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Self-rated and assessed cognitive functions in epilepsy: Impact on quality of life

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Summary
Aim of the study: To compare the effects of perceived and assessed cognitive functions on quality of life (QoL) in patients with epilepsy (PWE).
Methods: The study analyzed the data from a series of PWE who compiled the Quality of Life in Epilepsy-89 Inventory (QOLIE-89) and the Multiple Ability Self-Report Questionnaire (MASQ) for QoL and perceived cognitive abilities, respectively. The State-Trait Anxiety and Beck Depression inventories were used to assess mood. Neuropsychological tests evaluated abstract reasoning, attention, conceptual-motor tracking, constructional praxis, language, verbal and non-verbal memory, abstraction, category shifting, verbal fluency, and visual—spatial abilities.
Results: The QOLIE-89 overall score was predicted by the Mood and Attention and Executive Functions factors and MASQ scores, explaining 38, 6, and 4% of its variance, while disease duration, seizure frequency, and schooling determined 16%. The QOLIE-89 Psychosocial, Cognitive, and Physical Performance sub-domains related to mood. The Cognitive and Physical Performance factors also related to the MASQ and Attention and Executive Functions factor scores, respectively.
Conclusions: In PWE, self-rated and assessed cognitive deficits may influence QoL, explaining 10% of its variance irrespective from mood and clinical variables. Treating cognitive deficits and their perception may help improve QoL.

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Introduction

Quality of life (QoL) is a multidimensional construct encompassing health- and disease-related dimensions and inner personal facets (Orley, 1994; World Health Organization Quality of Life Group, 1996; Bishop and Hermann, 2000; Giovagnoli et al., 2009). The first studies that measured QoL in patients with epilepsy (PWE) started in the early 1980. Hermann (1993, 1995) claimed, in particular, that QoL assessment in PWE includes various domains (e.g., attitude toward accepting epileptic seizures, fear of stigma in employment, problems with chronic medication, emotional reactions) that are not covered by psychometric tests, underlining that QoL and neuropsychological assessment are not synonyms.

Different studies showed that demographic and clinical variables (Baker, 1995; Dodrill and Batzel, 1997; Torta and Keller, 1999; Bishop and Hermann, 2000; Bishop and Allen, 2003; Raty et al., 2003; Montanaro et al., 2004; Cankurtaran et al., 2005; Liou et al., 2005), mood (Lehrner et al., 1999; Loring et al., 2004; Alanis-Guevara et al., 2005; Cramer et al., 2005; Meldolesi et al., 2006; Szaflarski et al., 2006), and inner aspects (Giovagnoli et al., 2006) may influence QoL. In this framework, the impact of cognitive deficits, which frequently affect PWE (Hermann, 1995; Devinsky et al., 1995; Giovagnoli, 2013), remains uncertain. Perrine et al. (1995) showed that some neuropsychological factors relate to the cognitive scores provided by the QoL in Epilepsy-89 inventory (QOLIE-89) (Devinsky et al., 1995). Breier et al. (1998) also described a relationship between neuropsychological performances and a QoL subscale score concerning perceived cognition, but no association between neuropsychological performances and no-cognitive QoL domains. Giovagnoli and Avanzini (2000) found that self-reported memory is an important determinant of the QOLIE-89 overall score and that both self-reported memory and neuropsychological performances relate to the QOLIE-89 cognitive subscale score. Meneses et al. (2009) showed that language, general intelligence, and attention test scores contribute to determine QoL.

These findings suggest an uneven influence for cognitive problems on QoL, maybe due to inconsistencies across studies in the type of assessment. Some associations between QoL and cognitive abilities may reflect similarities in the material of neuropsychological and self-rated measures (Perrine et al., 1995; Breier et al., 1998; Giovagnoli and Avanzini, 2000) or in the modality of assessment (self-evaluation of QoL and cognitive functions) (Giovagnoli and Avanzini, 2000). Different modalities of assessment convey various contextual and individual variables. Neuropsychological tests are based on standard procedures that allow to control for the condition of performance and to compare individual scores with normative data but do not correspond to real-life conditions (Jones-Gotman et al., 1993). Self-rating reflects daily life more accurately than neuropsychological tests but may be confounded by anxiety, affective states, and self-esteem (Hermann, 1995; Giovagnoli et al., 1997; Elixhauser et al., 1999; Helmstaedter and Elger, 2000; Marino et al., 2009). Indeed, in fully aware patients, self-rating significantly relates to neuropsychological performances, while in patients with incomplete or no awareness the perception of cognitive failures reflects depression and seizure frequency (Giovagnoli, 2013). Both self-rated and objective assessment of cognitive abilities may integrate usefully the clinical and therapeutic management of PWE. However, the correlation of self-rated abilities with QoL was never compared with that of objective abilities and the concomitant influence of epilepsy-related and demographic variables was seldom taken into consideration.

On these grounds, given the risk of cognitive impairment in epilepsy, this study was aimed to clarify the impact of self-rated and assessed cognitive impairments on QoL and to evaluate if such an impact is a by-product of epilepsy-related variables. Perceived and objective deficits were expected to affect differently QoL.

Methods

Patients

The study retrospectively assessed a series of PWE who had completed QoL evaluation as part of the neuropsychological assessment. The patient group was previously described in relation to cognitive awareness (Giovagnoli, 2013). At the time of patient evaluation, diagnosis was based on the ILAE Classification of 1989 (Commission on Classification and Terminology of the International League against Epilepsy, 1989). In six cases, diagnosis was changed from frontal (FLE) to temporal lobe epilepsy (TLE) based on the evaluation of the clinical course and re-evaluation of laboratory data (Table 1). Ninety-five patients older than 14 years, with five or more years of schooling, were chosen randomly from a pool of 214 PWE evaluated from 1998 to 2002. None of the patients had idiopathic generalized epilepsies. These 95 patients reported a disease duration longer than 1 year and showed no intelligence problems (as expressed by regular schooling accomplishments) or psychiatric symptoms (as expressed by clinical history and neurological examination). In 50 patients with symptomatic epilepsy, magnetic resonance imaging or computerized tomography revealed a focal brain lesion compatible with low-grade glioma, ganglioglioma, cavernous angioma, hippocampal sclerosis,

Table 1 Patient characteristics.

	Males	Females
	42	53
Age	36.28 ± 12.32	(14–70)
Education (years)	10.73 ± 3.43	(5–18)
Age of seizure onset (years)	18.63 ± 13.30	(1–66)
Disease duration (years)	17.53 ± 11.20	(1–50)
Monthly seizure frequency	6.65 ± 9.43	(1–40)
Cryptogenic epilepsy	45	
Symptomatic epilepsy	50	
Temporal lobe epilepsy	42	
Frontal lobe epilepsy	23	
Parietal-occipital epilepsy	12	
Multifocal epilepsy	18	
One-drug therapy	62	