	−0.3	−0.5**	−0.3	−0.5**
SF-36 - Vitality (0-100)	−0.4*	−0.4*	−0.5**	−0.5**
SF-36 - Social aspects (0-100)	−0.4*	−0.3	−0.5**	−0.5**
SF-36 - Emotional aspects (0-100)	−0.5**	−0.5**	−0.6**	−0.7**
SF-36 - Mental health (0-100)	−0.4*	−0.3*	−0.5**	−0.5**
SF-36 - Physical component summary	−0.1	−0.6**	−0.4*	−0.5**
SF-36 - Mental component summary	−0.5**	−0.4*	−0.6**	−0.6**
SGRQ - Total score	0.6**	0.8**	0.9**	–

SGRQ: Saint George's Respiratory Questionnaire; and SF-36: Medical Outcomes Study 36-item Short-Form Health Survey. *$p < 0.05$. **$p < 0.01$. Spearman's correlation.

Table 3 - The Saint George's Respiratory Questionnaire and the Medical Outcomes Study 36-item Short-Form Health Survey: correlations with the study variables.

Questionnaire and domains	Clinical score	Visual analog scale	MMRC	BDI
SGRQ				
Symptoms	–0.6**	–0.5**	0.5**	0.2
Activities	–0.3*	–0.4*	0.6**	0.2
Impact	–0.5**	–0.3*	0.2	0.5**
Total score	–0.6**	–0.4*	0.4*	0.4*
SF-36				
Physical component summary	0.06	0.3	–0.5**	0.03
Mental component summary	0.4*	0.5**	–0.4*	–0.3

MMRC: Modified Medical Research Center Dyspnea Scale; BDI: Beck Depression Inventory; SGRQ: Saint George's Respiratory Questionnaire; and SF-36: Medical Outcomes Study 36-item Short-Form Health Survey. *p < 0.05. **p < 0.01. Spearman's correlation.

be stronger with the use of the SGRQ than with the use of the generic SF-36. This hypothesis seems to have been demonstrated, according to the results of the present study. This is important, since it reinforces the previous work performed to validate the SGRQ.[11,12]

Regarding the comprehension of the questionnaires, apparently there were no difficulties. Cognitively, 13 patients had an MMSE score < 25. However, there were no significant differences in either of the two questionnaires between the scores of the two groups (Group 1 patients with an MMSE score ≥ 25 or Group 2 patients with an MMSE score < 25). In addition, it would be expected that patients with some type of dementia would present worse mental health aspects than would those with better MMSE scores. However, there were no significant differences between the groups in terms of the BDI score or the SF-36 MCS (or its related domains). Among the variables, the same was observed, with the exception of the VAS score. For this variable only, there was a difference between the MMSE groups (1.8 points; p = 0.01). This finding might demonstrate that, in the group with MMSE scores < 25, the VAS was not as well understood by the patients as were the other instruments. The failure of cognitively impaired patients to understand the VAS can be attributed to the greater difficulty of this group in attributing a single overall health assessment score based solely on their perception. The same cannot be said for the other instruments. Unlike what was suggested in the study to revalidate the Brazilian version of the SGRQ,[12] the new version of this instrument seems to be valid even in patients with some type of cognitive impairment.

The impact domain was the one that correlated most strongly with the SGRQ total score, which seems to demonstrate that incapacitation is more highly valued than are activity restriction itself and symptoms. Feelings of helplessness and fatality in the face of the disease would form the greatest component in this process. The relationship between the SGRQ and the SF-36 presented some expected correlations. The correlation between the functional capacity domain (SF-36) and the activities domain (SGRQ) was significantly stronger than were those between the other domains. This is to be expected, since the functional capacity domain includes items, such as the ability to walk, bathe, perform vigorous activities, etc, that are quite similar to those included in the SGRQ activities domain. The same was true for the SF-36 physical aspects domain, which also measures, although more generically, the degree of difficulty that patients experience in performing their habitual activities. Therefore, the correlation between the SF-36 PCS and the SGRQ activities domain was expected. The correlation between the SF-36 emotional aspects domain and the SGRQ impact domain would also be expected. The impact domain involves feelings of shame, frustration and fear that patients have in the face of the disease. The SF-36 emotional aspects domain seeks to measure how much these feelings affect the daily routine of the patient. As would be expected, the SF-36 pain domain did not present any correlation with the SGRQ domains, since, obviously, pain is not an

Table 4 - Comparison between the subgroups of the variables studied in terms of the domains of the Saint George's Respiratory Questionnaire and the Physical and Mental Component Summaries of the Medical Outcomes Study 36-item Short-Form Health Survey.

Questionnaire and domains	Clinical score		Visual analog scale		MMRC		BDI	
	10-17	18-20	0-5	6-10	0-3	4-5	0-14	15-36
SGRQ								
Symptoms	63.1 ± 11.5**	39.2 ± 12.7**	57.9 ± 15.7*	42.4 ± 15*	42.4 ± 13.1**	62.6 ± 14.8**	45 ± 14.7*	58.2 ± 17.3*
Activities	72.9 ± 14.9	61.7 ± 19.3	72.4 ± 17.4	60.7 ± 16.8	58.5 ± 16.3**	78.8 ± 12.7**	65 ± 17.5	70 ± 18.5
Impact	55.5 ± 15.5**	37.4 ± 15.5**	49.8 ± 15.8	42 ± 19.9	45.1 ± 19.6	48.1 ± 15.8	38.6 ± 14.4**	55.4 ± 17.5**
Total score	62.2 ± 12.4**	45.3 ± 12.2**	58.2 ± 13	48 ± 15.5	48.9 ± 15.1*	60.1 ± 12.2*	47.9 ± 12*	60.5 ± 15.2*
SF-36								
Physical component summary	35.8 ± 6.1	38.2 ± 7.5	35.3 ± 6.3	39.2 ± 7.1	39.2 ± 7.6	34.1 ± 4.5	37.1 ± 7.6	36.9 ± 6.1
Mental component summary	37.2 ± 11.6	44.7 ± 12.1	37.1 ± 11.3*	45.9 ± 12*	43.1 ± 11.9	37.4 ± 12.3	43.1 ± 11.5	38.4 ± 13

MMRC: Modified Medical Research Center Dyspnea Scale; BDI: Beck Depression Inventory; SGRQ: Saint George's Respiratory Questionnaire; and SF-36: Medical Outcomes Study 36-item Short-Form Health Survey. *$p < 0.05$. **$p < 0.01$. Data presented as mean ± SD.

important component of the clinical profile of COPD.

Regarding the correlations between the two questionnaires and the variables studied, the strongest one was between the SGRQ symptoms domain and the clinical score. Since 5 of the 10 questions of the clinical scale address patient symptoms, this correlation was more than expected. The correlation between the BDI score and the SGRQ impact domain, as well as the lack of correlation between the BDI score and the SF-36 MCS, seems to demonstrate that patient depressive symptoms are secondary to COPD itself rather than to some primary psychiatric disease. The finding that dyspnea correlated with the symptoms domain and with the activities domain was expected, since the principal component of dyspnea is almost exclusively physical. It is of note that the strongest correlation related to the SF-36 was between the SF-36 MCS and the VAS. The VAS seemed to capture the patient perception of mental state better than it captured the patient perception of the impact that COPD has on health. This seems to be corroborated by the weak correlation with the SGRQ impact domain. Regarding the discrimination capacity of the questionnaires in the subgroups of the variables studied, the same tendency was observed. The SGRQ symptoms domain was the one with the best discrimination capacity. There were significant differences in the symptoms score in comparison with all of the subgroups. This was expected, since respiratory symptoms are the principal components of the disease. No other finding would be expected. The activities domain was more discriminative for dyspnea. Obviously, activities are a direct reflex of dyspnea, the principal component of the disease. Regarding the impact domain, there were significant differences in terms of the BDI score, which reinforces the previous comment that depression might be secondary to COPD. In contrast, being a generic questionnaire, the SF-36 did not present any type of discriminative capacity, except between the MCS and the VAS, which reinforces the previous comment about the patient perception of mental state. The concordant findings in the various analyses performed allow a number of conclusions to be drawn regarding the new Brazilian version of the SGRQ. First, cognition, as assessed by the MMSE, did not seem to affect the comprehension of the instruments, with the exception of the VAS. In addition, the majority of the expected correlations between the SGRQ and the SF-36 were observed, as were those expected between the two questionnaires and the other variables studied. Furthermore, as a specific questionnaire

for COPD, the SGRQ presented better discriminative properties than did the generic SF-36 questionnaire. Finally, the SF-36 does not seem to be an appropriate instrument for determining the affective state of COPD patients, since the MCS did not correlate consistently with depressive symptoms.

References

1. National Heart, Lung, and Blood Institute. Global initiative for chronic obstructive lung disease - Pocket guide to COPD diagnosis, management, and prevention. NIH publication, no. 2701B. Bethesda: U.S. Dept. of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute; 2001.
2. Yaksic, Mateo Sainz. Profile of a Brazilian population with severe chronic obstructive pulmonary disease. J Pneumol. 2003;29(2) 64-8.
3. Ståhl E, Lindberg A, Jansson SA, Rönmark E, Svensson K, Andersson F, et al. Health-related quality of life is related to COPD disease severity. Health Qual Life Outcomes. 2005;3:56.
4. Britto RR, Santos CF, Bueno FF. Reabilitação pulmonar e qualidade de vida dos pacientes portadores de DPOC. Rev Fisioter Univ São Paulo. 2002;9(1):9-16.
5. Jones PW, Agusti AG. Outcomes and markers in the assessment of chronic obstructive pulmonary disease. Eur Respir J. 2006;27(4):822-32.
6. Engström CP, Persson LO, Larsson S, Sullivan M. Health-related quality of life in COPD: why both disease-specific and generic measures should be used. Eur Respir J. 2001;18(1):69-76.
7. Sousa TC, Jardim JR, Jones P. Validação do Questionário do Hospital Saint George na Doença Respiratória (SGRQ) em pacientes portadores de doença pulmonar obstrutiva crônica no Brasil. J Pneumol. 2000;26(3):119-28.
8. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992;30(6):473-83.
9. Ciconelli RM, Ferraz MB, Santos W, Meinão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36). Rev Bras Reumatol. 1999;39(3):143-50.
10. Jones PW, Quirk FH, Baveystock CM, Littlejohns P. A self-complete measure of health status for chronic airflow limitation. The St. George's Respiratory Questionnaire. Am Rev Respir Dis. 1992;145(6):1321-7.
11. Ferrer M, Villasante C, Alonso J, Sobradillo V, Gabriel R, Vilagut G, et al. Interpretation of quality of life scores from the St George's Respiratory Questionnaire. Eur Respir J. 2002;19(3):405-13.
12. 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):114-22.
13. Mahler DA, Mackowiak JI. Evaluation of the short-form 36-item questionnaire to measure health-related quality of life in patients with COPD. Chest. 1995;107(6):1585-9.
14. Malý M, Vondra V. Generic versus disease-specific instruments in quality-of-life assessment of chronic obstructive pulmonary disease. Methods Inf Med. 2006;45(2):211-5.
15. Domingo-Salvany A, Lamarca R, Ferrer M, Garcia-Aymerich J, Alonso J, Félez M, et al. Health-related quality of life and mortality in male patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med. 2002;166(5):680-5.

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