Thai Version of the Quality-of-Life in Epilepsy Inventory: Comparison Between the QOLIE-31 and the QOLIE-10

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ABSTRACT

Approximately 1% of the general Thai population have epilepsy. Measuring the outcome of epilepsy treatment has traditionally assessed seizure frequency and severity, adverse effects and antiepileptic drug levels. Patients' perceptions often include additional parameters that encompass the effects of epilepsy on daily activities and functions. The health-related quality of life instruments for a population with epilepsy were developed from the questionnaires that were used for evaluating the general population. These instruments include the QOLIE-89 instrument, QOLIE-31 and QOLIE-10. This current report describes a comparison between the QOLIE-31 and the QOLIE-10 to assess the usefulness of the abbreviated questionnaire in Thai.

Key words: Quality-of-life in epilepsy, QOLIE-10, QOLIE-31, Thai version

INTRODUCTION

Epilepsy is a medical diagnosis that is retained even when signs and symptoms are well controlled and all laboratory tests are normal. Jacoby (1992) described epilepsy as "both a medical diagnosis and a social label". The possibility of recurrent seizures is a silent but ever-present component of daily life for the patients who carry the diagnosis of epilepsy. They may experience the effects of their drugs and/or their illness on their work, driving, social activities and their general activities in daily life.

Measuring the outcome of epilepsy treatment has traditionally assessed seizure frequency and severity, adverse effects and antiepileptic drug levels. Patients' perceptions often include additional parameters that encompass the effects of epilepsy on daily activities and functions (Cramer et al., 1996).

The health-related quality of life instruments for a population with epilepsy were developed from the questionnaires that were used for evaluating the general population. These instruments include the QOLIE-89 instrument, QOLIE-31 and QOLIE-10 (Cramer et al., 1996, 2000). This current report will describe a comparison between the QOLIE-31 and QOLIE-10 to assess the usefulness of the abbreviated questionnaire in Thai.

MATERIALS AND METHODS

QOLIE-31 questionnaire

The QOLIE-31 was developed to assess health-related quality of life in patients with epilepsy (Devinsky, 1993; Devinsky and Cramer, 1993; Meader, 1993; Perrine, 1993). It was derived from the QOLIE89 (Devinsky et al., 1995), an instrument with 89 items in 17 subscales, including generic and epilepsy-specific issues. The QOLIE-31 questionnaire contains 31 items, 16 of which were drawn from existing sources and 15 were developed by the QOLIE Development Group. The QOLIE-31 contains seven multi-item scales that tap the following health concepts: seizure worry, overall quality of life, emotional well-being, energy fatigue, cognitive functioning, medication effects and social functioning. The scoring procedure for the QOLIE-31 converts the raw precoded numeric values of items, having scores of 0-100 where higher scores reflect a better quality of life. An overall score is obtained by using a weighted average of the multi-item scale scores (Vickrey et al., 1993).

During development, internal consistency reliability coefficients (Cronbach alpha) ranged from $\alpha = 0.77$ (social functioning scale) to $\alpha = 0.85$ (cognitive functioning scale). Test-retest data demonstrated good reliability (range r=0.64-0.85). Item to scale correlations were uniformly very high for all scales, including seizure worry (r= 0.68-0.79), overall QOL (r=0.90-0.92), emotional well-being (r=0.71-0.82), energy-fatigue (r=0.81-0.85), cognitive functioning (r=0.66-0.81), medication effects (r=0.75-0.89) and work/driving/social functioning (r=0.69-0.80). The QOLIE-31 was sensitive to differences in seizure frequency and severity categories (Cramer et al., 1998, 2000).

QOLIE-10 questionnaire

The QOLIE-10 (Cramer et al., 1996) is a self-administered questionnaire, designed for completion by patients alone. It was derived from the QOLIE-31 (Cramer et al., 1998). The QOLIE-10 comprises of seven components: seizure worry, overall QOL, emotional well-being, energy-fatigue, cognitive functioning, medication effects (physical effects and mental effects) and social function (work, driving, social function). QOLIE-10 components correlated adequately with QOLIE-89 subscales in the validation study (Cramer et al., 1996, 2000) : seizure worry (r=0.64), overall QOL (r=0.66), emotional well-being (r=0.67) energy-fatigue (r=0.72), cognitive functioning (r=0.64), physical effects (r=0.67), mental effects (r=0.73), work (r=0.57), driving (r=0.68), and social function (r=0.54). The QOLIE-10 was sensitive to differences in seizure frequency and severity categories (P=0.003).

The numbers of items in each subscale of QOLIE-31 and QOLIE-10 are listed in Table 1.

Table 1. Structure of the QOLIE-31 and QOLIE-10.

QOLIE-31 subscales	No. items in subscale	QOLIE-10 components	No. items in component
Seizure worry	5	Seizure worry	1
Overall QOL	2	Overall QOL	1
Emotional well-being	5	Emotional well-being	1
Energy-fatigue	4	Energy	1
Cognitive functioning	6	Cognition	1
Medication effects	5	Physical effect, mental effect	2
Social function Health status [a]	5	Work, driving, social function	3
Total score	30	Total score	10

[a] Item 31 in the QOLIE-31 is a health status question that is not included in the total score. Notation of this item was removed from these analyses comparing the two instruments.

Adaptation of the QOLIE-31 and QOLIE-10 into Thai

The adaptation process of the QOLIE-31 and QOLIE-10 into Thai included the following phases: translation into Thai, assessment of item comprehension, back translation into English, assessment of its validity by three experts and reliability.

Subjects

Eighty-nine patients with epilepsy were studied at two seizure clinics in Thailand. Criteria included patients with epilepsy who could read and comprehend the questions. The QOLIE instruments were not intended for use by intellectually impaired patients. Patients completed both the QOLIE-10 and the QOLIE-31 by themselves on the same day. Demographic and disease characteristics are shown in Table 2.

Table 2. Demographic and disease characteristics.

Age (mean years)	33.04 ± 10.78
Gender (% male)	53.9%
Duration of epilepsy (mean years)	12.45 ± 9.35
Seizure type (%) Simple partial Complex partial Generalized tonic-clonic Absence	 4.5% 7.9% 86.5% 1.1%

Patients with either generalized or partial epilepsy were grouped into controlled (n = 40, 44.9%), low (n = 12, 13.5%), moderate (n = 19, 21.3%) and high (n = 18, 20.2%) seizure-frequency groups, based on the number of seizures in the past year (Table 3) (Devinsky et al., 1995).

Table 3. Seizure frequency groups.

Seizure type	Number of seizures in preceeding 12 months			
	Seizure-free > 1 yr	Low	Moderate	High
Simple partial	0	1-20	21-100	101-200
Complex partial	0	1-4	5-12	13-24
Generalized tonic-clonic	0	1	2-4	5-12
Absence	0	1-20	21-100	101-200

Analysis

Statistical analyses included Pearson's correlation coefficients for comparison of QOLIE-10 and QOLIE-31 subscales and total scores. Discriminant validity was assessed by univariate F tests of scales and items with seizure groups. Patients with epilepsy were grouped by seizure-frequency groups, based on the previous study (Devinsky et al., 1995). Internal consistency of the QOLIE-31 and the QOLIE-10 and their subscales were analyzed by using Cronbach's alpha coefficients.

RESULTS

The internal consistency of the QOLIE-31 and QOLIE-10

The internal consistency for the QOLIE-10 and QOLIE-31 overall scores and dimensions were high (Table 4). The Cronbach's alpha coefficients for the QOLIE-31 and QOLIE-10 overall scores were 0.76 and 0.91, respectively. Internal consistency reliability coefficients for the QOLIE-31 ranged from $\alpha = 0.47$ (energy-fatigue) to $\alpha = 0.80$ (seizure worry). Internal consistency reliability coefficients for the QOLIE-10 ranged from $\alpha = 0.33$ (mental health scale) to $\alpha = 0.64$ (role function scale).

Table 4. The internal consistency of the QOLIE-31 and QOIE-10.

QOLIE-31 subscales	Cronbach's alpha	QOLIE-10 components	Cronbach's alpha
Seizure worry	0.80	Epileptic scale	0.60
Overall QOL	0.71	Mental health scale	0.33
Emotional well-being	0.78	Role function scale	0.64
Energy-fatigue	0.47		
Cognitive functioning	0.79		
Medication effects	0.71		
Social function	0.68		
Total score	0.91	Total score	0.76

Test-retest data (Table 5) showed significant Pearson correlations for individual items (range, r = 0.34-0.74; all p <0.001) and scales (range, r = 0.62-0.67; all p=0.000).

Table 5. Reliability of QOLIE-10.

	Pearson's correlation	Significance
Energy	0.48	0.00
Depression	0.48	0.00
Driving	0.49	0.00
Transportation a	0.59	0.00
Memory	0.42	0.00
Work	0.34	0.001
Social	0.62	0.00
Physical effect	0.52	0.00
Mental effect	0.52	0.00
Seizure worry	0.50	0.00
Overall QOL	0.74	0.00

[a] this item was added because some patients could not drive, or did not have a car, or motorcycle, or bicycle.

Item to scale correlations of the QOLIE-31 were uniformly high for all scales, including seizure worry (r = 0.66-0.83), overall QOL (r = 0.87-0.90), emotional well-being (r = 0.70-0.76), energy-fatigue (r = 0.21-0.76), cognitive functioning (r = 0.60-0.78), medication effects (r = 0.80-0.83) and work/driving/social functioning (r = 0.59-0.75).

Item to scale correlations of the QOLIE-10 were also high for all scales, including epilepsy effect scale (r = 0.64-0.81), mental health scale (r = 0.65-0.68) and role function scale (r = 0.57-0.75).

Correlations between QOLIE-31 and QOLIE-10

Correlation coefficients between the scores of the QOLIE-31 and QOLIE-10 are presented in Table 6. Correlation for the total scores was 0.78. Correlations for subscale scores ranged from 0.34 to 0.69. However, if the QOLIE-10 items were from the same items in the QOLIE-31, correlation for subscales ranged from 0.59 to 0.87 and for total scores was 0.87. When we asked about transportation instead of driving, correlation of this item was 0.41 and 0.68 for the same and different questionnaire, respectively.

Table 6. Correlations between QOLIE-31 and QOLIE-10.

Domain	QOLIE-10 and QOLIE-31	QOLIE-10 from QOLIE-31	Validation study (Cramer et al., 1996)
Seizure worry	0.59	0.83	0.64
Overall QOL	0.69	0.87	0.66
Emotional well-being	0.55	0.72	0.67
Energy-fatigue	0.50	0.74	0.72
Cognition	0.45	0.60	0.64
Physical effect	0.48	0.76	0.67
Mental effect	0.61	0.83	0.73
Work 0.41	0.70	0.57	
Driving	0.34	0.59	0.68
Transportation a	0.41	0.68	0.68
Social 0.47	0.75	0.54	
Total 0.78	0.87		

[a] this item was added because some patients could not drive, or did not have a car, or motorcycle, or bicycle.

Discriminant validity

The QOLIE-10 and the QOLIE-31 total scores were sensitive to differences in the seizure frequency categories. (P=0.004, 0.019, respectively). The epileptic effects scale and mental health scale of the QOLIE-10 differed significantly among seizure groups with multivariate testing ($p<0.05$). Otherwise, only the overall QOL and the emotional well-being subscale of the QOLIE-31 differed significantly among seizure groups ($p<0.05$).

DISCUSSION AND CONCLUSION

QOLIE-10 and QOLIE-31 are simple questionnaires that can be completed easily and quickly by patients. All items in these questionnaires pertain to aspects of daily living for people with epilepsy. The discriminant validities of the QOLIE-10 and QOLIE-31 were demonstrated by the finding of differences among seizure groups for the total scores. Using the QOLIE-10, we found differences in the epileptic effects scale and mental health scale except for the role function scale. Conversely, the previous study (Cramer et al., 1996) found differences among seizure groups for role-function items (driving, work, and social issues). These differences between the two sets of results may be caused by the nature of Thai people which help them accept their illness and also most Thai patients stay at home and are not part of the workforce (retired, student, homemaker, unemployed).

Subscale weighting should also be revised for different populations (Cramer et al., 1998). This applies to the item about driving and transportation. The questionnaire should ask about the effect of illness or antiepileptic drugs on transportation rather than on driving because most Thai patients do not have a car or own a vehicle. The subscales of energy-

fatigue for the QOLIE-10 and the QOLIE-31 had lower reliability and correlation than other subscales. This may reflect that Thai patients did not understand these topics or that these effects were not specific for Thai epilepsy patients.

The results presented in this paper suggest that the patients in clinical settings can complete the QOLIE-10 and QOLIE-31 and that the resulting health related quality of life (HRQOL) data were similar to each other. The QOLIE-10 is shorter than the QOLIE-31 and easier to translate the data to the score, so it's convenient and saves time to use the QOLIE-10 to screen patients in the clinical setting. However, the QOLIE-31 provided more detail of HRQOL than the QOLIE-10, although the translation procedure was more difficult. It would be helpful to develop an easier method to score the QOLIE-31 in order to appropriate its use to screen in the clinical setting. This might be possible by developing an appropriate computer programme.

Many studies have proved that the QOLIE-10 and QOLIE-31 can be used to screen patients in clinical settings and for clinical trials in many countries (Cramer et al., 1998; Torres et al., 1999). The data presented here indicate the usefulness of the QOLIE-10 and QOLIE-31 for using as screening tools in clinical practice and clinical research with Thai patients having epilepsy.

ACKNOWLEDGEMENTS

We are grateful to the health officers of the Epilepsy clinic, Mahasarakham Hospital and Khon Kaen Psychological Hospital for their valuable help in arranging the patients.

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