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Research report

A psychometric analysis of the Clinically Useful Depression Outcome Scale (CUDOS) in Spanish patients

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ABSTRACT

Background: Psychometrically sound and time-efficient scales that measure depressive symptoms are essential for research and clinical practice. This study was aimed at exploring the psychometric properties of the Spanish version of the Clinically Useful Depression Outcome Scale (CUDOS) in a clinical sample.
Method: Participants were 162 patients (72% women) with a mood disorder (86% diagnosed as major depressive disorder). Depressive symptoms were assessed by means of the CUDOS, the Beck Depression Inventory (BDI), and two interviewer-rated instruments: the 17-item Hamilton Depression Rating Scale ($HDRS_{17}$) and the Clinical Global Impression-Severity (CGI-S) scale. Dimensionality, internal consistency, test–retest reliability, construct validity, criterion validity, and responsiveness to change of the CUDOS were explored.
Results: The CUDOS exhibited a one-factor structure which accounted for 55.7% of the variance, and excellent results for internal consistency (Cronbach's alpha=0.93), for test–retest reliability (intraclass correlation coefficient=0.84) and for convergent validity [$HDRS_{17}$ (r=0.77), CGI-S (r=0.73) and BDI (r=0.89)]. The ability of the CUDOS to identify patients in remission was high (area under ROC curve=0.96). Its responsiveness to change was also highly satisfactory: patients with greater clinical improvement showed a greater decrease in CUDOS scores ($p < 0.001$).
Limitations: Diagnoses, even though made by expert clinicians, were established as part of routine clinical practice. Generalizability of the findings beyond the study sample is unknown.
Conclusions: The findings suggest that the Spanish version of the CUDOS is valuable as a brief and psychometrically sound self-report instrument to assess depressive symptoms in research and in clinical practice.

1. Introduction

The Clinically Useful Depression Outcome Scale (CUDOS) is a self-report scale developed with the twofold aim of being a screening instrument with case-finding capability and a sensitive-to-change measure of the severity of depressive symptoms (Zimmerman et al., 2008). This scale is composed of 16 items that cover the 9 DSM-IV diagnostic criteria of major depressive disorder (MDD). Responses are obtained on a 5-point Likert scale indicating the frequency of the symptom during the past week (0=not at all true [0 days]; 4=almost always true [every day]). Total scores range from 0 to 64. The CUDOS is significantly shorter and less time-consuming for the respondent (usually taking no more than three minutes to be completed) than most self-report questionnaires in common use (Zimmerman et al., 2004; Zimmerman and McGlinchey, 2008). Moreover, it shows adequate psychometric properties comparable to the ones of these latter instruments (Zimmerman et al., 2004, 2006b, 2008). The CUDOS is also extremely quick and easy to score (Zimmerman et al., 2008; Zimmerman and McGlinchey, 2008) and has a higher acceptability among patients than other self-reports (Zimmerman and McGlinchey, 2008). The above features render this scale particularly well suited to assess depressive symptoms in both research and clinical practice settings. The present study aims at exploring the psychometric properties of the Spanish version of the CUDOS in a clinical sample, addressing the following measurement properties: dimensionality, reliability, validity and responsiveness to change.

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2. Method

2.1. Design and setting

This is an observational, prospective, single-centre study, with varying follow-up, performed in outpatient and inpatient psychiatric facilities of a general hospital located in Barcelona (Catalonia, northeast Spain).

2.2. Participants

The sample consisted of 162 consecutively recruited patients (72.4% women) with a mean age of 52.0 (SD = 14.8) years, suffering from a mood disorder according to DSM-IV (85.6% diagnosed as MDD; dysthymic disorder: 5.5%; bipolar I disorder: 8.9%), and treated predominantly in the outpatient clinic (78.3%). Exclusion criteria included lifetime diagnosis of psychotic disorder, and current neurological or substance-use disorders. All participants were assessed while receiving their treatment as usual, which could be long-term ongoing or recently prescribed. The 17-item Hamilton Depression Rating Scale ($HDRS_{17}$) mean score for the whole sample was 16.4 (SD = 8.1).

2.3. Instruments

Depressive symptoms were assessed by means of the Spanish version of the CUDOS, a self-report scale – the Beck Depression Inventory (BDI; Vázquez and Sanz, 1999) – and two interviewer-rated instruments: the $HDRS_{17}$ (Bobes et al., 2003) and the Clinical Global Impression-Severity scale (CGI-S; Guy, 2004). In addition, two self-report instruments tapping into psychosocial functioning and quality of life were administered: the Single-Item Global Measure of Psychosocial Functioning (GPF) and the Single-Item Global Measure of Quality of Life (GQOL; Zimmerman et al., 2006c).

2.4. Procedure

The Spanish versions of the CUDOS and the two single-item global measures (i.e., GPF and GQOL) were developed through the usual translation-back translation process. All translations were done by independent native speakers in the destination language. The two native English back-translators did not know the original version of the scales. The author of these measures gave his approval to the back-translated versions and certified their conceptual and linguistic equivalence with the original versions. The research project was approved by the Clinical Research Ethics Committee of Hospital de la Santa Creu i Sant Pau (Barcelona). All participants provided written informed consent.

Patients were assessed by means of clinician-rated instruments and self-reported scales. Ratings on the clinician administered instruments were blind to the responses given by patients on the self-reported scales. The CUDOS, the GPF and the GQOL were administered to the entire sample ($n = 162$), whilst the other three instruments (i.e., BDI, $HDRS_{17}$ and CGI-S) only to 124 patients. To study the CUDOS test–retest reliability, the scale was re-administered to a group of clinically stable patients ($n = 28$) 7–14 days after. To investigate CUDOS responsiveness to change, this scale together with the other three instruments were re-administered 3 or more weeks after, to a subgroup of patients ($n = 53$) who had been prescribed an antidepressant treatment few days before or after entering the study.

2.5. Data analyses

CUDOS dimensionality was assessed by means of a principal components analysis (PCA). The criteria used to determine the number of components to be retained were the Scree test, parallel analysis and interpretability of simple structure. Internal consistency reliability was estimated using Cronbach's alpha. Test–retest reliability of the CUDOS was evaluated with the intraclass correlation coefficient (ICC). Convergent construct validity was assessed by correlating the CUDOS with the other three measures of depression and the two single-item global measures. To examine the known-groups construct validity, patients were grouped upon the severity of depressive symptoms (according to the CGI-S) and groups were then compared on CUDOS scores with an analysis of variance (ANOVA). Concurrent criterion validity was assessed by using a receiver operating characteristic (ROC) curve analysis to determine the ability of the CUDOS to correctly identify patients in remission (defined as a $HDRS_{17}$ score ≤ 7). Responsiveness to change was explored by (a) comparing CUDOS change scores (score on the second administration minus the score on the first one) among the three clinical improvement categories obtained from change scores on the CGI-S; and (b) examining effect sizes of the changes on the different instruments. All analyses were performed using IBM SPSS version 19.0.

The analysis of the dimensionality and internal consistency of the CUDOS included only 13 items rather than the original 16. Pairs of items exploring opposite variants of the same disturbance (e.g., increased and decreased appetite) were collapsed – selecting the higher value of each pair – into single items assessing appetite, sleep and psychomotor disturbances. This is a commonly adopted procedure in the evaluation of certain scales assessing depressive symptoms (e.g., Rush et al., 2006), with the specific objective of not introducing artifacts when studying the factor structure of a given scale that includes separate items which assess compound-opposite criteria (Zimmerman et al., 2006a). All other data analyses were conducted involving the original number of items.

Cronbach's alpha and ICC were interpreted according to the ranges of clinical significance proposed by Cicchetti (1994). Pearson correlation coefficients and partial eta-squared indexes were appraised using the ranges for effect size interpretation recommended by Ferguson (2009). The area under the ROC curve was interpreted according to the ranges of diagnostic accuracy suggested by Fischer et al. (2003).

3. Results

3.1. Dimensionality

The correlation matrix was considered suitable for factor-analytical modeling because the Kaiser–Meyer–Olkin measure of sampling adequacy was excellent (0.912) and Bartlett's test of sphericity was highly significant [$\chi^2(78) = 1415.24$, $p < 0.001$]. Following the criteria mentioned above, the PCA revealed a one-factor solution as the best. Moreover, the ratio between the eigenvalues of the first and the second component was 5.89 (7.24/1.23), which exceeds the critical value of 4, a criterion usually used as evidence of unidimensionality (Slocum-Gori and Zumbo, 2011). This one-factor structure explained 55.7% of the variance, with component loadings ranging from 0.596 to 0.874 (Table 1). All factor loading values were positive, statistically significant ($p < 0.05$; Hair et al., 2010), and ranging from good to excellent (Comrey, 1973).

3.2. Reliability

Cronbach's alpha coefficient reached a value of 0.931, suggesting an excellent internal consistency reliability (Cicchetti, 1994). Removal of any of the CUDOS items did not increase the scale's alpha coefficient value (Table 1). Furthermore, all corrected item-total correlations were well above the minimum recommended cut-off of 0.30 (Nunnally and