

## Brief Communication

## Epilepsy-related stigma in European people with epilepsy: Correlations with health system performance and overall quality of life



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## ABSTRACT

We aimed to relate the percentages of encountered epilepsy-related stigma in people with epilepsy with quantitative indicators of the quality of health systems and quality of life by country in Europe. The epilepsy-related stigma percentages were obtained from the largest population-based study in people with epilepsy available. We correlated percentages of people with perceived stigma per European country with data on the country's overall health system performance, health expenditure per capita in international dollars, and the Economist Intelligence Unit's quality-of-life index. We found a nonsignificant trend towards negative correlation between the epilepsy-related stigma percentage and the overall health system performance ( $r = -0.16$ ;  $p = 0.57$ ), the health expenditure per capita in international dollars ( $r = -0.24$ ;  $p = 0.4$ ), and the Economist Intelligence Unit's quality-of-life index ( $r = -0.33$ ;  $p = 0.91$ ). Living in a European country with a better health system performance and higher health expenditure per capita does not necessarily lead to a reduction in perceived epilepsy-related discrimination, unless the public health system invests on awareness programs to increase public knowledge and reduce stigma.

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## 1. Introduction

In developed countries, the age-adjusted prevalence of epilepsy, operationally defined as two or more unprovoked seizures occurring at least 24 h apart [1], is 4–8 per 1000 population subjects [2,3]. Epilepsy is a condition highly associated with stigma. This stigma is feared or perceived discrimination based solely on the label of epilepsy and greatly affects the quality of life of people with epilepsy. Stigma among people with epilepsy leads to increased anxiety and depression and lower compliance with medication [4–6].

Previous studies explored the potential relation between socioeconomic status and epilepsy-related stigma. Results demonstrate that people with epilepsy with low socioeconomic status report more feelings of stigma and discrimination compared with people with epilepsy with high socioeconomic status [7,8]. However, economic well-being, for instance, measured by gross domestic product dollar per capita, may not explain alone the broader quality of life in a country [9], and

other factors, including overall health system performance or health expenditure per capita, should be taken into consideration, especially when considering disease-related stigma and discrimination.

In 2000, Baker et al. [10] published results of a study collecting clinical data about patient-perceived stigma from 5211 patients with epilepsy residing in 15 European countries. To date, this study represents the largest population-based attempt to evaluate the stigma of epilepsy in Europe.

The aim of this study was to correlate percentages of people with epilepsy with epilepsy-related stigma obtained from Baker's study [10] with indicators of the country's quality of health systems and quality of life.

## 2. Methods

Percentages of people with epilepsy-related stigma were extracted from the paper's figure [10].

We correlated percentages of people with perceived stigma per European country with data on overall health system performance in 1997 [11] and with data on health expenditure per capita in international dollars in 1997 [11]. Furthermore, we correlated percentages of people with perceived stigma per European country with the Economist

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**Table 1**

Percentages of people with stigma (derived from [10]), overall health system performance (ranking), health expenditure per capita, and the Economist Intelligence Unit's quality-of-life index.

European country	Stigmatized persons (%)	Overall health system performance (ranking) <sup>a</sup>	Health expenditure per capita in international dollars <sup>a</sup>	Economist Intelligence Unit's quality-of-life score
Czech Republic	55	49	40	6.63
Denmark	35	35	8	7.80
Finland	45	31	18	7.62
France	65	1	4	7.08
Germany	60	25	3	7.48
Greece	62.5	14	30	7.16
Hungary	55	66	59	6.53
Italy	55	2	11	7.81
Netherlands	40	17	9	7.43
Poland	30	51	58	6.31
Portugal	37.5	12	27	7.31
Spain	32.5	7	24	7.73
Sweden	50	23	7	7.94
Switzerland	55	20	2	8.07
UK	52.5	18	26	6.92

<sup>a</sup> Health system attainment and performance estimated for 1997.

Intelligence Unit's quality-of-life index calculated in 2005 [9]. The Economist Intelligence Unit's quality-of-life index represents an attempt to measure which country provides “the best opportunities for a healthy, safe, and prosperous life in the years ahead” [12] and is “based on a method that links the results of subjective life satisfaction surveys to the objective determinants of quality of life across countries” [9].

Relationships were analyzed by calculating Pearson correlation coefficients (*r*) and corresponding *p*-values. Statistics were performed using SPSS version 20.0, and significance was set at *p* < .05.

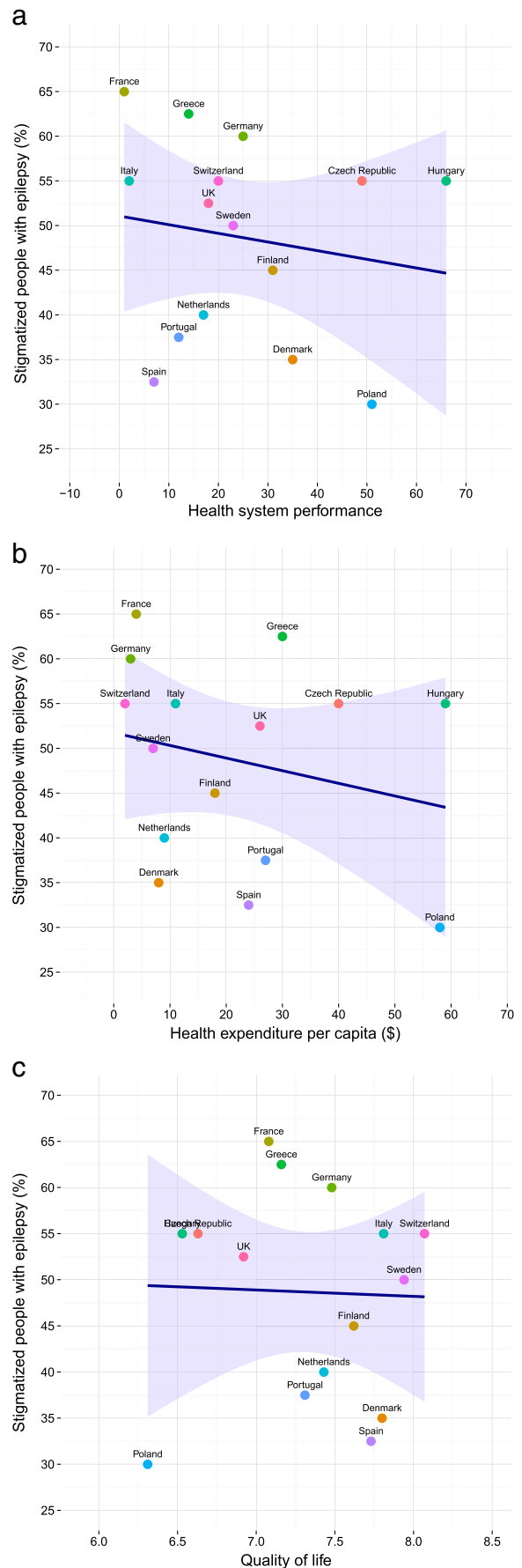
### 3. Results

Percentages of stigmatized patients (derived from [10]), overall health system performance (ranking), health expenditure per capita, and the Economist Intelligence Unit's quality-of-life index are reported in Table 1. Scatterplots of percentages of people with epilepsy with stigma versus overall health system performance (ranking), health expenditure per capita in international dollars, and the Economist Intelligence Unit's quality-of-life score are shown in Fig. 1. We found a trend towards negative correlation between the percentages of people with epilepsy-related stigma and the overall health system performance (Pearson correlation coefficient: *r* = −0.162; *p* = 0.57), health expenditure per capita in international dollars (*r* = −0.24; *p* = 0.4), and the Economist Intelligence Unit's quality-of-life index (*r* = −0.33; *p* = 0.91). None of these correlations proved to be statistically significant.

### 4. Discussion

The lack of correlations suggests that the overall quality of health system, the health expenditure per capita, and the quality of life perceived by the overall population have little influence on perceived epilepsy-related stigma.

This suggests that living in a European country with a better health system performance and higher health expenditure per capita does not automatically lead to reduced perceived epilepsy-related discrimination, unless the public health system invests on awareness programs



**Fig. 1.** a. Scatterplot of percentage of stigmatized people with epilepsy versus overall health system performance (ranking). b. Scatterplot of percentage of stigmatized people with epilepsy versus health expenditure per capita in international dollars. c. Scatterplot of percentage of stigmatized people with epilepsy versus the Economist Intelligence Unit's quality-of-life score.

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