



Associations between religiosity and anxiety, depressive symptoms, and well-being in Korean adults living with epilepsy



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ABSTRACT

Purpose: Religiosity can be important in the everyday life of persons with epilepsy (PWE). How PWE live with religiosity can be influenced by their cultural background. We determined whether religiosity is associated with anxiety, depressive symptoms, and well-being in Korean adults with epilepsy.

Methods: This multicenter cross-sectional study was conducted in the outpatient clinics of five university hospitals in Korea. Religiosity was assessed using the five-item Duke University Religion Index (DUREL). The WHO-Five Well-Being Index (WHO-5) and Hospital Anxiety Depression Scale were used. The participants were categorized into three subgroups bounded by the 33rd and 66th percentiles of their DUREL scores.

Results: Of a total of 226 participants, 61.1% declared that they had religious affiliation. The median DUREL score was 11 (interquartile ranges 6, 18). All three subscales of the DUREL were significantly related to WHO-5 ($p < 0.01$). Non-organizational religious activities such as prayer and meditation were also inversely related to anxiety ($p < 0.05$) and depressive symptoms ($p < 0.01$). After controlling for confounding variables, anxiety and depressive symptoms were more extensive in the low religiosity subgroup than in the high or no religiosity subgroup ($p < 0.01$) and well-being was higher in the high or low religiosity subgroup than in the no religiosity subgroup ($p < 0.05$).

Conclusions: Religiosity is significantly associated with anxiety, depressive symptoms, and well-being in Korean adults with epilepsy.

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1. Introduction

Epilepsy is one of the most common neurological disorders and is characterized by recurrent seizures. Because of the stigmatized nature of epilepsy and its unpredictability of seizure recurrence, persons with epilepsy (PWE) can commonly experience significant psychosocial difficulties, discrimination, and/or social exclusion [1,2]. Such negative experiences have significant impacts on quality of life (QoL) in PWE [3]. Current literature indicates that any combination of factors known to contribute to QoL cannot explain the variance of QoL to a wide extent in PWE [4,5]. Furthermore, individuals with comparable severity of epilepsy may differ widely in perceived QoL [6]. This suggests that

personal factors or inner resources independent of seizures and psychosocial aspects may play a relevant role in mental health in PWE; that is, religiosity/spirituality may be the missing link between disease and mental health [7].

People become more religious during negative life events [8] such as suffering from epilepsy. Religious support can be helpful in dealing with stressful situations. Religion may also play a role in long-term adjustment to a disease, helping maintain self-esteem, giving emotional comfort and hope, and providing a sense of meaning and purpose [9]. Consequently, adequate religious coping can improve patients' health and QoL [10].

Studies of religiosity in PWE have largely focused on its potential relationship with the clinical aspects of epilepsy [11–16]. For example, patients with temporal lobe epilepsy have been reported to be more religious than controls without epilepsy, which supports an anatomic and functional basis for emotional and religious experiences, with the particular involvement of the limbic lobe as the area responsible [11–13]. These studies have been important for exploring the biological basis of hyperreligiosity in PWE. By contrast, little attention has been

Abbreviations: PWE, persons with epilepsy; DUREL, Duke University Religion Index; WHO-5, WHO-Five Well-Being Index; HADS, Hospital Anxiety Depression Scale; QoL, quality of life.

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paid to the contribution of religiosity and/or spirituality to mood and QoL in PWE [7]. Furthermore, findings from previous studies appear to be inconsistent. Some have shown that spirituality is significantly associated with QoL in patients with focal epilepsy [7], whereas a recent Brazilian study did not show a relationship between religiosity and QoL in PWE [14]. These conflicting findings may be explained by cultural differences in religious coping style. African-American PWE have been found to more frequently use religiosity as a coping mechanism than Caucasians [17]. Among African-Americans, the increased utilization of religion is inversely related to the presence of depressive symptoms [18].

Religiosity can be particularly important for the everyday life of PWE and how they live with religiosity can be influenced by their cultural background. Even though much has been written about the importance of addressing spiritual needs as part of patient-centered health care [19], there is little evidence on the potential association between religiosity and QoL in PWE [7]. Therefore, we investigated whether having religiosity is associated with anxiety, depressive symptoms, and well-being in Korean adults with epilepsy.

2. Methods

2.1. Subjects

This multicenter cross-sectional study was conducted on an adult epilepsy cohort, the members of which had all attended the outpatient clinics of five university hospitals in Korea. Inclusion criteria were as follows: >18 years old, diagnosed with any type of epilepsy, and treated for >1 year. Patients were excluded if they had experienced a seizure in the 48 h before the request to fill out the questionnaire or if they were unable to read or understand the questionnaire. Epilepsy was defined as a history of two or more unprovoked seizures. Epilepsy and seizures were classified using the International League Against Epilepsy classification [20,21].

The participants were asked to fill out questionnaires on the day they visited their neurologist at the outpatient clinic. Demographic and clinical data were collected by interview and reviewing medical files. Written informed consent was obtained from all participants. The study was reviewed and approved by the Institutional Review Board of Asan Medical Center.

2.2. Assessment tools

Religiosity was assessed using the five-item Duke University Religion Index (DUREL) [22], which consists of three subscales of religiosity, including organizational religious activity, non-organizational religious activity, and intrinsic religiosity. The organizational item determines frequency of attendance at religious services (six response options: 1 = never, 6 = more than one time per week). The non-organizational item determines frequency of private religious activities such as prayer, meditation, or Bible study (six response options: 1 = rarely or never, 6 = more than one time per day). The three intrinsic religiosity items determine whether the subject experiences the presence of the divine, allows religious beliefs to guide his or her approach to life, and transports religion into other areas of life (five response options: 1 = definitely not true, 5 = definitely true). The intrinsic religiosity score ranges from 3 to 15 and the overall DUREL score ranges from 5 to 27. Higher scores indicate greater religiosity. We used the Korean version of the DUREL [23]. In our sample, Cronbach's alpha for the intrinsic religiosity dimension was 0.913.

Symptoms of anxiety and depression were assessed using the Hospital Anxiety Depression Scale (HADS), which consists of 14 items, 7 related to anxiety (HADS-A subscale) and 7 related to depression (HADS-D subscale) [24]. Higher scores represent higher levels of depression and anxiety. We used the Korean version of the HADS [25]. In

our sample, Cronbach's alphas for the HADS-A and HADS-D subscales were 0.870 and 0.857, respectively.

Well-being was evaluated using the WHO-Five Well-Being Index (WHO-5) [26], which consists of five positively worded items. Subjects are asked to respond to questions about their positive feelings within the last two weeks on 6-point scale (0–5). The raw score is multiplied by four to give a percentage score ranging from 0 to 100, with higher scores reflecting higher levels of well-being. We used the Korean version of the WHO-5 [27]. In our sample, Cronbach's alpha for the WHO-5 was 0.896.

2.3. Measuring severity of epilepsy

As in Austin et al. [28], a composite score of severity of epilepsy was determined by adding three scores from 0 to 3, based on seizure type, seizure frequency, and number of antiepileptic drugs. Seizure type was scored 3 for generalized tonic-clonic seizures, 2 for complex partial seizures, 1 for simple partial seizures, and 0 for absence of seizures for at least one year. When the patients had more than one type of seizure, the most severe seizure type was used. Seizure frequency was scored 3 for weekly or daily seizures, 2 for monthly seizures, 1 for 1–11 seizures a year, and 0 for absence of seizures for at least one year. Type of medication regimen was scored 3 for a regimen with 3 or more antiepileptic drugs, 2 for duo therapy, 1 for monotherapy, and 0 for no medication. The composite score of severity of epilepsy ranges from 0 to 9, with higher scores reflecting higher severity of epilepsy.

2.4. Statistical analysis

Data are expressed as the number and percentage of patients, means and SDs in the case of normally distributed data, or medians and interquartile ranges (IQRs) in the case of non-normally distributed data. The participants were categorized into three subgroups bounded by the 33rd and 66th percentiles of the DUREL scores. To determine the associations between religiosity and demographic and epilepsy-related variables, one-way analysis of variance (ANOVA) and the chi-square test were conducted.

We determined whether there were associations of religiosity with health outcomes including anxiety, depressive symptoms, and well-being. The univariate analyses were performed using one-way ANOVA. Independent associations were evaluated using multiple linear regression analyses. The dependent variables were health outcomes having significant associations with religiosity in the univariate analysis. The independent variables were the categorical variables of the DUREL, which were divided at the 33rd and 66th percentiles of the total scores. Confounding variables included age, sex, and epilepsy-related variables with p values <0.05 in univariate analysis. Epilepsy-related variables were age at seizure onset, duration of epilepsy, the presence or absence of generalized tonic-clonic seizures in the last year, types of antiepileptic treatment (monotherapy vs. polytherapy), the presence or absence of seizure remission in the last year, and composite score of epilepsy severity. In case of multiple linear regression analysis for WHO-5, the HADS score was added in as a confounding variable. In addition, correlations between the DUREL subscales and health outcomes were analyzed using the Spearman correlation test. p values <0.05 were considered statistically significant. Data were analyzed using SPSS version 21.0 (SPSS Inc., Chicago, IL, USA).

3. Results

3.1. Subjects

A total of 226 participants were included in this study (Table 1). There were 94 men (41.6%) and 132 women (58.4%). The mean age was 40.9 years old (SD 12.4) and the mean age at seizure onset was 22.8 years old (SD 13.9). In all, 138 (61.1%) patients declared that they

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