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Measuring disability in patients with chronic fatigue syndrome: reliability and validity of the Work and Social Adjustment Scale

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ABSTRACT

Background: Disability is a defining feature of chronic conditions, and it is an increasingly used measure of therapy effectiveness. The Work and Social Adjustment Scale (WSAS) is a simple and clear measure of disability. Although the scale is widely used, no study has yet investigated its psychometric properties in patients with chronic fatigue syndrome (CFS).
Methods: Data from two samples of patients were used, one from a multicenter randomized controlled clinical trial of treatments for CFS (n =639) and the other from a clinic that specializes in CFS (n=384). All patients completed the WSAS as well as other measures.
Results: Internal consistency and the Spearman–Brown split-half coefficient values indicated that the scale is reliable. CFS patients who had comorbid diagnoses of depression, anxiety or fibromyalgia had higher WSAS scores. High levels of disability were associated with high number of physical symptoms, severe fatigue, depression, anxiety, poor sleep quality and poor physical fitness, with correlation coefficients ranging between 0.41 and 0.11. Lower scores on the WSAS were modestly associated with better physical functioning as well as higher levels of physical capacity as assessed by a walking test. Sensitivity to change was evaluated in a subgroup of patients who had undergone a course of cognitive behavioral therapy. Disability significantly decreased after therapy and remained stable at follow-ups.
Conclusion: The WSAS is a reliable and valid assessment tool for disability in patients with CFS.

Introduction

The World Health Organization defines disability as an umbrella term covering impairments, activity limitations and participation restrictions. This definition describes impairment as a problem in body function or structure, activity limitation as a difficulty encountered by an individual in executing a task or action and participation restriction as a problem experienced by an individual in involvement in life situations [1]. Temporary episodes of disability are generally accepted as part of an illness course, but when disability is long lasting, these can become less tolerable. Disability is increasingly perceived as an important index of recovery, and intervention studies often include measures of disability as primary outcomes along with symptom reduction [2,3].

Disability is a characteristic feature of chronic fatigue syndrome (CFS). Between 27% and 65% of CFS patients are reported not to be working, and less than a third of untreated patients are estimated to resume employment within 3 years after diagnosis [4,5]. However, occupational outcomes tend to improve substantially for CFS patients who receive treatment such as cognitive behavioral therapy and graded exercise therapy [6]. Impairment in social and relational activities is also often reported by CFS patients [7]. Social and relational limitations are also likely to contribute to the high prevalence of emotional problems such as anxiety and depression observed in CFS [8].

The Work and Social Adjustment Scale (WSAS) is a five-item scale that assesses an individual's ability to perform everyday activities including work, home management, family and relationship interaction and social and private leisure activities. Each of the five items is rated on a 9-point scale ranging from 0 (not at all a problem) to 8 (very severely impaired) so that total scores range between 0 and 40, with high scores denoting higher levels of disability. The scale was first introduced by Marks [9], but the first study evaluating its psychometric proprieties in psychiatric groups [i.e., obsessive-compulsive disorder (OCD) and depression] was conducted by Mundt et al. [10]. These authors found that the WSAS had good internal consistency (i.e., Cronbach's α ranging between .70 and .90) and that it positively correlated with depressive symptom severity in depressed individuals as well as with obsessive-compulsive symptom

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severity in a group of patients with OCD. In a later study, Mataix-Cols et al. [11] extended the validation of the scale to phobic disorders and, using principal component analyses, confirmed the monofactorial structure of the scale. These authors also assessed sensitivity to change and found that WSAS total scores reflected differences in phobic severity and improvement with treatment. In the last decade, disability measures have been increasingly included in chronic and severe mental illness interventions studies [12,13].

The use of WSAS in other conditions is less well established. Up to date, the scale has been used in patients with CFS [14,15], irritable bowel syndrome [16] and nonepileptic attack disorder [17]. However, studies of the psychometric proprieties of the WSAS in these populations are lacking.

We aimed to determine the reliability and validity of the WSAS in two large samples of patients with CFS, as well as its sensitivity to change.

Methods

Participants

Two groups of patients with CFS were recruited for this study. Both groups were used to demonstrate the psychometric properties of the WSAS; only the second group was used to investigate sensitivity to change.

Cohort 1: the Pacing, graded Activity and Cognitive behaviour therapy: a randomized Evaluation (PACE) trial

Baseline data from the 640 patients assessed for the PACE trial were used. One patient did not complete the WSAS and was therefore excluded from the analysis. This is a large UK-based multicenter randomized controlled trial comparing the effectiveness of four treatments for people with CFS (see White et al. [18], for the study protocol). These are standardized specialist medical care alone, or standardized specialist medical care plus one of three therapies, namely, adaptive pacing therapy, cognitive behavior therapy (CBT) or graded exercise therapy. The main inclusion criteria for entering the trial were as follows: meeting the Oxford research diagnostic criteria for CFS [19], a score of 6 or more on the Chalder Fatigue Questionnaire [20], a score of 65 or less on the 36-item Short Form Health Survey (SF-36) physical function subscale [21] and at least 18 years old at randomization. The exclusion criteria were relevant alternative medical diagnosis explaining fatigue [22], diagnosis of a psychiatric condition excluded by the Oxford diagnostic criteria for CFS or self-harm risk, trial treatments inappropriate for the patient's clinical needs (e.g., someone with significant posttraumatic stress disorder) or having previously received a trial treatment in one of the PACE trial centers. Patients were recruited between November 2004 and November 2009, and the baseline (prerandomization) data only were used in this study.

Cohort 2: CFS patients attending a CFS specialist unit

Data from 384 patients assessed in a UK secondary care specialist clinic were used to form cohort 2. These patients were initially referred from primary or secondary care and assessed by a consultant psychiatrist or senior therapist who confirmed the diagnosis of CFS. Patients included had a minimum age of 18 years at intake and a diagnosis of CFS according to the Oxford criteria [19]. Patients with severe psychiatric comorbidity (e.g., severe depression) are generally not treated by the CFS clinic; nevertheless, a number of comorbid psychiatric problems such as moderate depression and anxiety are frequently observed in CFS patients. All patients in cohort 2 received a course of CBT from an experienced clinical psychologist or nurse. Data collection for cohort 2 was conducted as part of the clinic audit and service evaluation.

Patients in cohort 2 received between 10 and 15 sessions of individual CBT and completed the WSAS and the Chalder fatigue scale (CFQ) both before and after therapy and again at 6- and 12-month follow-up after discharge from treatment. A number of cohort 2 patients had missing follow-up measures. One hundred sixty-one did not complete the WSAS after treatment, 174 did not complete the measure at the first follow-up and 159 did not complete it at the second follow-up. Reasons for not completing the measure were as follows: poor compliance and delay in returning the measures (e.g., more than 2 months from the due date). Only 114 patients completed the WSAS at 4 time points. Preliminary analysis conducted on baseline levels of WSAS, fatigue and basic demographic variables (i.e., age and gender) did not reveal any significant difference between patients who complete the measures at all assessment points and those who did not.

All patients in both cohorts underwent a range of laboratory investigations under the supervision of either the patients' general practitioners or hospital doctors, to exclude alternative medical causes, as recommended by the National Institute for Health and Clinical Excellence (NICE) guidelines [23].

Measures

Patients in cohort 1 were assessed with a number of measures in addition to the WSAS. These included the following: the CFQ, a 11-item scale assessing severity of fatigue [20–22,24]; the SF-36 physical functioning subscale [21]; the Hospital Anxiety and Depression Scale (HADS), a 22-item scale assessing symptoms of anxiety (HADS-A) and depression (HADS-D) [25] form, which an independent score for anxiety and depression can be derived; a 15-item assessment of common physical symptoms [26]; Centre for Disease Control (CDC) criteria for CFS symptom count [22]; Jenkins sleep scale [27]; the 6-min walking test to give an objective measure of physical capacity [28]; and the self-paced step test, a measure of fitness [29]. The Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (SCID), Research Version, was used to assess the presence of concomitant psychiatric disorders [30].

Analysis

Statistical analyses were performed using SPSS 17. Scale reliability was measured by Cronbach's α coefficient and Spearman–Brown split-half coefficient [31,32]. Conventionally, coefficients above 0.70 are considered satisfactory [33]. Correlations were assessed with Pearson *r*. Analysis of variance and *t* test were used to investigate construct validity by comparing mean WSAS scores between different subgroups of CFS patients defined by gender, age and marital status. Sensitivity to change was evaluated with repeated-measure analysis of variance (ANOVA) across four consecutive assessments. Partial eta squared (η^2) describing the proportion of total variation attributable to WSAS excluding other factors and error variance is reported for effect size estimation [34]. All tests were two tailed, and α of .05 indicated significance.

Principal component analysis with varimax rotation was used to investigate the factorial structure. An orthogonal rotation (i.e., varimax) was preferred to oblique rotation (i.e., promax) in line with previous studies [11–22,24]. Kaiser's criterion (i.e., retention for factors above eigenvalue 1) was used to assess the number of components to be retained [35].

Results

Patients from the two cohorts did not differ by age, cohort 1 (mean=38.3, S.D.=11.8), cohort 2 (mean=39.1, S.D.=10.1), $t(1021)=-1.04$, $P=.29$, but did differ in gender distribution ($\chi^2(1)=22.6$, $P<.0001$) with a higher proportion of males in cohort 2 (37%)