Factors associated with quality of life in a low-income population with epilepsy

Camilo Alfonso Espinosa Jovel (MD) [a,c,*], Sergio Ramírez Salazar (MD) [b],
Carlos Rincón Rodríguez (MSc.) [b], Fidel Ernesto Sobrino Mejía (MD) [a,c]

[a] University of La Sabana, Medical School, Neurology Postgraduate Department, Bogotá, Colombia
[b] University of La Sabana, Medical School, Bogotá, Colombia
[c] Kennedy Western Hospital, Neurology Department, Bogotá, Colombia

ABSTRACT

Objective: Currently few studies describe the variables that impact quality of life (QoL) in patients with epilepsy in low-income populations. The study aimed to establish relationships between QoL scores obtained through the QOLIE-10 inventory and clinical variables in patients older than 18 years diagnosed with epilepsy.
Methods: We conducted an observational, descriptive, and cross-sectional study. We conducted consecutive recruitment of the data for all patients with an epilepsy diagnosis who were treated in the neurology department of Kennedy Western Hospital located in Bogota, Colombia. The variables that were statistically significant in the bivariate analysis were included in a multiple linear regression model.
Results: 220 patients were evaluated. The 50th percentile of the total score of the QOLIE-10 scale was 70 (95% CI: 67,5–75). The demographic profile was characterized by low level of education, unemployment, and single marital status. The variables included in the regression model that significantly affected QoL were depression (p < 0.001), severe daytime sleepiness (p = 0.030), structural/metabolic etiology of epilepsy (p = 0.021), drug resistant epilepsy (p = 0.015), and epilepsy with undetermined antiepileptic drug response (p = 0.007).
Conclusions: The QoL in patients with epilepsy from a low-economic population is determined primarily by depression, severe daytime sleepiness, etiology of epilepsy (structural/metabolic etiology), and the type of therapeutic response to antiepileptic drugs (drug resistant epilepsy and undetermined antiepileptic drug response). These data suggest the need to promote early diagnosis and treatment of psychiatric comorbidities and sleep disorders, as well as effective and timely therapeutic interventions to prevent drug resistance in epilepsy.

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1. Introduction

Epilepsy is a chronic disease defined by the International League against Epilepsy (ILAE) as a brain disorder, characterized by a predisposition to present seizures, generating neurobiological, cognitive, psychological, and social consequences (Berg et al., 2010). Recent studies have shown that epilepsy is a prevalent disease with high social and economic impact, and is more frequent in low-income countries (Ngugi et al., 2010). The estimated prevalence for active epilepsy (with seizures in the past 5 years) in developed countries is 4.9 per 1.000, compared with 12.7 per 1.000 for rural areas in developing countries (Ngugi et al., 2010). In Colombia, the latest study showed that the overall prevalence is 11.3 per 1000, with small regional variations, except in the eastern region where prevalence is 23 per 1000 (Velez and Eslava-Cobos, 2006). Epilepsy is not only a common disease, but also a disabling one; these patients have a higher risk of premature death, psychosocial dysfunction, and poor quality of life (QoL) (Fazel et al., 2013). QoL is a broad concept that is somewhat subjective; it is defined by the World Health Organization as the perception that an individual has of his place in existence, in the context of culture and system securities in which they live, and in relation to their goals, expectations, standards, and concerns (Jacoby et al., 2009). The QoL for epilepsy patients has been evaluated for more than 20 years with the application of different questionnaires that allow

* Corresponding author. Permanant address: Campus del Puente del Común, Km. 7, Autopista Norte, Bogotá, Colombia.
E-mail address: camilo_jovel@hotmail.com (C.A. Espinosa Jovel).

standardization of this concept, and in the recent years, QoL has become one of the main outcomes of therapeutic interventions for epilepsy patients (Vergara Palma et al., 2015). The QOLIE-10 inventory, which is a reduced version of QOLIE-31, is an effective questionnaire for measuring the QoL in patients with epilepsy, and recently Viteri et al. validated the Spanish version of the QOLIE-10 inventory, proving it to be valid and reliable (Viteri et al., 2008). Recent studies have shown that the main determinants of QoL in patients with epilepsy are seizure frequency, depression, and sleep disorders, while the evidence for age, marital status, education level, employment status, and antiepileptic drugs as predictors of QoL is inconsistent (Taylor et al., 2011). Since depression and sleep disorders represent frequent comorbidities in patients with epilepsy, and have significant impact on the QoL of these people, some questionnaires have been recently validated in the Spanish language in order to objectify these diagnoses. Examples include the NDDI-E inventory for depression in epilepsy which was validated in the Spanish language by Di Capua et al. (2012), and the Epworth scale for daytime sleepiness, which was validated in the Colombian population by Chica-Urzola et al. (2007). Currently there are few studies that describe the variables that affect the QoL in patients with epilepsy in low-income populations. For this reason, and because Kennedy Western Hospital is a public hospital in Bogota, Colombia, where most patients with epilepsy have a low income and a high degree of social vulnerability (Espinosa Jovel et al., 2014), we decided to conduct this study in order to describe the main clinical and socio-demographic variables that affect the QoL in this population.

2. Materials and methods

2.1. Study population

The Kennedy Western Hospital is a public hospital which functions as a tertiary care center for people from Kennedy (Bogotá, Colombia) and nearby areas, representing a population of approximately 2,741,000 people according to national statistics. The majority of people have a low socioeconomic status, with the highest unemployment rate (16.3%) of all districts in Bogota (http://www.culturarecreacionydeporte.gov.co/localidades/ kennedy). A total of 53% of the inhabitants of Kennedy live in poverty and 13.3% live in extreme poverty (http://www. culturarecreacionydeporte.gov.co/localidades/kennedy). In 2014, the neurology department of the Kennedy Western Hospital, evaluated a total of 2649 patients diagnosed with epilepsy, both in outpatient and emergency consultation. We also have recently published a demographic and clinical description of patients with epilepsy attending the Kennedy Western Hospital, showing that 86.8% have a low socioeconomic status, 76.7% are unemployed, and only 10.2% have completed college (Espinosa Jovel et al., 2014).

2.2. Study design

We conducted an observational, descriptive, cross-sectional study, in which we used a consecutive sampling technique, taking information from patients older than 18 years who had an epilepsy diagnosis for at least 1 year and were receiving antiepileptic drugs at the time of the evaluation. We included patients who were treated at the neurology department of Kennedy Western Hospital between September 2014 and March 2015. We excluded patients with physical and/or mental limitations that did not allow proper registration of data collection, as well as patients with a history of epilepsy surgery. Epilepsy surgery is widely associated with a better QoL, and we have previously shown that in our population surgical intervention could change the QOLIE-10 score by almost

21 points (Vergara Palma et al., 2015). For this reason, we decided to exclude patients with a history of epilepsy surgery, thus avoiding false-positive results in the QOLIE-10 inventory. All patients gave informed consent. This study was approved by the research ethics committee of the University of La Sabana, by Act No. 46 of September 2014. The information was obtained during a specialized consultation, where the instrument of data collection was applied by the neurologist, including sociodemographic variables (age, sex, education, marital status, and occupational activity) and clinical variables (risk factors for epilepsy, age of diagnosis, type of seizures, frequency of seizures, treatment with antiepileptic drugs, and therapeutic response). The etiology and the classification of epilepsy was based on the age of presentation, semiology, evolution of the disease, and familial history, and complemented with electroencephalogram, video EEG, brain MRI, and neuropsychological assessment (when available in the medical record). We did not have access to genetic confirmation in cases of probable genetic epilepsy. During the consultation, the QOLIE-10 inventory, the NDDI-E, and the Epworth scale were applied by the neurologist. Based on the validation studies of each of these questionnaires (Di Capua et al., 2012; Chica-Urzola et al., 2007), major depression was defined as a score ≥ 13 on NDDI-E, and mild to severe daytime sleepiness was defined as scores of 10–16 and 17–24 respectively on the Epworth scale. The definition of epilepsy used in this study was based on the recommendations of the ILAE report in 2014 (at least 2 unprovoked (or reflex) seizures occurring >24 h apart) (Fisher et al., 2014). The definition of therapeutic response to antiepileptic drugs was based on the proposal of ILAE in 2010, where 3 types are defined: controlled, resistant, and undetermined epilepsy (Kwan et al., 2010). We also consider (subjectively) that some patients with 1 or 2 mild focal seizures in the last year were controlled, since they had no impact on daily functioning and it was their basal situation during many years.

2.3. Statistical analysis

A description of each variable, based on the median and interquartile range for quantitative variables and absolute and relative frequency for categorical variables, was made. A bivariate analysis was made to determine the association between sociodemographic and clinical variables (including the Epworth and NDDI-E score scales) and the total score of the QOLIE-10 scale. The non-parametric Wilcoxon test and Kruskal-Wallis test were used on categorical independent variables, and the Spearman's rank correlation coefficient on quantitative independent variables. The variables that were statistically significant in the bivariate analysis were included in a multiple linear regression model. The outcome variable used in the regression model was the total score of the QOLIE-10 inventory, which was defined as a quantitative continuous variable. Model assumptions were evaluated according to the Shapiro-Wilk test. The scatter plot between residuals and model predictions and the coefficient of determination r^2 was calculated. The presence of collinearity was evaluated. The data were analyzed with the STATA 12 program.

3. Results

3.1. Sociodemographic and clinical data

A total of 220 patients were included, of whom 51.8% (n = 114) were men. The 50th percentile (P50) of age was 35 years (interquartile range: 32–37), with a range of 18–79 years. The P50 for the age of diagnosis of epilepsy was 14 years (interquartile range: 12.9–15). A total of 6.8% (n = 15) of patients were illiterate, and only 14.5% (n = 32) had technical careers and/or a college education. A total