Quality of Life in Epileptic Patients in Southern Thailand

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Objective: *To determine the risk factors for a low quality of life in Thai epileptic patients.*
Material and Method: *A cross-sectional study was conducted at Songklanagarind Hospital, Thailand. Epileptic patients aged 15-50 years old, who had been treated with a stable dose of antiepileptic drug(s) for more than three months, were enrolled. Those who had other chronic medical illnesses and pregnant women were excluded. All subjects completed a self-report questionnaire that included questions about the quality of life in epilepsy-31 (QOLIE-31), hospital anxiety, depression score (HADS), age, sex, occupation, marital status, education level, medical insurance, seizure frequency, trauma due to seizure activity, duration of epilepsy, and medication analysis.*
Results: *In the univariate analysis, significant ($p < 0.05$) factors affecting the quality of life included seizure frequency, history of trauma due to seizures, depression, and anxiety. In the multivariate regression analysis, seizure frequency, anxiety, and depression were significant. Anxiety and depression were significant statistical factors in explaining a lower quality of life. Throughout the results, seizure frequency, depression, and anxiety had an inverse relation to scores. Age, sex, education, medical insurance, occupation, marital status, and medication were not significant for quality of life. In the subscale analysis of quality of life, seizure frequency was associated with seizure worry; occupation with energy/fatigue; anxiety with all subscale QOLIE; depression with emotional well-being, overall, energy/fatigue and cognitive and social functions; marital status with energy/fatigue; and medical insurance with medical effects.*
Conclusion: *These findings indicated that mood disorder and seizure frequency could be a powerful predictor for the quality of life.*

Keywords: *Depression, Anxiety, Seizure frequency, Epilepsy, Quality of life, Thailand*

J Med Assoc Thai 2009; 92 (6): 762-9
Full text. e-Journal: *http://www.mat.or.th/journal*

Epilepsy is a chronic condition with numerous social, physical functions and psychological consequences(1). In 2005, the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) defined epilepsy as: "a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures and by the neurobiological, cognitive, psychological, and social consequences of this condition(2)". The epileptic patients experience these effects in their work, driving, social and general activities in daily life, which also include psychosocial effects as a result of the burden experienced by their families and care givers. Treatment focusing on seizure-free epilepsy is, however, not sufficient(3,4).

Optimal quality of life is the main goal of epilepsy treatment(5). The concept of health-related quality of life (HRQOL) is a multifactorial construction that describes an individual's perceptions of their physical, psychological, social functioning, and well-being. Instruments for measuring the health-related quality of life in epilepsy include the Quality of Life in Epilepsy Inventory for Adolescents (QOLIE-AD-48)(6); Quality of Life in Epilepsy Inventory-89 (QOLIE-89)(7); Quality of Life in Epilepsy Inventory-31 (QOLIE-31)(8);

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Quality of Life in Epilepsy Inventory-10 (QOLIE-10)(9); Liverpool Health Related Quality of Life Battery (Liverpool HRQOL)(10) and the Epilepsy Surgery Inventory (ESI-55)(10). QOLIE-31 has sufficient internal consistency and stability and is easy to use. Several studies have reported that depression and anxiety(11), duration of disease(12), and seizure frequency(13,14) are associated with a low quality of life but most of the previous studies have been conducted in the West. Quality of life questionnaires analyze multiple daily functions, which depend on the cultural, ethnic, and economic differences on a country-by-country basis. Four-fifths of the world's 50 million patients with epilepsy are located in Asia. In Asia, epilepsy represents a major public health problem(15), characterized by lack of prioritization and infrastructural support(16), misinformation and misunderstanding(17). To the best of the authors' knowledge, in Asia, especially South East Asia, there are no data published in English on the quality of life in epileptic patients. To fill the information gap on the identification of the main influence factors, the authors conducted a cross-sectional study on the quality of life in adult Thai epileptic patients using QOLIE-31. The main objectives of the author's study were firstly, to analyze QOLIE-31 and secondly, to evaluate its subscale for factors associated with the low quality of life.

Material and Method

Subjects

The present cross-sectional study was conducted at a tertiary care, referral medical center in Southern Thailand, on epileptic patients between September 2005 and January 2007. The authors enrolled 15-50 year old epileptic patients who had been treated with antiepileptic drugs for more than six months in the General Medical and/or Neurological Clinic of Songklanagarind Hospital, which is the only medical referral center in the South of Thailand.

The inclusion criteria were the epileptic patient could read and comprehend the questions, had no chronic medical illness other than epilepsy, and had not taken any other medication except, a stable dose of antiepileptic drug(s) during the three months prior to inclusion. Exclusion criteria were pregnancy, in ability to read and converse in Thai and significant disability, such as mental retardation, ataxia, paresis, and other motor disabilities, learning disability, language disorder, hearing or visual disability, psychosis or psychiatric disease, and significant medical disorders other than epilepsy. There were 109 chronic epilepsy patients seen throughout the present study. A total of 19 patients were excluded for various reasons: 10 because they could not read, 4 due to psychiatric co-morbidity, and 5 as a result of hemiparesis due to stroke. Seizure frequency was defined by: 1) no seizure in the past year, 2) 1 or more per year but not more than 1 per month, 3) more than 1 per month but not more than 1 per week, 4) more than 1 per week but not more than 1 per day, 5) more than 1 per day. The Ethics Review Committee of the Department of Medicine approved the present study and informed consent was sought from all the patients.

Procedures

All subjects completed a self-reported questionnaire that included QOLIE-31, the hospital anxiety and depression score (HADS), age, sex, education level, medical insurance, duration of epileptic seizures, occupation, seizure frequency, trauma due to seizure activity, and medications used. All forms were completed in one episode and if this was not the case the patient was excluded.

The patient's variables were rechecked by independent interviewers with their family members and the medical records. Occasionally, their physicians were contacted if the data were uncertain.

Questionnaires

Quality of Life in Epilepsy-31 (QOLIE-31)

The quality of Life in Epilepsy Inventory 31 is a widely-recognized questionnaire for ascertaining the quality of life in epileptic patients and has been derived from QOLIE-89. QOLIE-31 contains seven multi-item scales: seizure worry, overall quality of life, emotional-well being, energy fatigue, medication effect, cognitive function and social functioning. QOLIE-31 was translated into the Thai language(18).

Hospital anxiety and depression scale (HADS)

HADS is easy to use and appropriate for screening in limited time situations. HADS has been shown to correlate strongly with other depression rating scale tools that are used for diagnosis of depression(19) and has been validated in several studies(20, 21). Recent studies have been carried out on HADS devised for detecting depression and anxiety in people with epilepsy(22-25). Nilchaikovit et al(26) translated HADS into Thai.

The authors analyzed QOLIE-31 in respect of 1) age, 2) sex, 3) duration of epilepsy, 4) education, 5) medical insurance, 6) occupation, 7) marital status,

8) seizure frequency, 9) history of trauma due to seizure activity, 10) medication, 11) depression, and 12) anxiety. They also evaluated the subscales of QOLIE-31 for significant variability associated with low quality of life in epileptic patients.

Statistical analysis

The overall quality-of-life scores were summarized according to the patients' demographic and clinical characteristics. A univariate followed by a multivariate linear regression analysis was used to identify those characteristics that had an independent association with the total scores and subscale of quality of life. Multivariate modeling was performed by backward elimination guided by the significance of explanatory variables using partial F-tests. Computers equipped with STATA version 6 performed all the data analysis. A p-value of less than 0.05 was considered statistically significant.

Results

General characteristics of the patients

Ninety patients (43 males, 47 females) were investigated. The mean age of patients was 32.52 (range 15-49 years) and the mean duration of epilepsy was 14.43 years (range 0.6-30 years). The medication analysis revealed that 75% of the participants were on mono antiepileptic drug and 25% were on poly antiepileptic drugs. Patients with no seizure activity in the past year constituted 34.44% and those having more than 1 per day during the past year comprised 6.67% of the population. Patients with 1 or more per year but not more than 1 per month, more than 1 per month but not more than 1 per week, more than 1 per week but not more than 1 per day constituted 27.78, 21.11, and 10.00 respectively (Table 1).

Relation of socio-demographics and clinical variables to quality of life

In the present study, age, sex, education level and duration of epilepsy were found not to be associated with the composite and subscale scores of QOLIE-31 using either univariate or multivariate linear regression analysis.

Among the mood disorder clinical variables, high scores for anxiety and depression in the HADS and seizure frequency showed a highly significant relationship with low scores in the composite QOLIE-31 in the univariate analysis ($p < 0.001$) as shown in the Table 1. Anxiety depression exhibited a strong significance in the multivariate analysis (Table 2). In the multivariate analysis of the quality of life subscales, anxiety was found to be a significant predictor for all subscales, while depression remained a significant predictor for emotional-well being, energy/fatigue, cognitive function, social function and overall (Table 3).

Table 1. Results of univariate modeling of QOLIE

Variable	Number of patients (%)	Mean QOL (SD)	p-value
Seizure frequency			<0.001**
No in the past year	31 (34.44)	71.39 (13.36)	
1 or more per year but not more than 1 per month	25 (27.78)	63.10 (12.93)	
More than 1 per month but not more than 1 per week	9 (21.11)	58.02 (15.15)	
More than 1 per week but not more than 1 per day	9 (10.00)	47.59 (18.78)	
More than 1 per day	6 (6.67)	48.44 (18.65)	
History of trauma due to seizures			0.043*
Yes	39 (43.33)	59.29 (17.69)	
No	51 (56.67)	66.35 (13.89)	
Depression			<0.001**
Yes	22 (24.44)	48.63 (16.28)	
No	68 (75.56)	66.79 (13.94)	
Anxiety			<0.001**
Yes	36 (40.00)	50.11 (12.53)	
No	54 (60.00)	70.51 (13.46)	

p-value using Anova, t-test

* Statistical significance, ** Highly statistical significance

QOLIE = quality of life in epilepsy, SD = standard deviation

Table 2. Results of multivariate modeling of QOLIE

Variable	Unstandardized coefficient β	95% CI	p-value
Anxiety	-14.32	-19.92 to -8.72	<0.001
Depression	-11.85	-18.01 to -5.67	<0.001
Seizure frequency			
No in the past year	Reference		0.031
1 or more per year but not more than 1 per month	-2.80	-9.28 to 3.67	
More than 1 per month but not more than 1 per week	-6.47	-13.51 to 0.57	
More than 1 per week but not more than 1 per day	-10.11	-19.61 to -0.60	
More than 1 per day	-15.19	-25.88 to -4.49	

QOLIE = quality of life in epilepsy
95% CI = 95% confidence interval

Table 3. Results of multivariate modeling of subscale QOLIE

Domain/predicting variable	Standardized coefficient β	p-value
Seizure worry		
Seizure frequency		<0.001
Anxiety	-0.232	0.017
Emotional well-being		
Anxiety	-0.528	<0.001
Depression	-0.302	<0.001
Overall		
Anxiety	-0.306	0.003
Depression	-0.267	0.009
Energy/fatigue		
Anxiety	-0.469	<0.001
Depression	-0.215	0.011
Occupation		0.010
Marital status		0.006
Cognitive function		
Anxiety	-0.308	0.003
Depression	-0.258	0.011
Medication effects		
Anxiety	-0.219	0.037
Medical insurance		0.037
Social functions		
Anxiety	-0.487	<0.001
Depression	-0.243	<0.007

Seizure frequency was significantly associated only with the seizure worry subscale. In seizure worry subscale, the analysis used the patient who did not have seizure frequency in the past year for reference. The resuls show that the patients that had 1 or more per year but not more than 1 per month, more than 1 per month but not more than 1 per week, more than 1 per week but not more than 1 per day, and more than 1 per day had a negative correlation with the seizure worry with a standardized coefficient beta of -0.331, -0.301, -0.392, and -0.337, respectively.

Gender and duration of disease were not correlated with the composite QOLIE-31 nor any subscale of QOLIE-31, in either the univariate or multivariate analysis.

The medical insurance categories by payment included the following schemes: universal coverage, government officer, self-financing, universal coverage PSU student, patient under the patronage of H.R.H. Crown Prince Maha Vajiralongkorn, and social security. Medical insurance did not correlate with the composite QOLIE-31, but the multivariate analysis indicated a relationship with the medication effects subscale. The analysis used the universal coverage for reference. The social security had a negative correlation with the medication effects subscale (standardized coefficient beta = -0.009). In medication effects subscale, government officer, self-financing, universal coverage PSU student, and patient under the patronage of H.R.H. Crown Prince Maha Vajiralongkorn were positively correlated with the medication effect subscale with a standardized beta 0.226, 0.242, 0.158, and 0.263 respectively.

The analysis of occupation indicated that 70% of patients were in full-time employment, 2.22% were part-time, 4.44% were unemployed, 8.89% were students, and 14.45% had either no job, or retired, and others. The analysis used the full-time for reference, part-time patients, no job or retired patients and other categories were negatively correlated with the energy/fatigue subscale with a standardized beta -0.239, -0.107, and -0.022 respectively. The trainee had a positive correlation with energy/fatigue subscale with a standardized coefficient beta 0.284. Marital status was the only sub-category to have a significant association with the energy/fatigue subscale. The analysis used the single for reference, married patients showed a positive correlation to energy/fatigue with a standardized beta 0.213 and 0.226 in patients who were divorced.

Discussion

Epilepsy is the most common and challenging neurological disorder. This chronic disorder affects a patients' life by limiting his/her social, physical and emotional functions resulting in a poor quality of life. Improving an epileptic's HRQOL is recognized as an essential component of the management of patients with epilepsy(14,27).

Recent clinical trials in the evaluation of antiepileptic drugs(28) and epileptic surgery(29,30) have focused not only on seizure free treatment but also on the most important end point of a good quality of life. Previous studies in Northern America and Europe have shown differing results country-by-country(31). The quality of life is represented in all activities of daily living but is dependent on cultural, ethnic, and socioeconomic factors.

In the developing countries in Southeast Asia, there are few studies concerning the quality of life among epileptic patients. At present, to the best of the authors' knowledge, there is no published data in English concerning QOLIE in epileptic patients. The present study focused on factors that correlate with the composite and sub scores of QOLIE-31. More factors for analysis were included than in the previous data from Western countries and the presented study looked forward the best predictor and including various health services programs and political wills in Thailand.

When universal coverage was used as a reference, government officers, self-financed insurance holders, PSU students under the universal coverage, and patients under the patronage of H.R.H. Crown Prince Maha Vajiralongkorn, were positively correlated with the medication effects subscale of QOLIE-31 while social security had a negative correlation. This may be so because those social security insurance have lower monthly incomes than the other groups. A negative correlation between monthly income and QOLIE is also shown by Senol et al(32). Patients with low-income levels have less access to medical facilities and are, therefore, likely to have an irregular drug intake and infrequent checkups because the scheme will cover the price of treatment but has no provision for travel to and from the medical facility. However, the distribution of patients is both wide and with a small population for the groups who are provided for by the UC's PSU students (2.22%), under the patronage of H.R.H. Crown Prince Maha Vajiralongkorn, (2.22%), and social security (6.67%). The proportion was high for the universal coverage (34.44%), government officers (24.45%), and self-financing (30%) groups.

Patients with frequent seizures reported low social contact and feelings of stigmatization(33). A high frequency seizure rate in patients usually limits the daily activity in their everyday lives. This leads to an impairment of physical activity, social function, and psychological problems. It was shown that the high seizure frequency was positively correlated with a low quality of life. The present study's results are similar to those of reports from Guekht et al(33) and Thomas et al(34). Focusing on the relationship/correlation/association between the subscale of seizure worry with seizure frequency, the authors' found that a high seizure frequency was negatively correlated with only the seizure worry subscale, which contrasted with a previous study where the seizure frequency was a significant inverse predictor of quality of life across the different domains(35).

It is generally appreciated that co-morbidity psychiatric disorders increase in epileptic patients and that co-morbid moods, especially depression and anxiety, can exert adverse effects on the quality of life with epilepsy(12,13). The relationship between mood disorder; anxiety and depression, and QOLIE have been studied but few studies have reported both anxiety and depression together. In the present, the authors used HADS to measure depression and anxiety in epileptic patients associated with the composite QOLIE-31 using both univariate analysis and multi-variate linear regression analysis correlations. The findings suggest that patients with epilepsy do have anxiety associated with their low quality of life ($p < 0.001$). The relationship between depression and the various subscales show that epileptic patients with depression had low scores for their emotional well being, overall, energy/fatigue, cognitive function, and social function while anxious patients had low scores for all of the subscales. In a similar way to previous studies, a relationship between anxiety and QOLIE-31 scale was found(12,35,36). The subgroups of occupational and marital status were difficult to interpret for an association with energy/fatigue because of the distribution of the population.

In conclusion, the quality of life has been established as an important component of epilepsy care.

The present study focused on factors that correlate with the composite QOLIE-31 and its subscales. Depression, anxiety, and seizure frequency are independently associated with the quality of life. From the subscale, analysis associations are observed between seizure frequency and seizure worry, occupation and marital status with energy/fatigue, medical insurance with medical effects, anxiety with all the subscales, and depression with emotional well-being, while overall energy/fatigue, and cognitive function and social function.

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คุณภาพชีวิตของผู้ป่วยโรคลมชักในภาคใต้ของประเทศไทย

คณิตพงษ์ ปราบพาล, อลัน กีเตอร์, กิตติ ลิ่มอภิชาต, พรชัย สถิรปัญญา, สุวรรณา เศรษฐวชิราวานิช

***วัตถุประสงค์**: หาปัจจัยเสี่ยงต่อคุณภาพชีวิตต่ำในผู้ป่วยโรคลมชักชาวไทย*
***วัสดุและวิธีการ**: เป็นการศึกษาแบบตัดขวาง ณ โรงพยาบาลสงขลานครินทร์ คัดเลือกผู้ป่วยโรคลมชักอายุระหว่าง 15 ถึง 50 ปี ผู้ซึ่งได้รับการรักษาด้วยยากันชักขนาดคงที่อย่างน้อย 3 เดือน ส่วนผู้ป่วยที่เป็นโรคเรื้อรังและหญิงตั้งครรภ์คัดออกจากการศึกษา ผู้ป่วยทั้งหมดทำแบบสอบถามรายงานเกี่ยวกับตนเองด้วยแบบสอบถามคุณภาพชีวิตในโรคลมชัก (QOLIE-31) และ hospital anxiety and depression score (HADS) อายุ เพศ อาชีพ สถานภาพสมรส ระดับการศึกษา การประกันทางการแพทย์ ความถี่ของการชัก การบาดเจ็บเกี่ยวข้องกับการชัก ระยะเวลาของการเป็นโรคลมชักและยา*
***ผลการศึกษา**: ในการวิเคราะห์แบบตัวแปรเดียว ปัจจัยที่มีนัยสำคัญ ($p < 0.05$) ที่กระทบต่อคุณภาพชีวิตประกอบด้วยความถี่ของการชัก การบาดเจ็บเกี่ยวข้องกับการชัก ซึมเศร้า และวิตกกังวล การวิเคราะห์แบบหลายตัวแปรแบบถดถอยพบว่า ความถี่ของการชัก วิตกกังวล และซึมเศร้าเป็นปัจจัยที่มีนัยสำคัญอย่างสูงในการอธิบายถึงคุณภาพชีวิตต่ำ ผลที่ได้ทั้งหมดพบว่าความถี่ของการชัก ซึมเศร้าและวิตกกังวลสัมพันธ์ผกผันกับคะแนน ส่วนอายุ เพศ ระดับการศึกษา การประกันทางการแพทย์ อาชีพ สถานภาพสมรส และยาไม่มีนัยสำคัญกับคุณภาพชีวิต ในการวิเคราะห์ตัววัดย่อยของคุณภาพชีวิต ความถี่ของการชักสัมพันธ์กับความกังวลที่จะชัก อาชีพกับพละกำลังเหนื่อยล้า วิตกกังวลกับตัววัดย่อยทั้งหมดของคุณภาพชีวิต ซึมเศร้ากับการเป็นอยู่ดีทางอารมณ์ ภาพโดยรวม พละกำลัง/เหนื่อยล้า หน้าที่ทางสังคมและการรับรู้ สถานภาพสมรสกับพละกำลัง/เหนื่อยล้า และการประกันทางการแพทย์ด้วยเพราะก่อผลทางการแพทย์*
***สรุป**: สิ่งที่พบเหล่านี้ชี้ว่าความผิดปกติทางอารมณ์และความถี่ของการชักเป็นตัวทำนายที่เข้มแข็งสำหรับคุณภาพชีวิต*