

Comparison of Correlation of Farsi Translation of CAT and SGRQ in Patients with COPD

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Abstract

Background: CAT and SGRQ are two health related quality of life questioners validated for application in patients with COPD. Our purpose is to study the correlation of these questioners in COPD patients considering separate features of disease including symptom, activity, impact and total score.

Material and Method: Between December 2014 and December 2015 validated Farsi translation of CAT and SGRQ were administered to patients with clinically proven COPD in referral center of Masih Daneshvari hospital, Tehran-Iran. The components of SGRQ score including symptom, activity, impact and total scores were calculated using excel based SGRQ calculator. Informed consent was obtained from patients. CAT questions similar to SGRQ were categorized into symptom (question number 1 to 3), activity (question number 4 and 5), and impact (question number 6 to 8), based on the meaning and concept of the questions. All data was processed by spearman correlation coefficient analysis using SPSS software version 22.

Results: Ninety nine patients [73 male (73.7%) and 26 female (26.3%)] with COPD were studied. Mean age was 57.46 ± 12.17 years old (31-87). The correlation between CAT and SGRQ in all components of questioners including symptom (0.792), activity ($r=0.657$), impact ($r=0.467$) and total score ($r=0.673$) was significant ($p < 0.001$).

Conclusion: Total scores of Farsi translation of CAT and SGRQ correlated significantly as well as the subdivided questions including symptom, activity and impact. Despite less number of questions, CAT questionnaire is able to reliably assess the different aspects of COPD patients.

Introduction

Chronic Obstructive Pulmonary Disease (COPD) causes significant morbidity and mortality worldwide, they are considered a huge burden on patients' lives. Management of COPD has been under prime focus lately as they impair the quality of life.

Management of chronic respiratory diseases was based on information obtained from spirometry for years [1]. As these information could not depict a real image of patient's wellbeing [2] and the importance of measuring disease impact on life was known [1], Health Related Quality of Life questioners (HRQL) were developed as a tool for assessment of health status and monitoring quality of life in such patients [3].

Global initiative for chronic Obstructive Lung Disease (GOLD) proposed symptomatic health status questions like Dyspnea measurement and the frequency of exacerbations in addition to objective tests like spirometry for COPD management [4]. Nowadays quality of life is considered a goal in management of chronic respiratory diseases. For this aim to be achieved, numerous questioners regarding quality of life has been introduced to measure the impact of COPD on daily life and to evaluate the effectiveness of pulmonary rehabilitation or to predict possible disease exacerbation [5-8].

Saint George Respiratory Questionnaire (SGRQ) has been traditionally known as gold standard for evaluation of health status in this group of patients. The questionnaire is self-administered and consist of 76 items in categories; activity, symptom and impact [3]. Symptom related questions measures cough frequency, sputum production, wheeze or Dyspnea. Activity segment targets daily activity limitations and impact segment try to evaluate the secondary consequences like depression and involvement in everyday life. Each question has its own value ranged from zero (the best condition) to 100 (the worst condition). Score for SGRQ is calculated for each segment separately [7]. Total score summarize the scores of all segments [7]. Although SGRQ is valid and reproducible [9] it is rather time consuming and complicated and needs specialists to calculate scores, so it has limited

application in primary care [10,11]. After its introduction, COPD assessment test (CAT) is now considered a simple patient-completed questionnaire and has been suggested as an easy and practical tool in comparison to SGRQ with acceptable validity [12-14]. CAT is also sensitive to changes in health status following an exacerbation and can measure responses to rehabilitation effectively [11,15]. It eases the relation between patient and physician in everyday practice.

CAT is composed of eight questions with six pointed scale (0 to 5) for each question in which zero means the best condition and 5 means the worst and total score is out of 40. CAT score has strong correlation with SGRQ in term of validity in COPD patients [14]. Also it is shown to sensitively change according to disease course and can identify possible exacerbations as well [16]. As mentioned above CAT score reported as total score and is not split up to separate parts like SGRQ. However the response to each item may be used to estimate areas of life dominantly affected by respiratory disease.

In current study we divided CAT questions into three categories of symptom related, activity related and impact oriented questions according to the concept of each question, to evaluate the correlation of each category between CAT and SGRQ.

Method

Between December 2014 and December 2015 validated Farsi translation of CAT and SGRQ were administered to patients with clinically proven COPD in Masih Daneshvari hospital, a referral center for respiratory diseases in Tehran-Iran. Those subjects who failed to complete the questionnaires for any reason were excluded. The components of SGRQ score include symptom, activity, impact and total score were calculated using excel based SGRQ calculator by permission. CAT questions similar to SGRQ were categorized into symptom (question number 1 to 3), activity (question number 4 and 5), and impact (question number 6 to 8), based on the meaning and concept of the questions. Total score for CAT was calculated as well. The reported scores in CAT questionnaire were compared to the same score calculated in SGRQ. All data was processed by spearman correlation coefficient analysis using SPSS software version 22.

Table 1: Descriptive statistics for CAT.

	N	Minimum	Maximum	Mean	Std. Deviation
CAT.S	99	4.00	15.00	10.6061	3.12272
CAT.A	99	5.00	15.00	11.3434	2.77070
CAT.I	99	.00	10.00	5.5051	2.31840
CAT. Total	99	15.00	40.00	27.0909	6.02222

Table 2: Correlation between CAT and SGRQ.

	N	Minimum	Maximum	Mean	Std. Deviation
SJ.S	99	20.40	100.00	75.5448	17.85951
SJ.A	99	38.40	100.00	78.5863	14.38860
SJ.I	99	30.70	99.38	64.8973	15.02080
SJ.Total	99	40.40	93.90	70.8436	14.69223
Valid N (list wise)	99				

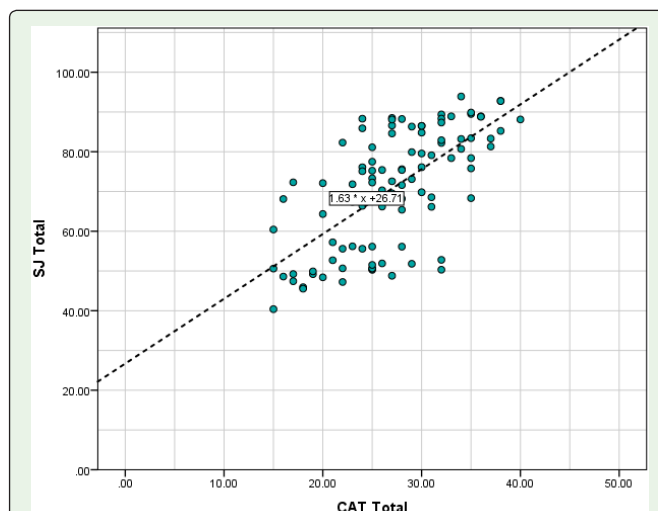


Figure 1: The positive correlation between total, symptom, activity and impact scores between CAT and SGRQ respectively.

Result

Ninety nine patients [73 male (73.7%) and 26 female (26.3%)] with known COPD successfully completed both CAT and SGRQ questionnaires were included in our study. Mean age was 57.46 ± 12.17 years old (31-87). Descriptive statistics for CAT, SGRQ and their subgroup scores for symptom, activity and impact are shown in Table 1.

The correlation between scores calculated in SGRQ as well as CAT and their categorized components were analyzed by linear regression. Spearman coefficient (r), p value and linear regression model in correlation between CAT and SGRQ is shown in Table 2. As presented in this table in all components of questioners as well as Total score the correlation between CAT and SGRQ was significant (p< 0.001) (Figures 1-4).

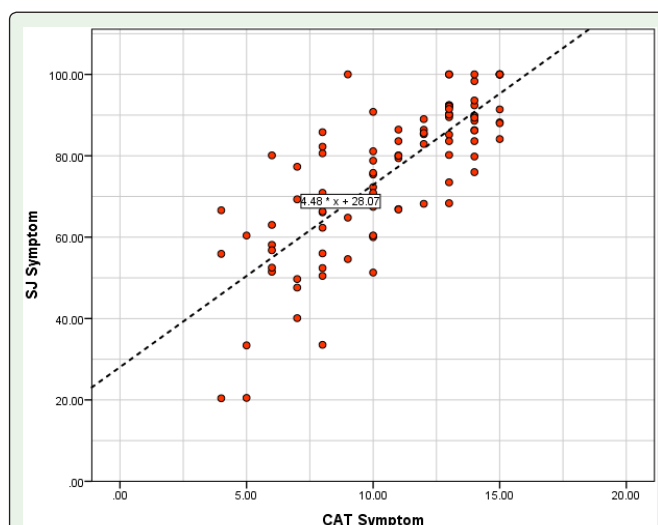


Figure 2: The positive correlation between total, symptom, activity and impact scores between CAT and SGRQ respectively.

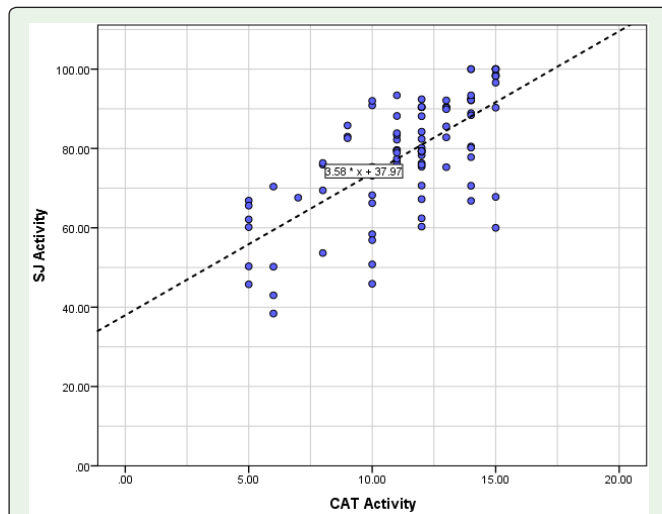


Figure 3: The positive correlation between total, symptom, activity and impact scores between CAT and SGRQ respectively.

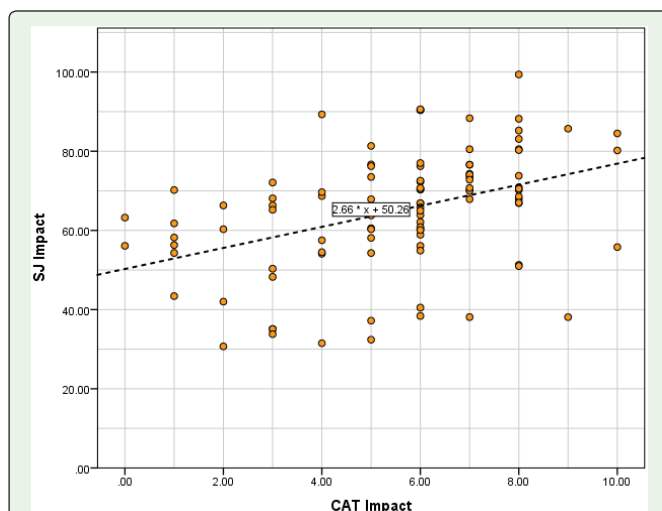


Figure 4: The positive correlation between total, symptom, activity and impact scores between CAT and SGRQ respectively.

Discussion

In current study we applied a question categorizing method and divided CAT questions into 3 categories of symptom, activity and impact score in order to study comparability of these scores with scores calculated in SGRQ. According to our results symptom, activity, impact and total scores in CAT questions were comparable with similar SGRQ scores in our patients, as statistical analysis using linear regression demonstrated significant linear relationship between each paired scores calculated in these questionnaires ($p < 0.001$).

Knowing the significance of COPD impact on patients' lives contributed to development of health related quality of life questionnaires is frequently used as assessment and monitoring tools nowadays [1,3]. SGRQ has been known for years as the old standard for health status assessment in COPD patients as it is a valid and reproducible questionnaire [7,9]. This questionnaire however

is complicated, time consuming and requires specialist for score calculation [10]. As a result, CAT, an easier and less time consuming questionnaire with acceptable validity has been in center of attention in recent years [14]. A study by Tsiligianni et al. introduced CAT and clinical COPD questionnaire (CCQ) as both reliable and valid tools for health status assesment in patients with COPD [1]. Dodd et al. conducted a study to determine possible changes in CAT score after pulmonary rehabilitation in 261 patients with COPD [11]. According to their results CAT scores improved with pulmonary rehabilitation in COPD patients and was a sensitive measure for distinguishing categories of response to pulmonary rehabilitation. Jones et al. investigated CAT sensitivity to changes in patients' health status after COPD exacerbation [15]. Results indicated that CAT score is sensitive and as responsive as more complex questionnaires to pulmonary rehabilitation in COPD patients. Another investigation by Lee et al introduced CAT as simple tool for identifying increased exacerbation risk [16]. Results of this study, in other words, gave CAT a preventive value given the questionnaire's ability in recognizing those at risk of an exacerbation.

Ringbaek et al. compared CAT, CCQ and SGRQ in terms of quality of life assessment ability [17]. Results supported correlation between SGRQ and CAT in patients suffering from severe COPD with advantage of CAT being easily completed by patients themselves.

Although CAT is a valid tool in health status assessment in COPD patients, the questions are not split-up and a total score is only reported, However SGRQ reports 3 separate scores according to different segments in questionnaire targeting different aspects of life. This scoring system can determine disease effects on different aspect of life more specifically. Nevertheless CAT seems to lack this ability as only total score is reported.

Given widespread use of CAT questionnaire, nowadays as a reliable, valid and sensitive assessment tool with possible predictive ability for exacerbation as well as an easy and patient centered questionnaire and considering our results at the same time, the idea of categorizing questions may give CAT an additional ability of specifically predicting disease effect of different aspects of patients' live. These characteristics will make CAT a more comprehensive tool and expands its application in different clinical settings.

Finally it should be mentioned that we administered standard Farsi version of questionnaire in current study, considering the results of a study conducted in our hospital, Farsi version of SGRQ is consistent and compatible with the original English version and can be used for quality of life evaluation in COPD patients(18, 19).

Limited number of subjects and patient selection from a single center may be the limitation of our study. Of course additional studies including more patients are required for determining the usefulness of CAT categorized scoring strategy to specifically assess the different aspects of COPD patients.

Conclusion

Total scores of Farsi translation of CAT and SGRQ correlate significantly as well as their subdivided questions including symptom, activity and impact. Despite little number of questions CAT questionnaire is able to reliably assess the different aspects of COPD patients.

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