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The use of GAD–7 as a screening tool for Generalized Anxiety Disorder in patients with epilepsy

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Abstract

Epilepsy is a prevalent neurological disease affecting approximately 2 - 3% of world's population. As is known, patients with epilepsy (PWE) are more predisposed to present comorbid psychiatric disorders, however, many of them remain underdiagnosed. In last years, several screening tools with the objective of assessing anxiety symptoms in different sub-populations have been proposed, including in PWE. Relevant publications concerning this issue were identified by searching several widely used databases. Our results disclosed that the Generalized Anxiety Disorder – 7 Scale (GAD-7) was considered a valid and reliable screening tool for detecting Generalized Anxiety Disorder in patients with epilepsy. After literature review, we concluded that the use of GAD-7 in these patients is becoming an emergent clinical practice. Further studies are needed to investigate the applicability of this screening tool in larger samples of PWE in primary care.

Keywords : Epilepsy; Anxiety; Psychiatric Co-morbidities; Generalized Anxiety Disorder; Screening Tools; Generalized Anxiety Disorder – 7 Scale; GAD–7

Abbreviations : HAM: Hamilton Anxiety Rating Scale; HADS-A: Hospital Anxiety and Depression Scale; GAD-2: Generalized Anxiety Disorder-2 scale; GAD-7: Generalized Anxiety Disorders-7 scale; GAD: Generalized Anxiety Disorder; DSM-IV: 4th Edition of the Diagnostic and Statistical Manual of Mental Disorders; PWE: Patients with Epilepsy; N: Number; RP: Research Participants; PPV: Positive Predictive Value; NPV: Negative Predictive Value

Introduction

Epilepsy is a prevalent neurological disease affecting approximately 2-3% of world's population [1]. Individuals who suffer from this condition are more predisposed to present comorbid psychiatric disorders (approximated prevalence of 6%). When considering mental disorders related to epilepsy, prevalence occurs as follows: Depression (24-74%), Anxiety Disorders (10-25%), Psychosis (2-7%) and Personality Disorders (1-2%) [2]. This association complicates treatment and clinical management of those patients [3,4]. Despite the high prevalence of psychiatric disorders in epilepsy, many of them remain underdiagnosed and untreated [5]. The crescent number of studies concerning this topic is an important mark for the multidisciplinarity of epileptology.

Method

Relevant publications were identified after searching several widely used databases, including PubMed Central® (last searched January 17, 2018), SciELO (last searched January 17, 2018), Google Scholar (last searched January 17, 2018), Europe PubMed Central® (last searched January 19, 2018) and Wiley Online Library (last searched January 19, 2018). The databases were searched by using the following terms: Epilepsy, Anxiety, Psychiatric Comorbidities, Generalized Anxiety Disorder, Screening tools, Generalized Anxiety Disorder-7 scale and GAD-7.

Results

Our review disclosed that, in last years, several screening tools with the objective of assessing anxiety symptoms in different sub-populations have been proposed. Some examples are: HAM (Hamilton Anxiety Rating Scale) [6], HADS-A (Hospital Anxiety and Depression Scale) [7], GAD-2 (Generalized Anxiety Disorder – 2 Scale) [8] and GAD-7 (Generalized Anxiety Disorder – 7 Scale) [9]. The GAD-7 is an evaluation instrument elaborated by Spitzer et al. [9] and validated by Kroenke and Spitzer et al. [10], in United States of America. Based on the 4th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) Generalized Anxiety Disorder (GAD) criteria, seven items aiming a self-report measure of anxiety symptoms were developed to compound a brief questionnaire [11]. It takes a few minutes to complete GAD-7. Each item is scored from 0 to 3 (total score of 21 points). As proposed in the original validation article, a total

score > 9 predicts a greater chance of diagnosing GAD in general population [10].

Recently, some studies have considered the use of GAD-7 as a screening tool for anxiety symptoms in patients with epilepsy (PWE). According to our review, the first relevant paper about that issue, published in 2014, was MEPSY (Multicenter Trial of Epilepsy and Psychiatric), a multicentric cross-sectional study involving 243 eligible PWE in South Korea. In that study, after multidisciplinary evaluation and statistical analysis of data, Seo et al. concluded that GAD-7 is a valid and reliable screening tool for detecting GAD in PWE. The author suggested a cut-off score of > 6 in this population, with a sensitivity of 92,2%, a specificity of 89,1%, a positive predictive Value (PPV) of 69,1% and a negative predictive value (NPV) of 97,7%. In MEPSY, PWE with GAD were more likely to be women (p-value = 0,011), to have had the onset of epilepsy in an earlier age (p-value = 0,006) and were less likely to take psychiatric medication (p-value < 0,001) when compared with patients without GAD [12].

In 2015, Tong et al. validated the GAD-7 among chinese PWE in a consecutive cohort of 213 eligible research participants. In that paper, authors also suggested a cut-off score of > 6 (sensitivity of 94% and specificity of 91,4%; PPV of 77% and NPV of 98%) [13]. According to results of that study, there were more patients with complex partial seizures - now called focal onset impaired awareness seizures [14] - diagnosed with GAD (p–value = 0,046), while for other seizure types no such difference was noted. Seizures were more frequent (p-value = 0,001) and more recent (p-value = 0,013) in PWE with GAD when compared to PWE without GAD. PWE of the GAD group were more likely to be taking multiple antiepileptic drugs (p-value = 0,042). Patients with idiophatic epilepsy had less GAD (p-value = 0,013) [13].

The most recent article concerning use of GAD–7 as a screening tool for GAD in PWE (N = 145) included in this review was published by Micolaud-Franchi et al, in 2016. According to the authors, the cut-off point that showed maximized sensitivity and specificity was 7 (sensitivity of 95,9% and specificity of 76%; PPV of 67,1% and NPV of 97,3%). In that study, there was no statistically significant difference in demographic and clinical characteristics between PWE with and without GAD [15]. The compiled data of studies cited in this review were exposed on Table 1.

Table 1: Compilated data of studies concerning validation of the GAD-7 among PWE.

	Authors	Publication Year	N of eligible RP	Cut-off score suggested	Sensitivity of Cut-off score	Specificity of Cut-off score	PPV of Cut-off score	NPV of Cut-off score
Studies (GAD-7 - PWE)	Seo et al	2014	243	> 6	92,2%	89,1%	69,1%	97,7%
	Tong et al	2015	213	> 6	94%	91,4%	77%	98%
	Micolaud-Franchi et al	2016	145	> 7	95,9%	76%	67,1%	97,3%

Studies (GAD-7-PWE): Studies concerning validation of the GAD-7 among PWE; GAD-7: Generalized Anxiety Disorder-7 scale; PWE: Patients With Epilepsy; N: Number; RP: Research Participants; PPV: Positive Predictive Value; NPV: Negative Predictive Value.

The discrepancy of cut-off scores of GAD-7 in studies including PWE compared to studies in general population (> 6 versus > 9, respectively) could reflect a tendency for PWE to underestimate their worry symptoms due to chronic anxiety related to their epileptic disorder per se [16]. Another factor considered by Seo et al., Tong et al. and Micolaud-Franchi et al. was the perceived stigma of people with epilepsy, which might lead them to an unwillingness to disclose their feelings when answering the questionnaire [12,13,15]. In addition, it is worthy to cite the cross-cultural differences between samples studied, as suggested by Seo et al. [12].

Conclusion

After our review, we concluded that the use of GAD-7 as a screening tool for detecting GAD in PWE is becoming an emergent clinical practice. Further studies are needed to investigate the applicability of GAD-7 in larger samples of PWE in primary care. Strategies to assess anxiety and depression symptoms in people with epilepsy are very important, since identification and treatment of psychiatric disorders are related to better clinical outcomes and control of seizures.

Conflicts of Interest

None.

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