Article

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Validation of the EuroQol quality of life questionnaire on stroke victims

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ABSTRACT

Objective: To validate a quality of life scale, EuroQoL, on stroke patients. **Method:** 67 patients were scored simultaneously for EuroQoL-5 Dimensions (EQ-5D), NIH Stroke Scale (NIHSS) and modified Barthel Index (mBI). Pearson test was used to correlate each scale. Additionally, 31 patients were examined by two independent evaluators on the same day through application of EQ-5D. Kappa statistics were used to evaluate interobserver agreement. **Results:** EQ-5D showed good correlation with both stroke severity (NIHSS, r= –0.404, P<0.001) and degree of impairment on activities of daily living (mBI, r=0.512, P<0.001). We noticed a good interobserver agreement (k>0.60) in all dimensions evaluated (P<0.01). **Conclusion:** We demonstrated that EQ-5D is reproducible and valid on evaluation of quality of life in patients post stroke in Brazil.

Key words: quality of life, EuroQoL, stroke.

Validação do questionário de qualidade de vida EuroQol em vítimas de acidente vascular cerebral

RESUMO

Objetivo: Validar uma escala de qualidade de vida, o EuroQoL-5D, em pacientes com acidente vascular cerebral (AVC). **Método:** O EuroQoL-5 Dimensões (EQ-5D), NIH Stroke Scale (NIHSS) e o Índice de Barthel modificado (IBm) foram aplicados simultaneamente a 67 pacientes. O teste de Pearson foi utilizado para correlacionar as escalas. Adicionalmente, 31 pacientes foram avaliados por dois investigadores independentes, no mesmo dia para aplicação do EQ-5D. O índice Kappa foi utilizado para avaliar a variabilidade interexaminadores. **Resultados:** O EQ-5D mostrou boa correlação com a gravidade do déficit neurológico (NIHSS: r= –0,404; P<0,001) e com o grau de restrição às atividade da vida diária (IBm: r=0,512; P<0,001). Houve uma boa concordância interexaminadores (k>0,60) em todas as dimensões avaliadas (P<0,01). **Conclusão:** O EQ-5D é reprodutível e válido na avaliação da qualidade de vida de pacientes pós-AVC no Brasil.

Palavras-chave: qualidade de vida, EuroQoL, acidente vascular cerebral.

World-wide, including developing countries, chronic degenerative disease prevalence is increasing, causing a change on universal morbimortality profile[1]. These diseases may cause limiting physical disabilities or permanent impairment on survivors. The advances in treatment have increased life expectancy, but also the possibility to remain with residual functional incapacity, with significant impact on quality of life (QoL)[2].

According to this, the construct of quality of life has been an important part of reflection of multidimensional concept of health[3-5]. A large diversity of QoL evaluation instruments have been developed for research and clinical practice, both as self-applied questionnaires and interviews. The development and validation of instruments to evaluate QoL has become an important area of research. However, to demonstrate their validity, these instru-

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ments require evaluation in different research centers and by various researchers on several populations[6].

The EuroQol-5 dimensions (EQ-5D) is already translated to several languages, is frequently used as measure of QoL and has showed internal consistency when applied to general population and in groups of patients with various diseases[7].

Despite being translated to Portuguese language, the EQ-5D is not yet validated in Brazil.

This paper aims to demonstrate the reproducibility and validity of this instrument and its utility on stroke-related research and clinical practice[8].

METHOD

All patients were recruited from the Stroke Clinic of the Federal University of Bahia, with a clinical diagnosis of stroke, regardless of the number of events. Stroke was defined as a new neurological focal deficit with duration longer than 24 hours[9]. Exclusion criteria included people with communication and comprehension difficulties and those who refused to participate. All participants signed a consent term, agreeing to participate voluntarily and the study was approved by a ethics committee of Federal University of Bahia.

Between July and November 2005, we sequentially applied the following scales: EQ-5D, modified Barthel Index (mBI) and the National Institutes of Health Stroke Scale (NIHSS). The EQ-5D is a generic instrument which approaches five dimensions of health (mobility, self-help, habitual activities, pain, anxiety/depression), each one with three levels of abnormality. A composite QoL score was calculated based on previously published criteria, where scores varied between 0 and 1, with death receiving a score of 0 and 1 being the best state of health[10]. A score of 0.86 is considered the reference score for the general population and 0.78 for individuals between 65 and 74 years old[11].

To evaluate the functional profile of the patients, we applied the mBI, which categorized them in groups of independence. A total mBI score of 50 suggest complete independence, 46-49 slight dependence, 31-45 moderate dependence, 11-30 severe dependence and 10 complete dependence[12].

The severity of stroke was measured by the NIHSS, which offers a quantitative evaluation of neurological disability, giving us the severity of the stroke measurement through the assessment of conscience level, language, neglect, visual field, extra ocular movements, muscular strength, ataxia, dysarthria and sensory loss. The higher the score, more severe the stroke[13].

To verify the interobserver agreement, between January and March 2008, we applied the EQ-5D in a separate group of patients from the same Stroke Clinic, who were evaluated independently by two investigators on the same day.

The Statistical Package for the Social Sciences (SPSS) version 13.0 was utilized for statistical analysis. To correlate scores between scales we applied the Pearson test; and we used the kappa index to compare the interobserver agreement. We considered a verypoor association values <0.20; poor, 0.20-0.39; moderate, 0.40-0.59, good, 0.60-0.79 and excellent >0.80. The significance level was established as 5%.

RESULTS

The convenience sample selected for the correlation tests was composed of 67 individuals with mean age of 59.3 (±13.3) years, 56.2% female. The neurological deficit measured by the NIHSS showed a median of 4 and the mean mBI was of 43.6 (±7.1). EQ-5D showed a good correlation with both NIHSS (r= –0.404, P<0.001) and mBI (r=0.512, P<0.001) (Table 1).

Thirty patients with mean age of 54 years range 23 to 74 years, with 58% female were evaluated for interobserver agreement. We noticed a good interobserver agreement (k>0.60) in all dimensions evaluated (P<0.01) (Table 2).

DISCUSSION

To study QoL in health is essential, because this parameter interferes on definition of treatment, on evaluation of its results and could act as starting-point for primary attention and rehabilitation. The EQ-5D is a generic instrument that tries to reach all important aspects related to health and it reflects the disease impact on the individual. A prospective study carried out in the United

Table 1. Correlation between quality of life (EQ-5D) and widely used scales in stroke research: National Institutes of Health Stroke Scale (NIHSS) and modified Barthel Index (mBI).

Scale correlated with EQ-5D	Pearson correlation (r)	P-value
NIHSS	–0.404	<0.001
mBI	0.512	<0.001

Table 2. Interobserver agreement on dimensions of EQ-5D.

Dimensions of EQ-5D	Interobserver agreement (kappa)
Mobility	K=0.621*
Usual activities	K=0.654**
Pain	K=0.747**
Self-care	K=0.652**
Anxiety/depression	K=0.754**

*p<0.01; **p<0.001.

Kingdom validated the EQ-5D on stroke survivors, considering it short, simple and allowing the majority of patients to answer it without assistance[14].

Most literature reviewed of the EQ-5D compares it with other generic and specific measurements utilized in quality of life evaluation[15]. The present study demonstrated that a significant correlation exists between QoL and level of functionality in victims of stroke. However, this is not enough to be considered as substitute data, as represented by the moderate correlation between mBI and the EQ-5D. Even though the QoL related to health and functional status are concepts extremely related, they represent different components of individual condition of health[16]. The survivors of stroke have a widespread variety of symptoms that surpass the individual's peformance of motor activities, and, for not capturing the psicosocial related aspects of health, the mBI would not be enough to evaluate the stroke impact to the individual's life[1,2,15]. According to this, a recent study which evaluated functionality using mBI and QoL with the EQ-5D, found a portion of patients functionally independent with a poor QoL, and a proportion of dependent patients with a good QoL[17]. Similar data was found in another research, which documented that independent patients could have a compromised QoL[18].

A study that compared the mBI with the EQ-5D found a significant and stable relationship between these scales, demonstrating that EQ-5D is a valid instrument with discriminative capacity among the different levels of disease incapacity. As the mBI is more widely utilized, the author suggests its application as an alternative evaluation measurement in patients unable to assert their QoL. However, the same author recognizes a roof effect of mBI, which is not representative beyond a period of six months[19].

The severity of stroke measured with NIHSS demonstrated a predominance of individuals considered to have a mild stroke severity. This probably reflects our patient sample, composed of patients able to arrive at an outpatient clinic. As expected, a significant correlation was found between stroke severity and QoL, but again many patients with mild deficits showed poor QoL scores.

The assessment instruments must be reproducible through time, they have to reproduce equal or much similar results, in two or more administrations to the same patient, considering, naturally, that the clinical stage has not been modified. A good inter-observer agreement rate of the instrument was demonstrated in this study, with a good achievement in all its dimensions.

The EQ-5D has been used in several studies as preferred measurement to evaluate QoL in stroke survivors[15,20-24]. Other studies have validated its utilization in different chronic disease and in general population, suggesting its application on clinical research and in epidemiological studies of QoL in health[25-30]. As in other studies, it was not possible to examine the aspects to convergent validation, because there is not a QoL gold-standard measurement[8].

In conclusion, it was possible to demonstrate the reproducibility and validity of EQ-5D in a population of stroke patients, as an instrument with measurement properties demonstrated by several groups, which makes it useful to be utilized on evaluation of QoL in research and on clinical practice.

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