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One step closer to a global tool for rapid screening of major depression in epilepsy: Validation of the French NDDI-E

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ABSTRACT

Objective: Depression in people with epilepsy (PWE) is underdiagnosed and undertreated. The Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) is a screening questionnaire used for detecting major depressive episode (MDE) in PWE, and is already validated in 10 languages. However a version in French, one of the world's widely spoken languages, was, until now, lacking. We aimed to translate and validate the French NDDI-E.

Methods: This study was performed under the auspices of the ILAE. People with epilepsy >18 years of age were recruited from 2 specialist epilepsy units in Marseille, France. Two native French speakers and 2 native English speakers performed a forward–backward translation. The Mini International Neuropsychiatric Interview (MINI) was performed as the gold standard, and the Center for Epidemiological Studies Depression symptoms index (CES-D) was performed for external validity. Data were compared between PWE with MDE and PWE without MDE using the chi-square test and Student's *t*-test. Internal structural validity, external validity, and receiver operator characteristics were analyzed.

Results: Testing was performed on 116 PWE: mean age = 40.39 years (SD = 13.83, range: [18–81] years old); 58.6% (68) were women; 87.1% had focal epilepsy. Using the MINI, we found that 33 (28.4%) patients had current MDE and that 15 (12.9%) patients had dysthymia; also, we found that 37 (31.9%) patients presented suicidal ideation and/or behavior. Cronbach's alpha coefficient was 0.838, indicating satisfactory internal consistency. Correlation between the NDDI-E and the CES-D scores was high ($r(116) = 0.817$, $p < 0.0001$), indicating good external validity. Receiver operator characteristic analysis showed an area under the curve of 0.958 (95% CI = 0.904–0.986), ($p < 0.0001$), indicating good capacity of the NDDI-E to detect MDE (defined by MINI). The cutoff for maximal sensitivity and specificity was 15. The mean NDDI-E score in PWE with MDE was 18.27 (SD = 2.28), and the mean NDDI-E score in PWE without MDE was 10.61 (SD = 3.63).

Significance: This study validated the French NDDI-E, with a cutoff score of 15/24 for MDE, similar to previous studies, and reinforces the NDDI-E as a global tool for detection of MDE.

1. Introduction

Screening for depressive episode (MDE) is of high relevance in patients with epilepsy (PWE) [1] and represents a global problem [2,3]. Major depressive episode is the most frequent comorbid mental disorder in epilepsy [4,5], and its presence is associated with a negative effect on seizure control [6], higher rates of adverse effects of antiepileptic drug (AED) therapy [7], poorer outcome of epilepsy surgery [8,9], lower quality of life [10], increased risk of suicidal behavior in PWE [11], and increased health-care costs [12].

Despite the significance of MDE in epilepsy, clinicians still underestimate its importance [13,14], and it remains an underdiagnosed and undertreated condition [2]. A reliable and practicable screening instrument could help improve the detection of MDE in PWE. The Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) was developed with the specific aim of detecting MDE in PWE [14]. The advantages of

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NDDI-E are multiple. It is a self-reported questionnaire based on 6 items, which accurately assess the patient's affective experience [15]. It was specifically developed to minimize potential confounding effects due to seizures, cognitive consequences of epilepsy, and antiepileptic treatments, which might produce symptoms overlapping with those of MDE [14,16]. It is a shorter questionnaire compared with classical self-reported screening questionnaires used to detect MDE, such as the Beck Depression Inventory (BDI, 21 items) or the Center for Epidemiologic Studies Depression Scale (CES-D, 20 items), both of which have been validated in PWE [16]. Thus, the NDDI-E is a more time-efficient means of detecting MDE, which improves the ability to detect MDE in PWE in busy clinical practice [17].

Another valuable aspect of the NDDI-E is that it has been already translated and validated into Brazilian [18], Spanish [19,20], Italian [21], German [22], Japanese [23], Greek [24], Arabic [25], and Korean [26] (Fig. 1). Thus, the NDDI-E represents a multilingual diagnostic tool for the worldwide problem of MDE in PWE [2]. Despite French being the 6th most widely spoken world language, with 220 million speakers [27], the NDDI-E has not previously been translated and validated in French. Thus, in order to better detect NDE in native French speakers with epilepsy, the purpose of this study was to design and validate a French version of the NDDI-E. Translating questionnaires may be dependent on cultural background [28], and, before using any translated questionnaire, it is necessary to perform a transcultural validation according to specific rules and methods. In each of the previous languages into which the NDDI-E has been translated, the scale has proven to be a user-friendly and reliable instrument with good psychometric properties (Table 4). In the present study, we analyzed the psychometric properties of the French NDDI-E version in a representative sample of French PWE.

2. Methods and materials

2.1. Participants

People with epilepsy were recruited from the Clinical Neurophysiology Department of the Marseille University Hospital and the Hôpital Henri Gastaut, Marseille, over a 6-month period (January 2014–Jun 2014). Inclusion criteria were as follows: native French-speaking adult patients (>18 years of age) with any type of active epilepsy according to the ILAE criteria. The diagnosis of epilepsy was documented clinically and confirmed where necessary with video-EEG investigations. Both inpatients and outpatients were included. Exclusion criteria were as follows: insufficient capacity to consent and to understand and answer the self-report questionnaires and the presence of other severe chronic medical conditions (other than epilepsy).

Gender, age, type and frequency of seizures, age at onset of epilepsy, number of antiepileptic drugs currently being taken, the presence of vagal nerve stimulation, and use of antidepressant drugs were noted.

Patients were invited to participate in the study during their routine neurological evaluation. After receiving a detailed description of the study, participants gave their informed consent. This study was conducted in accordance with the Declaration of Helsinki and French Good Clinical Practices.

2.2. Procedure

2.2.1. Translation of the NDDI-E

The translation was carried out under the auspices of the International League Against Epilepsy (ILAE) and followed the instructions provided by one of the authors of the original NDDI-E (AMK). A forward–backward

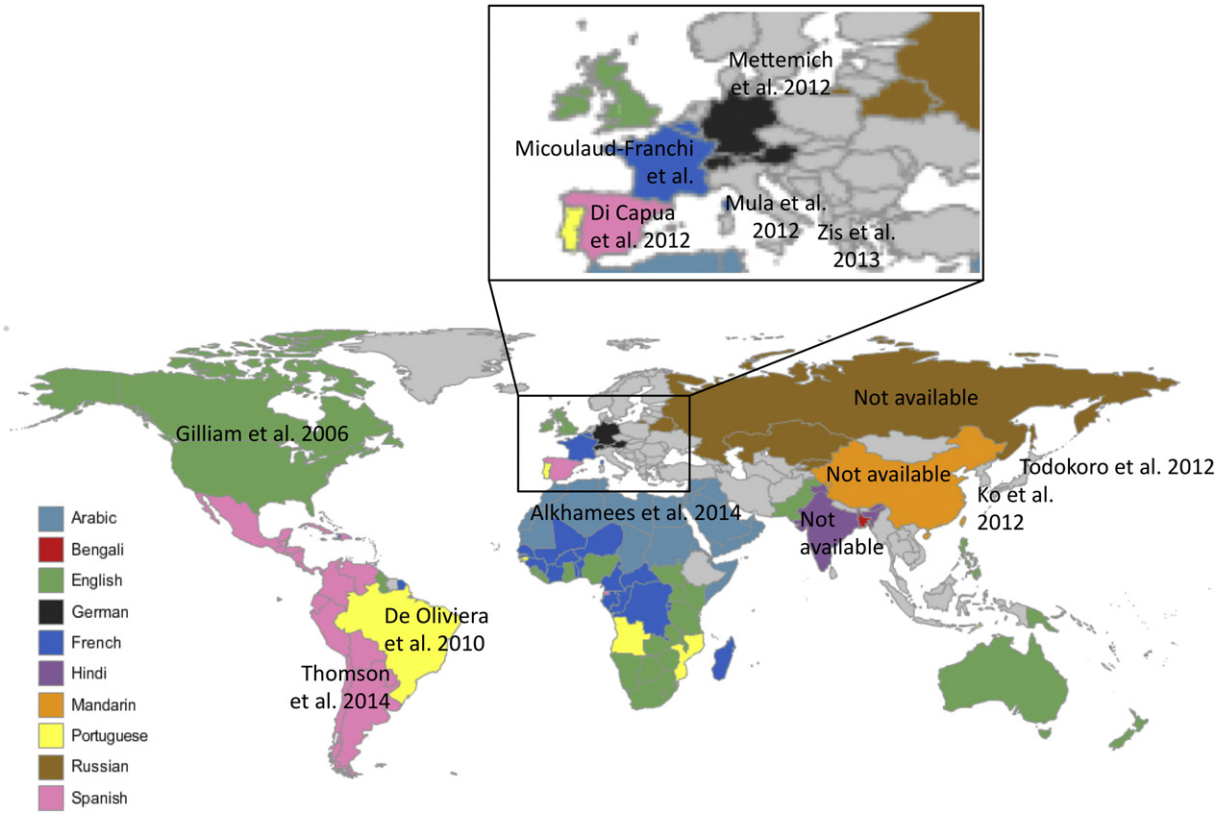

Fig. 1. Distribution of language (official or first language) and regions where a translated and published NDDI-E was validated. The colors represent the 10 most spoken languages around the world.