

Exploring patients with COPD and functional impairment in daily living: Result from a validity study in NTEC GOPCs

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INTRODUCTION

Measurement of functional status of patients with COPD is essential in a multidimensional evaluation for healthcare professionals to have a comprehensive picture about the impacts of the disease and facilitate continuity of care. The Manchester Respiratory Activities of Daily Living Questionnaire (MRADLQ) is a multidimensional patient-reported questionnaire which is a self-administered scale originally launched in English and takes about 10 minutes to complete. It measures functional ability in four domains: (1) mobility (seven items); (2) kitchen (four items); (3) domestic tasks (six items); and (4) leisure activities (four items).

A validation study was conducted in NTEC GOPCs to develop a Chinese version of MRADLQ (C-MRADLQ) with pictorial enhancement and to explore patients with COPD and functional impairment in daily living.

METHOD

This was an observational cross-sectional study. A convenience sample of 233 patients (169 patients with COPD and 64 patients with normal spirometry) were recruited from nurse and allied health respiratory clinics under the catchment of NTEC GOPCs. They were invited to complete a pictorial enhancement e-form version of C-MRADLQ (Figure 1). The result was further compared with lung function, GOLD classification, mMRC, COPD Assessment Test (CAT), Chinese Version of the Shortness of Breath Questionnaire (C-SOBQ), COPD group and ADO index.



Figure 1: C-MRADLQ e-form

RESULTS

The mean score of C-MRADLQ for patient with COPD was 96.82 (95%CI: 94.91-98.72), while patient with normal spirometry was 102.84 (95%CI: 102.19-103.48) (maximum score=105). Figure 1 compared the mean C-MRADLQ domain score. Lower average score were noted in stair climbing (mean=4.20, SD=0.94), walking outside the house (mean=4.58, SD=0.73), washing small items of clothing (mean=4.60, SD=0.77) and general housework (mean=4.62, SD=0.78). It suggested that more patient with COPD experienced functional impairment in these tasks in daily living.

Figure 1: Distribution of C-MRADLQ domain score (n=233)

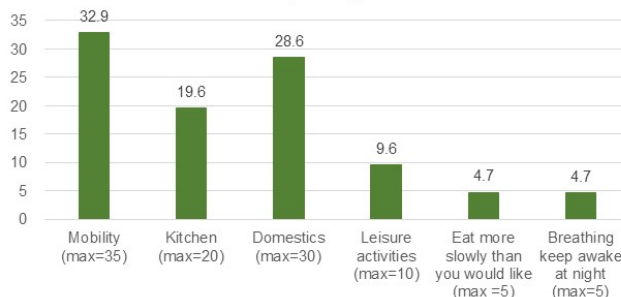


Table 1 highlighted C-MRADLQ is significantly correlated with COPD stage, COPD group, SOBQ score, CAT score, mMRC, ADO index, Spirometry lung function test results and number of admission. Multiple linear regression was performed for patient with COPD. It suggested that the SOBQ score, CAT score and COPD stage could significantly predict the total MRADLQ score (Table 2). Comparing patient with normal spirometry result, one-way ANOVA suggested that patient with moderate to severe COPD (Stage II - IV), Group B and C scored significantly lower in the four domain mean scores of C-MRADLQ ($F=15.21-15.82$, $p<0.001$) (Table 3).

Criterion-related parameter	Spearman's Rho coefficient
Age	-0.112
Gender	-0.034
COPD stage	-0.407***
COPD group	-0.424***
No. of Adm	-0.103
SOBQ	-0.637***
CAT	-0.466***
MMRC	-0.459***
FVC	0.313***
FVC % predicted	0.304***
FEV1	0.467***
FEV1 % predicted	0.455***
FEV1/FVC	0.397***
ADO Index	-0.398***
C-MRADLQ	
Mobility	0.908***
Kitchen	0.556***
Domestic tasks	0.798***
Leisure	0.577***
Others	0.604***

Table 1 Correlation Matrix of C-MRADLQ with Other Criterion Parameters (n=233) (***) $p<0.001$)

	B	SE	t	P value	R	R ²
(Constant)	109.53	1.68	65.13	<0.001	0.562	0.316
SOBQ	-0.30	0.08	-3.82	<0.001		
CAT score	-0.34	0.15	-2.35	0.020		
COPD Stage	-1.72	0.84	-2.04	0.043		

Table 2 Predictions of the C-MRADLQ Total score (n=169)

COPD Stage	N	C-MRADLQ Total score		95% CI		F Value	P value	np2
		Mean	SD	Lower	Upper			
Normal	64	102.84	2.61	102.19	103.50	15.21	<0.001	0.21
Stage I	46	102.87	3.15	101.94	103.80			
Stage II	73	99.44*	10.24	97.05	101.83			
Stage III	43	96.67***	7.34	94.41	98.93			
Stage IV	7	82.86***	19.34	64.97	100.75			
Group A	106	102.14	4.15	101.34	102.94	15.82	<0.001	0.22
Group B	50	93.42***	12.26	89.94	96.90			
Group C	10	95.20*	18.65	81.86	108.54			
Group D	3	92.67	6.81	75.76	109.58			

Table 3 Subgroup analysis of C-MRADLQ total score by COPD stage and group (* $p\leq 0.05$, ** $p<0.01$, *** $p<0.001$, np2: partial eta-squared)

DISCUSSION & CONCLUSION

The Chinese version of the MRADLQ with pictorial enhancement was a valid and useful tool to understand patients with COPD and functional impairment in daily living. Result of The total score of C-MRADLQ

An e-form was also developed to facilitate efficient administration using tablets, especially for score calculation and documentation. This handy and reliable instrument allows healthcare professionals to document functional status effectively among patients with COPD in Hong Kong.

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