



Religiosity aspects in patients with epilepsy

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ABSTRACT

The objectives of this study were to assess religiosity aspects in patients with epilepsy (PWEs) and controls and to determine whether such aspects were related to the samples' clinical, sociodemographic, and QOL-31 data. The Duke Religion Index was administered to 159 adult PWEs and 50 controls. The relationships between the Duke Religion Index and the study variables of the two groups were compared. Intrinsic religiosity (IR) and nonorganizational religiosity (NOR) were higher in PWEs than in controls. Logistic regression showed that being female ($p = 0.022$) and having mesial temporal lobe epilepsy with hippocampus sclerosis (MTLE-HS) ($p = 0.003$) were predictors of high organizational religiosity (OR) and that high NOR was associated with MTLE-HS ($p = 0.026$) and controlled seizures. Further, only MTLE-HS ($p = 0.002$) was predictive of high IR. The Duke Religion Index and QOLIE-31 scores were not related. Different forms of interictal religiosity are related to clinical aspects of epilepsy.

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1. Introduction

Little is known about the relationship between religious beliefs and practices and the clinical aspects of epilepsy.

Religiosity is a complex term linked to specific doctrines. It has behavioral and social characteristics and three dimensions: intrinsic religiosity (IR) consists of internalized and personal religious beliefs characterized by individual religious commitment and motivation; organizational religiosity (OR) is individual involvement in public religious activities. It can be measured by temple attendance frequency, religious order affiliation, and time spent in religious meetings and praying; nonorganizational religiosity (NOR) pertains to private religious practices, for example, praying, meditating, and reading religious texts [1,2].

Some studies suggest that people become more religious during negative life events, such as having a disease. Individuals may use negative or positive religious coping strategies to deal with the adversity [3]. Religious involvement is associated with better health and quality of life [3,4].

High religiosity (religious fervor) is a behavioral characteristic of patients with epilepsy (PWEs), especially those with mesial temporal lobe epilepsy with hippocampus sclerosis (MTLE-HS) [5,6].

The Duke Religion Index assesses religiosity dimensions associated with health outcomes. It is a multidimensional measurement of religiosity assessing OR, NOR, and IR [7]. The Brazilian Portuguese version of the

Duke Religion Index was validated in Brazil in 2012 [8]. We are unaware of studies that used the Duke Religion Index to investigate whether clinical epilepsy variables, such as type and frequency of epileptic seizures or epileptic syndrome, are related to religious aspects.

We sought to determine whether distinct dimensions and intensities of religiosity were associated with clinical epilepsy variables. Therefore, the objectives of this study were to assess religiosity aspects in PWEs and to investigate their relationship with clinical, sociodemographic, and QOL-31 data.

2. Methods

2.1. Subjects

2.1.1. Patients

Consecutive PWEs more than 18 years of age were recruited at the epilepsy outpatient clinic of Hospital e Maternidade Celso Pierro (PUC-Campinas), Campinas, São Paulo, Brazil.

Epilepsy was diagnosed according to the International Classification of Epilepsies and Epileptic Syndromes [9] criteria. Patients with symptomatic focal epilepsies included a subgroup of surgery-naïve patients with mesial temporal lobe epilepsy with hippocampus sclerosis (MTLE-HS), characterized by hippocampus atrophy, loss of digitations of the hippocampal head, and loss of the definition of internal structure in magnetic resonance imaging.

Epilepsy was considered to be under control when epileptic seizures had not occurred in the past twelve months.

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Patients who had difficulty understanding the questions in the instruments due to low education level or mental disability were excluded, as well as those with a history of cancer or stroke.

2.1.2. Controls

When PWEs were recruited, consecutive controls with no history of neurological or other chronic disorders and matched for age, education level, and gender were recruited among PWE relatives, PWE companions, and other hospital patients seen at the general outpatient clinics of the Hospital and Maternity Hospital Celso Pierro.

The study was approved by the Human Research Ethics Committee of PUC-Campinas.

2.2. Procedure

1. Interview to collect sociodemographic data (age, gender, education level, and reported religion) and clinical data (age at onset, type and frequency of seizures, duration of epilepsy, neurological antecedents, antiepileptic drugs (AEDs), and epileptic syndrome).
2. Investigation of psychiatric comorbidities using the DSM-IV and ICD-10 criteria at the psychiatric ward, dividing the patients into two groups: with psychiatric comorbidity and without psychiatric comorbidity.
3. Use of the Duke Religion Index [7,8] to determine religiosity. This instrument is a five-item measure of religious involvement, which yields three subscales: (a) organizational religious behavior (1 item): "How often do you attend a house of worship or other religious meetings?"; (b) nonorganizational religious behavior (1 item): "How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?"; and (c) intrinsic religious motivation (3 items): "In my life, I experience the presence of the Divine (i.e., God)," "My religious beliefs are what really lie behind my whole approach to life," and "I try hard to carry my religion over into all other dealings in life." Responses are recorded on 5- or 6-point Likert scales. Lower scores indicate higher religiosity. The following criteria were used: scores below three for OR and NOR characterize high religiosity; scores lower than 7.5 for IR characterize high religiosity.
4. Use of digital electroencephalogram to assess the focus and side of the epileptiform activity.
5. Use of the Quality of Life in Epilepsy Inventory (QOLIE-31) [10] to determine quality of life. This instrument is an epilepsy-specific quality-of-life inventory with seven domains: worry about seizure, overall quality of life, emotional well-being, energy-fatigue, cognitive functioning, medication effects, and social functioning. The overall score ranges from 1 to 100. Quality of life increases with higher scores.

The PWEs were submitted to all the procedures above, and the control group (CG) was submitted to procedures 1, 2, and 3.

2.3. Data analysis

The Duke Religion Index OR, NOR, and IR scores of the PWEs and controls were compared and checked for association with their clinical, sociodemographic, and QOL-31 data.

The continuous variables were expressed as mean and standard deviation. The Student *t*-test, analysis of variance (ANOVA), and Pearson chi-squared test compared the continuous variables and categorical variables.

Logistic regression determined the relationship between the predictor variables and the binary outcome variables (dependent variables) using variables with $p < 0.10$ in the respective prior correlation analyses (independent variables). The independent variables were gender, age at first seizure, seizure type, seizure frequency, epilepsy duration and AED, epileptic focus location, and presence of psychiatric comorbidity when

appropriate. The data were treated by the software IBM SPSS Statistics, version 22. The significance level was set at 5%.

3. Results

3.1. Sociodemographic aspects and the Duke Religion Index

Table 1 shows the PWEs' and controls' sociodemographic data and the Duke Religion Index. A total of 209 individuals (159 PWEs and 50 controls) were assessed. The age, gender, and education level of the groups did not differ.

Regarding religion, 83 (52.2%) PWEs were Catholic, 58 (36.4%) were Evangelical, 6 (3.7%) had other religions, and 12 (7.5%) had no religious affiliation. The reported religions of the PWEs and CG did not differ.

The PWEs' OR, NOR, and IR scores were 2.91 ± 1.63 , 2.92 ± 1.59 , and 7.04 ± 4.18 , respectively; the CG's OR, NOR, and IR scores were 3.32 ± 1.31 , 3.64 ± 1.39 , and 8.48 ± 3.22 , respectively. Patients with epilepsy had significantly higher IR scores compared with the CG (Table 1).

The PWEs had higher proportions of high nonorganizational religiosity and intrinsic religiosity compared with the CG (Table 1).

Females in both groups had significantly higher OR according to the chi-square test ($p = 0.027$). Nonorganizational religiosity and intrinsic religiosity did not differ by gender. The Duke Religion Indices of the PWEs and CG were not correlated with their age or education level.

Psychiatric comorbidities found in 55 PWEs were as follows: psychotic disorders in 6; mood disorders in 23; neurotic disorders in 21; and alcohol-related mental and behavioral disorders in 5. No PWEs had postictal psychosis.

3.2. Duke Religion Index and clinical aspects of the PWEs

Table 1 shows the clinical data.

Sixteen (10%) individuals had generalized idiopathic epilepsies, 49 (30.8%) had probable symptomatic focal epilepsies, and 94 (59.1%) had symptomatic focal epilepsies. Forty-five patients had MTLE-HS.

High OR was more frequent in female PWEs (Table 2). This difference was not observed in controls (chi-square test, $p = 0.908$). Patients with epilepsy and female controls had similar proportions of high OR according to the chi-square test ($p = 0.111$).

High OR, high NOR, and high IR were more frequent in PWEs with MTLE-HS than in those with other epileptic syndromes (Table 2).

High NOR was more frequent in PWEs with controlled seizures than in those with uncontrolled seizures. The Duke Religion Index was not related to other clinical aspects.

Logistic regression determined the clinical factors that potentially affected high OR, NOR, or IR (low religiosity as reference). Two factors were related to high OR: female gender and MTLE-HS (Table 3). The

Table 1
Sociodemographic and clinical aspects of PWEs and NCs.

	PWEs	NCs	p-Value
Subjects	159	50	
Age (years)	43.6 (± 13.7)	46.9 (± 9.7)	0.06*
Gender – female	57.9%	54%	0.62 ^a
Formal education (years)	5.6 (± 3.6)	4.6 (± 3.9)	0.12*
Age at first seizure (years)	23.0 (± 15.3)	–	
Epilepsy duration (years)	20.6 (± 13.6)	–	
Seizure type – partial	59.1%	–	
Epileptic seizure frequency – uncontrolled	54.7%	–	
Antiepileptic drugs – one	62.9%	–	
Psychiatric comorbidity – present	34.6%	–	
Duke Religion Index			
Organizational religiosity – high	53 (33.3%)	20 (40%)	0.388 ^a
Nonorganizational religiosity – high	108 (67.9%)	25 (50%)	0.022 ^a
Intrinsic religiosity – high	104 (65.4%)	22 (44%)	0.007 ^a

* *T*-test.

^a Chi-square test.

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