



# Attitudes toward epilepsy and perceptions of epilepsy-related stigma in Korean evangelical Christians



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## ABSTRACT

**Purpose:** The scriptural description of Jesus driving out an evil spirit from a boy with epilepsy supported the idea of the spiritual nature of epilepsy for centuries. Korea has a shorter history of Christianity than the Western world. We determined whether there are differences in attitudes toward epilepsy and perception of epilepsy-related stigma between people with and without belief in evangelical Christianity in Korea.

**Methods:** Data were collected from evangelical churches and theological colleges. People without religious beliefs were enrolled as a control group through convenience sampling. The Public Attitudes Toward Epilepsy (PATE) scale and the modified Stigma Scale for epilepsy were used. Familiarity with and knowledge of epilepsy were also assessed. Evangelical Christians were categorized as professional or nonprofessional depending on whether they had received professional education in Christian theology.

**Results:** A total of 227 evangelical Christians and 139 controls were included. The scores on the Stigma Scale and in the two PATE domains were significantly lower in the professional Christian group than in the controls or the nonprofessional group ( $p < 0.05$ ) but did not differ between the nonprofessional group and controls. After controlling for confounders, only the professional group was independently associated with lower scores on the Stigma Scale and in the PATE personal domain ( $p < 0.05$ ). The remaining associations lost their significance.

**Conclusions:** We found no differences in attitudes toward epilepsy and perception of stigma between people with and without belief in evangelical Christianity in Korea.

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## 1. Introduction

Epilepsy is one of the first-described neurological diseases. In different parts of the world and in different cultures, epilepsy has been associated with many misconceptions [1,2]. According to Hippocrates (460–370 BC) and his followers, epilepsy originated in the brain when an excess of phlegm entered the blood [3]. In spite of Hippocrates's teaching that epilepsy is a physical illness, belief in demoniac possession as the cause of epilepsy became predominant in the Middle Ages [1]. This fundamental change in the basic concept of epilepsy, with its profound effect on the subsequent ages, was attributed to the theological authority Origen (185–254 AD) [1], who described epilepsy as a hardship sent by a demon, basing his reasoning on the uncompromising scriptural description of a case of epilepsy in the New Testament [4]. According to the gospel of Mark (Mark 9:17–29), Jesus cast out an evil spirit from a boy with epilepsy [4]. An analogous description of a boy possessed with a dumb spirit is given in the gospels of Matthew (Matthew 17:14–21) and Luke (Luke 9:37–43) [4]. The term epilepsy

is not mentioned anywhere in the New Testament, but the description of the illness is precise and imaginative, although it was made 2000 years ago. This description was used to support the thesis of the spiritual nature of epilepsy for centuries [1,2]. In the Western world, the fight against the supernatural and occult began only with the onset of the Enlightenment in the late 17th century, culminating in the denial of demoniac influence even in the biblical cases [2].

Nowadays, the belief in demoniac possession as a cause of epilepsy has nearly disappeared or is rapidly being reduced worldwide [2,5,6]. However, people with epilepsy continue to suffer from social stigma and discrimination [7–9], not only in the developing world but also in the supposedly enlightened West [10,11]. Legislation based on centuries of stigma still exists in many countries. In some parts of the world, epilepsy can be used as a reason to annul a marriage or simply prohibit one [12].

Different religious and cultural backgrounds have different influences on public attitudes toward epilepsy as well as epilepsy-related social stigma [5,6,10,11]. Korea has a short history of Protestantism, of around 130 years. Since the late 19th century, when Protestant missionaries first came to Korea, the growth of Christianity was gradual, until 1945 [13]. In that year, approximately 2% of the population was Christian. Since 1945, rapid growth in Christianity has ensued: by 2015, 19.7% of the population of South Korea (9.7 million) was Protestant,

Abbreviations: ANOVA, analysis of variance; PATE, Public Attitudes Toward Epilepsy.

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and 7.9% (3.9 million) was Catholic [14]. In the 1990s, Protestantism surpassed Buddhism in number of adherents [13].

Religious beliefs can have a positive influence on attitudes toward epilepsy, acting as a source of selfless love [15], or a negative influence, when they are linked with guilt and punishment [16]. It is unclear whether belief in Christianity in South Korea has significant effects on attitudes toward epilepsy and perception of stigma against the cultural background shared with people without belief in Christianity. Although the Bible teaches that selfless love is the priority for every Christian, believers could be vulnerable to misconceptions about epilepsy stemming from the scriptural passage where Jesus drives out an evil spirit from a boy. An understanding of knowledge and attitudes with respect to epilepsy in a community can provide a basis for developing strategies to reduce misconceptions [17]. Therefore, we investigated whether Korean evangelical Christians who are familiar with the New Testament have more negative attitudes toward epilepsy and express more social stigma associated with epilepsy than Koreans who do not believe in any religion.

## 2. Methods

### 2.1. Subjects

The study was conducted as a cross-sectional survey from June to December 2016. To collect data from evangelical Christians, surveys were distributed to 14 evangelical churches and two theological colleges. To limit the study subjects to Christians familiar with the Bible, the survey was distributed only to office bearers in the church, such as elders, senior deacons or deaconesses, pastors, and theological students older than 18 years. Adults who were older than 18 years and did not believe in any religion were enrolled as a control group through convenience sampling. Known cases of epilepsy and members of their families were excluded. All participants were asked to fill out a set of questionnaires that were self-reported and administered anonymously.

Evangelical Christians were categorized into two groups depending on whether they were receiving professional education in Christian theology. The professional group consisted of pastors and theological students, whereas the nonprofessional group consisted of elders, senior deacons, and senior deaconesses. 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. Measures

Attitudes toward epilepsy were assessed using the 14-item Public Attitudes Toward Epilepsy (PATE) scale [18]. It consists of two domains, that is, a nine-item general domain that includes the participant's general opinion of people with epilepsy and a five-item personal domain that requires participants to consider personal involvement and commitment with patients with epilepsy. Each item on the PATE scale was scored using a five-point Likert scale, with 1 being strongly disagree and 5 being strongly agree. The mean score for all items, as well as the mean scores in the general and personal domains, were calculated and ranged from 1 to 5. A higher total score reflects a more negative attitude toward epilepsy. In our sample, Cronbach's alphas for the general and personal domain were 0.827 and 0.791, respectively.

Perception of stigma was measured using the Stigma Scale for epilepsy, which has recently been revised to detect subtle differences in levels of felt stigma [19]. It consists of three items rated on a four-point Likert-type scale (0 = not at all, 1 = yes, maybe, 2 = yes, probably, 3 = yes, definitely). The statements were mirrored to be answered by someone without epilepsy. For example, the question "Because of your epilepsy, do you feel that other people are uncomfortable with you?" was modified to "Do you feel uncomfortable when you are with someone with epilepsy?" The total scores ranged from 0 to 9,

with higher scores reflecting a higher level of felt stigma. In our sample, Cronbach's alpha for the Stigma Scale was 0.669.

Misconception of belief in demonic possession as a cause of epilepsy was assessed by one question "Do you think that epilepsy is possession by supernatural power such as an evil spirit or the Devil?" A five-point Likert scale was used for scoring, with 1 being strongly disagree and 5 being strongly agree.

Familiarity with and knowledge of epilepsy were assessed by five and three questions, respectively, which were modified from the 2002 HealthStyles survey conducted in the USA [17]. Each question of familiarity with epilepsy required a simple yes/no response. Participants scored one for each item with which they agreed, and their overall score was the sum of their positive responses, ranging from 0 to 5. Higher scores indicated greater familiarity with epilepsy. Each question on knowledge of epilepsy was scored using a five-point Likert scale, with 1 being strongly disagree and 5 being strongly agree. The total scores ranged from 3 to 15. A higher score reflected greater knowledge of epilepsy. In addition, the scores 5 and 4 were considered the presence of self-reported knowledge of epilepsy.

### 2.3. Statistical analysis

Data are expressed as the numbers and percentages of patients, the means and SDs in the case of normally distributed data, or the medians and interquartile ranges in the case of not normally distributed data. To compare group characteristics, statistical analyses were performed using Student's *t*-test or one-way analysis of variance (ANOVA) with the Scheffé post hoc test for normally distributed data, the Mann-Whitney *U* test or the Kruskal-Wallis test for non-normally distributed data, and the chi-square test for categorical variables. To determine the correlations between variables, Pearson's or Spearman's correlation tests were conducted.

We determined whether any Christian group was independently related to attitudes toward epilepsy. The dependent variables were the scores on the PATE and Stigma Scale. The independent variables were the categorical variables for the Christian groups, including the professional and nonprofessional groups. We performed univariate analyses with ANOVA or the Kruskal-Wallis test and then conducted multiple linear regression analyses with independent variables that had *p* values < 0.05 in univariate analyses. Confounding variables included in the analyses were age, sex, scores in familiarity with epilepsy, and scores in knowledge of epilepsy. Log transformation was applied to the Stigma Scale variable with right-skewed distribution to satisfy the normality assumption. *p* values < 0.05 were considered statistically significant. Data were analyzed using SPSS version 21.0 (SPSS Inc., Chicago, IL).

## 3. Results

### 3.1. Subjects

A total of 227 evangelical Christians were included in this study (Table 1). The professional group had 131 (57.7%) members and the nonprofessional group had 96 (42.3%). The control group consisted of 139 people who did not believe in any religion. The professional group was the youngest whereas the nonprofessional group was the oldest ( $p < 0.05$ ). The prevalence of females was highest in the nonprofessional group and lowest in the professional group ( $p < 0.05$ ).

### 3.2. Familiarity with and knowledge of epilepsy

The scores of familiarity with epilepsy were significantly higher in professional or nonprofessional group than in control group ( $p < 0.05$ ) (Table 1). For example, the proportion of participants who currently knew anyone with epilepsy was higher in evangelical Christians (20.6% and 26.0% in the professional and nonprofessional groups, respectively) than in the control group (9.4%) (Table 2). The proportion

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