VALIDATION OF VIETNAMESE TRANSLATION OF ST. GEORGE RESPIRATORY QUESTIONNAIRE IN VIETNAMESE PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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This study was conducted to define validity and test-retest reliability of the St. George's Respiratory Questionnaire for COPD (SRGQ-C) in Vietnamese COPD patients. This study was carried out at the National Lung Hospital, Hanoi, Vietnam (December 2016 - May 2017). SGRQ-C was piloted in 20 COPD patients. Test-retest reliability was assessed after administering the tool via interview to a separate group of 30 COPD patients twice over a six - month period to allow for clinical changes. Results showed that in the pilot test, irrelevant words related to differing cultural contexts were refined. Reproducibility between two administrations of SGRQ-C was high. The Cronbach's alpha coefficient had high values exceeding 0.7 for all components (symptom: 0.822, activity: 0.910, impact: 0.948). The intra-class correlation coefficients for total and component scores were high (ranging from 0.722 to 0.834). Conclusion: The SGRQ-C performs well as a QoL instrument in Vietnamese patients with COPD.

Key words: Quality of life, SGRQ-C, COPD, validity, reliability.

I. INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is one of the most rapidly growing chronic conditions globally [1]. In Vietnam, the number of people affected with COPD is increasing due to tobacco smoking, aging and air pollution [2]. COPD affects all aspects of life, and health-related quality of life (HRQL) is considered one of the treatment outcomes [3 - 5]. The St. George's Respiratory Questionnaire for COPD (SGRQ-C) is a standardized questionnaire to measure well-being in COPD patients [6]. This instrument can quantify changes in comprehensive aspects of HRQL in COPD patients. While the SGRQ-C has been translated into many languages, including Vietnamese, it has not yet been validated [7]. This study aimed to validate the performance of the Vietnamese SGRQ-C instrument including face and content validity, as well as test-retest reliability.

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Received: 05/11/2019
Accepted:09/12/2019

II. METHODS

1. Study designed and participants

This observational cross-sectional study was conducted at the COPD management unit of the National Lung Hospital (NLH), Hanoi, Vietnam, between December 2016

and May 2017. A total of 50 outpatients with a confirmed diagnosis of COPD were recruited. Only outpatients with a confirmed diagnosis of COPD, defined as forced expiratory volume in one second (FEV1) less than 80% predicted and FEV1/Forced Expiratory Volume Capacity (FVC) <0.7, were invited to participate. The study was granted ethical approval from the Human Research Ethics Committees of the Queensland University of Technology (QUT), Brisbane, Australia (QUT Ethics Approval Number: 1600000959) and the National Lung Hospital, Hanoi, Vietnam (NLH Ethics Approval Number: 462/2016/NCKH).

2. Instrument

The SGRQ-C was translated into Vietnamese and back-translated into English by two separate persons [8] with the permission of the SGRQ's author. The tool comprises of 14 questions with 40 weighted responses divided into two parts, covering three independent domains (symptoms, activities and impact) [6]. Scores ranging from 0 to 100 are computed for each component, and a total score is calculated based on responses to all items. All components and total scores are computed using item-specific weightings assigned to each question [6]. A higher SGRQ-C score (either component or total) represents a poorer HRQL.

Validity and reliability: The Vietnamese SGRQ-C was piloted for face and content validity using a group of 20 COPD patients. The principal investigator facilitated a focus group (n = 10) followed by individual interviews (n = 10) to discuss each question in the tool to ensure there was no confusion about any items or words. The tool was then refined according to the feedback. The final version of the SGRQ-C was administrated twice six-months apart to another group of 30 COPD patients to assess reliability. An interval of six-months was considered to allow changes in clinical and lung function to occur [9].

All data was collected and calculated by the principal researcher who is a trained medical doctor.

3. Statistical analysis

Data analysis was performed using SPSS version 23.0, with $p<0.05$ considered significant.

Using baseline data, construct validity of SGRQ-C was investigated via correlation between component scores and the total score, and lung function (FEV1% predicted). Internal consistency was evaluated using Cronbach's alpha, with 0.7 considered an acceptable value. [10] Test-retest reproducibility was assessed between the two clinic visits (six-months apart), using intra-class correlation coefficient (ICC). In addition, a correlation between change in SGRQ score and change in FEV1% predicted was also evaluated.

III. RESULTS

Table 1. Lists the demographic and clinical profile of the pilot test and test-retest participants

	Pilot test (n = 20)	Test-retest (n = 30)	Total (n = 50)
Age (years), mean ± SD	63.2 ± 7.8	64.4 ± 8.3	63.9 ± 8.0
Gender, n (%)			

	Pilot test (n = 20)	Test-retest (n = 30)	Total (n = 50)
Male	14 (70.0%)	22 (73.3%)	36 (72.0%)
Female	6 (30.0%)	8 (26.7%)	14 (28.0%)
Marital status, n (%)			
Married	17 (85.0%)	25 (83.3%)	84.0%)
Other (single, divorced, separated…)	3 (15.0%)	5 (16.7%)	8 (16.0%)
Education level, n (%)			
Junior school	4 (20.0%)	4 (13.3%)	8 (16.0%)
Middle and high school	11 (55.0%)	17 (56.7%)	28 (56.0%)
College/university	5 (25.0%)	9 (30.0%)	14 (28.0%)
Smoking status, n (%)			
Current smoker	1 (5.0%)	4 (13.3%)	5 (10.0%)
Ex-smoker	14 (70.0%)	20 (66.7%)	34 (68.0%)
Never smoke	5 (25.0%)	6 (20.0%)	11 (22.0%)
FEV1% predicted, mean ± SD	47.1 ± 19.6	49.2 ± 17.4	48.4 ± 18.1
GOLD stage, n (%)			
Mild COPD	2 (10.0%)	1 (3.3%)	3 (6.0%)
Moderate COPD	5 (25.0%)	14 (46.7%)	19 (38.0%)
Severe COPD	8 (40.0%)	10 (33.3%)	18 (36.0%)
Very severe COPD	5 (25.0%)	5 (16.7%)	10 (20.0%)

SD: Standard Deviation; FEV1%: Forced Expiratory Volume in 1 second; GOLD: Global Initiative for Obstructive Lung Disease; COPD: Chronic Obstructive Pulmonary Disease

After the pilot testing, some irrelevant items were removed or changed to be culturally appropriate such as deletion of “play golf” or “shovel snow”, and “walk 5 miles per hour” was converted to “walk 8 kilometres per hour”. In addition, as COPD patients in this study were considered elderly, it was more appropriate to use an interview rather than a self-report format. As a result, some multiple-choice questions (Question 9, 10, 11, 12, and 13) suitable for self-report were converted to yes/no questions for the interview format.

All participants responded to the SGRQ-C questionnaire at both visits. There were significant negative correlations between FEV1% predicted and the total and component scores ‘activity’ and

'impact' (r = - 0.466, p < 0.001; r = - 0.537, p = 0.001 and r = - 0.443, p = 0.05, respectively). The correlations using change scores provided similar results. The negative correlations for 'symptoms' were not significant. High coefficients for Cronbach's alpha (> 0.8) and intra-class correlation (> 0.7) were displayed for total and all component scores (Table 2).

Table 2. Scoring and performance distribution of Vietnamese translation of SGRQ-C questionnaire

	Symptoms	Activity	Impact	Total
Score of 1st visit data				
Mean ± SD	52.7 ± 24.7	52.9 ± 24.2	38.5 ± 27.7	45.1 ± 24.8
Range	11.1-95.1	13.7-94.0	4.0-84.5	11.7-84.7
Score of 2nd visit data				
Mean ± SD	47.5 ± 20.3	51.5 ± 30.4	31.6 ± 22.8	40.2 ± 23.3
Range	7.7-83.0	13.3-94.0	6.3-71.5	9.2-80.3
Intra-class correlation coefficient	0.722	0.813	0.801	0.834
Cronbach's alpha coefficient	0.822	0.910	0.948	0.967
Correlation with FEV1% predicted	-0.249	-0.537***	-0.443*	-0.466***
Change of scores, mean ± SD	-5.3 ± 21.1	-1.4 ± 21.8	-6.8 ± 20.6	-4.9 ± 18.2
Correlation with change of FEV1% predicted	-0.267	-0.540**	-0.323*	-0.450*

SD: Standard Deviation; FEV1: Forced Expiratory Volume in 1 second;

** Significant at the 0.05 level ** Significant at the 0.01 level *** Significant at the 0.001 level*

IV. DISCUSSION

This is the first study to assess the validity and the test - retest reliability of a Vietnamese translation SGRQ for patients with COPD. While the tool has been used previously in Vietnam to measure HRQL in COPD patients, it was not validated [7]. The refined version retained the original structure with all questions and items from the English original version [6]. The present study found the adaptation performed well in Vietnamese COPD patients. All participants completed the interview, suggesting the acceptability and feasibility of applying this tool to the clinical context in Vietnam.

The cross - sectional data from the baseline visit showed that the activities and impact components and total scores had significant correlation with disease severity expressed by lung function (FEV1%). The symptoms component however did not correlate. However, there was a good agreement between responses to individual items in each component, signifying good internal consistency and it was comparable to the original English version [11].

The longitudinal data was derived from information from two visits spaced six - months apart. The test - retest reproducibility of

SGRQ - C component and total scores among outpatients with COPD was uniformly high. The change of FEV1% between the two visits was significantly correlated with the activities and impact components and total SGRQ scores. However, it did not perform well for the "symptoms" component. The Vietnamese version performed as well or better than other translated versions of the SGRQ - C [12 - 14].

COPD is a chronic and progressive disease with typical symptoms (cough, sputum, breathless) often persisting over time despite treatment. SGRQ - C might not be sensitive enough over a six - month period to measure changes in COPD symptoms. Larger studies with longer following - up period are needed to confirm these findings.

V. CONCLUSION

The present study showed that the Vietnamese SGRQ - C questionnaire has a high reproducibility and high internal consistency which suggests this tool may be a good instrument to evaluate the health - related quality of life for patients with COPD in Vietnam.

Transperancy declaration

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported. The reporting of this work is compliant with the STROBE guideline. The lead author affirms that no important aspects of the study have been omitted and that any discrepancies from the study as planned have been explained.

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